Department for Environment, Food & Rural Affairs

Appraisal of Sustainability of the National Policy Statement for Water Resources Infrastructure

Appraisal of Sustainability Report

Wood Environment & Infrastructure Solutions UK Limited – November 2018

Report for

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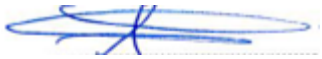

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Document revisions

No.	Details	Date
1	Draft AoS Report	August 2018
2	Final Draft AoS Report	October 2018
3	Revised Final Draft AoS Report	October 2018
4	Final AoS Report	November 2018

Non-Technical Summary

Introduction

This Non-Technical Summary provides an overview of the Appraisal of Sustainability Report of the draft National Policy Statement for Water Resources Infrastructure (hereafter referred to as the 'draft National Policy Statement'). The draft National Policy Statement will apply to water resources infrastructure in England only. If circumstances were to arise requiring planning consideration of water resources infrastructure elsewhere in the UK, planning decisions and environmental assessments would be pursued through the relevant, devolved planning system.

The following sections of this Non-Technical Summary:

- provide an overview of the various types of water resources infrastructure and the draft National Policy Statement;
- describe the Appraisal of Sustainability process and how it has been applied to the draft National Policy Statement, including the Appraisal of Sustainability objectives and guide questions used in the appraisal;
- present a summary of the findings of the Appraisal of Sustainability of the draft National Policy Statement (and reasonable alternatives); and
- set out the next steps in the Appraisal of Sustainability process.

The appraisal, the Appraisal of Sustainability Report and this Non-Technical Summary have been completed by Wood Environment & Infrastructure Solutions UK Ltd (Wood) on behalf of the Department for Environment, Food and Rural Affairs (Defra).

Water Resources Infrastructure Planning

The Water Industry Act 1991, as amended by the Water Act 2003 and Water Act 2014, requires all water companies to prepare, maintain and publish statutory Water Resource Management Plans (WRMPs). The plans set out how water companies intend to maintain the balance between water supply and demand and ensure security of supply over at least the next 25 years in a way that is economically, socially and environmentally sustainable.

The types of options considered in preparing WRMPs can be broadly categorised as follows:

- supply side measures – increasing the water available for use in the local supply area through an increase in deployable output[1] from a range of measures that can include (but is not limited to) new or increased abstraction from existing sources, new or increased capacity for reservoirs, improving water treatment and reuse, water transfers (importing water from an area of surplus into an area of deficit) and desalination plants; and
- demand management – reducing the demand for water through a combination of leakage reduction and water efficiency measures.

[1] Deployable output is defined in the draft statutory instrument (The Infrastructure Planning (Water Resources) (England) Order 2018). It refers to the annual average volume of water that can be produced per day from a defined facility under drought conditions, having regard in particular (where applicable) to: the hydrological yield of the facility; the quantity of water licensed for abstraction; the state of the local environment; defined infrastructure properties; any water treatment processes; and any requirements relating to water quality.

Once the published final WRMP is adopted, the preferred options are implemented as schemes. Schemes that include the development of new water resources infrastructure usually require planning consent under the Town and Country Planning Act 1990. This planning framework has helped water companies understand future needs and maintain the balance of supply and demand within their boundaries.

The challenges faced by the water industry have recently been identified in a number of documents, including the Climate Change Risk Assessment (CCRA2),[2] the Adaptation Sub Committee (ASC)[3] report and the Environment Agency's Case for Change[4] including its advice to Defra on water supply and resilience and infrastructure[5]. The current evidence predicts potential deficits across England and Wales of up to 3,000 megalitres per day (Ml/d) by 2040. The recent National Infrastructure Commission report, Preparing for a Drier Future[6], indicates that one third of the predicted deficit could be addressed by reduced leakage from water company pipes and a further third by improved efficiency (by reducing household consumption), but that the remaining third would need to be addressed by water transfers between companies and new water resources.

The Water UK's 2016 Water Resources Long-Term Planning Framework (2015-2065)[7] also noted the importance of demand management in conjunction with a combination of localised initiatives and strategic schemes to provide future resilience and address the forecast supply deficit, and the Government has confirmed[8] that a 'twin track'[9] approach to improving the resilience of water supplies is required, with investment in new supplies complementing measures to reduce the demand for water.

National Policy Statement for Water Resources Infrastructure and Reasonable Alternatives

In order to meet the challenge of securing resilient water supplies, the water industry may need to develop new 'nationally significant' water resources infrastructure. For 'nationally significant infrastructure projects' (such as a major new reservoir), a separate planning regime was established under the Planning Act 2008. In this, development consent is decided at a national level by the Secretary of State, based on policy criteria set out in the designated National Policy Statement. This approach is intended to simplify and speed up the process of providing development consent for such projects, and is used in other sectors, such as energy and transport.[10]

The National Policy Statement for nationally significant water resources infrastructure will provide planning policy guidance against which development consent order applications for any nationally significant water

[2] Committee on Climate change (2017) *UK Climate Change Risk Assessment 2017 Evidence Report.* Available at: https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/uk-climate-change-risk-assessment-2017/

[3] Committee on Climate change (2017) *Updated projections for water availability for the UK (HR Wallingford).* Available at: https://www.theccc.org.uk/publication/climate-change-risk-assessment-ii-updated-projections-for-water-availability-for-the-uk/

[4] Environment Agency (2011) *The Case for Change – Current and Future Water Availability*. Available online: http://webarchive.nationalarchives.gov.uk/20140328154328/http:/cdn.environment-agency.gov.uk/geho1111bvep-e-e.pdf

[5] Environment Agency (2015) *Water Supply and Resilience Infrastructure*. Available online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/504682/ea-analysis-water-sector.pdf

[6] National Infrastructure Commission (2018) *Preparing for a drier future*. Available online: https://www.nic.org.uk/wp-content/uploads/NIC-Preparing-for-a-Drier-Future-26-April-2018.pdf

[7] Water UK (2016) *Water resources long term planning framework.* Available online: https://dl.dropboxusercontent.com/u/299993612/Publications/ [Accessed May 2018].

[8] See Defra (2007) *The government's strategic priorities and objectives for Ofwat*. Available from https://consult.defra.gov.uk/water/consultation-on-a-new-sps/supporting_documents/Draft%20SPS%20for%20consultation%20%20FINAL.pdf [Accessed August 2017].

[9] A twin track approach to water resources is one that addresses demand management and water efficiency alongside the need for new water resources infrastructure.

[10] For example, Defra estimate that the average time saving to reach consent per scheme through the NSIP planning process, compared with using local planning authorities (LPA), is assumed conservatively to be 6 months based on analysis of the Thames Tideway project. See also Hickman, H. and Mitchell, K. and National Infrastructure Planning Association (2017) Effective national infrastructure: Balancing detail and flexibility through planning to delivery. Project Report. National Infrastructure Planning Association. Available from: http://eprints.uwe.ac.uk/32043

resources infrastructure project will be examined. It will set out Government policy on securing resilient water supplies, including the role of WRMPs[11] in identifying the most appropriate options and the need for nationally significant infrastructure projects related to water resources. Setting out the need for infrastructure in the National Policy Statement will provide improved clarity and confidence to the delivery phase of any preferred large water resources schemes.

The National Policy Statement will be used as the primary basis for the examination by the Examining Authority, and decisions by the Secretary of State, on development consent order applications for water resources infrastructure in England that falls within the definition of a nationally significant infrastructure project as defined in the Planning Act 2008 (subject to any future amendments). If circumstances were to arise requiring planning consideration of nationally significant water resources infrastructure elsewhere in the UK, planning decisions and environmental assessments would be pursued through the relevant, devolved planning system.

The infrastructure covered by the National Policy Statement reflect the revised criteria for nationally significant water resource infrastructure as laid in parliament , and which include reservoirs, water transfer schemes and desalination.

Additionally, there is a power in section 35 of the Planning Act 2008 for the Secretary of State to direct that a water resources infrastructure development should be treated as a development for which development consent is required. This may include, but is not limited to, large scale aquifer re-charge or effluent reuse schemes.

The draft National Policy Statement, which is the subject of this Appraisal of Sustainability, comprises four chapters, as follows:

- **Chapter 1**: provides an overview of the purpose, scope and objectives of the draft National Policy Statement.
- **Chapter 2**: outlines the need for nationally significant water resources infrastructure, in the context of the Government's twin-track approach to resilience, together with the statutory process for identifying options to address need.
- **Chapter 3**: sets out the assessment principles against which applications relating to water resources infrastructure are to be decided.
- **Chapter 4:** sets out the generic impacts to be considered by an applicant and the Examining Authority. For each impact, guidance is provided: to the applicant on the matters to be considered (including information to be presented in an Environmental Statement, completed to meet the requirements of the Environmental Impact Assessment Regulations); on decision making by the Secretary of State; and with regard to proposed mitigation measures to be considered by the applicant.

In common with the majority of other National Policy Statements, and as a strategic planning document, it is the Government's preference that it will not be site specific.

One reasonable alternative to the draft National Policy Statement has been identified and considered as part of the Appraisal of Sustainability. This is:

- no National Policy Statement: an option which is based on existing national planning policy to guide the development of any future nationally significant water resource infrastructure in England.

[11] Section 1.4 and 2.5 of the draft NPS clarify this role.

For more information on the draft National Policy Statement and the alternatives considered, please see Section 2 of the Appraisal of Sustainability Report.

What is an Appraisal of Sustainability (AoS)?

The Planning Act 2008[12] requires that an Appraisal of Sustainability must be carried out before a National Policy Statement can be designated. The main purpose of an Appraisal of Sustainability is to ensure that the likely environmental, social and economic effects of the National Policy Statement, at a national level, are identified, described and evaluated. If potential significant adverse effects are identified, the Appraisal of Sustainability recommends options for avoiding or mitigating such effects. In this way, the Appraisal of Sustainability helps to inform the preparation of the National Policy Statement and supports the National Policy Statement's contribution to the achievement of sustainable development.

This Appraisal of Sustainability incorporates an assessment in accordance with the requirements of the Strategic Environmental Assessment Directive[13] and relevant implementing regulations[14] (the Strategic Environmental Assessment Regulations). The Directive aims for a high level of environmental protection and to promote sustainable development. It applies to certain plans that are likely to have significant effects on the environment. The Appraisal of Sustainability considers social and economic effects in the same way as environmental effects are required to be assessed by the Strategic Environmental Assessment Directive.

In this context, the purposes of the Appraisal of Sustainability of the draft National Policy Statement are:

- to support the Secretary of State in meeting their requirements under:
  - Section 5 (3) of the Planning Act 2008 to complete an Appraisal of Sustainability of the policy within the statement; and
  - Section 10 (2) and (3) of the Planning Act 2008 to ensure that the National Policy Statement contributes to the achievement of sustainable development and for due regard to be given to the desirability of mitigating and adapting to climate change and achieving good design;
- to ensure that the likely significant environmental, social and economic effects of the draft National Policy Statement and any reasonable alternatives are identified, characterised and appraised;
- to help identify appropriate measures to avoid, reduce or mitigate adverse effects and to enhance beneficial effects associated with the implementation of the draft National Policy Statement wherever possible;
- to provide a framework for monitoring the potential significant effects arising from the implementation of the draft National Policy Statement;
- to give the statutory consultees, stakeholders and the wider public the opportunity to review and comment upon the environmental, social and economic effects that the draft National Policy Statement may have on them, their communities and their interests, and to encourage them to make responses and suggest improvements to the draft National Policy Statement;
- to inform the UK Government's decisions on the draft National Policy Statement; and
- to demonstrate that the draft National Policy Statement has been developed in a manner consistent with the requirements of the Strategic Environmental Assessment Directive and relevant implementing regulations.

[12] The Planning Act 2008, available online at: http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

[13] European Union Directive 2001/42/EC on the assessment of the effects of certain plans and programmes.

[14] The Environmental Assessment of Plans and Programmes Regulations 2004 S.I. 2004 No. 1633.

The Appraisal of Sustainability is an assessment of the draft National Policy Statement only and does not, therefore, consider specific proposals for water resources infrastructure.

The main stages for carrying out an Appraisal of Sustainability mirror those required for a Strategic Environmental Assessment and are iterative, building on evidence and consultation responses over time to inform the development of the National Policy Statement. They include:

- setting the context and objectives, establishing the baseline and deciding on the scope of the appraisal in consultation with consultees including the statutory Strategic Environmental Assessment bodies (**Stage A**);
- developing and refining alternatives, assessing the likely direct, indirect and cumulative effects of proposed and preferred options for the National Policy Statement and identifying mitigating and monitoring measures (**Stage B**);
- completing an Appraisal of Sustainability Report to present the predicted environmental and socio-economic effects of the draft National Policy Statement, including reasonable alternatives, in a form suitable for public consultation and use by decision-makers (**Stage C**);
- consulting on the draft National Policy Statement and the Appraisal of Sustainability Report (**Stage D**);
- assessing the environmental, social and economic implications of any significant changes to the draft National Policy Statement (**Stage D**);
- providing information in a Post Adoption Statement on how the Appraisal of Sustainability Report and consultees' opinions were taken into account in deciding the final form of the National Policy Statement to be designated (**Stage D**); and
- undertaking suitable monitoring of the associated impacts of the selected options (**Stage E**).

The main outputs of the Appraisal of Sustainability are:

- the **Appraisal of Sustainability Scoping Report**, which set out the context and established the baseline conditions for the assessment and outlined the approach to the Appraisal of Sustainability of the draft National Policy Statement including the Appraisal of Sustainability objectives and guide questions. The Appraisal of Sustainability Scoping Report is available at: https://consult.defra.gov.uk/water/nps-water-supply-planning-act-2008/;
- the **Appraisal of Sustainability Report** (the main report to which this Non-Technical Summary relates), which contains the findings of the appraisal of the environmental, social and economic effects of the draft National Policy Statement and reasonable alternative and which is being issued for public consultation; and
- the **Appraisal of Sustainability Post Adoption Statement**, which will set out how environmental, social and economic factors, the Appraisal of Sustainability Report and consultees' opinions were taken into account in deciding the final form of the National Policy Statement.

For more information on the Appraisal of Sustainability process and requirements, please see Section 1 of the Appraisal of Sustainability Report.

How has the appraisal been undertaken?

What is being appraised?

The Appraisal of Sustainability of the draft National Policy Statement has been undertaken by appraising the likely sustainability effects of implementing the draft National Policy Statement, in delivering sustainable

water resources infrastructure as part of Government's policy of a twin track approach to the sustainable management of water resources. The appraisal focuses on:

- the proposed National Policy Statement objectives set out in Section 1.9 of the draft National Policy Statement;
- the proposed assessment principles and guidance on impacts contained within Section 4 of the draft National Policy Statement; and
- the reasonable alternative to the draft National Policy Statement.

How have sustainability effects been identified?

A series of Appraisal of Sustainability objectives and guide questions have been established against which the draft National Policy Statement and reasonable alternative have been appraised. The Appraisal of Sustainability objectives and guide questions used in the appraisal of the draft National Policy Statement reflect the topics contained in Annex I of the Strategic Environmental Assessment Directive and have been informed by:

- a review of plans and programmes and the associated environmental protection objectives (see **Section 3** and **Appendix B** of the Appraisal of Sustainability Report);
- baseline information and key sustainability issues (see **Section 3** and **Appendix B**);
- a broad understanding of the likely generic effects arising from water resources infrastructure; and
- responses received to consultation on the initial Appraisal of Sustainability Scoping Report (see **Appendix E**).

The Appraisal of Sustainability objectives are shown in **Table 1**.

Table 1 Appraisal of Sustainability Objectives

AoS Topic Area	AoS Objectives	SEA Directive Topics
Biodiversity and Nature Conservation	1. To protect and enhance biodiversity (habitats, species and ecosystems) working within environmental capacities and limits.	Biodiversity, Flora and Fauna
Population, Economics and Skills	2. To support a strong, diverse and stable economy through the provision of nationally significant water resources infrastructure with opportunities to improve skills and employment, minimise disturbance to local communities and maximise positive social impacts.	Population
Human Health	3. To ensure the protection and enhancement of human health and wellbeing.	Population Human Health
Land Use, Geology and Soils	4. To conserve and enhance soil and geology and contribute to the sustainable use of land.	Soils
Water Quality	5. To protect and enhance water quality and help achieve the objectives of the Water Framework Directive.	Water
Water Quantity	6. To protect and enhance surface and ground water levels and flows and ensure sustainable water resource management.	Water
Flood Risk and Coastal Change	7. To minimise the risks from coastal change and flooding to people, property, communities and	Water

AoS Topic Area	AoS Objectives	SEA Directive Topics
	habitats and species, taking into account the effects of climate change.	Climatic Factors
Air	8. To minimise emissions of pollutant gases and particulates and enhance air quality, helping to achieve the objectives of the Air Quality and Ambient Air Quality and Cleaner Air for Europe Directives.	Air Human Health Biodiversity, Flora and Fauna
Noise	9. To minimise noise pollution and the effects of vibration.	Human Health Biodiversity, Flora and Fauna
Climatic Factors	10. To minimise greenhouse gas emissions as a contribution to climate change and ensure resilience to any consequences of climate change.	Climatic Factors
Waste and Resources	11. To minimise waste arisings, promote reuse, recovery and recycling, minimise the impact of wastes on the environment and communities and contribute to the sustainable use of natural and material assets.	Material Assets
Traffic and Transport	12. To minimise the volume of traffic and promote more sustainable transport choices**.**	Biodiversity, Flora and Fauna Population Human Health
Cultural Heritage	13. To conserve and where appropriate enhance the historic environment including cultural heritage resources, historic buildings and archaeological features and their settings.	Cultural Heritage
Landscape and Townscape	14. To protect and enhance landscape and townscape quality and visual amenity.	Landscape Human Health

NB: the Appraisal of Sustainability objectives and guide questions are presented in Table 4.3 of the Appraisal of Sustainability Report

The 6 proposed National Policy Statement objectives have been assessed by testing their compatibility with the 14 Appraisal of Sustainability objectives. This assessment has been undertaken using a compatibility matrix. The guidance on impacts and the reasonable alternative to the draft National Policy Statement have also been assessed against the 14 Appraisal of Sustainability objectives to identify likely significant environmental, social and economic effects, using an appraisal matrix.

Section 4 of the Appraisal of Sustainability Report provides further information in respect of the approach to the Appraisal of Sustainability of the draft National Policy Statement.

What are the likely significant sustainability effects of the draft National Policy Statement for Water Resources Infrastructure and reasonable alternatives?

Table 2 summarises the likely significant sustainability effects of the guidance and mitigation contained in the draft National Policy Statement against the 14 Appraisal of Sustainability objectives, along with the performance of the 'no NPS' reasonable alternative.

Table 2 Summary of the likely significant effects of the draft NPS and 'no NPS' alternative.

Alternative	AoS Objective													
	1. Biodiversity	2. Population	3. Human health	4. Land use	5. Water Quality	6. Water Quantity	7. Flood Risk and Costal Change	8. Air	9. Noise	10. Climatic Factors	11. Waste and resources	12. Traffic and transport	13. Cultural heritage	14. Landscape and townscape
Draft NPS	+	+	+/?	+	+	+	+	+	+	+	+	+	+	+
No NPS	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?

Table 3 shows the scoring system used to undertake the appraisal.

Table 3 Scoring system used in the AoS of the draft NPS

Score Key:	+ + Significant positive effect	+ Minor positive effect	0 Neutral effect	- Minor negative effect	-- Significant negative effect	? Uncertain effect

NB: where more than one symbol is presented in a box it indicates that the AoS has found more than one score for the category. Where a box is coloured but also contains a '?', this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.

It should be noted, however, that the 'no NPS' reasonable alternative is not the same as a 'baseline or business as usual' scenario. Under the 'no NPS' reasonable alternative, proposals for water resources infrastructure could still be brought forward and planning decisions would be made in the context of the prevailing national planning policy and legislation.

Draft National Policy Statement

The construction and operation of water resources infrastructure could have a wide range of social, economic and environmental impacts. The type and magnitude of impact varies with the type of infrastructure proposed. All represent a substantial construction programme, with reservoirs in particular likely to require an extensive excavation process. Water transfer schemes could potentially affect an extensive longitudinal area and desalination plants, using currently technology, are an energy intensive process. All infrastructure types have the potential to significantly affect both water quantity and quantity and would be expected to play an important role in ensuring a resilient water supply for consumers. By providing policy and guidance to nationally significant infrastructure project developers, the Examining Authority and the Secretary of State, the draft NPS will help to ensure that these impacts are identified, appropriately assessed and, where necessary, avoided, minimised or mitigated and benefits enhanced.

The draft NPS will support the Government's 'twin track' approach to managing water resources and also support the broader environmental aims of other Government Policies, such as the 25 Year Environmental Plan by providing a clear framework for decisions relating to water resources infrastructure. The draft NPS will also support the delivery of a water resources infrastructure in a timely manner, which is anticipated to be of increasing importance in a changing climate.

Overall, the draft NPS has been assessed as having long-term, permanent positive effects across all of the AoS objectives, with additional uncertainty identified for the health objective. This is as a result of not having health addressed as its own topic within the NPS, but rather indirectly through other topics such as noise and air quality. No negative effects (significant or minor) have been identified although there is the potential for positive effects associated with the implementation of the draft NPS to be enhanced.

No National Policy Statement

Under the 'no NPS' alternative, the Secretary of State would determine whether water resources infrastructure would qualify as a nationally significant infrastructure project in accordance with the Planning Act 2008 (as amended). Development consent applications would be subject to the provisions of national planning policy and the Environmental Impact Assessment Regulations as well as legislation in respect of, for example, the protection of international and national habitats and species, cultural heritage, air quality and contaminated land. Alongside policy and guidance contained in other plans and programmes (such as local plans, marine plans and water resource management plans), this would be expected to help ensure that social, economic and environmental impacts associated with the development of water resources infrastructure are identified, assessed and minimised/mitigated.

Issues relating to discharges or emissions which affect air quality, water quality, land quality and the marine environment (or which include noise and vibration) would be subject to separate regulation under the pollution control framework or other consenting or licensing regimes. Any activities within the development that are regulated under those regimes will need to obtain the relevant permissions before the activities can be undertaken. These existing regulatory controls will help to ensure that environmental impacts associated with the development of water resources infrastructure are acceptable.

Despite the policy and legislative framework outlined above, the absence of a clear statement regarding the full range of considerations to be taken into account by the applicant and Secretary of State (as proposed in the draft NPS) risks inconsistency in interpretation, particularly at a project level. It may also result in opportunities for the mitigation of adverse impacts and enhancement of benefits being missed. Under this alternative there would also be increased uncertainty with regard to the successful and timely delivery of water resources infrastructure which could have implications in respect of the reliance of the water supply in the UK in a changing climate. **In consequence, whilst this alternative has been assessed as having a positive effect across the majority of the AoS objectives, a higher degree of uncertainty persists.**

Summary

Overall, the designation of the draft National Policy Statement as proposed would ensure that planning decisions in respect of water resources infrastructure take into account (and mitigate where appropriate) the full range of social, economic and environmental impacts that may be related to their delivery, are expedient, timely, predictable and accountable and are predicated on the need for the infrastructure having been established. This will support the UK Government's policy of a twin track approach to the sustainable management of water resources. **In consequence, the draft National Policy Statement as proposed is being taken forward for consultation.**

Section 5 and Appendix B of the Appraisal of Sustainability Report provides the detailed appraisal of the draft National Policy Statement and reasonable alternative of 'no National Policy Statement'.

What are the main recommendations of the Appraisal of Sustainability?

Based on the appraisal of the draft National Policy Statement (as proposed), measures have been identified to enhance the sustainability of the document. These measures are included within each of the topic-based assessments in **Appendix B** and are collated in **Appendix E** and summarised in **Section 5**.

A number of measures to enhance the draft National Policy Statement cut across several of the Appraisal of Sustainability objectives and draft National Policy Statement topics. These cross-cutting measures predominantly relate to the impacts contained in Chapter 4 of the draft National Policy Statement and include:

- the inclusion of direct reference to the Planning Practice Guidance; and
- the inclusion of greater guidance with regards to the potential contents of the Environmental Statement.

Based on the findings of the Appraisal of Sustainability, it is also considered that the guidance contained in the 'Applicant's Assessment' sub-sections of Chapter 4 could make more explicit the requirements in respect of the content and scope of an Environmental Statement (as required). Such guidance would go beyond reference to the Planning Practice Guidance and Schedule 4 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 to reflect the issues relevant to nationally significant water resources infrastructure projects and to ensure consistency across each of the impacts considered in Chapter 4. This guidance could cover (for each topic):

- the broad scope and methodology for assessment including reference to relevant guidance and thresholds of significance (recognising that the scope of an Environmental Statement will be fully determined at the project stage);
- the identification and characterisation of existing baseline conditions (and their evolution without the proposed water resources infrastructure);
- the identification, description and assessment of effects (including the determination of whether any effects would be significant and also including the consideration of any cumulative effects);
- any mitigation and enhancement measures (as necessary); and
- any relevant proposed monitoring arrangements.

Further recommendations relating to the scope of an Environmental Statement in respect of individual topics are detailed in **Appendix E** and summarised in **Section 5**.

How will the sustainability effects of implementing the draft National Policy Statement for Water Resources Infrastructure be monitored?

Once the National Policy Statement is designated, its environmental, social and economic effects will need to be monitored. Monitoring the socio-economic and environmental effects of the implementation of the draft National Policy Statement can help to answer questions such as:

- Were the Appraisal of Sustainability predictions of effects accurate?
- Is the National Policy Statement contributing to the achievement of the Appraisal of Sustainability objectives?
- Are mitigation measures performing as well as expected?
- Are there any unforeseen adverse effects? Are these within acceptable limits, or is remedial action desirable?

For the 14 topics considered in this Appraisal of Sustainability, it is proposed that monitoring should focus on the indicators and sources of information set out in **Table 4**.

Table 4 Potential Monitoring Indicators

Topic Area	Potential Indicator(s)	Possible Source(s) of Information
Biodiversity and Nature Conservation	Annual (where information allows) trends in: • condition of designated sites; • threatened habitats and species; • populations of countryside birds; and • surface water biological indicators in locations at or adjacent to development sites including associated infrastructure. Implementation of construction management plans. Implementation of biodiversity enhancement measures.	Joint Nature Conservation Committee Department for Environment, Food and Rural Affairs (Defra) Environment Agency Natural England Natural Resources Wales Scottish Natural Heritage Developer
Population, Economics and Skills	Annual (where information allows) trends in: • number of construction workers employed at water resources infrastructure sites; • employment activity and unemployment rates in locations hosting water resources infrastructure; • business counts in locations hosting water resources infrastructure; • local jobs creation associated with the development of water resources infrastructure; • training and apprenticeship opportunities generated by water resources infrastructure development; • Gross Value Added (GVA)[15] associated with construction and operation of water resources infrastructure; • investment in local community facilities and services associated with water resources infrastructure; and • deprivation at locations hosting water resources infrastructure.	Developer Office for National Statistics
Human Health	Annual (where information allows) trends in: • monitoring of noise levels at development sites and along transport routes to/from the water resources infrastructure sites; • number of nuisance complaints received related to water resources infrastructure activity; • air quality at development sites and along key transport routes from/to the water resources infrastructure construction sites; • water resources infrastructure worker	Developer Local Planning Authority Public Health England Office for National Statistics

[15] GVA is the measure of the value of goods and services produced in an area, industry or sector of an economy.

Topic Area	Potential Indicator(s)	Possible Source(s) of Information
	accidents; and • health deprivation and inequalities at locations hosting water resources infrastructure. Implementation of construction management plans at water resources infrastructure construction sites.	
Land Use, Geology and Soils	Annual (where information allows) trends in: • loss of best and most versatile agricultural land as result of the development of water resources infrastructure; • area of vegetation and soil layers cleared to support water resources infrastructure; • remediation of contaminated land in support of water resources infrastructure; • incidences of land contamination at water resources infrastructure sites; and • condition of Geological Conservation Review sites in locations adjacent to water resources infrastructure sites. Implementation of construction management plans at water resources infrastructure sites.	Developer Local Planning Authority Natural England
Water Quality (including surface and ground water quality and availability)	Annual (where information allows) trends in: • groundwater quality monitoring; • surface water quality monitoring; • volumes of water consumption; and • consented/permitted discharges at water resources infrastructure sites and linked waterbodies.	Developer Environment Agency Natural Resources Wales Scottish Environment Protection Agency Relevant water companies
Flood Risk and Coastal Change	Annual (where information allows) trends in: • the extent of water resources infrastructure in Flood Zones 2 and 3[16]; • the extent of water resources infrastructure in Coastal Change Management Areas; • incidents of flooding downstream of water resources infrastructure sites; • the incorporations sustainable drainage systems in the design of development; • incidents of flooding affecting water resources infrastructure; and • investment in flood risk defences associated with water resources infrastructure	Developer Environment Agency Local Planning Authority

[16] Land identified by the Environment Agency as having either a medium or high probability of flooding. Flood Zone 2 defined as land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. Flood zone 3 defined as Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.

Topic Area	Potential Indicator(s)	Possible Source(s) of Information
	development.	
Air	Annual (where information allows) trends in: • air quality monitoring (including nitrogen oxides (NOx), hydrocarbons, carbon monoxide (CO), particulate matter (PM), methane, sulphur dioxide (SO2), radon, volatile organic compounds (VOCs) and ozone) at water resources infrastructure development sites and along key transport routes to/from the water resources infrastructure construction sites; and • traffic activity levels around water resources infrastructure development sites (annual average daily traffic flows). Implementation of construction management plans at water resources infrastructure construction sites.	Developer Local Planning Authority Public Health England
Noise	Annual (where information allows) trends in: • monitoring of noise levels at water resources infrastructure development sites and along transport routes from/to the water resources infrastructure construction sites; and • number of nuisance complaints received related to water resources infrastructure activity. Implementation of construction management plans at water resources infrastructure construction sites.	Developer Local Planning Authority
Climatic Factors	Annual (where information allows) trends in: • energy consumption associated with the development of water resources infrastructure; and • emissions of greenhouse gases associated with water resources infrastructure development.	Developer

What are the next steps?

This Appraisal of Sustainability Report is presented for consultation. Feedback received from consultees will be documented and considered in reviewing the proposals for the draft National Policy Statement. A Post Adoption Statement will summarise how the Appraisal of Sustainability and the consultation responses have been taken into account and how social, economic and environmental consideration have been integrated into the final decisions regarding the National Policy Statement.

How to give us your views

We would welcome your views on any aspect of this Appraisal of Sustainability Report. However, we would particularly welcome responses to the following questions:

Consultation Questions	
1.	Do you agree with the findings (of 'likely significant effects') of the Appraisal of Sustainability Report? If not, what other significant effects do you think have been missed, and why? Please provide reasons to support your answer.
2.	Do you agree with the conclusions of the Appraisal of Sustainability Report and the recommendations for enhancing positive effects associated with the implementation of the draft NPS? If not, what do you think should be the key recommendations and why?
3.	Do you agree with the proposed arrangements for monitoring the significant effects of the implementation of the draft NPS? If not, what measures do you propose?

Please provide your comments via the Citizen Space survey at https://consult.defra.gov.uk/water/draft-national-policy-statement. If you have any questions about the consultation please contact the Defra team at:

Email: WaterSupplyNPS@defra.gsi.gov

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1. Introduction

1.1 Overview

1.1.1 Public water supplies and future water resource availability will be affected by population and economic growth, changes in consumer behaviour and the impacts of climate change. The Government's '25 Year Environment Plan'[17] states that:

"*Water companies must develop and implement robust long-term plans that develop new water resources where needed. New supplies will include large infrastructure, such as reservoirs and water transfers, which are needed to make sure the water industry can provide sufficient water for homes and businesses and reduce abstraction from some sources to protect the environment*".

1.1.2 The Government set out how it will enhance its policy framework to ensure the long term resilience of the public water supply[18]. This included the potential to prepare a National Policy Statement (NPS) to support delivery of new 'nationally significant' water resources infrastructure.. In her Written Statement[19] of 14th March 2017, the Parliamentary Under Secretary of State for the Environment and Rural Life Opportunities confirmed that the Government had decided to prepare an NPS for nationally significant infrastructure projects (NSIPs)[20] relevant to water resources. The preparation of the NPS was identified in the actions contained in the '25 Year Environment Plan'.[21] Preparation of the NPS is being led by the Department for Environment, Food and Rural Affairs (Defra).

1.1.3 The NPS for Water Resources Infrastructure will guide the Secretary of State (SoS), the Planning Inspectorate and applicants in the consideration of any applications for development consent in relation to water resource-related nationally significant infrastructure projects in England. Once the NPS has been designated, the Secretary of State will be required to determine any applications for development consent in accordance with it, unless certain other criteria (set out in the Planning Act 2008) apply.

1.1.4 The NPS will support the delivery of nationally significant water resources projects identified as preferred options in water company's final published water resource management plans (WRMPs). It may also be relevant to water resource schemes which, under section 35 of the Planning Act 2008, have been directed by the Secretary of State to be treated as an NSIP. The NPS will help water undertakers[22] to plan, fund and develop eligible infrastructure that will improve the resilience of future water supplies. The NPS is intended to be a strategic planning document that provides high level assessment principles against which development consent order (DCO) applications will

[17] HM Government (2018) *A Green Future: Our 25 Year Plan to Improve the Environment.* Available from: https://www.gov.uk/government/publications/25-year-environment-plan [Accessed February 2018]
[18] Defra (2016) *Creating a great place for living: Enabling resilience in the water sector*. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/504681/resilience-water-sector.pdf [Accessed August 2017].
[19] UK Parliament (2017) *Affordable, Resilient Water Supplies: Consultation on the Government's Strategic Priorities for Ofwat: Written statement - HCWS530.* Available from: http://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Commons/2017-03-14/HCWS530/
[20] Defined under the Planning Act 2008, Part 3, Section 27 and 28 (and any subsequent amendment).
[21] HM Government (2018) *A Green Future: Our 25 Year Plan to Improve the Environment,* page 70 under 'Actions we will take' states 'Consulting in 2018 on a National Policy Statement for water resources that will streamline the planning process for new large infrastructure schemes, leading to net environmental benefits, as set out in the Industrial Strategy', page 70 of
[22] This includes all private water companies who have a statutory duty to produce a WRMP every five years.

be considered; in common with the majority of other designated NPS, it is not anticipated that it will identify any specific sites for future water resource infrastructure.

1.1.5 As part of the development of the NPS, Defra has prepared the Draft National Policy Statement for Water Resources Infrastructure (the draft NPS) that is being published for public consultation. The draft NPS has been informed by the 'Climate Change Risk Assessment 2017'[23], the 'Water resources long term planning framework (2015-2065)'[24], 'Preparing for a drier future'[25], other evidence[26,27] and WRMPs[28] prepared by water companies, alongside ongoing stakeholder engagement and assessment. **Section 2** provides further information in relation to the preparation, purpose and content of the draft NPS.

1.1.6 Before designating an NPS, Section 5(3) of the Planning Act 2008 requires that the Secretary of State carry out an appraisal of the sustainability (AoS) of the policy set out in the statement. The AoS ensures that the likely environmental and socio-economic effects of the NPS are identified, described and evaluated. The AoS also satisfies the requirements of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (commonly referred to as the Strategic Environmental Assessment (SEA) Directive) and relevant implementing regulations[29] (the SEA Regulations).

1.2 Purpose of this Report

1.2.1 This report presents the findings of the AoS of the draft NPS. The purposes of the AoS are:

- To support the Secretary of State in meeting their requirements under:
  - Section 5 (3) of the Planning Act 2008 to complete an AoS of the policy within the statement; and
  - Section 10 (2) and (3) of the Planning Act 2008 to ensure that the NPS contributes to the achievement of sustainable development and for due regard to be given to the desirability of mitigating and adapting to climate change and achieving good design.
- To ensure that the likely significant social, economic and environmental effects of draft NPS and any reasonable alternatives are identified, characterised and appraised;
- to help identify appropriate measures to avoid, reduce or mitigate adverse effects and to enhance beneficial effects associated with the implementation of the draft NPS wherever possible;

[23] Committee on Climate Change (2017) *UK Climate Change Risk Assessment 2017*. Available from: https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/uk-climate-change-risk-assessment-2017/ [Accessed August 2017].
[24] Water UK (2016) *Water resources long term planning framework*. Available from: https://dl.dropboxusercontent.com/u/299993612/Publications/Reports/Water%20resources/WaterUK%20WRLTPF_Final%20Report_FINAL%20PUBLISHED.pdf [Accessed August 2017].
[25] National Infrastructure Commission (2018) *Preparing for a drier future: England's water infrastructure needs*. Available from https://www.nic.org.uk/wp-content/uploads/NIC-Preparing-for-a-Drier-Future-26-April-2018.pdf [Accessed October 2018].
[26] Defra (2016) *Guiding Principles for Water Resources Planning*. Available from: http://www.wrse.org.uk/wp-content/uploads/2018/04/Defra-Guiding-Principles-for-Water-Resource-Planning.pdf
[27] Environment Agency and Natural Resources Wales (2016) *Final Water Resources Planning Guideline.* Available from: https://naturalresources.wales/media/678739/ea-nrw-and-defra-wg-ofwat-technical-water-resources-planning-guidelines.pdf] [Accessed July 2017)].
[28] Water Resource Management Plans were published when Defra's 2016 iteration of the '*Guiding Principles for Water Resources Planning*' was the extant guidance. This has since been superceded by the 2018 iteration.
[29] The Environmental Assessment of Plans and Programmes Regulations 2004 S.I. 2004 No. 1633.

- to provide a framework for monitoring the potential significant effects arising from the implementation of the draft NPS;
- to give the statutory consultees, stakeholders and the wider public the opportunity to review and comment upon the environmental and socio-economic effects that the draft NPS may have on them, their communities and their interests and to encourage them to make responses and suggest improvements to the draft NPS;
- to inform the UK Government's decisions on the draft NPS; and
- to demonstrate that the draft NPS has been developed in a manner consistent with the requirements of the SEA Directive and relevant implementing regulations.

1.2.2 The AoS is an appraisal of the draft NPS only and does not, therefore, consider specific proposals for water resources infrastructure (such proposals are identified and assessed through the water resources planning process - see **Section 1.3**). However, when considering the likely significant effects that could occur as a result of the draft NPS, it does, where appropriate, consider the likely activities and potential sources of effects associated with the construction and operation of water resources infrastructure.

1.2.3 The appraisal and AoS Report have been completed by Wood Environment and Infrastructure Solutions UK Ltd (Wood) on behalf of Defra.

1.3 Water Resources Infrastructure Planning – An Overview

Water Resources Management Planning

1.3.1 The Water Industry Act 1991, as amended by the Water Act 2003 and Water Act 2014, requires all water companies to prepare, maintain and publish statutory WRMPs. The plans set out how water companies intend to maintain the balance between water supply and demand and ensure security of supply over at least the next 25 years in a way that is economically, socially and environmentally sustainable.

1.3.2 Part III of the Water Industry Act 1991 states the following role for water companies in water supply:

"37.—(1) It shall be the duty of every water undertaker to develop and maintain an efficient and economical system of water supply within its area and to ensure that all such arrangements have been made—

(a) for providing supplies of water to premises in that area and for making such supplies available to persons who demand them; and

(b) for maintaining, improving and extending the water undertaker's water mains and other pipes, as are necessary for securing that the undertaker is and continues to be able to meet its obligations under this Part.

37A.—(2) A water resources management plan is a plan for how the water undertaker will manage and develop water resources so as to be able, and continue to be able, to meet its obligations under this Part."

1.3.3 The Government has set out its priorities for water companies in developing their WRMPs via the 'guiding principles'[30] for water resources planning. The Water Resources Planning Guidelines[31] produced by the Environment Agency and Natural Resources Wales, meanwhile, provides a framework for the development and presentation of water company plans.

1.3.4 The process of developing a WRMP requires an estimation of baseline supply forecast to be prepared, along with an estimation of baseline demand forecast. The uncertainties and target headroom[32] required are then estimated. The calculation of the baseline supply-demand balance for each year of the plan's period are then used to determine if there are any years or critical periods where there is likely to be a supply-demand balance deficit. This is tested for resilience under a number of future scenarios. Once this information has been established and is considered robust, options which could be used to address the supply demand balance deficit are considered with the final planning solution for managing supply and demand presented in the WRMP. Following public consultation on the draft WRMP, amendment, review and direction by the Secretary of State for Food, Environment and Rural Affairs, the water company will publish the final WRMP.

1.3.5 The process of option development that underpins WRMP preparation includes a review of as many potential solutions as possible (the 'unconstrained list' of options) to identify 'feasible' (constrained) options. These 'feasible' options are then reviewed to identify 'preferred options' to resolve any supply deficits. The types of options considered in preparing WRMPs can be broadly categorised as follows:

- supply side measures – increasing the water available for use in the local supply area through an increase in deployable output from a range of measures that can include (but is not limited to) new or increased abstraction from existing sources, new or increased capacity for reservoirs, improving water treatment and reuse, water transfers (importing water from an area of surplus into an area of deficit) and desalination plants; and
- demand management – reducing the demand for water through a combination of leakage reduction and water efficiency measures.

1.3.6 Once the WRMP is adopted, the preferred options are then implemented as schemes. Schemes that include the development of new water resources infrastructure usually require planning consent under the Town and Country Planning Act 1990. This planning framework has helped water companies understand future needs and maintain the balance of supply and demand within their boundaries.

1.3.7 The Environment Agency's 2011 'Case for Change'[33] considered the implications of climate change for water supplies regionally and nationally and concluded that while demand management is essential, significant new water resources will be needed to meet the needs of people, businesses and the environment. The Government requested that the water industry develop a national water resources long-term planning framework to establish water needs and the strategic options that could meet these needs. Water UK's 2016 'Water resources long-term planning framework (2015-2065)' noted the importance of demand management in conjunction with a combination of localised initiatives and strategic water resources infrastructure schemes to provide future

[30] Further information available at https://www.gov.uk/government/publications/water-resources-planning-managing-supply-and-demand/water-resources-planning-how-water-companies-ensure-a-secure-supply-of-water-for-homes-and-businesses . A full copy of the guiding principles can be requested from water-company-plan@environment-agency.gov.uk

[31] Environment Agency and Natural Resources Wales (2018) *Water Resources Planning Guideline: Interim Update.* Available from: https://cdn.naturalresources.wales/media/686174/interim-wrpg-update-july18-final-changes-highlighted.pdf

[32] Target headroom is the minimum buffer that a prudent company should allow between supply and demand to cater for uncertainties in the overall supply-demand balance and meet its agreed level of service.

[33] Environment Agency (2011) *The case for change – current and future water availability*. Report No: GEHO1111BVEP-E-E

resilience. Reflecting the recommendations of this report, the Government confirmed[34] that a 'twin track'[35] approach to improving the resilience of water supplies is required, with investment in new supplies complementing measures to reduce the demand for water. The recent National Infrastructure Commission report, *Preparing for a Drier Future*[36] reiterates the importance of the twin track approach; it indicates that one third of the predicted deficit could be addressed by reduced leakage from water company pipes and a further third by improved efficiency (by reducing household consumption), but that the remaining third would need to be addressed by water transfers between companies and new water resources.

National Policy Statement for Water Resources

1.3.8 In order to meet the challenge of increasing water resource resilience, the water industry may need to develop new 'nationally significant' water resources infrastructure. For 'nationally significant infrastructure projects' (such as a major new reservoir), a separate planning regime was established under the Planning Act 2008. In this, development consent is decided nationally based on policy criteria set out in the designated NPS. This is intended to simplify and shorten the process of providing development consent for such projects.[37]

1.3.9 In this context, the Government is developing an NPS for nationally significant water resources infrastructure with the aim of contributing to resilient water supplies and providing planning policy guidance against which DCO applications for any nationally significant water resources infrastructure project will be examined. Alongside the development of an NPS, the UK Government has laid a statutory instrument in parliament to amend the Planning Act 2008 criteria for water infrastructure that is classed as 'nationally significant'. This is in order to ensure that the right type and scale of projects are included to address the water resilience challenge.

1.4 Appraisal of Sustainability (AoS) and Strategic Environmental Assessment (SEA)

The Requirement for an AoS of the National Policy Statement for Water Resources

1.4.1 Section 5(3) of the Planning Act 2008 requires that an AoS must be carried out before an NPS can be designated. The main purpose of an AoS is to examine the likely social, economic and environmental effects of designating the NPS. If potential significant adverse effects are identified, the AoS recommends options for avoiding or mitigating such effects. In this way, the AoS helps inform the preparation of the NPS and supports the NPS's contribution to the achievement of sustainable development.

[34] See Defra (2007) *The government's strategic priorities and objectives for Ofwat*. Available from https://consult.defra.gov.uk/water/consultation-on-a-new-sps/supporting_documents/Draft%20SPS%20for%20consultation%20%20FINAL.pdf [Accessed August 2017].
[35] A twin track approach to water resources is one that addresses demand management and water efficiency alongside the need for new water resources infrastructure.
[36] National Infrastructure Commission (2018) *Preparing for a drier future*. Available online: https://www.nic.org.uk/wp-content/uploads/NIC-Preparing-for-a-Drier-Future-26-April-2018.pdf
[37] For example, Defra estimate that the average time saving to reach consent per scheme through the NSIP planning process, compared with using local planning authorities (LPA), is assumed conservatively to be 6 months based on analysis of the Thames Tideway project. See also Hickman, H. and Mitchell, K. and National Infrastructure Planning Association (2017) Effective national infrastructure: Balancing detail and flexibility through planning to delivery. Project Report. National Infrastructure Planning Association. Available from: http://eprints.uwe.ac.uk/32043

Relationship between AoS and SEA

1.4.2 The Government has determined that the AoS of the draft NPS, required under the Planning Act 2008, should incorporate an assessment in accordance with the requirements of the SEA Directive and relevant implementing regulations to ensure that environmental considerations are taken into account. The Directive aims for a high level of environmental protection and to promote sustainable development and applies to certain plans that are likely to have significant effects on the environment. The draft NPS is being treated as a plan for the purpose of the SEA Directive.

1.4.3 The AoS considers social, economic and environmental effects in the same way as environmental effects are required to be assessed by the SEA Directive.

Stages of the AoS Process

1.4.4 The main stages of AoS mirror those of SEA and are iterative, building on evidence and consultation responses over time to inform the development of the NPS. They include:

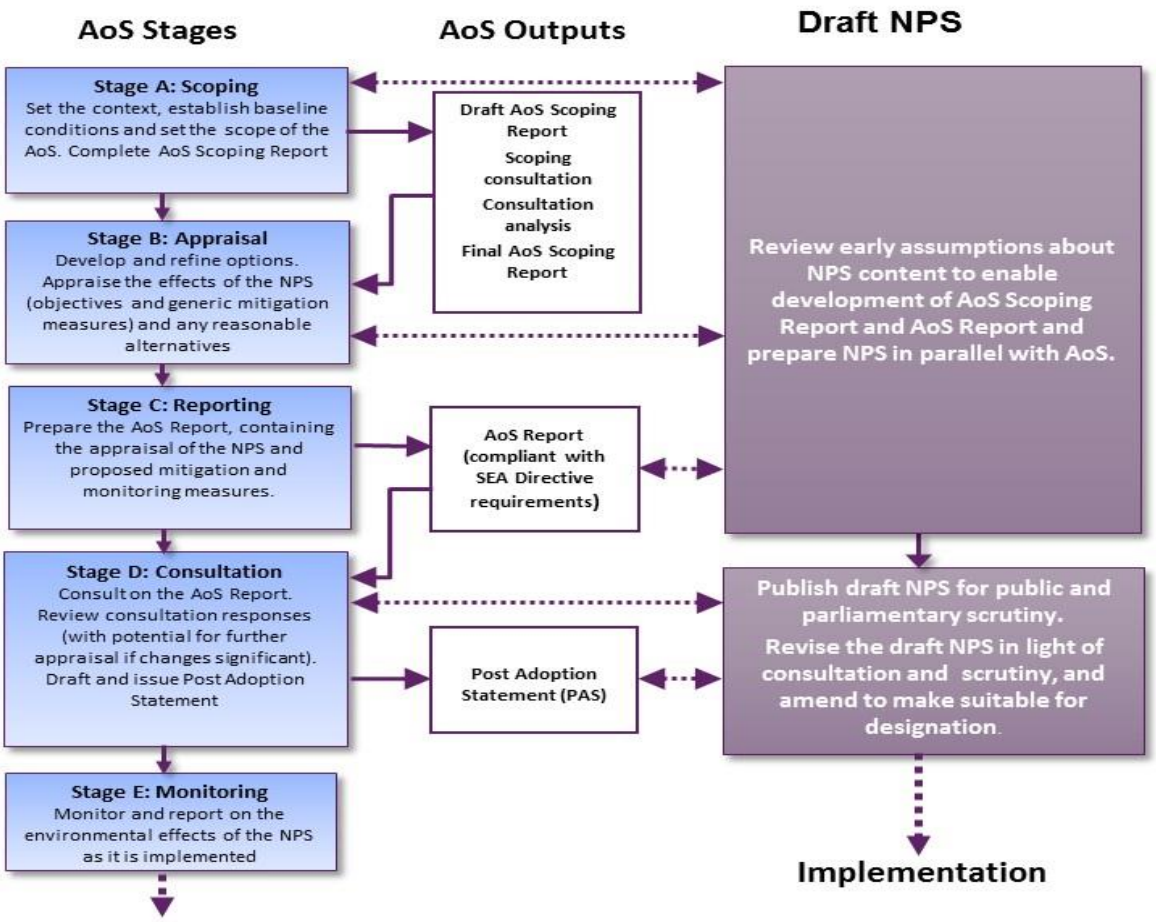
- setting the context and objectives, establishing the baseline and deciding on the scope of the appraisal in consultation with consultees including the statutory SEA bodies (**Stage A**);
- developing and refining alternatives, assessing the likely direct, indirect and cumulative effects of proposed options and identifying mitigating and monitoring measures (**Stage B**);
- completing an AoS Report to present the predicted environmental and socio-economic effects of the draft NPS, including reasonable alternatives, in a form suitable for public consultation and use by decision-makers (**Stage C**);
- consulting on the draft NPS and the AoS Report (**Stage D**);
- assessing the environmental and socio-economic implications of any significant changes to the draft NPS (**Stage D**);
- providing information in a Post Adoption Statement on how the AoS Report and consultees' opinions were taken into account in deciding the final form of the NPS to be designated (**Stage D**); and
- undertaking suitable monitoring of the associated impacts of the selected options (**Stage E**).

1.4.5 The main outputs of the AoS are:

- the **AoS Scoping Report**, which set out the context and established the baseline conditions for the assessment and outlined the approach to the AoS of the draft NPS including the appraisal objectives and guide questions. A draft scoping report was issued for consultation in November 2017 and was then subsequently revised. The final AoS Scoping Report is available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/697240/nps-water-consult-aos-scoping-report.pdf
- the **AoS Report** (this report), which contains the findings of the appraisal of the environmental, social and economic effects of the draft NPS and is being issued for public consultation alongside the draft NPS; and
- the **AoS Post Adoption Statement**, which will set out how environmental, social and economic factors, the AoS Report and consultees' opinions were taken into account in deciding the final form of the NPS.

1.4.6 The key AoS stages are shown in **Figure 1.1** together with links to the draft NPS process.

Figure 1.1 Linking the AoS and Draft NPS



Note: These stages are based on guidance contained in Office of the Deputy Prime Minister (now Communities and Local Government) (2005) guidance.[38]

1.4.7 A draft (initial) Scoping Report was completed and a technical consultation on the report took place between 13th November 2017 and 22nd December 2017 (**Stage A** highlighted above). The report was amended to take account of the responses received as appropriate and a Final Scoping Report was issued in March 2018.

1.4.8 The appraisal framework contained in the Final Scoping Report (comprising AoS objectives and guide questions) has then been used to appraise the social, economic and environmental effects of the draft NPS as well as the reasonable alternatives to the NPS (**Stage B**). This has been an iterative process alongside the development of the draft NPS itself. These appraisals (**Stage C**) are presented in this AoS Report which is available for consultation (**Stage D**). Following consultation on the AoS Report, Defra will prepare an AoS Post Adoption Statement that sets out the results of the consultation and appraisal and the extent to which the views and AoS findings have been addressed in the designated NPS. Compliance with the SEA Directive requires that any resultant significant environmental effects of the NPS are monitored (**Stage E**).

[38] Office of the Deputy Prime Minister (2005) *Practical Guide to the Strategic Environmental Assessment Directive*. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf

1.5 Consultation and Stakeholder Engagement

Overview

1.5.1 Consultation lies at the heart of any meaningful assessment or appraisal process and is based on the key principle that the plan and programme making is better where it is transparent, inclusive and uses information that has been subject to public scrutiny. In this context, the intention is that those with an interest in, or are affected by, the draft NPS should have the opportunity to present their views.

Consultation on the Initial Scoping Report

1.5.2 The initial Scoping Report was issued for consultation to the UK statutory SEA and other bodies identified in **Box 1.1** for comment on the 13th November 2017. Whilst this technical consultation was primarily aimed at a number of statutory and selected consultees, Defra also made the initial Scoping Report publicly available.

Box 1.1 AoS Scoping Consultees

UK SEA Statutory Consultation Bodies	Additional (Specialist) Consultees
• Environment Agency	• Water companies
• Historic England	• Ofwat
• Natural England	• Consumer Council for Water
• Scottish Natural Heritage	• Planning Inspectorate
• Historic Scotland	• National Infrastructure Commission
• Scottish Environment Protection Agency	• Committee on Climate Change
• Scottish Government	• Marine Management Organisation
• Natural Resources Wales	• National Parks Authority
• Cadw (Welsh Government historic environment service)	• Joint Nature Conservation Committee
• Welsh Government	
• Department of Agriculture, Environment and Rural Affairs (DAERA), Northern Ireland	
• Northern Ireland Environment Agency, Northern Ireland	

1.5.3 Comments on any aspect of the initial Scoping Report were welcomed, although views were particularly sought in response to the following questions:

- Do you agree with the main issues identified in the topic areas (Section 3.3)? Specifically:
  - Are there issues included in the proposed scope of the appraisal that you think should be removed? If so why?
  - Are there relevant issues that have not been reflected in the proposed scope of the appraisal that you think should be included? If so, why?
- Does the AoS Scoping Report set out sufficient information to establish the context for the appraisal, both in terms of the scope of the baseline analysis presented, and the plans and

programmes reviewed (Appendix B)? If not, which areas do you think have been missed from the baseline analysis and/or what additional plans or programmes should be included?

- Do the AoS objectives and guide questions (Section 4.3) cover the breadth of issues appropriate for appraising the effects of the draft NPS? If not, which objectives should be amended and how? Or which guide questions should be amended and how? Are there other objectives or guide questions that you believe should be included?
- Do you have any comments on the discussion on potential reasonable alternatives to the NPS (Section 2.4)? Should any further alternative scenarios be considered? Please support your suggestion with your reasoning.

1.5.4 A total of 41 responses to the initial Scoping Report were received from a range of bodies and individuals including: statutory consultees; the energy sector; water companies and other water sector representatives; local planning authorities; environmental groups; and individuals. Responses related to all aspects of the Scoping Report but particularly concerned:

- possible alternatives to the NPS in the context of a twin track approach and a focus on demand management;
- requests for additional baseline information and inclusion of further plans and programmes in Appendix B to the initial Scoping Report;
- the identification of additional key issues relevant to the NPS for inclusion in Table 3.3 of the initial Scoping Report;
- the scope of the AoS in terms of its geographic scope (with reference to the marine environment specifically) and the timescales for the appraisal;
- proposed amendments to the AoS objectives, guide questions and illustrative guidance including in respect of: biodiversity and nature conservation (AoS Objective 1); human health (AoS Objective 3); water quantity (AoS Objective 6); flood risk and coastal change (AoS Objective 7); climatic factors (AoS Objective 10); cultural heritage (AoS Objective 13); and landscape and townscape (AoS Objective 14).

1.5.5 **Appendix D** contains a schedule of the consultation responses received on the initial AoS Scoping Report, Defra's response and the subsequent action taken and reflected in the Final Scoping Report that was published in March 2018.

1.6 Habitats Regulations Assessment

1.6.1 In accordance with Regulation 110 of The Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations') which applies Regulations 105[39], there is a need for Defra to consider whether the NPS is likely to have a significant effect on any specified European sites. Such sites include Special Areas of Conservation (SACs), designated under Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, and Special Protection Areas (SPAs), designated under Council Directive 2009/147/EC on the Conservation of Wild Birds. Ramsar Sites (designated under the 1976 Ramsar Convention) are not European sites but under UK planning policy are given the same level of protection[40]. A screening of the likely significant effects has been

[39] Regulation 105(1) states: "*Where a land use plan—*
(a)is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and (b)is not directly connected with or necessary to the management of the site, the plan-making authority for that plan must, before the plan is given effect, make an appropriate assessment of the implications for the site in view of that site's conservation objectives".
[40] Paragraph 118 of the National Planning Policy Framework (DCLG, 2012) states that listed or proposed Ramsar sites should be given the same protection as European sites

undertaken, and because likely significant effects on European sites have not been ruled out, an appropriate assessment of the implications for European sites has been undertaken.

1.6.2 The HRA is reported separately from the AoS. However, the conclusions of the HRA have helped to inform the appraisal process, particularly in respect of the potential effects of the draft NPS on biodiversity.

1.6.3 Defra notes that all DCO applications which may be made pursuant to the NPS, once designated, will be subject to the requirements of the planning system under the Planning Act 2008.

1.7 AoS Report Structure

1.7.1 This AoS Report is structured as follows:

- **Non-Technical Summary** - Provides a summary of the AoS Report, including information on both the draft NPS and the key findings of the appraisal.
- **Section 1: Introduction** - Includes a summary of the draft NPS, an overview of the scope, report contents and a summary of consultation on the initial Scoping Report.
- **Section 2: The Draft NPS for Water Resources** - Describes the background to the draft NPS, its objectives and regulatory context together with an overview of the potential structure and contents. This section also sets out the approach to identifying alternatives that have been considered and appraised as part of the AoS.
- **Section 3: Context and Baseline** - Provides details of the review of international, European, UK and national (England, Scotland and Wales) plans and programmes and baseline conditions for the environmental categories required by the SEA Directive and additional socio-economic topics. It summarises the key sustainability issues relevant to water resources. Further detailed information is contained at **Appendix B.**
- **Section 4: Appraisal Methodology** - Outlines the approach to the appraisal of the draft NPS and reasonable alternatives including the appraisal framework (which comprises AoS objectives and guide questions) and the technical difficulties encountered in completing the appraisal including assumptions and uncertainties.
- **Section 5: Appraisal of the Sustainability Effects of the Draft NPS and Reasonable Alternatives** - Summarises the likely significant environmental and socio-economic effects of the draft NPS and any reasonable alternatives, including cumulative effects, mitigating measures, uncertainties and risks. The detailed appraisals are contained in **Appendix B.**
- **Section 6: Conclusions and Monitoring -** Summarises the main effects of the draft NPS and reasonable alternatives to the NPS and presents views on implementation and monitoring. The reasons for selecting the draft NPS as proposed and for the rejection of alternatives are explained.
- **Glossary and Abbreviations.**
- **Appendix A**: **Quality Assurance Checklist.**
- **Appendix B: Baseline and Contextual Information** - Sets out the collated contextual and baseline information, on a topic-by-topic basis, for each of the appraisal topics. For each topic, this Appendix presents the following information (consistent with the SEA Directive reporting requirements):
  - Introduction - provides an overview of the topic;

- Summary of Plans and Programmes - provides an overview of the policy context in which the NPS sits;
- Overview of the Baseline - provides an overview of the baseline and the key topic specific baseline factors which will need to be considered as part of the appraisal. This includes the key environmental characteristics of each topic or area most likely to be significantly affected;
- Existing Problems - highlights some of the existing pressures on the topic area, particularly in relation to the NPS;
- Likely Evolution of the Baseline - provides an overview of how the baseline is likely to change in the absence of the NPS, an understanding of this is key to understanding the effects of the NPS on the topic area;
- Assessing Significance - outlines the objectives and guide questions related to the topic area which have been used in the appraisal of the effects of the draft NPS and reasonable alternatives alongside guidance that has helped determine the relative significance of potential effects on the objectives; and.
- Appraisal - includes completed matrices that record the findings of the appraisal of the draft NPS and the reasonable alternative against the AoS objectives including proposed mitigation measures (where appropriate) and measures for enhancement, assumptions and uncertainties and additional information that may be required.

- **Appendix C: Definitions of Significance** – Outlines the thresholds that have been used to determine the significance of effects in the appraisal process.
- **Appendix D: Schedule of Consultation Responses** – Details the consultation responses received on the initial Scoping Report.
- **Appendix E: Recommendations Arising from the Initial Appraisal Process –** Details the iterative review of the draft NPS, and the findings from three distinct stages of commentary.
- **Appendix F: Mitigation and enhancement** – Presents a summary table of the mitigation and enhancement measures identified by appraisal of the draft NPS against the AoS Objectives.

1.8 How Information in this AoS Report Meets the Requirements of the SEA Directive

1.8.1 **Table 1.1** details how the requirements of the SEA Directive and its transposing regulations have been addressed in this AoS Report.

Table 1.1 SEA Information Requirements Addressed within this AoS Report

SEA Information Requirements	AoS Report Reference
Directive 2001/42/EC of The European Parliament and of the Council:	*The following sections of this Scoping Report address the requirements of the SEA Directive:*
1. An outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes.	**This requirement is addressed in Section 2 (The Draft NPS for Water Resources), Section 3 (Context and Baseline) and Appendix B.**

SEA Information Requirements	AoS Report Reference
Directive 2001/42/EC of The European Parliament and of the Council:	*The following sections of this Scoping Report address the requirements of the SEA Directive:*
2. The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.	**This requirement is addressed in Section 3 (Context and Baseline) and Appendix B.**
3. The environmental characteristics of areas likely to be significantly affected.	**This requirement is addressed in in Section 3 (Context and Baseline) and Appendix B.**
4. Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds[41] and Council Directive 92/43/EEC (the Habitats Directive[42]).	**This requirement is addressed in Section 3 (Context and Baseline) and Appendix B.**
5. The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation.	**This requirement is addressed in Section 3 (Context and Baseline) and Appendix B.**
6. The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues such as: biodiversity; population; human health; fauna; flora; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues referred to in sub-paragraphs (a) to (l).	**This requirement is addressed in Section 5 (Appraisal of the Draft National Policy Statement for Water Resources Infrastructure and Reasonable Alternatives) and Appendix B.**
7. The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme.	**This requirement is addressed in Section 5 (Appraisal of the Draft National Policy Statement for Water Resources Infrastructure and Reasonable Alternatives) and Appendix F.**
8. An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information.	**The requirement regarding the reasons for selecting the reasonable alternatives is addressed in Section 2 (The Draft NPS for Water Resource Infrastructure).** **The requirement concerning the description of any difficulties is addressed in Section 4 (Appraisal Methodology).**
9. A description of the measures envisaged concerning monitoring in accordance with Article 10	**This requirement is addressed in Section 6 (Conclusions and Monitoring).**

[41] Council Directive 79/409/EEC on the conservation of wild birds. The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. In the UK, the provisions of the Birds Directive are implemented through the Wildlife & Countryside Act 1981, 1989 c.69 (as amended) and The Conservation (Natural Habitats, &c.) Regulations 1994, S.I 2716, (as amended).

[42] Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (EC Habitats Directive). In the UK the Directive has been transposed into national laws by means of the Conservation (Natural Habitats, & c.) Regulations 1994 (as amended) (see footnote 22) (Habitats Regulations). The 'Habitats Regulations' apply to the UK land area and its territorial sea (to 12 nautical miles from the coast) and are supported by government policy guidance.

SEA Information Requirements	AoS Report Reference
Directive 2001/42/EC of The European Parliament and of the Council:	*The following sections of this Scoping Report address the requirements of the SEA Directive:*
10. A non-technical summary of the information provided under the above headings.	**A Non-Technical Summary is provided with this AoS Report.**

1.9 How to Comment on this AoS Report

1.9.1 This AoS Report is being issued for public consultation. Details of how to respond to the consultation are provided below.

This Consultation: How to Give Us Your Views

1.9.2 We would welcome your views on any aspect of this AoS Report. However, we would particularly welcome responses to the following questions:

Consultation Questions	
1.	Do you agree with the findings (of 'likely significant effects') of the Appraisal of Sustainability Report? If not, what other significant effects do you think have been missed, and why? Please provide reasons to support your answer.
2.	Do you agree with the conclusions of the Appraisal of Sustainability Report and the recommendations for enhancing positive effects associated with the implementation of the draft NPS? If not, what do you think should be the key recommendations and why?
3.	Do you agree with the proposed arrangements for monitoring the significant effects of the implementation of the draft NPS? If not, what measures do you propose?

1.9.3 Please provide your comments via the Citizen Space survey at https://consult.defra.gov.uk/water/draft-national-policy-statement. If you have any questions about the consultation please contact the Defra team at:

Email: WaterSupplyNPS@defra.gsi.gov

Post: Water Infrastructure Team

Department for Environment, Food and Rural Affairs,

3rd Floor Seacole Block

2 Marsham Street

London

SW1P 4DF

2. The Draft National Policy Statement for Water Resources Infrastructure

2.1 Introduction

2.1.1 As detailed in **Section 1**, the Government is preparing a NPS for nationally significance water resources infrastructure and this work is being led by Defra. As part of the development of the NPS, Defra has prepared the draft NPS that is being published for public consultation.

2.1.2 This section provides further detail in respect of the planning context for nationally significant infrastructure projects (**Section 2.2**) and the scope and contents of the draft NPS (**Section 2.3**). It also sets out the approach to the identification of reasonable alternatives to the NPS that have been considered during the appraisal process (**Section 2.4**).

2.2 Nationally Significant Infrastructure Projects

Legislative and Consenting Background

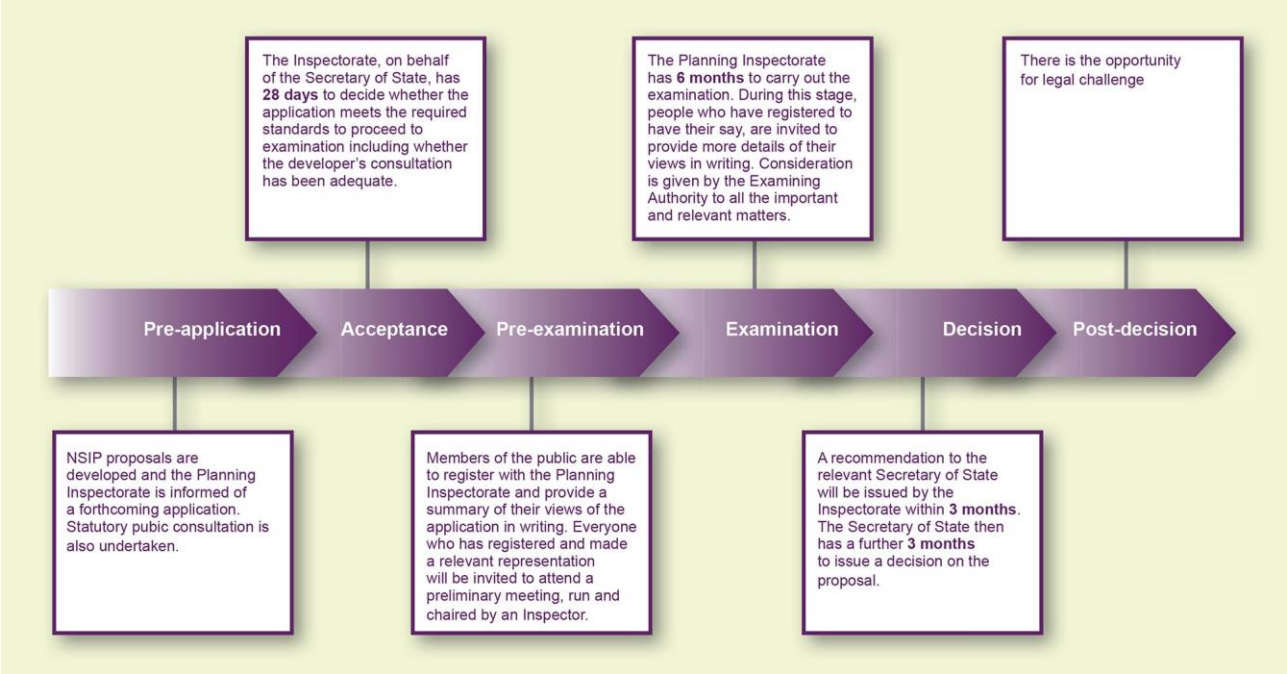
2.2.1 The Planning Act 2008 introduced a procedure to streamline the decision-making process for NSIPs. Under the Act, an applicant wishing to construct a NSIP must first apply for development consent. All DCO applications which may be made pursuant to the NPS, once designated, will be subject to the requirements of the planning system under the Planning Act 2008. As part of this process, the applicant should consider whether the proposed nationally significant infrastructure project is considered to be an Environmental Impact Assessment[43] development under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the Environmental Impact Assessment Regulations). Similarly, the applicant should consider the potential effects of the proposed development on protected habitats through consideration of requirements of the Conservation of Habitats and Species Regulations 2017[44].

2.2.2 For such projects, the relevant Secretary of State will appoint an 'Examining Authority' to examine the application. The Examining Authority will be from the Planning Inspectorate and will be either a single Inspector or a panel of three or more Inspectors. Once the examination has been concluded, the Examining Authority will make a recommendation to the Secretary of State, who will make the decision on whether to grant or to refuse consent.

2.2.3 There are six key stages in the development consent application process for nationally significant infrastructure projects and these are shown in **Figure 2.1**.

[43] Planning Inspectorate (2015) *Preliminary Environmental Information, Screening and Scoping: Advice note Seven: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping*.
[44] Planning Inspectorate (2015) *Habitats Regulations Assessment: Advice note ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects*.

Figure 2.1 The Development Consent Process for Nationally Significant Infrastructure Projects



2.2.4 Part 3 of the Planning Act 2008 lists the projects that are to be determined as nationally significant infrastructure projects.

2.2.5 In addition to development consent under the Planning Act 2008, an applicant will also need permits from the environmental regulator before constructing a nationally significant infrastructure project. In England, the Environment Agency is responsible for environmental protection under the Environmental Permitting (England and Wales) Regulations 2016. There are separate environmental regulators in other parts of the UK. The Environment Agency will therefore be responsible for regulating the environmental aspects of developing water resources infrastructure (for example, regulating the impacts of any changes to local hydrological regimes as a result of the proposed infrastructure).

National Policy Statements

2.2.6 NPSs set out the criteria by which applications for nationally significant infrastructure projects within their scope are determined. They include the Government's objectives for the development of nationally significant infrastructure in a particular sector and set out:

- how the infrastructure will contribute to sustainable development;
- how the objectives for the sector in question have been integrated with other Government policies;
- how actual and projected capacity and demand have been taken into account;
- relevant issues in relation to safety or technology;
- circumstances where it would be particularly important to address the adverse impacts of development; and
- specific locations, where appropriate, in order to provide a clear framework for investment and planning decisions.

2.2.7 They also include any other policies or circumstances that Ministers consider should be taken into account in decisions on infrastructure development.

2.2.8 NPSs undergo a process of public consultation and parliamentary scrutiny before being designated (i.e. published). They provide the framework within which Inspector(s) forming the Examining Authority make their recommendations to the Secretary of State.

2.3 The National Policy Statement for Water Resources Infrastructure

Purpose of the National Policy Statement

2.3.1 As detailed in **Section 1.3**, the NPS for Water Resources Infrastructure will set out the need for nationally significant infrastructure projects related to water resources in England and the Government's policies to deliver them. It will be used as the primary basis for preparing applications for development consent, for examination by the Examining Authority and for making decisions by the Secretary of State in considering development consent applications for water resources infrastructure in England that falls within the definition of a NSIP as defined in the Planning Act 2008 (subject to any future amendments). If circumstances were to arise requiring planning consideration of nationally significant water resources infrastructure elsewhere in the UK, planning decisions and environmental assessments would be pursued through the relevant, devolved planning system.

2.3.2 The NPS is also intended to work alongside the statutory water resources planning process and will inform water company business plans by clearly describing the case for water infrastructure, in turn providing improved clarity and confidence to the delivery phase of any preferred large supply schemes.

2.3.3 Following the Written Statement[45] confirming that the Government had decided to prepare an NPS for nationally significance water resources infrastructure, Defra has led its preparations. Its development has been guided by the following three high level principles:

- Principle 1: The NPS will set out the need for water infrastructure as part of a 'twin track' approach to managing water resources.
- Principle 2: The NPS will reinforce and make clear the role of water companies' WRMPs in identifying the most appropriate water resources schemes, including new water resources infrastructure.
- Principle 3: The NPS will reiterate the importance of developing and designing water resources schemes that meet the government's objective to enhance the environment.

2.3.4 The application of these principles has informed the structure and content of the draft NPS.

Infrastructure Covered by the National Policy Statement

2.3.5 The infrastructure covered by the NPS, which reflect the criteria for nationally significant infrastructure that are related to water proposed by Defra, include reservoirs, water transfer schemes and desalination. It should be noted, however, that whilst the NPS (as proposed) is aligned with the Government's proposed categories and thresholds for nationally significant water

[45] UK Parliament (2017) *Affordable, Resilient Water Supplies: Consultation on the Government's Strategic Priorities for Ofwat: Written statement - HCWS530.* Available from: http://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Commons/2017-03-14/HCWS530/

resources infrastructure, it does not preclude consideration of other major infrastructure projects. In section 35 of the Planning Act 2008, there are powers for the Secretary of State to direct that a water resources infrastructure development should be treated as an NSIP.

2.3.6 Descriptions of the three water resources infrastructure types covered by the NPS are provided below, together with Defra's thresholds[46] for projects that will be considered nationally significant.

Reservoirs (including new reservoirs and reservoir enlargement/raising)

2.3.7 Reservoirs are used to ensure that water companies hold reserves of water in readiness for treatment when demand requires it. Reservoirs can also provide increased water supply resilience to climate change and enhance environmental resilience through the controlled release of water to rivers. Water levels within reservoirs will fluctuate where water drawn-down exceeds levels of recharge from the reservoirs supply source, typically in the summer; however, the operation of reservoirs is regulated by Environment Agency abstraction licences (with the exception of periods of drought when drought permits may be implemented).

2.3.8 Reservoirs can be constructed as impounding reservoirs, where the natural flow of a river or drainage from an area is held-back, or non-impounding reservoirs, where water is stored in a reservoir by pumping water or by a piped inflow of water. The capacity of existing reservoirs, meanwhile, can be increased by raising the dam level or by enlarging the storage facility. Enlargement may include the provision of smaller dams around the edge of the reservoir. New or enlarged reservoirs are likely to be supported by associated infrastructure including; pipelines, pumping stations and water treatment works.

2.3.9 The definition of a nationally significant reservoir is one where the volume of water to be held back by the dam or stored in the reservoir will exceed 30 million cubic metres; or the deployable output of the dam or reservoir will exceed 80 million litres per day (Ml/d).

Water Transfer Schemes

2.3.10 Water transfer schemes have a fundamental role in enhancing the resilience of water supplies by increasing the connectivity of the network, especially when combined with other infrastructure types that are resilient to drought, such as desalination.

2.3.11 Water transfer schemes can include the distribution of water either within or between water company areas. There are various aspects of associated development required for the operation of transfer schemes which may include, for example; pipelines, treatment works, intake structures, screening equipment, service reservoirs and pumping stations. The types and amount of infrastructure needed to support a transfer is entirely dependent on the individual scheme; for example, some transfers will use more existing infrastructure or natural waterways, and be gravity-fed, whereas others will use pipes and require pumping stations.

2.3.12 The definition of a nationally significant water transfer scheme is one where the deployable output of the infrastructure to be constructed or altered as a result of the development is expected to exceed 80 Ml/d.

[46] Defra (2018, Consultation on National Policy Statement for Water Resources Infrastructure – types and sizes of projects Summary of responses and government response, August 2018. Available from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/734974/nsip-consult-sum-resp.pdf

Desalination

2.3.13 There are over 16,000 desalination plants in the world; the Thames Water Desalination Plant in Beckton (which opened in June 2010) is the first and to date only large-scale desalination plant in the UK. The Beckton desalination plant is capable of supplying 150 million litres of potable water per day (which is sufficient to supply approximately 400,000 households).

2.3.14 Desalination plants work by extracting saltwater, which is then cleaned using various filtration processes. The salt is removed using a process called reverse osmosis that involves forcing the water at high pressure through very fine membranes, which hold back the salt and other molecules. The treated water is then re-mineralised so that it has similar properties to other local supplies, ensuring among other purposes, that it tastes the same. Following this, the water is purified to ensure it is safe to drink and then put into the supply network. Alongside the desalination plant itself, associated development may be required including, for example, pipelines, service reservoirs and pumping stations.

2.3.15 Desalination provides resilience to severe and extreme droughts, floods and temperature extremes and is anticipated to become increasingly utilised worldwide in response to pressures on water supply created by climate change. However, the technology is limited to coastal and estuarine locations and has high operational energy demands. In the future, if energy and treatment constraints can be addressed, desalination may become a more economic, continuous and flexible source of water, rather than a source only used as a last resort.

2.3.16 **The definition of a nationally significant desalination plant is one where the deployable output of the desalination plant is expected to exceed 80 Ml/d**.

Other infrastructure types

2.3.17 Other water resources infrastructure may also be considered under section 35 of the Planning Act 2008 as a NSIP and may include, but is not limited to, large scale aquifer re-charge or effluent reuse schemes.

Scope of the National Policy Statement

2.3.18 The NPS, once designated, will provide the framework for decision making on DCO applications for the construction of nationally significant infrastructure related to water resources in England. At the draft NPS stage it is the Government's preference for the NPS for water resource infrastructure to set out the need for nationally significant infrastructure and provide the high level assessment principles against which DCO applications will be considered. In common with the majority of other NPSs, and as a strategic planning document, it is not intended that it will be site specific.

Preparation of the National Policy Statement

2.3.19 The key stages and indicative timetable for preparation of the NPS are set out in **Figure 2.2**. Public consultation on the principles for the NPS (and NSIP thresholds) took place concurrently with consultation on the initial Scoping Report. A further informal consultation on the types and sizes of nationally significant water resources infrastructure took place between the 5th and 26 April 2018. The responses to these consultations have been considered by Defra and have been used to help guide the development of the draft NPS (for example in the NSIP definitions and thresholds).

2.3.20 The draft NPS is then being issued for consultation during Autumn 2018. Taking into account the responses received to the consultation on the draft NPS alongside any new evidence, Defra will then finalise the NPS. It is currently expected that the NPS will be laid before parliament during summer 2019.

Figure 2.2 Indicative Timetable for the Preparation of the National Policy Statement

AoS=Appraisal of Sustainability, **HRA**=Habitats Regulations Assessment, **NSIP**=Nationally significant infrastructure project, **NPS**=National Policy Statement

2.4 The Draft National Policy Statement for Water Resources Infrastructure

2.4.1 The draft NPS, which is the subject of this AoS Report, comprises four chapters, as follows:

- **Chapter 1**: provides an overview of the purpose and scope of the draft NPS including the draft NPS objectives. The draft NPS objectives are as follows:
  - To provide a clear national planning policy that facilitates the examination and determination of applications for NSIPs for water resources in England;
  - To set out the need for nationally significant water resources infrastructure and the role of WRMPs in identifying and satisfying the need. This will provide clarity and confidence on eligible NSIP schemes to inform water company's long term plans;
  - To provide the primary basis for examination by the Examining Authority and for decisions by the Secretary of State on development consent applications for water resources infrastructure;
  - To provide guidance to potential NSIP developers on the relevant infrastructure, generic impacts and general siting considerations that may need to be taken into account when planning for the development of water resources infrastructure;
  - To provide policy and guidance on generic impacts to support any relevant local planning authorities in preparing their local impact reports, which they will be invited to prepare under section 60 of the Planning Act;
  - To guide the development of NSIPs that support the government's sustainability goals and objective to enhance the environment.
- **Chapter 2**: outlines the need for nationally significant water resources infrastructure, in the context of the Government's twin-track approach to resilience, together with the regulatory framework for water and the options for addressing need.
- **Chapter 3**: sets out the assessment principles against which applications relating to water resources infrastructure are to be decided. The assessment principles are as follows:
  - Environmental Impact Assessment;
  - Habitats Regulations Assessment;
  - Environmental net gain;
  - Assessing alternatives;

- Good design;
- Climate change adaptation;
- Environmental regulation;
- Common law nuisance and statutory nuisance;
- Safety;
- Security considerations; and
- Health.

- **Chapter 4:** sets out the generic impacts to be considered by an applicant and the Examining Authority. Guidance is provided across the following topics:
  - Air quality;
  - Biodiversity and nature conservation;
  - Carbon emissions;
  - Coastal change;
  - Dust, odour, artificial light, smoke and steam;
  - Historic environment;
  - Flood risk;
  - Landscape and visual impacts;
  - Land use including open space, green infrastructure and Green Belt;
  - Noise and vibration;
  - Resource and waste management;
  - Socio-economic impacts;
  - Traffic and transport; and
  - Water quality and resources.

2.4.2 For each impact, guidance is provided: to the applicant on the matters to be considered (including information to be presented in an Environmental Statement, completed to meet the requirements of the EIA Regulations); on decision making by the Secretary of State; and with regard to proposed mitigation measures to be considered by the applicant.

2.5 Reasonable Alternatives to the Draft National Policy Statement for Water Resources Infrastructure

Overview

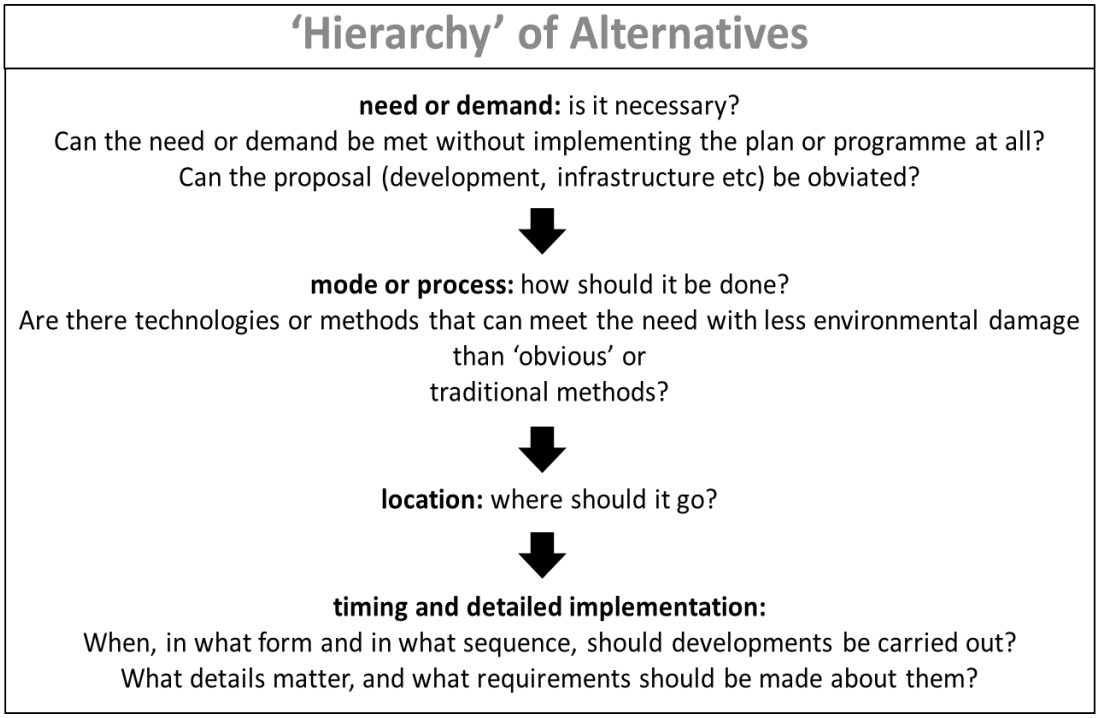
2.5.1 Department for Communities and Local Government's (DCLG) guidance[47] on the issue of alternatives within an emerging NPS is that:

[47] DCLG (2013) *How to prepare a National Policy Statement – A High Level Advice Note for Departments' Department for Communities and Local Government Aug 2013*.

"*The accompanying Appraisal of Sustainability should support this by considering the implications of the alternatives to building new infrastructure. If some of the possible alternatives go against established Government policy, then consider the scope for considering policy alternatives within the AoS without reopening settled policy*".

2.5.2 The Office of the Deputy Prime Minister's SEA guidance[48] includes a 'hierarchy' of alternatives (see **Figure 2.3**).

Figure 2.3 Hierarchy of Alternatives



2.5.3 The questions contained in this hierarchy, together with consultation responses to the initial AoS Scoping Report[49] (which sought views on possible reasonable alternatives to the NPS), have been used to guide the identification of options for the NPS. The options identified focus specifically on whether an NPS for water resources infrastructure is necessary, how it should be done and the extent to which it should specify locations for future development. In this context, and consistent with the hierarchy, the following alternatives to the draft NPS (as proposed) have been identified:

- **Is it necessary?** To address this, the alternative of no NPS is considered.
- **How should it be done?** To address this, the following alternatives are considered:
  - an NPS related to demand management or small scale water resources infrastructure;
  - an NPS that includes a threshold but not the infrastructure type;
  - an NPS that specifies infrastructure categories to cover all possible major water resources infrastructure projects (i.e. projects not explicitly defined in the Planning Act 2008 but which may come forward as section 35 development).

[48] ODMP (2005) *A Practical Guide to the Strategic Environmental Assessment Directive*. Available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf [Accessed May 2018].
[49] Amec Foster Wheeler (2017) *Appraisal of Sustainability of the National Policy Statement for Water Resources: Scoping Report*.

- **Where should it go?** To address this, the following alternatives are considered:
  - a criteria-based NPS;
  - a site-specific NPS;
  - a directional NPS.

2.5.4 These alternatives to the draft NPS as proposed are considered in more detail below along with the rationale on whether to take them forward for appraisal as part of the AoS process.

2.5.5 With regard to the timing and detailed form of implementation (the fourth question in the hierarchy of alternatives in **Figure 2.3**), whilst both are fundamental aspects of implementation of the NPS and have been considered in the AoS, they are also issues that would be addressed in detail as part of the WRMP process and, subsequently, by the developer in an application for development consent. Taking this into account, and as specific infrastructure proposals are not contained in the draft NPS, it would be premature to examine reasonable alternatives to the timing of delivery of individual nationally significant infrastructure projects. In consequence, this is not considered further.

No NPS

2.5.6 Under this alternative, an NPS relating to nationally significant water resources infrastructure would not be designated. It is still assumed, however, that nationally significant water resources infrastructure projects would still be identified in water company WRMPs (as appropriate) and be implemented. For any such qualifying development, a DCO would still be required under the Planning Act 2008 and a DCO application would still be submitted to the Secretary of State. However, the DCO application's development, subsequent examination and final determination by the Secretary of State would be undertaken without the explicit guidance of an NPS.

2.5.7 It should be noted that the no NPS alternative is separate and distinct from the baseline analysis presented in this AoS Report (**Section 3** and **Appendix B**) and which represents the current state of the environment and its likely evolution under a 'business as usual' scenario (i.e. without the NPS and/or nationally significant water resources infrastructure under the Planning Act 2008 coming forward).

2.5.8 Although it is the Government's view that there is a clear and defined need for an NPS to provide planning policy guidance for future water resources infrastructure, in order to provide a comparator, and consistent with SEA guidance and practice, it is considered useful to assess the social, economic and environmental effects of proceeding with no NPS. In consequence, the no NPS alternative has been taken forward for consideration in the AoS.

An NPS related to demand management or small scale water resources infrastructure

2.5.9 Several of the respondents to the initial AoS Scoping Report consultation suggested that the AoS should consider alternative means of meeting water supply demand to nationally significant water resources infrastructure. These respondents suggested that demand management or multiple smaller-scale projects could be contained within, or even be the focus of, the NPS.

A demand management-led NPS

2.5.10 Under this alternative, the NPS would relate to the implementation of demand management projects (such as leakage reduction and enhanced water efficiency) alongside water supply infrastructure, as part of a twin track approach. Potentially, direction could be given in a NPS

towards the prioritisation of demand management measures before consideration could then be given to the provision of new water supply infrastructure.

2.5.11 The challenges faced by the water industry have recently been identified in a number of documents, including the Climate Change Risk Assessment (CCRA2),[50] the Adaptation Sub Committee (ASC)[51] report and the Environment Agency's Case for Change[52] including its advice to Defra on water supply and resilience and infrastructure.[53] Large water supply deficits have been predicted in some areas of England by 2040, with the areas affected increasing by 2065[54] as a result of a combination of climate change, population and economic growth and the need to protect and enhance the environment. Potential deficits across England and Wales of up to 3,000 Ml/d are predicted by 2040, increasing to 5,200 Ml/d by 2065.[55]

2.5.12 Water UK's 2016 Water resources long-term planning framework (2015-2065)[56] noted the importance of demand management in conjunction with a combination of localised initiatives and strategic schemes to provide future resilience and address the forecast supply deficit. Reflecting the recommendations of this report, the Government has confirmed that a 'twin track' approach to improving the resilience of water supplies is required, with investment in new supplies complementing measures to reduce the demand for water. This commitment is set out in the Government's 25 Year Environment Plan.[57]

2.5.13 The recent National Infrastructure Commission report, Preparing for a drier future[58], contains the Commission's advice on how to address England's water supply challenges and deliver the appropriate level of resilience for the long term. The Commission's central finding is that the Government should ensure that plans are in place to deliver an additional supply and demand reduction of at least 3,300 Ml/d. The report states that one third of the deficit could be addressed by reduced leakage from water company pipes and a further third by improved efficiency (by reducing household consumption) but that the remaining third would need to be addressed by water transfers between companies and new water resources. This advice supports the Government's twin track approach.

2.5.14 The Government has concluded that there is a compelling need for the development of water supply infrastructure alongside demand management. An NPS that relates to demand management projects only, or gives direction towards the prioritisation of one above the other, would not be consistent with this settled policy.

[50] Committee on Climate change (2017) *UK Climate Change Risk Assessment 2017 Evidence Report.* Available at: https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/uk-climate-change-risk-assessment-2017/
[51] Committee on Climate change (2017) *Updated projections for water availability for the UK (HR Wallingford).* Available at: https://www.theccc.org.uk/publication/climate-change-risk-assessment-ii-updated-projections-for-water-availability-for-the-uk/
[52] Environment Agency (2011) *The Case for Change – Current and Future Water Availability*. Available online: http://webarchive.nationalarchives.gov.uk/20140328154328/http:/cdn.environment-agency.gov.uk/geho1111bvep-e-e.pdf
[53] Environment Agency (2015) *Water Supply and Resilience Infrastructure*. Available online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/504682/ea-analysis-water-sector.pdf
[54] Water UK (2016) *Water Resources Long-Term Planning Framework*. Available from https://www.water.org.uk/water-resources-long-term-planning-framework [Accessed May 2018].
[55] Water UK (2016) *Water Resources Long-Term Planning Framework*. Available from https://www.water.org.uk/water-resources-long-term-planning-framework [Accessed May 2018[.
[56] Water UK (2016) *Water Resources Long-Term Planning Framework*. Available from https://dl.dropboxusercontent.com/u/299993612/Publications/ [Accessed May 2018].
[57] HM Government (2018) A *Green Future: Our 25 Year Plan to Improve the Environment*. Available from https://www.gov.uk/government/publications/25-year-environment-plan [Accessed February 2018]
[58] National Infrastructure Commission (2018) *Preparing for a drier future*. Available online: https://www.nic.org.uk/wp-content/uploads/NIC-Preparing-for-a-Drier-Future-26-April-2018.pdf

Extending the scope of the NPS to include demand management

2.5.15 A further option could be to extend the scope of the draft NPS (as proposed) to include demand management projects alongside water supply infrastructure.

2.5.16 The Government has reviewed the Planning Act 2008 definitions of the types of water resources infrastructure that are classed as 'nationally significant' in order to ensure that the right type and scale of projects are included to address the water scarcity challenge. Consultation on proposals to amend these thresholds took place between November and December 2017 and, additionally, in April 2018. The Government has confirmed[59] that the revised definition of nationally significant water resources infrastructure will include the following categories and thresholds:

- reservoirs (volume of water to be held back by dam is expected to exceed to 30 million m^3 or will have a deployable output of 80 Ml/d, or higher);
- transfers (volume of water to be transferred will have a deployable output of 80 Ml/d, or higher); and
- desalination (will have a deployable output of 80 Ml/d, or higher).

2.5.17 The scale of development associated with the implementation of demand management measures is typically small and/or unlikely to give rise to significant construction impacts. Water efficiency schemes are consumer specific (involving, for example, new or retrofitted devices to reduce tap, shower and toilet water use, the provision of water butts, water metering and awareness raising and educational programmes) whilst leakage reduction measures generally involve improved leakage detection on existing networks and/or the replacement and repair of existing pipelines. Whilst there is the potential for a programme of demand management measures to generate water savings that could be deemed nationally significant, individually, such schemes would not align with the proposed definitions of nationally significant water resources infrastructure. Further, from a planning perspective, demand management measures would either not require any planning consent or would be permitted development such that an NPS would not apply (and not be needed to apply).

2.5.18 Inclusion of demand management in the NPS compared to the current position is likely to increase the regulatory requirements and time required for implementation, without providing any additional benefits. In consequence, it is considered that the inclusion of demand management measures in the NPS would be unnecessary, inappropriate and would hinder rather than expedite their delivery.

2.5.19 Importantly, excluding demand management measures from the NPS would not preclude such schemes from coming forward. Indeed, the Government's guiding principles for WRMPs[60] sets out that all options (both supply and demand management) should be considered to meet future public water supply needs and that water companies should demonstrate this in their WRMPs. In accordance with this guidance, and consistent with the Government's twin track approach, it is fully expected that water companies will, in preparing their WRMPs, give full consideration to demand management options. Further, should a unique demand management scheme come forward that is of national significance and would benefit from the Planning Act 2008 regime, this could be still be determined as an application under section 35 of the Act.

[59] Defra (2018, Consultation on National Policy Statement for Water Resources Infrastructure – types and sizes of projects Summary of responses and government response, August 2018. Available from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/734974/nsip-consult-sum-resp.pdf

[60] Defra (2016) *Guiding Principles for Water Resources Planning*.

2.5.20 **It is the Government's view that demand management projects do not fall within the revised definition of nationally significant water resources infrastructure. Further, to subject them to the requirements of an NPS would be unnecessary, inappropriate and would hinder rather than expedite their delivery. In consequence, it is concluded that an NPS relating to demand management is not a reasonable alternative to be taken forward for consideration in the AoS.**

An NPS that includes multiple small-scale water resources infrastructure projects

2.5.21 Under this alternative, the infrastructure covered by the NPS would include multiple small scale water supply projects (i.e. projects that are not deemed to be nationally significant) in addition to larger nationally significant water infrastructure.

2.5.22 As noted earlier, the Government has concluded that there is a compelling national need for the development of nationally significant water infrastructure of a scale indicated by the proposed thresholds. Individual small scale infrastructure schemes would not meet such a need and, further, subjecting smaller scale projects to the NSIP regime (as opposed to determination under the Town and Country Planning Act 1990 by a local planning authority) would not be proportionate to the scale of development, may place an unnecessary burden on water companies and would be likely to constrain or delay rather than expedite infrastructure delivery. However, the provision of multiple individual schemes in an integrated operation could cumulatively meet or exceed the revised thresholds and so be considered to contribute to meeting national need and may benefit from determination under the NSIP regime and would then be subject to the requirements of the NPS.

2.5.23 In consequence, it is the view of the Government that this approach does not represent an alternative NPS, but rather an alternative, additional way in which infrastructure could be provided to meet national need. The proposed thresholds do not purposefully exclude such an approach and each DCO will be treated on its own merit. However, if a scheme of this type was seen to be nationally significant but did not meet the Planning Act 2008 definition, an application under section 35 of the Act could be considered.

2.5.24 Individual small-scale schemes would continue to be subject to existing planning requirements under the Town and Country Planning Act 1990. These would be considered by water companies as part of the WRMP preparation process and the Government fully recognises the importance of such schemes in meeting the water supply challenge. It should also be noted that the NPS would be a material consideration in decisions on planning applications relating to water resources infrastructure under the Town and Country Planning Act 1990.[61]

2.5.25 **Overall, it is the Government's view that the revised NPS thresholds, whilst not providing explicit direction, would not exclude the potential to consider a project resulting from multiple small-scale water supply projects, if offering a single integrated solution within a defined spatial area. A project of this nature could also be considered under section 35 if it did not meet the Planning Act 2008 definition. In consequence, the approach is considered to be an alternative to delivery rather than an alternative to the NPS itself and as such, is not a reasonable alternative to be taken forward for consideration in the AoS.**

[61] As set out in paragraph 5 of the National Planning Policy Framework (2018), NPSs form part of the overall framework of national planning policy, and may be a material consideration in preparing plans and making decisions on planning applications. See https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/740441/National_Planning_Policy_Framework_web_accessible_version.pdf [Accessed October 2018].

An NPS that includes a threshold but not the infrastructure type

2.5.26 Under this alternative, the scope of the infrastructure included would not be defined by type, but would be limited to a threshold deployable output value (for example, 80 Ml/d or higher). This would then permit the widest range of infrastructure to be considered and could accommodate future changes in water resource technologies without the need for further amendment to the NPS or legislative change. However, to be implemented, such an approach would first require amendment to the existing definitions for nationally significant water supply projects under sections 27 and 28 of the Planning Act 2008.

2.5.27 Whilst the use of an 'infrastructure neutral' threshold would operate well for many water supply schemes, such an approach is less well able to accommodate proposals for reservoirs, where the volume of water to be held back is an important additional consideration to deployable output in determining whether the scheme would be nationally significant. The potential issue is illustrated by considering a number of proposed reservoirs, where reliance on deployable output alone could lead to some new or extended reservoirs not being considered through the Planning Act 2008 regime, when their capacity would indicate that it was appropriate to do so (or vice versa) (see **Table 2.1)**.

Table 2.1 Capacity and Deployable Output for Selected WRMP14 Reservoir Schemes[62]

Reservoir/dam raising project	Capacity (million m^3)	Deployable Output (Ml/day)
Upper Thames Reservoir (Thames Water)	150	283
Longdon Marsh (Thames Water)	125	207
Chinnor (Thames Water)	100	201
Longworth (Thames Water)	50	101
Borrowbeck (United Utilities)	33	80
Goose Green (South East Water)	72	20
Halland (South East Water)	51	17.8

2.5.28 It is also noted that consultation responses to the proposals to amend NSIP thresholds included general agreement that size alone should not be used as the only determining factor for an NSIP[63]

[62] Sources are those feasible option reservoir schemes from WRMP14s that exceed the proposed NSIP thresholds in Annex D of *National Policy Statement for Water Resources: Consultation on developing a National Policy Statement for Water Resources (NPS) and proposals to amend the definition of nationally significant water resources infrastructure in the Planning Act 2008*, Defra, November 2017

[63] Defra (2018) Consultation on developing a National Policy Statement for Water Resources Summary of responses and government response, March 2018 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/697238/nps-water-consult-sum-resp.pdf

and, further, that broad support was provided for the Government's proposals for the factors proposed (in terms of infrastructure type, capacity and deployable output). An NPS based then on thresholds for deployable output value alone would be inconsistent with consultation findings, be unlikely to enjoy wide stakeholder support and, importantly, would not reflect the Government's proposed amendments to the definitions of nationally significant water supply projects contained in sections 27 and 28 of the Planning Act 2008 (as laid in parliament).

2.5.29 **Overall, it is the Government's view that an NPS that is not infrastructure specific does not provide the degree of specificity needed to reflect the range of water resources infrastructure that could be nationally significant, is inconsistent with consultation findings and would not reflect the Government's intended amendments to the definitions of nationally significant water resources infrastructure contained in the Planning Act 2008 (as laid in parliament). In consequence, it is not considered to be a reasonable alternative for consideration in the AoS.**

An NPS that specifies infrastructure categories to cover all major water resources infrastructure projects

2.5.30 Under this alternative, the scope of infrastructure types specifically included in the generic impacts chapter of the draft NPS (as proposed) would be extended to cover a wider range of categories of water resources infrastructure that, whilst not included in the Government's revised amendments to the Planning Act 2008, could be considered as development for which development consent is required under section 35 of the Planning Act 2008[64]. This could include other infrastructure schemes to enhance the storage capability of the water supply system and water available for use including, but not limited to, aquifer re-charge and effluent re-use schemes. The need for these schemes may be identified through the WRMP process as the best solution for increasing water supply capacity in a particular area(s).

2.5.31 As set out in **Section 2.3**, whilst the NPS (as proposed) is aligned with the Government's proposed categories and thresholds for nationally significant water resources infrastructure, it does not preclude consideration of other major infrastructure projects. In section 35 of the Planning Act 2008, there are powers for the Secretary of State to direct that a water resources infrastructure development should be treated as an NSIP. This could apply to the other potential schemes, such as aquifer re-charge and effluent re-use. In consequence, it is the Government's view that there is no need to explicitly identify these other categories as the legislation and proposed NPS contain the necessary flexibility. Furthermore, the existing approach can accommodate the advancement of new technologies without the need for further amendment to the NPS or legislative change. In this context, the draft NPS (at paragraph 1.4.6) makes clear that "*The Secretary of State will also consider applications for development consent for projects which don't meet the NSIP criteria, as set out in sections 27, 28 and 28A of the Planning Act, but are referred under section 35 of the Planning Act. Where a section 35 referral is made by a water undertaker for a scheme which has been identified as a preferred option in a final WRMP, this NPS may apply*".

2.5.32 The Government is aware that there is a presentational merit in the inclusion of identified additional schemes; however, it is considered that the additional clarity provided is not materially different from that already contained in the NPS.

2.5.33 **Overall, it is the Government's view that an NPS that includes additional categories of major water resources infrastructure development is not materially different from the NPS (as proposed) as the NPS does not preclude the determination of other major infrastructure**

[64] The Secretary of State may give a direction for development to be treated as a nationally significant infrastructure project, subject to the detailed provisions set out in section 35 of the Planning Act 2008.

projects through the NSIP regime under section 35 of the Planning Act 2008. In consequence, it is not considered to be a reasonable alternative for consideration in the AoS.

A criteria-based NPS

2.5.34 A criteria-based NPS would exclude development in, or restrict development to, areas meeting certain criteria (be they 'exclusionary' or 'inclusionary' criteria).

2.5.35 For the purposes of considering alternatives for the draft NPS, exclusionary criteria are those criteria which, when applied, would ensure that any nationally significant water resources infrastructure development could not take place within an area. Such criteria would be for the purpose of protecting the environment and may include, for example, excluding development at, under or adjacent to World Heritage Sites, listed buildings, National Parks, or Areas of Outstanding Natural Beauty; they are a measure that seeks to avoid adverse effects from future water resources infrastructure development at locations possessing certain characteristics.

2.5.36 The converse to exclusionary areas for the development of nationally significant water resources infrastructure would be to apply 'inclusionary criteria' to the NPS, whereby certain criteria are prescribed in the NPS which a location must satisfy for it to be considered suitable for new water resources infrastructure. Inclusionary criteria may include, for example, the scale of the supply demand deficit forecast by a water company whereby the NPS would set thresholds for nationally significant water resources infrastructure based on the scale of the supply demand deficit forecast by a water company and for which demand management and local supply options would be insufficient.

2.5.37 There is a clear statutory process for deciding on the most appropriate water resource options. In accordance with the Water Industry Act 1991 and subsequent legislation, each water company has a statutory obligation to produce a WRMP every five years. Informed by an assessment of need including the supply-demand balance, a rigorous process of options identification and assessment (including SEA and HRA) and public consultation, proposals for the development of any nationally significant water resources infrastructure will be included in WRMPs; importantly, a scheme cannot apply for development consent in accordance with the Planning Act 2008 unless it has been identified as a preferred option through this process.

2.5.38 In this context, the Government considers that it would be inappropriate for the NPS to include exclusionary or inclusionary criteria. Under this alternative, the Government would be prejudging the suitability of areas for development which could unduly constrain the selection of suitable sites by water companies and undermine the WRMP options identification and appraisal process. This is particularly pertinent given the range of infrastructure to be covered by the NPS and associated effects, their scale and the likelihood that multiple projects will come forward.

2.5.39 With specific regard to the adoption of exclusionary criteria, the sensitivity of designated areas varies considerably and many of the potential effects of infrastructure development can be mitigated by good design and planning such that it may be possible to develop infrastructure in these areas without an unacceptable environmental impact (as is the case in respect of a large number of existing water supply schemes). Indeed, the planning process already provides protection for designated areas and these issues will be examined initially as part of the WRMP preparation process and, subsequently, at the project stage when both the potential impacts and the effectiveness of their mitigation can best be judged. In consequence, the adoption of exclusionary criteria could unnecessarily preclude projects from coming forward. Further, the use of such criteria may not necessarily exclude the possibility of adverse effects occurring; this is particularly relevant to water resources infrastructure, the construction and operation of which can have far reaching effects (for example, impacts on ecological sites downstream of an abstraction due to reduced river flow).

2.5.40 Water resources infrastructure can also provide opportunities to deliver net environmental benefits; for example, the potential for habitat creation associated with new reservoirs or for schemes such as water transfers to improve the sustainability of waterbodies. This alternative may prevent these opportunities from being fully realised.

2.5.41 **Overall, it is the Government's view that a criteria-based NPS is not a reasonable alternative for consideration in the AoS. Under the Water Industry Act 1991 and subsequent legislation, there is an established, statutory requirement for a rigorous process for the identification and selection of water resources infrastructure projects. The application of exclusionary or inclusionary criteria would not be in accordance with this statutory process, may unduly constrain the ability of water companies to select the most suitable projects to ensure sustainable supplies of water in their regions, could duplicate existing planning policy protections in the NPPF and may not lead to the avoidance of adverse effects anticipated.**

A site-specific NPS

2.5.42 A site-specific NPS would identify candidate sites for nationally significant water resources infrastructure. There are examples of other NPSs taking a site specific approach; for example, the nuclear generation NPS (EN-6) identifies potentially suitable sites for the deployment of new nuclear power stations whilst the Airports NPS identifies Heathrow as the preferred location for new runway capacity and infrastructure in south east England.

2.5.43 However, to take a site-specific approach for water resources would require significant evidence in terms of need, appropriateness and ongoing relevance that would duplicate the existing statutory water resource planning process and would lead to unnecessary conflicts. As set out in **Section 1.3**, the Water Industry Act 1991 and subsequent legislation requires all water companies to prepare, maintain and publish statutory WRMPs. The plans set out how water companies intend to maintain the balance between water supply and demand and ensure security of supply over at least the next 25 years in a way that is economically, socially and environmentally sustainable. Part III of the Water Industry Act 1991 states the following role for water companies in water supply:

"*37.—(1) It shall be the duty of every water undertaker to develop and maintain an efficient and economical system of water supply within its area and to ensure that all such arrangements have been made—*

> *(a) for providing supplies of water to premises in that area and for making such supplies available to persons who demand them; and*
>
> *(b) for maintaining, improving and extending the water undertaker's water mains and other pipes, as are necessary for securing that the undertaker is and continues to be able to meet its obligations under this Part.*

37A.—(2) A water resources management plan is a plan for how the water undertaker will manage and develop water resources so as to be able, and continue to be able, to meet its obligations under this Part."

2.5.44 Informed by an assessment of need including the supply-demand balance, a rigorous process of options identification and assessment (including environmental and social costings, Water Framework Directive (WFD) assessment, SEA and HRA) and public consultation, proposals for the development of any nationally significant water resources infrastructure will be included in WRMPs. It is therefore through WRMPs that decisions on the water resources infrastructure required at a local, regional and national scale are made and a scheme cannot apply for development consent in accordance with sections 27,28 and 28A of the Planning Act 2008 (as amended) unless it has been identified as a preferred option in a final WRMP which the Secretary of State has given permission

to publish. The complementary relationship between the current draft NPS and the WRMP process is highlighted in:

- one of the six objectives for the NPS which is "*To set out the need for nationally significant water resources infrastructure and the role of WRMPs in identifying and satisfying the need. This will provide clarity and confidence on eligible NSIP schemes to inform water company's long term plans*"; and
- paragraph 3.1.6, the draft NPS which states that "*NSIPs as defined in the Planning Act must have been identified within a published final WRMP and will have undergone full options appraisal, public engagement, and if required, will have been subject to Examination in Public. It is therefore not necessary for the Examining Authority and the decision maker to reconsider the details of this options appraisal process*".

2.5.45 In this context, a site-specific NPS would not be in accordance with the objectives for the NPS or with the existing legislation requiring the preparation of WRMPs by water companies. Under this alternative, the Government would be prejudging the outcome of the options selection process and making assumptions about the nationally significant infrastructure and locations needed. WRMPs look forward at least 25 years and are reviewed every five years in accordance with guidance[20]. The final preferred options do change between each cycle of WRMP development and adoption, in part reflecting changes in evidence, modelling, guidance and new technologies. Given the need to consider and review the widest range of water resource options possible, on a five year basis, a site-specific NPS would unduly constrain the identification and selection of suitable options and locations. Furthermore, without an equivalent review mechanism, a site-specific NPS could become out dated within one cycle of WRMP development.

2.5.46 Whilst there are examples of other NPSs taking a site specific approach (for example, waste water, nuclear power and aviation), for nationally significant water resources infrastructure there exists a statutory water resources planning process that is well-established and robust. WRMPs take a long term (25 year and beyond) view, are reviewed every five years and in accordance with guidance[27], they are increasingly taking a strategic, cross-boundary approach to water resources planning. If an NSIP is included in a published final WRMP as a preferred option, the need for that scheme will have been demonstrated in line with Government policy. On this basis, it is the Government's view that WRMPs remain the most appropriate mechanism for water resources planning.

2.5.47 Overall, it is the Government's view that a site-specific NPS is not a reasonable alternative to be taken forward for consideration in the AoS. Under the Water Industry Act 1991 and subsequent legislation, there is an established, statutory requirement for a rigorous process for the identification and selection of water resources infrastructure projects. The identification of sites in the NPS would undermine the WRMP process and would not be in accordance with legislation. Further, this alternative may unduly constrain the ability of water companies to select the most suitable projects to ensure sustainable supplies of water in their regions. In consequence, in the context of nationally significant water resources infrastructure, a site-specific NPS is considered to be unnecessary and inconsistent with existing NPS objectives, whose application would lead to incompatible, out-dated and non-compliant decision making.

A directional NPS locating new residential and employment allocations in areas with high water availability

2.5.48 A scoping consultation response suggested an alternative NPS that was more spatially directional than at present; the suggestion was based on the observation that the NPS (as proposed) focused on securing a water supply for all people irrespective of location. This inevitably means addressing the balance of having a high population density and comparatively drier conditions in the south

east of England as compared to, for example, Wales which has higher rainfall per capita. One option, therefore, would be to encourage residential and economic development in areas with the highest surplus water supply, with the aim of reducing the need for new water resources infrastructure.

2.5.49 It is the Government's view that this option does not relate to the provision of nationally significant water resource infrastructure and in consequence, it is outside of the scope of the NPS. Furthermore, there is no procedure within the planning system available to deliver this national scale distribution planning and such an approach would undermine the preparation of local plans by local authorities. In any case, the WRMP process ensures that populations are provided with a secure and safe supply of water, irrespective of their location. In developing their WRMPs, water undertakers consult local authorities in order to ensure that local growth projections are fully taken into account when calculating the future demand for water. This is in accordance with section 5.3 of Water Resources Planning Guideline which states "*For companies supplying customers wholly or mainly in England you will need to base your forecast population and property figures on local plans published by the local council or unitary authority*".

2.5.50 It is the Government's view that that a directional NPS is not a reasonable alternative to be taken forward for consideration in the AoS. The location of future growth is outside the scope of the NPS and the planning system does not provide a mechanism for spatial planning at the national scale. Notwithstanding this, the WRMP process ensures that populations are provided with a secure and safe supply of water, irrespective of their location.

Summary of reasonable alternatives

2.5.51 Following the application of the reasonableness test in compliance with Article 5(1) of the SEA Directive, one alternative to the draft NPS (as proposed) has been identified as reasonable and has been taken forward for appraisal as part of this AoS, namely 'No NPS'.

2.5.52 Under the 'No NPS' alternative, a DCO for nationally significant water resources infrastructure projects would still be required under the Planning Act 2008; however, its development and subsequent examination would be undertaken without the explicit guidance of an NPS.

3. Context and Baseline

3.1 Introduction

3.1.1 This section, alongside **Appendix B**, provides an overview of the context and baseline information that has informed the development of the appraisal framework (see **Section 4**). It includes details of the review of other relevant plans and programmes (**Section 3.2**) and baseline information (**Section 3.3**) and culminates in the identification of key issues to be considered by the draft NPS and AoS (**Section 3.4**).

3.1.2 Baseline information and relevant plans and programmes have been considered for England, Wales and Scotland. The proposed geographical scope of the context and baseline has been arrived at through consideration of the fact that the hydrological systems of each country cross national borders.

3.1.3 Annex I of the SEA Directive requires that the subsequent appraisal (to be contained in the AoS Report) should include information on the "*likely significant effects on the environment, including on issues such as: biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues referred to*".

3.1.4 These topics have formed the basis for the collection and analysis of contextual and baseline information alongside additional socio-economic topics. **Table 3.1** presents how the topics in this report are consistent with the SEA Directive requirements. Whilst information is presented by topic, the appraisal of the draft NPS has considered linkages between the topics as appropriate.

Table 3.1 Topics Considered in this AoS Report

Annex I SEA Directive Effects	Topics Considered in this AoS Report
Biodiversity, Flora and Fauna	Biodiversity and Nature Conservation
Population	Population, Economics and Skills
Human Health	Human Health
Soil	Land Use, Geology and Soils
Water	Water Quality
	Water Quantity
Air	Air Quality
	Noise

Annex I SEA Directive Effects	Topics Considered in this AoS Report
Climatic Factors	Climatic Factors (including climate change mitigation and adaptation and energy)
	Flood Risk and Coastal Change
Material Assets	Waste and Resources
	Traffic and Transport
Cultural Heritage, including architectural and archaeological heritage	Cultural Heritage (including architectural and archaeological heritage)
Landscape	Landscape and Townscape

3.1.5 Consistent with the requirements of Annex 1 (b), (c) and (d) of the SEA Directive, **Appendix B** sets out the collated contextual and baseline information, on a topic-by-topic basis, for each of the 14 AoS topics above, as follows:

- **Introduction**: provides an overview and definition of the topic.
- **Review of Plans and Programmes**: provides an overview of the international/European, UK and national (England, Scotland and Wales) policy context in which the draft NPS sits.
- **Overview of the Baseline**: summarises the baseline for each of the topic areas at the UK and national (England, Scotland and Wales) level. This includes the key environmental characteristics of each topic or area most likely to be significantly affected.
- **Summary of Existing Problems Relevant to Water Resources**: identifies the key topic specific issues to be considered as part of the appraisal.
- **Likely Evolution of the Baseline**: describes the likely evolution of baseline conditions without the implementation of the draft NPS, an understanding of this is key to determining the effects of the NPS on the topic area.
- **Assessing Significance:** outlines the objectives and guide questions related to the topic area which have been used in the appraisal of the effects of the draft NPS and reasonable alternatives alongside guidance that has helped determine the relative significance of potential effects on the objectives.
- **Appraisal:** includes completed matrices that record the findings of the appraisal of the draft NPS and reasonable alternative against the AoS objectives including proposed mitigation measures (where appropriate) and measures for enhancement, assumptions and uncertainties and additional information that may be required.

3.2 Review of Plans and Programmes

3.2.1 One of the first steps in undertaking the AoS (and to meet the requirements of the SEA Directive) is to identify and review other relevant plans, programmes, policies and strategies (hereafter referred to as 'plans and programmes') that could have an effect on the draft NPS. These may be plans and programmes at an international/European, UK or national level, as relevant to the scope of the NPS. For the purposes of this AoS, it is assumed that the broad objectives of extant European Union (EU) legislation will be maintained once the UK has withdrawn from the EU and that similar or equivalent environmental protections will remain in place.

3.2.2 The summary within each topic section in **Appendix B** identifies the relationships between the draft NPS and these other documents; i.e. how the NPS could be affected by the other plans' and programmes' aims, objectives and/or targets, or how it could contribute to the achievement of any environmental and sustainability objectives and targets set out in these plans and programmes.

3.2.3 The review of plans and programmes has also informed the environmental social, and economic baseline and helped determine the key sustainability issues for the NPS and AoS. It has also provided the policy context for the appraisal of the draft NPS.

3.2.4 From the review of these plans and programmes, a number of key environmental protection and socio-economic objectives have been identified. These are summarised in **Table 3.2**, along with an indication of where the policy objectives are reflected in the AoS objectives (discussed further in **Section 4**).

3.2.5 On 23 June 2016, the EU referendum took place and the people of the United Kingdom voted to leave the European Union. Until exit negotiations are concluded, the UK remains a full member of the European Union and all the rights and obligations of EU membership remain in force. During this period, the Government will continue to negotiate, implement and apply EU legislation. The outcome of these negotiations will determine what arrangements apply in relation to EU legislation in future once the UK has left the EU.

Table 3.2 Summary of Key Objectives Identified from the Review of Plans and Programmes Relevant to the AoS

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
1. Biodiversity and Nature Conservation	**International:** • to protect international/European protected wildlife areas (including Special Areas of Conservation, Special Protection Areas and Ramsar sites); • to contribute to the conservation of global biodiversity; • to ensure the conservation and enhancement of natural heritage including wetland conservation; • to ensure the conservation of biodiversity in order to contribute to the health and wellbeing of the population; • to identify where operators are financially liable for threats of or	Objective 1: Biodiversity and Nature Conservation Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 5: Water Quality Objective 6: Water Quantity Objective 7: Flood Risk and Coastal Change Objective 10: Climatic Factors

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
	actual damage to the environment under the "polluter pays" principle; and • to anticipate, prevent and act on causes of significant reduction or loss of biodiversity. **UK, England, Scotland and Wales:** • to conserve and enhance biological diversity within the UK; • to ensure that the quality of habitats and biodiversity is enhanced or at least conserved and take account of key priority habitats and species in decision making; • to protect the network of nationally protected wildlife areas (including Sites of Special Scientific Interest); • to create an ecological network which is resilient to changing pressures; • to ensure new developments contribute to a net gain in the value of nature; and • to safeguard vulnerable non-renewable resources for future generations.	
2. Population, Economics and Skills	**International:** • to achieve economic development and reduction of inequalities whilst adhering to the principles of social and environmental justice and sustainable development; • to promote full employment, quality and productivity at work and promote inclusion by addressing disparities in access to labour markets; • to promote the economic development of disadvantaged areas within the European Union; • to grant public rights to information, public participation and access to justice; and • to undertake appropriate consultation with consultation bodies and the public. **UK, England, Scotland and Wales:** • to promote economy and efficiency in water infrastructure investment decisions and value to consumers; • to create strong, prosperous and sustainable communities;	Objective 2: Population, Economics and Skills Objective 3: Human Health

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
	• to narrow the gap between deprived neighbourhoods and the rest of the UK; • to remove barriers to growth; • to develop and support successful, thriving, safer and inclusive urban and rural communities; • to support the transition to a low carbon economy; • to develop a culture of innovation and research and development; and • to enhance educational attainment and skills.	
3. Human Health	**International:** • to ensure children have safe water and clean air; • to ensure that measures to improve the health and wellbeing of the population are appropriately supported; • to preserve, protect and improve the quality of the environment and to protect human health; • to promote good health throughout the lifespan of the population; • to reduce inequities in health; • to prevent critical health effects as a result of high levels of noise in and around dwellings; and • to avoid, prevent or reduce harmful effects including annoyance due to exposure to environmental noise. **UK, England, Scotland and Wales:** • to ensure a supply of wholesome water; • to reduce and where possible avoid the effects and causes of statutory nuisance and to comply with all relevant UK environmental legislation; • to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business; • to ensure noise reduction occurs where there may be adverse impacts of noise on human health; • to protect and enhance the quality of the environment, including the availability of green space; • to promote good health and good quality of life through the effective	Objective 2: Population, Economics and Skills Objective 3: Human Health Objective 5: Water Quality Objective 8: Air Quality Objective 9: Noise

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
	management of noise in the context of Government policy on sustainable development; and • to maintain and enhance public and worker safety.	
4. Land Use, Geology and Soils	**International:** • to protect soil on the basis of the principles of: preservation of soil functions; prevention of soil degradation (and mitigation of its effects); and restoration of degraded soils; • to take precautionary measures where soil function may be affected; • to identify areas at risk of erosion, organic matter decline, salinisation, compaction and landslides; and • to limit the introduction of dangerous substances into soils and to avoid accumulation in soil that would hamper soil functions and create a risk to human health and the environment. **UK, England, Scotland and Wales:** • to ensure contaminated land is identified and remediated where appropriate; • to protect and preserve the environment and guard against pollution to land; • to preserve, where possible, the best and most versatile agricultural land; • to promote more sustainable patterns of development; • to adopt a sustainable approach to land use though consideration of: economic development, social inclusion, environmental protection and prudent use of resources; • to promote development of previously developed land; • to protect and enhance geological conservation interests and soils; • to safeguard workable resources and ensure that an adequate and steady supply is available to meet the needs of the construction, energy and other sectors; and • to secure the sustainable restoration of sites to a relevant use after operation has ceased.	Objective 1: Biodiversity and Nature Conservation Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 5: Water Quality Objective 6: Water Quantity

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
5. Water Quality	**International**: • to ensure that there is no deterioration to the quality of freshwater and marine environments; • to ensure that the water and ecological quality of freshwater and marine environments is conserved and enhanced; • to ensure sustainable use of water resources and reduced pollution and physical impacts; • to protect the environment from the adverse effects of urban waste water discharges and discharges from industrial processes; • to prevent the pollution of groundwater; and • to protect the health of European water consumers. **UK, England, Scotland and Wales:** • to protect and enhance the water environment in a way that allows it to adjust flexibly to a changing climate; • to manage water resources sustainably without causing environmental damage; • to maintain and enhance water quality; • to maintain and enhance the quality of water sources; • to understand and manage diffuse pollution sources; and • to improve the quality of the UK water environment and the ecology which it supports.	Objective 1: Biodiversity and Nature Conservation Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 5: Water Quality Objective 6: Water Quantity
6. Water Quantity	**International:** • to encourage the sustainable use of water resources and protect aquatic ecology, drinking water and bathing waters; • to facilitate the integrated management of both the coastal zone and river basin districts to ensure sustainable use and protection of resources; and • to encourage the uptake of sustainable drainage systems (SuDS). **UK, England, Scotland and Wales:**	Objective 1: Biodiversity and Nature Conservation Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 5: Water Quality Objective 6: Water Quantity

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
	• to reduce pressure on the environment caused by water taken for human use; • to promote water use efficiency; • to protect vital water supply infrastructure; • to protect and enhance the water environment in a way that allows it to adjust flexibly to a changing climate; • to secure long term resilience of water supplies to the impacts of drought and climate change; and • to increase water efficiency throughout the cycle of abstraction, treatment, supply and use.	
7. Flood Risk and Coastal Change	**International:** • to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity; and • to provide a consistent approach to managing flood risk across Europe. **UK, England, Scotland and Wales:** • to reduce the threat of flooding to people and their property; • to avoid inappropriate development in areas at risk of flooding; • to sustainably manage risks from flooding and coastal erosion; • to ensure that policies and decisions in coastal areas are based on an understanding of coastal change over time; • to enable an appropriate and consistent approach to marine planning across UK waters, and to ensure the sustainable use of marine resources and the strategic management of marine activities from renewable energy to nature conservation, fishing, recreation and tourism; and • to prevent new development from being put at risk from coastal change.	Objective 2: Population, Economics and Skills Objective 3: Human Health Objective 5: Water Quality Objective 6: Water Quantity Objective 7: Flood Risk and Coastal Change Objective 10: Climatic Factors
8. Air Quality	**International:** • to promote cleaner transport technologies and manage the demand for transport to prevent	Objective 1: Biodiversity and Nature Conservation Objective 3:Human Health Objective 4: Land Use, Geology and Soils

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
	detrimental effects to human health from air pollution; • to ensure that air quality is enhanced or at least maintained and ensure that measures are adopted to support continued air quality standards; • to monitor and reduce trans-boundary atmospheric pollution; • to maintain air quality where it is good and improving; • to attain levels of air quality that do not give rise to significant negative impacts on, and risks to, human health and the environment; and • to reduce emissions from industrial processes. **UK, England, Scotland and Wales:** • to improve air quality and reduce the impact of air pollution on human health; • to improve air quality and reduce the impact of air pollution on biodiversity; and • to ensure new development is appropriate for its location and takes into account the effects of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution.	Objective 5: Water Quality Objective 6: Water Quantity Objective 8: Air Quality
9. Noise	**International:** • to ensure that measures to improve the health and wellbeing of the population are appropriately supported; • to preserve, protect and improve the quality of the environment and to protect human health; • to prevent critical health effects as a result of high levels of noise in and around dwellings; and • to avoid, prevent or reduce harmful effects including annoyance due to exposure to environmental noise. **UK, England, Scotland and Wales:** • to reduce, and where possible avoid, the effects and causes of statutory nuisance and to comply with all	Objective 1: Biodiversity and Nature Conservation Objective 2: Population, Economics and Skills Objective 3: Human Health Objective 9: Noise

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
	relevant UK environmental legislation; • to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business; and • to ensure noise reduction occurs where there may be adverse impacts of noise on human health.	
10. Climatic Factors (including climate change and adaptation)	**International:** • to prevent "dangerous" human interference with the climate system, namely through reductions in the emissions of greenhouse gases; • to promote renewable energy sources; • to promote sustainable development with regards to energy development, efficiency and consumption, transportation, industrial development, terrestrial and marine resource development and land use; • to reduce emissions of carbon dioxide and combat the serious threat of climate change; • to enable Europe's transition to a low-carbon economy and increase its energy security; and • to ensure that energy efficiency measures are put in place and, where possible, renewables are employed to contribute to appropriate climate change targets. **UK, England, Scotland and Wales:** • to improve carbon management and help the transition towards a low carbon economy; • to promote climate change risk management and adaptation in all aspects of business to ensure future resilience for communities, businesses and the environment; • to pursue new development in places that are resilient to climate change and in ways that are consistent with social cohesion and inclusion; • to conserve and enhance biodiversity, recognising that the distribution of habitats and species will be affected by climate change;	Objective 1: Biodiversity and Nature Conservation Objective 2: Population, Economics and Skills Objective 3: Human Health Objective 5: Water Quality Objective 6: Water Quantity Objective 7: Flood Risk and Coastal Change Objective 8: Air Quality Objective 10: Climatic Factors Objective 12: Traffic and Transport

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
	• to deliver flexibility through different climate change adaptation pathways; • to reduce energy consumption; and • to minimise detrimental effects on the climate from greenhouse gases and maximise resilience to climate change.	
11. Waste and Resources	**International:** • to adopt waste management principles such as the "polluter pays principle", the "waste hierarchy" and "circular economy"; • to protect human health and the environment against harmful effects caused by the collection, transport, treatment, storage and tipping of waste; • to help Europe become a recycling society that seeks to avoid waste and uses waste as a resource; • to ensure the prudent use of resources; and • to ensure there are effective defences against potential hazards so that individuals, society and the environment are protected now and in the future. **UK, England, Scotland and Wales:** • to decouple waste growth (in all sectors) from economic growth and put more emphasis on waste prevention and re-use; • to increase diversion from landfill of municipal and non-municipal waste and secure better integration of treatment for all waste; • to ensure waste is disposed of as near as possible to the place of production; • to ensure the layout and design of new development supports sustainable waste management; • to make the best use of resources currently in use, reducing as far as practicable the quantity of material used and waste generated, and using as much recycled and secondary material as possible, before securing the remainder of material needed through new primary extraction; • to safeguard workable resources and ensure that an adequate and steady supply is available to meet the needs	Objective 1: Biodiversity and Nature Conservation Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 5: Water Quality Objective 6: Water Quantity Objective 10: Climatic Factors Objective 11: Waste and Resources

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
	of the construction, energy and other sectors; • to minimise the impacts of aggregate extraction on local communities, built and natural heritage, and the water environment; and • to place higher activity waste out of reach and therefore improve security.	
12. Traffic and Transport	**International:** • to achieve a 60% cut in transport emissions by 2050 through: no more conventionally-fuelled cars in cities; 40% use of sustainable low carbon fuels in aviation; and a 50% shift of medium distance intercity passenger and freight journeys from road to rail and waterborne transport. **UK, England, Scotland and Wales:** • to encourage sustainable local travel and economic growth by making public transport and cycling and walking more attractive and effective, promoting lower carbon transport and tackling local road congestion; • to integrate planning and transport to promote more sustainable transport choices, promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling and to reduce the need to travel, especially by car; • to promote patterns of development which optimise the use of existing infrastructure, reduce the need to travel, provide safe and convenient opportunities for walking and cycling for both active travel and recreation, enable the integration of transport modes and facilitate freight movement by rail or water; and • to deliver national networks that meet long term needs, supporting a prosperous and competitive economy and improving overall quality of life, as part of a wider transport system.	Objective 1: Biodiversity and Nature Conservation Objective 2: Population, Economics and Skills Objective 3: Human Health Objective 8: Air Quality Objective 12: Traffic and Transport
13. Cultural Heritage	**International:** • to identify, protect and preserve World Heritage Sites;	Objective 2: Population, Economics and Skills Objective 4: Land Use, Geology and Soils Objective 13: Cultural Heritage Objective 14: Landscape and Townscape

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
	• to protect and sustain the historic environment for the benefit of current and future generations; • to identify and protect important heritage features; and • to collect and disseminate scientific information on cultural and archaeological heritage to aid conservation and public awareness. **UK, England, Scotland and Wales:** • to protect listed buildings, scheduled monuments and buildings within conservation areas; • to protect and promote stewardship of the historic environment; • to promote positive planning and management to bring about sensible solutions to the treatment of sites with archaeological remains and to reduce the areas of potential conflict between development and preservation; • to protect heritage assets and their wider settings; and • to safeguard internationally and nationally-designated historically or culturally significant sites.	
14. Landscape and Townscape	**International:** • to ensure that development is 'appropriate' particularly in relation to protected landscapes; and • to protect, manage and plan for landscape change throughout Europe. **UK, England, Scotland and Wales:** • to conserve and enhance nationally designated landscapes (Areas of Outstanding Natural Beauty and National Parks); • to maintain the character of the undeveloped coast, protecting and enhancing its distinctive landscapes, particularly in areas defined as Heritage Coast; • to provide public access to the countryside and promote sustainable farming and protection of wildlife; • to retain attractive landscapes, and enhance landscapes near to where people live; • to improve damaged and derelict land around towns;	Objective 1: Biodiversity and Nature Conservation Objective 2: Population, Economics and Skills Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 13: Cultural Heritage Objective 14: Landscape and Townscape

Topic	Summary Objectives from Other Plans and Programmes	AoS Objectives Link (see Section 4)
	• to work within the framework of landscape to help shape future places and manage change everywhere; and • to retain land in agricultural, forestry and related uses.	

3.3 Analysis of the Baseline

3.3.1 An essential part of the SEA compliant AoS process is to identify the current state of the environment and its likely evolution under a 'business as usual' scenario. Only with sufficient knowledge of the existing baseline conditions can the likely significant effects of the draft NPS be identified and appraised. Compliance with the SEA Directive also requires that the actual effects of implementing the NPS on baseline conditions are monitored.

3.3.2 To inform the baseline analysis contained in **Appendix B**, information has been used from a variety of sources including, amongst others: Defra; the Department for Business, Energy and Industrial Strategy (BEIS); the Environment Agency; Natural England; Historic England; the Office for National Statistics (ONS); Welsh Government; Natural Resources Wales (NRW); and the Scottish Environment Protection Agency (SEPA). Consultation responses received on the initial AoS Scoping Report have also been taken into account and **Appendix B** updated as appropriate in order to ensure that the baseline evidence is sufficiently robust to support the AoS the draft NPS.

3.3.3 As set out above, the analysis of the baseline and its likely evolution represents a 'business as usual' scenario in which an NPS for Water Resources is not designated. This is in order to provide the basis for the assessment of the draft NPS. The baseline contained in **Appendix B** is separate and distinct from the 'no NPS' reasonable alternative outlined in **Section 2** in which it is assumed that nationally significant water resource infrastructure would still come forward for development consent and implementation but without the explicit guidance of an NPS.

3.4 Key Issues Relevant to the Draft National Policy Statement for Water Resources Infrastructure

3.4.1 From the analysis of current and projected baseline conditions, a number of issues have been identified as being relevant to the draft NPS. These are summarised in **Table 3.3**. Against each topic, the reference to the AoS objectives indicates how these issues have been reflected within the appraisal framework (see **Section 4**).

Table 3.3 Key Issues Relevant to the NPS for Water Resources Infrastructure

Topic	Summary of Key Issues	AoS Objectives link (see Section 4)
1. Biodiversity and Nature Conservation	<u>Relevance to Water Resources Infrastructure</u> • The construction of water resources infrastructure can affect biodiversity and ecosystem resilience. Impacts may be direct (for example, the loss of,	Objective 1: Biodiversity and Nature Conservation Objective 3: Human Health

Topic	Summary of Key Issues	AoS Objectives link (see Section 4)
	or damage to, habitats and species) or indirect (for example, disturbance due to noise and emissions to air associated with construction works). • The operation of water resources infrastructure can have a range of positive and negative impacts on habitats and species and wider ecosystem resilience due to, for example, changes in hydrology, changes in water chemistry and the spread of invasive non-native species. Water infrastructure can contribute positively to biodiversity, introducing new features that can provide opportunities for nature and wildlife in the medium to long term. • Discharges associated with the construction and operation of water resources infrastructure e.g desalination can adversely affect marine habitats. <u>Key Trends</u> • Special Areas of Conservation (SACs), Sites of Community Importance (SCIs), Special Protection Areas (SPAs) and Ramsar sites are important for biodiversity at the international level. The total extent of land and sea in the UK protected by national and international designations has increased from 10.8 million hectares in December 2010 to 17 million hectares at the end of July 2015, comprising 2.6 million hectares on land and 14.4 million hectares at sea. • Since 2005, the percentage of features or area of Areas/Sites of Special Scientific Interest (A/SSSIs) in favourable or recovering condition has increased from 67% to 84% in 2010 and to 94.3% in 2017. This change reflects improved management of sites, but may also be affected by a greater number of sites/features having been assessed over time. The majority of protected areas on land are A/SSSIs, so the condition indicator is not representative of marine sites. • The annual review of UK Biodiversity Indicators comprises 51 measures, of which 5 are not assessed in the long term and 8 are not assessed in the short term. Of the 46 long-term measures, 22 show an improvement, compared to 13 of the measures that were deteriorating. Of the 43 short term measures, 17 show an improvement, as compared to 10 in decline. Measures that improved or deteriorated in the short term have not necessarily continued to improve or deteriorate respectively in the long term. • The Joint Nature Conservation Committee's (JNCC) third review of the UK's SPA network has identified that whilst total numbers of breeding seabirds / waterbirds, and of non-breeding waterbirds, have increased, total numbers of breeding birds of prey have declined. • Birds in the UK are showing changes in abundance and distribution, predominantly moving northwards, in a way that is consistent with a changing climate. • Key pressures and risks in respect of biodiversity and nature conservation that are relevant include, inter-alia: o population growth; o habitat loss and fragmentation by development; o agricultural intensification and changes in agricultural management practices; o water abstraction, drainage or inappropriate river management; o lack of appropriate habitat management; o atmospheric pollution (acid precipitation, nitrogen deposition);	Objective 4: Land Use, Geology and Soils Objective 5: Water Quality Objective 6: Water Quantity Objective 7: Flood Risk and Coastal Change Objective 10: Climatic Factors

Topic	Summary of Key Issues	AoS Objectives link (see Section 4)
	○ water pollution from both point and wider (diffuse) agricultural sources; ○ climate change and sea level rise; ○ recreational pressure and human disturbance; and ○ invasive and non-native species.	
2. Population, Economics and Skills	Relevance to Water Resources Infrastructure • The growing population within the UK will increase population densities and, in-turn, would be expected increase the pressure on water resources. • Long-term growth of the economy would be expected to lead to an increase in demand for water for commercial and industrial purposes. In turn, the risk of drought or interruptions to accessing water may pose a risk to economic productivity. • The construction of large scale water resources infrastructure in particular can represent a significant capital investment with the potential to create employment opportunities, deliver supply chain benefits and contribute to skills development in the working population. • The operation of water resources infrastructure can support long term socio-economic growth by ensuring sufficient supplies of water are made available to meet demand. • The affordability of water, protection of vulnerable customers and delivering best value for money is a key consideration in water company investment decisions. • The construction and operation of water resources infrastructure can adversely affect businesses and communities, principally due to disruption. • Consumer preference and consumer behaviour can have a strong influence on the demand for water resources. Key Trends • The current UK population is generally increasing and is projected to reach 74.3 million by 2039, a rise of 9.7 million people. Assumed net migration accounts for 51% of the projected increase, with natural increase (more births than deaths) accounting for the remaining 49% of growth. • The increase in population is anticipated to increase demand for water resources, particularly in London and the south east where not only is the population expected to increase most rapidly, these areas also experience the highest levels of water stress. • The respective indicators and areas of multiple deprivation in England, Scotland and Wales are similar in that there continues to be deprivation in specific areas. This suggests that the affordability of water bills will remain an issue for certain communities in the UK. Research by the Consumer Council for Water in 2015 revealed that 12% of customers said they were struggling to pay their water bills and which disproportionately affects those on low incomes. This trend could be exacerbated by increasing living costs. • There are current uncertainties over future market conditions, following the UK's vote to leave the EU; however, as the Bank of England highlights, whilst financial conditions are currently stable, there are a number of possible exit scenarios from the EU that could test the resilience of the financial system.	Objective 2: Population, Economics and Skills Objective 3: Human Health
3. Human Health	Relevance to Water Resources Infrastructure	Objective 2: Population, Economics and Skills

Topic	Summary of Key Issues	AoS Objectives link (see Section 4)
	• A reliable source of clean water is required for basic sanitation and to ensure human health. • The increase in the severity of drought, particularly in the south and east of England, poses a risk to health. • The detection and removal of chemicals in the drinking water supply, or in treated waste water returned to the environment, is an important aspect of maintaining a wholesome water supply. • Certain aspects of water resources infrastructure, such as reservoirs, can provide valuable recreational opportunities, both for water sports and for users of the associated land such as walkers and cyclists. • The construction and operation of water resources infrastructure can have adverse effects on human health for example, due to noise disturbance or loss of open space. <u>Key Trends</u> • Health inequalities exist in many communities. This is due to a number of factors (and the interplay between them) including housing quality, economic wellbeing, employment, lifestyle, heredity factors, cultural and environmental factors. • Sustained exposure to elevated air pollution levels (including exposure to elevated concentrations of particulate matter, oxides of nitrogen and sulphur) contributes to respiratory illness. • Whilst relatively uncommon, the freshwater environment poses a number of health risks that can be easily exacerbated if the environment is poorly managed.	Objective 3: Human Health
4. Land Use, Geology and Soils	<u>Relevance to Water Resources Infrastructure</u> • Soils are a non-renewable resource vulnerable to changes in both hydrology and land use. • Hydrogeology will affect the distribution and movement of groundwater and surface water and is a key consideration for water resources planning. • The construction of water resources infrastructure can affect land use and soil. Impacts may be direct (for example, the loss of, or damage to, land and soil from new development) or indirect (for example, the location of new infrastructure affecting adjacent land uses). The appropriate management and control of soils and sediments that are excavated, moved and/or stored during construction is key to their long-term sustainability. <u>Key Trends</u> • The principal land uses in the UK are grassland, arable/horticulture and forestry. The 2011 UK National Ecosystem Assessment classifies 6.8% of the UK's land area as urban. • Approximately 1.6% of the land in the UK has been affected by contamination from industrial activity, although this is progressively being addressed as sites are redeveloped. • Disturbance of contaminated sites carries the risk of pollution pathways being created or re-opened for any existing ground contamination. • There is currently increasing pressure on rural and agricultural land from developers as urban areas expand. Future population growth leading to an increase in the need for housing and related urban development infrastructure will put more pressure on protected land including important geological sites. • Soils in England continue to be affected by human actions including intensive agriculture, historic levels of industrial pollution and urban	Objective 1: Biodiversity and Nature Conservation Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 5: Water Quality Objective 6: Water Quantity

Topic	Summary of Key Issues	AoS Objectives link (see Section 4)
	development, making them vulnerable to erosion (by wind and water), compaction and loss of organic matter. • As the climate (including temperature and rainfall patterns) changes in the future, it is likely that soils have the potential to be further degraded, as a result of both the direct and indirect impacts of climate change.	
5. Water Quality (including surface and ground water quality and availability)	<u>Relevance to Water Resources Infrastructure</u> • Reliable access to water of good quality is an essential aspect of water resources planning. • The construction of water resources infrastructure would be expected to help ensure a robust future supply of good quality water in a changing climate. • The construction and operation of water resources infrastructure can have adverse impacts on water quality due to, for example, pollution. • The operation of water resources infrastructure can have both positive and negative impacts on water quality associated with, in particular, changes to water levels as a result of abstraction or discharge. This in-turn can affect the resilience of ecosystems. • The historic pollution of groundwater and nitrate concentrations present an issue for water resources infrastructure and ensuring drinking water standards are met. <u>Key Trends</u> • Coastal, estuarine and river water quality has improved since 1990. • Many waterbodies are subject to pressure from multiple sources including rural diffuse pollution, waste water discharges, acidification and urban diffuse pollution, that pose a risk to water quality. • The percentage of surface water bodies classified under the Water Framework Directive as having 'high' or 'good' surface water status between 2012 and 2017 decreased from 36% to 35%. There is a need to prevent the deterioration of Water Framework Directive waterbodies, achieve protected area objectives and achieve water body status objectives. • There is a legacy of groundwater pollution in the UK from historical mining and other industrial activities, although this is progressively being addressed as sites are remediated as part of site redevelopment. • The area of England at potential risk from agricultural nitrate pollution designated as Nitrate Vulnerable Zones (NVZs) remains largely unchanged from 2013 at about 58%. • Long term population and housing growth will increase pressure on surface water and groundwater quality. • Climate change is expected to have significant impacts on the water environment. Changes in the level of rainfall, the potential for increased droughts and the more intense storms are expected to pose long term challenges to the maintenance of water quality standards.	Objective 1: Biodiversity and Nature Conservation Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 5: Water Quality Objective 6: Water Quantity
6. Water Quantity	<u>Relevance to Water Resources Infrastructure</u> • There is growing pressure on water resources in parts of the UK, particularly the south east and east of England. • The construction of water resources infrastructure would be expected to increase the volume and resilience of the water supply.	Objective 1: Biodiversity and Nature Conservation Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 5: Water Quality

Topic	Summary of Key Issues	AoS Objectives link (see Section 4)
	• The volume and flow of water significantly affects ecological functioning and the broader environment and can be affected (potentially positively or negatively) by water resources infrastructure through, for example, changes in supply and abstraction. Key Trends • There has been a downward trend in the amount of water that households are using each day (decreasing from 145.8 litres per person per day (lpd) in 2011/12 to 139.6 lpd in 2015/16). However, many water companies have forecast an increase in per capita consumption in their WRMPs. As such, there is an ongoing need to promote water efficiency measures (including metering). • Average actual leakage levels (mega litres per day) have remained broadly level for the last five years and further opportunities exist to reduce leakage rates including using a variety of innovative measures. • Demand for water is expected to increase from a growing population alongside industrial, agricultural and commercial pressures. Water resources in parts of the UK, particularly the south east and east of England are under growing pressure. • The risk of prolonged and more severe droughts is increasing, which in turn risks the increasing use of drought restrictions measures and consequent effects on the environment, people and the economy. • Climate change is expected to have significant impacts on the water environment. Areas where the underlying geology is generally impermeable are expected to be particularly affected as river flows would be likely to fall to low levels in drier periods and quickly react to rainfall episodes.	Objective 6: Water Quantity
7. Flood Risk and Coastal Change	Relevance to Water Resources Infrastructure • Flood risk presents a significant planning issue in the development of major infrastructure projects, both in terms of the infrastructure itself being flooded during its construction and operational phases and the changes to flood risk resulting from the infrastructure, such as increased run-off raising the flood risk in downstream areas. • The operation of water resources infrastructure (e.g. reservoirs) may provide an opportunity to address flood risk issues (for example, by providing extra space for flood water storage). Key Trends • Some 15% of UK properties are at risk from flooding (surface water, river or coastal), although the degree of risk varies. • The UK Climate Change Risk Assessment 2017: Projections of future flood risk projected that the number of residential properties exposed to flooding more frequently than 1:75 years (on average) increases from 860,000 today to between 1.2 million and 1.7 million properties in 2080, depending on the scenario considered. • Sea levels are rising, with worst case scenarios of a 1.9m increase in sea level by 2100 (with up to 0.76m more likely). The south and east of England will experience the greatest effective increases, due to the effects of post-glacial rebalancing. • Many coastal sites (especially in the south and east of the England) are already prone to erosion, due to their underlying geology, coupled with rising sea levels and increased storm intensity. Shoreline Management Plans (in England and Wales) are taking a long term view of coastal change by identifying sustainable management approaches for up to the next 100 years.	Objective 2: Population, Economics and Skills Objective 3: Human Health Objective 5: Water Quality Objective 6: Water Quantity Objective 7: Flood Risk and Coastal Change Objective 10: Climatic Factors

Topic	Summary of Key Issues	AoS Objectives link (see Section 4)
8. Air Quality	Relevance to Water Resources Infrastructure • Air quality is sensitive to changes in traffic volume and emissions from other sources such as construction plant and machinery. Increases in transport movements and works associated with the construction and operation of nationally significant water resources infrastructure could affect air quality, particularly in areas with existing air quality issues. For example, construction traffic can lead to increased nitrate deposition in sensitive habitats. Key Trends • Air quality has improved in the UK over the last sixty years as a result of the switch from coal to gas and electricity for heating of domestic and industrial premises, stricter controls on industrial emissions, higher standards for the composition of fuel and tighter regulations on emissions from motor vehicles. However, poor air quality, particularly due to vehicle emissions, remains an issue for community health and for biodiversity, especially in/downwind of urban areas and major transport networks. • A relatively large number of Air Quality Management Areas are located in urban areas, many of which have been designated due to high NO_2 and PM_{10} levels. • Historical emissions from the combustion of fossil fuels, particularly coal, have resulted in high levels of sulphur and nitrogen deposits in wetter parts of the UK such as northern England and the Welsh uplands. This has resulted in acidification and nitrogen eutrophication in some areas. Around a third of the UK land area is sensitive to acid deposition and a third to eutrophication[65].	Objective 1: Biodiversity and Nature Conservation Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 5: Water Quality Objective 6: Water Quantity Objective 8: Air Quality
9. Noise	Relevance to Water Resources Infrastructure • The construction and operation of water resources infrastructure is likely to have noise impacts associated with vehicle movements and the operation of plant and machinery. Key Trends • Ambient noise levels are gradually rising in the UK as a result of an increasing, and increasingly mobile, population. This, in turn, increases the value of tranquil places. The cumulative impacts of noise on sensitive groups in local communities may create or exacerbate existing health issues. • There is a need to address noise issues in the UK's most affected communities.	Objective 1: Biodiversity and Nature Conservation Objective 2: Population, Economics and Skills Objective 3: Human Health Objective 9: Noise
10. Climatic Factors (including climate change and adaptation and flood risk)	Relevance to Water Resources Infrastructure • The availability of additional water supplies can increase the resilience of the existing water network and broader environment and support adaptation to the effects of climate change such as drought. • The construction and operation of large scale water resources infrastructure is likely to result in a net increase in energy use and greenhouse gas emissions, noting however that new infrastructure may replace older, less energy efficient infrastructure with higher emissions.	Objective 1: Biodiversity and Nature Conservation Objective 2: Population, Economics and Skills Objective 3: Human Health Objective 5: Water Quality Objective 6: Water Quantity

[65] Eutrophication is the enrichment of an ecosystem with chemical nutrients, typically compounds containing nitrogen and phosphorus, and whilst it can be natural, can also be man-made. Man-made eutrophication is commonly associated with elevated levels of nutrient enrichment arising from waste water treatment works discharges into rivers which can lead to algal blooms, decomposition or organic matter and deoxygenation of waters.

Topic	Summary of Key Issues	AoS Objectives link (see Section 4)
	• The energy requirements associated with different types of water resources infrastructure will vary with the scope for the use of renewable energy greater for certain infrastructure types than for others. • Water resources infrastructure may be vulnerable to the effects of climate change such as flood risk and coastal change. <u>Key Trends</u> • The input of greenhouse gasses (e.g. CO_2, CH_4, N_2O, O_3) resulting from fossil fuel usage, agriculture and other land uses have been linked with atmospheric warming and climate change. • Fossil fuel dependency remains high and is likely to remain so for some time. • Legally binding EU and Government targets (the Climate Change Act 2008 and subsequent revisions, The Carbon Budgets Order 2009) seek to reduce emissions (based on a carbon budget of $MtCO_2$ equivalent) by 80% on 1990 levels by 2050. The Government has confirmed its intention within the Fifth Carbon Budget to reduce UK greenhouse gas emissions by 57% by 2032 relative to 1990 levels. • Changes in temperature and rainfall patterns, along with more frequent extreme weather events, create the situation where a greater degree of resilience will have to be incorporated into plans and proposals. • The UK's Climate Projections (UKCP09) show that the UK as a whole is likely to experience hotter, drier summers, warmer, wetter winters and rising sea levels, particularly in the south east of England. This is likely to have a significant effect on a range of environmental conditions, including the water environment. • Sensitive ecosystems and UK water resources are likely to come under increasing pressure as a result of climate change.	Objective 7: Flood Risk and Coastal Change Objective 8: Air Quality Objective 10: Climatic Factors Objective 12: Traffic and Transport
11. Waste and Resources	<u>Relevance to Water Resources Infrastructure</u> • Large scale infrastructure projects have the potential to generate very high volumes of waste during both construction and operation. This waste should be managed in accordance with the waste hierarchy. • Large scale water resources infrastructure may require both short-term (i.e. during construction) and long-term (i.e. during operation) use of materials that are non-renewable or are imported. In doing, so schemes may have an environmental impact that extends outside the water company operational area. <u>Key Trends</u> • The total amount of municipal and commercial and industrial waste produced each year is likely to decrease in coming years. • The consumption of non-renewable sources will deplete overall stocks and result in a scarcity of resources for future generations.	Objective 1: Biodiversity and Nature Conservation Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 5: Water Quality Objective 6: Water Quantity Objective 10: Climatic Factors Objective 11: Waste and Resources
12. Traffic and Transport	<u>Relevance to Water Resources Infrastructure</u> • The construction and operation of large scale water resources infrastructure projects can result in increased traffic volumes and may involve pipeline works within/across roads which in-turn can lead to an increase in congestion on road networks and driver delay in addition to wide environmental impacts. <u>Key Trends</u> • There are areas of the UK's transport network which are stretched beyond their capacity at peak times.	Objective 1: Biodiversity and Nature Conservation Objective 2: Population, Economics and Skills Objective 3: Human Health Objective 8: Air Quality Objective 12: Traffic and Transport

Topic	Summary of Key Issues	AoS Objectives link (see Section 4)
	• Increasing levels of congestion are being experienced on the UK's road network. • There is a need for investment in transportation infrastructure to meet future demand and support economic growth. • There is a need to reduce the need to travel and facilitate a shift towards more sustainable modes of transport.	Objective 14: Landscape and Townscape
13. Cultural Heritage	Relevance to Water Resources Infrastructure • Wetlands are fragile and vulnerable to subtle changes arising from development that can affect paleoenvironmental deposits and archaeological assets. Other aspects of the wider historic environment that could be affected include disruption to historically important water sources, the flooding or drying of deep archaeological sites and assets such as mills and bridges which can be affected by local water levels. • The construction and operation of large scale water resources infrastructure can have adverse impacts on the significance of heritage assets and archaeological remains both directly (through the loss of, or damage to, assets) or indirectly (through effects on setting). • Cultural landscape is a function of the interaction between human traditions, landscape and the environment and is a highly valued feature of some areas such as National Parks. • Existing water resources infrastructure including, for example, pumping stations and reservoirs can be historically important in their own right. Key Trends • The impact of climate change on wetland heritage is currently poorly understood. Measures introduced to protect and enhance natural environmental qualities (water quality or biodiversity) may also inadvertently threaten wetland heritage if not handled sensitively. • The UK has over 459,000 listed buildings, approximately 33,720 scheduled monuments, 2,416 historic parks and gardens, in excess of 10,259 conservation areas, 58 Protected Wrecks and 86 historic battlefields in England and Scotland (the Welsh inventory is not yet complete) and 28 World Heritage Sites. • The settings of some heritage assets are at risk from new development. • Scheduled monuments in rural areas are at risk from agricultural practices, land disturbance and unrestricted plant, scrub or tree growth.	Objective 2: Population, Economics and Skills Objective 4: Land Use, Geology and Soils Objective 13: Cultural Heritage Objective 14: Landscape and Townscape
14. Landscape and Townscape	Relevance to Water Resources Infrastructure • The construction and operation of large scale water resources infrastructure can have adverse impacts on landscape character, visual amenity and tranquillity. Where works are located in areas of high landscape value (for example, National Parks), these effects could be significant. • Water infrastructure can also contribute positively to landscapes, introducing new features that can provide opportunities for nature and wildlife in the medium to long term. Key Trends • Some 10% of the UK is covered by National Parks, with other designations extending the area of landscape covered by a further 15%. • Key issues that could affect landscape could include the effects of climate change (and effects arising from the increased frequency and intensity of storm and flood events, increased likelihood of droughts and the	Objective 1: Biodiversity and Nature Conservation Objective 2: Population, Economics and Skills Objective 3: Human Health Objective 4: Land Use, Geology and Soils Objective 13: Cultural Heritage Objective 14: Landscape and Townscape

Topic	Summary of Key Issues	AoS Objectives link (see Section 4)
	anticipated increased in wildfires), changes to agricultural practices, new energy infrastructure and development pressures. • Noise and light pollution appears to have increased considerably over the last 30-40 years over much of the UK. The growth of urban areas, road networks and industrial areas are all major contributors to increased light levels.	

3.5 Limitations of the Data

3.5.1 Data have generally been sourced from national bodies to enable comparison between baseline information for England, Scotland and Wales. However, in some cases baseline information collected by national bodies differs meaning that data are not directly comparable.

3.5.2 The information used has been sourced, so far as is possible, from the most recent datasets available utilising a wide range of authoritative and official sources. It is important to acknowledge that there are variable time lags between raw data collection and its publication. Consequently, at the time of this AoS Report's publication, the baseline or predicted future trends may have varied from those described above and in **Appendix B**.

4. Appraisal Methodology

4.1 Introduction

4.1.1 This section describes the approach taken to undertaking the AoS of the draft NPS (and the 'No NPS' reasonable alternative). It draws on the information presented in **Section 2**, **Section 3** and **Appendix B**, as well as the responses received to consultation on the initial AoS Scoping Report, to define the scope of the appraisal (in terms of what has been appraised and the environmental and socio-economic issues considered) and sets out the appraisal framework. The appraisal framework includes AoS objectives and guide questions supported by definitions of significance that are intended to help the reader understand how the appraiser has determined the effects of the draft NPS against the objectives. The section also highlights the difficulties encountered during the appraisal process.

4.2 Scope of the Appraisal

Topics

4.2.1 The range of potential environmental, social and economic effects under consideration has been informed primarily by the SEA Directive and through giving due consideration to the nature and scope of the potential significant environmental effects resulting from the draft NPS. As discussed in **Section 3.1**, Annex I of the SEA Directive and Schedule 2 of the SEA Regulations require that the assessment includes information on the "*likely significant effects on the environment, including on issues such as: biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues referred to*". The scope of the draft NPS presented in **Section 2** and the outputs from the review of other relevant plans and programmes and baseline information have also been used to define the scope of the appraisal.

4.2.2 In **Table 4.1**, each of the 12 SEA topic areas listed above are considered in turn. All of these topic areas have been addressed in the AoS.

4.2.3 It should be noted that, whilst the appraisal of the draft NPS has been presented on a topic-by-topic basis, where there are linkages between the impacts and effects identified (for example, the potential impact of water resource extraction on water dependent habitats), these have been highlighted in the appraisal commentary as appropriate.

Table 4.1 Basis for Scoping out Topic Areas from the AoS

SEA Topic Area	Include in Draft Water Resources NPS AoS?	AoS Topic Area
Biodiversity	Yes	Biodiversity and Nature Conservation
Population	Yes	Population, Economics and Skills Traffic and Transport
Human Health	Yes	Human Health Air Quality

SEA Topic Area	Include in Draft Water Resources NPS AoS?	AoS Topic Area
		Noise
Fauna	Yes	Biodiversity and Nature Conservation
Flora	Yes	Biodiversity and Nature Conservation
Soils	Yes	Land use, Geology and Soils
Water	Yes	Water Quality Water Quantity
Air	Yes	Air Quality Traffic and Transport
Climatic Factors	Yes	Climatic Factors Flood Risk and Coastal Change
Material Assets	Yes	Waste and Resource Management
Cultural Heritage	Yes	Cultural Heritage
Landscape	Yes	Landscape and Townscape

Geographic Scope

4.2.4 The AoS has considered the potential effects of the draft NPS in England, Scotland and Wales (including in the marine environment where relevant). This reflects the potential for water resource management schemes in England to impact upon adjacent areas in Scotland and Wales due to the transboundary nature of hydrological systems, such as rivers flowing across borders.

4.2.5 In order to comply with the transboundary consultation requirements of the SEA Directive (article 7) and SEA regulation 14 (1), consideration has been given to whether any likely significant negative effect would arise and whether there would be an effect on other areas and states. No such effects have been identified and no effects are anticipated on other states arising from the NPS. Further consideration of transboundary effects is presented in **Section 5**.

4.2.6 As noted in **Section 1**, the AoS relates to the NPS only and has not, therefore, appraised any site-specific proposals for nationally significant water resources infrastructure.

Timescales

4.2.7 When considering the timing of potential effects of the draft NPS, the appraisal has classified effects as 'short,' 'medium' or 'long-term.' This reflects an intention to capture the differences that could arise at different timescales, consistent with the requirements of Annex II (2) of the SEA Directive where the assessment of the effects should have regard to "*the probability, duration, frequency and reversibility of the effects*".

4.2.8 **Table 4.2** below summarises the timescales applied in the AoS. Water resources infrastructure of the scale to qualify as a nationally significant infrastructure project, such as reservoirs and dams, are typically built with the intention of lasting for significant periods (as long as correct maintenance procedures are followed). Long term effects are considered to be those over 30 years in duration.

Beyond this, for example using a 50 year time horizon, effects are difficult to predict due to the level of uncertainty with regards to potential future technology.

Table 4.2 Duration of Short, Medium and Long Term

Estimated Length (years)	Duration
0-5 years	Short
6-30 years	Medium
Over 30 years	Long

4.3 Appraisal Framework

4.3.1 Establishing appropriate AoS objectives and guide questions is central to appraising the effects of the draft NPS. The AoS objectives and guide questions used in the appraisal of the draft NPS reflect the topics contained in Annex I of the SEA Directive and have been informed by:

- the review of plans and programmes and the associated environmental protection objectives identified (see **Section 3** and **Appendix B**);
- the baseline information and key sustainability issues (see **Section 3** and **Appendix B**);
- a broad understanding of the likely generic effects arising from the construction and operation of water resources infrastructure; and
- responses received to consultation on the initial AoS Scoping Report.

4.3.2 Broadly, the AoS objectives present the preferred environmental social and economic outcomes, which typically involve minimising detrimental effects and enhancing positive effects. Associated guide questions have been developed for each AoS objective to provide a detailed framework against which the draft NPS can be appraised. The appraisal objectives and guide questions are presented in **Table 4.3**. For the avoidance of doubt, the AoS objectives are not the same as the proposed NPS objectives.

Table 4.3 Appraisal Objectives and Guide Questions

AoS Topic Area	AoS Objectives	Guide Questions	SEA Directive Topics
Biodiversity and Nature Conservation	1. To protect and enhance biodiversity (habitats, species and ecosystems) working within environmental capacities and limits.	• Will the Water Resources NPS protect and/or enhance internationally designated nature conservation sites e.g. Special Areas of Conservation, Special Protection Areas, Ancient Woodlands, Marine Protected Areas and Ramsar Sites? • Will the Water Resources NPS protect and/or enhance nationally designated nature conservation sites e.g. Sites of Special Scientific Interest? • Will the Water Resources NPS have an impact on Marine Conservation Zones? • Will the Water Resources NPS protect and/or enhance priority species and habitats or species of conservation concern? • Will the Water Resources NPS affect non-designated	Biodiversity, Flora and Fauna

AoS Topic Area	AoS Objectives	Guide Questions	SEA Directive Topics
		habitats and species including protected species? • Will the Water Resources NPS have an impact on fisheries? • Will the Water Resources NPS lead to a change in the ecological quality of habitats due to changes in groundwater/river water quality and/or quantity? • Will the Water Resources NPS affect the structure, function and resilience of natural systems (ecosystems)? • Will the Water Resources NPS affect the ecological network of protected areas and the connectivity between sites? • Will the Water Resources NPS lead to a net gain in biodiversity? • Will the Water Resources NPS affect public access to areas of wildlife interest? • Will the Water Resources NPS affect the spread or transfer of invasive non-native species?	
Population, Economics and Skills	2. To support a strong, diverse and stable economy through the provision of nationally significant water resources infrastructure with opportunities to improve skills and employment, minimise disturbance to local communities and maximise positive social impacts.	• Will the Water Resources NPS help to ensure that sufficient water resources infrastructure is in place to meet increased demand associated with population growth and to support economic development? • Will the Water Resources NPS ensure that an affordable supply of water is maintained and that vulnerable customers are protected? • Will the Water Resources NPS promote economically efficient solutions that deliver best value for money? • Will the Water Resources NPS affect opportunities for investment in education and skills development? • Will the Water Resources NPS reduce the effects of drought restrictions on the economy? • Will the Water Resources NPS affect existing abstractors? • Will the Water Resources NPS affect the number or types of jobs available in local economies? • Will the Water Resources NPS help to improve the resilience of other national infrastructure? • Will the Water Resources NPS affect the social infrastructure and amenities available to local communities?	Population
Human Health	3. To ensure the protection and enhancement of human health and wellbeing.	• Will the Water Resources NPS adversely affect human health by resulting in increased nuisance and disruption (e.g. as a result of increased noise levels)? • Will the Water Resources NPS disproportionately affect communities already identified as vulnerable / at risk? • Will the Water Resources NPS ensure the continuity of a safe and secure drinking water supply to protect public health? • Will the Water Resources NPS affect opportunities for recreation and physical activity?	Population Human Health

AoS Topic Area	AoS Objectives		Guide Questions	SEA Directive Topics
			• Will the Water Resources NPS maintain surface water and bathing water quality within statutory standards?	
Land Use, Geology and Soils	4.	To conserve and enhance soil and geology and contribute to the sustainable use of land.	• Will the Water Resources NPS have an effect on soil quality/function, variety, extent and/or compaction levels? • Will the Water Resources NPS increase the risk of significant land contamination? • Will the Water Resources NPS have an effect on any known and existing contamination? • Will the Water Resources NPS protect and/or enhance Geological Conservation Sites, important geological features and geophysical processes and functions? • Will the Water Resources NPS change patterns of land use or affect best and most versatile agricultural land?	Soils
Water Quality	5.	To protect and enhance water quality and help achieve the objectives of the Water Framework Directive.	• Will the Water Resources NPS protect and improve surface, ground, estuarine and coastal water quality? • Will the Water Resources NPS prevent the deterioration of Water Framework Directive waterbody status (or potential)? • Will the Water Resources NPS support the achievement of protected area objectives, such as groundwater source protection zones and nitrate vulnerable zones? • Will the Water Resources NPS support the achievement of environmental objectives set out in River Basin Management Plans? • Will the Water Resources NPS ensure a new activity or new physical modification does not prevent the future achievement of good status for a water body?	Water
Water Quantity	6.	To protect and enhance surface and ground water levels and flows and ensure sustainable water resource management.	• Will the Water Resources NPS affect river flows and groundwater levels? • Will the Water Resources NPS reduce the impact of drought measures on the environment? • Will the Water Resources NPS affect demand for water resources? • Will the Water Resources NPS ensure the sustainable and resilient supply of water resources? • Will the NPS affect hydrological functioning such as flow variation?	Water
Flood Risk and Coastal Change	7.	To minimise the risks from coastal change and flooding to people, property, communities and habitats and species, taking into account the effects of climate change.	• Will the Water Resources NPS help to avoid development in areas of flood risk and, where possible, reduce flood risk? Where development in flood risk areas cannot be avoided, will the NPS ensure that appropriate mitigation measures are applied to avoid increasing flood risk and, where possible, reduce flood risk? • Will the Water Resources NPS affect the resilience of infrastructure, places, communities and habitats and species to future flooding? • Will the Water Resources NPS help to avoid development in areas affected by coastal erosion and not affect coastal processes and/or erosion rates?	Water Climatic Factors

AoS Topic Area	AoS Objectives	Guide Questions	SEA Directive Topics
Air	8. To minimise emissions of pollutant gases and particulates and enhance air quality, helping to achieve the objectives of the Air Quality and Ambient Air Quality and Cleaner Air for Europe Directives.	• Will the Water Resources NPS affect air quality? • Will the Water Resources NPS create a nuisance for people or wildlife (for example from dust or odours)?	Air Human Health Biodiversity, Flora and Fauna
Noise	9. To minimise noise pollution and the effects of vibration.	• Will the Water Resources NPS help to minimise noise and vibration effects from construction and operational activities on residential amenity and on sensitive locations and receptors?	Human Health Biodiversity, Flora and Fauna
Climatic Factors	10. To minimise greenhouse gas emissions as a contribution to climate change and ensure resilience to any consequences of climate change.	• Will the Water Resources NPS help to ensure a low carbon design solution to the construction and operation of water resources infrastructure? • Will the Water Resources NPS increase resilience to the effects of climate change? • Will the Water Resources NPS lead to an increase in energy use? • Will the Water Resources NPS affect the ability of species or habitats to adapt to a changing climate? • Will the Water Resources NPS promote climate change adaptation (including rising temperatures and more extreme weather events)?	Climatic Factors
Waste and Resources	11. To minimise waste arisings, promote reuse, recovery and recycling, minimise the impact of wastes on the environment and communities and contribute to the sustainable use of natural and material assets.	• Will the Water Resources NPS maximise re-use and recycling of recovered components and materials? • Will the Water Resources NPS help achieve government and national targets for minimising, recovering and recycling waste? • Will the Water Resources NPS increase the burden on limited natural resources? • Will the Water Resources NPS make best use of existing infrastructure and resources?	Material Assets
Traffic and Transport	12. To minimise the volume of traffic and promote more sustainable transport choices**.**	• Will the Water Resources NPS help to minimise traffic volumes? • Will the Water Resources NPS help to minimise the direct effects of transport such as noise and vibration, severance of communities and wildlife habitats and safety concerns? • Will the Water Resources NPS encourage alternative and sustainable means of transporting freight, waste and minerals, where possible?	Biodiversity, Flora and Fauna Population Human Health
Cultural Heritage	13. To conserve and where appropriate enhance the historic environment including cultural heritage resources, historic buildings and archaeological features and their settings.	• Will the Water Resources NPS affect the significance of internationally and nationally designated heritage assets and their settings? • Will the Water Resources NPS affect non-designated heritage assets, archaeological remains and their settings? • Will the Water Resources NPS conserve or enhance heritage assets and the wider historic environment including landscapes, townscapes, buildings, structures	Cultural Heritage

AoS Topic Area	AoS Objectives	Guide Questions	SEA Directive Topics
		and archaeological remains? • Will the Water Resources NPS avoid damage to important wetland areas with potential for paleoenvironmental deposits? • Will the Water Resources NPS affect the fabric and setting of historic buildings, places or spaces that contribute to local distinctiveness, character and appearances? • Will the Water Resources NPS improve access to, and interpretation, understanding and appreciation of, the significance of heritage assets? • Will the Water Resources NPS affect the heritage of communities?	
Landscape and Townscape	14. To protect and enhance landscape and townscape quality and visual amenity.	• Will the Water Resources NPS have detrimental visual impacts? • Will the Water Resources NPS affect the purposes and/or special qualities of protected/designated/culturally important landscapes and their setting? • Will the Water Resources NPS affect the intrinsic character or setting of local landscapes, townscapes and seascapes? • Will the Water Resources NPS help to minimise light pollution from construction and operational activities on residential amenity and on sensitive locations and receptors? • Will the Water Resources NPS affect public benefits and/or services provided by landscape? • Will the Water Resources NPS affect traditional land management activities that have created unique landscapes? • Will the Water Resources NPS provide opportunities to enhance nationally and locally designated landscapes, townscapes and seascapes and their settings? • Will the Water Resources NPS affect tranquillity? • Will the Water Resources NPS affect public access to open spaces or the countryside?	Landscape Human Health

4.4 Completing and Recording the Appraisal

Appraising the Effects of the Draft NPS

4.4.1 In accordance with the ODPM (now HMCLG) Practical Guide to the SEA Directive[66], the appraisal process has sought to predict the significant effects of the draft NPS. This has been done by identifying the likely changes to the baseline conditions as a result of implementing the draft NPS and the reasonable alternative to it. These changes are described (where possible) in terms of their geographic scale, the timescale over which they could occur, whether the effects would be

[66] ODPM (HMCLG) (2005) *A Practical Guide to the Strategic Environmental Assessment Directive*. Available online at: https://www.gov.uk/government/publications/strategic-environmental-assessment-directive-guidance

temporary or permanent, positive or negative, likely or unlikely, frequent or rare. Where numerical information was not available, the appraisal has been based on professional judgement and with reference to relevant legislation, regulations and policy. More specifically, in undertaking the appraisal, consideration has been given to:

- baseline information including existing social economic and environmental problems and their evolution;
- the likely activities and potential sources of effects associated with the construction and operation of water resources infrastructure;
- the regulatory framework;
- consultation with statutory consultees and other stakeholders;
- the AoS objectives and guide questions; and
- definitions of significance (see below).

4.4.2 The following elements of the draft NPS have been assessed:

- the proposed objectives contained in section 1 of the draft NPS;
- the proposed assessment principles (including criteria on good design) and guidance on impacts contained within sections 3 and 4 the draft NPS;
- the 'no NPS' scenario, which has been identified as a reasonable alternative.

4.4.3 The proposed NPS objectives have been assessed by testing their compatibility with the AoS objectives using a compatibility matrix (presented in **Table 5.1** of this AoS Report). The scoring system used to determine their compatibility is shown in **Table 4.4**.

Table 4.4 Scoring System used in the Compatibility Assessment of Draft NPS Objectives

Score	Compatibility
+	Objectives are potentially compatible.
?	Uncertain if objectives are related.
~	No clear relationship between objectives.
-	Objectives are potentially incompatible.

4.4.4 The proposed assessment principles and guidance on impacts, as well as the 'No NPS' reasonable alternative, have been assessed against the AoS objectives on a topic-by-topic basis to identify likely significant environmental, social and economic effects using an appraisal matrix (see **Table 4.5**). The resulting appraisal and identification of effects has been used to determine the extent to which any principles and generic impacts identified in the draft NPS are sufficient and appropriate to cover the likely effects of water resources infrastructure, along with any proposed mitigation and enhancement measures.

Table 4.5 Appraisal Matrix

Draft NPS Section	Draft NPS	No NPS	Appraisal
Applicant's Assessment	+	+/?	**Draft NPS** *A description of the effects of the Water Resources NPS sub-section on the topic under consideration has been provided here, with reasoning and justification included. Mitigation and enhancement measures have also been identified.*
			No NPS *A description of the effects of the reasonable alternative to the NPS has been provided here, with reasoning and justification included.*
Decision Making	+	+	**Draft NPS**
			No NPS
Mitigation	+/?	+/?	**Draft NPS**
			No NPS
Other Sections of the draft NPS Relevant to Topic			
Summary Appraisal of Likely Significant Effects			**Draft NPS**
			No NPS
Summary of Recommended Mitigation and Enhancement	*A summary of the mitigation and enhancement measures identified through the appraisal has been presented here.*		

4.4.5 The scoring system used in the appraisal is presented in **Table 4.6**.

Table 4.6 Scoring system used in the appraisal of the draft NPS

Score Key:	+ + Significant positive effect	+ Minor positive effect	0 Neutral effect	- Minor negative effect	-- Significant negative effect	? Uncertain effect
NB: where more than one symbol is presented in a box it indicates that the AoS has found more than one score for the category. Where a box is coloured but also contains a '?', this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.						

Guidance on Determining Significance

4.4.6 Topic-specific guidance has been developed for what constitutes a significant effect, a minor effect or a neutral effect for each of the AoS objectives. These definitions of significance have helped to ensure a consistent approach to interpreting the significance of effects and assist the reader in understanding the decisions made by the appraiser. The guidance on significance can be found in the relevant topic chapters in **Appendix B** and are summarised in **Appendix C**. **Table 4.7** shows an example of this guidance along with the symbols used to record the effects within the appraisal.

Table 4.7 Illustrative Guidance for the Appraisal of Significance for Biodiversity and Nature Conservation

Effect	Description	Illustrative Guidance
++	Significant positive	• Option would have a significant and sustained positive effect on European or national designated sites and/or protected species. (e.g. – fully supports all conservation objectives on site, long-term increase in population of designated species); • Option would create new areas of wildlife interest with improved public access in areas where there is a high demand for access to these sites. • Option would lead to a site of importance for nature conservation gaining a favourable status.
+	Positive	• Option would have a minor positive effect on European or national designated sites and/or protected species (e.g. – supports one of the conservation objectives on site, short-term increase in population of designated species); • Option would have a positive effect on local biodiversity (e.g. – through removal of all existing disturbance/pollutant emissions, or creation of new habitats leading to long-term improvement to ecosystem structure and function); • Option would enhance existing public access to areas of wildlife interest in areas where there is some demand for these sites. • Option would have a minor positive effect on the status of a site of importance for nature conservation.
0	Neutral	• Option would not have any effects on European or national designated sites and/or any species (including both designated and non-designated species); • Option would not affect public rights of way or access to areas of wildlife interest.
-	Negative	• Option would have negative effects on local biodiversity (e.g. – through an increase in disturbance/pollutant emissions, or some loss of habitat leading to temporary loss of ecosystem structure and function); • Option would decrease public access to areas of wildlife interest in areas where there is some demand for access to these sites. • Option would have a minor negative effect on the status of a site of importance for nature conservation.
--	Significant negative	• Option would have a negative effect on European or national designated sites and/or protected species (i.e. on the interest features and integrity of the site, by preventing any of the conservation objectives from being achieved or resulting in a long-term decrease in the population of a priority species). These effects could not be reasonably mitigated. • Option would lead to a site of importance for nature conservation losing a favourable status.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Mitigation and enhancement

Identifying effective mitigation and enhancement measures is a fundamental part of the AoS. **Box 4.1** provides information on the mitigation hierarchy that has been followed in undertaking the AoS of the draft NPS. The mitigation hierarchy is based on the principle that it is preferable to prevent the generation of an impact rather than counteract its effects. It therefore suggests that mitigation measures higher up the hierarchy should be considered in preference to those further down the list. The mitigation and enhancement measures proposed from the completion of the appraisal of the draft NPS are collated together in **Appendix E**.

Box 4.1 Mitigation Hierarchy

Mitigation measures should be consistent with the mitigation hierarchy:[67]

- Avoidance – making changes to a design (or potential location) to avoid adverse effects on an environmental feature. This is considered to be the most acceptable form of mitigation.
- Reduction – where avoidance is not possible, adverse effects can be reduced through sensitive environmental treatments/design.
- Compensation – where avoidance or reduction measures are not available, it may be appropriate to provide compensatory measures (e.g. an area of habitat that is unavoidably damaged may be compensated for by recreating similar habitat elsewhere). It should be noted that compensatory measures do not eliminate the original adverse effect, they merely seek to offset it with a comparable positive one.
- Remediation – where adverse effects are unavoidable, management measures can be introduced to limit their influence.
- Enhancement – where there are no negative impacts, but measures are adopted to achieve a positive move towards the sustainability objectives e.g. through innovative design.

Appraisal of Secondary, Cumulative and Synergistic Effects

4.4.7 The SEA Directive, and its implementing regulations in the UK, require that secondary, cumulative and synergistic effects are considered as part of the AoS (see definitions presented in **Table 4.8**).

Table 4.8 Definitions of Secondary, Cumulative and Synergistic Effects

Type of Effect	Definition*
Secondary (or indirect)	Effects that do not occur as a direct result of the draft NPS's implementation, but occur at distance from the direct impacts or as a result of a complex pathway. Examples of a secondary effect of the draft NPS could include the materials (and embodied carbon) used in the construction of the water resources infrastructure (such as a reservoir), or health effects of changes to air quality associated with HGV emissions from the transportation of construction materials.
Cumulative	Effects that occur where several individual activities which each may have an insignificant effect, combine to have a significant effect. Examples of a cumulative effect resulting from the implementation of the draft NPS could include potential effects on a European designated site where a habitat or species is vulnerable and the cumulative effects of disturbance and pollutant emissions arising from development and operation causes a significant impact. Cumulative effects will also include the potential effects (if any) of a proposed activity and any other proposed and consented developments.
Synergistic	Effects that interact to produce a total effect that is greater than the sum of the individual effects. For example, this can occur where the toxicity of two chemicals is greatly increased when they are combined.

*Adapted from SEA guidance, ODPM (MHCLG) (2005)[38]

[67] Institute of Environmental Management and Assessment (2016) *Environmental Impact Assessment: Guide to Delivering Quality Development*. Available from: https://www.iema.net/assets/newbuild/documents/Delivering%20Quality%20Development.pdf

4.4.8 Through the AoS of the constitute elements of the draft NPS, the appraisal of the cumulative effects of the collective implementation of the draft NPS has been completed. Additionally, the effects of the draft NPS in-combination with other plans and programmes has been considered. A matrix similar to that shown in **Table 4.9** has been to summarise the cumulative effects of the draft NPS with other plans and programmes.

Table 4.9 Cumulative Assessment Matrix

AoS Objective	Plan/ Programme 1	Plan/ Programme 1	Plan/ Programme 3	Plan/ Programme 4	Commentary
1.Biodiversity and Nature Conservation *To protect and enhance biodiversity (habitats, species and ecosystems) working within environmental capacities and limits.*	--	-	-	+	*A description of the biodiversity and nature conservation effects of the draft NPS and other plans and programmes in-turn has been be provided here, with reasoning and justification included…*

Score Key:	+ + **Significant** positive effect	+ **Minor** positive effect	0 **Neutral** effect	- **Minor** negative effect	- - **Significant** negative effect	? **Uncertain** effect

NB: where more than one symbol is presented in a box it indicates that the AoS has found more than one score for the category. Where a box is coloured but also contains a '?', this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.

4.5 Technical Difficulties

Uncertainties

4.5.1 The following uncertainties have been encountered during the AoS of the draft NPS:

- the potential location of new water resources infrastructure is unknown;
- the timing and delivery of new water resources infrastructure is unknown;
- the detailed design of any new water resources infrastructure and associated development is unknown;

- there is the potential for types of water resources infrastructure other than reservoirs, water transfers and desalination plants to be subject to the NPS. The types of infrastructure that may come forward under section 35 of the Planning Act 2008 are uncertain;
- future changes to the social, economic and environmental baseline beyond those discussed in **Appendix B** are difficult to predict in light of the long operational lifespan of water resources infrastructure; and
- the draft NPS will be applied on scheme specific basis and while it provides consistency in terms of guidance to the applicant, Examining Authority and decision maker, there remains some residual uncertainty over the exact provisions that will be applied at the project consenting stage.

Assumptions

4.5.2 Reflecting the uncertainties identified during the appraisal process, the following assumptions have been made:

- it is assumed that the designation of a NPS will increase the probability of water resources infrastructure being developed and in turn increase the probability of associated impacts;
- it is assumed that the environmental effects of water resources infrastructure proposals will be fully considered through EIA and HRA (as appropriate); and
- it is assumed that there will be no significant change to the existing planning policy and regulatory framework.

5. Appraisal of the Draft National Policy Statement for Water Resources Infrastructure and Reasonable Alternatives

5.1 Introduction

5.1.1 This section of the AoS Report presents the findings of the appraisal of the draft NPS, which has been undertaken in accordance with the methodology described in **Section 4**. It provides a summary of the role of the AoS in the evolution of the draft NPS (**Section 5.2**) and an assessment of the compatibility of the draft NPS objectives with the AoS objectives (**Section 5.3**). Drawing on the detailed topic-based assessments contained in **Appendix B**, it then provides an overview of the likely significant environmental, social and economic effects of the guidance contained in the draft NPS as well as the 'No NPS' reasonable alternative (**Section 5.4**) which is then summarised (**Section 5.5**). Consideration is given to any significant transboundary effects of the draft NPS (**Section 5.6**) and secondary, cumulative and synergistic effects (**Section 5.7**). The section concludes with an overview of proposed measures for enhancing the sustainability of the draft NPS (**Section 5.8**).

5.2 Evolution of the Draft National Policy Statement for Water Resources Infrastructure

5.2.1 The AoS has been undertaken alongside, and informing, the development of the draft NPS. This is to help ensure that sustainability considerations have been taken into account in the development of the draft NPS from the outset. This iterative approach has sought to provide initial views on the likely significant effects of the emerging draft NPS, proposing measures to avoid, minimise or mitigate any adverse effects and to maximise positive effects thereby enhancing its sustainability performance.

5.2.2 The iterative approach to the development of the draft NPS and AoS thereof has comprised the following key stages:

1. **Review of draft NPS structure**: Wood undertook an initial review of the proposed structure for the draft NPS and provided comments to Defra. This was intended to help identify, at an early stage, possible gaps in the document and key sustainability considerations to be taken into account by Defra in drafting the policy.
2. **High level review of the first draft NPS**: Wood undertook an early review of the draft NPS to ensure that the AoS could properly support the preparation of the policy by identifying issues where further clarification would be helpful. Commentary was also provided on the emerging topic guidance contained in section 4 of the draft NPS to support Defra in refining the document prior to further, detailed appraisal;
3. **Detailed appraisal of the emerging draft NPS**: Wood completed an initial, detailed appraisal of the draft NPS to help identify opportunities to enhance the sustainability performance of the document.

5.2.3 The recommendations arising stages 1 and 2 above and a signpost to how they have been taken into account in the draft NPS (as proposed) is provided in **Appendix E**. Stage 3 formed the basis for detailed appraisal contained in Appendix B and has not been presented separately to avoid unnecessary duplication.

5.2.4 This iterative process has led to a number of changes to the emerging draft NPS, including:

- development and inclusion of draft NPS objectives (see section 1.10 of the draft NPS);
- provision of further clarity on how the principle of environmental net gain is to be integrated into proposals from the outset and then reflected in applications (in both Chapters 3 and 4 of the draft NPS);
- inclusion of additional topics in the impacts section of the NPS for socio-economics and population, traffic and transport and resource use (Chapter 4 of the draft NPS); and
- inclusion of summaries of the potential effects associated with the construction and operation of water resources infrastructure covered by the draft NPS and related mitigation and enhancement measures on a topic-by-topic basis (Chapter 4 of the draft NPS)

5.2.5 Based on the appraisal of the draft NPS (as proposed), further measures have been identified to enhance its sustainability. This is summarised below (see **Section 5.8**) and all mitigation measures are collated in **Appendix F**).

5.3 Compatibility Assessment of the Draft National Policy Statement Objectives

5.3.1 The draft NPS sets out six objectives that provide the overarching framework for the guidance and mitigation contained in the Statement. A matrix has been completed to assess the compatibility of the draft NPS objectives against the AoS objectives. **Table 5.1** presents the results of this compatibility assessment.

5.3.2 Overall, the relationship between the draft NPS objectives and the AoS objectives is a positive one, reflecting the purpose of the draft NPS to provide a balanced and transparent approach to the consideration of the range of issues which need to be accounted for when considering an application for new water resources infrastructure.

5.3.3 The assessment has identified some uncertainty between the draft NPS objective of "*To provide a clear national planning policy that facilitates the examination and determination of applications for NSIPs for water resources in England*" and the AoS objectives. This reflects the potential for the development of water resources infrastructure supported by Government policy to have some adverse effects against the AoS objectives, particularly during the construction stage. Following construction, there is also the potential for long term effects for certain types of infrastructure, particularly with regards to historic assets and landscapes, although once operational, the new water resource infrastructure will support greater resilience in the water supply to growing communities, generating positive effects across the AoS objectives.

5.3.4 No incompatibilities between the draft NPS objectives and the AoS objectives have been identified. However, it is important to note that whilst these relationships are positive in principle, the specific circumstances of implementation (for example, the characteristics of sites taken forward for development) could change these relationships in the light of the balancing exercise which may be required to achieve the objectives of the NPS and securing environmental, social and economic interests.

Table 5.1 Compatibility assessment

Draft NPS Objective \ AoS Objective	Biodiversity	Population	Human Health	Land Use	Water Quality	Water Quantity	Flood Risk	Air Quality	Noise	Climatic Factors	Waste and resources	Traffic and Transport	Cultural Heritage	Landscape / Townscape
To provide a clear national planning policy that facilitates the examination and determination of applications for NSIPs for water resources in England.	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?
To set out the need for nationally significant water resources infrastructure and the role of WRMPs in identifying and satisfying the need. This will provide clarity and confidence on eligible NSIP schemes to inform water company's long term plans.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
To provide the primary basis for examination by the Examining Authority and for decisions by the Secretary of State on development consent applications for water resources infrastructure.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
To provide guidance to potential NSIP developers on the relevant infrastructure, generic impacts and general siting considerations that may need to be taken into account when planning for the development of water resources infrastructure.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
To provide policy and guidance on generic impacts to support any relevant local planning authorities in preparing their local impact reports, which they will be invited to prepare under section 60 of the Planning Act.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
To guide the development of NSIPs that support the government's sustainability goals and objective to enhance the environment.	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Key

Score	Compatibility
+	Objectives are potentially compatible.
?	Uncertain if objectives are related.
~	No clear relationship between objectives.
-	Objectives are potentially incompatible.

5.4 The Likely Significant Sustainability Effects of the Draft National Policy Statement and Reasonable Alternatives

Overview

5.4.1 The draft NPS, and in particular the guidance on impacts contained in Chapter 4 of the draft NPS, have been appraised against the 14 AoS objectives to identify likely significant environmental, social and economic effects. This appraisal is contained within each of the topic-based appraisals in **Appendix B**.

5.4.2 The following sub-sections summarise the anticipated effects of the implementation of the draft NPS and present them by AoS objective topic. The qualitative scoring system used in the summary tables is shown in **Table 5.2**.

Table 5.2 Scoring system used in the AoS of the draft NPS

Score Key:	+ + Significant positive effect	+ Minor positive effect	0 Neutral effect	- Minor negative effect	-- Significant negative effect	? Uncertain effect

NB: where more than one symbol is presented in a box it indicates that the AoS has found more than one score for the category. Where a box is coloured but also contains a '?', this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.

5.4.3 For each AoS objective topic, the performance of the reasonable alternative to the proposed draft NPS, the 'no NPS' alternative, is also considered. It should be noted, however, that the 'no NPS' reasonable alternative is not the same as a 'baseline or business as usual' scenario. Under the 'no NPS' reasonable alternative, it is assumed that proposals for water resources infrastructure could still be brought forward and planning decisions would be made in the context of the prevailing national planning policy and legislation. The subsequent commentary therefore reflects the additional merits (or their absence) of the NPS compared to 'no NPS' on any nationally significant water resource infrastructure that could come forward for consideration and implementation.

Biodiversity and Nature Conservation

5.4.4 The impacts on biodiversity during the construction stage are anticipated to be similar to those of other large infrastructure schemes. Impacts may include, for example, the loss of/disturbance to habitats and species (including adverse effects on designated nature conservation sites) associated with land take and the use of equipment/plant (i.e. noise and emissions to air) as well as contamination/pollution due to, for example, disturbance to earthworks and accidental spillage.

5.4.5 Once operational, reservoirs have the potential for a broad range of adverse effects on biodiversity typically associated with long-term changes to hydrological regimes or changes to morphological conditions, for example a reduction in flow rate downstream of a reservoir or the prevention of seasonal flooding. However it should also be noted that, once established, reservoirs often become sites of importance for nature conservation in themselves offering a habitat for birds, fish and other species.

5.4.6 Water transfer schemes are likely to be large in scale, with potentially very long-distance routing and as such there is the potential for the loss of/disturbance to habitats and species (including

adverse effects on designated nature conservation sites) associated with land take, the use of equipment/plant and vehicle movements across a large area (for example, related to noise and emissions to air). There is also the potential for the transfer of non-native species.

5.4.7 Particular effects on biodiversity associated with desalination can include the entrapment of fish and marine mammals in intake screens, the discharge of brine and other chemicals and increased turbidity and seawater temperatures which can affect sensitive habitats and species.

5.4.8 **Table 5.3** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on biodiversity and nature conservation (AoS Objective 1) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.3 Appraisal of the draft NPS and 'no NPS' alternative: biodiversity and nature conservation.

Biodiversity and nature conservation	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.9 The draft NPS sets out how the hierarchy of protected areas/sites (international, national and local) should be considered by the Secretary of State, which is expected to have a positive effect on biodiversity and nature conservation. A general principle is established that development should avoid significant harm to biodiversity and geological conservation interests and should contribute overall to net biodiversity gain.

5.4.10 The draft NPS provides for the application of clear mitigation measures, addressing direct and indirect effects, and promoting conservation and enhancement of biodiversity interests (including biodiversity net gain), resulting in positive effects. The appraisal has identified further mitigation measures that would ensure the potential effects of proposals are minimised and opportunities for enhancement considered. The wider considerations of the draft NPS as reflected in the assessment principles, such as environmental net gain, EIA, SEA, HRA, WRMP development, good design and pollution control, are also likely to result in positive effects.

5.4.11 Overall, the application of the draft NPS is likely to result in positive effects in respect of the protection and enhancement of biodiversity interests. However, it must be noted that the HRA Screening prepared in support of the draft NPS has identified that the potential for a significant effect on a SPA, SAC or Ramsar site cannot be ruled out at this stage. Any such effect would be associated with the construction and operation of the new water resources infrastructure once a location has been identified. As discussed in Section 1 of this report, the draft NPS does not identify potential development locations for new water infrastructure. The AoS presented in this report has appraised the assessment principles and guidance on impacts set out in the draft NPS on a topic-by-topic basis and identified that the draft NPS would be anticipated to have a positive effect. It does not seek to directly assess the impacts of developing new water resources infrastructure. For further details with regards to the potential effects of the construction and operation of new water

resources infrastructure on SPAs, SACs and Ramsar sites and the future steps to be taken in the HRA of these effects, please refer to the HRA Report submitted in support of the draft NPS.

5.4.12 The draft NPS framework will be applied in light of existing legislation at international and national levels in principle protecting biodiversity and nature conservation interests, although this will be a balancing exercise reflecting national need and other considerations.

No National Policy Statement

5.4.13 Under this alternative, international and national legislation and national and local planning policy protecting habitats and species would apply. The Environmental Impact Assessment Regulations would also require the consideration of impacts associated with the development of nationally significant water resource infrastructure on biodiversity to be assessed whilst the Secretary of State must comply with the Habitats Regulations where development is likely to have a significant effect on a European designated nature conservation site. Taken together, this would be expected to help ensure that impacts on biodiversity assets are identified, assessed and, where appropriate, mitigated. However, the absence of a clear statement of the full range of considerations to be taken into account (as proposed in the draft NPS) risks inconsistency in interpretation, particularly at a project level.

5.4.14 Overall, this alternative has been assessed as having a positive effect on AoS Objective 1, although a degree of uncertainty persists.

Population, Economics and Skills

5.4.15 Impacts on population, economics and skills during the construction stage of new water resources infrastructure are anticipated to be significant as the construction of new water resources infrastructure represents a large capital investment with the potential for significant benefits for the local economy and through the economic supply chain. However, construction activity could, depending on the location of development, have adverse impacts on existing nearby businesses and the tourism sector due to, for example, the loss of amenity. There is also the potential for an influx of construction workers into the host communities to increase pressure on existing services and facilities as well as the local housing market which may affect community cohesion (albeit temporarily).

5.4.16 Once operational, all three types of water resources infrastructure would be expected to have the potential for a minor level of job creation. They would also be expected to play an important role in providing the water supply needed to support both population and economic growth by helping to ensure that water is available for both private and commercial uses. Enhanced resilience in water supply would be expected to reduce the requirements for drought restrictions that can adversely affect the economy.

5.4.17 Reservoir development may provide recreational opportunities such as walking and water sports that could help support local businesses and the tourism sector. Water transfer schemes could, for the areas of sourced water resources, affect water supply for existing abstractors (including proposed future growth) and other receptors using the target supply.

5.4.18 **Table 5.4** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on population, economics and skills (AoS Objective 2) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.4 Appraisal of the draft NPS and 'no NPS' alternative: population, economics and skills.

Population, Economics and Skills	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.19 The draft NPS highlights the broad range of issues that will need to be considered under the topic of population, economics and skills. The most significant effects are anticipated to be realised at the construction stage as a result of the large capital investment programme required to develop water resources infrastructure.

5.4.20 Potential impacts on social infrastructure and amenities available to local communities (both positive and negative) could occur throughout the construction and operation of water resources infrastructure and this is recognised in the 'Applicant's Assessment' section of the draft NPS, which at paragraph 4.13.6 states that "*The assessment should cover any socio-economic impacts appropriate to the proposed development. Examples include:*

- *the creation of jobs and training opportunities;*
- *the provision of educational and visitor facilities;*
- *the impact of the proposed new facility on tourism, local businesses or local services;*
- *opportunities to provide a direct water supply to local business water users*."

5.4.21 The draft NPS recognises the opportunity presented by the significant infrastructure investment during the construction stage and seeks to ensure that the benefits, including the take up of jobs and investment in local skills and education, are optimised. The appraisal has identified further mitigation measures that seek to ensure that adverse effects on the local economy are minimised and that anticipated population growth can be accommodated.

5.4.22 Overall, the application of the draft NPS is likely to result in positive effects in respect of population, economics and skills.

No National Policy Statement

5.4.23 Under this alternative, applications would be subject to the provisions of national and local planning policy and the Environmental Impact Assessment Regulations and which together would support the identification, assessment and mitigation/enhancement of social and economic impacts arising from the development of water resources infrastructure. However, the absence of clear expectations relating to design (including mitigation and enhancement) could lead to uncertainty and inconsistency in interpretation and missed opportunities to deliver social and economic benefits.

5.4.24 Overall, this alternative has been assessed as having a positive effect on AoS Objective 2, although a degree of uncertainty persists.

Human Health

5.4.25 The construction of new water resources infrastructure may adversely affect human health through construction activity and associated HGV movements, which have the potential to lead to noise, vibration, water and air pollution. The construction of infrastructure may potentially require the temporary closure of areas used for recreation. In addition, the temporary increase in the number of construction works in a local area may increase the pressure on local health facilities.

5.4.26 Once operational, all three types of water resources infrastructure would be expected to play an important role in ensuring a resilient supply of potable water. There would also be the opportunity to restore areas that were closed for recreation during the construction phase and the potential for the enhancement and/or creation of new recreational areas.

5.4.27 **Table 5.5** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on human health (AoS Objective 3) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.5 Appraisal of the draft NPS and 'no NPS' alternative: human health.

Human Health	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	**+/?**	**+/?**	**+**	**+/?**
No NPS	**+/?**	**+/?**	**+/?**	**+/?**

Draft National Policy Statement

5.4.28 Whilst human health is included as a factor to be considered for inclusion in an EIA (Schedule 4 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017), human health is not included as a specific topic in the 'Generic Impacts' section of the draft NPS. Instead, health is principally addressed through the 'Assessment Principles' for the NPS. In section 3.12 the draft NPS states "*Where the proposed project has likely significant environmental impacts that would have an effect on human beings, the applicant should identify and set out the assessment of any likely significant health impacts….The applicant should identify measures to avoid, reduce or compensate for adverse health impacts and seek enhancement opportunities as appropriate. These impacts may affect people simultaneously, so the applicant, the Examining Authority and the Secretary of State (in determining an application for development consent) should consider the cumulative impact on health.*"

5.4.29 The health implications of new water resources infrastructure are also inherent to a number of the other topics within section 4 of the draft NPS, such as air quality and noise. Whilst the draft NPS does not include specific decision-making criteria regarding health, its oblique inclusion in these other topics will help to ensure that health is appropriately considered in the decision-making process.

5.4.30 The draft NPS also requires consultation to be undertaken with key stakeholders such as Public Health England, the Health and Safety Executive, relevant local authorities and local health care groups. However, as stated above human health is not included as a specific topic in the 'Generic Impacts' section of the draft NPS and as such there are no specific mitigation measures attributed

to it, instead referring to mitigation proposed in other topic areas such as transport, noise, and air quality. The appraisal has therefore identified a number of health specific mitigation measures to mitigate any potential adverse effect on human health.

5.4.31 The assessment of the draft NPS has identified that, taken together, the guidance provided in the assessment principles and in those health-related topics that comprise section 4 of the draft NPS would have a positive effect on this AoS objective. However, due to the absence of specific guidance within the 'Generic Impacts' section, it is considered that there remains a degree of uncertainty.

No National Policy Statement

5.4.32 Under this alternative, applications would be subject to the provisions of national planning policy and the EIA Regulations which would require consideration of the effects on health. Further, proposals would continue to be identified through the WRMP process which would include the consideration of effects on health. In consequence, even without the NPS, this alternative would still be considered to have a positive effect on this AoS objective.

5.4.33 However, the absence of specific guidance on health impacts risks inconsistency in interpretation, particularly at a project level which could have more uncertain outcomes (and at least the possibility that all beneficial effects are not enhanced and all adverse effects not avoided, minimised or mitigated).

5.4.34 Overall, this alternative has been assessed as likely to have a positive effect on the human health AoS objective, although a degree of uncertainty persists.

Land Use, Geology and Soils

5.4.35 The construction of new reservoirs risks the permanent loss of substantial areas of land that may be required, potentially affecting soils and the best and most versatile agricultural land. The construction of water transfer schemes may also lead to the disturbance to or loss of agricultural land and other land uses and soil along the length of the route, however unlike reservoirs the land lost due to pipeline works can typically be reinstated following construction. Depending on the location of development, there is the potential for reservoirs and water transfer schemes to affect geologically sensitive sites.

5.4.36 The construction of desalination plants can affect land use and soil. Impacts may be direct (for example, the loss of, or damage to, land and soil from new development) or indirect (for example, the location of new infrastructure affecting adjacent land uses). Construction activity may also lead to soil contamination as a result of accidental spillage, could lead to disturbance of existing contaminated land, and/or cause soil compaction as a result of the use of heavy machinery.

5.4.37 Once operational (and discounting any loss of land during construction), the operational impacts associated with new water resources infrastructure are expected to be negligible, although there may be some adverse impacts on adjacent land uses due to, for example, vehicle movements. In addition, water transfer schemes may help to avoid the over abstraction of water and its associated effects, including the drying out of wetland areas and salt water intrusion into aquifers.

5.4.38 **Table 5.6** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on land use, geology and health (AoS Objective 4) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.6 Appraisal of the draft NPS and 'no NPS' alternative: land use, geology and soils.

Land Use, Geology and Soils	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.39 The development of nationally significant water resources infrastructure could affect land use, geology and soils. Impacts are likely to be principally associated with the land take required during construction but may also include contamination. Therefore, the 'Decision Making' text of the draft NPS (paragraph 4.10.16) identifies a range of circumstances in which development may be unacceptable:

"The Secretary of State should not grant consent for development on existing open space, land used for sports and recreational buildings and for other sports and recreational purposes including playing fields, unless an assessment has been undertaken either by the local authority or independently, which has shown the open space and the buildings and/or land to be no longer needed, or the Secretary of State determines that the benefits of the project (including need) outweigh the potential loss of such facilities, taking into account any positive proposals made by the applicant to provide new, improved or compensatory land or facilities"

4.10.17 *"Where networks of green infrastructure have been identified in development plans, they should normally be protected from development and, where, possible, strengthened by or integrated within it."*

4.10.19 *"When located in the Green Belt, projects may comprise inappropriate development…The Secretary of State will need to assess whether there are very special circumstances to justify inappropriate development…The Secretary of State may require the provision of replacement Green Belt land, which should be secured by the applicant."*

5.4.40 The draft NPS additionally identifies a range of mitigation measures that could be applied at the project stage to help mitigate adverse, and enhance positive, effects associated with the development of water resources infrastructure. The appraisal identified no further potential mitigation measures.

5.4.41 The wider considerations of the draft NPS as reflected in the assessment principles, such as EIA, SEA, WRMP development, good design and environmental regulation, are also likely to result in positive effects.

5.4.42 Overall, the draft NPS has been assessed as having a positive effect on this AoS objective.

No National Policy Statement

5.4.43 Under this alternative, applications would be subject to the provision of nationally planning policy and EIA Regulations which would require consideration of the effects on land use, geology and soils. Further, proposals would continue to be identified through the WRMP process which would include the consideration of effects on land use, soils and geology. In consequence, even without the NPS, it would therefore still be considered to have a positive effect in relation to this AoS objective. However the absence of a clear statement of the full range of considerations to be taken

into account (as proposed in the draft NPS) risks inconsistency in interpretation, particularly at a project level.

Water Quality

5.4.44 The potential for contamination of groundwater, surface water and marine water during construction is a common risk to water quality for all types of water resources infrastructure. The construction of water resources infrastructure may also lead to changes to the hydrological regime, continuity, and morphological conditions of associated rivers (particularly in respect of impoundment reservoirs). Water transfer schemes pose a particular risk to water quality where a scheme crosses a waterway. Effects in this regard can include:

- the loss or damage of habitats and species;
- creating a barrier to the movement of fish and other wildlife;
- preventing sediment and woody debris being moved downstream; and
- prevention of natural river movement.

5.4.45 Once operational, the water quality requirements of a reservoir are closely related to the various functions that a reservoir may be required to undertake, which can include water supply, flood control, hydropower, navigation, wildlife conservation and recreation. Where reservoirs are to be used to supply potable water, there is a strong emphasis on water quality as phytoplankton blooms can cause taste problems in drinking water. Impaired water quality, such as the presence of iron and manganese, can increase treatment costs.

5.4.46 Water transfer schemes can adversely affect various parameters of water quality including chemical composition and oxygen content. The effects are dependent on the baseline water conditions of the two water bodies that the water transfer is taking place between. The rate of transfer and seasonal timing can also have a significant effect on factors such as iron concentration and the growth of cyanobacteria.

5.4.47 **Table 5.7** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on water quality (AoS Objective 5) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.7 Appraisal of the draft NPS and 'no NPS' alternative: water quality.

Water Quality	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.48 The draft NPS refers to 'Water Quality and Resources' which combines consideration of water quality and quantity issues. Where text is repeated from this and the next section, this is intentional.

5.4.49 Paragraph 4.15.6 of the text in the draft NPS under the heading of 'Applicant's Assessment' states "*The applicant should make early contact with the relevant regulators, including the local authority, the EA and MMO where appropriate, for relevant licensing and environmental permitting requirements. Where the proposed development is likely to have adverse effects on the water environment, the applicant should undertake an assessment of the existing status and impacts of the proposed development on water quality, water resources and physical characteristics as part of the Environmental Statement. A project specific WFD assessment may also be required*."

5.4.50 The requirement for early engagement with the relevant regulators, provision of guidance in terms of an ES (and where relevant a Water Framework Directive (WFD) Assessment) and identification of mitigation measures will help to ensure that the likely effects of the construction and operation of water resources infrastructure on water quality are properly considered. No additional project-level mitigation beyond that already set out in the draft NPS was identified through the appraisal, although reference could be included to the treatment options available to maintain water quality in reservoirs.

5.4.51 The 'Decision Making' text (paragraph 4.15.12) states that "*the Secretary of State should be satisfied that a proposal has had regard to the River Basin Management Plans and the requirements of the WFD, including Article 4.7, and those on priority substances and groundwater. The specific objectives for particular river basins are set out in River Basin Management Plans*".

5.4.52 In stating that the Secretary of State will need to give due consideration to impacts on the water environment in the context of the WFD and River Basin Management Plans (RBMPs) and taking into account the provisions relating to mitigation/planning obligations, the draft NPS has been assessed as having a positive effect on water quality.

5.4.53 Overall, the draft NPS complements existing national planning policy and legislation as well as the objectives of RBMPs in respect of the WFD and the development of WRMPs. In consequence, the draft NPS has been assessed as having a positive effect on this objective.

No National Policy Statement

5.4.54 Under this alternative, applications would be subject to the provisions of extant national planning policy and the EIA Regulations which require consideration of the effects of development proposals on water quality. Environmental permits for (inter alia) the abstraction of water, impounding of water and discharges would also be required alongside a Marine Licence for works affecting marine areas. Further, proposals would continue to be identified through the WRMP process which would include the consideration of effects on water quality. In consequence, even without the NPS, this alternative would still be considered to have a positive effect in relation to water quality. However, the absence of a clear statement of the full range of considerations to be taken into account (as proposed in the draft NPS) risks inconsistency in interpretation, particularly at a project level and could undermine the opportunities to enhance the water environment.

Water Quantity

5.4.55 The construction of new water could temporarily disrupt the hydrological regime of existing watercourses. This has the potential to impact downstream sites and end users. For new reservoirs and water transfer schemes, impacts on the hydrological regime and hydromorphology of the source and receiving waterbodies may continue in the long term with the potential for both positive and negative effects.

5.4.56 All new water resources infrastructure would be expected to play a role in ensuring a resilient supply of potable water. Desalination plants have a particular role in ensuring that a sustainable

and resilient supply of water resources can be maintained whilst at the same time reducing abstractions from surface water bodies and ground waters that are not sustainable.

5.4.57 **Table 5.8** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on water quantity (AoS Objective 6) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.8 Appraisal of the draft NPS and 'no NPS' alternative: water quantity.

Water Quantity	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.58 The draft NPS refers to 'Water Quality and Resources' which combines consideration of water quality and quantity issues. Where text is repeated from the previous section, this is intentional.

5.4.59 Paragraph 4.15.6 of the text in the draft NPS under the heading of 'Applicant's Assessment' states "*The applicant should make early contact with the relevant regulators, including the local authority, the EA and the MMO where appropriate, for relevant licensing and environmental permitting requirements. Where the proposed development is likely to have adverse effects on the water environment, the applicant should undertake an assessment of the existing status and impacts of the proposed development on water quality, water resources and physical characteristics as part of the Environmental Statement. A project specific WFD assessment may also be required*."

5.4.60 The requirement for early engagement with the relevant regulators, provision of guidance in terms of an ES (and where relevant a WFD Assessment) and identification of mitigation measures will help to ensure that the likely effects of the construction and operation of water resources infrastructure on water quantity are properly considered.

5.4.61 The 'Decision Making' text (paragraph 4.15.12) states that "*the Secretary of State should be satisfied that a proposal has had regard to the River Basin Management Plans and the requirements of the WFD, including Article 4.7, and those on priority substances and groundwater. The specific objectives for particular river basins are set out in River Basin Management Plans*".

5.4.62 In stating that the Secretary of State will need to give due consideration to impacts on the water environment in the context of the WFD and RBMPs and taking into account the provisions relating to mitigation/planning obligations, the draft NPS has been assessed as having a positive effect on water quantity.

5.4.63 In addition to the range of mitigation measures identified in the draft NPS, the appraisal has noted further mitigation measures focussed around undertaking and managing changes to hydrological flows and ensuring that where a WFD Assessment has been prepared in support of a WRMP, this is given due consideration in the decision-making and design process.

5.4.64 Overall, the draft NPS is considered to provide a clear framework to guide decisions on new water resources infrastructure in respect of the water environment. It complements existing national

planning policy and legislation as well as the objectives of RBMPs in respect of the WFD and the development of WRMPs. In consequence, the draft NPS has been assessed as having a positive effect on this AoS objective.

No National Policy Statement

5.4.65 Under this alternative, applications would be subject to the provisions of extant national planning policy and the EIA Regulations which require consideration of the effects of development proposals on water quantity. The abstraction licensing regime would also apply and proposals would continue to be identified through the WRMP process which would include the consideration of effects on water quantity and availability. In consequence, even without the NPS, this alternative would still be considered to have a positive effect in relation to water quantity. However, the absence of a clear statement of the full range of considerations to be taken into account (as proposed in the draft NPS) risks inconsistency in interpretation, particularly at a project level.

Flood Risk and Coastal Change

5.4.66 New water resources infrastructure could be affected by flood risk and coastal change if inappropriately sited. The construction of new water resources infrastructure may also increase the risk of flooding elsewhere due to, for example, changes in surface water run-off or the siltation of local water courses. These impacts can be accentuated over the lifetime of the infrastructure due to the effects of climate change. Desalination plants using sea water are located near coastal areas and can require significant land take. Construction of defences to protect the desalination plant and associated infrastructure such as sea walls, has the potential to impact coastal erosion elsewhere. Reservoirs can pay an important role once operational in reducing flood risk by providing substantial additional flood water storage capacity.

5.4.67 **Table 5.9** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on flood risk and coastal change (AoS Objective 7) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.9 Appraisal of the draft NPS and 'no NPS' alternative: flood risk and coastal change.

Flood Risk and Coastal Change	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.68 The draft NPS requires that applications for development consent are supported by a Flood Risk Assessment (FRA) (where appropriate) and that the sequential test set out in the NPPF is adopted when assessing flood risk and the exception text applied if necessary.

5.4.69 With specific regard to coastal change, the draft NPS sets out that for proposals located in a Coastal Change Management Area, applicants should provide appropriate justification in terms of why there is a need for development to be located in a Coastal Change Management Area and assess the vulnerability of the proposed development to coastal change.

5.4.70 At paragraph 4.5.8, the draft NPS states that the Secretary of State "*should not grant development consent unless it is demonstrated that: the development will be safe (from flood risk and coastal erosion) over its planned operational lifetime and will not have an unacceptable impact on coastal change; the character of the coast (including designations) is not compromised; the development provides wider sustainability benefits; and the development does not hinder the creation and maintenance of continuous, signed and managed route around the coast*". It is considered that this guidance should help to avoid inappropriate development in areas affected by coastal erosion.

5.4.71 The draft NPS additionally identifies a range of mitigation measures that could be applied at the project stage to help mitigate adverse, and enhance positive, effects associated with the development of water resources infrastructure. The appraisal identified no further potential mitigation measures.

5.4.72 Overall, the draft NPS attaches substantial weight to the risks of flooding and coastal change. The guidance contained in Chapter 4 alongside other requirements relating to, for example, good design and climate change adaptation, will help to minimise direct and indirect effects with respect to any potential flood risk and coastal change. The draft NPS has therefore been assessed as having a positive effect on this AoS objective.

No National Policy Statement

5.4.73 Despite the absence of a guiding framework for flood risk and coastal change impacts, this alternative is likely to result in positive effects overall as any development would be subject to the provisions of national planning policy and the EIA Regulations and would be likely to take into account local flood risk management plans and strategies and guidance. In addition, proposals would continue to be identified through the WRMP process which would include the consideration of effects on this AoS topic. However, the absence of a clear statement on the role of the Secretary of State when assessing the location of development in particular risks inappropriate development being considered. It is acknowledged that whilst mitigation measures would be forthcoming under this alternative, there is a risk that these are not comprehensive or consistent and may not fully address any effects arising.

Air

5.4.74 During the construction phase of new water resources infrastructure, emissions to air from vehicle movements and the use of plant associated with the construction of new or enlarged reservoirs could affect air quality. This is a particular issue in areas with existing air quality issues and/or where sites are located in close proximity to sensitive receptors. There is also the potential for impacts on local communities and/or biodiversity from the generation of dust during construction.

5.4.75 During the operational phase, both reservoirs and desalination plants would be expected to have some vehicle movements associated with their ongoing operation and maintenance, however the effect on air quality would be expected to be minor. For water transfer schemes, any effect would be expected to be negligible.

5.4.76 **Table 5.10** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on air quality (AoS Objective 8) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.10 Appraisal of the draft NPS and 'no NPS' alternative: air.

Air	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.77 Air quality standards and objectives are governed by European and domestic legislation. Where impacts of water resources infrastructure are expected to affect the UK's ability to meet the targets laid out in this legislation, the draft NPS sets out that the applicant must undertake an assessment of the impacts as part of an ES. The draft NPS also requires that the Secretary of State gives substantial weight to air quality issues and at paragraph 4.2.12 states that consent can be refused where there are significant impacts on air quality which would contravene the Air Quality Standards Regulations 2010 for the relevant averaging periods or affect the ability of a non-compliant area to achieve compliance.

5.4.78 It is important to note that there are also links between air quality and other topics contained in Chapter 4 of the draft NPS including, in particular, those topics related to biodiversity and nature conservation, human health and traffic and transport. In addition, the assessment principles (including in respect of good design, common law and nuisance and environmental regulation) may also help to ensure that measures are adopted to avoid adverse impacts on air quality. This is expected to generate further positive effects in respect of this AoS objective.

5.4.79 Whilst Section 4.2.8 of the draft NPS requires the Secretary of State to the take into account the presence of AQMAs, it does not require development to be sited away from AQMAs where possible, which has been identified by the appraisal as an additional mitigation measure.

5.4.80 Overall, it is considered that the draft NPS provides a strong policy framework to ensure that significant adverse impacts on air quality arising from the development of water resources infrastructure are avoided/mitigated. It has therefore been assessed as having a positive effect on AoS Objective 8.

No National Policy Statement

5.4.81 Despite the absence of a guiding framework for air quality impacts, this alternative is likely to result in positive effects on this AoS objective overall as any development would be subject to the provisions of, inter alia, national planning policy, the EIA Regulations, HRA Regulations and Air Quality Regulations. Further, proposals would continue to be identified through the WRMP process which would include the consideration of effects on air quality. However, the absence of clear expectations relating to the scope of assessment (including mitigation and enhancement) could lead to uncertainty and inconsistency in their application and missed opportunities to minimise emissions to air. The precise range of mitigation applied as part of any scheme development would potentially be less certain and with greater inconsistency than under a NPS.

Noise

5.4.82 All three types of water resources infrastructure types will have lengthy construction times and require the use of heavy duty plant and machinery for construction. Together with associated

vehicle movements, this will generate noise and vibration which has the potential to impact noise sensitive receptors, depending on the location of development.

5.4.83 Once operational, reservoirs and water transfer schemes would be expected to have a negligible impact on noise, however noise and vibration generated from the industrial processes associated with the operation of a desalination plant may have the potential to impact sensitive locations and receptors.

5.4.84 **Table 5.11** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on noise (AoS Objective 9) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.11 Appraisal of the draft NPS and 'no NPS' alternative: noise.

Noise	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.85 The draft NPS requires the identification and assessment of noise aspects through a noise assessment as part of an ES. It draws attention to how, with respect to human receptors, noise should be assessed with reference to the relevant British Standards and other guidance and advises that the applicant consults the Environment Agency on the likely scope of an environmental permit and Natural England with regard to the assessment of noise aspects on protected species or other wildlife. The draft NPS expects development to demonstrate good design through, for example, the selection of the quietest cost-effective approach available.

5.4.86 It also makes clear that the Secretary of State, as decision maker, "*should not grant consent unless satisfied that a proposal will: avoid significant adverse impacts on health and quality of life from noise as a result of new development; mitigate and minimise other adverse impacts on health and quality of life from noise from new development; and where possible, contribute to improvements to health and quality of life*" (paragraph 4.11.9).

5.4.87 That draft NPS also states that for those processes in a development whose noise aspects would be subject to an environmental permitting regime, the Secretary of State may assume that the regime will exercise the necessary controls over noise impacts. However, the Secretary of State must take into account the potential impact from all noise sources when deciding whether or not to grant development consent and, if so, on what terms.

5.4.88 The draft NPS does not include a list of mitigation measures for noise as they are considered to be generic to all large-scale construction schemes. The appraisal has recommended that a suite of construction-stage mitigation measures are included to ensure that these matter are given due clarity and consideration.

5.4.89 Overall, it is considered that the draft NPS will have a positive effect on this AoS objective as it will help to minimise noise and vibration effects associated with the construction and operation of new water infrastructure, notably on sensitive locations and receptors.

No National Policy Statement

5.4.90 Despite the absence of a guiding framework for noise aspects, this reasonable alternative is likely to result in positive effects on noise as any development would be subject to the provisions of national planning policy, the EIA Regulations, WHO guidelines for community noise and relevant British Standards. However, the absence of a clear statement regarding the full range of information to be submitted with regards to noise in an ES may mean that opportunities are lost to effectively identify, assess and mitigate noise aspects. Similarly, the absence of a clear statement on the role of the Secretary of State, including ensuring that development avoids significant adverse noise impacts, risks uncertain effects on the receptors and their surroundings. It is considered that mitigation measures would be forthcoming under this reasonable alternative but there is the risk that they would not fully address the range of impacts associated with nationally significant water resources infrastructure.

5.4.91 Overall, this reasonable alternative is considered to have a positive effect on noise, although some uncertainty remains.

Climatic Factors

5.4.92 It is expected that the scale of construction required for the enlargement of existing, or construction of new, water resources infrastructure will generate high levels of emissions of greenhouse gases from HGV movements, construction plant and the embodied carbon in raw materials.

5.4.93 Once operational, reservoirs and water transfer schemes would result in some energy use and generate associated greenhouse gas emissions, whereas desalination is energy intensive and in consequence, operational emissions are likely to be significant. It should be noted too that reservoirs may play an active role in adapting to climate change by increasing flood water storage capacity.

5.4.94 **Table 5.12** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on climatic factors (AoS Objective 10) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.12 Appraisal of the draft NPS and 'no NPS' alternative: climatic factors.

Climatic Factors	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.95 The draft NPS seeks to ensure that the carbon impacts of development are assessed by the applicant pursuant to the EIA regulations and appropriate mitigation measures implemented in order to reduce carbon emissions arising from water resources infrastructure.

5.4.96 Section 4.4.4 of the draft NPS requires the applicant to provide evidence of the carbon impact of the project, both from construction and operation, such that it can be assessed against the Government's carbon obligations, including but not limited to carbon budgets.

5.4.97 The consideration of the carbon impacts of scheme options and the subsequent assessment of climate change effects will help to ensure that climate change mitigation and adaptation are duly taken into account by applicants, that effects are identified and that appropriate mitigation measures are implemented. The appraisal has identified potential additional mitigation measures to assist in ensuring that any development has considered how best to adapt to the effects of climate change and ensure that all opportunities to minimise CO_2 emissions have been considered.

5.4.98 The draft NPS also stipulates that, should the development of new water resources infrastructure result in an increase in carbon emissions, this will not be considered a reason to refuse development consent unless the resulting increase in carbon emissions is so significant that it would have a material impact on the Government's ability to reach its carbon reduction targets. This is expected to have a positive effect for climatic factors.

5.4.99 Overall, the implementation of the draft NPS is likely to result in a positive effect in respect of minimising carbon impacts and promoting climate change adaptation.

No National Policy Statement

5.4.100 Despite the absence of a guiding framework on climatic factors, this reasonable alternative is likely to result in positive effects overall as any development proposal would be subject to the provisions of national planning policy and the EIA Regulations and the resulting overall effects under this alternative are likely to be positive. Further, proposals would continue to be identified through the WRMP process which would include the consideration of climatic factors. However, the absence of a clear statement on the full range of information to be submitted in the ES and considered by the Secretary of State risks development not effectively mitigating carbon emissions and proposing effective adaptation. It is acknowledged that whilst mitigation measures would be forthcoming under this alternative, there is a risk that these are open to interpretation and that they may not fully address an appropriate range of activities.

Waste and Resources

5.4.101 The development of water resources infrastructure will require significant volumes of resources including raw materials and energy. Construction activity would also generate waste arisings including, in particular, excavated soil. Once operational, reservoirs and water transfer schemes would be expected to create minimal amounts of waste and require few resources, such as chemicals. Waste generation would typically be associated with ongoing operational requirements from associated infrastructure such as water treatment works.

5.4.102 Desalination plants will generally use brackish or sea water as a primary resource. As a by-product of the desalination process, brine effluent is produced and will be discharged into a watercourse or the sea which needs to be managed so that it does not have a harmful environmental impact. The operation of desalination plants will likely require a high volume of energy and chemical use. There are also likely to be associated waste arisings requiring disposal which may be contaminated (e.g. sludge).

5.4.103 **Table 5.13** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on waste and resources (AoS Objective 11) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.13 Appraisal of the draft NPS and 'no NPS' alternative: waste and resources.

Waste and Resources	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.104 The draft NPS requires an applicant to show the intended approach to managing waste for any development consent, including the production of a Site Waste Management Plan. Waste must be managed in accordance with the waste management hierarchy. This will help to ensure that waste arisings associated with the construction and operation of water resources infrastructure are minimised and that reuse, recycling and recovery are promoted. It is also noted that reference is made to 'the best overall environmental, social and economic outcome' which implies a requirement for applicants to consider the wider sustainability impacts of waste management.

5.4.105 The proposed decision-making framework also provides a clear approach to the consideration of waste and resources. The range of mitigation measures proposed would also minimise waste and resource use. The appraisal has identified further mitigation measures that would assist in reducing resource use, particularly through an emphasis on managing energy use in any buildings associated with the water resources infrastructure. Overall, the draft NPS has been assessed as having a positive effect on this AoS objective.

No National Policy Statement

5.4.106 Under this alternative, applications would be subject to the provisions of national planning policy and the EIA Regulations as well as a wide range of legislation at the European and national level on waste including the Waste Framework Directive. Further, proposals would continue to be identified through the WRMP process which would include the consideration of effects on waste and resources. The environmental permitting regime also incorporates operational waste management requirements for certain activities. This policy and legislative framework is expected to help ensure that applicants and the Secretary of State consider the impacts of new water resources infrastructure on waste and resources, generating a positive effect on this objective. However, the absence of a clear statement regarding waste considerations and impacts on resource use (as proposed in the draft NPS) risks inconsistency in interpretation, particularly at a project level.

5.4.107 Overall, this reasonable alternative is considered to have a positive effect on waste and resources, although some uncertainty remains.

Traffic and Transport

5.4.108 The development of water resources infrastructure and any associated infrastructure would be likely to generate a significant volume of vehicle movements necessary for the movement of materials, waste and workers to/from sites. There may also be a requirement for associated pipeline works within/across roads. Depending on the location of development and the capacity of the highway network, this could result in congestion and driver delay as well as road safety impacts. Vehicle movements also have the potential to cause nuisance to the host community and impacts on wildlife and habitats. Once operational the number of vehicle movements anticipated are minimal.

Table 5.14 presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on traffic and transport (AoS Objective 12) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.14 Appraisal of the draft NPS and 'no NPS' alternative: traffic and transport.

Traffic and Transport	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.109 The draft NPS requires that, where a proposed development is likely to have significant transport implications, the applicant prepares a transport assessment as part of an ES and in liaison with (as appropriate) Highways England, the local highways authority, the rail network operator(s), Network Rail, the Maritime and Coastguard Agency, the relevant navigation authorities and Associated British Ports. It also requires that applicants prepare a travel plan including demand management measures to mitigate transport impacts and propose measures to improve access by public transport, walking and cycling.

5.4.110 The requirement for the preparation of an ES with an associated transport assessment and travel plan, alongside consultation with Highways England, the highway authorities and other consultees, will help to ensure that effects associated with the construction and operation of new water resources infrastructure on traffic and transport are properly considered and mitigation measures identified. The consideration of all modes of travel and their modal split will additionally help to minimise the transportation of materials, waste and workers by road where possible.

5.4.111 The draft NPS also states that where substantial impacts have been identified cannot be reduced, applicants may enter into planning obligations for funding infrastructure and mitigating adverse impacts.

5.4.112 The proposed mitigation measures set out in the draft NPS indicate a preference for demand management measures over the provision of new transport infrastructure and for rail and water-borne options over road transport options. Where new transport infrastructure is required, the draft NPS requests that consideration be given to how this can be delivered to maximise public benefit. The appraisal has also identified further mitigation measures to promote public accessibility and minimise the adverse effects associated with temporary road closures.

5.4.113 Overall, it is considered that the implementation of the draft NPS is likely to result in a positive effect in respect of minimising traffic volumes and promoting sustainable transport choices.

No National Policy Statement

5.4.114 Under this alternative, applications would be subject to the provisions of national planning policy and the EIA Regulations. Further, proposals would continue to be identified through the WRMP process which would be expected to include the consideration of effects on traffic and transport. However, the absence of a clear statement on the full range of information to be submitted with regards to traffic and transport (as proposed in the draft NPS) risks development not effectively

mitigating traffic and transport impacts. Similarly, the absence of a clear statement on the role of the Secretary of State, including ensuring that development avoids significant adverse transport impacts, risks uncertain effects on the receptors and their surroundings. It is considered that mitigation measures would be forthcoming under this reasonable alternative but there is the risk that they would not fully address the range of impacts associated with nationally significant water resources infrastructure.

5.4.115 Overall, this alternative has been assessed as having a positive effect on this AoS objective, although some uncertainty remains.

Cultural Heritage

5.4.116 The construction of new water resources infrastructure can have adverse impacts on the significance of heritage assets and archaeological remains both directly (through the loss of, or damage to, assets) or indirectly (through effects on setting). In this regard, many reservoirs and their associated infrastructure are themselves listed. There may also be construction impacts on historic and valued cultural landscapes, particularly where a new reservoir is proposed.

5.4.117 Once operational, new infrastructure may continue to affect the settings of heritage assets and landscapes. Additionally, any changes in flows downstream of new infrastructure could both positively and negatively affect the settings of heritage assets located in closed proximity to surface water bodies. There may also be impacts on wetlands, which are fragile and vulnerable to subtle changes arising from development that can affect paleoenvironmental deposits and archaeological assets, disruption to historically important water sources and the flooding or drying of deep archaeological sites.

5.4.118 **Table 5.15** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on cultural heritage (AoS Objective 13) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.15 Appraisal of the draft NPS and 'no NPS' alternative: cultural heritage.

Cultural Heritage	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.119 The draft NPS requires that as part of the environmental statement, the applicant should provide a description of the significance of the heritage assets affected by the proposed development. Where such a development may affect heritage assets with an archaeological interest, a desk-based assessment and, where necessary, field examination will also be required. These requirements will help to ensure that adverse effects on cultural heritage are avoided or mitigated at the project stage. Additionally, the draft NPS may help to ensure that opportunities are identified to enhance the historic environment through, for example, sensitive design and addressing assets at risk.

5.4.120 The draft NPS makes clear that the Secretary of State should give 'great weight' to the conservation of heritage assets and sets out in detail the range of considerations which will be part of the

decision-making process. At paragraph 4.7.18, it sets out that, where the proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, the Secretary of State "*will refuse consent unless it can be demonstrated that the substantial harm or total loss of significance is necessary to deliver substantial public benefits that outweigh that loss or harm, or alternatively that all of the following apply:*

- *The nature of the heritage asset prevents all reasonable uses of the site;*
- *No viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation;*
- *Conservation by grant funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and*
- *The harm or loss is outweighed by the benefit of bringing the site back into use*."

5.4.121 In light of these requirements it is considered that the draft NPS will help to ensure that impacts on heritage assets associated with the development of water resources infrastructure will be minimised and opportunities for enhancement promoted, although broader strategic development considerations, such as the need for new water resources infrastructure, could override cultural heritage interests where impacts cannot be avoided and there are substantial public benefits.

5.4.122 Where cultural heritage interests are affected, the draft NPS provides for the application of clear mitigation measures, which should result in positive effects. Further, the draft NPS identifies potential opportunities for enhancing assets associated with the development of water resources infrastructure.

5.4.123 Overall, it is considered that the implementation of the draft NPS is likely to result in a positive effect in respect of conserving and enhancing our cultural heritage.

No National Policy Statement

5.4.124 Under this alternative, applications would be subject to the provisions of national planning policy and the EIA Regulations. This would be expected to help ensure that adverse effects on historic assets associated with new water resources infrastructure are identified, assessed and appropriately mitigated. Further, proposals would continue to be identified through the WRMP process which would include the consideration of effects on historic assets. However, the absence of a clear statement on the full range of considerations to be taken into account (as proposed in the draft NPS) risks inconsistency in interpretation and unintended consequences through implementation, particularly at the project level. However, this reasonable alternative is considered to have a positive, albeit uncertain, effect against the cultural heritage AoS objective.

Landscape and Townscape

5.4.125 The scale of works involved in constructing a new or enlarged reservoir (including groundworks, embankments and land re-profiling) will be significant. The reservoir will almost certainly be sited on greenfield land with the potential for existing landscape features (e.g. hedgerows or trees) to be lost as a consequence of the works. As a result, there is the potential for construction activity to have detrimental impacts on landscape/townscape character; where development takes place in designated landscapes in particular, these impacts could be significant. Water transfer schemes have the potential for a detrimental impact on landscape quality, particularly where long distance pipelines are required. As a result of their typically coastal locations, desalination plants may also affect seascapes alongside townscapes and landscapes, with the effect resulting from the significant amount of above ground infrastructure required. Construction of all three infrastructure types may

also adversely affect nearby sensitive receptors such as residential properties and the potential for light pollution to disturb tranquillity.

5.4.126 Once operational, pipelines associated with water transfer schemes will be buried such that associated impacts are likely to be negligible. However, any above ground infrastructure such as pumping stations and water treatment works may continue to have adverse impacts on landscape character and visual amenity; where development takes place in designated landscapes in particular, these impacts could be significant. Both reservoirs and desalination plants have the potential for impacts established at the construction stage to continue throughout the operational lifespan of the infrastructure. Reservoirs however have the potential to become an attractive landscape feature in their own right once established.

5.4.127 **Table 5.16** presents the findings of the appraisal of the draft NPS and 'no NPS' alternative on landscapes and townscapes (AoS Objective 14) in the context of the possible impacts identified above. Effects have been identified for the draft NPS topic sub-sections (Applicant's Assessment, Decision Making and Mitigation) as well as for the draft NPS as a whole (cumulative effects).

Table 5.16 Appraisal of the draft NPS and 'no NPS' alternative: landscape and townscape.

Landscape and Townscape	Applicant's Assessment	Decision making	Mitigation	Cumulative effects
Draft NPS	+	+	+	+
No NPS	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.4.128 The draft NPS provides clear guidance, and reference to more detailed external guidance, on how landscape and visual impacts should be taken into account by applicants and the Secretary of State. The draft NPS also identifies that any application for development consent that could affect landscapes of national significance (such as National Parks and Areas of Outstanding Natural Beauty) will need to comply with the provisions of the relevant legislation and guidance.

5.4.129 In accordance with the NPPF, the draft NPS states that great weight should be given to conserving landscape and scenic beauty in nationally designated areas, in particular National Parks, the Broads and AONBs which have the highest level of environmental protection and the Secretary of State should refuse development consent in these areas except in exceptional circumstances and where it can be demonstrated that the development is in the public interest. Weight is also given to the conservation of local landscapes and townscapes, taking into account relevant development plan policies.

5.4.130 With regard to visual impacts (including in respect of coastal areas), the text in this section requires the Secretary of State to judge whether the visual effects on sensitive receptors, such as local residents, and other receptors including visitors to the local area, outweigh the benefits of a development.

5.4.131 The wider considerations of the draft NPS in respect of the assessment principles such as good design is likely to result in positive effects for landscape interests. It should be noted, however, that the draft NPS framework will be applied in light of existing legislation and this will be a balancing exercise reflecting the consideration of national need and other considerations.

5.4.132 Overall, it is considered that the implementation of the draft NPS is likely to result in a positive effect in respect of conserving and enhancing our landscapes and townscapes.

No National Policy Statement

5.4.133 Under this alternative, applications would be subject to the provisions of national planning policy, specific statutory requirements concerning effects on nationally designated landscape (Section 11A of the National Parks and Access to Countryside Act 1949 and Section 85 of the Countryside and Rights of Way Act 2000) and the EIA Regulations. Further, proposals would continue to be identified through the WRMP process which would include the consideration of effects on landscape and townscape. In consequence, effects would still be considered likely to be positive. However, the absence of a clear statement of the full range of considerations to be taken into account (as proposed in the draft NPS) risks inconsistency in interpretation, particularly at a project level, hence uncertainty over the likely effect.

5.5 Summary of the Likely Significant Effects of the Draft National Policy Statement and Reasonable Alternatives

5.5.1 **Table 5.17** summarises the potential cumulative effects of the guidance and mitigation contained in the draft NPS (in terms of the Applicant's Assessment; Decision Making; and Mitigation sub-sections used for each topic within Chapter 4 of the draft NPS) against the 14 AoS objectives, along with the performance of the 'no NPS' alternative.

Table 5.17 Summary of the likely significant effects of the draft NPS and 'no NPS' alternative.

Alternative	AoS Objective													
	1. Biodiversity	2. Population	3. Human health	4. Land use	5. Water Quality	6. Water Quantity	7. Flood Risk and Costal Change	8. Air	9. Noise	10. Climatic Factors	11. Waste and resources	12. Traffic and transport	13. Cultural heritage	14. Landscape and townscape
Draft NPS	+	+	+/?	+	+	+	+	+	+	+	+	+	+	+
No NPS	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?	+/?

Draft National Policy Statement

5.5.2 The construction and operation of water resources infrastructure could have a wide range of social, economic and environmental impacts. The type and magnitude of impact varies with the type of infrastructure proposed. All represent a substantial construction programme, with reservoirs in particular likely to require an extensive excavation process. Water transfer schemes could potentially affect an extensive longitudinal area and desalination plants, using currently technology, are an energy intensive process. All infrastructure types have the potential to significantly affect both water quantity and quantity and would be expected to play an importantly role in ensuring a resilient water supply for consumers. By providing policy and guidance to nationally significant infrastructure project developers, the Examining Authority and the Secretary of State, the draft NPS will help to ensure that these impacts are identified, appropriately assessed and, where necessary, avoided, minimised or mitigated and benefits enhanced.

5.5.3 By providing a clear framework for decisions relating to water resources infrastructure, the draft NPS will support the Government's 'twin track' approach to managing water resources and also support the broader environmental aims of other Government Policies, such as the 25 Year Environmental Plan. The draft NPS will also support the delivery of a water resources infrastructure in a timely manner, which is anticipated to be of increasing importance in a changing climate.

5.5.4 Overall, the draft NPS has been assessed as having long-term, permanent positive effects across all of the AoS objectives, with additional uncertainty identified for the health objective. This is as a result of not having health addressed as its own topic within the NPS, but rather indirectly through other topics such as noise and air quality. No negative effects (significant or minor) have been identified although there is the potential for positive effects associated with the implementation of the draft NPS to be enhanced.

No National Policy Statement

5.5.5 Under the 'no NPS' alternative, water resources infrastructure would be determined by the Secretary of State as a nationally significant infrastructure project in accordance with the Planning Act 2008 (as amended). Applications would be subject to the provisions of national planning policy and the EIA Regulations as well as legislation in respect of, for example, the protection of international and national habitats and species, cultural heritage, air quality and contaminated land. Alongside policy and guidance contained in other plans and programmes (such as local plans, marine plans and water resource management plans), this would be expected to help ensure that social, economic and environmental impacts associated with the development of water resources infrastructure are identified, assessed and minimised/mitigated.

5.5.6 Issues relating to discharges or emissions which affect air quality, water quality, land quality and the marine environment (or which include noise and vibration) would be subject to separate regulation under the pollution control framework or other consenting or licensing regimes. Any activities within the development that are regulated under those regimes will need to obtain the relevant permissions before the activities can be undertaken. These existing regulatory controls will help to ensure that environmental impacts associated with the development of water resources infrastructure are acceptable.

5.5.7 Despite the policy and legislative framework outlined above, the absence of a clear statement regarding the full range of considerations to be taken into account by the applicant and Secretary of State (as proposed in the draft NPS) risks inconsistency in interpretation, particularly at a project level. It may also result in opportunities for the mitigation of adverse impacts and enhancement of benefits being missed. In consequence, whilst this alternative has been assessed as having a positive effect across the majority of the AoS objectives, a higher degree of uncertainty persists and under this alternative there would also be increased uncertainty with regard to the successful and timely delivery of water resources infrastructure which could have implications in respect of the reliance of the water supply in the UK in a changing climate.

5.6 Secondary, Cumulative and Synergistic Effects

5.6.1 In determining the significance of effects of a plan or programme, the SEA Directive requires that consideration is given to the secondary, cumulative and synergistic nature of the effects. The cumulative effects (including, where relevant, consideration of secondary and synergistic effects) of the draft NPS on the AoS objectives have, where appropriate, been included in the detailed assessment in Appendix B and in the sections above.

Cumulative Effects Arising from the Draft National Policy Statement

5.6.2 The draft NPS contains four sections:

1. Introduction
2. The need for nationally significant water resources infrastructure
3. Assessment Principles
4. Generic impacts

5.6.3 These sections have been appraised against the AoS objectives and the results presented in **Appendix B** including a summary appraisal and score representative of the cumulative effect of the all sections of the plan.

5.6.4 Identifying the cumulative effects of the various water resources infrastructure projects that may be subject to the draft NPS is highly uncertain, with the number, location and potential types of project unknown making quantification or qualification of any such effect impossible. However, the effects of the draft NPS were found to be positive across all AoS Objectives and as such it is anticipated that the cumulative effect of applying the draft NPS to a number of projects would remain positive.

5.6.5 **Table 5.18** provides a summary of cumulative effects of the draft NPS itself based on the cumulative effects and associated scores set out in Tables 5.3 to 5.16.

Table 5.18 Summary of cumulative effects

Topic	Likely Significance	Summary
1. Biodiversity and Nature Conservation	+	The construction and operation of water resources infrastructure could have a wide range of impacts on biodiversity. There is the potential for the loss or fragmentation of habitat or disturbance from activities on site and HGV movements. There is also the potential for ecological enhancement as a result of new habitat creation associated with certain infrastructure types. The draft NPS sets out how the interests of protected areas/sites should be considered by the applicant, the Examining Authority and the Secretary of State. The NPPF, the Habitats Regulations requirements and the EIA Regulations will ensure that the likely effects on biodiversity and nature conservation are comprehensively identified, assessed and where necessary mitigated. Given the continued application of the legal and policy protection given to SACs, SPAs, Ramsar sites and to SSSIs, and the clear framework to guide decision making on nationally significant water resource infrastructure, the cumulative effects of the draft NPS and other plans and policies are likely to be positive.
2. Population Economics and Skills	+	The construction and operation of water resources infrastructure will have positive economic impacts such as job creation, spend in the local economy and investment in the supply chain. The draft NPS promotes and supports job creation and seeks to ensure benefits are realised for local economies. As such it is expected to have a minor positive cumulative effect with other plans and programmes, such as the Local Growth White Paper, on the population, economics and skills AoS objective.
3. Human Health	+/?	Human Health is addressed as an Assessment Principle within the draft NPS and through the approach to mitigating the potential effect of water resources infrastructure on traffic, noise, vibration, air quality and emissions. In combination with the NPPF and the Environmental Impact

Topic	Likely Significance	Summary
		Assessment Regulations, the draft NPS will ensure that the likely effects on human health are comprehensively identified, assessed and where necessary mitigated. The draft NPS, in combination with the other plans and programmes that form the policy framework nationally for the delivery of potable water, in particular WRMPs, are considered to have a minor positive cumulative benefit to the health of the population, with a degree of uncertainty associated with health not being addressed directly as a topic within the draft NPS.
4. Land Use, Geology and Soils	+	The construction and operation of water resources infrastructure could affect existing land uses due to land take associated with new development. This may result in clearance of vegetation and loss of soil levels leading to the loss of soil function and processes. It could also lead to disruption to agricultural drainage, water supply and access systems. The draft NPS highlights a broad range of issues that will need to be considered by both applicants and the Secretary of State in respect of land use, geology and soils. In combination with assessment principles such as environmental net gain, EIA, SEA, WRMP development, good design and pollution control, it is considered that the draft NPS will have a minor cumulative benefit on the land use, geology and soils AoS objective.
5. Water Quality	+ +	The construction and operation of new water resources infrastructure can have a wide range of both positive and negative effects on water quality depending on the type, scale and location of development and the baseline water environment. Effects during construction may be associated with, the discharge of contaminants or changes to the hydrological regime, continuity, and morphological conditions of associated waterbodies. During operation, meanwhile, effects may be related to changes to the physio-chemical status of waterbodies or flow variation. The draft NPS requires (in liaison with key regulators and other bodies with an interest in the water environment) that potential impacts on water quality are identified, assessed and, where necessary, mitigated. This is expected to help protect surface water, groundwater, estuarine and coastal water quality. The draft NPS, in combination with the other plans and programmes that form the policy framework nationally for the delivery of potable water, including WRMPs and the Water Framework Directive, are considered to have a significant cumulative benefit to water quality.
6. Water Quantity	+ +	The construction and operation of new water resources infrastructure can have a wide range of effects on water quantity associated with, in particular, changes to abstraction regimes and flows; the magnitude of these effects will be dependent on the type, scale and location of development and the baseline water environment, including the availability of water for abstraction. The draft NPS requires (in liaison with key regulators and other bodies with an interest in the water environment) that potential impacts on water quantity are identified, assessed and, where necessary, mitigated. This is expected to help ensure the sustainable use of water resources. The draft NPS, in combination with the other plans and programmes that form the policy framework nationally for the delivery of potable water, including WRMPs, River Basin Management Plans and the Water Framework Directive, are considered to have a significant cumulative benefit on water quantity.
7. Flood Risk and Coastal Change	+	The nature of effects on flood risk and coastal change is highly dependent on the type of infrastructure being promoted, with desalination plants particularly vulnerable to flood risk and coastal change due to their coastal locations. The draft NPS stipulates that the Secretary of State can refuse consent in Flood Zones 2 and 3 if the sequential and exception test, respectively, have not been satisfactorily applied which will help to avoid inappropriate development in areas of

Topic	Likely Significance	Summary
		flood risk. The draft NPS, in combination with the NPPF, local flood risk management plans and strategies and other guidance, are considered to have a minor cumulative benefit on flood risk and coastal change.
8. Air	+	The construction of new water resources infrastructure can have an adverse effect on air quality as a result of the use of heavy machinery and other plant. This in turn can adversely affect both human health and biodiversity. The draft NPS seeks to minimise air pollution and the effects of vibration through a range of mitigation measures including the use of Construction Environmental Management Plans (CEMP) and the consideration of air quality as a part of the Environmental Statement. The draft NPS, in combination with the NPPF, PPG and the Government's long term commitments to air quality such as the requirements of the Gothenburg Protocol are considered to have a minor cumulative benefit on air quality.
9. Noise	+	The construction of new water resources infrastructure can be expected to involve the generation of noise which could lead to adverse impacts on sensitive receptors, including adverse effects on sites of importance for nature conservation and local communities. Sources of potential noise include, inter alia, the operation of plant and machinery, construction vehicle movements and operational noise emissions associated with water resources infrastructure such as desalination plants. The draft NPS seeks to minimise noise pollution and the effects of vibration by requiring the identification and assessment of noise aspects though a noise assessment as part of an ES. The draft NPS, in combination with the Noise Policy Statement for England, the NPPF and the PPG on noise are considered to have a minor cumulative benefit on noise.
10. Climatic Factors	+	New water resources infrastructure will contribute to climate change due to emissions associated with, for example, vehicle movements to and from sites, the use of powered plant, the embodied carbon within construction materials and carbon emissions associated with energy use. Desalination in particular is an energy intensive process with the consequent potential for high carbon emissions. The draft NPS seeks to ensure that the carbon impacts of development are assessed, and appropriate mitigation measures implemented so as to reduce emissions. The draft NPS, in combination with national planning policy and the WRMP process are considered to have a minor cumulative benefit on climatic factors.
11. Waste and resources	+	The construction of nationally significant water resources infrastructure will likely require substantial volumes of resources as well as natural resources such as water. During the lifetime of such a project, and particularly at construction, large quantities of waste will also be generated. The draft NPS promotes good design as an integral consideration from the outset of a proposal which, allied with the application of the environmental net gain principle, is expected to help encourage the sustainable use of natural resources and material assets, including through the re-use and recycling of wastes and materials. The draft NPS, in combination with national planning policy, EIA Regulations and the wide range of legislation at the European and national level on waste including the Waste Framework Directive are considered to have a minor cumulative benefit on waste and resources.
12. Traffic and Transport	+	The transportation of materials, wastes and personnel during the construction (and in some cases operation) of water resources infrastructure may have a wide range of impacts on the surrounding transport infrastructure, users of that infrastructure and on other connecting networks. Development may also affect accessibility. In this context, the draft NPS seeks to ensure that significant transport impacts are identified through an ES and associated transport assessment and, aided by a travel plan, mitigated appropriately. The draft NPS, in combination with national

Topic	Likely Significance	Summary
		planning policy, EIA Regulations and Local Transport Plans are considered to have a minor cumulative benefit on traffic and transport.
13. Cultural Heritage	+	The development of nationally significant water resources infrastructure could have both direct (e.g. loss of or damage to an asset) or indirect (e.g. impacts on setting) effects on the significance of cultural heritage assets including archaeology. The draft NPS is likely to result in positive effects in respect of the conservation and enhancement of cultural heritage interests by providing a framework for the consideration of a range of potential impacts and mitigation. In combination with national planning policy and the EIA Regulations the draft NPS is considered to have a minor cumulative benefit on cultural heritage.
14. Landscape and Townscape	+	The construction and operation of nationally significant water resources infrastructure would be likely to have adverse impacts on landscape and townscape. The potential magnitude of effects will vary depending on the exact type, scale and location of development; where proposals are located in designated landscapes such as National Parks and AONBs and include above ground infrastructure, there is the potential for impacts to be significant. The implementation of the draft NPS is likely to result in positive effects in respect of the protection and enhancement of landscapes and townscapes; this reflects the specification of parameters associated with the construction and operation of new water resources infrastructure and identified opportunities for mitigation and enhancement. In combination with national planning policy, specific statutory requirements concerning effects on nationally designated landscapes (Section 11A of the National Parks and Access to Countryside Act 1949 and Section 85 of the Countryside and Rights of Way Act 2000) and the EIA Regulations, the draft NPS is considered to have a minor cumulative benefit on landscape and townscape.

Cumulative Effects In-combination with Other Plans and Programmes

5.6.6 Potential cumulative effects could also be associated with the interaction of the draft NPS with other plans and programmes. The non-location specific nature of the draft NPS limits the extent to which such effects can be considered in detail. Given the positive effects identified for the draft NPS, it appears the interactions between the draft NPS and other plans or programmes, particularly those directly related to water resources infrastructure, will give rise to positive cumulative effects.

5.6.7 **Table 5.19** provides a summary of the cumulative effects of the draft NPS in combination with the waste water infrastructure NPSs. Whilst other NPS would be expected to have an effect on the water environment, this is typically as a result of the ongoing use of any resultant development, for example the NPS for New Nuclear Power would be expected to lead to the development of nuclear power stations with a high water demand. However, this are operational issues with a high degree of uncertainty. The Waste Water NPS set out to manage the water environment and in turn the potential for cumulative effects should be considered.

Table 5.19 Summary of cumulative effects of the draft NPS with the waste water infrastructure NPSs.

NPS	Likely effect on…	Likely Significance	Summary
NPS for Waste Water	Cumulative effects on all AoS Objectives	+	The NPS sets out Government policy for the provision of major waste water infrastructure and provides information on two specific NSIPs, a sewage treatment works scheme at Deephams in North East London and a waste water collection, storage and transfer tunnel (the Thames Tunnel). The implementation of the draft NPS for Water Resources Infrastructure alongside the adopted NPS for Waste Water would have cumulative benefits for all objectives and both document provide a policy framework ensuring that a broad range of environmental, social and economic factors are considered by the Secretary of States as a part of the decisions making process.

5.7 Transboundary Effects

5.7.1 The appraisal presented above has found that the implementation of the draft NPS will have positive effects across all of the AoS objectives, with significant cumulative positive effects identified for water quantity and quality. This reflects the expectation that the policy and guidance for the project applicant, the Examining Authority and the Secretary of State contained in the draft NPS will, alongside prevailing national planning policy, legislation and regulatory regimes, provide a positive framework that helps to ensure the potential adverse impacts of water resources infrastructure are identified, appropriately assessed and, where necessary, avoided, minimised or mitigated.

5.7.2 As the draft NPS relates to England only and the AoS has found that it will have no significant effects across the AoS objectives, it is concluded that implementation of the NPS will have no significant transboundary effects. The transboundary effects (if any) of individual proposals for water resources infrastructure will be considered at project-level as part of the development consent process.

5.8 Mitigation and Enhancement

5.8.1 The AoS has been undertaken iteratively alongside the development of the draft NPS in order to enhance its sustainability performance. Based on the appraisal of the draft NPS (as proposed), further measures have been identified to enhance the sustainability of the document. These measures are included within each of the topic-based assessments in **Appendix B** and are presented separately in **Appendix F**.

5.8.2 The recommendations arising from the appraisal predominantly relate to the impacts contained in Chapter 4 of the draft NPS. A number of measures to enhance the draft NPS cut-across several of the AoS objectives and draft NPS topics. These crosscutting measures include:

- the inclusion of direct reference to the Planning Practice Guidance; and
- the inclusion of greater guidance with regards to the potential contents of the ES.

6. Conclusions and Monitoring

6.1 The Sustainability Effects of the Draft National Policy Statement for Water Resources Infrastructure

6.1.1 The likely significant social, economic and environmental effects of implementing the draft NPS have been identified, described and evaluated in accordance with Section 5(3) of the Planning Act 2008 and in compliance with the requirements of the SEA Directive (2001/42/EC) and relevant implementing regulations.

6.1.2 Overall, the appraisal contained in this AoS Report has found that the implementation of the draft NPS is likely to have positive effects across all of the AoS objectives that have been used to help characterise the social, economic and environmental effects of the draft NPS, with significant cumulative positive effects identified for water quantity and quality. This reflects the expectation that the policy and guidance for the applicant, the Examining Authority and the Secretary of State contained in the draft NPS will, alongside prevailing national planning policy, legislation and regulatory regimes, provide a positive framework that helps to ensure the potential adverse impacts of water resources infrastructure development are identified, appropriately assessed and, where necessary, avoided, minimised or mitigated.

6.1.3 Importantly, by providing a clear framework for decisions relating to water resources infrastructure, the draft NPS will support the delivery of new water resources infrastructure in a timely manner which is anticipated to be of increasing importance in a changing climate.

6.1.4 No negative effects (significant or minor) on the AoS objectives have been identified during the appraisal of the draft NPS. However, opportunities have been highlighted to enhance the positive effects associated with the implementation of the draft NPS.

6.2 Comparison of the Draft National Policy Statement for Water Resources Infrastructure and the No NPS Alternative

6.2.1 The alternative of not designating an NPS would mean that existing national planning policy would guide the development of any future water resources infrastructure for. Taking into account the existing legislative and regulatory framework that exists to manage environmental impacts, this alternative would be expected to have positive effects across the AoS objectives.

6.2.2 However, relative to the designation of the NPS, there would be a higher degree of uncertainty due to the absence of a clear statement regarding the full range of considerations to be taken into account by the applicant and Secretary of State and opportunities for the mitigation of adverse impacts and enhancement of benefits may be missed. Importantly, under this alternative there would also be increased uncertainty with regard to the successful and timely delivery of water resources infrastructure which could have implications in respect of the reliance of the water supply in the UK in a changing climate. In consequence, the alternative of not designating a NPS is considered to be a worse performing alternative than designating a NPS.

6.3 Reasons for Selecting the Draft National Policy Statement for Water Resources Infrastructure and Rejecting Reasonable Alternatives

Reasons for Selecting the Draft National Policy Statement

6.3.1 The draft NPS as proposed provides a clear and transparent policy framework in which planning decisions in respect of water resources infrastructure would take place. Once designated, the NPS will provide increased certainty to the developer, Examining Authority and Secretary of State that nationally significant water resources infrastructure can be brought forward.

6.3.2 It will help to ensure that the potential adverse impacts of water resources infrastructure development are identified, appropriately assessed and, where necessary, that such impacts are avoided, minimised or mitigated. It will also set out a clear decision making process, involving objective examination by the Planning Inspectorate, which recommends to the Secretary of State whether or not to grant development consent.

6.3.3 The Government considers that the water resources management planning process is the appropriate method of identifying proposed locations, sites and infrastructure projects and that a non-site specific NPS provides an appropriate framework for examination of development consent order applications, that builds on this process.

6.3.4 Overall, the designation of the draft NPS as proposed would ensure that planning decisions, in respect of water resources infrastructure, take into account the full range of environmental and socio-economic impacts associated with nationally significant water resources infrastructure development and that they are expedient, timely, predictable and accountable. This will ultimately support the UK Government's policy to secure the goal of plentiful water as set out in the Government's 25 Year Environment Plan. In consequence, the draft NPS as proposed is being taken forward for consultation.

Reasons for Rejecting the Reasonable Alternatives Considered

No NPS

6.3.5 Under this reasonable alternative, a NPS would not be designated. This would not prevent water resources infrastructure from coming forward and planning decisions would be made in the context of the prevailing national planning policy and legislation. However, there would be increased uncertainty in respect of the successful and timely delivery of a nationally significant water resources infrastructure project and in the absence of a clear policy statement, the full range of considerations and opportunities for the mitigation of adverse impacts and enhancement of benefits may be missed. In consequence, the alternative of not designating a NPS has been rejected.

6.4 Proposals for Monitoring

6.4.1 It is a requirement of the SEA Directive to establish how the significant effects of implementing the draft NPS will be monitored. As set out in Government Guidance[68], "it is not necessary to monitor

[68] ODPM (2005) *A Practical Guide to the Strategic Environmental Assessment Directive.* Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf

everything or monitor an effect indefinitely. Instead, monitoring needs to be focused on significant sustainability effects".

6.4.2 Monitoring should therefore be focused on:

- the significant effects identified in the appraisal that may give rise to irreversible damage, with a view to identifying trends and where appropriate to implement relevant mitigating measures before such damage is caused; and
- uncertain effects where monitoring would enable preventative or mitigating measures to be undertaken.

6.4.3 Article 10(2) of the SEA Directive specifically states that, where appropriate, existing monitoring arrangements may be used to assess the success of the appropriate plan in achieving its objectives. It does not require that targets be developed for the SEA itself.

6.4.4 As set out above, the appraisal contained in this AoS Report has found that the implementation of the draft NPS is likely to have positive effects across all of the AoS objectives. No significant positive or significant negative effects have been identified. Despite this, monitoring the socio-economic and environmental effects of the implementation of the draft NPS can help to answer questions such as:

- Were the AoS predictions of effects accurate?
- Is the NPS contributing to the achievement of the AoS objectives?
- Are mitigation measures performing as well as expected?
- Are there any unforeseen adverse effects? Are these within acceptable limits, or is remedial action desirable?

6.4.5 The need for ongoing monitoring is particularly pertinent given the uncertainties identified in **Section 4.5**of this report.

6.4.6 For the 14 topics considered in this AoS, it is therefore proposed that monitoring should focus on the indicators and sources of information set out in **Table 6.1**.

Table 6.1 Potential Monitoring Indicators

Topic Area	Potential Indicator(s)	Possible Source(s) of Information
Biodiversity and Nature Conservation	Annual (where information allows) trends in: • condition of designated sites; • threatened habitats and species; • populations of countryside birds; and • surface water biological indicators in locations at or adjacent to development sites including associated infrastructure. Implementation of construction management plans. Implementation of biodiversity enhancement measures.	Joint Nature Conservation Committee Department for Environment, Food and Rural Affairs (Defra) Environment Agency Natural England Natural Resources Wales Scottish Natural Heritage Developer
Population, Economics and Skills	Annual (where information allows) trends in: • number of construction workers employed at	Developer

Topic Area	Potential Indicator(s)	Possible Source(s) of Information
	water resources infrastructure sites; • employment activity and unemployment rates in locations hosting water resources infrastructure; • business counts in locations hosting water resources infrastructure; • local jobs creation associated with the development of water resources infrastructure; • training and apprenticeship opportunities generated by water resources infrastructure development; • Gross Value Added (GVA)[69] associated with construction and operation of water resources infrastructure; • investment in local community facilities and services associated with water resources infrastructure; and • deprivation at locations hosting water resources infrastructure.	Office for National Statistics
Human Health	Annual (where information allows) trends in: • monitoring of noise levels at development sites and along transport routes to/from the water resources infrastructure sites; • number of nuisance complaints received related to water resources infrastructure activity; • air quality at development sites and along key transport routes from/to the water resources infrastructure construction sites; • water resources infrastructure worker accidents; and • health deprivation and inequalities at locations hosting water resources infrastructure. Implementation of construction management plans at water resources infrastructure construction sites.	Developer Local Planning Authority Public Health England Office for National Statistics
Land Use, Geology and Soils	Annual (where information allows) trends in: • loss of best and most versatile agricultural land as result of the development of water resources infrastructure; • area of vegetation and soil layers cleared to support water resources infrastructure; • remediation of contaminated land in support of water resources infrastructure; • incidences of land contamination at water	Developer Local Planning Authority Natural England

[69] GVA is the measure of the value of goods and services produced in an area, industry or sector of an economy.

Topic Area	Potential Indicator(s)	Possible Source(s) of Information
	resources infrastructure sites; and • condition of Geological Conservation Review sites in locations adjacent to water resources infrastructure sites. Implementation of construction management plans at water resources infrastructure sites.	
Water Quality (including surface and ground water quality and availability)	Annual (where information allows) trends in: • groundwater quality monitoring; • surface water quality monitoring; • volumes of water consumption; and • consented/permitted discharges at water resources infrastructure sites and linked waterbodies.	Developer Environment Agency Natural Resources Wales Scottish Environment Protection Agency Relevant water companies
Flood Risk and Coastal Change	Annual (where information allows) trends in: • the extent of water resources infrastructure in Flood Zones 2 and 3[70]; • the extent of water resources infrastructure in Coastal Change Management Areas; • incidents of flooding downstream of water resources infrastructure sites; • the incorporations sustainable drainage systems in the design of development; • incidents of flooding affecting water resources infrastructure; and • investment in flood risk defences associated with water resources infrastructure development.	Developer Environment Agency Local Planning Authority
Air	Annual (where information allows) trends in: • air quality monitoring (including nitrogen oxides (NOx), hydrocarbons, carbon monoxide (CO), particulate matter (PM), methane, sulphur dioxide (SO2), radon, volatile organic compounds (VOCs) and ozone) at water resources infrastructure development sites and along key transport routes to/from the water resources infrastructure construction sites; and • traffic activity levels around water resources infrastructure development sites (annual average daily traffic flows). Implementation of construction management plans at water resources infrastructure	Developer Local Planning Authority Public Health England

[70] Land identified by the Environment Agency as having either a medium or high probability of flooding. Flood Zone 2 defined as land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. Flood zone 3 defined as Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.

Topic Area	Potential Indicator(s)	Possible Source(s) of Information
	construction sites.	
Noise	Annual (where information allows) trends in: • monitoring of noise levels at water resources infrastructure development sites and along transport routes from/to the water resources infrastructure construction sites; and • number of nuisance complaints received related to water resources infrastructure activity. Implementation of construction management plans at water resources infrastructure construction sites.	Developer Local Planning Authority
Climatic Factors	Annual (where information allows) trends in: • energy consumption associated with the development of water resources infrastructure; and • emissions of greenhouse gases associated with water resources infrastructure development.	Developer

6.5 Next Steps

6.5.1 This AoS Report is presented for consultation. Feedback received from consultees will be documented and considered in reviewing the proposals for the draft NPS. A Post Adoption Statement will summarise how the AoS and the consultation responses have been taken into account and how social, economic and environmental consideration have been integrated into the final decisions regarding the NPS.

Glossary and Abbreviations

Term	Definition
AONB	Area of Outstanding Natural Beauty. An area of countryside considered to have significant landscape value.
AoS	Appraisal of Sustainability. An assessment of a National Policy Statement required by the Planning Act 2008 before a National Policy Statement can be designated. It identifies, describes and evaluates the likely environmental and socio-economic effects of the National Policy Statement. If potential significant adverse effects are identified, the Appraisal of Sustainability recommends options for avoiding or mitigating such effects.
AQMA	Air Quality Management Area. These are areas which have been identified by local authorities as unlikely to reach national air quality objectives.
BAT	Best Available Technique. BATs are required to be considered (under EC Directive 96/61) in order to avoid or reduce emissions resulting from certain installations and to reduce the impact on the environment as a whole.
BEIS	Department for Business, Energy and Industrial Strategy. The department brings together responsibilities for business, industrial strategy, science, innovation, energy, and climate change.
Cadw	Cadw is the Welsh Government's historic environment service.
CEMP	Construction Environment Management Plan. A Plan which details management measures to adopt and implement during construction activities to avoid and manage construction effects on the environment and surrounding communities.
CFMP	Catchment Flood Management Plan. A plan that considers and looks to address all types of inland flooding, from rivers, groundwater, surface water and tidal flooding.
CO	Carbon monoxide (a colourless, odourless and toxic gas).
CO_2	Carbon dioxide. A naturally occurring gas, also a by-product of burning fossil fuels and other industrial processes. It is the principal anthropogenic greenhouse gas that affects the Earth's radiative balance.
Cumulative effects	Effects that occur where several individual activities which each may have an insignificant effect, combine to have a significant effect.
MHCLG	Ministry for Housing, Communities and Local Government. The UK government department responsible for building regulations, community cohesion, fire services and community resilience, housing, local government, planning, race equality and urban regeneration.
DCO	Development Consent Order. A consent by a Minister for a Nationally Significant Infrastructure Project. This will combine a grant of planning

Term	Definition
	permission with a range of other separate consents, such as listed building consent.
Defra	Department for Environment, Food and Rural Affairs. The UK government department responsible for safeguarding the natural environment, supporting the food and farming industry, and sustaining the rural economy.
Deployable output	Deployable output is defined in the draft statutory instrument (The Infrastructure Planning (Water Resources) (England) Order 2018). It refers to the annual average volume of water that can be produced per day from a defined facility under drought conditions, having regard in particular (where applicable) to: the hydrological yield of the facility; the quantity of water licensed for abstraction; the state of the local environment; defined infrastructure properties; any water treatment processes; and any requirements relating to water quality.
EA	Environment Agency. The environmental regulator for England. The Agency's role is the enforcement of specified laws and regulations aimed at protecting the environment, in the context of sustainable development, predominantly by authorising and controlling radioactive discharges and waste disposal to air, water and land. The Environment Agency also regulates nuclear sites under the Environmental Permitting Regulations and issues consents for non-radioactive discharges.
EIA Directive	Environmental Impact Assessment Directive, which covers the Directive 2014/52/EU which amended Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment which itself updated the original Directive (85/337/EEC).
EMP	Environmental Management Plan. This is a document that sets out the required measures to manage the environmental effects of development and to demonstrate compliance with relevant legislation.
ES	Environmental Statement. An Environmental Statement contains an Environmental Impact Assessment (EIA) completed in accordance with Directive 2014/52/EU and UK implementing regulations. The ES must include at least the information reasonably required to assess the likely significant environmental effects of a development. The ES is submitted with an application for development consent.
European site	European sites include Sites of Community Importance (SCIs), Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs), and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2010.
FTE	Full Time Equivalent. This is a unit to measure employed persons in a way that makes them comparable although they may work a different number of hours per week. It is obtained by comparing an employee's average number of hours worked to the average number of hours of a full-time worker.
GHG	Greenhouse gases. These gases absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the

Term	Definition
	Earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect.
Ha	Hectare; a metric unit of area defined as 10,000 square metres.
HGV	Heavy Goods Vehicle. A heavy goods vehicle (HGV) is the term for any truck with a gross combination mass (GCM) of over 3.5 tonnes. It is defined in defined in Directive 2001/116/EC. There are sub-categories for vehicles between 3.5 tonnes and 12 tonnes and for all goods vehicles over 12 tonnes.
HRA	Habitats Regulations Assessment. This is an assessment of whether a draft plan or project is likely to have a significant effects on any European sites (either alone or 'in combination' with other plans or projects); and, if so, whether these effects will result in any adverse effects on that site's integrity with reference to the site's conservation objectives. This is undertaken in accordance with the Conservation of Habitats and Species Regulations 2010 (as amended) and Directive 92/433/EEC (the 'Habitats Directive').
ML	Megalitre; a unit of volume defined as a million litres.
t CO_2 eq	Tonnes of carbon dioxide equivalent. This is a metric measure used to compare the emissions from various greenhouse gases on the basis of their global warming potential by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.
N2K (Natura 2000) sites	Natura 2000 is a network of nature protection areas in the territory of the European Union. It is made up of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated respectively under the Habitats Directive and Birds Directive. The network includes both terrestrial and marine sites (Marine Protected Areas (MPAs)).
NPPF	National Planning Policy Framework. The framework first published by the then Department for Communities and Local Government in 2012 sets out the Government's planning policies for England and how these are expected to be applied. This has been revised in 2018.
NRW	Natural Resources Wales. The environmental regulator in Wales. It was created in 2013 with a mission to ensure that the environment and natural resources of Wales are sustainably maintained, enhanced, and used, now and in the future. Its regulatory responsibilities includes the regulation of the disposal of radioactive wastes from nuclear sites, as well as other premises in Wales. All permits relating to sites generating or disposing of radioactive waste in Wales are issued by Natural Resources Wales. Compliance with these permits at nuclear sites is currently carried out by the Environment Agency specialists on behalf of Natural Resources Wales, but enforcement is undertaken directly by Natural Resources Wales.
NTS	Non-Technical Summary. Summarises the findings of this AoS.
RIGS	Regionally important geological and geomorphological sites (RIGS). The sites are locally designated sites of local, national and regional importance for geodiversity (geology and geomorphology) in the United Kingdom.

Term	Definition
NOx	Nitrogen oxides. NOx is the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts.
NSIP	Nationally significant infrastructure projects. These are large scale developments that require development consent under the Planning Act 2008.
OECD	Organisation for Economic Co-operation and Development. An intergovernmental economic organisation with 35 member countries, founded in 1960 to stimulate economic progress and world trade.
ONS	Office for National Statistics (ONS). The UK's largest independent producer of official statistics and its recognised national statistical institute. The ONS is responsible for collecting and publishing statistics related to the economy, population and society at national, regional and local levels. The ONS also conducts the census in England and Wales every 10 years.
PPW	Planning Policy Wales. PPWs provides the land use planning policy for Wales. It is supplemented by a series of Technical Advice Notes (TANs) and Minerals Technical Advice Notes (MTANs).
Ramsar	Ramsar sites are wetlands of international importance, designated under the Ramsar Convention (first signed in 1971).
SAC	Special Areas of Conservation are strictly protected sites designated under the Habitats Directive.
SEA	Strategic Environmental Assessment. An iterative process to identify, describe and evaluate the likely significant effects of a plan or programme (and any reasonable alternatives). It is undertaken in compliance with Directive 2001/42/EC and UK implementing regulations (SI 2004/1633, SI 2004/1656, SR 2004/280).
SEA Directive	Strategic Environmental Impact Assessment Directive. Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment.
Secondary effects	Effects that do not occur as a direct result of a plan or activity, but occur at distance from the direct impacts or as a result of a complex pathway.
SEPA	Scottish Environment Protection Agency. The environmental regulator for Scotland. Responsibilities include operating the Scottish aspect of the Radioactive Incident Monitoring Network and work with the Health and Safety Executive to control the risk of major accidents at industrial sites.
SO_2	Sulphur Dioxide (a toxic and odorous gas).
SPA	Special Protected Areas are strictly protected sites classified in accordance with Article 4 of the Birds Directive.
SPZ1	Groundwater Source Protection Zone 1. SPZs are areas defined by the Environment Agency as areas that highlight the risk of groundwater contamination from any activities that might cause pollution in the area. SPZ1

Term	Definition
	is the inner protection zone; it is defined as the 50 day travel time from any point below the water table to the source. This zone has a minimum radius of 50 metres.
SSSI	Site of Special Scientific Interest. A SSSI is an area notified by nature conservation agencies as an area of land which is 'of special interest by reason of any of its flora, fauna, or geological or physiographical features'.
SuDS	Sustainable Drainage Systems. SuDS are a sequence of water management practices and facilities designed to drain surface water in a manner that will provide a more sustainable approach than what has been the conventional practice of routing run-off through a pipe to a watercourse.
Synergistic effects	Effects that interact to produce a total effect that is greater than the sum of the individual effects.
UKCP09	UK Climate Projections 09. UKCP09 provide projections on climate change based on methodology designed by the Met Office. The projections are designed to help plan how to adapt to a changing climate.
WHO	World Health Organisation. WHO is a specialised agency of the United Nations that is concerned with international public health.
WRZ	Water Resource Zone. WRZ describes an area within which the management of supply and demand of water is largely self-contained (apart from agreed bulk transfers of water).
WFD	Water Framework Directive. Directive 2000/60/EC establishing a framework for Community action in the field of water policy.

Appendix A
Quality Assurance Checklist

The Government's Guidance on SEA contains a quality assurance checklist to help ensure that the requirements of the SEA Directive are met. These requirements have been highlighted below and a signpost provided to where the requirements are met in this AoS Report.

Objectives and Context	
The plan's purpose and objectives are made clear.	Presented in **Section 2**.
Environmental issues, including international and EC objectives, are considered in developing objectives and targets.	**Section 3** and **Appendix B** identify the sustainability baseline issues and set out the environmental protection objectives and targets and how these are linked to the AoS objectives. AoS objectives are clearly set out and linked to indicators and targets where appropriate. **Section 4** presents the AoS objectives and guide questions. Links to other related plans, programmes and policies are identified and explained. **Section 3 and Appendix B** identify relevant plans and programmes.
Scoping	
The environmental consultation bodies are consulted in appropriate ways and at appropriate times on the content and scope of the Scoping Report.	Technical consultation on an initial AoS Scoping Report took place between 13 November 2017 and 22 December 2017. **Appendix D** contains a schedule of consultation responses.
The SEA focuses on significant issues.	Key sustainability issues that could arise from the implementation of the draft NPS have been identified in this AoS Report (see **Section 3**) and **Appendix B**.
Technical, procedural and other difficulties encountered are discussed; assumptions and uncertainties are made explicit.	**Section 4** describes the key difficulties encountered during the preparation of this AoS Report.

Alternatives	
Realistic alternatives are considered for key issues, and the reasons for choosing them are documented.	Potential alternatives are identified in **Section 2** and have been assessed in **Appendix B**. A summary of this assessment is provided in **Section 5**. The reasons for the selection of the draft NPS (as proposed) and the rejection of alternatives are set out in **Section 6**.
The environmental effects (both adverse and beneficial) of each alternative are identified and compared.	The reasonable alternatives to the draft NPS have been assessed in **Appendix B**. A summary of this assessment is provided in **Section 5**.
Inconsistencies between the alternatives and other relevant plans, programmes or policies are identified and explained.	The reasonable alternatives to the draft NPS have been assessed in **Appendix B**. A summary of this assessment is provided in **Section 5**.
Reasons are given for selection or elimination of alternatives.	Potential alternatives are identified in **Section 2.** The reasons for the selection of the draft NPS (as proposed) and the rejection of reasonable alternatives are set out in **Section 6**
Baseline Information	
Relevant aspects of the current state of the environment and their likely evolution without the plan are described.	Refer to **Section 3** and **Appendix B**.
Characteristics of areas likely to be significantly affected are described, including areas wider than the physical boundary of the plan area where it is likely to be affected by the plan where practical.	Refer to **Appendix B**.
Difficulties such as deficiencies in information or methods are explained.	These are stated throughout the report where appropriate and **Section 4.**
Prediction and Evaluation of Significant Environmental Effects	
Effects identified include the types listed in the Directive (biodiversity, population,	These are set out in **Appendix B** and summarised in **Section 5**.

human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage and landscape) as relevant; other likely environmental effects are also covered as appropriate.	
Both positive and negative effects are considered, and the duration of effects (short-, medium-, or long-term) is addressed.	These are set out in **Appendix B** and summarised in **Section 5**.
Likely secondary, cumulative and synergistic effects are identified where practicable.	These are set out in **Appendix B** and summarised in **Section 5**.
Inter-relationships between effects are considered where practicable.	These are set out in **Appendix B** and summarised in **Section 5**.
The prediction and evaluation of effects makes use of relevant accepted standards, regulations and thresholds.	Refer to individual topic chapters in **Appendix B** and **Section 4.**
Methods used to evaluate the effects are described.	These are described in **Section 4**.
Mitigation Measures	
Measures envisaged to prevent, reduce and offset any significant adverse effects of implementing the plan or programme are indicated.	These are set out in **Appendix B,** collated in **Appendix F** and summarised in **Section 5**.
Issues to be taken into account in project consents are identified.	If relevant, these are set out in **Appendix B** and summarised in **Section 5**.
Environmental Report	
Is clear and concise in its layout and presentation.	The layout of the AoS is set out in **Section 1**. The structure was subject to early consultation and review as part of scoping.
Uses simple, clear language and avoids or explains technical terms.	The AoS has been written in plain English as far as the technical nature of the report allows.

Uses maps and other illustrations where appropriate.	Tables have been used throughout the AoS Report and in the appendices where appropriate.
Explains the methodology used.	This is presented in **Section 4**.
Explains who was consulted and what methods of consultation were used.	This is covered in **Section 1**.
Identifies sources of information, including expert judgement and matters of opinion.	References to information sources are provided throughout the report and appendices where appropriate.
Contains a non-technical summary covering the overall approach to the SEA, the objectives of the plan, the main options considered, and any changes to the plan resulting from the SEA.	A Non-Technical Summary has been provided.
Consultation	
The SEA is consulted on as an integral part of the plan-making process.	Technical consultation on an initial AoS Scoping Report took place between 13 November 2017 and 22 December 2017. **Section 1** presents a summary of this consultation. **Appendix D** contains a schedule of consultation responses. This AoS Report will be published for consultation alongside the draft NPS.
Consultation Bodies and the public likely to be affected by, or having an interest in, the plan or programme are consulted in ways and at times which give them an early and effective opportunity within appropriate timeframes to express their opinions on the draft plan and Environmental Report.	Technical consultation on an initial AoS Scoping Report took place between 13 November 2017 and 22 December 2017. **Section 1** presents a summary of this consultation. **Appendix D** contains a schedule of consultation responses. This AoS will be published for consultation alongside the draft NPS.
Decision-making and Information on the Decision	
The Environmental Report and the opinions of those consulted are taken	This will be included in the Post Adoption Statement (to be issued following consultation on this AoS Report).

into account in finalising and adopting the plan or programme.	
An explanation is given of how they have been taken into account.	This will be included in the Post Adoption Statement (to be issued following consultation on this AoS Report).
Reasons are given for choosing the plan or programme as adopted, in the light of other reasonable alternatives considered.	This will be included in the Post Adoption Statement (to be issued following consultation on this AoS Report).
Monitoring Measures	
Measures proposed for monitoring are clear, practicable and linked to the indicators and objectives used in the SEA.	Measures are presented in **Section 6**.
Monitoring is used, where appropriate, during implementation of the plan or programme to make good deficiencies in baseline information in the SEA.	Details of this are provided in **Section 6**.
Monitoring enables unforeseen adverse effects to be identified at an early stage (these effects may include predictions which prove to be incorrect).	Details of this are provided in **Section 6**.
Proposals are made for action in response to significant adverse effects.	This will be set out in the Post Adoption Statement (to be published following consultation).

Appendix B
Detailed Appraisal including Baseline and Contextual Information

Appendix C
Definitions of Significance

Illustrative Guidance for the Assessment of Significance for Biodiversity and Nature Conservation

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would have a significant and sustained positive effect on European or national designated sites and/or protected species. (e.g. fully supports all conservation objectives on site, long-term increase in population of designated species); • Option would create new areas of wildlife interest with improved public access in areas where there is a high demand for access to these sites. • Option would lead to a site of importance for nature conservation gaining a favourable status. • Option would significantly increase ecosystem resilience.
+	Positive	• Option would have a minor positive effect on European or national designated sites and/or protected species (e.g. – supports one of the conservation objectives on site, short-term increase in population of designated species); • Option would have a positive effect on local biodiversity (e.g. through removal of all existing disturbance/pollutant emissions, or creation of new habitats leading to long-term improvement to ecosystem structure and function); • Option would enhance existing public access to areas of wildlife interest in areas where there is some demand for these sites. • Option would have a minor positive effect on the status of a site of importance for nature conservation. • Option would have a minor positive effect on ecosystem resilience.
0	Neutral	• Option would not have any effects on European or national designated sites and/or any species (including both designated and non-designated species); • Option would not affect public rights of way or access to areas of wildlife interest.
-	Negative	• Option would have negative effects on local biodiversity (e.g. through an increase in disturbance/pollutant emissions, or some loss of habitat leading to temporary loss of ecosystem structure and function); • Option would decrease public access to areas of wildlife interest in areas where there is some demand for access to these sites. • Option would have a minor negative effect on the status of a site of importance for nature conservation. • Option would have a minor negative ecosystem resilience.
--	Significant	• Option would have a negative effect on European or national designated

Effect	Description	Illustrative Guidance
	Negative	sites and/or protected species (i.e. on the interest features and integrity of the site, by preventing any of the conservation objectives from being achieved or resulting in a long-term decrease in the population of a priority species). These effects could not be reasonably mitigated. • Option would lead to a site of importance for nature conservation losing a favourable status. • Option would significantly decrease ecosystem resilience.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Illustrative Guidance for the Assessment of Significance for Population, Economics and Skills

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would help ensure sufficient water resources infrastructure is in place to meet increased future long term regional demand for water and to support economic development; • Option would ensure a significant additional regional affordable supply of water is maintained and vulnerable customers protected; • Option would incorporate the provision of social infrastructure and amenities; • Option would provide educational services/facilities and offer long-term opportunities for skills development including, for example, apprenticeship schemes; • Option would generate in the order of 800 or more direct full time equivalent (FTE) employment opportunities per annum[1], a large proportion of which would benefit the local community; • Option would generate significant investment in local supply chains fostering economic growth, generating indirect employment opportunities and enhancing the robustness of the local economy (e.g. through the procurement of local contractors to undertake construction activities); • Option would significantly enhance the attractiveness of an area to existing and prospective residents and businesses (e.g. through the generation of employment opportunities).
+	Positive	• Option would help ensure water resources infrastructure is in place to contribute towards meeting increased future long term sub-regional demand for water and to support economic development; • Option would ensure an additional affordable supply of water is maintained and vulnerable customers protected; • Option would stimulate some limited investment in existing services and amenities (e.g. associated with any increase in the work place population); • Option would provide some educational opportunities and skills development including, for example, apprenticeship schemes; • Option would generate some direct full time equivalent (FTE) employment opportunities per annum (below 800) which may benefit the local community; • Option would generate some limited investment in local supply chains (e.g. through the procurement of local contractors to undertake construction activities); • Option would enhance the attractiveness of an area to existing and prospective residents and businesses (e.g. through the generation of employment opportunities and provision of infrastructure).
0	Neutral	• Option would not affect the provision of water resources infrastructure. • Option would not affect affordable supplies of water. • Option would not affect social infrastructure and amenities available to

Effect	Description	Illustrative Guidance
		local communities; • Option would not affect the provision of educational services/facilities or offer opportunities for skills development; • Option would not affect any local employment opportunities/increase local unemployment rates; • Option would have no effect on wider economic benefits/undermine the growth and diversity of the local economy; • Option would not affect the attractiveness of an area to existing and prospective residents and businesses.
-	Negative	• Option would reduce/restrict the provision of water resources infrastructure. • Option would adversely affect affordable supplies of water. • Option would cause some disruption to existing services and amenities available to local communities which is likely to be felt in the short term; • Option would lead to a loss of some direct FTE jobs (below 800 per annum) (e.g. due to the cessation of some activities or rationalisation of activities on sites); • Option would reduce the resilience and diversity of the local economy (e.g. through loss of local supply chain opportunities); • Option would reduce local investment in an area and affect growth of local economy; • Option would undermine the attractiveness of an area to existing and prospective residents and businesses (e.g. due to impacts arising from construction activities or concerns regarding operational impacts); • Option would undermine the quality of life of the local population (e.g. due to noise and vibration associated with HGV movements during construction or operation) such that some complaints could be expected.
--	Significant Negative	• Option would reduce/restrict the provision of nationally significant water resources infrastructure. • Option would adversely affect affordable regional supplies of water. • Option would result in the loss of existing services and amenities available to local communities (e.g. where development is proposed on a site in community use); • Option would lead to a significant loss of direct FTE jobs (a minimum of 800 per annum) (e.g. due to the closure of local employment sites); • Option would significantly reduce the resilience and diversity of the local economy (e.g. through significant loss of local contracts and supply chain opportunities); • Option would lead to a significant reduction in investment in an area that would affect the growth of local economy; • Option would significantly undermine the attractiveness of an area to existing and prospective residents and businesses (e.g. due to impacts arising from construction activities or concerns regarding operational

Effect	Description	Illustrative Guidance
		impacts); • Option would seriously undermine the quality of life of the local population (e.g. due to noise and vibration associated with HGV movements during the construction or operation of facilities) such that the project and local authority would be likely to experience a considerable number of complaints.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

[1] The proposed threshold of significance represents around 0.5% of the estimated 166,500 jobs supported by the water sector in the UK (https://www2.warwick.ac.uk/fac/soc/ier/ngrf/lmifuturetrends/sectorscovered/energy/sectorinfo/subsectors/).

Illustrative Guidance for the Assessment of Significance for Human Health

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would have a significant positive effect on the likely determinants of good health (including employment opportunities, level of deprivation, physical activity, access to open space and recreational activities, environmental quality and community safety); • Option would have a strong and sustained positive effect on health and well-being and acknowledges the health needs of specific groups in society (e.g. children, mums to be and the elderly); • Option would support the provision of healthcare facilities (i.e. as a result of an increase in the local population linked with employment provision).
+	Positive	• Option would have a positive effect on the likely determinants of good health (including employment opportunities, level of deprivation, physical activity, access to open space and recreational activities, environmental quality and community safety); • Option would have a positive effect on health and well-being and acknowledges the health needs of specific groups in society (e.g. children, mums to be and the elderly).
0	Neutral	• Option would have no observable effects (short, medium and long-term) on the health and well-being of individuals, specific groups in society (e.g. children, mums to be and the elderly) and communities.
-	Negative	• Option would have a negative effect on the likely determinants of good health (including employment opportunities, level of deprivation, physical activity, access to open space and recreational activities, environmental quality and community safety); • Option would have a negative effect on the health and well-being of individuals, specific groups in society (e.g. children, mums to be and the elderly) and communities; • Option would result in some nuisance and/or disruption to communities, such that some complaints could be expected.
--	Significant Negative	• Option would have a significant negative effect on the likely determinants of good health (including employment opportunities, level of deprivation, physical activity, access to open space and recreational activities, environmental quality and community safety); • Option would have a significant negative effect on the health and well-being of individuals, specific groups in society (e.g. children, mums to be and the elderly) and communities; • Option would cause statutory nuisance or a sustained and significant nuisance and/or disruption to communities.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Effect	Description	Illustrative Guidance

Illustrative Guidance for the Assessment of Significance for Land Use, Geology and Soils

Effect	Description	Illustrative Guidance
++	Significant positive	• Option would restore and significantly improve soil quality and land stability to conditions beyond current levels and remove all soil contamination so that soil functions and processes would be significantly improved in the long term; • Option would minimise the use of, and protect from irreversible damage, high quality agricultural land; • Option would have a significant and sustained positive impact on national designated geological sites; • Option would seek to minimise the use of any undeveloped land, and look to preferentially reclaim and redevelop significant areas of previously developed or derelict land.
+	Positive	• Option would generate minor improvements in soil quality and land stability and would remove some soil contamination so that soil functions and processes would be improved in the long term; • Option would reduce any potential damage to high quality agricultural land; • Option would reduce any potential hazard associated with existing soil contamination; • Option would have a minor and temporary positive impact on a national designated geological site; • Option would seek to preferentially make use of previously developed land.
0	Neutral	• Option would not significantly affect potential hazards associated with any existing contamination; • Option would not cause damage or loss to soil such that soil function and processes would not be affected; • Option would not affect land stability; • Option would not involve significant loss of any undeveloped or developed land.

Effect	Description	Illustrative Guidance
-	Negative	• Option would lead to an increase in pollutant discharges to soil; however, these would be less than permitted limits, such that there would be minor short-term increases in land contamination; • Option would cause minor increases in potential hazards associated with existing soil contamination; • Option would cause minor increases in potential hazards associated with land stability; • Option would cause a temporary loss of soil so that soil function and processes would be negatively affected in the short/medium term; • Option would cause minor short-term negative effects on geological conservation sites/important geological features or soils of high importance; • Option would lead to the majority of development using undeveloped land or land that has reverted to a 'wild' state.
--	Significant negative	• Option would lead to a statutory limit being reached or exceeded in relation to land contamination, such that there would be a major and sustained increase in land contamination; • Option would cause major and sustained increases in potential hazards associated with existing soil contamination; • Option would cause major increases in potential hazards associated with land stability; • Option would cause considerable loss of soil quality, such that soil function and processes would be irreversibly and significantly affected; • Option would cause a substantial and permanent loss of, or damage to, soil of high importance (such as best and most versatile agricultural land) and/or designated geological conservation sites/important geological features; • Option would not develop derelict or previously developed land, but would lead to development of significant areas of undeveloped land/ land that has reverted to a 'wild' state.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Illustrative Guidance for the Assessment of Significance for Water Quality

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would significantly decrease the amount of waste water, surface run-off and pollutant discharges so that the quality of water receptors (including groundwater, surface water, sea water or drinking water receptors) would be significantly improved and sustained and water targets (including those relevant to chemical and ecological condition) reached and exceeded; • Option would significantly improve surface, ground, estuarine and coastal water quality; • Option would improve Water Framework Directive waterbody status (or potential).
+	Positive	• Option would lead to minor decreases in the amount of waste water, surface run-off and/or pollutant discharges so that the quality of water receptors (including groundwater, surface water, sea water or drinking water receptors) may be improved to some level temporarily and some water targets (including those relevant to chemical and ecological condition) would be reached/exceeded; • Option would improve surface, ground, estuarine and coastal water quality.
0	Neutral	• Option would not change the amount of waste water, surface run-off and/or pollutant discharges such that the quality of water receptors would not be affected; • Option would not affect Water Framework Directive waterbody status (or potential).
-	Negative	• Option would lead to minor increases in the amount of waste water, surface run-off and/or pollutant discharges so that the quality of water receptors (including groundwater, surface water, sea water or drinking water receptors) may be decreased to some level temporarily and it may prevent some water targets (including those relevant to chemical and ecological condition) from being achieved; • Option would decrease (directly or indirectly) surface, ground, estuarine and coastal water quality.
--	Significant Negative	• Option would lead to major increases in the amount of waste water, surface run-off and/or pollutant discharges so that the quality of water receptors (including groundwater, surface water, sea water or drinking water receptors) would be considerably increased and some or all water targets (including those relevant to chemical and ecological condition) would not be achieved. • Option would significantly decrease (directly or indirectly) surface, ground, estuarine and coastal water quality • Option would significantly decrease Water Framework Directive waterbody status (or potential) where there is a requirement to justify permitting of the option under the provisions of Article 4.7 of the Water Framework Directive.

Effect	Description	Illustrative Guidance
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Illustrative Guidance for the Assessment of Significance for Water Quantity

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would lead to a major increase in water supply/availablity such that the risk of water shortages in an area is significantly decreased and abstraction is at a sustainable level in the long term; • Option would lead to a major reduction in water use compared to prior to development such that the risk of water shortages in an area is significantly decreased and abstraction is at a sustainable level in the long term; • Option would lead to a major reduction in the risk and/or severity of droughts.
+	Positive	• Option would lead to a minor increase in water supply/availablity such that the risk of water shortages in an area is decreased and abstraction is at a sustainable level in the long term; • Option would lead to a minor reduction in water use compared to prior to development such that the risk of water shortages in an area is decreased in the short term and abstraction is closer to sustainable levels than prior to development; • Option would lead to a minor reduction in the risk and/or severity of droughts.
0	Neutral	• Option would not significantly affect water demand and abstraction levels would not be altered.
-	Negative	• Option would lead to a minor reduction in water supply/availablity such that the risk of water shortages in an area is increased; • Option would lead to a minor increase in water use compared to prior to development such that the risk of water shortages in an area is increased to some level in the short term, particularly in periods of low flow, and abstraction is considered beyond sustainable levels; • Option would lead to a minor increase in the risk and/or severity of droughts.
--	Significant Negative	• Option would lead to a major reduction in water supply/availablity such that the risk of water shortages in an area is significantly increased and abstraction is not at a sustainable level in the long term; • Option would lead to major increases in water use compared to prior

Effect	Description	Illustrative Guidance
		to development such that the risk of water shortages in an area is significantly increased and abstraction is significantly beyond sustainable levels; • Option would lead to an exceedance of an abstraction license limits. • Option would lead to a major increase in the risk and/or severity of droughts.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Illustrative Guidance for the Assessment of Significance for Flood Risk and Coastal Change

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would result in a significant decrease in people or property at risk of, or affected , flooding, coastal inundation or sea level rise.
+	Positive	• Option would result in a decrease in people or property at risk of, or affected by, flooding, coastal inundation or sea level rise.
0	Neutral	• Option would not lead to an overall change in the number of people or property at risk of, or affected by, flooding, coastal inundation or sea level rise; • Option would result in development being sited in Flood Zone 1 (or equivalent) areas.
-	Negative	• Option would result in an increase in people or property at risk of, or affected by, flooding, coastal inundation or sea level rise; • Option would result in development being sited in Flood Zone 2 (or equivalent) areas.
--	Negative	• Option would result in a significant number of people or property affected by flooding, coastal inundation or sea level rise; • Option would result in development being sited in Flood Zone 3 (or equivalent) areas.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Illustrative Guidance for the Assessment of Significance for Air Quality

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would significantly improve local air quality through a sustained reduction in concentrations of pollutants identified in national air quality objectives.
+	Positive	• Option would lead to a minor improvement in local air quality from a reduction in concentrations of pollutants identified in national air quality objectives.
0	Neutral	• Option would not affect local air quality.
-	Negative	• Option would result in a minor decrease in local air quality; • Option would have a negative effect on local communities and biodiversity due to an increase in air and odour pollution and particulate deposition.
--	Significant Negative	• Option would cause a significant decrease in local air quality (e.g. leading to an exceedance of Air Quality Objectives for designated pollutants and the designation of a new Air Quality Management Area); • Option would have a strong and sustained negative effect on local communities and biodiversity due to significant increases in air and odour pollution and particulate deposition.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Illustrative Guidance for the Assessment of Significance for Noise

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would significantly improve the ambient noise environment in the vicinity of potential or actual sites.
+	Positive	• Option would lead to an improvement in the ambient noise environment in the vicinity of potential or actual sites.
0	Neutral	• Option would not affect the noise environment of potential or actual sites.
-	Negative	• Option would result in a minor negative effect on the ambient noise environment in the vicinity of potential or actual sites; • Option would cause minor disturbance associated with vibration on potential or actual sites.
--	Significant Negative	• Option would result in a major negative effect on the ambient noise environment in the vicinity of potential or actual sites over the short or longer term; • Option would cause major disturbance associated with vibration on potential or actual sites over the short or longer term.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Illustrative Guidance for the Assessment of Significance for Climate Change

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would help to significantly reduce carbon and other greenhouse gas emissions; • Option would significantly increase resilience/decrease vulnerability to climate change in the water supply and wider environment.
+	Positive	• Option would help to reduce carbon and other greenhouse gas emissions; • Option would increase resilience/decrease vulnerability to climate change in the water supply and wider environment.
0	Neutral	• Option would not lead to an overall change in carbon and other greenhouse gas emissions and would not contribute to climate change or resilience to climate change within the wider environment.
-	Negative	• Option would increase carbon and other greenhouse gas emissions; • Option would decrease resilience/increase vulnerability to climate change in the water supply and wider environment.
--	Significant Negative	• Option would significantly increase carbon and other greenhouse gas emissions; • Option would significantly decrease resilience/increase vulnerability to climate change in the water supply and wider environment.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Illustrative Guidance for the Assessment of Significance for Waste and Resource Use

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would increase the capacity of waste management infrastructure; • Option would create no additional hazardous or non-recyclable waste, whilst maximising the proportion of materials that are re-useable or recyclable; • Option would ensure the safe handling of hazardous wastes; • Option would make best use of existing infrastructure and resources (e.g. buildings and other facilities on sites) and help conserve natural resources.
+	Positive	• Option would not create an increase in the volume of hazardous and non-recyclable wastes that require disposal; • Option would increase the volume of materials reused and recycled; • Option would make best use of existing infrastructure and resources (e.g. buildings and other facilities on sites).
0	Neutral	• Option would not create an increase in the volume of hazardous and non-recyclable wastes that require disposal; • Option would have no effect on the capacity of waste management infrastructure; • Option would not have any impact on existing natural resources.
-	Negative	• Option would increase volumes of hazardous and non-recyclable waste that would require disposal; • Option would have a limited adverse impact on the capacity of existing waste management systems; • Option would require the limited use of natural resources during construction and operational stages.
--	Significant Negative	• Option would generate a high volume of hazardous and non-recyclable waste that would require disposal; • Option would impede the achievement of Government and national targets for minimising, recovering and recycling waste; • Option would have a significant adverse impact on the capacity of existing waste management systems (e.g. leading to the permitting of additional landfill capacity to accommodate waste); • Option would increase risks associated with the handling of hazardous wastes; • Option would require a significant volume of natural resources and result in the direct loss of resources.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Illustrative Guidance for the Assessment of Significance for Traffic and Transport

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would make a significant positive and long-term contribution to minimising the direct and indirect effects of traffic and transport associated with nationally significant water resources infrastucture.
+	Positive	• Option would make a positive contribution to minimising the direct and indirect effects of traffic and transport associated with nationally significant water resources infrastucture.
0	Neutral	• Option would not have any effects on traffic and transport.
-	Negative	• Option would have minor, short-term adverse effects associated with the direct and indirect impacts of traffic and transport realted to nationally significant water resources infrastucture.
--	Significant Negative	• Option would cause significant long-term effects associated with the direct and indirect impacts of traffic and transport related to nationally significant water resources infrastucture.
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Illustrative Guidance for the Assessment of Significance for Cultural Heritage

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would make a significant positive and long-term contribution to the setting and conservation of designated and locally important cultural heritage features (e.g. through enhancement of setting, permanent removal of a structure creating a negative visual impact or large scale enhancement of designated features).
+	Positive	• Option would bring minor short-term improvements to the setting and conservation of designated and locally important cultural heritage features (e.g. temporary removal of a structure creating a negative visual impact).
0	Neutral	• Option would not have any significant effects on any cultural heritage sites or assets or their setting.
-	Negative	• Option would result in minor short-term degradation to the setting and conservation of designated and locally important cultural heritage features (e.g. temporary use of equipment/structures creating a negative visual impact).
--	Significant Negative	• Option would cause long-term degradation to the setting and conservation of designated and locally important cultural heritage features (e.g. through direct and permanent loss or damage to designated assets or the introduction of a structure that will have a considerable and permanent negative visual impact).
?	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Illustrative Guidance for the Assessment of Significance for Landscape and Townscape

Effect	Description	Illustrative Guidance
++	Significant Positive	• Option would make a significant positive contribution to the purposes and/or special qualities of protected/designated landscapes and their setting; • Option would have a significant positive effect on local landscapes and townscapes and/or their setting (e.g. through the replacement of poorly designed/derelict buildings with high quality development); • Option would enhance public access to the countryside and increase open space provision.
+	Positive	• Option would serve to enhance the purposes and/or special qualities of protected/designated landscapes and their setting; • statutorily-designated landscapes and/or their setting; • Option would have a positive effect on local landscapes and townscapes and/or their setting; • Option would enhance public access to open spaces and the countryside.
0	Neutral	• Option would not have any effect on statutorily-designated landscapes or their setting; • Option would not have any effects on local landscapes and townscapes or their setting • Option would not affect visual amenity; • Option would not enhance or restrict public access to open spaces and the countryside.
-	Negative	• Option would have short-term negative effects on the purposes and/or special qualities of protected/designated landscapes and their setting; • Option would have a negative effect on the intrinsic character of local landscapes and townscapes and/or their setting; • Option would affect the visual amenity of local communities; • Option would temporally restrict public access to open spaces and the countryside.
--	Significant Negative	• Option would have long-term negative effects on the purposes and/or special qualities of protected/designated landscapes and their setting; • Option would severely affect the intrinsic character of local landscapes and townscapes and/or their setting; • Option would severely affect the visual amenity of local communities; • Option would result in the loss of open spaces and restrict public access to the countryside.
	Uncertain	• From the level of information available, the effect that the option would have on this objective is uncertain.

Effect	Description	Illustrative Guidance
?		

Appendix D
Schedule of Consultation Responses

Appraisal of Sustainability Scoping Report

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
Energy UK				
EUK1	3	There should be a principle which more clearly requires the NPS development and, in turn, developers and authorisers of water resource NSIPs to have regard to the reasonable needs of other sectors dependent on surface and ground water. These are potentially in competition with those providing water for public water supply and with the environment at times of water scarcity. For sectors such as energy and agriculture, there is no national plan or regional set of plans analogous to WRMPs. Although 'effects on other abstractors' is a welcome heading deep within the Appraisal of Sustainability (AoS), we do not consider that this is afforded sufficient prominence, particularly in the context of Defra's expected programme of abstraction reform being downgraded.	Comment noted. Effects on other abstractors is currently identified explicitly within the AoS Framework as a proposed guide question to AoS Objective 2. The purpose of the AoS Framework is to enable the identification and assessment of effects across all the topics identified in the AoS (including those of the Strategic Environmental Assessment (SEA) Directive 2001/42/EC). As such, the guide questions are primarily aimed at identifying where there is the potential for a significant environmental effect. Due to the importance of providing a comprehensive assessment, no one topic is considered more important than another. In discussing the effects identified, the AoS Report will identify the potential for effects on other water abstractors as appropriate.	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			No change to the Scoping Report is considered necessary.	
EUK2	1	We agree with the topics but we consider that the economics topic could be generalised to include potential adverse effects (or benefits) for those potentially competing for scarce water resource. Alternatively, this area could be further developed under the headings of water quality and water quantity. The 'scoring system' (e.g. AoS App B Table 2.2, Table 6.6 *et al*) should include benchmarking of adverse impacts due to effects on other abstractors, but does not.	Comment noted. Effects on other abstractors is included as a proposed guide question to AoS Objective 2 and in this context, the AoS Report will identify the potential for effects on other water abstractors as appropriate. The effects on abstractors is one of eight guide questions set within the wider context of the AoS population, economy and skills objective 'To support a strong, diverse and stable economy through the provision of nationally significant water resources infrastructure with opportunities to improve skills and employment, minimise disturbance to local communities and maximise positive social impacts'. It is considered that amending the objective to one generalised to include effects on those competing for water resources would reduce its scope and limit	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			its ability to consider matters such as whether the NPS will: • ensure that there is sufficient water resources infrastructure in place to meet increased demand associated with population growth and to support economic development; • ensure that an affordable supply of water is maintained and that vulnerable customers are protected; • promote economically efficient solutions that deliver best value for money; • promote opportunities for investment in education and skills development; and • affect employment opportunities. Due to the importance of providing a comprehensive assessment which considers the full range of likely significant effects on the environment, it is not proposed to accept the suggested amendment.	

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			No change to the Scoping Report is considered necessary.	
EUK3	2	Ideally, we would like to see some recognition of the water resource needs of other sectors and how these might develop, although we recognise that these are not easily characterised. Inclusion of reference to the overarching NPS for energy and the daughter NPSs for nuclear, fossil-fired power stations and renewables would be welcome, although these do not have the necessary spatial resolution, nor can they, to automatically feed into a Water Resources NPS or individual WRMPs.	Comment noted. NPS EN-1 sets out the overarching national policy statement for energy. This and the five associated NPS (EN-2 to EN-6) have been considered in Appendix B of the AoS Scoping Report. As acknowledged in the response, no other suitable baseline information has been identified. No change to the Scoping Report is considered necessary.	N/A
EUK4	3	We welcome inclusion within the 'economics' section of the question 'Will the Water Resources NPS affect existing abstractors?'. This is a crucial issue which we consider goes far beyond '… the risk of drought or interruptions to accessing water may pose a risk to economic productivity' suggested on page 28. Clearly, this question cannot be answered within the NPS itself but should prompt consideration and evidence gathering in the development of individual NSIPs. The NPS should not provide a steer or presumption that a water resource NSIP scheme has first call on scarce water for which there may be competition from other users or developers from other sectors.	Agreed. The NPS will provide planning policy guidance against which development consent order applications for any nationally significant water resources infrastructure project will be examined. This will include generic impacts and siting considerations, including generic mitigation measures. Requested detailed requirements for inclusion in the NPS do not fall within the scope of the AoS Scoping Report but will be	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			considered by Defra in preparing the draft NPS.	
		AoS Appendix B in places misrepresents the Water Framework Directive as requiring all waters to reach 'good' status as opposed to requiring the setting of targets through the planning process aiming to achieve 'good' status and taking into account disproportionate costs and feasibility, etc. This is a material misrepresentation in the 'context' area.	Comment noted. Appendix B has been amended to more clearly reflect the requirements of the Water Framework Directive.	Appendix B (Table 1.11 Table 3.1 Table 5.4)
EUK5	4	We would reiterate that decisions on the allocation of scarce water resources should not be made within WRMPs. Alternative scenarios should consider the relative availability of water and the impact each scenario could have on other water abstractors.	Comment noted. The Water Industry Act 1991, as amended by the Water Act 2003 and the Water Act 2014, requires all water companies to prepare, maintain and publish statutory Water Resources Management Plans (WRMPs). The plans set out how water companies intend to maintain the balance between water supply and demand and ensure security of supply over the next 25 years and beyond in a way that is economically, socially and environmentally sustainable. Any changes to the scope and requirements of WRMPs would be outside the role of the NPS for water resource infrastructure.	N/A
National Infrastructure Planning Association (NIPA)				
NIPA1	4	NIPA's view is that the AoS should consider alternative means of meeting water demand to large-scale infrastructure. Whilst the NPS will establish	Comment noted. The AoS is being undertaken in a manner to meet	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		need for this infrastructure as part of a 'twin track' approach, NIPA suggests that, for example, demand management methods should be considered in the AoS in terms of being a sole solution, even if just by way of a brief acknowledgement and dismissal. NIPA also queries whether there is a need to consider properly alternative policy approaches. Whilst the AoS Scoping Report does reference a 'non-NPS' scenario (presumably with WRMPs), there are no alternatives mentioned in terms of other potential policy frameworks. Obviously assessment of reasonable alternatives is essential under SEA law to establish a legally robust NPS. The approach to alternatives should therefore be very carefully considered, to avoid legal challenge and delay in the delivery of these important schemes.	the requirements of the SEA Directive 2001/42/EC. The SEA Directive requires the identification, description and evaluation of "*the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme*". The NPS will provide planning policy guidance against which development consent order applications for any nationally significant water resources infrastructure project will be examined. It will also set out why nationally significant water resources infrastructure is needed, within the context of the twin track approach. Whilst it is valid to consider whether the need case for water resources infrastructure is appropriate, within the context and requirements of the SEA Directive, unless demand	

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			management infrastructure could be envisaged to be of such scale as to be within the scope of the NPS, it is unlikely that it could be considered a reasonable alternative. However, for completeness, it will be referenced in a section in the AoS Report that describes in detail the consideration of the alternatives to the NPS, and identifies which of those alternatives are considered reasonable. These reasonable alternatives will be taken forward and included within the subsequent appraisal.	
EDF Energy				
EDF1	3	EDF Energy strongly believes that a principle should be included that clearly requires both the developer and authorisers of the Water Resource NSIPs to have regard to the impacts of the scheme on other abstractors in the vicinity of the proposed project. This is because they are potentially in competition with those providing water for public water supply and with the environment at times of water scarcity. For sectors such as energy and agriculture, there is no national plan or regional set of plans analogous to WRMP. Although "Effects on other abstractors" is a welcome heading deep within the AoS, we do not believe this is sufficient prominence given the importance of this issue.	Comment noted. Effects on other abstractors is currently identified explicitly within the AoS Framework as a proposed guide question to AoS Objective 2. The purpose of the AoS Framework is to enable the identification and assessment of effects across all the topics identified in the AoS (including those of the SEA Directive 2001/42/EC). As such, the guide	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			questions are primarily aimed at identifying where there is the potential for a significant environmental effect. Due to the importance of providing a comprehensive assessment, no one topic is considered more important than another. In discussing the effects identified, the AoS Report will describe the potential for effects on other water abstractors as appropriate. Requested detailed requirements for inclusion in the NPS do not fall within the scope of the AoS Scoping Report but will be considered by Defra in preparing the draft NPS. No change to the Scoping Report is considered necessary.	
EDF2	2	EDF Energy would welcome a requirement within the NPS for any applicant for a development for the transfer or impoundment of water to demonstrate how they have considered the potential impacts on abstractions that are downstream of the new proposals. Power stations require abstracted water to operate, so any potential reduction in water availability would be a serious concern for operators. For example, if a power station could not operate during an electricity system stress event due to lack of water, then this could lead directly to the failure of	Comment noted. Requested detailed requirements for inclusion in the NPS do not fall within the scope of the AoS Scoping Report but will be considered by Defra in preparing the draft NPS.	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		electricity supply to customers and the power station operator could be subject to financial penalties, for failing to fulfil its obligations.	No change to the Scoping Report is considered necessary.	
EDF3	3	EDF Energy welcomes the inclusion within the 'economics' section of the objectives and guide questions asking, 'Will the Water Resources NPS affect existing abstractors?' This is because the risk of drought or interruptions to access of water may pose a significant risk to economic productivity within other sectors. This question cannot be answered within the NPS itself but should prompt consideration and evidence in development of individual NSIPs. The NPS should not provide a steer or presumption that a water resources NSIP scheme has first call on scarce water for which there may be competition with other users or developers from other sectors.	Comment noted. The NPS will provide planning policy guidance against which development consent order applications for any nationally significant water resources infrastructure project will be examined. This will include generic impacts and siting considerations, including generic mitigation measures. Requested detailed requirements for inclusion in the NPS do not fall within the scope of the AoS Scoping Report but will be considered by Defra in preparing the draft NPS. No change to the Scoping Report is considered necessary.	N/A
Chartered Institute of Water and Environmental Management (CIWEM)				
CWM1	3	CIWEM welcomes the use of an Appraisal of Sustainability (AoS). This will allow communities to comment on the ability of the NPS to drive multiple benefits.	Comment noted.	N/A
National Farmers Union (NFU)				
NFU1		No comment.	Noted.	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
Blueprint for Water				
BFW1	1	While we broadly agree with the main issues identified in section 3.3, in addition to the information described in Appendix B, we would consider it important to acknowledge as an over-arching point that the framework around the management of the natural environment is liable to change with Britain's exit from the EU. In particular, any post-CAP agri-environment scheme, developed within the context of Government's 25 Year Environment Plan, will have significant relevance to the water environment. This is due to the causal links between the management of land and habitats within a catchment, and the water quality and quantity regimes of the catchment's freshwaters. The development of future land management policy is therefore highly relevant to water resources as those freshwaters that are affected by it underpin the industry's water supplies. As such the AoS must build in the uncertainty associated with Brexit and take the 25 Year Plan for the Environment into account.	Comment noted. As identified in the introduction to Appendix B, the Scoping Report assumes that the broad objectives of extant European Union (EU) legislation will be maintained once the UK has withdrawn from the EU and that similar or equivalent environmental protections will remain in place. Nonetheless, uncertainties within the Scoping Report are highlighted on a topic-by-topic basis. The effect of the UK's withdrawal from the EU is identified within Appendix B Section 1.5 and the uncertain effect on the economy is identified in Section 2.5.	N/A
		As a general point, whilst Section 3.3 and Annex B are very comprehensive, the trends and issues identified need to be better related to the issues likely to arise from the Water Resources NPS. This includes full consideration of likely evolution of issues without the plan (NPS) which is not covered in much detail in the AoS Scoping Report.	Comment noted. It is considered that the key issues identified from the baseline analysis and analysis of the likely evolution of the baseline are broadly appropriate for the purposes of the AoS of the NPS.	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		Table 3.3 sets out Key Issues Relevant to the NPS for Water Resources. We believe the following points should also be incorporated / considered here: <u>Biodiversity and Nature Conservation</u> • Whilst we agree that 'Water infrastructure can contribute positively to biodiversity, introducing new features that can provide opportunities for nature and wildlife in the medium to long term', the relative importance of habitat lost and that created are not always equal; (for example, if losing or degrading fen habitat or chalk river during the construction of a reservoir). This should be built into the future appraisal. • Reference should be made in Table 3.3 (and Appendix B) to the recently published UK SPA review (see here: http://jncc.defra.gov.uk/page-7309) and consider the recommendations for action; and the State of UK's Birds 2017 (see here: https://www.bto.org/research-data-services/publications/state-uk-birds/2017/state-uk-birds-2017). • Reference will need to be made to the Defra 25 Year Environment Plan once published. • It would be helpful to see a clear link in the Summary of Key Issues (Key Trends) and Appendix B to the extent to which protected areas	Comment noted. This response will be considered when undertaking the AoS of the draft NPS. Agreed. This reference has been included in Table 3.3 and Appendix B. Agreed. Reference to the 25 Year Environment Plan has been included in Appendix B. Comment noted. Water resource impacts (whether abstraction or habitat creation) are identified in a generalised way in a number of publications (EEA, 2015 State of	N/A Table 3.3, Appendix B (Section 1.3) Appendix B (various topics) N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		and habitat and species have been impacted by water resource issues. • The key trends under this section should also address current levels of over abstraction and impact on ecological status. <u>Human Health</u> • A further area of relevance to Water Resources Infrastructure is the issue of emerging pollutants. Water Resources Infrastructure may need to consider the detection and removal of chemicals in the drinking water supply that come from the rural or urban parts of a catchment, or in treated waste water returned to the environment (e.g. pharmaceuticals). These chemicals may equally have ecological impacts that need to be mitigated. <u>Water Quality</u> • Historic pollution of groundwater also stems from agricultural operations; nitrate concentrations present an issue for water resources (re drinking water standards) as well as for aquatic ecology. <u>Water Quantity</u> • The ongoing need to promote water efficiency measures, including metering is recognised; however, as raised above, there is not a level	nature in the EU, JNCC and RSPB 'State of Nature' 2016); however, whilst providing justification for the observation of the issue, the reports are considered insufficient to supplement the current baseline detail. Agreed. Reference to pollutants has been included in Table 3.3 Agreed. Reference to pollution from agricultural operations has been included in Table 3.3. Comment noted. This is outside the scope of the AoS and NPS. No change to the Scoping Report is considered to be necessary.	Table 3.3 Table 3.3 N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		playing field between companies regarding the opportunity to progress universal metering. • Metering, and other measures such as leakage reduction, can also be curtailed to some extent by limited customer support for the expenditure that would enable them. Equally, they can be supported up to or beyond the point where they are financially neutral, given customer support for their implementation. The role of the Periodic / Price Review process in determining the current and future landscape for water efficiency measures should therefore be recognised. • Relevant to water resources infrastructure, we would like added: The volume and flow of water significantly affects ecological functioning and will be affected (potentially positively or negatively) by water resources infrastructure. <u>Climatic Factors</u> • It is noted that the construction and operation of large scale water resources infrastructure is likely to result in a net increase in energy use and greenhouse gas emissions. Some forms of infrastructure will be inherently more energy-intensive than others, and in addition, the scope for the Infrastructure's energy needs to be met by renewable energy will be greater for certain infrastructure types than for others; this should all be reflected in the AoS. We welcome the statement of potential opportunity for water resources infrastructure to help address flood risk issues.	Comment noted. This is outside the scope of the AoS and NPS. No change to the Scoping Report is considered to be necessary. Agreed. Table 3.3 has been revised as per this response. Agreed. Table 3.3 has been amended as per this response. Comment noted.	N/A Table 3.3 Table 3.3 N/A
BFW2	2	Regarding Appendix B, we recommend the following:		

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		Under International/European plans and programs: • Regarding biodiversity and nature conservation we suggest adding the EU invasive alien species regulation.	The Invasive Species Regulations fulfil Action 16 of Target 5 of the EU 2020 Biodiversity Strategy, which is included in Appendix B, Section 1.2 of the Scoping Report. Additional reference to Regulation (EU) 1143/2014 on invasive alien species has been added.	Appendix B (Section 1.2)
		• The UN Sustainable Development Goals. Those of particular relevance are goal 12 on responsible consumption and production (including the sustainable management and efficient use of natural resources) and goal 15 on sustainable management of our environment (including conservation, restoration and sustainable use of inland freshwater ecosystems and their services).	Agreed. Reference to the Development Goals has been included in Appendix B.	Appendix B (Section 11.2)
		Under England, specific plans and programs regarding biodiversity and nature conservation we recommend adding: • The Water Act (2015) specifying the resilience duty and the consequent definition by Ofwat, which includes the protection of the natural environment now and in the future.	Comment noted. The Water Act is included within the two water topics (Appendix B Sections 5 and 6). Whilst the overlap between topic areas is appreciated, plans and programmes have principally been discussed under the topic	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			that is their primary concern to avoid unnecessary duplication.	
		We welcome the acknowledgement that there will be interconnected effects on the environment.	Comment noted.	N/A
		Under the baseline information for abstraction, we propose: • Including current levels of over abstraction and impact on protected areas or WFD status/Reason for not achieving good.	Comment noted. Given the national scale of the AoS, it is not considered proportionate to include this level of information.	N/A
		Under likely evolution of the baseline: • The evolution of the baseline currently highlights current trends over the lifetime of the NPS. As such it struggles to take the effects of climate change into account.	Disagree. Appendix B Section 10 includes a review of national plans, policies and baseline data with regards to climate change and potential future scenarios.	N/A
		• We disagree with the statement that "*unsustainable groundwater and surface water abstraction may contribute to environmental damage of rivers and wetlands at 500 sites in England and Wales*" and yet that "*the Environment Agency's approach to abstraction management and the restrictions placed on abstraction by the Water Framework Directive would both be expected to act in mitigation of these potential trends.*" The expected changes are due to climate change and the Climate Change Committee conclude that freshwater habitats are particularly vulnerable to climate change and more needs to be done. In addition, the Environment Agency's approach to abstraction management is supposed to reduce current levels of over abstraction but is not currently going to address potential over abstraction arising from a changing climate. We also argue that WFD may not achieve what is proposed due to affordability and	Disagree. The Environment Agency's approach to managing water abstraction takes full account of the pressures on water resources resulting from climate change.-	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		exemptions. The potential for abstraction to continue to contribute to environmental damage of our rivers and wetlands should be acknowledged and the potential for climate change to increase this impact.		
		• We note that a changing climate and abstraction also affects flow variability, which is vitally important to ecological functioning and is not mentioned specifically in the assessment.	Comment noted. Reference to flow variability and ecological functioning has been included in Table 3.3.	Table 3.3
		• Within Table 10.2, under the question "*Will the Water Resources NPS increase resilience to the effects of climate change*?" there is no mention of how the NPS might impact on environmental resilience. We reiterate that the Water resources long-term planning framework fails to identify the long term risks and opportunities of the water supply industry on the environment and vice versa. This is a gap which needs to be filled. There is the potential for a Water Resources NPS to increase environmental resilience, but this needs to be better understood within the NPS and Assessment of Sustainability. We recognise that many of these issues are described elsewhere in the AoS documents, but suggest that they need to be given appropriate prominence via their inclusion at this level of the assessment.	Comment noted. The AoS Framework includes a broad range of objectives and guide questions that, taken together, enable the identification of likely significant effects. For example, under biodiversity, the guide questions consider: • Will the Water Resources NPS lead to a change in the ecological quality of habitats due to changes in groundwater/river water quality and/or quantity? • Will the Water Resources NPS protect and/or enhance priority species and habitats? • Will the Water Resources NPS affect the structure and	Table 4.3, Appendix B (Section 1.6)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			function of natural systems (ecosystems)? These are all factors that will contribute towards 'environmental resilience'. Please note, whilst not 'environmental resilience' the final guide question of those listed above has been amended to read: 'Will the Water Resources NPS affect the structure and function, and resilience of ecosystems?'. This is to address a requirement of Section 6 the Environment (Wales) Act 2015 concerning a duty 'to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems'.	
BFW3	3	Yes, in general, the objectives and guide questions cover the breadth of issues appropriate for appraising the effects of the draft NPS. Under Biodiversity and Nature Conservation we suggest an additional two questions: • "Will the NPS affect the ecological network of protected areas and connectivity between sites?"	Agreed. The guide question suggested in this response has been included under AoS Objective 1.	Table 4.3, Appendix B (Section 1.6)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		• "Will the NPS affect hydrological functioning such as flow variation?"	Comment noted. The proposed guide question has been included under AoS Objective 6.	Table 4.3, Appendix B (Section 1.6)
		One addition we would like made is under section 10: climatic factors: Will the Water Resources NPS increase *environmental and operational* resilience to the effects of climate change?	Comment noted. For the reasons set out above (under Question 2), no change to the Scoping Report is considered to be necessary.	N/A
		We have some broader comments on the proposed appraisal framework: the matrix should be expanded to have a column covering mitigation and the expected residual effect. The appraisal will need to give consideration to the transboundary nature of effects, the magnitude and spatial extent of impacts; environmental standards and limits (and where exceeded) – particularly important if the proposed biodiversity objective is to be meaningful and the frequency and reversibility of any impact.	Comment noted. Mitigation and any transboundary effects will be clearly identified within the matrices in the AoS Report. As noted in the example matrix presented in Table 4.5 of the Scoping Report, in the commentary under the effects column, mitigation and enhancement measures will also be identified. No change to the Scoping Report is therefore proposed.	N/A
		Finally, in the guidance on determining significance (specifically in reference to Biodiversity and Nature Conservation), we would like to see reference made to meeting favourable conservation status and for local biodiversity to be defined.	Comment noted. In the illustrative guidance for the assessment of significance for biodiversity and nature conservation, the examples provided in the definition of an	Appendix B (Section 1.6), Appendix C

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			effect will be extended to include the effects on conservation status	
		Clear analysis of the cumulative effects should be made including the combined effect of the preferred NPS as well as the NPS in combination with other plans, programmes or projects (existing and proposed).	Comment noted. Paragraphs 4.4.7 to 4.4.8 and Tables 4.7 and 4.8 of the Scoping Report set out the proposed approach to the assessment of secondary, cumulative and synergistic effects as part of the appraisal of cumulative effects. Paragraph 4.4.8 states that 'the effects of the draft NPS in-combination with other plans and programmes will also be considered'. No change to the Scoping Report is therefore proposed.	N/A
		We highlight that the following points should be made clear within the AoS scoping report: • Geographic scope (P.35): this should also cover the marine environment surrounding England.	Section 4.2 sets out the proposed scope of the appraisal including its geographic extent. To confirm, this includes effects in the marine environment. For the avoidance of doubt, Section 4.2 will be amended to address this point.	Section 4.2 N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		• The Draft AoS Report should include an outline of the alternatives chosen as well as the likely significant effects of implementing these.	Comment noted. Section 5.2 of the Scoping Report sets out the proposed structure of the AoS Report, which will include a chapter 'outlining the likely significant environmental and socio-economic effects of the implementation of the draft NPS and the reasonable alternatives to it, including cumulative effects, mitigating measures, uncertainties and risks. The reasons for selecting the draft NPS as proposed and for the rejection of alternatives, together with any difficulties encountered in completing the appraisal, will be explained'.	N/A
		• The Draft AoS Report must be made available alongside the consultation into the Draft NPS.	Comment noted. The AoS Report will be made available for consultation alongside the draft NPS. In this regard, Section 1.4 of the Scoping Report sets out the stages of the AoS process, and highlights that Stage D includes 'consulting on the draft NPS and the AoS Report'.	

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		The proposed Appraisal Framework (Table NTS1) sets out a series of questions against which the draft NPS and alternatives will be appraised. If this process is to ensure that the sustainability of the NPS, in environmental terms, is to be reliably assessed, we suggest the following additions / clarifications to the guide questions: Biodiversity and Nature Conservation:		
		• This section should specifically include reference to Invasive Non-Native Species (INNS) given their propensity to impact upon aquatic ecosystems and the risk that their spread will be facilitated by physical changes to those ecosystems (such as those brought about by NSIP water resource projects). The proposed questions should specifically ask whether the NPS will increase the spread or transfer of invasive non-native species and consequently impact on habitats and species.	Agreed. A guide question relating to INNS has been included in the AoS Framework under AoS Objective 1.	Table 4.3, Appendix B (Section 1.6)
		• In relation to impacts upon designated conservation areas, the AoS should consider Marine Conservation Zones liable to be designated in Tranche 3, alongside existing MPAs.	Agreed. Reference to Marine Conservation Zones has been included in the AoS Framework.	Table 4.3, Appendix B (Section 1.6)
		• Alongside 'Priority' (NERC Act) species, the AoS should consider Species of Conservation Concern.	Agreed. Reference to Species of Conservation Concern has been included in the AoS Framework.	Table 4.3, Appendix B (Section 1.6)
		• In relation to the structure and function of natural systems, it should be recognised that the current ability of most ecosystems to function naturally is constrained by the impacts of modifications over time, and this in turn hinders the ability of the habitat and the species it supports to function in a way which delivers ecosystem services and	Comment noted. The wording of the guide question is intended to help identify whether effects on ecosystems will be neutral, positive or negative. No change to the	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		allows adaption to pressures such as climate alterations. The AoS should therefore not assume that maintaining the status quo is delivering sustainability; it should consider whether the NPS will impact on opportunities to deliver natural ecosystem function, rather than whether it will affect an ecosystem's (currently sub-optimal) structure or function.	Scoping Report is therefore proposed.	N/A
		• In relation to changes in groundwater or river water quality or quantity, specific reference should be made to the requirements of the Water Framework Directive, including the requirement for 'no deterioration'. The AoS should also feature transitional and coastal waters considered under the directive, particularly since desalination schemes (which will feature in the NPS) are likely to impact primarily on these environments. (Although mentioned under 'water quality', the failure to refer to the WFD in relation to ecology is a concern).	Comment noted. Reference to the WFD is included under AoS Objective 5 and in consequence, it is not considered necessary to include further reference under AoS Objective 1. Where effects on water quality may impact on biodiversity, this will be considered in the AoS of the draft NPS.	N/A
		• Reference should be made to whether the Water Resources NPS will exacerbate the impacts of climate change which is one of the key drivers of biodiversity declines.	Comment noted. Effects on climate change will be considered through the appraisal of the draft NPS against AoS Objective 10. Where impacts may affect biodiversity, this will be considered in the AoS.	N/A
		• We are pleased to see the biodiversity objective refers to working within environmental capacities and limits. However, these limits / capacities for biodiversity will need to defined within the AoS if this is to be used as an effective test of the NPS.	Comment noted.	

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		Population, economics and skills: • We are concerned that the wording around economics will promote a 'single-issue' view of costs. We would welcome consideration of natural capital (provided that biodiversity targets are properly built in), and of the ecosystem services provided by this capital in the long term, when considering which solutions deliver the best value. A number of Water Companies are starting to think about taking this approach within their developing Water Resources Management Plans, and the NPS could therefore valuably provide an early lead in this area.	Comment noted. It is not Defra's intention to undertake a natural capital assessment of the draft NPS at this stage.	N/A
		• The section looks at reducing impacts upon the economy, for example, from drought restrictions. Effectively this means ensuring the resilience of water supplies, yet there is no specific acknowledgement of the importance of environmental resilience. The wording may promote consideration primarily of operational and infrastructure resilience, yet by contrast, Ofwat's Chief Executive Cathryn Ross recently said "Ecosystems are part of operational resilience - we depend as much on them to supply clean water and absorb waste water as we do on pipes and treatment works." Options promoted via the NPS should seek to secure environmental resilience in order to protect the asset upon which water companies rely to operate.	Comment noted. For the reasons set out above (under Question 2), no change to the Scoping Report is considered to be necessary.	N/A
		Climatic factors: • The AoS should specifically consider whether the NPS will hinder the ability of species or habitats to adapt to a changing climate, e.g. by fragmenting habitat and preventing species' dispersal.	Comment noted. A specific guide question relating to adaptation is included under AoS Objective 10.	Table 4.3, Appendix B (Section 1.6)

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			This has been revised to include reference to habitats and species.	N/A
		• We propose the following alteration to the wording: *Will the Water Resources NPS increase environmental and operational resilience to the effects of climate change?*	Comment noted. For the reasons set out above (under Question 2), no change to the Scoping Report is considered to be necessary.	
		• The AoS should specifically consider whether the NPS adequately ensures that schemes will themselves be resilient to climate change and growth so that they do not themselves become an issue in the future.	Please see the response above.	N/A
		Water quality and water quantity: • Whilst worth considering at the policy level, many impacts upon water quality and quantity will only become apparent at the individual (and in-combination) scheme level; the NPS should therefore employ robust measures to ensure that impacts not deemed significant at this over-arching level are not then overlooked at the regional or local level where their consequences will be felt, simply because a scheme type is 'waived through' via its inclusion within the NSIP list.	Requested detailed requirements for inclusion in the NPS do not fall within the scope of the AoS Scoping Report but will be considered by Defra in preparing the draft NPS.	N/A
		• Regarding reducing the impact of drought measures on the environment, the AoS will need to consider the (beneficial) impact of not needing to resort to drought orders during times when the environment is already stressed, against the potential (detrimental) impact that the water resources options employed may themselves have upon the environment during times of drought.	Comment noted. This will be considered in the AoS of the draft NPS where appropriate. No change to the Scoping Report is considered to be necessary.	N/A
		Flood Risk and Coastal Change:		

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		• The overarching objective should be extended as follows: To minimise the risks from coastal change and flooding to people, property, communities and habitats and species, taking into account the effects of climate change. • The proposed guide questions should consider the resilience of infrastructure, and places/communities, habitats and species to future flooding.	Agreed. AoS Objective 7 has been amended as per this response. Agreed. An additional guide question has been included under AoS Objective 7 relating to resilience to flooding.	Table 4.3, Appendix B (Section 7.6), Appendix C Table 4.3, Appendix B (Section 7.6)
BFW4	4	We welcome Government's recognition that a twin-track approach to meeting future water resource needs is required, utilising demand management alongside new water resources infrastructure. We have already highlighted issues around the roll-out of demand management options and so conclude that the NPS or an alternative to it could helpfully consider any changes needed to policy or guidance that would facilitate the wider delivery of demand management measures in line with the aspirations of Government, Ofwat and the environmental sector. For example, measures identified in the Waterwise Water Efficiency Strategy for the UK, which is being delivered by a Water UK supported steering group, such as the need for a more effective labelling scheme. Water companies should be actively working with Government, NGOs and other stakeholders to demonstrate high ambition on water efficiency before implementing new supply side solutions. One alternative approach to the NPS would be to consider how far measures could meet national water supply requirements through demand management and smaller measures without the need for	Comment noted. Reference or a statement of new water resource policy or guidance would be outside the scope of the NPS. The NPS will provide planning policy guidance against which development consent order applications for any nationally significant water resources infrastructure project will be examined. It will also set out why nationally significant water resources infrastructure will be needed, set within the context of the twin track approach. Whilst it is a valid to consider whether the need case for water	N/A

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		nationally important infrastructure. From there it would be possible to determine the likely amount of water to be delivered through new nationally significant infrastructure and where this might be necessary. Generally, there seems to be a misunderstanding of the role of Strategic Environmental Assessment (to be fulfilled here through the AoS). The AoS provides authorities and the public with an early and effective opportunity to express their opinion on the draft plan and the accompanying environmental report before the adoption of the plan and to enable the implications of different choices to be made clear. Section 2.4 of the AoS Scoping Report sets out a number of possible alternatives, however, a number of these seem to have already been discounted before being assessed and made available to the public. For example, the consultation has been framed to indicate that an NPS is necessary, that a twin-track approach should be adopted and that the NPS should be non-site specific. This is concerning and suggests the AoS is not directly influencing decision-making which would be contrary to the spirit of the SEA Directive and Regulations. We strongly recommend that all reasonable alternatives (including those set out in Section 2.4) are properly assessed and made available for public consultation so the reasons for making certain choices and decisions is clear. Otherwise the AoS will resemble a paper chase with no meaningful influence on the NPS. We would be pleased to meet further with Government to discuss the approach to consultation and assessment of alternatives and the list of reasonable alternatives to be assessed (please refer to our response as a whole for an indication of other possible options, including our response to question 20). This will ensure all reasonable options are given proper consideration. For example, in deciding whether or not to have an NPS it will be important	resource infrastructure is appropriate, within the context and requirements of the SEA Directive 2001/42/EC, unless demand management infrastructure could be envisaged to be of such scale as to be within the scope of the Planning Act 2008, it is unlikely that it could be considered a reasonable alternative (given the objectives of the NPS). However, for completeness, such options will be referenced in a section in the AoS Report that sets in detail the consideration of the alternatives to the NPS, and identifies which of those alternatives is considered reasonable. These reasonable alternatives will be taken forward and included within the subsequent appraisal. In this way, the AoS Report will identify, describe and assess the likely significant effects of the NPS and the reasonable alternatives to it, in compliance with the requirements of Article 5(1) of the SEA Directive 2001/42/EC.	

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		to recognise, that an NPS approach may speed up development and the impacts of projects so consented may be greater and occur sooner and possibly at a larger scale than they would otherwise (hence it will be important to test a no-NPS alternative). Furthermore, a spatially-relevant NPS and AoS would allow a much better assessment of the strategic and cumulative effects of different levels of water infrastructure development at different locations and so enable a strategy/policy that might actually help to maximise environmental benefits and avoid environmental and social impacts. This would also provide a clear framework for company WRMPs. Consideration should also be given to the results of any regional water resources planning exercises (WRSE, WRE), particularly looking at where these differ from or contradict company WRMPs. It should be noted that such differences may arise where companies plan to different service standards, such as regarding the predicted frequency of drought restrictions.	Section 2.4 of the Scoping Report sets out some of the alternatives that could be considered, with reference to government guidance on the 'hierarchy of alternatives'. This highlighted the potential to consider: • a non-site specific NPS; • a non-site specific NPS that includes location criteria (for example, criteria based on excluding areas of specific environmental concern such as nationally/internationally designated nature conservation sites or national landscape designations); • a location-specific NPS that identifies candidate sites for nationally significant water resources infrastructure. These will be considered further in the AoS Report in compliance with the SEA Directive.	
Woodland Trust				
WT1	1	Topic 1 1 (Biodiversity and Nature Conservation) should include consideration of ancient woodland in line with the Conservative's manifesto pledge to improve protection for this irreplaceable habitat.	Comment noted. Ancient Woodlands are included within the scope of the assessment. The Ancient Woodland Inventory is discussed in Appendix B Section	Section 4.3, Appendix B (Section 1.6).

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			4.2. The consideration of Ancient Woodlands also falls within the scope of the proposed guide questions; however, not all conservation designations are listed for every guide question in the interests of brevity. Reflecting this response, Ancient Woodland has been specifically referred to in the AoS Framework under AoS Objective 1.	
WT2	2	As stated above, irreplaceable habitats including ancient woods and trees should have been considered in the baseline analysis.	The Ancient Woodland Inventory is discussed in Appendix B Section 4.2. The long-term loss of Ancient Woodlands is also identified in Appendix B Section 14.4. No change to the Scoping Report is considered necessary.	N/A
WT3	3, 4	No comment.	Noted.	N/A
Consumer Council for Water				
CCFW1		No comment.	Noted.	N/A
WSP				
WSP1	1	Yes. Although topic areas identified are in Section 3.1 and 3.2 rather than 3.3. WSP is glad to see that impacts relating to geology and farming are included but would expect to see more specific reference to soil management/sediment control, as failure to manage this resource explicitly may not be entirely sustainable on the long run.	Comment noted. Soil management and sediment control has been identified as a key issue in Table 3.3 and Appendix B (Section 4.4).	Table 3.3, Appendix B (Section 4.4)

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WSP2	2	WSP views the baseline as comprehensive within the topic areas. There is no specific assessment against energy policy as the impacts/effects within several topic areas (economy, transport, air quality etc.) have energy implicit within them. Given the intense linkages between energy and water, should there be a specific baseline and impact assessment for energy? The present indicative economic analysis set out Appendix B of is crude and clearly no key decisions should be made using these metrics particularly where the outcomes are marginal against the criteria suggested.	Comment noted. Energy use will be principally considered under AoS Objective 10. This has been clarified in the AoS Framework. The presentation of economic data in Appendix B is considered proportionate to the requirements of an AoS of a proposed NPS concerning water resources. The subsequent AoS Report will use the baseline information presented (revised following consultee responses) to inform the appraisal of the NPS and any reasonable alternatives against the AoS objectives. The resulting assessment will be an AoS and should not be considered an economic analysis. No change to the Scoping Report is considered necessary.	Table 4.3, Appendix B (Section 10.6) N/A
Natural Resources Wales				
NRW1	2	**Review of Plans and Programmes** Whilst the AoS has identified a number of plans and programmes relevant for Wales that need to be considered as part of this AoS, it		

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		seems that a number have not been considered despite their equivalent for England having been considered. Proposed amendments include: <u>Water Quality</u>		
		• The reference made to Environmental Permitting (England and Wales) Regulations 2010, should be amended to refer to the 2016 regulations. The review of plans and programmes should also describe how the Environmental Permitting (England and Wales) Regulations 2016 regulates discharges that can affect water quality.	Agreed. The reference has been amended.	Appendix B (Sections 4.2 and 5.2)
		• The reference to Shoreline Management Plans should be updated to reflect that reviews (SMP2) have been completed, and set policies for the whole coast of England and Wales for the next 20, 50, and 100 years (2005-2025, 2025-2055, and 2055-2105).	Agreed. Specific reference to SMP2 has been included.	Appendix B (Section 5.2)
		• The Groundwater (Water Framework Directive) (Wales) Directions 2016.	Agreed. Reference has been added.	Appendix B (Section 5.2)
		• The Nitrate Pollution Prevention (Wales) Regulations 2013.	Agreed. Reference has been added.	Appendix B (Section 5.2)
		<u>Water Quantity</u> • Welsh Water company drought plans.	Comment noted. Reference has been added to drought plans in England and Wales. However, specific reference to Welsh Water's plans has not been included.	Appendix B (Section 6.2)
		• Welsh water resources management plans.	Agreed. The reference to WRMPs has been revised to clarify that this relates to England and Wales.	Appendix B (Section 6.2)

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			However, specific reference to Welsh Water's plans has not been included.	
		• River Basin Management Plans.	Disagree. Reference to RBMPs in England and Wales is included in Appendix B (Section 5.2).	N/A
		• Catchment Abstraction Management Strategies Managing Water Abstraction (2017).	The reference to Catchment Abstraction Management Strategies has been revised to clarify that this relates to England and Wales.	Appendix B (Section 6.3)
		• Water Resources Planning Guidelines.	Disagree. This is a technical document related to the preparation of WRMPs (although reference to the guidelines is included elsewhere in the report).	N/A
		• Water Company drought planning technical guidelines.	Disagree. This is a technical document related to the preparation of Drought Plans.	N/A
		• Welsh Government guiding principles for development of WRMPs.	Disagree. This is a technical document related to the preparation of WRMPs (although reference is included elsewhere in the report).	N/A

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		• Welsh Government guiding principles for development of drought plans.	Disagree. This is a technical document related to the preparation of Drought Plans.	N/A
		• UK Climate Change Risk Assessment (specific Wales summary).	Disagree. The UK Climate Change Risk Assessment is included in the baseline analysis for the UK as a whole.	N/A
		• Ofwat 2020 policies.	Agreed. Reference has been included.	Appendix B (Section 6.2)
		<u>Flood Risk and Coastal Change</u> • DCWW 2050 consultation: http://www.dwrcymru.com/en/Company-Information/Business-Planning/Welsh-Water-2050.aspx.	Agreed. Reference has been included.	Appendix B (Section 7.2)
		• Flood Risk Regulations 2009: The AoS should also recognise NRW's duties in Wales under the Act.	Agreed. The reference has been amended.	Appendix B (Section 7.2)
		• The AoS should refer to the provisions within the Marine and Coastal Access Act 2009 as it applies to Wales (in addition to how it applies in England).	Agreed. The reference has been amended.	Appendix B (Section 7.2)
		• The National Flood and Coastal Erosion Risk Management Strategy.	Agreed. Reference has been included.	Appendix B (Section 7.2)
		• The Welsh Government made amendments to the Reservoir Act (1975) in 2015/16. The amendments are intended to ensure the ongoing protection of public safety by reducing the risk of an	Agreed. The reference has been amended.	Appendix B (Section 7.2)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		uncontrolled release of water from large reservoirs and the potentially catastrophic flooding this would cause. • Recommended non-statutory standards for sustainable drainage (SUDS) in Wales: Recommended standards that promote more natural SUDS systems in new development and aid developers, local authorities and other stakeholders to demonstrate that they have taken account of the Welsh Government's planning advice on Development and Flood Risk. • Wellbeing and Future Generations (Wales) Act 2015. • Planning (Wales) 2015 Act: Sets out a series of legislative changes to deliver reform of the planning system in Wales. <u>Climatic Factors</u> • The review of plans and programmes should include the duties of Welsh Ministers and public bodies under the Well-being and Future Generations Act (Wales) 2015 to "take account of the report containing an assessment of the risks for the United Kingdom of the current and predicted impact of climate change most recently sent to the Welsh Ministers under section 56(6) of the Climate Change Act 2008 (c.27)" (the UK Climate Change Risk Assessment). This applies to Welsh Ministers under Section 11 of the Act, when preparing their	Agreed. Reference has been included. Comment noted. It is considered that this Act is adequately referenced elsewhere in Appendix B to the Scoping Report. Comment noted. It is considered that this Act is adequately referenced elsewhere in Appendix B to the Scoping Report. Agreed. Reference has been included.	Appendix B (Section 7.2) N/A N/A Appendix B (Section 10.2)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		Future Trends Report, and to Public Services Boards under Section 38, when preparing their Local Assessments of Well-being. <u>Landscape and Townscape</u> • We suggest that you amend to clarify that Natural Resources Wales has the statutory power to designate National Parks and AONBs in Wales. • We suggest that you amend to clarify that a significant aspect of the Environment (Wales) Act 2016 is that the link between natural resources and well-being is made explicit **Overview of the Baseline** <u>Land Use, Geology and Soils</u> The geology description for Wales refers to 'Carboniferous peat'. However, we query whether this relates to carboniferous coal measures, or rather should refer to 'Carboniferous rocks', and then expand on modern peat/ raise bogs in the soils section. Additionally, reference should be made to Carboniferous Limestone and Devonian sandstones forming important groundwater resources in south Wales. We suggest that the Baseline Overview should clarify that there are approximately 300 SSSI designated for geology, and 485 GCR sites. They are UNESCO Global Geoparks. It should also refer to Regionally Important Geodiversity Sites (RIGS). There are over 800 RIGS in Wales. <u>Water Quality</u> The final paragraph should also refer to the 17 water bodies of the Severn River Basin District within Wales which are targeted by NRW for improvement.	Agreed. The reference has been revised. Agreed. The reference has been revised. Comment noted. This description has been revised as per this response. Agreed. The baseline description has been revised.	Appendix B (Section 14.2) Appendix B (Section 14.2) Appendix B (Section 4.3) Appendix B (Section 5.5)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		It seems that the figures used in the table are based on the 2009 classification. This has been updated by the 2015 classification. Whilst we welcome the inclusion of information relevant to Dŵr Cymru, we consider similar information should be included for the areas within Wales operated by Severn Trent Water and Dee Valley Water to understand current provision and pressures.	Comment noted. Table 6.3 has been updated. Comment noted. Specific reference to Welsh Water is included in Section 6.3 reflecting the fact that Welsh Water is the main water company in Wales. Inclusion of specific information relating to other water companies is not considered to be proportionate to a national level assessment. No change to the Scoping Report is therefore considered to be necessary.	Appendix B (Section 5.3) N/A
		<u>Flood Risk and Coastal Change</u> We suggest that the baseline date for Wales should also refer to the Catchment Abstraction Management Strategies (CAMS) outputs for the relevant cross-border river basins to identify where water resources pressures exist. It is estimated that 2,126 properties in Wales are vulnerable to coastal erosion during the next 100 years if there is no active intervention. This	Comment noted. Reference to specific CAMS is not considered to be proportionate to a national level assessment. No change to the Scoping Report is therefore considered to be necessary. Agreed. The baseline description has been revised.	N/A Appendix B (Section 7.3)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		figure is reduced to 145 with full implementation of Shoreline Management Plan (SMP)2 polices. In this section, risk is referred to in in terms of a "1-in-75 or greater chance of flooding in any given year". This is different to the level of risk previously used in Section 7.3, which refers to high and medium risk (high being > than or = to 1:30, and medium being <1:30, > 1:100). We recommend that risk should be considered consistently throughout the AoS. As currently drafted, the second sentence of the second paragraph seems to indicate to a SMP for Fairbourne. We suggest this is amended to clarify that Fairbourne is an example of a coastal community at risk from flooding/erosion, and that the SMPs cover the whole coast of Wales. <u>Landscape and Townscape</u> For a full overview of the Welsh landscape it is recommended that the following evidence is incorporated into the AoS: • LANDMAP landscape evaluation • National Landscape Character Areas, Seascapes, and • CADW Register of Historic Parks and Gardens Environmental issues affecting well-being in Wales are explored in NRW's State of our Natural Resources Report (SoNaRR) 2016. For landscape trends in Wales see LANDMAP updates 2017. NRW Tranquillity Mapping is also available for analysis in line with Scotland and England. Specifically produced by Wales' Designated Landscapes 'State of the Park / AONB Report' are also a useful source of evidence on the DL's special qualities.	Comment noted. This reflects the sources of information used in the report. No change to the Scoping Report is therefore considered to be necessary. Agreed. The baseline description has been revised. Comment noted. Reference to the sources of information cited in this response has been included in Appendix B.	N/A Appendix B (Section 7.5) Appendix B (Section 14.3)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
NRW2	3	We welcome the clarification in paragraph 4.2.4 of the AoS that it will consider the potential effects of the draft NPS on Wales (as well as England). We recommend that the applicants need to consider potential impacts on environmental features within Wales at the project stage is explicitly recognised in the NPS, as well as the need to consult the relevant statutory consultee.	Comment noted. Requested detailed requirements for inclusion in the NPS do not fall within the scope of the AoS Scoping Report but will be considered by Defra in preparing the draft NPS.	N/A
		We welcome the commitment in paragraph 4.4.7 to undertake an appraisal of secondary, cumulative and synergistic effects alongside other plans/ programmes. However, it would be useful to learn which plans/ programmes will be considered as part of this assessment, and what consultation will be held to ensure that relevant plans/programmes are identified before the assessment is undertaken.	Comment noted. Given the timeframe of the NPS, it is not practical to identify the plans and programmes to be considered in the assessment at this stage as they are subject to change prior to publication of the final AoS report.	N/A
		We welcome the objective to protect and enhance biodiversity and ecosystems. Under Section 6 the Environment (Wales) Act 2015 public bodies have a duty to protect and enhance biodiversity, and in so doing promote the resilience of ecosystems. To meet the aspirations within Wales, we suggest that the 6th guide question is amended to read: "Will the Water Resources NPS affect the structure and function, and resilience of ecosystems?"	Agreed. The guide question has been amended as per this comment.	Table 4.3, Appendix B (Section 1.6)
		Given the objective and guide questions in relation to ecosystem, we consider that Table 1.12 should also include an indicator to monitor the impacts (and their significance) on ecosystem resilience.	Agreed. The definition of significance has been revised as per this response.	Appendix B (Section 1.6)
		Rather than referring to a "decrease" in Water Framework Directive (WFD) status, we advise that the table should refer to "deterioration" to be consistent with conventional and widely understood terminology.	Agreed. The definition of significance has been revised as per this response.	Appendix B (Section 5.6)

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		The table refers to both "significant" 'decrease' and 'increase' in WFD status for 'significant negative' and 'significant positive' effects. However, it is not clear how this differs from 'increases/ decreases' for 'negative/ positive' effects. This should be clarified in the table. We would consider that any deterioration in WFD status would be significant.	Agreed. A significant negative effect will be qualified by reference to there being a requirement to justify permitting of the option under the provisions of Article 4.7 of the WFD. No distinction will be made for the positive effects in regard to WFD.	Appendix B (Table 5.5) and Appendix C (C7).
		We recommend that the reasoning of the third Objective/ Guide Question should reflect the aspiration to be consistent with the conclusions of Shoreline Management Plans 2.	Agreed. Table 7.1 has been revised to refer to SMP2.	Appendix B (Section 7.6)
		We suggest that the second Guide Question in Table 14.1 should be amended to read: Will the Water resources NPS affect the purposes and/ or special qualities of protected/ designated landscapes? This change should also be reflected in Table 14.2	Agreed. Tables 14.1/14.2 (and Table 4.3) have been revised as per this response.	Table 4.3, Appendix B (Section 14.6)
		We suggest including an additional guide question in Table 14.1 that reads: Will the Water Resources NPS affect public benefits and/ or services provided by landscape?	Agreed. The guide question proposed in this response has been included in the AoS Framework.	Table 4.3, Appendix B (Section 14.6)
NRW3	4	With regards to the first question as to whether it is necessary, has there been consideration of whether population and economic growth should be located to areas where there is sufficient water resources available?	Comment noted. The selection and refinement of options for appraisal is an ongoing process. Comments here will be considered alongside others in identifying reasonable alternatives for appraisal.	N/A
Northern Ireland Environment Agency				

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
NIEA1	1	In preparation of the NPS and all of its associated documents, including the AoS, Defra, as the Public Authority, is legislatively required to have regard to the UK Marine Policy Statement (UK MPS) and any relevant Marine Plan. This is not apparent as, for example, the UK MPS is not mentioned in all but one of the documents. The AoS Scoping Report Appendix B considers the UK MPS under *Water Quality* and *Flood Risk and Coastal Change*, however, only in relation to ensuring the sustainable use of marine resources, strategic management of marine activities and approaches to marine planning.	Comment noted. It is considered that the Scoping Report has given due recognition to the UK Marine Policy Statement at Appendix B, Sections 5.2 and 7.2. The implications stemming from, or relating to, the NPS will be considered at the assessment stage. No change to the Scoping Report is considered necessary.	N/A
NIEA2	1	Regard to the marine should not be limited to 'environment' related topic areas, and it is suggested that wider consideration of the potential impact both on and from the marine, in relation to social and economic topics, is given.	Comment noted. Issues such as the marine environment have principally been discussed under the topic that is their primary concern, although it is recognised that many topic areas and issues overlap/are related. The AoS of the draft NPS will consider effects on marine areas (including social and economic effects) as appropriate. No change to the Scoping Report is considered necessary.	N/A
NIEA3	1	Please note that for Box 1 AoS Scoping Consultees and throughout all of the documents, where reference is made to the Department of the Environment's 'Environment and Heritage Service', Northern Ireland, as a	Agreed. References have been updated accordingly.	Box NTS1 Box 1

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		statutory consultee, this should be the Department of Agriculture, Environment and Rural Affairs (DAERA), Natural Environment Agency.		
Natural England				
NE1	1	Yes, we consider that the assessment takes account of the likely significant effects on our specific areas of interest, and has correctly scoped in the relevant topics. We would welcome a commitment within the NPS/AoS to the achievement of a 'Net Gain' for nature and consider that this should be reflected within the assessment questions.	Agreed. The guide question 'Will the Water Resources NPS lead to a net gain in biodiversity?' has been included in the AoS Framework.	Table 4.3, Appendix B (Section 1.6)
NE2	2	The AoS Scoping Report includes a wide range of referenced data sources for establishing the baseline. We welcome the inclusion of National Character Areas as part of the baseline and consider that the information within these assessments could help to identify baseline conditions for a number of the topics (Biodiversity, Landscape, Soils, Recreation, etc.).	Comment noted.	N/A
NE3	3	The guide questions appear to be comprehensive and the objectives cover our main strategic interests. We would welcome recognition of the Government's aim to achieve a net gain for nature through new development and consider that the guide questions should be amended to capture this commitment.	Agreed. The guide question 'Will the Water Resources NPS lead to a net gain in biodiversity?' has been included in the AoS Framework.	Table 4.3, Appendix B (Section 1.6)
NE4	4	We welcome the opportunity to comment on the proposed alternatives at the scoping stage and consider that the alternatives presented will provide a useful guide in assessing options available to those preparing the NPS. We note that the alternatives are limited to differing ways of delivering water developments (e.g. whether through an NPS, or not), and we would welcome consideration of an alternative that looked at different types of NPS. For instance, if the NPS was to be used, not just to help determine NSIP applications that come forward under the current round of Water Resources Management Plans, but to guide the development of future Water Resource Management Plans, then we consider that the process could significantly assist meeting Defra's stated	Comment noted. The selection and refinement of options for appraisal is an ongoing process. Comments made in this response will be considered in identifying reasonable alternatives for appraisal.	N/A

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		aims for the 25 Year Environment Plan for improving water quality and provision. The SEA Directive requires consideration of the short, medium and long term impacts of the alternatives. For an NPS that seeks to guide NSIP projects, we would consider that the construction impacts will be very different from the operational impacts. In order to demonstrate these differing impacts, we consider that it would be better to set a short term assessment of 0-5 years (rather than the current 0-10 years), and a long term assessment of >30 years (rather than >50 years). In our experience, it is very difficult to draw conclusions of impacts (against a baseline) for more than 50 years, due to the levels of uncertainty in future technologies.	Agreed. The proposed timescales for short, medium and long term set out in Table 4.2 of the Scoping Report have been amended as per this response in order to better aid differentiation between construction and operational effects. The timescales will therefore be as follows: • short – 0 to 5 years; • medium – 5 to 30 years; • long – greater than 30 years.	Table 4.2
Historic Environment Scotland				
HES1	3	We note that the historic environment has been scoped into the assessment, under cultural heritage. On the basis of the information provided, we are content with this approach and are satisfied with the scope and level of detail proposed for the assessment. You should ensure that the environmental findings of the assessment are clearly defined from socio-economic findings.	Comment noted.	N/A
HES2	N/A	We are content with the 12 week consultation period which you propose. Please note that, for administrative purposes, we consider that the consultation period commences on receipt of the relevant documents by the SEA Gateway.	Comment noted.	N/A
Scottish Environment Protection Agency (SEPA)				
SEPA1	3	We are generally content with the scope and level of detail proposed for the assessment but would recommend the inclusion of specific reference to invasive non-native species (INNS) within the guide questions – either	Comment noted. A specific guide question regarding invasive non-	Table 4.3, Appendix B (Section 1.6)

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		within the Biodiversity and Nature Conservation topic or the Water Quality topic. INNS can greatly reduce biodiversity and they can also be a public health hazard (e.g. giant hogweed). INNS are dispersed by human activity; the construction and operation of water resources infrastructure has the potential to affect dispersal of INNS, including cross catchment transfers of INNS.	native species has been included under AoS Objective 1.	
SEPA2	N/A	We note the reference to mitigation measures (AoS page 42) and would make the following observations: 1. The AoS Report should clearly set out how any negative environmental effects will be addressed bearing in mind that for SEA purposes, negative environmental effects cannot be said to have been mitigated by social or economic gains. 2. It is important to ensure that mechanisms are established in the NPS to ensure that all proposed mitigation which is outwith the scope of changes to the NPS itself can be achieved. For example Box 2 on page 42 provides *promoting high quality, sustainable design in liaison with local communities* as an example of mitigation. Such mitigation will need an enabling mechanism which must be built into a relevant process e.g. a requirement of the NPS itself or a condition of any development consent granted, if mitigation is to be achieved.	Comment noted. Section 5.2 of the Scoping Report sets out the proposed structure of the AoS Report. This will include a chapter outlining the likely significant environmental and socio-economic effects of the implementation of the draft NPS and the reasonable alternatives to it, including cumulative effects, mitigating measures, uncertainties and risks.	N/A
SEPA3	2	We would highlight the following clarifications and updates for AoS Appendix B: Flood Risk Management Strategies – page 149 • Flood Risk Management Strategies (FRMS) are in place for all 14 Local Plan Districts. Links to all 14 plans can be found here http://apps.sepa.org.uk/FRMStrategies/index.html. • A series of Local Flood Risk Management Plans are in place for all 14 Local Plan Districts. Links to all plans:	Comment noted. Appendix B Sections 7, 10 and 11 have been amended accordingly.	Appendix B (Sections 7.2, 10.2 and 11.2)

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		https://www.sepa.org.uk/environment/water/flooding/local-frm-plans/ Climatic factors - page 180 • Draft RPP3 was published in January 2017 http://www.gov.scot/Publications/2017/01/2768 • A Draft Scottish Energy Strategy was published in January 2017, consultation responses are currently being analysed, anticipated publication of the final strategy by end 2017 http://www.gov.scot/Topics/Business-Industry/Energy/energystrategy • An update of the Renewables Routemap was published in 2015 http://www.gov.scot/Topics/Business-Industry/Energy/RoutemapUpdate2015 Waste and resource management – page 204 • Making Things Last: A Circular Economy Strategy for Scotland was published in 2016 http://www.gov.scot/Publications/2016/02/1761		
Scottish Natural Heritage (SNH)				
SNH1	3	We note that the NPS will apply to England only but as is reflected in the consultation documents, proposals in England could potentially have transboundary effects. We are content that you have satisfactorily scoped this into the assessment.	Comment noted.	N/A
Affinity Water				
AW1	N/A	Our review of the key issues and topics covered indicated that they are broadly consistent with those identified generically for water resource management plans. There is one query regarding traffic and transport and	Comment noted. The key issues identified in the Scoping Report reflect the review of plans and programmes and baseline	N/A

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		waste and resources: how would an NPS for water infrastructure support the achievement of those objectives?	information contained in Appendix B as well as the potential impacts of large scale water resources infrastructure. It is the role and purpose of the AoS to identify whether the NPS is likely to have a significant effect on traffic and transport and waste and resources. It does not assume from the outset that there would be an effect, either positive or negative, on these aspects. No change to the Scoping Report is considered necessary.	
	1	It is recognised that it is difficult to apply an SEA/HRA to a non-site specific NPS, and would therefore direct the NPS to the dWRMPs where potential infrastructure and options might provide further information that could help the NPS focus on infrastructure types.	Comment noted. Due consideration will be given to the draft WRMPs throughout the appraisal process and in the preparation of the draft NPS. No change to the Scoping Report is considered necessary.	N/A
	4	It would be helpful to see more information relating to how the alternatives were defined, in order to understand whether there might be further alternatives that could be included. Possibly a description of the methodology followed for identifying alternatives?	Comment noted. Section 2.4 of the Scoping Report provides an overview of the approach/basis to identifying reasonable alternatives. The identification of alternatives is an ongoing process and further	N/A

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			discussion will be set out in the AoS Report. No change to the Scoping Report is considered necessary.	
South East Water				
SEW1		No comment.	Noted.	N/A
Anglian Water				
AW1	1	Yes, we agree with the main issues identified in the topic areas. The issues listed adequately reflect both the positive and negative impacts that can occur as part of water resources infrastructure development.	Comment noted.	N/A
South West Water				
SWW1	1	There are no areas that should be removed. We do, however, think that under section 11 "Waste and Resources" specific mention should be made to the use of chemicals and materials in operation and their broader impacts. For example, many of the chemical needed for water treatment will be either petroleum based or sourced from outside the UK. As such they have a broader environmental footprint – i.e. they 'export' an environmental impact to other parts of the country or to other countries. We suggest that under Section 11 "Waste and Resources" the following reference should be included: "*Large scale infrastructure may require the long-term use of materials that are non-renewable or are importuned. In doing so they may export the environmental impact of their production to other parts of the country or to other countries*"	Agreed. Reference to the potential for cross-border impacts has been included in Table 3.3 and Appendix B (Section 11).	Table 3.3, Appendix B (Section 11)
	2	Yes.	Comment noted.	N/A

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	3	Amend human health guideline question to: "*Will the Water Resources NPS ensure the continuity of a safe ~~and secure~~ water supply*."	Disagree. It is considered that a secure water supply is an appropriate element of this guide question. Ensuring continuity of water supply can help to maintain human health. No change to the Scoping Report is considered necessary.	N/A
	3	Amend water quality guideline question to: "*Will the Water Resources NPS protect **or** improve surface, ground, estuarine and coastal water quality*?"	Disagree. It would be premature at this stage to assume that the proposals of the NPS could not achieve both the protection and improvement of water quality. No change to the Scoping Report is considered necessary.	N/A
	3	Add a new water quality guideline to the population, economics and skills AoS topic area: "*Will the Water Resources NPS help give more resilience to other national infrastructure*."	Agreed. The proposed guide question has been included in the AoS Framework.	Table 4.3, Appendix B (Section 2.6)
	4	A significant water resources infrastructure project by definition can be expected to be a large project. Due consideration in the first step (the "need") should be made to maximising potential benefits and test whether the project can deliver multiple benefits. For example, a new reservoir could be built to a range of different sizes. A small reservoir may only meet these demands, but also allow the reduction of abstraction at other distant locations. This would not only test the 'robustness' of the need but the suitability of alternatives.	Comment noted. The selection and refinement of options for appraisal is an ongoing process. Comments here will be considered alongside others in identifying reasonable alternatives for appraisal.	N/A
Northumbrian Water				

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NW1	1	There are no further issues we think should be included. We would suggest "Population, economics and skills" should be considered for removal. This issue is more the Justification of Need for a water resource scheme. All of the other issues are the possible consequences aligned to the development of a scheme.	Disagree. The AoS would not be compliant will the scope of topics required by the SEA Directive or reflect the baseline analysis and potential effects of the NPS if 'population, economics and skills' were removed from the assessment. No change to the Scoping Report is considered necessary.	N/A
NW2	2	Yes.	Comment noted. No change to the Scoping Report is considered necessary.	N/A
NW3	3	Yes. See response to Q4 [*presented here as NW1*] for exclusion	Comment noted. See response to NW1. No change to the Scoping Report is considered necessary.	N/A
NW4	4	No. We believe the NPS as proposed is suitable for purpose.	Comment noted.	N/A
United Utilities				
UU1	1, 2, 3	We think that the AoS has taken an appropriate approach to identifying the issues, and appraising the effects of the draft NPS.	Comment noted.	N/A
UU2	4	We agree that the assessment has identified appropriate alternatives for consideration.	Comment noted.	N/A
Individual 1				
I1	1, 2, 3, 4	No answer, by setting this survey out you already know the answer.	Comment noted.	N/A

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Clean Rivers Trust				
CRT1	1	No.	Comment noted. No change to the Scoping Report is considered necessary.	N/A
CRT2	2	There are areas where there is a lack of knowledge demonstrated. It is a conservative and narrow document.	Disagree. The AoS Scoping Report considers the breadth of topics required by the SEA Directive, and in considering wider socio-economic effects presents information for the following 14 topics: biodiversity and nature conservation; population, economics and skills; human health; land use, geology and soils; water quality; water quantity; flood risk and coastal change; air quality; noise; climatic factors; waste and resource management; traffic and transport; cultural heritage; and landscape and townscape. Appendix B contains information for each of the topics that is considered appropriate and proportionate to support the appraisal of the NPS. Without further clarification, it is not possible to identify where further information is required.	N/A

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			No change to the Scoping Report is considered necessary.	
CRT3	3	The guide questions should be removed and a request made for questions to be answered.	Disagree. The guide questions are an important part of establishing the framework for the AoS. No change to the Scoping Report is considered necessary.	N/A
Friends of the Lake District				
FLD1	1	There seems a certain amount of disconnect between the issues identified and those in Appendix B. So, we identify a number of missing issues below, but many of them have been recognised in Appendix B.	Comment noted. Appendix B of the AoS Scoping Report presents a review of national level contextual environmental baseline information, proportionate to the indicative scope of the NPS. The review of plans and programmes and the baseline are summarised in Tables 3.2 and 3.3 of the Scoping Report. This information will be used to inform the appraisal of the draft NPS and reasonable alternatives to it.	N/A
		Population, economics and skills – it is astonishing that there is no recognition here of the impacts of huge infrastructure creation on people's lives or businesses, either during construction or ongoing. Such projects can create huge stress, cause havoc to existing businesses and impact on economics. This is not only for residents, but those who make	In response to this comment, Table 3.3 has been revised to include reference to the potential adverse impacts of water resources	Table 3.3

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		their living from the land – farmers, woodland owners, tourism businesses. The current United Utilities West Cumbria link is disrupting the lives of residents, preventing farmers from following their usual practices for nearly 2 years, having an impact on tourism businesses where roads and access routes are closed, or people are just avoiding the noise and mud that is created. The disruption and impacts for all these people have to be taken into account and the compensation offered never covers the impacts fully.	infrastructure on population (including economies).	
		Human health – there should be recognition that water catchments provide significant access and reservoirs, although man made can provide a 'rural' setting with the presence of water being a beneficial thing. Both have proven positive impacts on mental health and wellbeing and also physical health if exercise is taken. The creation of new reservoirs could reduce existing access and recreation provision or may provide more opportunity. This issue is increasing in significance with the rising pressures on the NHS and so should be added.	Agreed. The potential for the development of water resources infrastructure to have both positive and adverse impacts on human health has been included in Table 3.3.	Table 3.3
		Noise – the flip side of the coin to noise is tranquillity but tranquillity is an assessment of noise and other factors. CPRE have mapped tranquillity for the whole country and it is recognised as an important aspect of landscape and people's enjoyment of that landscape. We ask that tranquillity and impacts of construction (probably negative) and the final infrastructure (could be positive e.g. reservoir) are added in please.	Comment noted. Tranquillity is identified within Appendix B (Sections 9.2 and 14.4) as a key issue. However, reference to the CPRE tranquillity map has been included section and reference to tranquillity has also been included in Table 3.3.	Appendix B (Sections 9.3 and 14.4), Table 3.3
		Traffic and transport – needs to be cross referenced to sections on pollution, population and impact on people's lives, increased damage to roadside verges of more and larger lorries.	Comment noted. The linkages between traffic and transport and	Appendix B (Section 12.1), Table 3.3

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			other topics have been identified in Appendix B (Section 12.1). This has been revised to include reference to health and biodiversity. Linkages with other topics will also be considered further in undertaking the appraisal of the draft NPS. Table 3.3 has also been revised in response to this comment.	
		Cultural heritage – this is far wider than just wetland habitats, listed buildings and scheduled monuments. It includes patterns of life and work, traditions etc. The scope of the issue needs to be widened out and designations such as World Heritage Sites which can be designated for the importance of cultural heritage, e.g. the Lake District recognised more fully. In addition, cultural landscape as a function of the interaction between human traditions, landscape and the environment is a relevant consideration.	Comment noted. The policy context and UK baseline with regard to World Heritage Sites is established within Appendix B (Section 14). The extant guide question '*Will the Water Resources NPS conserve or enhance the historic environment, including heritage assets such as historic buildings, conservation areas, features, places and spaces, and their settings?*' includes World Heritage Sites; however, for brevity not all types and classification of historic asset are listed. The following guide questions have been included in the AoS Framework and associated issues reflected in Table 3.3:	Table 3.3, Table 4.3, Appendix (Section 14.6)

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			• 'Will the NPS affect traditional land management activities that have created unique landscapes?' • 'Will the NPS affect the heritage of communities?' In response to this comment, specific reference to important cultural landscapes has also been included in the AoS Framework.	
		Access and recreation – it is surprising that there is little mention of impacts on access and recreation, and this links to the sections on population, health, cultural heritage and landscape. Water catchments often provide a high level of access and recreation and this is hugely appreciated and recognised. Equally the creation of new infrastructure can have pretty devastating, even if usually short term impacts on access, e.g. the current United Utilities West Cumbria link pipeline work.	Comment noted. Effects on access and recreation are identified as a guide question under AoS Objective 3 and as such, will be considered throughout the AoS process. However, in response to this comment, reference to access and recreation has been included in Table 3.3.	Table 3.3
FLD2	2	Population, economics and skills – under the negative and significant negative, there does not seem to be an assessment of impact on landowners, or economic impact on businesses and landowners, apart from loss of jobs.	In response to this comment, Table 3.3 has been revised to include reference to the potential adverse impacts of water resources infrastructure on population (including economies).	Table 3.3, Table 4.3, Appendix B (Section 2.6) N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		Water quantity – the assessment makes no reference to reduction in leakage. It is unacceptable that for some companies, leakage per household is higher than use per household! Significant positive categories and positive impact assessment categories need to refer to reduction in leakage.	Comment noted. The guide questions include 'Will the Water Resources NPS ensure the sustainable and resilient supply of water resources?' which will ensure that effects on leakage are identified and assessed where appropriate. No change to the Scoping Report is considered necessary.	
		Noise – no mention of tranquillity. The CPRE tranquillity maps could be used as a baseline to assess this.	Comment noted. Tranquillity is identified within Appendix B (Sections 9.2 and 14.4) as a key issue. However, reference to the CPRE tranquillity map has been included section and reference to tranquillity has been included in Table 3.3.	Appendix B (Sections 9.3 and 14.4), Table 3.3
		Transport – needs to assess negative impacts on the landscape as well as the factors listed.	Comment noted. The linkages between traffic and transport and other topics have been identified in Appendix B (Section 12.1). This has been revised to include reference to landscape. Linkages with other topics will also be considered further in undertaking the appraisal of the draft NPS.	Appendix B (Section 12.1), Table 3.3

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			Table 3.3 has also been revised in response to this comment.	
		Landscape and Townscape – There is reference to the National Parks and Access to the Countryside Act but the references are very limited compared to reference to other Acts in the document. For example, the document needs to mention the Sandford Principle. It is astonishing that there is no mention of the Environment Act 1995. This is important for a variety of reasons, for example section 62 which is about the duty that statutory undertakers and agencies have to have regard to National Park purposes. This includes water companies. We welcome the recognition of the Countryside and Rights of Way Act 2000 but the references to it are again very limited. For example, there is no mention of section 85 which gives statutory undertakers and agencies a duty to have regard to the purposes of AONB designation. This includes water undertakers. There is also a need to refer to the existence of more local Acts that can have an impact on water providers, e.g. the Manchester Corporation Waterworks Act 1879.	Comment noted. The review of plans and programmes contained in Appendix B (Section 14.2) has been revised in response to this comment. However, it is not considered to be appropriate or proportionate to refer to specific local level plans and programmes or studies given the national scale of the assessment.	Appendix B (Section 14.2)
		We welcome the mention of the NCAs but again reference needs to be made to more local Landscape Character Assessments which will be very relevant at the individual application stage. In addition, there are some more local studies about the change in landscape condition. The landscape assessment could easily consider tranquillity if it has not been considered in the noise section.		N/A
		The importance of access and recreation is underplayed. It gets a mention under the health section, and landscape, but not the economics or people section.	Comment noted. Access and recreation are identified under health and landscape and will therefore be considered as part of	

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		Cultural landscape designations such as World Heritage Site are not mentioned, but the potential of major new water to impact on the Outstanding Universal Value is very high.	the AoS of the draft NPS. No change to the Scoping Report is considered necessary. Comment noted. The policy context and UK baseline with regard to World Heritage Sites is established within Appendix B (Section 14). The extant guide question '*Will the Water Resources NPS conserve or enhance the historic environment, including heritage assets such as historic buildings, conservation areas, features, places and spaces, and their settings?*' includes World Heritage Sites; however, for brevity not all types and classification of historic asset are listed.	N/A
FLD3	3	Water quantity – leakage reduction should be explicitly mentioned, not just more sustainable usage.	Comment noted. The guide questions include reference to the sustainable and resilient supply of water resources which permits consideration of the importance of considering network efficiency and leakage reduction. No change to the Scoping Report is therefore considered necessary.	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		The issues raised above need to be reflected in the objectives and guide questions, e.g. mention of tranquillity, etc.	Comment noted. An additional guide question has been included under AoS Objective 14 relating to tranquillity. See comments above relating to other amendments to the AoS Framework.	Table 4.3, Appendix B (Section 14.6)
		Does flood management via water infrastructure in extreme events receive enough attention?	Comment noted. The AoS Framework includes a specific objective (AoS Objective 7) relating to flood risk. No change to the Scoping Report is therefore considered necessary.	N/A
		The AOS needs to specifically consider the impacts of further abstraction on lakes on amenity and business use. For example, in the Lake District Windermere and Ullswater are abstracted for public use, and abstraction in summer compounds low lake levels and makes it difficult for boat businesses to operate. Equally, consideration should be given to impacts on outstanding universal value of World Heritage Sites, such as traditional patterns of managing common land.	Comment noted. The AoS will consider effects on amenity and businesses arising from the draft NPS. For example, the AoS Framework includes the guide questions: • Will the Water Resources NPS affect the number or types of jobs available in local economies? • Will the Water Resources NPS affect the social infrastructure and amenities available to local communities? • Will the Water Resources NPS affect opportunities for recreation and physical activity?	Table 4.3, Appendix B (Section 2.6)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			• Will the Water Resources NPS have detrimental visual impacts? The AoS will consider (where appropriate) impacts associated with abstraction in this context. The extant guide question '*Will the Water Resources NPS conserve or enhance the historic environment, including heritage assets such as historic buildings, conservation areas, features, places and spaces, and their settings?*' includes World Heritage Sites; however, for brevity not all types and classification of historic asset are listed. Notwithstanding this, the following guide question has been included in the AoS Framework: 'Will the NPS affect traditional land management activities that have created unique landscapes?'	Table 4.3, Appendix B (Section 14.6)
FLD4	4	Alternatives to be considered should include a larger number of smaller schemes that may have less impact but achieve the same result.	Comment noted. Whilst it is valid to consider whether the need case for water resources infrastructure is appropriate, within the context and requirements of the SEA Directive 2001/42/EC, unless future	N/A

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			infrastructure could be envisaged to be of such scale as to be within the scope of the Planning Act 2008, it is unlikely that it could be considered a reasonable alternative (given the objectives of the NPS). However, for completeness, such options will be referenced in a section in the AoS Report that sets out in detail the consideration of the alternatives to the NPS, and identifies which of those alternatives are considered reasonable. These reasonable alternatives will be taken forward and included within the subsequent appraisal. In this way, the AoS Report will identify, describe and assess the likely significant effects of the NPS and the reasonable alternatives to it, in compliance with the requirements of Article 5(1) of the SEA Directive 2001/42/EC.	
Individual 3				
I3		No comments.	Noted.	N/A
Lake District National Park Authority				

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
LDNP1	1	Yes, however cultural landscape as a function of the interaction between human traditions, landscape and the environment should be added.	Comment noted. The following guide question has been included in the AoS Framework and reflected in Table 3.3: • 'Will the NPS affect traditional land management activities that have created unique landscapes?' In response to this comment, specific reference to important cultural landscapes has also been included in the AoS Framework.	Table 4.3, Appendix B (Section 14.6)
LDNP2	2	Although culture and protected landscapes feature independently of each other, cultural landscape and designations such as World Heritage Site (for example the English Lakes World Heritage Site) or Biosphere Reserve are missing. This omission needs to be addressed. Within the English Lake District WHS the potential of a new reservoir to impact upon features of outstanding universal value within the landscape are high.	Comment noted. Section 13.1 and Section 14.1 (Appendix B) highlight the linkages between cultural heritage and landscape. The policy context and UK baseline with regard to World Heritage Sites is established within Appendix B (Section 14). The extant guide question '*Will the Water Resources NPS conserve or enhance the historic environment, including heritage assets such as historic buildings, conservation areas, features, places and spaces, and their settings?*' includes World Heritage Sites; however, for brevity not all types and classification of	Table 4.3, Appendix B (Section 13.6)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
			historic asset are listed. Interrelationships between these topics will be considered further is the AoS of the draft NPS where appropriate. However, in response to this comment, specific reference to important cultural landscapes has been included in the AoS Framework.	
		In addition, the relationship between the multiple benefits water supplies can provide for local economies, health and wellbeing in communities as well as access and recreation should be included.	Comment noted. The key issues identified in Table 3.3 highlight a wide range of benefits associated with water supply including in respect of health and economic growth; this is reflected in the AoS Framework. However, in response to this comment, reference to access and recreation has been included in Table 3.3.	Table 3.3
		Likewise the impacts and trade-offs that are created as a result of an NPS scheme, should be included too. It is also important that the social aspect is acknowledged. As with other NSIPs, there should be a willingness by communities to participate, if there is strong opposition from communities to be affected this should be a material consideration that carries significant weight.	Requested detailed requirements for inclusion in the NPS do not fall within the scope of the AoS Scoping Report but will be considered by Defra in preparing the draft NPS. .	N/A
LDNP3	3	In the Lake District, there is typically a water surplus. However, water is abstracted from natural occurring lakes (albeit modified for abstraction	Comment noted. The AoS will consider effects on amenity and	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		e.g., Windermere) which is utilised and depended upon by the local tourist economy. Proposals for water transfer schemes that may increase demand on water resources that prioritise drinking water over lake levels, affect the amenity value and ability of lake levels to function economically for business that rely on appropriate lake level (for example Windermere Lake Cruises). The AoS should include a proposed guide question such as 'will the NPS affect the economic role of functioning lake levels from natural occurring water resources?'	businesses arising from the draft NPS. For example, the AoS Framework includes the guide questions: • Will the Water Resources NPS affect the number or types of jobs available in local economies? • Will the Water Resources NPS affect the social infrastructure and amenities available to local communities? • Will the Water Resources NPS affect opportunities for recreation and physical activity? • Will the Water Resources NPS have detrimental visual impacts?	
		In addition where an NPS scheme affects designated cultural landscapes, created by human traditions a guide question such as 'Will the NPS affect traditional land management activities that have created unique landscapes?' will help understand the impact a scheme will have on traditional land management.	Agreed. The guide question proposed in this response has been included in the AoS Framework.	Table 4.3, Appendix B (Section 14.6)
LDNP4	4	Paragraph 2.4.10 sets out an adaptation to the non-site specific approach by applying location criteria. We would want to see other international designations included such as World Heritage Site status, to protect cultural landscapes.	Agreed. The receptors identified in paragraph 2.4.10 are examples and international designations such as World Heritage Sites are an appropriate consideration.	Section 2.4.10
Individual 4.				

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I4		No comments.	Noted.	N/A
Royal Town Planning Institute				
RTPI1	3	The AoS and SEA are supported. It is essential that the specific contributions of both are strongly demonstrated in the final NPS.	Comment noted.	N/A
Water UK				
WUK1	1, 2, 3, 4	Yes.	Comment noted.	N/A
CH2M				
CH2M1	1, 2, 3, 4	No comments.	Noted.	N/A
Canal and River Trust				
CART1	1, 2, 3, 4	No comments.	Noted.	N/A
Hampshire County Council				
HCC1	1	The County Council agrees with the 13 main issues set out in section 3.3, in particular Issue 7: Flood Risk and Coastal Change, having regard to our role as a Lead Local Flood Authority with responsibility for the management of local flood risk i.e. surface water, groundwater and from ordinary watercourses, and Issue 10: Climatic Factors (including climate change and adaptation and flood risk). Climate change in the South East is predicted to lead to hotter, drier summers, warmer wetter winters and increased incidents of severe weather such as storms and flooding. In addition, Water UK's 'Water Resources Long Term Planning Framework (2015 - 2065) suggest that, in some scenarios, we are facing longer, more frequent and more acute droughts than previously thought. Drier areas of the country such as the south face a higher risk of more severe droughts than those experienced in the past. These will impact on the services provided by Hampshire County Council such as emergency planning. We are working in partnership to prepare for these impacts and minimise the risks to our communities. The authority considers that all relevant issues have been included.	Comment noted. No change to the Scoping Report is considered necessary.	N/A
HCC2	2	Yes the AoS is considered to adequately set out sufficient information to establish the context for the appraisal. In respect to this, it is noted that	Comment noted.	N/A

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		Appendix B topic B7: Flood Risk and Coastal Change refers to the Flood and Water Management Act 2010 and the role of Lead Local Flood Authorities in developing local strategies for managing local flood risk.	No change to the Scoping Report is considered necessary.	
HCC3	3	Yes the AoS objectives and guide questions are considered to cover the issues for appraising the effects of the draft NPS.	Comment noted. No change to the Scoping Report is considered necessary.	N/A
HCC4	4	In supporting the twin track approach and the central role in the identification of potential future infrastructure requirements through the WRMP process that involves both the water supply companies and the Government's regulator OFWAT, it is considered that the 'hierarchy' of alternatives outlined in Section 2.4 discusses all reasonable alternatives.	Comment noted. No change to the Scoping Report is considered necessary.	N/A
Jacobs				
J1	1	With regard to the topic areas for consideration, the "climatic factors" topic listed in Table 3.2, there is a strong bias towards climate change mitigation, with only brief reference to climate resilience and adaptation. There should be more specific mention of climate change adaptation and the need to deliver flexibility through different "adaptation pathways". This principle applies to both individual water resource development flexibility, as well as the order and timing of implementing different WRMP measures (which is ordinarily the case). The need for flexibility and adaptation is important given the significant uncertainties in the longer term with regard to climate, water use, population growth, introduction of new technologies etc. With regard to Section 4.3, then there is a better balance in terms of mitigation, resilience and adaptation. The key issues are summarised in section 3.4. These are relevant as very general context but do not really provide guidance for the NPS in terms of setting an approach for large scale infrastructure or weighing up	Comment noted. Table 3.2 (and Table 3.3) refers specifically to climate change resilience and risk management. However, Table 3.2 has been revised to refer specifically to flexible adaptation.	Table 3.2

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		strategic choices in terms of cumulative impacts. The following comments are made for each: • Topic 1 - The key pressures could be expanded to identify relevant issues for the water infrastructure development more clearly for example impacts on fisheries and from marine discharges could be included. • Topic 2 - This could include reference to stated/surveyed customer preferences on water infrastructure investment and customer behaviour influencing demand. • Topic 3 - The role of access to water infrastructure related (reservoir) recreation amenity or more general associated environmental enhancements and link to benefit for health could be noted. • Topic 5 - It is not clear if the first bullet is intended to refer to good environmental /raw water quality or treated water - there are a number of water quality issues such as pesticide and nitrate pollution that are important for the environment and create treatment issues and costs (in addition to health issues covered in Topic 3). There is no mention of potential impact from waste discharges from effluent reuse and desalination, these are likely to be important issues given sensitive and designated receiving environments. The role of water resources infrastructure in terms of contribution to environmental resilience should be considered not just in terms of water supply network resilience. Deteriorating ground water quality e.g. for nitrates is a problem in some areas and this trend is not mentioned	Agreed. Reference to impacts on marine habitats has been included in Table 3.3. Agreed. Reference to stated customer preference and consumer behaviour has been included in Table 3.3. Agreed. Reference to recreation has been included in Table 3.3. Comment noted. Reference to water quality in the context of water treatment and groundwater quality has been included in Table 3.3. Reference to discharges is already included in Table 3.3 and no change in this regard is considered to be necessary. Linkages between water quality and wider environmental resilience including the vulnerability of biodiversity has been included in Table 3.3.	Table 3.3 Table 3.3 Table 3.3 Table 3.3

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		although legacy contamination is mentioned. In addition, the point on deterioration in water quality increasing vulnerability to INNS, it should be noted that water quality deterioration can increase vulnerability for biodiversity, habitats and species more generally. • Topic 6 - The role of water resources infrastructure in increasing environmental resilience not only water supply resilience should be highlighted. For example, there is a general trend to reduce existing water abstraction (ground or surface freshwater) where this is demonstrated as having a detrimental effect and thereby requiring water savings or new resources to be found. This can potentially support environmental resilience against climate change and other pressures. Supply and environmental resilience are linked but different aspects and both need to be considered. • Topic 7 - Operation of water supply reservoirs to provide flood storage is often overstated and many reservoirs will be pumped storage so would add some caution to the comment on this. The location of reservoirs to avoid flood plain loss or provide sufficient compensation is important and there may be potential to encourage multiple benefits through catchment management which can contribute to flood storage by retaining water within the catchment and improve water quality used to fill reservoirs – these are actions that could be linked to reservoir development. • Topic 8 - Air quality. Potential impacts on nitrate deposition in sensitive habitats should be noted.	Comment noted. Linkages between water quality and wider environmental resilience including the vulnerability of biodiversity has been included in Table 3.3. Comment noted. No change to the Scoping Report is considered necessary. Agreed. Reference to nitrate deposition has been included in Table 3.3. Agreed. Table 3.3 has been revised to more explicitly reference	Table 3.3 N/A Table 3.3 Table 3.3

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		• Topic 10 - Climatic Factors: The comments should also note the potential role of new water infrastructure in supporting environmental climate change resilience and adaptation not just supply resilience. • Topic 13 - The wording is strange 'construction and operation …. can have impacts on the significance of heritage assets' Also, clearly state potential for impacts on heritage assets and archaeological interests as being relevant.	environmental climate change resilience. Comment noted. Reference to the significance of heritage assets reflects the National Planning Policy Framework. Specific reference to archaeological remains has been included in Table 3.3.	 Table 3.3
J2	2	In general, the information set out in the Appendix B is comprehensive. There are some omissions, the Water Industry Strategic Environmental Requirements (WISER) issued by the Environment Agency and Natural England jointly (2017) is not referenced. This document is intended to give a clear steer to water companies on expectations for their approach on resilience and their obligations in terms of enhancing the environment and valuing the environment. These will be relevant in terms of the basis for selection of schemes put forward in company WRMPs. The Conservation of Habitats Regulations need to be updated to include the 2017 Regulations. Biodiversity lacks adequate coverage of the marine protected areas. Marine Conservation Zones are not referenced. The lack of emphasis on coastal/ marine environment is notable given the stated intention to include desalination and potential to include effluent reuse options most of which are likely to be located near the coast. For example, Table 1.10 (Overview of key issues) identifies 'Threats to UK freshwater habitats' but not to the marine environment. The issues should be forward looking and take account of likely high number of	Agreed. Reference to the Water Industry Strategic Environmental Requirements has been added to Appendix B. Comment noted. Reference to the Habitats Regulations has been updated and reference to Marine Conservation Zones included. In terms of the baseline information presented, it is considered that there is sufficient reference to the marine environment for the purposes of the AoS of the NPS.	Appendix B (Section 5.2) Appendix B (Section 1.2)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		future proposals for desalination and effluent reuse many of which could have in combination effects on the coastal environment.		
J3	3	Table 1.11 – while Marine Protected Areas are mentioned in the objective/guide questions, they are not considered fully for example, the question on impact on fisheries covers freshwater fisheries only but the desalination and effluent reuse options on the coast could have implications on for example, shellfisheries and marine fisheries.	Comment noted. The guide question asks whether there would be an impact on fisheries, which would include both marine and freshwater fisheries. This has been clarified in Table 1.11. Additionally, reference has been included to marine ecology and water quality.	Appendix B (Table 1.11)
		On geology and soils in Table 4.6 the implication on the last point is that a change of pattern of land use is undesirable; however, this may not always be the case for example, change from intensive arable to natural habitat and wetlands may contribute to objectives of environmental enhancement. The siting of reservoirs generally has to be influenced by topography, suitable geology and absence of high level other constraints and development. This can leave few options for siting.	Appendix B Table 4.6 makes no assumption as to whether a change in land use is a positive or negative effect, it simply asks the question as to whether it will occur. No change to the Scoping Report is therefore considered to be necessary.	N/A
		In some cases, the NPS or options will have both positive and negative aspects in terms of the significance guidance questions and it is not clear how these will be reported for the individual guide questions and a net assessment provided.	The approach to scoring is detailed in Section 4.4. Where both positive and negative effects are identified, both will be discussed and both the positive and negative effects will be shown in accordance with the proposed scoring system. No change to the Scoping Report is considered necessary.	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		In general, it is not clear how the assessment of the NPS and alternatives will apply the AoS NPS and option related significance criteria and questions as the NPS is intended to focus on the: proposed vision and objectives; proposed assessment principles; and guidance on impacts.	The approach to the appraisal of the draft NPS is detailed in Section 4 of the Scoping Report. This includes reference to how the objectives and guide questions will be applied. No further detail is considered to be necessary at this stage.	N/A
		The NSIP proposals will need to be viewed in the context of the overall approach in the WRMPs and how they contribute to overall objectives within the company and regional context. In addition, this should be reviewed alongside the other actions being taken by the water companies on leakage and demand management over 25-to 60-year planning context. The large scale schemes may have been identified for example, to avoid many smaller less sustainable abstractions or to allow sustainability reductions to be delivered to support other drivers for environmental enhancement.	Comment noted. This comment relates to specific NSIP proposals and is not considered relevant to the AoS at this stage.	N/A
J4	4	The identification of alternatives against which the AoS will be applied is not completely clear. The hierarchy needs to be considered within the context of how proposed NSIPs fit within the WRMPs balancing demand and supply with a range of options. However, the alternatives for AoS are alternatives for the NPS itself, for example: a) To have one or not so the question is essentially on the difference the planning process makes to actually delivering large scale infrastructure and the risk of not being able to provide the large scale projects (regardless of how these are defined) through the normal planning	Comment noted. The selection and refinement of options for appraisal is an ongoing process. Comments here will be considered alongside others in identifying reasonable alternatives for appraisal.	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		process and the implications for water resource planning - this is an important deliverability risk. b) Or the outcomes being less favourable without the NPS as a guiding framework – so the same policies and regulations apply regardless of the planning process vs the potential benefits if for example, the NPS provides more appropriate guidance tailored to the types of issues, challenges and opportunities relevant to the NSIPs. In relation to the third level of the hierarchy, the AoS would be assessing and comparing: the non-site specific approach based on providing location criteria; the location specific for candidate sites; and location specific in terms of thresholds and based on the WRMPs. The AoS methodology however, appears to be geared to comparing individual options and programmes of options so it is not clear how comparison will be made between these approaches or how the WRMP context will be taken into account. Other Points - Economic analysis It is not clear that Ecosystems Service Assessment or more standard environmental and social costing will be taken into account. These are relevant tools which can contribute to the analysis particularly in terms of valuing environmental and social enhancements. This is recommended for water companies in the WRMP guidance on valuation and in the Water Industry Strategic Environmental Requirements and although the application of ecosystems services assessment and natural capital accounting is in early stages for WRMP19 the NPS can be forward looking in this respect.	Comment noted. It is not Defra's intention to undertake an Ecosystem Services Assessment of the draft NPS at this stage.	N/A
Severn Trent Water				

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
STW1	1	We agree with the main issues identified.	Comment noted.	N/A
STW2	2, 3, 4	Yes.	Comment noted.	N/A
Wessex Water				
WW1	1, 2, 3, 4	No further views.	Noted.	N/A
Historic England				
HE1	1	In the summary of key issues (cultural heritage), reference could also usefully be made to the potential risks of changes in water abstraction (as noted in paragraph 34 of the main consultation document) for the wider historic environment (i.e. not just wetlands). Such changes could result in disruption to important water sources (e.g. the thermal springs in Bath), the flooding or drying of deep archaeological sites (e.g. mines), and general changes to local water levels (affecting mills, bridges, etc.).	Agreed. The additional key issues referred to in this response have been reflected in Table 3.3.	Table 3.3
		Specific mention should be made of the historical importance of some reservoirs, pumping stations and associated facilities (some of which may be designated).	Agreed. Additional reference to the historic importance of certain historic assets has been included in Table 3.3.	Table 3.3
		Registered Battlefields and Designated Wrecks should be added to the list of heritage assets.	Agreed. Reference to registered battlefields and designated wrecks has been included in Table 3.3.	Table 3.3
		Under landscape and townscape, noise should be added under the final bullet point in key trends with both noise and light pollution impacting on tranquillity.	Agreed. Reference to tranquillity has been included in Table 3.3.	Table 3.3
HE2	2	The definition of cultural heritage could usefully be more closely aligned with the definition of the historic environment in the NPPF.	Agreed. The definition has been amended.	Appendix B (Section 13.1)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		The 1990 Act would be more accurately described as follows: 'The Planning (Listed Buildings and Conservation Areas) Act 1990 outlines the level of protection received by listed buildings and conservation areas'.	Agreed. The terminology has been amended.	Appendix B (Section 13.2)
		Reference should also be made to the legislation which authorises Historic England to prepare the parks and gardens and battlefields registers (the Historic Buildings and Ancient Monuments Act 1953).	Agreed. Reference added.	Appendix B (Section 13.2)
		The reference to the National Planning Policy Statement should be corrected to 'National Planning Policy Framework'. The subsequent references to heritage policy are not complete; it may be most efficient to refer to the whole conservation section.	Agreed. Reference to the National Planning Policy Statement has been amended. Reference to the relevant section of the NPPF has been included.	Appendix B (Section 13.2)
		The reference to the Planning Practice Guidance is not particularly clear, and would benefit from revision (Historic England would be happy to advise further on this).	Comment noted. The wording in this section has been revised.	Appendix B (Section 13.2)
		Historic England Advice Note 8: Sustainability Appraisal and Strategic Environmental Appraisal should be added to the list of Historic England advice; it is worth noting that GPA3 is about to be reissued.	Agreed. Reference added.	Appendix B (Section 13.2)
		Reference also needs to be made to non-designated heritage assets. These are defined in the NPPF, and subject to specific policy (and Historic England advice). Particularly important within non-designated assets is nationally important, but non-designated archaeology (which is treated in the same way as scheduled monuments in policy terms).	Agreed. Reference to non-designated heritage assets has been included in the baseline analysis.	Appendix B (Section 13.3)
		In Section 13.3, up to date figures on designated assets can be obtained from the National Heritage List for England. The most up to date	Agreed. The figures referred to in this response have been updated	Appendix B (Section 13.3)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		Heritage at Risk Register is the 2017 edition, not 2016. Reference should be made to Historic Environment Records as valuable sources of information. There are some (repeated) errors in Section 14: • In England, parks and gardens are not registered for their landscape value but for their historic interest • The register of parks and gardens is in fact a statutory designation (see reference to the 1953 Act, above). All matters pertaining to historic parks and gardens should be considered under cultural heritage.	in accordance with the revised heritage list and reference made to the Historic Environment Records. Agreed. These errors have been addressed.	 Appendix B (Section 13)
HE3	3	**Cultural Heritage** It may be helpful for this NPS to be more closely aligned with other recent and emerging NPSs, particularly with regard to the criteria/questions being used. For example, this is the parallel wording currently used in the Airports NPS (supplemented with Historic England's suggestions for its improvement): Objective: Conserve and where appropriate enhance heritage assets and the wider historic environment including buildings, structures, landscapes, townscapes and archaeological remains. Guide Questions: • Will it affect the significance of internationally and nationally designated heritage assets and their settings? • Will it affect the significance of non-designated heritage assets and their settings?	Comment noted. The guide questions have been updated where appropriate; however, it should be noted that not all of the guide questions proposed are relevant and the NPS could be a non-spatial plan and as such reference, to construction and operation that is specific to a single (or limited number) of locations as is the case for the Airports NPS, for example, is not relevant.	Table 3.4

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		• Will it conserve or enhance heritage assets and the wider historic environment including landscapes, townscapes, buildings, structures and archaeological remains? • Will its construction and operation lead to harm to the significance of heritage assets, for example from the generation of noise, pollutants and visual intrusion? • Will it improve access to/and interpretation, understanding and appreciation of the significance of heritage assets?" In addition to the above, Historic England would welcome the retention of "Will the Water Resources NPS avoid damage to important wetland areas with potential for paleoenvironmental deposits?" **Landscape and Townscape** The wording in this section could be amended as follows: Objective: To protect and enhance landscape, townscape and waterscape quality and visual amenity including areas of tranquillity and dark skies. Guide Questions: • Will the Water Resources NPS have detrimental visual impacts? • Will the Water Resources NPS affect protected/designated landscapes or their setting? • Will the Water Resources NPS affect the intrinsic character or setting of local landscapes, townscapes or waterscapes? • Will the Water Resources NPS help to minimise light pollution and noise from construction and operational activities on residential amenity and on sensitive locations, receptors and views? • Will the Water Resources NPS affect public access to open spaces or the countryside?		

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		• Will it protect and enhance nationally and locally designated landscape, townscape and waterscape and their setting?"		
HE4	4	No comment.	Noted.	N/A
Group Against Reservoir Development				
GARD1	1	We have no comments at this stage.	Noted.	N/A
GARD2	2	We have no comments at this stage.	Noted.	
GARD3	3	Yes, in general, the objectives and guide questions cover the breadth of issues appropriate for appraising the effects of the draft NPS. On the proposed appraisal framework, the matrix should be expanded to have a column covering mitigation and the expected residual effect.	Comment noted. Mitigation measures will be clearly set out in the appraisal commentary.	N/A
GARD4	4	As GARD understands, Section 2.4 revolves around whether Nationally Significant Water Infrastructure Projects (NSWIP) are needed, whether the NPS is the best approach to providing this and then detailed questions about whether the NPS should be 'site-specific' or should include detailed planning issues, which seems to us to be a variant of the 'site-specific' issue. GARD accept that some NSWIPs are needed, principally to achieve water transfers, or to provide intrinsically-resilient potable water sources such as desalination and water re-use plants. GARD believes that a NPS on water is needed. At present, there is no co-ordinating framework or national overview and guidance of the complex issue of providing a secure supply of a basic essential whilst needing to safeguard and enhance the natural and social environment of the nation. We also welcome Government's recognition that a twin-track approach to meeting future water resource needs is required, comprising both demand management and new water resources infrastructure. GARD is very much against the NPS per se being transformed into a document with site-specific aspects. This would privilege at an early	Comment noted. At this stage, the final form of the NPS has not been decided and this will be informed by the AoS including consideration of reasonable alternatives. In this context, the selection and refinement of options for appraisal is an ongoing process. Comments here will be considered alongside others in identifying reasonable alternatives for appraisal.	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		stage various mega-projects which might be selected after insufficient regulator scrutiny and then themselves become embroiled in long processes of legal challenge. Enshrining various project locations in law via an NPS will detract from the document's strategic view and from the authority with which it would be viewed. At this point, we should re-iterate some of the points we have made about the difficulties faced in framing a fit-for-purpose NPS. If these cannot be adequately addressed, these might form the basis of an alternative framework to a NPS: • the NPS must support the implementation of demand management options, thus the NPS or alternative should consider any changes needed to policy or guidance that would facilitate the wider delivery of demand management measures, in line with the professed governmental aspirations. Clauses are needed which bring about a framework in which water companies must be actively working with Government and other stakeholders to demonstrate high ambition on water efficiency before implementing new supply side solutions. This NPS or alternative should also provide a clear framework/directives for company WRMPs. • The NPS or alternative should also provide a clear framework for statutory aspects of regional water resources planning exercises, particularly how they should interact with the individual company WRMPs. Although section 2.4 of the AoS Scoping Report sets out a number of possible alternatives, it seems that a number of these have already been discounted before being assessed and made available to the public. We are concerned that this indicates that the Government has already made		

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		up its mind on these matters. This is worrying as the document seems uneven in its approach to demand management and regional planning, as we have indicated above. In order to ensure transparency in decision-making, we recommend that all reasonable alternatives to an NPS (including those set out in Section 2.4) are properly assessed and made available for public consultation.		
Thames Water				
TW1	1	Thames Water agree that the main issues identified in Sections 3.2 and 3.3 of the AoS are generally appropriate. We do not consider there are any key issues that need removing, but there are a few issues that we consider should be included, as set out below. We note in Table 3.2 under the Human Health topic, reference is made to international objectives to ensure children have access to 'safe water' but that for the national position no reference is made to the provision of 'wholesome' water to protect public health in line with the Drinking Water Inspectorate's key objective. We consider this should be recognised as a key national policy objective. We note this is picked up in the key issues table in Section 3.4 but there should be a linkage between Section 3.2 and 3.4. Under the climatic factors topic in Table 3.2, it would be useful to include explicit reference to climate change adaptation alongside the phrase "to promote climate change risk management". In relation to Section 3.4 covering key issues relevant to the draft NPS, we make the following observations: a) For the Biodiversity and Nature Conservation topic, there is no reference to natural capital and the role that well-designed water	Comment noted. Agreed. Reference to wholesome water has been included in Table 3.2. Agreed. Reference to adaptation has been included in Table 3.2.	N/A Table 3.2 Table 3.2 Table 3.3

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		resource infrastructure developments can play in enhancing certain ecosystem services.	Agreed. Reference to ecosystem services and natural capital has been added to Table 3.3.	
		b) For the Biodiversity and Nature Conservation topic area, a key pressure and risk not identified is the effects of population and housing growth in certain parts of England.	Agreed. Reference to pressures associated with population growth has been added to Table 3.3.	Table 3.3
		c) Under the Population, Economics and Skills topic, it should be acknowledged that water resources infrastructure development will also contribute positively to long-term socio-economic growth in addition to the shorter-term employment benefits and skills development already noted in the AoS.	Agreed. Reference to the operational benefits of water resources infrastructure has been added to Table 3.3.	Table 3.3
		d) We agree with the key issue under the Human Health topic linking provision of a reliable water supply to the protection of public health.	Comment noted.	N/A
		e) Under the Water Quality topic, it would be useful to also reference the effects of population and housing growth (urbanisation) on surface water and groundwater quality, as well as noting that changes to future agricultural policies may also have an effect on water quality.	Agreed. Reference to pressures associated with population growth has been added to Table 3.3.	Table 3.3
		f) In relation to the Water Quantity topic, it should be noted that, in addition to effects on the environment, the risks of increasing use of drought restrictions measures has effects on people and socio-economy.	Agreed. Reference to the use of drought restrictions has been included in Table 3.3.	Table 3.3
		g) Whilst we generally agree (for the Climatic Factors topic) that construction and operation of large scale water resources infrastructure is likely to result in a net increase in energy use, there are also opportunities for developing renewable energy to partially support the energy requirements of these large scale infrastructure schemes.	Comment noted. Reference to the potential for low carbon design including renewable energy	

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			provision to minimise greenhouse gas emissions has been included in Table 3.3.	
TW2	2	Thames Water agrees that the Scoping Report and Appendix B set out sufficient information to establish the context for a policy statement that is not location-specific.	Comment noted.	N/A
		We agree that it is appropriate, at this stage, to assume that relevant extant EU legislation will be maintained once the UK has withdrawn from the EU and that similar or equivalent environmental protections will remain in place. In due course, these assumptions will need to be revisited in light of any future changes to relevant legislation.	Comment noted.	N/A
		There are some policies, plans or programmes that we believe should be considered as part of the AoS in addition to those included in Appendix B:		
		Recent policy development by the Government and the water sector on the application of natural capital accounting to assessing the benefits and dis-benefits associated with long-term infrastructure planning. References are made to parallel policy developments with respect to ecosystem services but not to natural capital accounting.	Agreed. References added where appropriate.	Appendix B
		In relation to the Human Health topic, reference should be made to the recent (September 2017) Drinking Water Inspectorate (DWI) Guidance Note: Long term planning for the quality of drinking water supplies.	Comment noted. This is a technical document and in consequence, it has not been included in the Scoping Report.	N/A
		Ofwat (July 2017) consultation: Delivering Water 2020: Consulting on our methodology for the 2019 price review	Comment noted. This is a technical document and in	N/A

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			consequence, it has not been included in the Scoping Report.	
		In relation to future changes to the baseline environment, we suggest reference is made to the Environment Agency's recent work (November 2017) on modelling five future different scenarios to explore the implications for future water resources and management.	Agreed. Reference added.	Appendix B
		Reference to catchment management policy and strategy implementation in the UK nation states to help address water quality risks, enhance biodiversity and support achievement of WFD objectives	Comment noted. Reference to catchment management strategies is currently included in Section 5.2 and therefore no change to the Scoping Report is considered to be necessary.	N/A
		Mayor of London (2011): Securing London's water future: The Mayor's Water Strategy and other equivalent strategies elsewhere in England	Disagree. Given the national scope of the AoS, it is not considered proportionate to include regional/sub-regional plans and programmes.	N/A
		More specific reference to the fact that there are defined policies (including land safeguarding policies in some cases) contained in many local plans relating to the need for (and safeguarding sites for) large-scale water resources infrastructure development.	Disagree. Given the national scope of the AoS, it is not considered proportionate to include regional/sub-regional plans and programmes.	N/A
		Thames Water note that the current and future baselines may not be fully developed. The data sources identified currently do not include the water company WRMP and drought plans, only regulatory data. Also,	Disagree. Appendix B presents the contextual baseline information and the 'likely evolution of the	N/A

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		there appears to be no mention of how the future will change, not only from a climate perspective, but also how the socio-economic and environmental baseline will evolve (ref consultation para 6). For a plan with implications for planning 50+ years from now, there will need to be future scenario testing, but how this will be achieved is not mentioned in detail.	baseline' for each of the 14 topics contained in the AoS. The key trends arising from this analysis are summarised in Table 3.3 of the Scoping Report.	
TW3	3	Thames Water agrees with the inclusion of all of the SEA topics set out in Table 4.1 and the links to the AoS topics. We broadly agree with the AoS objectives and guide questions set out in Section 4.3, with the following suggestions for improvement: a) In relation to Biodiversity and Nature Conservation topic, we consider there should be a guide question relating to the effects on natural capital. b) We suggest that the secure drinking water supply guide question under the Human Health topic could be strengthened as follows: "Will the Water Resources NPS ensure the continuity of a safe and secure drinking water supply to protect public health? c) In relation to the Flood Risk and Coastal Change topic, we suggest that the question relating to development in flood risk areas is clarified: is "development" relating specifically to water resource infrastructure developments or to the broader definition of 'development' (e.g. housing development)? If it relates to the former definition, it is suggested that the guide question is expanded to read: "Will the Water Resources NPS help to avoid development in areas of flood risk and, where possible, reduce flood risk or where development in flood risk areas cannot be	Comment noted. Comment noted. It is not Defra's intention to undertake a Natural Capital Assessment of the draft NPS at this stage. Agreed. The guide question has been amended. Agreed. The guide question has been amended.	N/A N/A Table 4.3, Appendix B (Section 3.6) Table 4.3, Appendix B (Section 7.6)

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		avoided, that appropriate mitigation measures are applied to avoid increasing flood risk and, where possible, reduce flood risk". d) We suggest that an additional guide question is added to the Landscape and Townscape topic to reflect the reference made in Table 3.3 about water infrastructure "contributing positively to landscapes": "Will the Water Resources NPS provide opportunities to enhance landscapes or townscapes?"	Agreed. The guide question suggested in this response has been included under AoS Objective 14.	Table 4.3, Appendix B (Section 14.6)
TW4	4	Thames Water agrees that, if some of the possible alternatives go against established Government policy, then the scope for considering policy alternatives within the AoS should not involve "reopening settled policy", as set out in the Department for Communities and Local Government guidance for an emerging NPS. We agree that consideration of the reasonable alternatives for the NPS should take into account the hierarchy of alternatives as set out in the Office of the Deputy Prime Minister (ODPM) SEA guidance. We further agree that the principles set out in the Scoping Report aligned to the ODPM hierarchy are appropriate. With respect to Paragraphs 2.4.10 and 2.4.11, we agree that it is appropriate to make reference to the draft Water Resources Management Plan (WRMP) 2019 submissions to carry out this assessment. However, we do have some concerns about the reference in paragraph 2.4.10 to "a location-specific NPS that sets thresholds for nationally significant water resources infrastructure based on the scale of the supply demand deficit forecast by a water company and for which demand management and local supply options would be insufficient." Such an approach would not only need to consider the supply-demand	Comments noted. The selection and refinement of options for appraisal is an ongoing process. Comments here will be considered alongside others in identifying reasonable alternatives for appraisal.	N/A

Ref	Consultation Question	Consultation Response	Commentary / Action Taken	Location of Changes in Final Scoping Report
		deficit forecast by a water company for its own operating area, but also the position of neighbouring water companies that may require a bulk water supply (or develop a shared resource) from that company. The draft 2019 WRMPs, as well as work carried out by the Water Resources South East (WRSE) group, should be consulted to understand the likely scale of inter-company transfers and/or development of shared water resources. It is not clear how alternative large scale water resources infrastructure that is not included within the current or proposed infrastructure types in the Planning Act 2008 are to be considered in the AoS, but the AoS should consider such alternatives that might be included in the draft 2019 WRMPs of some English water companies (for example, large scale treated water transfer options). We consider that there are key timing issues around the integration of additive large schemes. It is likely that several schemes will be required and how they inter-relate and are selected has a definite influence socially and environmentally. These issues can only be considered once the selection and timing of schemes is known. Consideration of both spatial and temporal application of large schemes will be required to assess their effects at a national and regional scale. Therefore, it not just about cumulative impacts of selected schemes, but of greater importance it is also about what is selected in the first place. We do not agree with the statement at paragraph 2.4.12 that the timing and detailed form of implementation are "issues outside the scope of a national, long-term assessment". The timing of nationally significant water resources infrastructure is of particular relevance when considering		

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		cumulative, in-combination effects with other policies, plans and programmes (as required by SEA), as well as between the development of such infrastructure between the different water companies in England (as well as Wales and Scotland where there could be possible environmental cumulative effects). Additionally, many of the large-scale water resource infrastructure developments are characterised by relatively long promotion/planning/design/construction/commissioning timescales, with consequent effects on the environment and local communities. We therefore consider that temporal factors must be explored alongside spatial factors in the AoS.		
Association of Drainage Authorities (ADA)				
ADA1	1	Agree with the main issues identified.	Comment noted.	N/A
ADA2	3	ADA broadly agrees with the main objectives/guide questions identified.	Comment noted.	N/A
CLA				
CLA1	1, 2, 3, 4	We are not in a position to comment on this.	Noted.	N/A

Appendix E
Recommendations Arising from the Initial Appraisal Process

As set out in **Section 5.2** of the AoS Report, the AoS has been undertaken alongside, and informing, the development of the draft NPS. This is to help ensure that sustainability considerations are taken into account in the development of the draft NPS from the outset. This iterative approach has sought to provide initial views on the likely significant effects of the emerging draft NPS, proposing measures to avoid, minimise or mitigate any adverse effects and to maximise positive effects thereby enhancing its sustainability performance.

The iterative approach to the development of the draft NPS and AoS thereof has comprised the following key stages:

1. **Review of draft NPS structure**: Wood undertook an initial review of the proposed structure for the draft NPS and provided comments to Defra. This was intended to help identify, at an early stage, possible gaps in the document and key sustainability considerations to be taken into account by Defra in drafting the policy.
2. **High level review of the first draft NPS**: Wood undertook an early review of the draft NPS to ensure that the AoS could properly support the preparation of the policy by identifying issues where further clarification would be helpful. Commentary was also provided on the emerging topic guidance contained in section 4 of the draft NPS to support Defra in refining the document prior to further, detailed appraisal;
3. **Detailed appraisal of the emerging draft NPS**: Wood completed an initial, detailed appraisal of the draft NPS to help identify opportunities to enhance the sustainability performance of the document.

For stages 1 and 2 outlined above, Tables E1 and E2 below summarise the principal recommendations arising and provide a signpost to how they have been taken into account in the draft NPS. Stage 3 formed the basis for detailed appraisal contained in Appendix B (with proposed mitigation measures collated in Appendix F) and has not been presented separately to avoid unnecessary duplication.

Table E.1 Recommendations Arising from the Review of the Draft NPS Structure

Chapter	Wood Comment	How the comment has been addressed in the draft NPS
Chapter 1	Within the introduction to the NPS, we would suggest that Defra is clear with regard to what types of infrastructure the NPS relates to. Reflecting on the contents of other NPSs, further subheadings that Defra may want to consider including in Section 1 could be: • Geographical coverage of the NPS (including that applicants should consider effects in Wales, Scotland etc. and that Defra should set out the proposed approach to cross boundary issues, noting that for Wales for example, the Environment (Wales) Act 2016 requirements will also apply with regard to the Sustainable Management of Natural Resources). • The relationship with other NPS. • Period, validity and review. • The objectives for the NPS.	Suggested contents has been included in Chapter 1 of the draft NPS.

Chapter	Wood Comment	How the comment has been addressed in the draft NPS
Chapter 2	Within this section, Defra may want to consider including a specific sub-heading on the twin track approach given the importance of this issue to consultees and Government policy on water resources.	Reference to the twin track approach has been included in Chapter 2 of the draft NPS.
Chapter 3	The proposed content of this section seems appropriate and reflects other NPS. Consideration could, however, be given to including a separate sub-section on the environmental enhancement principle and how applicants will need to demonstrate a net gain in environmental benefit as part of demonstrating 'good design'.	A specific section (Section 3.4) on environmental net gain has been included in Chapter 3 of the draft NPS.
Chapter 4	The topics identified are considered to be broadly appropriate. Consideration could, however, be given to the inclusion of the following additional topics:	
	• Human health: This topic is now included in the Environmental Impact Assessment (EIA) Regulations.	Health has been identified as an assessment principle in Chapter 3 of the draft NPS and is indirectly captured in other topics such as air quality; however, it is not included as a specific topic in Chapter 4.
	• Socio-economics and population: Population is a topic in the EIA Regulations and socio-economic impacts (for example, construction and operational effects on the local economy including other abstractors, skills, labour, tourism and recreation) are an important consideration when assessing large scale water resources infrastructure.	Socio-economics, population and demographics has been included as a specific topic in Chapter 4 of the draft NPS.
	• Traffic and transport: This could be a very important issue for many schemes that involve large scale construction activity that generates high volumes of vehicle movements/works within/across roads.	Traffic and transport has been included as a specific topic in Chapter 4 of the draft NPS.
	• Resource use: The EIA Regulations refer to material assets (albeit this is undefined) and also require details of the nature and quantity of the materials used.	Resources (and waste management) has been included as a specific topic in Chapter 4 of the draft NPS.
	Additionally, we have the following observations on the existing topics identified by Defra:	
	• Land use: This topic could also include reference to geology and soils (geology could alternatively be included under the biodiversity heading). Soil is included as a specific topic in the EIA Regulations.	The land use topic within Chapter 4 of the draft NPS includes reference to soils. Geodiversity is covered under the biodiversity and nature conservation topic.
	• Water quality and resources: We assume that this section will also include the consideration of water quantity. Defra may want to consider making this clear and also including reference to hydromorphological change. Impacts on the marine environment may also be an important consideration (e.g. in respect of desalination).	The water quality and resources topic within Chapter 4 of the draft NPS includes reference to hydromorphological

Chapter	Wood Comment	How the comment has been addressed in the draft NPS
		change, coastal waters and water quantity.
	• Carbon emissions: This could be re-titled climatic factors including climate change mitigation and adaptation/resilience. This would better align with the National Planning Policy Framework (NPPF) and EIA Regulations.	Climate change adaptation is identified as a key assessment principle in Chapter 3 of the draft NPS; however, it is not included as a topic in Chapter 4.
	• At this stage, we are not convinced that military/aviation is necessary as a topic for inclusion in the NPS.	This topic has been removed from the draft NPS.
	• Biodiversity and Ecological Conservation: Could this topic be re-titled Biodiversity and Nature Conservation?	The topic has been re-titled 'Biodiversity and nature conservation'.
	• Dust, Odour…: Could this topic be combined with that on Air Quality? We appreciate, however, that this is normally a standalone topic in NPS.	Consistent with other NPSs, Defra has determined at this stage to keep these topics separate.

Table E.2 Recommendations Arising from the High Review of the First Draft NPS

Chapter/Section	Wood Comment	How the comment has been addressed in the draft NPS
Chapter 1	The structure and content of this chapter are clear and broadly reflect other NPSs. However, it is our view that it would be helpful if there were a vision and clear statement of objectives for the NPS that outline precisely what the NPS is seeking to achieve (as is the case for other NPSs). Minor observations also made.	Objectives for the NPS have been included in Chapter 1 of the draft NPS.
Chapter 2	We have no substantive comments on this chapter (minor observations made)	Noted.
Chapter 3	The assessment principles detailed in Chapter 3 are broadly consistent with other NPSs. However, it is our view that the content of the chapter could be enhanced if it clearly set out interpretations of the assessment principles which are then reflected in subsequent chapter content. It is therefore considered that section 3.1 of the draft NPS could explicitly establish/list the assessment principles, each supported by a clear statement of intent. Minor observations also made.	Section 3.1 of the draft NPS establishes the assessment principles and provides a clear statement of intent/criteria.
Chapter 4	The 15 topics that comprise Chapter 4 of the draft NPS are broadly consistent with other NPSs and it is noted that the topics identified can be aligned with the AoS objectives contained in the Final Scoping Report. However, whilst forming assessment principles (see Chapter 3 of the draft NPS), health and climate change adaptation are not presently identified as specific topics in Chapter 4. The impacts of a water resources NSIP on health and climate change could be substantive and the inclusion of these topics in Chapter 4 would allow for further, more detailed guidance to be provided to applicants and the Secretary of State in respect of these impacts; it would also better align with the EIA Regulations. In consequence, it is our view that both topics should be included in Chapter 4. Reflecting the EIA Regulations, Defra may also want to consider the inclusion of major accidents and disasters as a topic in Chapter 4, although it is recognised that this topic is not included in other NPSs and could be captured in Chapter 3 (see also Section 3.3 of this report).	Climate change adaptation is identified as a key assessment principle in Chapter 3 of the draft NPS; however, it is not included as a topic in Chapter 4. Health has been identified as an assessment principle in Chapter 3 of the draft NPS and is indirectly captured in other topics such as air quality; however, it is not included as a specific topic in Chapter 4.
	• Human health: This topic is now included in the Environmental Impact Assessment (EIA) Regulations.	Health has been identified as an assessment principle in Chapter 3 of the draft NPS and is indirectly captured in other topics such as air quality; however, it is not included as a specific topic in Chapter 4.
	• Socio-economics and population: Population is a topic in the EIA Regulations and socio-economic impacts (for example, construction and operational effects on the local economy including other abstractors, skills, labour, tourism and recreation) are an important consideration when assessing large scale water resources infrastructure.	Socio-economics, population and demographics has been included as a specific topic in Chapter 4 of the draft NPS.

Chapter/Section	Wood Comment	How the comment has been addressed in the draft NPS
	• Traffic and transport: This could be a very important issue for many schemes that involve large scale construction activity that generates high volumes of vehicle movements/works within/across roads.	Traffic and transport has been included as a specific topic in Chapter 4 of the draft NPS.
	• Resource use: The EIA Regulations refer to material assets (albeit this is undefined) and also require details of the nature and quantity of the materials used.	Resources (and waste management) has been included as a specific topic in Chapter 4 of the draft NPS.
Section 4.1	Para 4.1.2 could usefully include reference to the requirement for applicants to undertake consultation with the relevant regulators where effects are anticipated to occur outside England.	4.1.3 discusses devolved administrations.
Air Quality (Section 4.2)	**Introduction** Reference to sources of emissions to air associated with the development of water resources infrastructure (for example, vehicle movements and the use of plant) could be included in para 4.2.1.	Included within potential impacts/mitigation table.
	Consideration could be given to including reference to the Environmental Permitting (England and Wales) Regulations 2016 (SI 2016/1154)[71] in which the environmental regulator specifies conditions for environmental permits, for example limiting the type and quantity of emissions released to air.	Section 3.8 discusses interface between environmental permitting and planning.
	Applicant's assessment Reference could be included in this section to consultation with the local planning authority and the Environment Agency on air quality matters.	The need for applicants to adequately consult with relevant authorities is set out at 4.1.4.
	Decision making Whilst this section mentions Natura 2000 sites (para 4.2.10), it does not set out the potential for air quality to be considered as part of any HRA. Defra may therefore wish to include further text on this matter.	Signpost to HRA in section 3.3 included.
	Mitigation There is the potential for additional mitigation measures to be identified such as requirements for air quality monitoring, implementation of dust suppression plans, the use of low emission machinery, containment of emissions, ensuring an adequate distance between sources of emissions and receptors, and limiting times of activity. The mitigation measures referenced could also include specific management measures, such as traffic planning, which could include optimising vehicle movements, phasing and frequency of movements and varying routes to limit the effects on any sensitive communities adjacent to principal routes.	The potential impacts/mitigation table identifies some key measures that may be considered as part of the DCO examination. This AoS is referenced at footnote 77 also.
Biodiversity and Nature Conservation (Section 4.3)	**Introduction** Consideration should be given to removing reference to Circular 06/05: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System as this is now outdated. Instead, reference could be included to the Planning Practice Guidance on the natural environment[72].	Included at 4.3.2.
	A brief overview of the range of potential positive and adverse impacts on biodiversity associated with the development of water resources infrastructure could be included in this section.	Section 4.3.3 includes potential impacts and mitigation table.
	Applicant's assessment	

[71] See http://www.legislation.gov.uk/uksi/2016/1154/contents/made [Accessed May 2018].
[72] See https://www.gov.uk/guidance/natural-environment [Accessed May 2018].

Chapter/Section	Wood Comment	How the comment has been addressed in the draft NPS
	In contrast to the previous section on air quality, there is no detailed guidance on the potential contents that should form part of the Environmental Statement (ES). It would be useful to supplement the current information with equivalent guidance. Signposting could be provided in this section to HRAs prepared in support of the draft NPS and WRMPs (as useful information to inform an applicant's assessment (and the Secretary of State's decision).	Significant information is provided on the various designated sites that will need consideration within an ES where relevant.
	This section could highlight the importance of ongoing engagement with relevant nature conservation bodies including Natural England.	Section 4.3.19 identifies NE and other bodies.
	It is recommended that this sections includes specific reference to biodiversity net gain (and, potentially, associated guidance). Applicants could be required to include proposals for environmental net gain as an integral consideration from the outset.	Section 4.3.5 cross references Environmental Net Gain section.
	It would be useful for this section to consider specific impacts associated with water resources infrastructure including, for example, changes in the quality of habitats due to changes in groundwater/river water quality and/or quantity.	Referenced with potential impacts/mitigation table/
	Decision making Consideration could be given to replacing reference to Biodiversity 2020 with the 25 Year Plan and including more specific reference to biodiversity net gain. For example, the draft NPS could state: "*After considering the DCO application and the effects on biodiversity, the Secretary of State may consider requiring the applicant to demonstrate environmental net gain*".	Included within 4.3.6.
	This section should be updated to refer to The Conservation of Habitats and Species Regulations 2017.	Updated.
	It is considered that this section could usefully set out the role of HRA in the decision making process and that the Secretary of State must comply with the Habitats Regulations when considering development, where that development is likely to have a significant effect on a European site.	Covered under section 3.3 on HRA.
	Reference to Marine Protected Areas could be included in this section.	Included with 4.3.6.
	At para 4.3.15, this section could include reference to priority species and habitats or species of conservation concern, fisheries and ecological connectivity.	Covered under 4.3.16.
	Mitigation Specific reference to biodiversity net gain could be included in this section. The mitigation measures identified could include reference to the development and implementation of plans to monitor impacts on sensitive habitats and species and accident prevention measures. Reference could be made in this section to enhancing public access to wildlife.	Identified in 4.3.7.
Carbon Emissions (Section 4.4)	**Introduction** An overview of the possible sources of greenhouse gas emissions arising from the construction and operation of water resources infrastructure could be included in this section.	Section 4.4.2 includes potential impacts/mitigation table.
	Applicant's assessment Signposting in this section could be provided to the assessment of carbon impacts as part of the WRMP process.	Included at 4.4.3.

Chapter/Section	Wood Comment	How the comment has been addressed in the draft NPS
	In contrast to the section on air quality, there is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance.	The potential impacts/mitigation section outlines possible significant effects that could need assessing
	Decision making No comments at this stage.	
	Mitigation We would agree with comments included in the draft NPS that reference should be provided to the provision of renewable energy in new developments (where viable).	Included at 4.4.8
Coastal Change (Section 4.5)	**Introduction** The text at para 4.5.3 could usefully highlight the potential causes and impacts of coastal change associated with the indirect impacts of water resources infrastructure.	Section 4.5.2 and the potential impacts/mitigation table identify the direct impacts that could lead to indirect effects.
	Applicant's assessment Reference should be made to Shoreline Management Plans (SMPs) in this section (although it is noted that SMPs are discussed under 'Decision making'').	Section 4.5.5 identifies the scope of assessment should be agreed with relevant organisations.
	Specific reference could be made to the need for applicant's to prepare a coastal change impact study (or similar) for schemes located in coastal areas, in consultation with the Environment Agency and coastal groups.	Included at 4.5.5.
	As per section 4.8 of the draft NPS on flood risk, reference could be included in this section to the need for applicants to take into account the potential impacts of climate change using the latest UK Climate Change Risk Assessment, the latest set of UK Climate Projections, and other relevant sources of climate change evidence. In contrast to the section on air quality, there is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance.	Section 4.5.5 identifies the scope of assessment needs to be agreed with relevant organisation and decision making section also clarifies points.
	Decision making No comments at this stage.	
	Mitigation No comments at this stage.	
Dust, Odour, Artificial Light, Smoke and Steam (Section 4.6)	**Introduction** Reference to sources of emissions and artificial light arising from the development of water resources infrastructure (for example, vehicle movements and the use of plant) could be included in para 4.6.1.	These emissions / impacts are common to any construction project. The advice provides flexibility for the DCO examination to examine any project specific significant aspects. 4.6.4 identifies likely aspects to consider.
	Applicant's assessment Specific reference to a lighting impact assessment could be included in this section.	
	Decision making No comments at this stage.	
	Mitigation No comments at this stage.	

Chapter/Section	Wood Comment	How the comment has been addressed in the draft NPS
Historic Environment (Section 4.7)	**Introduction** Para 4.7.1 could provide examples of the potential impacts of water resources infrastructure on heritage assets and could recognise that existing water resources infrastructure (including, for example, pumping stations and reservoirs) can be historically important in their own right.	The potential impacts/mitigation table identifies such impacts. Existing heritage assets are afforded protection and will need to be considered on a case by case basis.
	Reference within the introduction could be made to the NPPF which sets out the core land use planning principles that should underpin decision-making with regard to cultural heritage including the requirement to "conserve heritage assets in a manner appropriate to their significance." The NPPF requires any harm or loss to require clear and convincing justification.	'Significance' is discussed within the section.
	Applicant's assessment This section could make explicit reference to the need for the applicant to undertake an assessment of impacts on heritage assets including direct and indirect impacts on features and their settings.	Covered under 4.7.7 to 4.7.9
	This section could highlight the importance of ongoing engagement with Historic England and the local planning authority (although it is noted that this is referred to in a footnote (105).	
	Consideration could be given to including reference to non-designated assets in this section together with the historic character of landscapes and settlements as well as the heritage of communities.	Considered within Landscape section
	In contrast to the section on air quality, there is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance.	This section and the decision making section provide guidance on what may significant impacts.
	Decision making No comments at this stage.	
	Mitigation Whilst it is noted that this section refers to mitigation by record, additional mitigation (and enhancement) measures could be usefully identified, particularly in relation to the location and design of proposals. This is briefly touched upon in para 4.7.8.	
Flood Risk (Section 4.8)	**Introduction** Para 4.81 refers to the proposed development when perhaps this should read 'a 'proposed development'.	Removed
	This section could usefully set out how flood risk could affect, and be affected by, (both positively and negatively) water resources infrastructure.	The potential impacts/mitigation table identifies such impacts.
	Applicant's assessment Par 4.8.10 currently repeats para 4.8.6 and could therefore be deleted.	Addressed
	This section could make reference to any opportunities for enhancing flood risk management (for example, through increased water storage).	Included within 4.8.8
	This section could make specific reference to the need to consider the resilience of infrastructure, places, communities and habitats and species to future flooding.	All significant aspects of flood risk should be considered.
	This section could make explicit the linkages between the flood risk assessment and ES.	

Chapter/Section	Wood Comment	How the comment has been addressed in the draft NPS
	Decision making No comments at this stage. **Mitigation** No comments at this stage.	
Land Instability (Section 4.9)	**Introduction** Specific reference to the potential impacts of water resources infrastructure on land instability could be included in this section. **Applicant's assessment** In contrast to the section on air quality, there is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance. **Decision making** Whilst it is noted that other NPSs do not include a decision making subheading under the land instability topic, for consistency within the draft NPS, it is recommended that this is included. **Mitigation** No comments at this stage.	This section has been deleted, however a key assessment requirement has been included with the land use section (4.10) at 4.10.13 regarding ground instability.
Landscape and Visual Impacts (Section 4.9)	**Introduction** Consideration could be given to describing the potential range of landscape and visual effects associated with the development of water resources infrastructure. We note and welcome the reference to waterscape in this section. This could be extended to include reference to seascape, particularly given the potential impacts associated with the development of desalination plants. **Applicant's assessment** This section could include reference to the enhancement of landscape character and visual amenity. This section could encourage applicants to consider impacts on traditional land management activities that have created unique landscapes. In contrast to the section on air quality, there is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance. Para 4.10.6 refers to roads works within designated landscapes. Defra may wish to consider whether it is necessary to include this paragraph in the context of water resources infrastructure. Para 4.9.9 (first bullet) could include reference to water supply and environmental benefits associated with the operation of water resources infrastructure. **Decision making** No comments at this stage. **Mitigation** No comments at this stage.	The potential impacts/mitigation table identifies such impacts at 4.9.2. Included Referred to at 4.9.8. This section and the decision making section provide guidance on what may significant impacts. Removed This exceptional circumstances test is in conformity with the NPPF.

Chapter/Section	Wood Comment	How the comment has been addressed in the draft NPS
Land use including open space, green infrastructure and Green Belt (Section 4.10)	**Introduction** This section could provide an overview of the potential impacts of water resources infrastructure on land use.	The potential impacts/mitigation table identifies such impacts at 4.10.7
	Para 4.10.1 could include reference to blue infrastructure and the potential benefits associated with the operation of water resources infrastructure (i.e. new reservoirs).	Section 4.10.6 covers blue and green infrastructure
	Reflecting the potential impacts of desalination plants, this section could make reference to other users of the marine environment.	Included at 4.10.1 and 4.10.20
	Applicant's assessment This section could make reference to other users of the marine environment with reference to marine plans and the need for early discussions with the Marine Management Organisation (MMO).	MMO referenced elsewhere and MPA at 4.10.14 and 4.10.21
	At para 4.10.8, specific reference could be made to the need for engagement with the relevant minerals planning authority and the MMO.	Recreational opportunities considered under socio-economics section
	This section could encourage applicants to identify opportunities for enhancing open space and green infrastructure as part of development proposals (for example, through improved access to blue infrastructure such as reservoirs, improved coastal access and the provision of recreational facilities at sites).	This section and the decision making section provide guidance on what may significant impacts.
	In contrast to the section on air quality, there is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance.	
	Decision making Whilst it is noted that para 4.10.20 includes reference to coastal access, reference could be usefully included to impacts on existing or proposed marine activities.	
	Mitigation Additional measures could be identified in respect of potential impacts on geology and soils, the replacement of top soil following construction, avoiding geologically sensitive areas and minimising contamination. Reference could also be made to securing open space and recreational benefits through development.	Soils and potential contamination discussed at 4.10.4 and 4.10.5
	Para 4.10.21 could refer to compensation where mitigation in respect of mineral resources is not possible.	Included
Noise and vibration (Section 4.11)	**Introduction** At present, this section does not reference any relevant legislation. In this regard, it may be useful to consider including the Environmental Noise Directive (END) (2002/49/EC) which is concerned with noise from road, rail, air traffic and industry and the Environmental Noise Regulations 2006 (SI 2006/2238), which addresses the requirements of the END. Reference could also be made to the World Health Organisation (WHO) standards on noise 'Guidelines for community noise'[73].	Reference to relevant British Standards for assessing noise and Planning Policy Guidance are provided within this section.
	There is potential to include reference to the impacts of noise and vibration on biodiversity (para 4.11.1). This could include the impacts of underwater noise on marine ecology.	Included

[73] See https://infrastructure.planninginspectorate.gov.uk/document/2322958 [Accessed May 2018].

Chapter/Section	Wood Comment	How the comment has been addressed in the draft NPS
	Consideration could be given to describing the potential sources of noise and vibration associated with the development of water resources infrastructure.	Impacts are common to any construction project. The advice provides flexibility for the DCO examination to examine any project specific significant aspects.
	Applicant's assessment There is the potential to refer to vibration impacts alongside noise in this section.	
	Para 4.11.3 (bullet point 4) refers to post-closure which may not be appropriate in the context of water resources infrastructure.	Removed.
	Decision Making There is the potential to refer to vibration impacts alongside noise in this section.	From 4.11.1 'In this section, in line with current legislation, references below to 'noise' apply equally to the assessment of impacts of vibration'.
	Mitigation There is the potential to provide further examples of mitigation measures in this section. This may include, for example, the timing/phasing of activities, the use of noise attenuation equipment and monitoring.	Included at 4.11.14.
	Consideration could be given to including reference to compensation in this section (i.e. where mitigation is not possible). This may include, for example, improving noise insulation at affected properties.	
Resource and Waste Management (Section 4.12)	**Introduction** This section could usefully refer to resource use in new developments.	The potential impacts/mitigation table identifies such impacts at 4.12.5
	The introductory text could provide a summary of the potential sources of waste arisings associated with the development of water resources infrastructure.	
	It should be noted that the Waste (England and Wales) Regulations 2011 (SI 2011/988) has been amended by the Waste (England and Wales) (Amendment) Regulations 2012[74] and the Waste (England and Wales) (Amendment) Regulations 2014[75].	Revised
	This section could refer to the National Planning Policy for Waste (2014)[76].	
	Applicant's assessment This section could highlight the need for engagement with the relevant waste planning authority and operators to ensure that there is sufficient waste management capacity in place for new development.	Para 4.12.7, bullets 2 and 3 highlights the need to consider capacity availability and minimise disposal of waste (thereby reducing transportation)
	The guidance could make a specific recommendation that applicants take account of locally adopted waste plans and strategies and engage early with the relevant waste collection and disposal authorities, operators and the Environment Agency.	
	Reference could be made to the need to minimise the transportation of waste.	

[74] See http://www.legislation.gov.uk/uksi/2012/1889/contents/made [Accessed May 2018].
[75] See https://www.legislation.gov.uk/uksi/2014/656/contents/made [Accessed May 2018].
[76] Department for Communities and Local Government (2014) *National Planning Policy for Waste*. Available from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/364759/141015_National_Planning_Policy_for_Waste.pdf [Accessed May 2018].

Chapter/Section	Wood Comment	How the comment has been addressed in the draft NPS
	This section could refer to resource use and encourage applicants to use locally-sourced, sustainable building materials where possible. In contrast to the section on air quality, there is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance. **Decision making** This section could refer to resource use. Reflecting National Planning Policy for Waste (2014), reference in this section could be made to the need for the Secretary of State to consider impacts on sites and areas allocated for waste management and the integration of waste management facilities with the rest of a development. **Mitigation** This section could usefully identify more specific mitigation measures including, for example, making the best use of existing water resources infrastructure (e.g. pipelines) where possible.	Para 4.12.6 identifies that a Site Waste Management Plan should be produced and describes likely contents. This could guide any ES. The land use section requires consultation with local county or unitary authorities (waste management authority).
Socio-economics, Population and Demographics (Section 4.13)	**Introduction** It would be useful if in the introduction, a definition of the topic was included (at present, the text refers only to economic impacts). It is considered that this section could highlight more specifically how the development of water resources infrastructure could have both positive and adverse socio-economic effects. However, it is noted that more detail in respect of potential impacts is included under 'Applicant's assessment'. It is noted that this section includes reference to mitigation measures and which may be better included under the mitigation section. **Applicant's assessment** Para 4.13.4 could usefully refer to impacts on the local economy (including supply chains), existing abstractors, community cohesion and disadvantaged areas. In contrast to the section on air quality, there is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance. **Decision making** No comments at this stage. **Mitigation** This section could include reference to more specific mitigation measures such as those identified at para 4.13.1. This may include the identification of opportunities for proposals to provide lasting legacy benefits for host communities (for example, through the provision of new recreational facilities or housing).	Para 4.13.1 has been updated. This section has been expanded and refined. Section 4.13.1 has been amended.
Traffic and Transport (Section 4.14)	**Introduction** Reference could be included in this section to marine transport (associated with desalination plants). **Applicant's assessment** No comments at this stage. **Decision making** No comments at this stage. **Mitigation**	

Chapter/Section	Wood Comment	How the comment has been addressed in the draft NPS
	At para 4.14.8, it is noted that there is reference to a transport safety case which is unlikely to be applicable to water resources infrastructure. Reference could be made in this section to ensuring that any proposals for associated transportation infrastructure or services take account of socio-economic and environmental impacts and seek to provide a legacy benefit.	Removed.
Water Quality and Resources (Section 4.15)	**Introduction** Para 4.15.1 could be usefully expanded to identify the sources, and potential range, of impacts on the water environment associated with the construction and operation of water resources infrastructure.	The potential impacts/mitigation table identifies such impacts at 4.15.5
	At para 4.15.2, specific reference could be made to bathing water quality. This section could usefully refer to the targets contained in the 25 Year Plan.	Included
	Applicant's assessment There is the potential for this section to refer to the information provided in support of WRMPs including WFD Assessments (although this is referenced in respect of the spread of invasive species).	Included at 4.15.3
	Para 4.15.4 could include reference to the MMO.	Included at 4.15.6
	Para 4.15.5 could refer to bathing water quality as well as specific impacts associated with water resources infrastructure such as effects related to construction activity near/across waterbodies, new/increased abstractions (with a cross reference to Catchment Abstraction Management Strategies, for example) and discharges (including brine). Reference in this section could be included to opportunities to enhance the water environment.	
	Decision Making It is considered that this section of the draft NPS could make more explicit the key considerations to be taken into account by the Secretary of State in determining DCO applications including impacts on water resource availability, surface and ground water quality and bathing water (with reference to marine plans), where relevant. It is also considered that the guidance could be more definitive in respect of the circumstances in which the Secretary of State would refuse consent due to unacceptable impacts on the water environment. Reference in this section could be included to opportunities to enhance the water environment.	Para 4.15.3 identifies that water resource availability is considered as part of the WRMP process. Decisions on local water quality are taken in the context of WFD, specifically 4.15.12
	Mitigation Reference could be made to requirements for the preparation of environmental management plans to help minimise adverse effects on water resources.	

Appendix F
Mitigation and Enhancement

AoS Topic Area	Applicant's Assessment	Decision Making	Mitigation
Biodiversity and Nature Conservation	- Whilst para 4.3.5 refers to net gain and cross refers to section 3.4 (Environmental Net Gain), this section could integrate further the principle of net gain, for example by providing further examples of net gain measures beyond the limited number presented in the table of potential impacts in the 'Introduction' section, and by ensuring the ES makes reference to net gain. - There is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance. Specification of the contents of the ES could be drawn from the following which in turn serves as the reference point for the detail of the 'Decision Making' section: • Scoping o Identify the likely zone of influence of the proposed development. o Identify and evaluate ecological resources and features (habitats, species and ecosystems, including ecosystem function and processes) likely to be affected (could include ecological survey/research). o Describe any future anticipated changes to ecological conditions in the absence of the proposed project, to inform the assessment of impacts. o Provide the basis for determining significance of effects arising from the impacts. • Impact assessment o Assess whether important ecological features will be subject to impacts and characterise these impacts and their effects (including scale, duration and significance). o Assess the residual ecological impacts of the project remaining after mitigation and the significance of their effects, including cumulative effects. o Avoidance, mitigation, compensation and enhancement	- This section could include specific reference to fisheries and ecological connectivity. - It is considered that this section could usefully set out the role of HRA in the decision making process and that the Secretary of State must comply with the Habitats Regulations when considering development, where that development is likely to have a significant effect on a European site.	- In-river and riparian improvement measures should be considered in the design of development. - HGV movements should be routed to avoid disturbance to designated nature conservation sites. - Where appropriate, measures should be identified as part of the design of proposals to encourage public access to wildlife. - Proposals should seek to create/contribute to a Nature Recovery Network.

AoS Topic Area	Applicant's Assessment	Decision Making	Mitigation
	○ Identify and incorporate measures to avoid, reduce and compensate ecological impacts, and the provision of ecological enhancements including biodiversity net gain. ○ Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures. • Advice for decision makers: ○ Provide advice on the consequences for decision making of the significant ecological impacts, based on the value of the affected resource or feature and consideration of the legal and policy framework throughout the impact assessment process. - This section could additionally highlight the importance of ongoing engagement with relevant nature conservation bodies including Natural England (and, for cross border impacts, Natural Resources Wales and Scottish Natural Heritage).		
Population, Economics and Skills	- The draft NPS provides a range of factors to be considered by applicants when undertaking their assessments, which is considered appropriate and relevant. The text on employment could be expanded to explicitly require the assessment of the direct, indirect and induced employment associated with different phases of development, allowing for any negative or positive effects on other parts of the economy, for example tourism. Additionally, this section could specifically refer to impacts on existing abstractors (or any constraints on their future growth arising from the NSIP) as well as community cohesion and disadvantaged areas. - This section could make specific reference to delivering socio-economic benefits including, for example, local employment creation (as opposed to the assessment of these impacts). - Paragraph 14.13.34 could be revised to state "*The applicant should consider how the impacts of the infrastructure during construction and operational phases, such as job creation and increased spending in local economies, visual impacts and traffic and*	- No recommendations identified.	- Where possible steps should be taken to minimise the loss of visual amenity and amenity space to minimise the impact on nearby businesses and the tourism sector. - Steps should be taken to ensure that local facilities and amenities have sufficient capacity to accommodate any anticipated population growth, particularly during the construction phase.

AoS Topic Area	Applicant's Assessment	Decision Making	Mitigation
	transport may affect local communities and amenities. Applicants should demonstrate that with any water resources infrastructure development, they have taken steps to ensure that the entire demographic, including all equality groups in the local area, is considered". - There is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance. Specification of the contents of the ES could be drawn from the following which in turn serves as the reference point for the detail of the 'Decision Making' section: • Scoping o Identify the likely zone of influence of the proposed infrastructure. This typically includes an identification of possible direct economic and other effects affecting local people in the vicinity, as well as indirect and induced economic effects over a larger area. o Identify and evaluate the socio-economic characteristics of the population and, where relevant, of businesses likely to be affected (this is expected to include consultation with relevant stakeholders). o Identify and evaluate features, services and facilities within the zone of influence including education, public health, tourism and recreation. o Describe any future anticipated changes to the above in the absence of the proposed infrastructure, to inform the assessment of impacts, recognising the socio-economic characteristics are inherently dynamic. o Provide the methodological basis for determining the significance of effects and the scope of effects to be assessed. • Impact assessment o Assess and characterise the impacts and their effects (including scale, duration and significance) outlined in the scoping assessment.		

AoS Topic Area	Applicant's Assessment	Decision Making	Mitigation
	○ Assess the residual socio-economic impacts of the project remaining after mitigation and the significance of their effects, including cumulative effects. ○ Evaluate avoidance, mitigation, compensation and enhancement measures that may be necessary. • Avoidance, mitigation, compensation and enhancement ○ Identify and incorporate measures to avoid, reduce and compensate for social and economic impacts, and where possible enhance beneficial effects identified. ○ Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures. • Advice for decision makers: ○ Provide advice on the consequences for decision making of the significant social and economic impacts.		
Human Health	- It is recommended that human health be included as a stand-alone topic within section 4 'Generic Impacts' of the draft NPS. The 'Applicant's Assessment' text therein could usefully identify the key determinants of health and refer to the Planning Practice Guidance (PPG) on how health and well-being and effects on associated infrastructure, services and facilities should be considered in decisions making. - Within this section, guidance could be included in respect of engagement with key stakeholders such as Public Health England, the Health and Safety Executive, relevant local authorities, clinical commissioning groups and health and wellbeing boards. Direction could additionally be provided on the need for applicants to identify appropriate mitigation and enhancement measures. - The 'Applicant's Assessment' text could explicitly require the consideration of human health as part of an ES (in accordance with the EIA Regulations) with reference provided to guidance on integrating health considerations into EIA (see, for example,	- It is recommended that human health be addressed as a stand-alone topic within the 'Generic Impacts' section of the draft NPS and that appropriate guidance be given to inform the Secretary of State's decision making with regards to health issues. This should include those circumstances in which an identified effect on human health should be considered a reason for refusal of development and clear direction in terms of, for example, the use of planning obligations to mitigate adverse health impacts.	- Siting decisions and construction activities should be undertaken so as to avoid or minimise adverse effects on recreational areas, such as footpaths or open spaces that may be subject to closure. - Noise, traffic disruption and visual impacts should be considered and minimised in accordance with a Construction Environment Management Plan.

AoS Topic Area	Applicant's Assessment	Decision Making	Mitigation
	Health in Environmental Assessment: a primer for a proportionate approach (2017)[77] and *Health and Environmental Impact Assessment: a briefing for public health teams in England* (2017)[78]. Specification of the contents of the ES could be drawn from the following, which in turn serves as the reference point for the detail of the 'Decision Making' section: • Scoping o Identify the relevant legislation, policy and guidance with regards to health. o With reference to the guidance identified, outline what constitutes a significant impact with regard to health. o Identify and evaluate the health characteristics of the population within a defined study area (this is expected to include consultation with relevant stakeholders) including the identification of potentially vulnerable groups/receptors (which may also include workers). o Describe any future anticipated changes to the health baseline in the absence of the proposed infrastructure, to inform the assessment of impacts. o Identify the potential significant effects requiring further assessment during both the construction and operational stages. o Provide the methodological basis for determining significance of effects and the scope of effects to be assessed; this may include a detailed Health Impact Assessment (HIA). • Impact assessment o Assess and characterise the health impacts and their effects (including scale, duration and significance), identifying the anticipated health outcomes. This is likely to include a qualitative assessment of the health effects, based on the		- The routing and timing of HGV movements should, where possible, seek to avoid impacts on local communities. - Consideration should be given to the utilisation of waterborne and rail transport to deliver heavy freight in order to minimise traffic related impacts on local communities. - Care should be taken during construction regarding the potential for contaminants such as silt, concrete or fuel oil to pollute water courses via surface run off. This can be mitigated by undertaking all construction activities in accordance with relevant best practice pollution prevention guidance. - Where possible, opportunities should be sought to enhance open space provision and recreation as part of new developments. - Appropriate steps should be taken to ensure that water quality is considered in respect

[77] Cave B, Fothergill J, Pyper R, Gibson G, Saunders P (2017) *Health in Environmental Impact Assessment: a primer for a proportionate approach*. IEMA, Faculty of Public Health and Ben Cave Associates Ltd. Lincoln, England.
[78] Cave B, Fothergill J, Pyper R, Gibson G (2017) *Health and Environmental Impact Assessment: a briefing for public health teams in England*. Public Health England. London, England.

AoS Topic Area	Applicant's Assessment	Decision Making	Mitigation
	quantitative modelling and analysis reported in the air quality, noise and transport ES chapters respectively. Consideration may also need to be given to other ES topics such as socio-economics, land use and water which can influence human health (as highlighted above). Depending on the nature and location of the development, the ES may need to assess, where relevant, vulnerability to risks of major accidents and/or disasters that are relevant. o Assess the residual health impacts of the project remaining after mitigation and the significance of their effects, including cumulative effects. o Evaluate avoidance, mitigation, compensation and enhancement measures that may be necessary. • Avoidance, mitigation, compensation and enhancement o Identify and incorporate measures to avoid, reduce and compensate for health impacts and, where possible, enhance beneficial effects. o Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.		of the safety of any recreational users of a reservoir, with the potential to close the reservoir to recreational use where the risk is considered sufficient.
Land Use, Geology and Soils	- Reference could also be made to the Planning Practice Guidance (PPG) (under Natural Environment) in relation to soils which states that "*the planning system should protect and enhance valued soils and prevent the adverse effects of unacceptable levels of pollution. This is because soil is an essential finite resource that provides important 'ecosystem services*". - This section could encourage applicants to identify opportunities for enhancing open space and green infrastructure as part of development proposals (for example, through improved access to blue infrastructure such as reservoirs, improved coastal access and the provision of recreational facilities at sites). - Given the potential scale and locations of some types of water resources infrastructure (such as new reservoirs), the draft NPS could be amended to require a	- Whilst it is noted that paragraph 4.10.20 includes reference to coastal access, reference could be usefully included to impacts on existing or proposed marine activities. This section could also include specific decision making criteria in relation to existing land uses.	- No mitigation measures beyond those already identified in the draft NPS have been identified.

AoS Topic Area	Applicant's Assessment	Decision Making	Mitigation
	Soil Management Plan. This would give specific consideration to the management of soil as a resource (rather than 'waste'). The Plan would need to be site specific, identifying the best way to manage/use materials. The draft NPS could encourage the use of materials on site first, in order to reduce the need to transport material. This could be particularly relevant where proposals are located on best and most versatile agricultural land. - As part of the Government's 'Safeguarding our Soils' strategy, Defra has published a code of practice on the sustainable use of soils on construction sites, which may be helpful in development planning conditions. The applicant could be asked to develop their applications in light of this and other more detailed guidance, for example: • Defra and Environment Agency (EA(, CLR 11: Model Procedures for the Management of Land Contamination; • BS 3882:2015: Specification for topsoil and requirements for use; • BS 6031:2009 Code of Practice for Earth Works; • BS 10175:2011+A2:2017: Investigation of Potentially Contaminated Sites. Code of Practice; • CIRIA Report C741: Environmental Good Practice on Site (fourth edition). There is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance. Specification of the contents of the ES could be drawn from the following which in turn serves as the reference point for the detail of the 'Decision Making' section: • Scoping o Identify the likely zone of influence of the proposed development. o Identify and evaluate existing land uses/marine activity, geology and soils within the study area, including reference to agricultural land classifications.		

AoS Topic Area	Applicant's Assessment	Decision Making	Mitigation
	○ Describe any future anticipated changes to baseline conditions (including proposed land uses) in the absence of the proposed project, to inform the assessment of impacts. ○ Provide the basis for determining significance of effects arising from the impacts. • Impact assessment ○ Assess whether receptors will be subject to impacts and characterise these impacts and their effects (including scale, duration and significance), taking account of temporary and permanent land-use requirements and site restoration. ○ Assess the residual impacts of the project remaining after mitigation and the significance of their effects, including cumulative effects. • Avoidance, mitigation, compensation and enhancement ○ Identify and incorporate measures to avoid, reduce and compensate impacts on land use, geology and sols, and the provision of enhancements including environmental net gain. ○ Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.		
Water Quality	- There is the potential for this section to require that applicants consider the information provided in support of WRMPs (including WFD Assessments) and effects on bathing water quality, although it is recognised that this is currently captured in the introduction to section 4.15 of the draft NPS. - Reference in this section could be included to opportunities to enhance the water environment.	- It is considered that the guidance provided in this section of the draft NPS could be more definitive in respect of the circumstances in which the Secretary of State would refuse consent due to unacceptable impacts on water quality.	- A number of treatment options are available to maintain water quality in reservoirs. These include: • destratification; • hypolimnetic aeration/oxygenation;

AoS Topic Area	Applicant's Assessment	Decision Making	Mitigation
	- Consideration could be given to the provision of the following additional guidance on the contents of the ES, which in turn serves as the reference point for the detail of the 'Decision Making' section: • Scoping o Identify the likely zone of influence of the proposed development. o Describe the surface water and groundwater environment in the study area likely to be affected; o Describe any future anticipated changes to surface water and groundwater quality in the absence of the proposed scheme, to inform the assessment of impacts; o Provide the basis for determining significance of effects arising from the impacts. • Impact assessment o Identify the potential impacts on water quality including in respect of the achievement of River Basin Management Plan (RBMP) objectives and characterise these impacts and their effects (including scale, duration and significance); o Assess the potential impacts on the marine environment (including bathing water quality) together with a requirement for early engagement with the Marine Management Organisation (MMO) (where appropriate) and consideration of marine plans; o Consider the findings and recommendations of any WFD Assessment prepared in support of the relevant WRMP and project; o Assess the potential effects on aquatic ecology and habitats including a cross-reference to Section 4.3 of the draft NPS;		• underwater dam; • pool drawdown; • dilution; • phosphorus inactivation; • sediment removal; • harvesting; • biological controls; and • herbicides and algicides.

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	○ Assess the residual impacts of the scheme remaining after mitigation and the significance of their effects, including cumulative effects. • Avoidance, mitigation, compensation and enhancement ○ Identify and incorporate measures to avoid, reduce and compensate impacts on water quality, including opportunities to enhance the water environment; ○ Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.		
Water Quantity	- It is noted that this section of the draft NPS gives more focus to impacts on water quality. Consideration could be given to providing further advice and guidance for applicants in respect of water quantity and water resource availability (for example, with reference to Catchment Abstraction Management Strategies). - Consideration could be given to the provision of the following additional guidance on the contents of the ES, which in turn serves as the reference point for the detail of the 'Decision Making' section: • Scoping ○ Identify the likely zone of influence of the proposed development. ○ Describe the surface water and groundwater environment in the study area likely to be affected; ○ Describe any future anticipated changes to surface water and groundwater resources in the absence of the proposed scheme, to inform the assessment of impacts; ○ Provide the basis for determining significance of effects arising from the impacts. • Impact assessment	- It is considered that the guidance provided in this section of the draft NPS could be more definitive in respect of the circumstances in which the Secretary of State would refuse consent due to unacceptable impacts on water quantity. In addition, this section could include reference to opportunities to enhance the quality of the water environment.	- Careful consideration should be given to the establishment of a compensation flow regime in respect of reservoir development. - Detailed modelling of hydrological changes and analysis of effects should be undertaken. - Consideration should be given by both the Secretary of State and the applicant to the findings and recommendations of any WFD Assessment prepared in support of the relevant WRMP. Where necessary, a WFD Assessment for the proposed development should be undertaken.

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	○ Identify the potential impacts on water quantity including and characterise these impacts and their effects (including scale, duration and significance); ○ Consider the findings and recommendations of any WFD Assessment prepared in support of the relevant WRMP and project; ○ Assess the potential effects on aquatic ecology and habitats including a cross-reference to Section 4.3 of the draft NPS; ○ Assess the residual impacts of the scheme remaining after mitigation and the significance of their effects, including cumulative effects. • Avoidance, mitigation, compensation and enhancement ○ Identify and incorporate measures to avoid, reduce and compensate impacts on water quantity, including opportunities to enhance the water environment; ○ Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.		
Flood Risk and Coastal Change	- Section 4.8 of the draft NPS could make specific reference to the need to consider the resilience of infrastructure, places, communities and habitats and species to future flooding. - In section 4.5, reference could be made to Shoreline Management Plans (SMPs) and Marine Plans (although it is noted that this is referred to under 'Decision Making'). Specific reference could also be made to the need for applicants to prepare a coastal change impact study (CIS) (or similar) for schemes located in coastal areas, in consultation with the Environment Agency and coastal groups. - There is no detailed guidance on the potential contents that should form part of the ES with respect to flood risk and coastal change. Specification of the contents of the ES could be drawn from the following, which in turn serves as the reference point for the detail of the 'Decision Making' section:	- No recommendations identified.	- No additional mitigation measures beyond those already identified in the draft NPS have been identified.

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	• Scoping
	  o Identify the likely zone of influence of the proposed development;
	  o Describe the baseline environment including in respect of topography, land use, hydrology and geology;
	  o Identify and evaluate resources and features with the potential to be affected by flood risk (e.g. residential properties, biodiversity and historic environment);
	  o Describe any future anticipated changes to the baseline in the absence of the proposed project, to inform the assessment of impacts;
	  o Provide the basis for determining significance of effects arising from the impacts.
	• Impact assessment
	  o Assess and characterise the impacts and their effects (including scale, duration and significance) outlined in the scoping assessment, informed by the FRA and CIS (where required)
	  o Assess the residual impacts of the project remaining after mitigation and the significance of their effects, including cumulative effects.
	• Avoidance, mitigation, compensation and enhancement
	  o Identify and incorporate measures to avoid, reduce and compensate impacts, and the provision of enhancements.
	  o Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.		

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Air	- It would be useful for the text in section 4.2 to make direct reference to the Planning Practice Guidance (PPG) on the level of suggested detail to be included within an air quality assessment as part of the ES (PPG Air quality, *How detailed does an air quality assessment need to be?*). Additionally, the text could make reference to other parts of the PPG, notably when air quality could be relevant to a planning decision (PPG Air Quality, *when could air quality be relevant to a planning decision?*). Direct reference to the PPG will also serve to substantiate links to the enhancement of air quality, helping to ensure that the applicant's assessment identifies such opportunities (which are further specified under 'Decision Making'). - The draft NPS could refer to the requirements of the Clean Air Strategy 2018, which sets out actions to improve air quality to improve public health, protect the environment and boost the economy. - The text in the draft NPS mentions Natura 2000 sites (paragraph 4.2.5 refers) but does not set out the potential need for HRA and for air quality to be considered in a HRA, although the introduction does provide a cross reference to Section 4.3 (Biodiversity and Nature Conservation) of the draft NPS which in turn references the Conservation of Habitats and Species Regulations 2017. Reference could also be made to other designated nature conservation sites such as Sites of Special Scientific Interest (SSSI). - Sections 4.2 and 4.6 of the draft NPS could recommend that early pre-application engagement is undertaken with, inter alia, the relevant local planning authority and the Environment Agency. This would help to inform the assessment methodology and validate the findings. Additionally, applicants could consider local air quality action plans and strategies, where relevant and appropriate. - Specification of the contents of the ES could be drawn from the following which in turn serves as the reference point for the detail of the 'Decision Making' section: • Scoping o Identify the likely zone of influence of the proposed development. o Evaluate existing (background) air quality levels. o Describe any future anticipated changes to baseline conditions in the absence of the proposed project, to inform the assessment of impacts.	- No recommendations identified.	- Where possible, development should be sited away designated AQMAs.

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	○ Identify potentially sensitive receptors (whether local communities or nature conservation sites/habitats and species). ○ Provide the basis for determining the significance of effects arising from the impacts including assessment methods and air quality model verification. • Impact assessment ○ Assess any significant air quality effects (including in respect of odour, dust, smoke and steam) associated with the development and their mitigation, distinguishing between the project stages, and taking account of any significant emissions from any traffic generated by the project. ○ Consider the contribution of air emissions to site-specific critical levels and loads, for the protection of vegetation and ecosystems. ○ Consider the contribution of air emissions to ambient air quality. • Avoidance, mitigation, compensation and enhancement ○ Identify and incorporate measures to avoid, reduce and compensate impacts on air quality. ○ Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.		
Noise	- Reference could usefully be made in this section to the need for applicants to undertake early consultation and engagement with the relevant local authority. - The draft NPS could include further detailed guidance on the potential contents that should form part of the ES. Specification of the contents of the ES could be drawn from the following, which in turn serves as the reference point for the detail of the 'Decision Making' section: • Scoping	- No recommendations identified.	- Noise abatement measures should be implemented to protect people and the environment during construction activities by eliminating noise and substituting less noisy processes or equipment.

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	○ With reference to the guidance identified, outline what constitutes a significant impact with regard to noise. ○ Identify and evaluate any potentially significant sources of noise for both the construction and operational phases of development. ○ Identify and evaluate any noise sensitive receptors in the vicinity of the proposed infrastructure, including residents, businesses and tranquil areas (including those parts of the community that could be particularly affected and/or disrupted by noise and those European and nationally designated nature conservation sites). ○ Describe any future anticipated changes to the above in the absence of the proposed infrastructure, to inform the assessment of impacts. ○ Provide the methodological basis for determining significance of effects and the scope of effects to be assessed. • Impact Assessment ○ Assess and characterise the impacts and their effects (including scale, duration and significance). ○ With reference to the characteristics of the development and the receiving environment, include: ○ a map showing the site and surrounding area including receptors; ○ an estimate, by type and quantity, of expected noise resulting from the construction and operation of the proposed infrastructure. ○ If a BS4142 assessment is carried out, provide a full noise survey report (see BS4142 'Information to be reported'). ○ Assess whether, post mitigation, there are any residual effects that would still be considered significant. • Avoidance, mitigation, compensation and enhancement		- Acoustic barriers should be used during construction. - Consideration should be given to construction timing, including vehicles movements, to reduce negative impacts associated with noise and vibration. - Consideration should be given to designing in acoustic features such as strategic siting of infrastructure within the site (e.g. tanks and buildings) to act as acoustic barriers, or designing in features such as sound insulating materials or acoustic insulation barriers. - Best practice methods including the development and implementation of Construction Environmental Management Plans (CEMP) should be used. - HGV movements and construction vehicles should be routed and timed to avoid peak traffic periods (i.e. between 7am-9am and 4pm-6pm) and sensitive receptors.

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	o Identify and incorporate measures to avoid, reduce and compensate for noise impacts, and where possible enhance beneficial effects. o Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.		
Climatic Factors	- The Applicant's Assessment could require that applicants demonstrate that the development proposal (including both surface and underground infrastructure, such as pipelines) is resilient and adaptable to a changing climate over its operational lifetime. - It would be useful for the text in this section to make direct reference to the Planning Practice Guidance (PPG) on how planning can deal with the uncertainty of climate risks when promoting adaptation in developments (PPG Climate Change). Consideration should also be given to providing further guidance on the possible contents of the ES with regards to climatic factors. The specification of the contents of the ES could be drawn from the following: • Scoping o Evaluate existing greenhouse gas emissions (where relevant). o Describe any future anticipated changes to baseline conditions in the absence of the proposed project, to inform the assessment of impacts. o Provide the basis for determining the significance of effects including assessment methods. • Impact assessment o Any modelling or detailed quantification of a project's greenhouse gas emissions through its construction and operation should be presented, as relevant, within an appendix, which should be cross-referenced from a description of its findings that is contained in the main ES. If an Energy Statement is required, it should be included within the ES to be considered	- The draft NPS could state that the Secretary of State should refuse development consent if the applicant fails to show that they have considered the impact of climate change over the operation lifetime of the proposed development and not given consideration to the adaptability to a range of potential future climatic environments.	- Where landscaping is required, appropriate planting should be utilised that is adaptable to a changing climate. - The design and siting of new water infrastructure schemes should maximise energy efficiency and be adaptable to the anticipated effects of climate change. - Consider opportunities to minimise CO2 emissions associated with staff travel, including provision of alternative modes of transport.

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	good practice; as a minimum the ES must effectively summarise and cross reference its findings. o Any mitigation, compensation or monitoring related to a proposed development's GHG emissions (though it's construction and operation) should be included in a draft Environmental Management Plan (EMP), within the ES. If appropriate, the measures should be written to allow the consenting authority to condition the activity specified. o Assess any significant climate change effects associated with the development, distinguishing between the project stages, and taking account of any significant emissions from any traffic generated by the project. o Assess the residual impacts of the project remaining after mitigation and the significance of their effects, including cumulative effects. • Avoidance, mitigation, compensation and enhancement o Identify and incorporate measures to avoid, reduce and compensate impacts on climate change. Additional or new actions that could be taken to minimise emissions should be factored into the project post consent as appropriate, with the newly operational site considering implementing an Environmental Management System (EMS) to effectively manage its greenhouse gas emissions. o Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures,		
Waste and Resources	- Whilst the reuse of waste including excavated soil, subsoil and rock will help to minimise resource use associated with new water resources infrastructure, there are currently no specific requirements with regards to minimising resource use. Consideration should therefore be given to including criteria requiring that evidence be provided by applicants showing that steps have been taken to minimise resource use and promote the use of locally-sourced, sustainable materials where possible. This not	- It is considered that the guidance could be more definitive in respect of the circumstances in which the Secretary of State could refuse consent on the grounds of the management of waste which could include, for example,	- Energy efficient plant and construction methods should be adopted to reduce energy usage during construction.

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	only includes minimising the use of resources in construction, but also includes energy and heat management in infrastructure and minimising water and chemical use. However, and reflecting that it is a cross cutting theme, a number of other topics in Section 4 and the criteria for 'good design' detailed in Section 3 of the draft NPS do help to address this issue. This is considered further below (see 'Other Sections of the draft NPS'). - This section could make a specific recommendation that applicants take account of locally adopted waste plans and strategies. Reference could also be made to the need to minimise the transportation of waste. In this context, it would be useful for the text to make direct reference to National Planning Policy for Waste (2014) and in particular to paragraph 8 which concerns non-waste development. In this context, consideration could be given to the provision of additional guidance requiring that decisions regarding siting and assessments consider: • the likely impact of proposed, non-waste related development on existing waste management facilities (including their capacity to receive and treat/dispose of waste generated by water resources infrastructure construction and operation), and on sites and areas allocated for waste management; • the requirement for the provision of waste management facilities and their integration with the rest of the development; and • the handling of waste arising from the construction and operation of water resources infrastructure to maximise reuse/recovery opportunities, and minimise off-site disposal. There is no detailed guidance on the potential contents that should form part of the Environmental Statement (ES). Specification of the contents of the ES could be drawn from the following, which reflects the Planning Practice Guidance (PPG) on waste requirement for waste audits and EIA Regulations: • Scoping	concerns raised by the Environment Agency that remain unresolved. Clearer direction could also be provided with respect to the need for the Secretary of State to consider the impact of waste management activities on the environment and communities. - It is considered that the guidance could seek to ensure that the Secretary of State is satisfied that a suitable approach to minimising resource use during construction and operation has been undertaken.	- Managing heat, energy and water use in buildings to minimise use and consequent waste.

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	○ Identify and evaluate any potentially significant sources and types of waste and resource use for both the construction (including any excavation and/or demolition wastes) and operational phases of development. ○ Identify and describe the waste treatment and disposal facilities expected to receive the wastes identified above. ○ Describe any future anticipated changes to the baseline in the absence of the proposed infrastructure, to inform the assessment of impacts. ○ Provide the methodological basis for determining the significance of effects and the scope of effects to be assessed. • Impact Assessment ○ Assess the anticipated type and volumes of waste that the development could generate and the consequent increase in demand for waste treatment and disposal facilities. ○ Identify the steps to be taken to ensure effective segregation of wastes at source including, as appropriate, the provision of waste sorting, storage, recovery and recycling facilities. ○ Identify the steps to be taken to ensure the maximum amount of waste arising from development on previously developed land is incorporated within the new development, where applicable. ○ Identify the nature and quantity of materials and natural resources required during the construction and operational phases of development. • Avoidance, mitigation, compensation and enhancement ○ Identify and incorporate measures to avoid, reduce and compensate for waste impacts, and where possible enhance beneficial effects. ○ Identify and incorporate measures to minimise the use of resources/promote the use of sustainable materials.		

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	o Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.		
Traffic and Transport	- Specific guidance could be provided on the contents of a travel plan, taking into account the impacts and opportunities associated with different types of water resources infrastructure. This could include guidance in respect of maintaining/increasing accessibility to new water resources infrastructure (such as reservoirs for recreational use), provision for walking and cycling and road safety. - There is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance. Specification of the contents of the ES could be drawn from the following which in turn serves as the reference point for the detail of the 'Decision Making' section: • Scoping o A description of the traffic-generating aspects of the development proposal leading to impacts on traffic and transport. o A description of the baseline, including the principal modal routes, and for the road network. o Provide the methodological basis for determining significance of effects and the scope of effects to be assessed. • Impact assessment o Details regarding vehicle movements (using peak, 18 hours and AADT information) and the forecast changes in traffic movements (without the proposed development). o A prediction of how the traffic and transport baseline will change with the proposed development:	- This section could usefully include specific reference to the consideration of modal split in decisions taken by the Secretary of State, road safety and opportunities to promote accessibility to development proposals.	- Where possible, works affecting roads (such as pipeline works) should be timed so as to minimise adverse impacts on the highways network. Opportunities to enhance accessibility to existing and proposed infrastructure (for example, reservoirs) and to promote walking and cycling as part of a development should be considered as part of a Travel Plan.

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	▪ in the shorter term, such as during the construction period; ▪ in the longer term, during the operating life of the infrastructure; and ▪ at particular times of the day, evening and night as appropriate. o An assessment of the significance of effects of any predicted changes. • Avoidance, mitigation, compensation and enhancement o Identify and incorporate measures to avoid, reduce and compensate for traffic and transport impacts, and where possible enhance beneficial effects. o Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.		
Cultural Heritage	- It would be useful for the text in this section of the draft NPS to make direct reference to the Planning Practice Guidance (PPG) on how cultural heritage matters should be dealt with as part of a development consent application (PPG Conserving and enhancing the Historic Environment). Direct reference should also be made to the guidance issued by Historic England, including in particular 'Good Practice Advice in Planning' Parts 2 and 3. - This section could highlight the importance of ongoing engagement with Historic England and the local planning authority (although it is noted that this is referred to in a footnote. Consideration could also be given to including reference to non-designated assets in this section together with the historic character of landscapes and settlements as well as the heritage of communities. - There is no detailed guidance on the potential contents that should form part of the ES. It would be useful to supplement the current information with equivalent guidance.	- No recommendations identified.	- Infrastructure should be designed to minimise the effect on the setting of nearby historic assets.

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	Specification of the contents of the ES could be drawn from the following which in turn serves as the reference point for the detail of the 'Decision Making' section: • Scoping o Identify the legislative, regulatory and policy context for the assessment; o Identify a zone of influence or study area; o Identify and evaluate the significance of archaeological and built heritage receptors (including both statutory and locally listed buildings) within the study area, including any contribution to their setting; o Describe any future anticipated changes to the baseline in the absence of the proposed infrastructure, to inform the assessment of impacts. o Provide the methodological basis for determining significance of effects and the scope of effects to be assessed. • Impact Assessment o Undertake desk-based assessments and a walkover survey, incorporating the results of a detailed geophysical survey, which will inform the need for, and scope of, any further field surveys that may be required. o Assess the impacts of the proposed development on the significance of historic assets and their setting. o Assess the residual impacts of the project remaining after mitigation and the significance of their effects, including cumulative effects. • Avoidance, mitigation, compensation and enhancement o Identify and incorporate measures to avoid, reduce and compensate for cultural heritage impacts, and where possible, enhance beneficial effects.		

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	o Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.		
Landscape and Townscape	- This section could make direct reference to the Planning Practice Guidance (PPG) on how landscape matters should be dealt with as part of a development consent order application (PPG Natural Environment – Landscape). Additionally, this section could encourage early consultation and engagement with relevant stakeholders including, for example, Natural England, the relevant local planning authority, National Park authorities and AONB partnerships. - This section could include reference to the enhancement of landscape character and visual amenity and encourage applicants to consider impacts on traditional land management activities that have created unique landscapes. - Inclusion of specific guidance on the likely contents of an Environmental Statement (ES) would be helpful in clarifying the expectations for the applicant's assessment. Specification of the contents of the ES could be drawn from the following, which in turn serves as the reference point for the detail of the 'Decision Making' section: • Scoping o Establish the baseline landscape (including, where relevant, seascape) context and character, including the applicable national and local landscape character areas. o Establish the character of the development site including site topography and other key landscape features including, for example, public rights of way, hedgerows, trees and site use. o Identify potentially sensitive visual receptors (e.g. through the use of Zones of Theoretical Visibility (ZTV). o Identify the criteria for determining the sensitivity of different landscape and visual receptors to change and for assessing the significance of effects.	- No recommendations identified.	- Siting should be considered to avoid designated landscapes where possible.

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	• Impact assessment
	  ○ Undertake an assessment of landscape (and, where relevant, seascape) impacts that considers the effects of change and development on landscape as a resource in accordance with the Guidelines for Landscape and Visual Impact Assessment (2013)79.
	  ○ Undertake an assessment of visual effects that assesses the effects of change and development on the views available to people and their visual amenity.
	  ○ Detail conclusions on the significance of any effects that are predicted upon landscape features and character or on visual amenity.
	• Avoidance, mitigation, compensation and enhancement
	  ○ Identify and incorporate measures to avoid, reduce and compensate for landscape impacts, and where possible enhance beneficial effects.
	  ○ Detail proposals for monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.		

[79] Landscape Institute (2013) *Guidelines for Landscape and Visual Impact Assessment 3*. Available at: https://www.landscapeinstitute.org/technical/glvia3-panel/ [Accessed 17.07.18].

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