



# SIZEWELL C PROJECT: WFD COMPLIANCE ASSESSMENT

## EXECUTIVE SUMMARY

## WFD Compliance Assessment Executive Summary

### Introduction

SZC Co<sup>1</sup> is currently developing proposals to build and operate a new nuclear power station comprising two UK European Pressurised Reactors™ (EPRs) at Sizewell in Suffolk, north of the existing Sizewell B power station: ‘the Sizewell C Project’.

A detailed Water Framework Directive (WFD) Compliance Assessment was undertaken to determine whether the Sizewell C Project is compliant with the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (SI 2017/407), which implement Directive of the European Parliament and Council (EC) 2000/60/EC establishing a framework for community action in the field of water policy (generally known as the Water Framework Directive (WFD)) in the UK.

The WFD Compliance Assessment is divided into four parts:

- Part 1: Introduction and method;
- Part 2: Main development site;
- Part 3: Associated development sites; and
- Part 4: Cumulative effect assessment.

### Policy context

The WFD was transposed into national law in the UK by means of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. These regulations were updated by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. The Regulations provide for the implementation of the WFD, from designation of all surface waters (rivers, lakes, estuarine waters, coastal waters and ground waters) as water bodies, to the setting of objectives for the achievement of Good Ecological Status (GES) or Good Ecological Potential (GEP).

In relation to the WFD, the Nuclear National Policy Statement<sup>2</sup> specifically refers to the requirement to consider any discharge against regulatory standards for the protection

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<sup>1</sup> NNB Generation Company (SZC) Limited, whose registered office is at 90 Whitfield Street, London, W1T 4EZ; referred to in this document as ‘SZC Co.’.

<sup>2</sup> DECC. (2011). National Policy Statement for Nuclear Power Generation. London: The Stationery Office.

of the quality of estuarine or coastal waters, in line with future requirements of the WFD. The more general overarching National Policy Statement (NPS) on Energy (EN-1)<sup>3</sup> also recognises that infrastructure development can have adverse effects on the water environment, including groundwater and surface waters and that the applicant should undertake an assessment of the existing status, and impacts, of the proposed project on water quality, water resources and the physical characteristics of the water environment such that the Planning Inspectorate is able to satisfy itself that a proposal has regard to the relevant River Basin Management Plan (RBMP)<sup>4</sup>.

To ensure all elements of the proposals are in line with the requirements of the WFD, this Sizewell C Project WFD Compliance Assessment is, therefore, provided by SZC Co. to the Planning Inspectorate and Environment Agency as part of the application submissions.

### Assessment method

In line with published guidance produced by the Environment Agency (2016)<sup>5</sup> and Planning Inspectorate (2017)<sup>6</sup>, the WFD compliance assessment process consisted of three distinct stages:

- Stage 1: Screening and collation of baseline information. This stage collates all available baseline data that will be necessary to complete the Sizewell C WFD Compliance Assessment, i.e. collates all information on the scheme, the baseline environment and the water bodies which could potentially be impacted.
- Stage 2: Scoping. This stage identifies whether there is a potential risk to any of the water bodies identified in Stage 1 and is undertaken separately for each water body and each activity (or group of activities). Water bodies and activities can be scoped out of detailed assessment if it can be satisfactorily demonstrated that there is no risk to the water body. If a risk is identified, it is necessary to undertake a detailed assessment.
- Stage 3: Detailed compliance assessment. This stage determines whether the activities that have been put forward from Stage 2 will cause deterioration and whether this deterioration will have a significant non-temporary effect on the status of one or more WFD quality elements at water body level. If it is established that

<sup>3</sup> DECC. (2011). Overarching National Policy Statement for Energy (EN-1). London: The Stationery Office.

<sup>4</sup> Environment Agency. (2015). Anglian River Basin District: River Basin Management Plan. Bristol: Environment Agency.

<sup>5</sup> Environment Agency. (2016). Clearing the Waters for All. Retrieved from <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>

<sup>6</sup> Planning Inspectorate. (2017). Advice Note 18: The Water Framework Directive. London: Planning Inspectorate.

an activity is likely to affect water status at water body level, potential measures to avoid the effect are investigated.

The WFD compliance assessment has been carried out for the main development site and for each of the associated development sites. A summary of each stage of the assessment is presented in **section 1.4** for the Main Development Site and **section 1.5** for the Associated Development Sites. A summary of the Cumulative Effects Assessment presented in **section 1.6**.

## Main Development Site

### a) Stage 1: Screening

The initial screening exercise identified a range of activities associated with the main development site that could potentially impact upon WFD quality elements:

- Construction: Initial site preparation; earthworks for platform development; construction of marine structures; discharge of waste water; and discharge of cold test commissioning water.
- Operation: Presence of power station platform and cut-off wall; presence of permanent access road; presence of marine structures; presence of flood defence structures; discharge of foul and surface water via the cooling water system; intake of cooling water; discharge of trade effluent via the cooling water system; and discharge of polluting matter from the fish recovery and return (FRR) system.

These activities would take place in a number of surface and groundwater bodies, and therefore have the potential to affect WFD parameters. The Leiston Beck and Minsmere Old River river water bodies, Suffolk coastal water body, Blyth (S) and Alde and Ore transitional water bodies and Waveney and East Suffolk Chalk and Crag groundwater body have been screened in to this first stage of the WFD compliance assessment.

The potential implication of each construction and operational activity on each water body was therefore considered in detail in Stage 2 of the assessment.

### b) Stage 2: Scoping

The results of the scoping assessment demonstrate that activities from the construction and operation phases have the potential to affect WFD quality elements, mitigation measures and protected areas related to the Leiston Beck and Minsmere Old River water bodies, the Waveney and East Suffolk Chalk and Crag groundwater body, and the Suffolk coastal water body.

### i. Construction

Works associated with the initial site preparation and earthworks for the platform development may affect the hydrological regime and morphological conditions of Leiston Beck and Minsmere Old River along with general physico-chemistry elements and a potential rise in specific pollutants. Biological elements including aquatic flora, benthic invertebrates and fish may also be affected. These quality elements may also be affected by the potential discharge of foul and surface water.

The Waveney and East Suffolk Chalk and Crag groundwater body could also be affected by these construction activities. Groundwater levels may be affected along with the associated Groundwater Dependent Terrestrial Ecosystems (GWDTEs). Issues such as saline intrusion, and changes to water balance may also arise and affect dependent surface waters, whilst the quality of the groundwater is vulnerable to change through diffuse pollution, saline intrusion and pollutant trends.

The chemical and physico-chemical water quality elements of Suffolk Coastal water body and its associated habitats may be affected by the construction of marine structures and the discharge of foul, surface and any other water and by discharge of commissioning water via the CDO.

### ii. Operation

The presence of the power station platform and cut-off wall has the potential to affect hydromorphological and physico-chemical quality elements in both the Leiston Beck and Minsmere Old River. It is likely to affect the quantity and quality of the Waveney and East Suffolk Chalk and Crag groundwater body, and consequently also the GWDTEs and dependent surface water bodies, through potential saline intrusion and water balance. The permanent Site of Special Scientific Interest (SSSI) crossing and site access road may also affect the hydromorphology and physico-chemistry of Leiston Beck and impact on aquatic flora, benthic invertebrates and fish.

### c) Stage 3: Detailed assessment

The Stage 3 assessment demonstrates that, following the implementation of the suite of control measures embedded in the scheme design or set out in the **Code of Construction Practice** (CoCP) (Doc Ref. 8.11), no parameters are at risk of a level of deterioration that would lead to a decrease in class status for any of the parameters. As a result, the proposed construction and operational activities at the main development site are considered to be compliant with the requirements of the WFD and the proposed project activities would not counteract or otherwise affect the delivery of mitigation measures (both in place and not in place) that have been identified in the River Basin Management Plan (RBMP).

## Associated Development Sites

This section presents a summary of the WFD Compliance Assessment for the Sizewell C Project's associated development sites. The associated development sites that have been considered as part of this compliance assessment are as follows:

- Northern park and ride: a temporary park and ride facility to the north of the main development site at Darsham.
- Southern park and ride: a temporary park and ride facility to the south of the main development site at Wickham Market.
- Two village bypass: a new permanent 2.4km single carriageway road that would depart from the A12 to the south-west of Stratford St. Andrew before re-joining the A12 to the east of Farnham.
- Sizewell link road: a new permanent 6.8km single carriageway road which bypasses Middleton Moor and Theberton.
- Yoxford and other highways improvements: provision of a new permanent roundabout at the junction A12 and B1122 east of Yoxford and permanent improvements to existing highways (A12/B1119 junction and Saxmundham, A1094/B1069 junction south of Knodishall and A12/A144 junction south of Bramfield). The sites where highway safety measures are proposed are also considered in this compliance assessment (A140/B1078 junction west of Coddendam, B1078/B1079 junction east of Easton and Otley College).
- Freight management facility: a temporary facility with parking spaces for Heavy Goods Vehicles (HGVs) at a site close to the A12/A14 Seven Hills Junction.
- The part of the green rail route comprising a temporary rail extension of approximately 1.7 kilometres (km) from the junction with the existing Saxmundham to Leiston branch line and Saxmundham to Leiston branch line upgrades.

### a) Northern Park and Ride

#### i. Stage 1: Screening

The initial screening exercise identified a range of activities associated with the northern park and ride site that could potentially impact upon WFD quality elements in the Minsmere Old River and Waveney & East Suffolk Chalk and Crag water bodies:

- Construction: Site preparation, earthworks and construction including vegetation clearance, removal of topsoil, installation of drainage infrastructure, including SuDS, laying of base materials for parking areas and internal circulation routes,

installation of final surface layers, construction of buildings and installation of utilities, and management of construction-stage surface water and foul drainage

- Operation: Operational use of the site and associated water management measures (including surface water drainage and foul water)
- Removal and reinstatement: Demolition and removal of buildings and site infrastructure, reinstatement of agricultural land

## ii. Stage 2: Scoping

The Stage 2 assessment demonstrates that project activities associated with the northern park and ride during construction, operation and removal and reinstatement would not have direct or indirect effects on the Minsmere Old River and Waveney & East Suffolk Chalk and Crag water bodies, or any other water bodies, that would be sufficient to cause deterioration in the status of the water body or Protected Areas located within the water bodies. Furthermore, the proposed project activities would not counteract or otherwise affect the delivery of mitigation measures (both in place and not in place) that have been identified in the RBMP.

Consequently, the proposed development has not been progressed to the Stage 3 detailed compliance assessment, and the northern park and ride is considered to be compliant with the requirements of the WFD.

## b) Southern Park and Ride

### i. Stage 1: Screening

The initial screening exercise identified a range of activities associated with the southern park and ride site that could potentially impact upon WFD quality elements in the River Deben (Brandeston Bridge - Melton), River Ore and Waveney & East Suffolk Chalk and Crag water bodies:

- Construction: Site preparation, earthworks and construction including vegetation clearance, removal of topsoil, installation of drainage infrastructure including SuDS, laying of base materials for parking areas and internal circulation routes, installation of final surface layers, construction of buildings and installation of utilities, and management of construction-stage surface water and foul drainage.
- Operation: Operational use of the site and associated water management measures (including surface water drainage and foul water).
- Removal and reinstatement: Demolition and removal of buildings and site infrastructure, reinstatement of agricultural land.

## ii. Stage 2: Scoping

The Stage 2 assessment demonstrates that proposed project activities during construction, operation and removal and reinstatement would not have direct or indirect effects on the River Ore, River Deben and Waveney & East Suffolk Chalk and Crag water bodies that are sufficient to cause deterioration in their status or the status of Protected Areas located within the water bodies. Furthermore, the proposed project activities would not counteract or otherwise affect the delivery of the RBMP improvement or mitigation measures (both in place and not in place) that have been identified for these water bodies. Therefore, the southern park and ride is considered to be compliant with the requirements of the WFD.

## c) Two Village Bypass

### i. Stage 1: Screening

The initial screening exercise identified a range of activities associated with the two village bypass that could potentially impact upon WFD quality elements in the River Alde, River Fromus and Waveney & East Suffolk Chalk and Crag water bodies:

- Construction: Site preparation, earthworks and construction including vegetation clearance, removal of topsoil, surface materials, installation of drainage infrastructure (including SuDS) and flood compensation measures, laying of base materials and surfacing, management of construction-stage surface water and foul drainage. Import and storage of material from elsewhere. Construction of a bridge across the River Alde, construction of culverts across ordinary watercourses.
- Operation: Operational use of the site and associated water management measures for surface water. Permanent presence of bridge across River Alde and enhanced flood plain measures. Permanent presence of culverts across other water courses.

### ii. Stage 2: Scoping

The Stage 2 assessment demonstrates that the majority of the proposed project activities during the construction and operation of the two village bypass would not have any direct or indirect effects on the River Alde, River Fromus or Waveney & East Suffolk Chalk and Crag water bodies that are sufficient to cause deterioration in their status or the status of Protected Areas located within the water bodies.

However, the construction and operation of watercourse crossings has the potential to affect the hydromorphology and biology of the River Alde and counteract or otherwise affect the delivery of three RBMP improvement measures (removal or easement of barriers to fish migration, increase in-channel morphological diversity, and habitat

improvements) identified for the water body. The potential impacts of these activities, therefore, has been considered in more detail in the Stage 3 assessment.

### iii. Stage 3: Detailed Assessment

The detailed assessment demonstrates that the construction of watercourse crossings and the permanent presence of the bridge and culverts would not result in deterioration in the hydromorphology and biology of the River Alde or connected water bodies. Furthermore, the proposed activities would not counteract or prevent the implementation of improvement measures identified for the water body. The two village bypass is therefore considered to be compliant with the requirements of the WFD.

### d) Sizewell Link Road

#### i. Stage 1: Screening

The initial screening exercise identified a range of activities associated with the Sizewell link road that could potentially impact upon WFD quality elements in the Minsmere Old River and the Waveney & East Suffolk Chalk and Crag water bodies:

- Construction: Site preparation, earthworks and construction activities including vegetation clearance, removal of topsoil, surface materials, installation of drainage infrastructure including SuDS, laying of base materials and surfacing, management of construction-stage surface water and foul drainage from compounds. Crossing of two unnamed watercourses which would be culverted below the proposed road.
- Operation: Operational use of the site and associated water management measures (including surface water). Crossing of two unnamed watercourses which would be culverted below the proposed road.

#### ii. Stage 2: Scoping

The Stage 2 assessment demonstrates that the majority of the proposed project activities during construction and operation of the Sizewell link road would not have any direct or indirect effects on the Minsmere Old River or Waveney & East Suffolk Chalk and Crag water bodies that would be sufficient to cause deterioration in their status or the status of Protected Areas located within the water bodies.

However, the construction and operation have the potential to affect the hydromorphology and biology of the Minsmere Old River and counteract or otherwise affect the delivery of four mitigation measures (remove or soften hard bank, preserve or restore habitats, in-channel morphological diversity and enhance ecology) identified for

the water body. The potential impacts of these activities, therefore, are considered in more detail in the Stage 3 assessment.

### iii. Stage 3: Detailed Assessment

The detailed assessment demonstrates that the construction and operation of watercourse crossings would not result in deterioration in the hydromorphology and biology of the Minsmere Old River or any other water body. Furthermore, the proposed activities would not counteract or prevent the implementation of improvement measures identified for the water body. The Sizewell link road is, therefore, considered to be compliant with the requirements of the WFD.

### e) Yoxford and other highway improvements

#### i. Stage 1: Screening

The initial screening exercise identified a range of activities associated with Yoxford and other highway improvements that could potentially impact upon WFD quality elements in the Minsmere Old River and the Waveney & East Suffolk Chalk and Crag water bodies:

- Construction: Site preparation, earthworks and construction at Yoxford roundabout and A12/A144 junction south of Bramfield including vegetation clearance, removal of topsoil, installation of drainage infrastructure including SuDS, surfacing, management of construction-stage surface water and foul drainage.
- Operation: Management of surface water during the permanent operation of the Yoxford roundabout and A12/A144 junction south of Bramfield.

#### ii. Stage 2: Scoping

The assessment demonstrates that proposed project activities during construction and operation would not have direct or indirect effects on the Minsmere Old River and Waveney & East Suffolk Chalk and Crag water bodies that would be sufficient to cause deterioration in the status of the water body or Protected Areas located within the water bodies. Furthermore, the proposed project activities would not counteract or otherwise affect the delivery of the mitigation or improvement measures that have been identified in the RBMPs for these water bodies.

This means that the project would not have non-temporary impacts on water body status that are sufficient to result in the deterioration of these water bodies. Furthermore, the project would not prevent any water body status objectives being achieved in the future. The proposed highway improvements are, therefore, considered to be compliant with the requirements of the WFD at this stage.

f) **Freight Management Facility**

i. **Stage 1: Screening**

The initial screening exercise identified a range of activities associated with the freight management facility that could potentially impact upon WFD quality elements in the Orwell and Felixstowe Peninsula Crag & Chalk water bodies:

- **Construction:** Site preparation, earthworks and construction activities including vegetation clearance, removal of topsoil, installation of drainage infrastructure including SuDS, laying of base materials for parking areas and internal circulation routes, installation of final surface layers, construction of buildings and installation of utilities, management of construction-stage surface water and foul drainage.
- **Operation:** Operational use of the site and associated water management measures (including surface water and foul drainage).
- **Removal and reinstatement:** Demolition and removal of buildings and site infrastructure, reinstatement of agricultural land.

ii. **Stage 2: Scoping**

The assessment demonstrates that project activities during construction, operation and removal and reinstatement would not have direct or indirect effects on the Orwell and Felixstowe Peninsula Crag & Chalk water bodies that would be sufficient to cause deterioration in the status of the water body or Protected Areas located within the water bodies. Furthermore, the proposed project activities would not counteract or otherwise affect the delivery of the improvement measures that have been identified in the RBMPs for the groundwater body.

This means that the project would not have non-temporary impacts on water body status that are sufficient to result in the deterioration of these water bodies. Furthermore, the project would not prevent any water body status objectives being achieved in the future. Consequently, no elements of the proposed development have been progressed to Stage 3 detailed compliance assessment, and the freight management facility is considered to be compliant with the requirements of the WFD.

g) **Rail**

i. **Stage 1: Screening**

The minor works to renew existing track and upgrading of existing crossings are considered unlikely to present a risk to the water environment given the nature and small scale of the proposed works. They are therefore not considered in this assessment. The proposed rail extension route would require more significant construction that could

affect the water environment. The screening assessment identified that the following activities could potentially impact upon WFD quality elements in the Leiston Beck and Waveney & East Suffolk Chalk and Crag water bodies:

- Construction: Site preparation, earthworks and construction including earthworks, level crossings, landscaped bunds, embankments, drainage infrastructure including SuDS.
- Operation: Operational use of the site and associated water management measures.
- Removal and reinstatement: Removal of site infrastructure, removal of track and ballast, reinstatement of agricultural land.

## ii. Stage 2: Scoping

The assessment demonstrates that project activities during construction, operation and removal and reinstatement would not have direct or indirect effects on the Leiston Beck and Waveney & East Suffolk Chalk and Crag water bodies that are sufficient to cause deterioration in the status of the water body or Protected Areas located within the water bodies. Furthermore, the proposed rail extension route would not counteract or otherwise affect the delivery of the mitigation measures (both in place and not in place) that have been identified in the RBMP for these water bodies. Consequently, no elements of the proposed rail extension route have been progressed to the Stage 3 detailed compliance assessment. Rail improvements are therefore considered to be compliant with the requirements of the WFD.

## Cumulative Effects

Following the overall approach used in the Cumulative Effects Assessment that forms part of the ES (**Volume 10, Chapter 1** (Doc Ref. 6.11)), the assessment presented in this report will consider:

- Project-wide effects (intra-project): Effects that occur when environmental impacts from different elements of the Sizewell C Project combine, resulting in the potential for a significant effect (for example, from the combination of construction of one element and road traffic noise from another Sizewell C project on a residential receptor). If considered in isolation, the individual environmental impacts may not lead to significant effects.
- Cumulative effects with other projects: Cumulative effects arise when impacts from the proposed development combine with impacts from other third party projects (normally in the vicinity of the site), resulting in a change to the overall magnitude of impact acting on a receptor and potentially resulting in a significant effect.

Note that the assessments of the Main Development Site and Associated Development Sites in **Parts 2 and 3** of the WFD Compliance Assessment have demonstrated that the effects of the proposed development are restricted to water bodies within the Anglian River Basin District. There are therefore no transboundary effects, which occur when the impacts of the proposed development extend beyond the United Kingdom to Espoo Convention signatory states.

The assessments summarised in **section 3** of **Part 4** of the WFD Compliance Assessment demonstrate that any project wide effects would not be greater than those effects predicted for each activity alone. Furthermore, the assessment presented in **section 4** of **Part 4** demonstrates that cumulative effects between Sizewell C and other planned or potential third party projects would not be greater than those effects predicted for the Sizewell C Project alone. The assessment did not therefore indicate that any quality elements in any water body were at increased risk of deterioration such that the class status for any of the parameters would decrease. As a result, the proposed activities are considered to be compliant with the requirements of the WFD.

## Overall Conclusions

Following the screening and scoping process of the Main Development Site, construction and operational activities were assessed in detail (Stage 3) for the Leiston Beck, Minsmere Old River, Waveney East Suffolk Chalk and Crag and Suffolk coastal water bodies.

With regard to the associated development sites, following the screening and scoping process, only the Two Village Bypass (River Alde water body) and the Sizewell Link Road (Minsmere Old River water body) were carried forward to a detailed assessment (Stage 3).

The result of the stage 3 detailed assessments indicated that for all water bodies and activities, no change in the status of these water bodies is predicted, and no prevention of the implementation of improvement measures. This is due to the localised and impermanent nature of the effects related to construction activities, and the lack of deterioration in status predicted. The implementation of a CoCP also reduces the likelihood of an impact. The operational impacts were also predicted to be small and localised and therefore not contributing to a deterioration in the status of the water bodies.

The assessment found that no project wide effects would be greater than those predicted for each activity alone, and no effects between Sizewell C and other planned or potential third party projects would be greater than those predicted for the proposed development alone.

No water bodies are at risk of deterioration such that the class stays for any of the parameters would decrease and the proposed activities are considered to be compliant with the requirements of the WFD.