The Sizewell C Project

9.122 Written Submissions Responding to Actions Arising from Issue Specific Hearing 15: Proposed Temporary Desalination Plant (5 October 2021)

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1 ISSUE SPECIFIC HEARING 15: PROPOSED TEMPORARY DESALINATION PLANT

1.1 Introduction

1.1.1 This document contains the Applicant's written submissions responding to actions arising from Issue Specific Hearing 15 (ISH15) on the Proposed Temporary Desalination Plant, held on 5 October 2021.

1.1.2 This document corresponds to the Applicant's **Written Summaries of Oral Submissions made at ISH15** (Doc Ref. 9.121) submitted at Deadline 10.

1.2 Response to Mr Galloway

Q1. "*Has the applicant sought to optimise the location of the desalination water intakes in order to reduce the potential detrimental environmental impacts arising from poor quality water being imported for processing?*"

1.2.1 The location of the desalination outfall is located close to the location of the Fish Recovery and Return (FRR) tunnel headworks, because the water depth is suitable (approximately 5m), and the area has already been extensively tested to establish its suitability as a headworks location (see water quality baseline in Section 21.4, Volume 2, Chapter 21 of the ES [APP-314]). The chosen easting of the desalination outfall places it directly in line with the Construction Drainage Outfall (CDO) but approximately 300m to the south meaning the discharges of both follow the same hydrodynamic streamline. The desalination intake is c.100m north-east of the outfall location and offset from the CDO by c.100m east. This means the risk of recirculation from the CDO discharges into the desalination plant are minimal (BEEMS Technical Report TR552 in Appendix 3A of the Fourth ES Addendum [REP7-033]).An updated version is submitted at Deadline 10 to address comments from the MMO (Doc. Ref. 6.18(A)).

Q2. "*Can the applicant show the alternative locations surveyed and the range of water quality results obtained?*"

1.2.2 A range of alternative locations was not investigated for the desalination plant. Previous studies had confirmed the suitability of the chosen position for other infrastructure and the desalination plant was positioned with respect to several environmental criteria, including potential impacts on, or from, coastal geomorphology and to minimise abstraction at the intake of other site discharges (see response to Q1 above).

Q3. "*Is the applicant certain that the SZC site is the most suitable location for SWRO on the east Anglian coast? And therefore the site least likely to impact Marine Aquatic Ecotoxicity Potential (MAEPT).*"

1.2.3 The desalination plant is located in close proximity to the SZC site to minimise distance of supply for potable water requirements during construction. Discharges from the desalination plant would be small and the discharge point is at sufficient distance offshore and at a depth that will facilitate rapid mixing. Modelling has confirmed that potential zones in which effects are possible (including from various metals and other substances resulting from the concentration in the desalination process) would be limited to a maximum area of 1.0 ha from the point of discharge (BEEMS Technical Report TR552 in Appendix 3A of the Fourth ES Addendum [REP7-033] and updated version 2 of BEEMS Technical Report TR552 Cefas Sizewell C Desalination Plant Construction Discharge Assessment which is submitted at Deadline 10 (Doc Ref 6.318(A)).

Q4. "*Is the applicant able to provide independent evidence confirming the choice of Sizewell as a site for seawater Reverse Osmosis (SWRO) as the least ecologically damaging location*."

1.2.4 See response to Q3.

Q5. "*Based on the proposed intake location, can the applicant provide full details of chemical treatments to be applied throughout the SWRO process, including dosing rates, periodicity and concentrations as appropriate?*"

1.2.5 Descaling chemicals used for cleaning the Sea Water Reverse Osmosis (SWRO) membranes used for desalination contain phosphorus so this together with the phosphorus background in the seawater is also discharged in the desalination concentrate. An assessment of the predicted loading of added phosphorus has been assessed for its potential to affect marine plant growth and has not shown to be significant (BEEMS Technical Report TR552 in Appendix 3A of the Fourth ES Addendum [REP7-033]). Chlorine dosing would be flow controlled and angled inwards to minimise chlorine emissions to the environment. Abstracted water would be dechlorinated prior to the SWRO membranes. Chemical dosing to remove chlorine would be monitored and managed to avoid overdosing to minimise residual chemical discharge. As detailed in Chapter 3 paragraph 3.8.11 of the Fourth ES Addendum [REP7-030], process and maintenance chemicals would not be discharged, except for phosphorus (derived from use of a membrane descaling chemical). Aqueous discharges from chemical treatment will be tankered off-site for disposal. This will include

monthly and quarterly maintenance of the 'Clean-In-Place' wastewater from the SWRO and prefiltration (ultrafiltration) systems.

Q6. "*Has the applicant undertaken modelling to identify the potential environmental impacts associated with SWRO outflow arising from combined treatments, the projected zone of influence and the likely impact on MAEPT and other appropriate factors i.e. eco-indicators and eco-point*?"

1.2.6 Plume modelling was conducted and determined that potential zones of impact are limited (BEEMS Technical Report TR552 in Appendix 3A of the Fourth ES Addendum [REP7-033] and updated version 2 of BEEMS Technical Report TR552 Cefas Sizewell C Desalination Plant Construction Discharge Assessment submitted at Deadline 10 (Doc. Ref. 6.18(A)). A marine ecological assessment has been conducted in Section 3.9, Volume 1 of the Fourth ES Addendum [REP7-030], which states that no significant impacts are predicted on marine ecology receptors, including any potential toxicity impacts for all relevant life stages. This assessment is not changed by the refined modelling.

1.3 Effects of combined discharge plumes

1.3.1 The potential for in-combination effects of the desalination discharge with the CDO has been considered.

1.3.2 The easting of the desalination outfall places it in line with the CDO but c.300m to the south, meaning the discharges from both outfalls follow the same hydrodynamic streamline. The desalination intake is offset from the CDO by c.100m east meaning the risk of recirculation from the CDO discharges into the desalination plant are minimal.

1.3.3 Chemical discharges from the CDO include metals, unionised ammonia, potentially surfactants from tunnelling. These discharges do not overlap at ecologically relevant concentrations (i.e., above or close to respective EQS thresholds). Discharges from the CDO are at very low concentrations over small areas as detailed in the Environmental Statement Chapter 21 Marine Water Quality and Sediments [AS-034]. Likewise discharges from the desalination plant are at very low concentrations and over very small spatial areas (less the 0.5ha) (see Fourth ES Addendum [REP7-032] Appendix 3A).

1.3.4 Increases in zinc, chromium and lead at the desalination intakes and outfalls were estimated using the General Estuarine Transport Model (GETM) software and shown to be very low. These results are detailed in the Fourth ES Addendum [REP7-032] Appendix 3A, section 6 (BEEMS

Technical Report TR552 Cefas Sizewell C Desalination Plant Construction Discharge Assessment).

1.3.5 The maximum instantaneous recirculation concentration of example[1] tunnelling effluents at the desalination intake was 0.006µg l^{-1} for Rheosoil and 0.002µg l^{-1} for both CLB F5 M and bentonite. The concentrations of Rheosoil and CLB F5 M are well below their Environmental Quality Standard (EQS) levels (of the order of thousand times less). At the outfall, the maximum instantaneous concentration of tunnelling effluent from the CDO discharge was 0.025µg l^{-1} for Rheosoil, 0.008µg l^{-1} for CLB F5 M. Well below their EQS levels (on the order of hundred to a thousand times less for Rheosoil and CLB FM 5, respectively). These results are detailed in an updated version of BEEMS Technical Report TR552 Cefas Sizewell C Desalination Plant Construction Discharge Assessment submitted at Deadline 10 (Doc Ref 6.18(A)).

1.3.6 The combined construction discharges, while they do not overlap spatially do have an additive effect on the total area exposed to effects, however effects from the CDO and desalination plant individually are small and combined remain small. Adding a maximum instantaneous area of 1ha to the assessment of discharges in Chapter 21 Marine Water Quality and Sediments of the ES [AS-034] does not change the overall conclusions of no significant effects.

1.3.7 With regards to metals, zinc and chromium both fail initial screening for the CDO discharges and desalination. The CDO concentration above background for zinc was assessed as 0.11ha (surface, no exceedance at the bed). For chromium the mean EQS threshold was exceeded over 5.49ha at the surface and was not exceeded at the bed. The magnitude of this impact for the CDO discharges is assessed as very low due to the short duration and limited spatial area, for the desalination discharge the magnitude is assessed as low, due to the longer duration, but again has a very small spatial area (maximum instantaneous area of 1.0ha). The combined magnitude of the two discharges would also be low as the maximum duration is that of the desalination discharge and the combined areas remain comfortably within the spatial extent criteria described in **Table 21.1** in Chapter 21 Marine Water Quality and Sediments of the ES [AS-034] (i.e. below 10 ha).

[1] Tunnelling surfactants are not yet confirmed so two example surfactants have been modelled as case studies – these are Rheosil and CLB F5 M

1.4 Saline plume modelling and variations in water depth and flow speed

1.4.1 Following ISH15 and comments from the MMO in REP8-164 the Applicant has undertaken further modelling of the desalination discharge detailing the evolution of the plume though a full spring-neap cycle and considering the potential for temperature changes during the desalination process. The revised modelling has updated estimated plume extents from those presented in ISH15 and is detailed in an updated version of BEEMS Technical Report TR552 Cefas Sizewell C Desalination Plant Construction Discharge Assessment submitted at Deadline 10 (Doc Ref. 6.18(A)).

1.4.2 The saline plume from the desalination outfall was modelled using the CORMIX software. These results are detailed in the Fourth ES Addendum [REP7-032] Appendix 3A, section 6 (BEEMS Technical Report TR552 Cefas Sizewell C Desalination Plant Construction Discharge Assessment) and these results are expanded in a updated version submitted at Deadline 10 (Doc Ref. 6.18(A)). The updated version includes results covering different tidal states and over the spring-neap cycle. The results are summarised in Table 1 which shows the saline plume will fall to within 1 PSU of background within 6.8 to 21.5m. The time taken for a passive particle to traverse through the saline plume would also be short at between approximately 28 to 215 seconds for all tidal velocities above a slack threshold of 0.1m/s at the location of the desalination outfall.

1.4.3 The additional modelling requested by the MMO has resulted in updated plume extents compared to those described by Dr Mark Breckels during ISH15. During the hearing Dr Breckels described the range of the predicted salinity plume above 38.5 PSU to be limited to 0.7m from the discharge point (Table 1). This range has since been updated to 4.22m. The transit time of a passive particle moving through the maximum plume size above 38.5 PSU would be 42 seconds with a slack threshold of 0.1m/s. These updated model outputs are not significant and do not change the conclusions of the assessment.

Table 1: Distances to which discharge salinity would fall to within 1 PSU above background.

Salinity	Distance to Threshold (m)									
	Rising Tide	High Tide	Falling Tide	Low Tide -2 hrs	Low Tide -1 hr	Low Tide - 0.5 hrs	Low Tide	Low Tide +0.5 hrs	Low Tide +1 hr	Low Tide +2 hrs
+ 1 PSU (spring)	10.67	7.03	10.21	8.93	7.78	6.91	11.50	10.29	7.69	8.18
38.5 PSU (spring)	0.98	1.65	1.02	1.19	1.40	1.73	3.73	3.40	1.44	1.32
+ 1 PSU (neap)	8.23	6.84	7.80	6.83	6.76	11.24	21.51	6.98	7.09	7.91
38.5 PSU (neap)	1.32	2.09	1.40	1.81	1.97	3.69	4.22	2.24	1.68	1.39

* The MMO advised that "*exposure to salinities above 38.5 salinity units can be lethal particularly if such exposures are prolonged*" in REP8-164

1.5 Compressed air clearance system underwater noise

1.5.1 Dr Henderson asked whether consideration had been given to the impacts of underwater noise from the burst cleaning of the desalination plant intake on fish and marine mammals. Underwater noise from the activation of the compressed air cleaning system for the passive wedge wire cylinder screen intake was not scoped into the assessment for the reasons explained below. The use of compressed air in the marine environment is often associated with the mitigation of underwater noise in the form of bubble curtains which can be employed around impulsive noise sources, such as piling. Air bubbles act to attenuate noise and therefore serve to reduce the effects of noise in the environment. There is no known precedent for assessments of impacts from small scale compressed air cleaning activities. The cleaning process would be short and the level of noise generated is anticipated to be too low to present a viable impact pathway for effects on marine biota. Assessment of this potential effect has not been advised by any statutory consultees, and this is taken to mean they agree with the conclusion that the activity does not present a significant risk.

1.6 Sizewell B thermal plume effect on desalination discharges

1.6.1 The thermal plumes from Sizewell B have been modelled using GETM as described in Chapter 21 Marine Water Quality and Sediments [APP-315] Appendix 21E of the ES. An extract from this model, for a full year, at the desalination outfall location shows the mean temperature increase due to Sizewell B is 1.6°C and 3.5°C as a 98th percentile. While the level of thermal increase due to Sizewell B at the discharge point varies according to the tide and season, the 98th percentile shows that excess temperatures above 3.5°C would be extremely rare.

1.6.2 The effect of temperature on toxicity of discharges is assessed in the ES Chapter 21 Marine Water Quality and Sediments, paragraph 21.6.97 [APP-315] in relation to discharges from the CDO and thermal plumes from Sizewell B. In summary the evidence suggests elevation of at least 5°C would be required to cause significant increase in chemical toxicity (detailed in Chapter 21 Marine Water Quality and Sediments [APP-315] Appendix 21E of the ES). As the thermal uplift at the desalination outfall is less than 5°C (3.5°C as a 98th percentile) the temperature-dependent toxicity potential of the discharges is considered to be minimal in relation to the thermal influence of Sizewell B.

1.6.3 The capacity of marine water to carry dissolved oxygen (known at the saturation point) decreases with increasing temperature; it also decreases with increasing salinity. The Water Framework Directive threshold of dissolved oxygen is 5.7mg/l for “High” status. Measurements of dissolved oxygen saturation at Sizewell (detailed in Chapter 21 Marine Water Quality and Sediments [APP-315] Appendix 21E of the ES) demonstrate that the coastal waters off Sizewell are fully saturated (i.e., at or close to 100%), as would be expected in a well-mixed shallow coastal environment. The lowest measured dissolved oxygen was 6.96 mg/l which is well above the WFD threshold for ‘High’ status (5.7mg/l). Based on background 98th percentile temperature of 19.4°C and background salinity of 33.3 PSU (detailed in Chapter 21 Marine Water Quality and Sediments [APP-315] Appendix 21A of the ES), the saturated oxygen content would be 7.55mg/l. Calculating the dissolved oxygen saturation with an expected salinity of 53.8 PSU from the brine concentrate discharged from the desalination plant there is the potential for a small reduction (of approximately 1 mg/l) in the dissolved oxygen concentration. This would still be above the WFD “High” status and dispersal and mixing of the discharge would bring oxygen levels back to background concentration within between 6.8 and -21.5m form the outfall. Raising the temperature by an additional 3.5°C due to the potential overlap with the Sizewell B thermal plume (noting this condition would only ever occur on the warmest days, and have to coincide with tidal conditions causing Sizewell B plumes to overlap with the desalination discharge point)

would lead to a maximum reduction of 1.25mg/l in dissolved oxygen from the combined effect of temperature and salinity changes, meaning the saturation point (5.71mg/l) remains above the WFD "High" threshold.

1.6.4 An updated version of BEEMS Technical Report TR552 Cefas Sizewell C Desalination Plant Construction Discharge Assessment is submitted at Deadline 10 (Doc Ref. 6.18(A)).

1.7 Distance between Sizewell B and desalination headworks

1.7.1 The Sizewell B outfall and the desalination outfall are not on the same tidal stream line. The distance between the two is 435m or (in terms of northing only) 415m south and (in terms of easting) 130m west, i.e. inshore of, the desalination outfall.

1.7.2 The desalination discharge plume is small (Doc Ref. 6.18(A)). Therefore the influence of the Sizewell B cooling water discharge on the desalination discharge, or vice versa, is negligible.

1.8 Assessment of diesel generators from the desalination plant

1.8.1 In Natural England's submission in lieu of attendance at ISH 15 [EV-222], it raised an issue with regards to the assessment of diesel generators from the desalination plant. It is regrettable that NE did not attend ISH15 so that its position on these issues could be clarified, tested and examined. During the course of the hearing SZC Co. set out a summary of its response to Natural England's stated concerns.

1.8.2 Natural England's submission fails to acknowledge the role which different regulatory regimes play in relation to the assessment and control of environmental effects which are relevant to the emissions from generators.

1.8.3 The installation of diesel generators for use as part of the desalination plant and for use during construction will require the grant of an environmental permit under the Environmental Permitting (England and Wales) Regulations 2016 ('the Permitting Regulations'). The permit application will be assessed and decided by the Environment Agency ('EA') (Regulation 13, read with Regulations 2 and 32 Environmental Permitting (England and Wales) Regulations 2016/1154). The EA may decide to grant the permit subject to any number of conditions (para 12(2), part 1, schedule 5 Environmental Permitting Regulations and section 7 EPA 1990), and those conditions can include mitigation measures. Natural England would be a consultee to any such permit application and would have the opportunity to review and consider the supporting air impact assessment.

1.8.4 The permitting legislation explicitly requires the Environment Agency to apply certain conditions (section 7 Environmental Protection Act 1990). These include conditions which seem to them to be appropriate for achieving the objective of rendering harmless any substances which may cause harm if rendered to the air. It is clear that the EA will control air emissions under any permit.

1.8.5 At this relatively early stage of construction planning, it remains to be seen exactly what type of permit will need to be applied for; it will either be a standalone permit for these proposed diesel generators or they will be aggregated into a site wide permit in accordance the Industrial Emissions Directive. However, that is immaterial for the purposes of the DCO. Whatever the type of permit, it will be the subject of the same strict regulatory controls. These include the Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations') which apply to the grant of environmental permits as well as to the grant of planning permission (see regulation 63 which applies to '*any consent, permission or other authorisation…'*).

1.8.6 When deciding an application for an environmental permit, the EA is the competent authority (Regulation 7 Habitats Regulations). Therefore, when deciding the application for the permit the EA must consider whether the permitted activity is likely to have a significant effect on any European Site or a European offshore marine site. If it considers that the grant is likely to have a significant effect it must make an appropriate assessment of the permitted activity's implications for the site/sites in view of the site/s conservation objectives. Pursuant to Regulation 63(5) the EA may only grant the permit 'after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be).' In the ordinary way, the EA would be required to consider cumulative and in-combination effects. Necessarily, these will include consideration of the impacts of the generators together with the project as a whole.

1.8.7 There is no prospect of the EA granting a permit for such diesel generators as are ultimately needed on site where there is any risk that their operation would have an adverse effect on the integrity of a European Site. If the EA reached such a conclusion it would have to refuse the permit application or be satisfied that SZC Co had made a case under regulation 64 (with SZC Co having to demonstrate IROPI and provide compensation etc.). Thus the separate permitting regime is effective to ensure that the use and operation of generators required as part of the construction process would not give rise to any adverse effect on the integrity of a European Site.

1.8.8 Both EN-1 and EN-6 contain provisions which are relevant to how a decision-maker on a DCO should treat other regulatory processes which are designed to address emissions. Paragraph 4.10.3 of EN-1 is clear that the DCO process should act to complement rather than duplicate other controls and that the decision maker should work on the assumption that other regulatory regimes will do their job effectively. EN-1 also states:

"4.10.6 Applicants are advised to make early contact with relevant regulators, including EA and the MMO, to discuss their requirements for environmental permits and other consents. This will help ensure that applications take account of all relevant environmental considerations and that the relevant regulators are able to provide timely advice and assurance to the IPC. Wherever possible, applicants are encouraged to submit applications for Environmental Permits and other necessary consents at the same time as applying to the IPC for development consent."

4.10.7 The IPC should be satisfied that development consent can be granted taking full account of environmental impacts. Working in close cooperation with EA and/or the pollution control authority, and other relevant bodies, such as the MMO, Natural England, the Countryside Council for Wales, Drainage Boards, and water and sewerage undertakers, the IPC should be satisfied, before consenting any potentially polluting developments, that:

- *the relevant pollution control authority is satisfied that potential releases can be adequately regulated under the pollution control framework; and*
- *the effects of existing sources of pollution in and around the site are not such that the cumulative effects of pollution when the proposed development is added would make that development unacceptable, particularly in relation to statutory environmental quality limits.*

4.10.8 <u>The IPC should not refuse consent on the basis of pollution impacts unless it has good reason to believe that any relevant necessary operational pollution control permits or licences or other consents will not subsequently be granted</u>."

1.8.9 Similarly, EN-6 states:

"2.7.1 […] when considering a development consent application the IPC should act on the basis that:

- *the relevant licensing and permitting regimes will be properly applied and enforced;*

- *it should not duplicate the consideration of matters that are within the remit of the Nuclear Regulators (see paragraph 2.7.4 below); and*

- *it should not delay a decision as to whether to grant consent until completion of the licensing or permitting process (see paragraphs 2.7.5 and 2.7.6 below).”*

1.8.10 These statements of policy are consistent with relevant case-law. In Gateshead MBC v Secretary of State for the Environment [1994] WLUK 148; [1995] Env.L.R.37 a planning inspector recommended that planning permission for a clinical waste incinerator should be refused because its impact upon air quality and agriculture in the immediate area had been insufficiently defined. The Secretary of State rejected the recommendation of his inspector and granted outline planning permission on the basis that the Inspectorate of Pollution, in granting pollution control authorisation under the terms of the Environmental Protection Act 1990 would determine emission limits.

1.8.11 In dismissing the subsequent challenge to that decision, Lord Justice Glidewell stated (at 44):

“…Mr Mole submits, and I agree, that the extent to which discharges from a proposed plan will necessarily or probably pollute the atmosphere and/or create an unacceptable risk of harm to human beings, animals or other organisms, is a material consideration to be taken into account when deciding to grant planning permission. The Deputy Judge accepted that submission also. But the Deputy Judge said at page 17 of his judgment, and in this respect I also agree with him,

“Just as the environmental impact of such emissions is a material planning consideration, so also is the existence of a stringent regime under the EPA for preventing or mitigating that impact for rendering any emissions harmless. It is too simplistic to say, 'The Secretary of State cannot leave the question of pollution to the EPA' .”’

1.8.12 The effect of the Gateshead case was summarised by Carnwarth J. (as he then was) in R v Bolton Metropolitan Council [1998] Env.L.R.560 where he stated:

“To summarise, the impact of air discharges from such a plant is a material planning consideration, but in considering that issue the Council is entitled to take into account the system of controls available under IPC. Furthermore, unless it appears on the material before the planning authority that the discharges will, or will probably, be unacceptable to the

Environment Agency, it is a proper course to leave that matter to be dealt with under the IPC system." (at 573)

1.8.13 The Gateshead principle has been applied in the context of EIA development (R(oao An Taisce (National Trust for Ireland) v Secretary of State for Energy and Climate Change [2013] EWHC 4161 (Admin)). Further, in the context of the Habitats Regulations, the Court of Appeal has confirmed that it is lawful for a decision maker in relation to planning development control to rely upon the appropriate assessment of the control of emissions by the Environment Agency under the Permitting Regulations (Cornwall Waste Forum St Dennis Branch v Secretary of State for Communities and Local Government [2012] EWCA CIv 379; [2012] Env.L.R.34).

1.8.14 During ISH15 the EA confirmed (via its representative Mr. Sked) that though it could not pre-determine any permit application it was not identifying any reason why a permit could not be granted and that it was content regarding emissions for the purposes of the DCO. The EA further confirmed that the permitting process was robust and that the permitting process will be subject to the provisions of the Habitats Regulations.

1.8.15 It is therefore clear that in relation to this decision, the Secretary of State should proceed on the basis that the EA will robustly apply and enforce the Permitting Regulations. The Secretary of State can take the operation of that separate regulatory regime into account when reaching his decision on the DCO. Further, the Secretary of State can decide that that the EA will be best placed to assess the emissions of the generators at the permitting stage (including under the Habitats Regulations). This is expressly provided for in Regulation 67 Habitats Regulations. Key parts state:

(1) This regulation applies where a plan or project –

(a) …

(b) Requires the consent, permission or other authorisation of more than one competent authority; or

(c) ….

(2) Nothing in regulation 63(1) or 65(2) requires a competent authority to assess any implications of a plan or project which would be more appropriately assessed under that provision by another competent authority….2

[2] Regulation 67 and regulation 63 are appended to this document.

1.8.16 Indeed, it is clearly sensible and appropriate for the Secretary of State to decide that the EA is best placed to assess the emissions from the generators in circumstances where the permitting regime will govern the operation of the generators and it is the EA who, in deciding any application for a permit, will be able to impose and monitor any necessary controls. The EA is clearly best placed to govern the detailed assessment and management of the generators at a level of detail which is not possible as part of the DCO process. That is reflected in the oral evidence given by Mr Lowe during ISH15 of his experience of how these emissions have been dealt with for the purposes of decision-making in respect of many other DCOs. That does not mean that the emissions of the generators are an immaterial consideration for the DCO decision, rather it means that the Secretary of State is entitled to have regard to the existence of the permitting regime and the views of the EA when considering the emissions and can decide that any emissions will be controlled at acceptable levels through the permitting regime.

1.8.17 This principle is directly addressed in NPS EN-1, which provides from paragraph 4.10.2:

"*The planning and pollution control systems are separate but complementary. The planning system controls the development and use of land in the public interest. It plays a key role in protecting and improving the natural environment, public health and safety, and amenity, for example by attaching conditions to allow developments which would otherwise not be environmentally acceptable to proceed, and preventing harmful development which cannot be made acceptable even through conditions. Pollution control is concerned with preventing pollution through the use of measures to prohibit or limit the releases of substances to the environment from different sources to the lowest practicable level. It also ensures that ambient air and water quality meet standards that guard against impacts to the environment or human health.*

In considering an application for development consent, the IPC should focus on whether the development itself is an acceptable use of the land, and on the impacts of that use, rather than the control of processes, emissions or discharges themselves. The IPC should work on the assumption that the relevant pollution control regime and other environmental regulatory regimes, including those on land drainage, water abstraction and biodiversity, will be properly applied and enforced by the relevant regulator. It should act to complement but not seek to duplicate them."

1.8.18 Notwithstanding the fact that it is appropriate for the Secretary of State to rely upon the permitting regime for its assessment and control of the

emissions, SZC Co. is submitting an in-combination air quality assessment of the generators at Deadline 10 (Doc. Ref. 9.117(A)). This demonstrates that the operation of the generators used for the desalination plant and during construction will not give rise to an adverse effect on the integrity of any European Site or any unacceptable adverse environmental impact.

1.9 Assessment of operational water supply

1.9.1 In paragraph 4.3 of Natural England's submission in lieu of attendance at ISH 15 (EV-222), it raised an issue with regards to the assessment of where water is to be sourced from by SZC Co. in the period before the desalination plant becomes operational:

"Natural England also raise the potential for there to be further European sites impacted by water abstraction which could be scoped into the assessment depending on where tinkered (sic) and eventually mains water is sourced from."

1.9.2 This general and unexplained comment is wholly misconceived. No part of this DCO application requests permission for the abstraction of the tankered water. Wherever the water is sourced from, that source will be the subject of its own permissions and licenses which will have been the subject of environmental assessments. SZC Co will simply have the same status as any other customer for water. This is directly analogous to the sourcing of building materials for use during the project. As such, there is no legal or other basis for suggesting that environmental assessment of the abstraction of the tankered water is required.

1.9.3 The same is true of the long term supply of water to Sizewell C following cessation of desalination. Like all other customers, Sizewell C's water will be made available following the application of regulatory and consenting processes undertaken by the water company and designed specifically for that purpose.

1.10 Response to AONB Partnership

1.10.1 The AONB Partnership queried the location of the cumulative assessment for the Sizewell transfer main. This is contained at **ES Addendum, Volume 1: Chapter 10 Project Wide, Cumulative and Transboundary Effects** [AS-189] ((electronic pages 50-58).

1.11 Timing of the desalination plant

1.11.1 The timing of the desalination plant will be controlled by adding it to the list of "Key Environmental Mitigation" in Schedule 9 of the Deed of Obligation

(Doc. Ref. 10.4) at Deadline 10 which SZC Co. would need to use reasonable endeavours to carry out and complete in accordance with the Implementation Plan. The Implementation Plan is the Phasing Schedule at Plate 2.1 of the **Construction Method Statement** (Doc. Ref. 10.3).

1.11.2 Where, despite using reasonable endeavours, the timescales indicated in **Plate 2.1** cannot be met, SZC Co. must nevertheless deliver the desalination plant before the trigger set out in Paragraph 2.1.6 of the **Construction Method Statement**.

1.12 Construction Method Statement and provision of power

1.12.1 The construction electricity supply will be an undergrounded 132kV high voltage power cable that will be delivered in Phase 1 of construction. Alongside further details, this is set out and secured in Section 5.6 of the **Construction Method Statement**.

1.13 Carbon Assessment

1.13.1 Both the carbon assessment and the air quality assessments have been updated at **Deadline 10** based on the following worst case assumptions:

- Two diesel generators, operational for 2 years on the Main Platform, run 24/7 and providing 1.6MVA power in total.
- The desalination plant is operational for a total of up to 8 years, Q1 2024 to Q1 2032 (up to 2 years on diesel, and up to 6 years on electricity).

1.14 Drilled pipelines

1.14.1 The Construction Method Statement confirms that the intake and outfall pipes for the desalination must be installed under the beach and under the seabed using directional drilling or other trenchless methodology. Below highest astronomical tide, the pipe must be routed through the crag deposits that underlie the typically sandy gravel layer on the surface of the seabed. The exception to this is at the seaward end of the pipe where it must rise to meet the outfall diffusers. The pipeline will therefore be substantially below the seabed.

1.15 Passive wedge-wire cylinder screen

1.15.1 During ISH 15, the ExA raised an issue as to whether the mesh screen which is part of the intake head for the desalination plant is an item of mitigation and therefore should not have been taken into account at the

scoping stage for the purposes of the Shadow HRA Report Third Addendum [REP7-279] (which had the effect of excluding consideration of European Sites with migratory fish qualifying features at the likely significant effect screening stage) and therefore the impact on migratory fish ought to have been assessed.

1.15.2 This issue has been raised in the Rule 17 request (item 20f) and a response has been provided (Doc. Ref. 9.126). Part 1 of the response sets out why SZC Co. does not consider the mesh screen constitutes an item of mitigation. However, a Shadow HRA Report has been prepared (Part 2) in response which assesses the potential for effect on migratory fish, excluding the effect of the mesh screen at the likely significant effect screening stage.

1.16 Operational water supply

1.16.1 During ISH15, the Examining Authority asked why the Applicant's approach to why there could be no issue on operational water supply had not been adopted to obtain construction supply.

1.16.2 SZC Co. had requested that the water requirement for Sizewell C was included in the Northumbrian Water Limited (NWL) Water Resources Management Plan as early as 2013. That request had not been accepted by the water company but, as SZC Co. explained at ISH11 [REP8-121] (electronic page 4 onwards), until relatively recently, SZC Co. and NWL were working together towards an agreed solution for the supply of potable water for both the construction and operation phase of Sizewell C. Joint working was being undertaken towards the provision of the Sizewell transfer main. That approach was satisfactory to SZC Co. and no alternative action was necessary.

1.16.3 Whilst circumstances have changed for reasons rehearsed at the ISH and set out particularly in the letter from the Environment Agency of 26 August 2021, the principle of joint, collaborative working remains SZC Co.'s preferred approach.

1.16.4 The inability of NWL to be able to supply water for the early construction period had not been anticipated but, when it became apparent, it was most expedient for SZC Co. to protect its position through DCO Change 19. For the longer term, however, SZC Co. expects NWL to fulfil its obligations to supply water to Sizewell C.

1.17 Lighting at the desalination plant

1.17.1 The applicant's response to ExQ LI.3.7 at **Responses to the ExA's Third Written Questions (ExQ3) Volume 1 - SZC Co. Responses** [REP8-116], includes text on internal lighting. Following review, it is confirmed that the reference to internal lighting is not relevant to environmental assessments. The intention of this part of the response was to highlight that due to the containerised nature of the plant, much (but not necessarily all) of the task lighting will not be in the outdoor environment.

1.17.2 As implied by the ExQ response, SZC Co. confirms that outdoor task and ambient lighting will be controlled by the **Lighting Management Plan** (Doc. Ref. 6.3 (2B)) and lighting levels will fall within the remit of that which has already been environmentally assessed.

1.18 Transition process from Main Platform to Temporary Construction Area

1.18.1 The purpose of this written submission is to explain the rationale and process for relocating the temporary desalination plant from its initial location on the Main Platform to its subsequent location in the Temporary Construction Area following a request for further clarity by the ExA.

1.18.2 The description of the temporary desalination plant is provided in the **Construction Method Statement** (Doc. Ref. 10.3), including the locations at **Figures 3D.10** and **3D.11**.

a) Why relocate?

1.18.3 The initial location on the Main Platform is selected to enable quick construction and set up of the temporary desalination plant, as the area is relatively unconstrained by the extent of enabling works necessary to create a working construction platform. It is also in close proximity to the location of the required marine infrastructure.

1.18.4 It is necessary to relocate the temporary desalination plant to the temporary construction area because the bulk earthworks will require the ground underneath the temporary plant site to be excavated. The marine infrastructure up to and including the wet well chamber and intake pump infrastructure do not need to be relocated.

b) Transition process

1.18.5 The temporary desalination plant will comprise up to nine modular (containerised) units (grouped into three sets of three modules). The more

units that are operational at any one time, the greater the volume of desalinated water will be. The Construction Method Statement caps the volume of water than can be abstracted in each location.

1.18.6 In the initial location, typically up to three units will be operational, three units will be on standby (for use when the first set of units require maintenance) and three units will be spare.

1.18.7 The transition process is expected to begin by relocating the three spare units to the Temporary Construction Area, followed by the three standby units. At this point, the desalination supply will continue from the Main Platform via the three operational units without interruption.

1.18.8 The switch over will then occur by turning off the three units on the Main Platform and bringing up to six units in the Temporary Construction Area into operation. By this point they will be powered by electricity and not diesel generators. The proposals include water storage tanks within the height parameters to mitigate any short-term interruptions to supply.

1.18.9 The remaining three units will then be relocated to the Temporary Construction Area and become standby modules for use when some of the operational units require maintenance.

1.19 Response to request for written comments on draft Requirement 8(3) contained within the ExA's Rule 17 letter dated 06 October 2021 [PD-054]

1.19.1 As requested by the ExA, SZC Co. has placed its comments on draft Requirement 8(3) as part of submissions clearly arising from ISH15.

ExA Comment	SZC Co. Response
Annex B: Draft Requirement 8(3)	
The fourth addendum to the environmental statement [REP7-030] states at para 3.2.21 that "The proposed change to the Application is therefore for a temporary construction-phase desalination plant". At para 3.2.22 it states: "The desalination plant would be decommissioned once the transfer main is fully available, prior to the commencement of operation of the proposed nuclear power station." Paragraphs 3.3.14 and 3.3.15 of the Construction Method Statement [REP8-054] are as follows: "3.3.14 The fish return tunnels and associated headworks are not required until the operation of the power station and use of the seawater intake pipe must cease before they begin any commissioning tests towards the end of the construction period. There must be no interaction between the temporary desalination plant and operation of the cooling system for Sizewell C. 3.3.15 The seawater intake headworks must be decommissioned and removed once the permanent water supply is fully available. The buried intake pipeline must be grouted (or similar), capped and will remain in-situ. A jack-up barge will be necessary during both construction and decommissioning of the headworks and associated infrastructure."	SZC Co. also note that the construction of the authorised development must be carried out in accordance with the **Construction Method Statement**, secured by requirement 13 of the Draft DCO, and the statements relating to the desalination plant are imperative commitments, meaning that they are robust and enforceable controls that would ensure that these measures would be put in place and the temporary works removed. The Deadline 10 version of the Construction Method Statement also now includes a Grampian trigger that ensures that Phase 5 Cold-flush testing commissioning works must not commence until operation of the temporary desalination plant has ceased. Requirement 29 of the Deadline 10 Draft DCO also secures the removal of the desalination plant. In relation to the marine works, Deemed Marine Licence condition 46 is proposed to secure that details, including timing, of the removal methodology have first been submitted to and approved by the MMO. Part (e) of condition 46 states the details must include *"removal methodology and detailed method statement, to include headworks, anti-scour mats and depth to which the tunnels must be removed to avoid legacy impacts on coastal processes. Removal must be completed prior to commencement of hot functional commissioning testing."*

ExA Comment	SZC Co. Response
	Articles 4(m) and 4(n) of the Deemed Marine Licence also only authorise removal of the headworks, anti-scour mats and tunnel before hot functional commissioning testing commences.
It is clear that the desalination plant is only required for the construction phase. It has been assessed on that basis. It has not been assessed for the operational phase and the ExA does not understand the Applicant to be suggesting that the plant would be used for the operational phase. In some places the CMS states that parts of the desalination plant and tunnels would not be decommissioned until the permanent water supply is available. If permanent water supply is earlier than the beginning of operation of the power station that would be acceptable. But the desalination plant is to be temporary, has been assessed on the basis and must not be used for the operation of the power station. Accordingly, provision in clear and unambiguous terms that the desalination plant may not be used after and must be decommissioned before operation of the power station is essential. The draft requirement set out below is based on paras 3.3.14 and 3.3.15 of the CMS submitted at Deadline 8 and takes into account that the Applicant is committed to the restoration of the temporary construction area following completion of the construction phase – see para 3.4.63 of the CMS. ESC, SCC, the Applicant and other IPs are invited to comment on the drafting to ensure	SZC Co. can confirm that the desalination plant is only required temporarily in connection with the construction phase. As noted above, clear controls have been proposed that ensure the use of the desalination plant ceases before cold flush testing commences and all plant is removed by the end of construction. SZC Co. considers that the controls included at Deadline 10 provide all necessary controls to ensure the removal of the desalination plant and associated onshore and offshore infrastructure.

ExA Comment	SZC Co. Response
its efficacity. [Comments on the principle may also be made, though the ExA doubts this is controversial.]	
Comments should be made, titled "Decommissioning of the desalination plant, comments on the ExA's proposed Requirement 8(3)" at Deadline 10. If the comments are not made as part of submissions clearly arising from ISH15, they should be a document which is separate from any other submissions.	These comments are made as part of submissions clearly arising from ISH15, as request by the ExA.
Requirement 8(3) (i) The use of the temporary desalination plant and associated works (Work No. 1A (jj), (kk), (ll), Work No. 2M, Work No. 2N, Work No. 2O and Work No. 2P) must cease before either (a) commissioning testing begins or (b) the availability of the permanent water supply [to be defined], whichever event occurs first. (ii) Within 3 months of either (a) commissioning testing beginning or (b) the availability of the permanent water supply, whichever event occurs first, the temporary desalination plant (Work No 1A(jj)) must be removed and the intake head and shaft (Work No 2N) and outfall tunnel diffusers and shaft (Work No 2P) must be removed and decommissioned, and the outfall and intake pipelines (Works No.s 2M and 2O) must be grouted and capped.	The proposed wording of Requirement 8(3) is not considered necessary for the following reasons: - The Construction Method Statement requires use of the temporary desalination plant to cease before commissioning works begin. The power station cannot operate without commissioning works having first been completed. Equally, the desalination plant intake and outfall tunnels and headworks cannot operate if they are not connected to an operational desalination plant. - The desalination plant will be removed in accordance with the Construction Method Statement and Requirement 29 also secures its removal.

ExA Comment	SZC Co. Response
	- The Construction Method Statement also secures an enforceable control that the tunnels within Work No.1 (Work No. 1A(jj) and Work No 1A(kk)) will be capped and grouted. - Condition 46 of the Deemed Marine Licence requires the removal of Works Nos. 2M, 2N, 2O and 2P to be carried out in accordance with a method statement. Both Condition 47 and the licensed activities as noted above limit removal to prior to commencement of hot-functional testing commissioning works. The above approach is enforceable and consistent with what is assumed in the Fourth ES Addendum (AS-181).