Construction water supply consultation
Water Supply Strategy
Proposed Change 19
Consultation on Temporary Desalination Plant

To whom it may concern,

I write in respect the SZC Desalination Plant proposals, which as you will see (above), seem to have many more names than I consider helpful.

In composing this response I have read (among many, many, other of your publications):

- Water Supply Strategy **[APP-601]**
- Water Supply Strategy Update **[AS-202]**
- Sizewell C Community Newsletter **[August 2021]**
- Consultation on Temporary Desalination Plant **[August]**

Overview

I will keep my comments short, as I intend to make a fuller response in a Written Representation to the Planning Inspectorate in due course.

I am a retired project professional and therefore feel I have a responsibility to put aside personal issues with the SZC Project and provide honest and hopefully constructive feedback to the Applicant.

Obviously I have not been party to the development of the SZC Project, but do have an insight afforded by involvement in the Pre-Application Consultations and have five observations;

'Fail to prepare, prepare to fail'
Paraphrasing Benjamin Franklin's "failing to prepare is preparing to fail" may not be the most original thing to say. However, my observation over the last decade is that the Applicant has not been as well prepared as I would have expected for an "unusually large and complex" project.

At first I thought it might be that I was not sufficiently familiar with the modus operandi of the infrastructure and civil engineering sectors. I now believe, having led Programmes and Projects across not far short of a dozen business Sectors, that insufficient preparation has been invested in the strategic anchors of the SZC project.

'A little knowledge…can be a dangerous thing!'
After experiencing Pre-application and the first half of the Examination, it would seem more sensible had the Applicant; prior to the Sizewell site being nominated for 'one or more reactors', commissioned a full 'fresh eyes independent appraisal' of the site and its environs for 'do ability' - something akin to due diligence used in virtually all other business settings.

However, as is now evident, this could not have happened, and as a consequence, assumptions or conditions that may have pertained and been adjudged adequate in the 1970-80's have now been found to be; inadequate, inappropriate, inaccurate or no longer valid.

'Inspection, Inspection, Inspection'
I suspect that; too much of the Applicants preparatory work has been conducted via desk/internet research, diminishing the level of experiential knowledge and understanding of; the locality, the communities, the people, landscape, nuance etc. that becomes obvious through traditional 'inspection', there is no substitute!

'Get the basics right'
What the proposed *Change 19* exemplifies to me is; that the SZC Project suffers from an over dependence on the NSIP classification and all the flummery that appears to come with it. From my perspective it seems that; the 'top trumps' mentality NSIPs seem to engender, can become a proxy for paying heed to the basics. How else could it be that; a large corporation like

the Applicant, could be comfortable entering into a critical part of the 'approvals process' for a £20billion commitment without having confirmation of the adequacy of supply for a fundamental ingredient to so many facets of the Project?

Real Stakeholder Engagement

Irrespective of how and when the Applicant developed their *Water Supply Strategy,* had they fully committed to true Stakeholder Engagement, they would have been aware of the potential threat of inadequate potable water, from a very early stage, not only from the potential suppliers, but also from the chorus of Parish Councils, Local Authorities, residents and businesses who tried to forewarn them, only to be told it was *"progressing very well".*

Unfortunately, the Applicant has never really capitalised on the huge benefits good Stakeholder Relations can bring to a Project, preferring instead to re-run the hackneyed and dated approaches favoured by the less egalitarian nationalised dinosaurs of mid-century Europe.

One ringing endorsement of this assertion is, the statement made by a very well known *'face of SZC'* who responded to a Councillor relating the view of many residents that, 'the SZC proposals were not popular' with the heart-warming response all stakeholders will cherish that; "…this is not a vote!"

Conclusion

In my view, I see the *Change 19* proposal as the culmination of 10 years of the Applicant avoiding facing the realities of Eastern England; and in this case specifically the weather, the infrastructure, the environment and the site.

The truth is, this part of East Anglia is a water stressed area, this means; the natural environment as well as public water supplies. For the avoidance of doubt 'water stress' is defined in the regulations as *"the current household demand for water is a high proportion of the current effective rainfall which is available to meet that demand. Or, the future household demand for water is likely to be a high proportion of the effective rainfall which is likely to be available to meet that demand"*

Consequently if the Applicant thinks robbing the natural environment to maintain public water supplies, plus their desired 2,500,000 to 4,000,000 litres per day is a potential answer, they need to think again.

One only needs to look at Fig 1. [Page 13] In the Environment Agency's *"Updating the determination of water stressed areas in England Consultation document" of the 11 February 2021* to see the extent of water stress on the East Coast, stretching all the way from the Humber Estuary past the Thames and around to the South Coast beyond Portland Bill.

What many Coastal Suffolk residents may not be aware of is that *"The final assessment will provide our advice [Environment Agency] to the Secretary of State on the areas that should be determined as areas of serious water stress. The purpose of the determination is solely to inform whether water companies should be able to consider the option of charging by metred volume for all customers (compulsory metering). This is alongside other options to manage water supplies in their plans."*

Looking at the prospects for East Anglia, it seems clear to me that the Applicant should more properly be examining the impact of having to operate desalination during the whole construction period, the operational life of the station and throughout the decommissioning, until such time that potable water is no longer required.

Finally, as mentioned at the outset, I have a great many questions in respect to the operation of a temporary desalination plant (as proposed) and will be including them all in my Written Representation to the Planning Inspectorate.

Response ends

THE PROPOSED DESALINATION PLANT CHANGE REQUEST VIEWED IN THE CONTEXT OF THE APPLICANTS OVERARCHING APPROACH TO WATER

1. INTRODUCTION

1.1 The Applicants proposed installation of a Desalination Plant at the proposed site of Sizewell C raises more questions than those solely pertaining to the potentially damaging operation of a SWRO plant on the East Suffolk coast. It also raises questions of; transparency, integrity and honesty.

1.2 In order to examine the extent of the issues and the overarching approach of the Applicant; this paper has referenced;

1.2.1 **APP-601** – Water Supply Strategy

1.2.2 **AS-202** – Water Supply Strategy Update – ES Addendum Appendix 2.2D

1.2.3 SZC Project – Consultation on Temporary Desalination Plant

1.2.4 Contemporaneously noted comments from representatives of the Applicant

1.2.5 **REP5 – 257** Letter from Walker Morris LLP on behalf of Northumbrian Water Ltd [NWL]

1.2.6 Various publicly sourced; articles, publications and data (noted individually)

2. Background

2.1 It is well understood that coastal Suffolk is a *"water stressed area"* with *"significant seasonal demand variation because it is a popular holiday destination".* **Source:** Northumbria Water Ltd

2.2 Even the Applicant knew there was significant local concern about potable water, long before delivering their Water Supply Strategy in May 2020. Their abandoned Community Forum and coastal Suffolk Parish Councils were not alone in 'red flagging' the issue over recent years, but seemingly with little impact on the blinkered view of the Applicant.

2.3 As recently as March 2021 representatives of the Applicant were making light of potable water issues, saying *"…so we have been working with Essex and Suffolk Water, to come up with a scheme that they can deliver and through their own development rights, to bring more water into the Blyth management area, that will supply water from the start of the construction to Sizewell C and also provide, a benefit to the region on an ongoing basis, by increasing the interconnectivity from the Blyth area to the wider water network. This is about bringing in water from the Waveney area further south down to Saxmundham into the Sizewell area so we are, as I say, working with Essex & Suffolk Water and the Environment Agency to ensure that we have got a viable source of supply, and that work is progressing very well."* **Source:** Richard Bull – SZC Project

2.4 Coastal Suffolk's water issues are not new 'news', nor a national secret, consequently it is difficult to comprehend how the Applicant, following the nomination of the Sizewell site in 2010 failed to prioritise resolution of supply issues critical to the construction, operation and presumably decommissioning of the two nuclear reactors now being considered by the ExA.

Put simply, it is the equivalent of a Scottish Whisky producer planning a new distillery in the Atacama Desert.

2.5 Prior to dealing with specific issues pertaining to the Applicants proposal to install a SWRO plant (at least that seems to be current thinking) on the east coast, there are a number of questions that must be answered in respect to the overall approach to potable water supply.

Q1 An important question that immediately arises is; if the longer term solution being worked on is to have *"…Essex and Suffolk Water, to come up with a scheme that they can deliver and through their own development rights, to bring more water into the Blyth management area, that will supply water from the start of the construction to Sizewell C…"* which parties pay, what proportion of the costs for the necessary works? Is it equitable and what are the short, medium and long term implications for the water bills of coastal Suffolk residents?

Q2 It also seems that potable water supply, unlike many other fundamentals of the proposed SZC Project, is being omitted from the DCO and thereby; the scrutiny that examination by the Planning Inspectorate brings on behalf of the Secretary of State. One has to ask why this is the case and what impacts this may have in terms of; cost, risk, benefit and the interests of the public locally and nationally?

Q3 In examining the Site Water Supply Strategy and Update **[APP-601 and AS-202 respectively]** it appears that potable and non-potable water requirements for 'other sites' may not be covered within the strategy. Could the Applicant confirm that this is the case and indicate where the Water Supply Strategy for both Park and Rides (North and South), the SLR, the FMC, etc. are documented and what the calendarised forecast demand for each is to be over the entire construction period, or for as long as the 'other site' requires water – whichever is the longer?

Q4 Can the Applicant also identify, quantify and tabulate the periodicity of any projected transport movements related to the supply of; potable, non-potable water to these sites and any subsequent recovery of foul water/effluent from the same.

Q5 In their letter to the ExA dated 23rd July **[Their Reference AEO/DFM/NOR01691.8]**, Walker Morris LLP acting for Northumbrian Water Ltd [NWL] states *"information provided to NWL by the Applicant regarding the peak water supply requirements for Sizewell C has been recently updated and materially increased and is still not fixed."*

In their recently published document *"Consultation on Temporary Desalination Plant"* *the Applicant portrays* *"Likely water demand profile during the construction period"* as falling between 2,500,000 and 4,000,000 litres per day.

Can the Applicant identify what increase, both as a percentage and absolute (in Litres), this range represents to the current daily supply to the coastal Suffolk area?

Q6 It is estimated that the average UK household uses 349* litres of potable water each day. In a *"water stressed area"* like coastal Suffolk, what does the Applicant propose to do to allay the well-founded fears of residents when they learn that daily demand for potable water at Sizewell C during construction will be the same as another 7,100 to 11,400 households?

* **Source:** Energy Saving Trust

It is further noted that even under operation, the proposed Sizewell C station will likely consume 500,000 litres per day – equivalent to the daily demand of over another 1,400 additional households in the area

Q7 Does the blue portion of Plate 1.1 [Page 2 of Appendix 8.4K Site Water Supply Strategy] faithfully reproduce the content of Chapter 2, Figure 2.2 on page 11 of the Temporary Desalination Plant (Proposed Change 9) Consultation Document? If not, why not?

Q8 It is noted in the Applicants Planning Statement Appendix 8.4K Site Water Supply Strategy of May 2020, Page 4, Table 1.1 *"Summary of all potential water supply options"* one of the limitations of the Benacre Pumping Station option is stated as being *"Extensive pipeline construction required"*. However, this option would appear to be considerably less than the 28km of necessary pipeline construction being suggested that NWL undertake?

Q9 It is also noted that in the same table quoted in Q8 above, *"drought"* is rightly a consideration (see "Desalination" benefits). In extremis, whether operating a sub-demand level desalination plant and/or an external mains supply, what contingencies does the Applicant's plan have to deal with protracted drought, as has almost occurred in the region over some relatively recent summers?

In the event that drought conditions are encountered and that the desalination had been removed, SZC construction is then totally dependent on a mains supply of potable water, what decisions would the Applicant take with regard to suspending construction to safeguard residential potable water supply?

Q10 It is noted that in the same table quoted in Q8 and Q9 above, consideration is given to incentivising 'license holders' to construct winter storage reservoirs (see *"Licence trading with local abstractors."*). To what degree is the Applicant willing to potentially compromise further agricultural land, ecosystems and habitats in their efforts to secure a potable water supply for the construction of Sizewell C?

Q11 It is noted that in the same table quoted in Q8, Q9 and Q10 above, consideration is given to Construction of a new water storage area in the northern part of the site could be used to provide additional storage of water from Minsmere Sluice, collated greywater from site, or effluent. (see *"Additional water storage area."*). To what degree is the Applicant willing to potentially CA more land, compromise further agricultural land, ecosystems and habitats in their efforts to secure a potable water supply for construction of Sizewell C?

Q12 It is noted that in the same table quoted in Q8, Q9, Q10 and Q11 above, consideration has been given to Schedule on-site works so that high consumption activities avoid summer months when public water consumption is typically higher and environment is under greater stress.

It is very noticeable that *"urgency of need"* was not mentioned as a compelling reason not to take this option. However, as changing sequencing *"was challenging"* and there are *"High costs associated with project delays"* these were seen as legitimate/compelling reasons not to re-schedule works to avoid high consumption activities in the summer months. One is inclined to ask where the Applicant's priorities really lie and whether "urgency" has merely become a 'flag of convenience'.

Q13 In their letter to the ExA dated 23rd July [Their Reference AEO/DFM/NOR01691.8], Walker Morris LLP acting for Northumbrian Water Ltd [NWL] states *"NWL is aware that the Applicant has already indicated an intention to requisition a main pursuant to Section 41 of the Water Industry Act 1991."*

They continue, *"Whether under this or any other statutory provision NWL is concerned that there may be a disconnect between the phasing of the development and the ability to supply adequate water to it."* and then they indicate a gravely concerning situation whereby;

"…NWL may be compelled to meet demands for water which it cannot appropriately meet. Further, although Sizewell C is not a 'domestic' use, the water to be provided to the accommodation blocks (at least in part) may fall within the definition of a 'domestic' supply; having to supply any domestic needs presents a critical risk to NWL's ability to serve the needs of its existing customers…"

Can the Applicant explain why they are considering taking steps that could compel a competent body to take action that may risk 'continuity of supply' to residents of coastal Suffolk?

Q14 Messrs Walker Morris continue *"…with respect to non-domestic water supplies, the ability of NWL to enter into a Section 25 agreement (pursuant to the water Industry Act 1991) in the current timeframes for delivery of Sizewell C cannot be assumed – largely because of the impact on existing customers. Both of these scenarios pose considerable risks to NWL in the absence of a clear mechanism, imposed properly at the planning stage, to secure the delivery of infrastructure and to control the timing of any water supply by NWL to Sizewell C."*

Taking the comments of NWL's representative into account, is it conceivable that the Applicant would/could force through a solution (or solutions) that would place supplies of mains 'tap water' to coastal Suffolk residents in serious jeopardy?

Moreover, is it realistic to believe that, however compelling the issue of 'urgency' may appear, a Government of any complexion would press for bowsers and standpipes at every corner of coastal Suffolk's streets, to secure the construction of two 'big nuclear' reactors of a type that are; not yet thoroughly proven over time, delivered beyond the planned 'generation commencement' date, invariably over budget and considered by some commentators as; modern day behemoths, borne of a past age, in the hands of cultural egoists.

Unlike the Applicant who opines *"SZC Co. has developed a water supply strategy…"*, NWL's representative is far more unconvinced, noting it *"…understands that the Applicant's Water Supply Strategy remains in the process of being devised, and NWL has not yet had sight of this."*

It is hoped that having read the foregoing paragraphs, the ExA will appreciate why consideration of the Applicants *"Temporary Desalination Plant Consultation"* (and any subsequent dDCO changes applied for) should have full and thorough regard for the overarching consideration of water supply in East Suffolk (and neighbouring Local Authorities), the professional judgement and views of NWL and the expressed views of Parish Councils and other concerned parties throughout the Pre-Application Consultation rounds and more recently during the Examination itself.

3. Consultation Document, Consultation on Temporary Desalination Plant (August 2021)

Note: Paragraphs where the para number is followed by an asterisk are a fundamental concern requiring; clarification, further development and/or action by the Applicant.

3.1 INTRODUCTION

3.1.1 Interpretation - for the avoidance of doubt, please note that the absence of a comment in respect to any specific or general point within the Applicants Consultation does not imply agreement, nor should it be interpreted in any other way.

3.1.2 Consultation - the consultation window, cynically scheduled during the peak school and summer holiday period (following protracted privations associated with Covid) and comprising just 25 calendar days (including 6 weekend days) is less than generous and significantly lower than is broadly regarded as best practice for Public Consultations.

3.1.3 It is ironic, and leaves a very bad taste in the mouth that; on one hand the Applicant is seeking to invoke a short duration consultation, whilst simultaneously making public the previously rumoured delay to the Final Investment Decision.

3.1.4 It also grates that the often expressed 'urgency' made part of the lingua-franca of the Examination by Counsel for the Applicant, now appears to only apply to; the examination itself and Interested Parties.

3.1.5 One consequence of the short Consultation window may mean that responses exclude valuable analysis on the basis of time constraints. Moreover, it is likely to militate against thoughtful, important contributions from stakeholders, Interested Parties, the general public, businesses and other commentators.

3.1.6 Content - it is noted that the Consultation document comprises 23 pages, much of which is; generic, historic 'cut and paste' content. Whilst useful to the Applicant in painting a virtuous back-cloth, it has little direct association with the fundamental reasons why; more than a decade after the site being nominated, the Applicant has not actually got the viable Site Water Supply Strategy that they have used to mollify concerned Councils and residents throughout the Pre-Application Consultations.

3.1.7 In summary, the Consultation document has the hallmarks of something brought together at 'short order' and consequently lacks detailed and appropriate analysis and seems to rely largely on working assumptions.

3.1.8 However, as SWRO is a relatively simple concept, most serious issues are well known and if implemented with great care, the core SWRO detrimental impacts can be avoided or largely mitigated with suitable funding and regard to the dynamics of each specific site and the marine environment in which abstraction and saline discharge will occur.

3.1.9 That said, man-made increases in saline concentrations are almost never beneficial, with research in both the Middle East and the US demonstrating how intense SWRO discharges in; relatively small areas, areas with low tidal and wave movements, etc. are not only damaging to the marine environment and ecology in the immediacy of the outflow, but also, given the right circumstances can lead to high saline accumulations significant distances from the SWRO outflow.

3.1.10* It is noted at 2.3.5 that the Applicant intends to import potable water to site by HGV road tanker for a period of up to a year. In this connection, although not specifically stated it is assumed that the 40 road tanker

deliveries (80 HGV movements) per day would be using 18,000 litre capacity, six wheel tankers via the B1122. The total daily capacity would therefore appear to be a maximum of 720,000 litres, the source of which is not identified. Again these details appear to have been omitted from the consultation.

3.1.11* It is noted the Applicant is at pains to confirm that HGV road water tankers, desalination plant HGV deliveries, etc. would all be achieved (along with the other movements) within the *"…capped HGV limits already established…"*. It begs the question how much 'headroom' has been agreed in HGV limits, insofar as a potential 80 HGV movements a day, adds another 29,200+ HGV movements along the A12 and B1122.

Moreover, if the tanker deployed is smaller than an 18,000 litre six wheeler, then the volume of HGV movements could increase further still, dependent on demand.

3.1.12* At 2.3.8 & 9 The Applicant advises the Desalination plant would comprise 6-9 containerised modules. However, whilst they advise these will be delivered by road, presumably via the B1122, they appear uncertain over the nature of the containers and/or whether they will be delivered via traditional HGV, but do not fully discount an AIL format.

3.1.13* Bearing in mind the expressed view of some statutory authorities on the suitability of the B1122 for large HGV and abnormal/AIL traffic this omission does need to be clarified during the examination.

3.1.14* At 2.3.11 the Applicant implies that a seamless transfer of the Desalination Plant to the Temporary Construction Area could be achieved. This seems rather simplistic and fails to clearly explain how continuous; potable water production, seawater abstraction and brine outflow could be achieved without a second Desalination Plant and Diesel Generators, operating in parallel. This would require additional HGV movements and presumably lifting equipment to install and remove the respective plant as appropriate.

3.1.15* As stated above the Applicant implies that a seamless transfer of the Desalination Plant to the Temporary Construction Area could be achieved. This seems rather simplistic and fails to clearly explain how continuous; seawater abstraction and brine outflow could be achieved without an extensions to inflow and outflow pipelines or the pre-installation of between the two locations re inflow and outflow pipelines presumably as part of the Main Platform preparation. The mechanisms to permit the transfer of potable water production capabilities between the two proposed locations, needs full and detailed explanation.

3.1.16* When is *"the construction sites permanent electricity connection…"* scheduled to be operational?

3.1.17* At 2.3.13 the Applicant refers to the production of sludge/slurry cake for off-site disposal, at a rate of a single HGV (2 movements?) per day. However, the Applicant does not detail their proposals for:

- sludge storage; acreage, format, structures, tanker loading equipment etc.
- sludge dewatering; acreage, format, structures
- sludge drying; acreage, format structures and power requirements
- whether power for all activities are included in the Diesel Generated 1.5MVA quoted at 2.3.12

3.1.18* At 2.3.14 the Applicant indicates indicative locations for the desalination plant at figures 2.3 and 2.4.

Neither figure provides a context for the chosen indicative locations, either after the completion of construction or after completion of the groundworks, thereby limiting informed comment.

3.2 DESALINATION INFRASTRUCTURE

3.2.1* At 2.3.15 and 16 the Applicant indicates the seawater intake pipeline is to comprise a single 35cm diameter pipe extending 380m seaward. It is assumed the design is in its infancy, pending a full assessment of the subsurface geology, geotechnical conditions, etc. Can the Applicant provide an outline of the proposed pipeline design plan?

3.2.2* At 2.3.18 the Applicant refers to the hydraulic connection of the intake pipe to a wet well chamber, but makes no comment on it's; specific location (not shown on Figures 2.3 and 2.4), dimensions, planned capacity of the finished chamber, nor the materials and techniques to be used in its construction.

3.2.3* As the chamber at 2.3.18 is *"…landward of the temporary HCDF…"*, does the Applicant propose any specific treatment of the chamber, such that after the period of desalination is complete, any risk of degeneration of the redundant chamber's integrity is fully mitigated, thereby removing a potential weakness in land stability at that point?

3.2.4* At 2.3.20 the Applicant indicates a specific design of seawater intake (PWWC). It is assumed that all relevant agencies have been consulted on the latest technology available for intake screening and that there is consensus that the proposed approach is currently the most suitable for the; purpose, location, environment and potentially entrained species prevalent in Coastal Suffolk?

3.2.5* At 2.3.22 the Applicant indicates the intention to use Period Shock chlorination for the purposes of avoiding biofouling. It is recognised that the proposed flow controlled dosing and inward angling generate a reduction in the chlorine emissions into the broader environment.

It is noted the Applicant does not identify the chlorine dosing level and the periodicity proposed. These clearly need to be understood as part of the Examination, alongside the monitoring and management controls that should be required of the operator, alongside how proposals to alter Period Shock chlorination (dosage or periodicity) should be properly authorised.

3.1.24* It is understood that the desalination plant will provide the only source of potable water between the end of tanker delivered water and commencement of potable water being available from a mains transfer supply. How does the Applicant propose to deal with potable water supply during temporary interruptions for Shock Chlorination?

3.2.6* At 2.3.25 the Applicant indicates the intention to remove the seawater intake headworks once the transfer main supply is fully available. Additionally, the Applicant proposes leaving the buried intake pipeline in situ, it having been previously grouted and capped. For the avoidance of doubt is the Applicant proposing to grout and capping both ends of the pipeline?

In any event what is; the design life of the pipeline, the materials used in its construction and the measures to be applied to ensure long term avoidance of sea water ingress into the redundant pipeline, thereby minimising any possibility of unforeseen penetration of the sea defences and/or the Main Platform, by seawater.

3.2.7* At 2.3.27 the Applicant indicates the intention to locate the brine water outfall pipe between the inner and outer longshore bars, implying the outfall will be sited in an extended lateral depression. As the brine water is considerably denser than the surrounding seawater, has the Applicant ascertained whether there is a risk of developing a brine water 'ghetto' between the two bars? If not, should this theory be examined and discounted based on firm scientific evidence, prior to the proposal being adopted.

3.2.8* At 2.3.27 the Applicant indicates the intention to site the brine water outfall pipe *"…sufficiently distant from the intake to minimise re-trainment of the brine water."*
Could the Applicant confirm the distance they consider minimises re-trainment of brine water and what they consider the 'minimum' acceptable re-trainment of brine water to be? Can they also describe the monitoring and measurement regime to be in place to ensure this minimum is maintained?

3.2.9* At 2.3.29 the Applicant rightly identifies the need for *"…periodic inspection and cleaning of the outfall diffusers …to ensure correct operation."* Can the Applicant advise what inspection and cleaning provisions would be should SZC receive Consent?

3.2.10* At 2.3.30 the Applicant indicates the intention to dredge an area surrounding the diffusers. Can the Applicant describe what best practice would be for a site like SZC and therefore the amount and extent of dredging that would be required and at what periodicity?

3.2.11* At 2.3.31 the Applicant states that *"…brine water will be balanced and mixed on the construction site as part of the desalination process. It will then be stored in a storage tank adjacent to the desalination plant and pumped through the outfall pipe in a controlled manner, on a continuous basis (24-hours per day).*

For clarity can the Applicant provide details of how they intend the brine water be balanced and any resources employed in that activity? Can they advise whether the brine water tank is above or below ground, its maximum capacity, footprint, dimensions and construction type and whether covered or open.

As the tank discharges to the outfall pipe, can the Applicant also advise the target maximum holding level of the brine water tank and the active measures to ensure no exceedance of the tanks capacity, thereby avoiding the likelihood of 'brine water spill'.

3.3 ENVIRONMENTAL IMPACTS OF PROPOSED CHANGE 19

3.3.1* At 2.4.2 the Applicant tries to screen out an extensive list of areas on the basis that *"This is due to the typically sealed nature of the desalination process within pipes and containerised equipment and its central location within an area of already substantial construction activity and associated mitigation measures."* In making this statement the Applicant seeks to obscure the fact that desalination is not predominantly a "construction activity".

It is instead, albeit at a very basic level, a chemical processing activity and as a consequence has the potential to be causative to very many threats; environmental, health, safety, terrestrial ecological, marine ecological, ornithological, groundwater, watercourses, etc.

As a consequence, it is an obligation on the Applicant to fully apply themselves to; identifying, quantifying, avoiding, mitigating and compensating for additional hazard resulting from (amongst many others);

- millions of litres of seawater passing through the desalination plant
- the storage of an unquantified volume of brine water in a storage tank, awaiting pumping
- storage and deployment of hazardous chemicals involved in the maintenance of a desalination plant
- Periodic Shock Chlorination offshore
- extensive diesel powered electrical generation (24.7.365)
- associated pollutants including; noise, vibration, particulates, etc.
- HDD drilling impacts as above

The consequences of any one instance, having the potential for extensive long term damage in the terrestrial and marine environments. This is most definitely not an area where good intentions cut the mustard!

3.3.2* At 3.2.27 above, the location of the headworks for the brine water outfall between the inner and outer bars *"within the trough"* (as described by the Applicant at 2.4.5) may unnecessarily exacerbate any impacts of a brine 'ghetto' and even increase the likelihood of its creation.

3.3.3* At 2.4.7 the Applicant states the CPMMP *"…would enable detection of unexpected effects on these features and will apply equally to any potential small-scale impacts associated with the desalination works."*

However, as is pointed out at 2.4.9 *"The only conditioning chemical expected in the discharge concentrate is phosphorous, derived from use of a membrane descaling chemical."* one unforeseen consequence of which is the increased growth of algae and large aquatic plants. In turn these conditions can lead to algae blooms that produce algal toxins harmful to human and animal health.

This process can be remain virtually indiscernible until the algae bloom explodes on reaching critical mass and the rest as they say is history. Eutrophication sets off a chain reaction in the ecosystem, eventually leading to rotting algae and plants producing large amounts of carbon dioxide.

3.3.4* At 2.4.11 the Applicant concludes that although there are likely to be small exceedances of *"…screening thresholds for zinc and chromium. Any such effect is likely to be limited close to the point of discharge due to rapid mixing."* Once again the location of the discharge head *"within the trough"* may militate 'rapid mixing' allowing accumulations in 'the trough', an unforeseen consequence that can only be discounted by thorough analysis and modelling.

3.3.5* In the absence of confirmed designs for the seawater intake and brine outfall pipelines; it is difficult to agree the Applicants assertion at 2.4.13 that *"…the only disturbance for marine ecology receptors will be at the intake and outfall headworks."*

What is clear is that a considerable amount of assessment is yet to be undertaken and in the absence of that, the Applicant seems content to assume *"The magnitude of impacts of the desalination infrastructure is anticipated to be comparable to previous assessments in the Environmental Statement Volume 2, Chapter 22 [AS-035].* It is clearly for the responsible Authorities to advise the ExA accordingly.

3.3.6* At 2.4.15 the Applicant asserts in the final paragraph that; *"The relatively low abstraction rate (equivalent to less than 0.09% of the proposed cooling water abstraction once operational) coupled with the intake mitigation would result in negligible losses of fish and invertebrates."* This is a position that appears totally unsubstantiated and seems to make no significant reference to eggs and very early life stage invertebrates.

There is extensive research worldwide in respect to effective fish screening options and with every piece of research there invariably appear contradictions. Suffice to say the Applicant might consider running an active research project at SZC to establish the performance of fish screen options in the North Sea, perhaps with the assistance of a local university?

3.3.7* At 2.4.30 it is noted that the Temporary generators (number not quantified) *"…would be regulated through an environmental permit which will set controls on emission levels…".*

WRITTEN REPRESENTATION ENDS