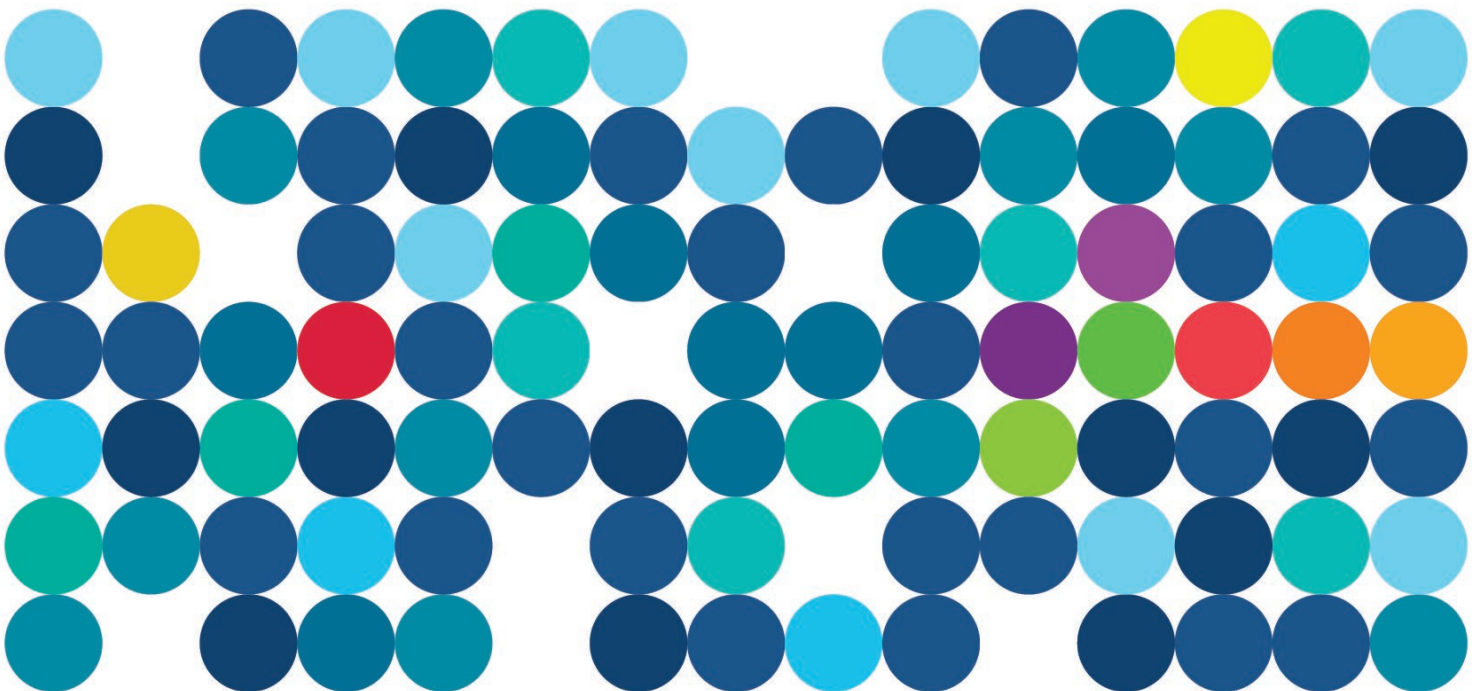


# Alkimos Seawater Desalination Plant

Response to Submissions  
Public Comments

April 2023



# **Alkimos Seawater Desalination Plant**

## **Environmental Review Document**

### **Assessment No. 2210**

#### **Summary of Public Submissions**

The public review period for the Alkimos Seawater Desalination Plant proposed by the Water Corporation commenced on 28 September for a period of four weeks, ending on 28 October 2022. A total of 14 submissions were received regarding the Public Environmental Review document, including from three stakeholder agencies.

Public and agency submissions received during the public review period were provided to you via email on 26 October 2022. In the table provided below, we ask that you please summarise and respond to the issues raised in the submissions.

Additionally, comments from the Department of Biodiversity, Conservation, and Attractions (DBCA) and the Department of Climate Change, Energy, the Environment, and Water (DCCEEW) are attached. The DBCA and DCCEEW comments are required to be addressed in full but do not need to be summarised.

Note that an incomplete answer to any of the issues raised could cause the public to appeal and this would delay the issue of any Ministerial Statement allowing implementation of the proposal by the Minister for Environment. Accordingly, please ensure that you give a full and reasoned answer to each issue.

The Response to Submissions document will be published on the EPA's website.

# Contents

<b>The proposal – General comments</b> .....	3
<b>Benthic communities and habitats</b> .....	4
<b>Coastal processes</b> .....	5
<b>Marine environmental quality</b> .....	6
<b>Marine fauna</b> .....	9
<b>Flora and vegetation</b> .....	14
<b>Landforms</b> .....	19
<b>Subterranean fauna</b> .....	21
<b>Terrestrial environmental quality</b> .....	21
<b>Terrestrial fauna</b> .....	22
<b>Inland waters</b> .....	23
<b>Air quality</b> .....	24
<b>Greenhouse gas emissions</b> .....	24
<b>Social surroundings</b> .....	26
<b>Human health</b> .....	27
<b>Consultation</b> .....	29
<b>Peer review</b> .....	30
<b>Offsets</b> .....	30
<b>Other</b> .....	38

## The proposal – General comments

No.	Submitter	Submission and/or issue	Response to comment
	<p>ANON-TXV1-UQBV-H</p> <p>ANON-TXV1-UQB3-E</p> <p>ANON-TXV1-UQBT-F (Quinns)</p>	<p>The need for a Desalination plant, alternative water sources (including aquafer recharge) and the cost to consumers</p> <p>In fact, the Alkimos proposal suggests that building additional seawater desalination plants is the Water Corporation's preferred and only water source development strategy.</p> <p>Given Perth's unique hydrogeology, the city and its suburbs are fortunate to have the option of further expanding systems of groundwater replenishment using highly treated wastewater. The aquifers beneath the city provide a 'natural' buffer that has encouraged public acceptance of this form of water supply. The Water Corporation is therefore missing an important opportunity to capitalise on public good will and Perth's hydrogeology.</p> <p>We don't need a Desal plant just like the Gold Coast in QLD never did either and now that big white elephant that has never been used and costs millions stands unused and an eyesore. We don't need one here either. What we need is all new homes being built in WA be legislated to have minimum sized water tanks (that can be plumbed into their homes) as part of the home build. this will take pressure off of our existing water source and start getting people being environmentally minded at home. We also need existing home owners being offered subsidies to have water tanks placed on their existing homes an we need corporate subsidies as well so that organizations can also adopt this initiative. Stops water from going down the drain and starts making it being put to good use. Might be a smarter way of saving money as well rather than a Desal plant.</p>	<p>The next new source is currently expected to be required in 2028 to allow for increased demand as a result of the ongoing effects of climate change in southwestern Australia, increasing population within the metropolitan area, and reduction in the Gngangara mound allocation.</p> <p>The Water Corporation conducted a research-based assessment of water option for the IWSS to provide an independent asset based reliable source that can be implemented within the current legislative framework which can produce the required quality and volume of potable water</p> <p>In 2016, as part of Water Corporation's Dry Season Response activities, a review of water source options for the IWSS was completed which covered a range of water source portfolios:</p> <ul style="list-style-type: none"> <li>• Upgrade of existing seawater desalination plants.</li> <li>• New seawater desalination plants.</li> <li>• New groundwater schemes.</li> <li>• Groundwater replenishment (water recycling).</li> </ul> <p>A multi-criteria assessment (MCA) process was developed and applied to the water source options, to evaluate them across the portfolios prioritising options within a source development program. To ensure a comprehensive and balanced approach was achieved for the option assessment, the MCA evaluated the following criteria: technical and design, economic, environmental, social, approvals and land matters. As a result, the water source options selected for initial priority and investigation within a source development program for the IWSS included:</p> <ul style="list-style-type: none"> <li>• ASDP (this Proposal).</li> <li>• Perth SDP 2 (PSDP2).</li> <li>• Eglinton GWTP (this Proposal) and borefield.</li> </ul> <p>While further groundwater replenishment at Woodman Point WWTP and Subiaco WWTP also scored favourably within the MCA, the timeline for investigation and delivery of these source options remains under review and presents significant risk in the event fast-tracking of source delivery is required. In addition, the first full scale groundwater replenishment scheme at Beenyup was not yet operational at the time of the MCA and it was desirable to see this scheme operating</p>

No.	Submitter	Submission and/or issue	Response to comment
			<p>successfully before additional schemes were progressed. As a result, these options were ranked lower on the source priority list at the time of completing the options assessment in 2016. Water Corporation recognises that having a number of source options to consider provides greater flexibility for future source decisions and investigations into alternative source options remain ongoing at this time.</p> <p>Potential locations for new seawater desalination sources to the north and south of Perth have been part of Water Corporation's long-term planning and were published in the planning strategy document <i>Water Forever</i> (2009). Since 2008, twelve new potential desalination plant sites along the coast have been considered by Water Corporation over three separate studies. The sites extend from Lancelin to Binningup and were compared using multiple criteria, broadly categorised as:</p> <ul style="list-style-type: none"> <li>• Cost (capital and operating).</li> <li>• Environmental.</li> <li>• Social.</li> <li>• Technical feasibility.</li> <li>• Water quality.</li> <li>• Integration and demand.</li> <li>• Deliverability.</li> <li>• Land ownership and access.</li> <li>• Local planning.</li> <li>• Approvals (Water Corporation 2022)</li> </ul>
	ANON-TXV1-UQBF-1	I decline the proposal	Refer to response above.

## Benthic communities and habitats

No.	Submitter	Submission and/or issue	Response to comment
	DBCA	<p>A. The Commissioning and Operational Marine Environmental Management Plan (COMEMP) states that removal of benthic communities and habitats (page 4, Appendix G) will be avoided as the intake and diffuser structures will be placed as far as reasonably practical from seagrass beds (~10m radius) and as such the risk</p>	<p>A. Potential loss of habitat has been fully assessed and provided to the DWER for review and approval (ASDP EP Act s 43A Request (Water Corporation 2023c)).</p> <p>B. As shown in Figure 6-2 of the <i>Alkimos Seawater Desalination Plant Environmental Review Document - Public Review Assessment No 2210 (WA): 2019/8453 (Commonwealth)</i> (Water Corporation 2022) (ASDP PER)</p>

Blue text represents February 2023 amendments

No.	Submitter	Submission and/or issue	Response to comment
		<p>of direct impacts is considered low. However, it is noted that the intake zone is mapped as a "BCH" area. It is assumed that this will be moved to an area without seagrass to meet the proponent's commitment to avoid the placement of structures over these habitats.</p> <p>B. The impacts of increased Total Suspended Solids (TSS) be expanded to consider impact to seagrasses.</p> <p>C. The potential impacts of increased smothering and burial be considered for seagrasses.</p>	<p>the intake has been mapped onto an area of macroalgae. The nearest seagrass dominated community is 1000 m from the proposed inlet location, 1500 m from the proposed outlet location and outside the area of potential impact (conservatively assumed to be 100 m from the point of drilling). Potential impacts of reduced light due to elevated TSS on macroalgae were assessed in Table 6-7 of the ASDP PER (Water Corporation 2022) and it was determined that worst-case mobilisation of sediments over a 5-day drilling period per shaft is unlikely to result in a significant and/or prolonged sediment plume/shading. Potential impacts due to persistent elevations in TSS were therefore considered of minor significance. Nevertheless, monitoring and management protocols for managing turbidity to protect BCH are described in the Construction Marine Environmental Management Plan (Attachment A) of <a href="#">ASDP RtS Supporting Document (Water Corporation 2023b)</a>).</p> <p>C. As shown in Figure 6-2 of the ASDP PER (Water Corporation 2022) the intake has been mapped onto an area of macroalgae. The nearest seagrass dominated community is 1000 m from the proposed inlet location, 1500 m from the proposed outlet location and outside the area of potential impact (conservatively assumed to be 100 m from the point of drilling). Potential impacts of smothering due to elevated TSS on macroalgae were assessed in (<a href="#">ASDP EP Act s 43A Request (Water Corporation 2023c)</a>) and considered of minor significance. Nevertheless, monitoring and management protocols for managing smothering to protect BCH are described in the Construction Marine Environmental Management Plan (<a href="#">Attachment A of ASDP EP Act s 43A Request (Water Corporation 2023c)</a>).</p>

## Coastal processes

No.	Submitter	Submission and/or issue	Response to comment
		No submission issues raised	

## Marine environmental quality

No.	Submitter	Submission and/or issue	Response to comment
	<p>ANON-TXV1-UQBT-F (Quinns)</p> <p>DBCA</p>	<p>We want to see ongoing monitoring and public reporting of results. The proposed extension of Marmion Marine Park should be considered, it is important to ensure that the plant does not compromise the park's ecological and use values.</p> <p>The Water Corporation has been a key stakeholder during the Marmion Marine Park extension planning process. Both the saline outfall and desalination intakes are located within candidate areas proposed for general use zoning within the expanded Marine Park.</p>	<p>Operation of the proposed ASDP would be subject to ongoing monitoring in accordance with EPA-approved Environmental Management Plans (EMPs). In relation to discharges to the marine environment, two EMPs were submitted with the Environmental Review Document for the ASDP. The Construction Marine EMP describes the management procedures that will be implemented during the ASDP marine construction phase to prevent and/or minimise impacts to the key marine environmental factors (marine environmental quality, benthic communities and habitats, marine fauna, and social surroundings). The same environmental factors are protected by implementation of Commissioning and Operational Marine EMP once the ASDP begins discharging to the marine environment. Environmental quality criteria specified within each of the marine EMPs are based on the EPA's Environmental Quality Management Framework for Western Australian marine waters (EPA 2016) and aim to ensure that the EPA's objectives for marine environmental quality are achieved.</p> <p>Annual compliance reports will be produced each year that the ASDP is in operation and will be publicly available on the Water Corporation's website, in the same manner that Compliance Assessment Reports are publicly available for the Perth Seawater Desalination Plant and the Southern Seawater Desalination Plant.</p> <p>If approved by the EPA, the ASDP will discharge brine into the marine environment at approx. 3.5 km from the shore and within the boundary of the proposed extension to the Marmion Marine Park. Water Corporation has been working closely with the Department of Biodiversity, Conservation and Attractions (DBCA), the State government agency responsible for planning, implementing and managing marine parks, with respect to the proposed ASDP. In particular, Water Corporation is continuing to work with DBCA to ensure that the operation of the ASDP is consistent with DBCA's social and ecological management objectives for the proposed marine park multiple use zones.</p>
	<p>ANON-TXV1-UQB6-H (DPIRD)</p>	<p>Since the initial proposal, several improvements have been made to the Desalination Project, most notably the decision to site the input and outlet pipes using tunnelling rather than trenching construction. Use of tunnelling should significantly reduce any noise/vibration and turbidity effects on marine biota.</p>	

No.	Submitter	Submission and/or issue	Response to comment
		<p>A. The Department has concerns regarding the potential stressor effects of temperature and salinity including:</p> <ul style="list-style-type: none"> <li>• The Report's description of the diffuser process is superficial and does not provide details of the diffusers' specification or operation.</li> <li>• The results of the water flow modelling provided in the report were not conclusive regarding the adequacy of mixing between outflow waters and the ambient waters.</li> </ul> <p>The Department is concerned that temperature and salinity levels set by EPA's environmental quality management standard may not be met. Of particular concern is the statement in the Report:</p> <p><i>"Data relating to the salinity of the receiving environment is limited because previous monitoring was not contiguous, short-term and/or measured at some distance from the proposed ASDP diffuser. Given the paucity of baseline data, Water Corporation is unable to commit to meeting a percentile-based trigger."</i></p> <p>B. The Department concurs with the Report's support for transparency of information and operation of the Alkimos SDP. In that regard the Department seeks clarification the following:</p> <ul style="list-style-type: none"> <li>• At what stage in the Operation and Construction reporting process DPIRD would be consulted or informed on:</li> <li>• The whole effluent toxicity (Wet) report</li> <li>• The report on the diffuser performance and validation report (within two months of the diffusers commission)</li> <li>• The Annual compliance reports</li> </ul>	<p>A. Refer to the proponent response to EPA Services comment 6 on Marine Environmental Quality in the <a href="#">ASDP RtS Supporting Document (Water Corporation 2023b)</a> for consideration of stressor effects and management.</p> <p>B. Reports will be submitted to the regulator for assessment and made available to stakeholders and the general public via Water Corporation's website.</p>
	<p>ANON-TXV1-UQB2-D (WAFIC)</p> <p>DBCA</p>	<p>A. WAFIC requests the Commissioning and Operational Marine Environmental Management Plan prioritises the completion of a comprehensive baseline study to identify salinity tolerances of local aquatic organisms and provide a quantitative base reference against which future changes to adjacent habitats are measured.</p>	<p>A. Refer to the proponent response to EPA Services comment 6 in the <a href="#">ASDP RtS EPA Comments (Water Corporation 2023a)</a> for consideration of salinity thresholds.</p> <p>B. Potential impacts of the proposal (including cumulative impacts on Marine Fauna) have been thoroughly assessed in the ASDP PER (Water Corporation 2022). Potential impacts are considered manageable under the EPA's environmental quality management framework for Western Australia's marine</p>

Blue text represents February 2023 amendments



No.	Submitter	Submission and/or issue	Response to comment
		<p>B. Species relocation and declines in health and mortality, leading to localised ecosystem regime shifts. We have particular regard for Roe's abalone populations which have already suffered declines from the nearby Ocean Reef Marina Development and believe the cumulative impacts from this proposal will be significant.</p> <p>C. WAFIC supports the use of salinity and temperature loggers to monitor the dilution of stressors around the outfalls. However, these reference sites are limited to locations beyond the influence of ASDP plumes, so to avoid the collection of potentially misleading data we recommend additional loggers be placed within proximity to ASDP plumes where stressors will be significant.</p> <p>D. The proposal recognises a lack of baseline data for salinity in adjacent habitats from the proposed diffusers. Without baseline data, it is difficult to identify the salinity tolerances of local marine species. This is also crucial in providing quantitative guidelines which comparisons can be made during operations.</p> <p>E. Maximum salinity tolerances cannot be used to justify the 'the risk posed by osmotic stress is negligible'. These tolerances are intended to be sustained for short periods of time after which negative implications are usually observed. This table also lacks diversity in references, with majority being more than 20 years old.</p> <p>F. Diffuser performance is only validated at the boundary edge of the Low Ecological Protection Area (LEPA). Additional monitoring sites should be added to include sites within the LEPA, with proximity to diffusers.</p> <p>G. Based on available information provided by the proponent, the Low Ecological Protection Area (LEPA) around the saline outfall does not fall within Candidate Area 3. However, as detailed in the Water Corporation's modelling, under certain currents/wind conditions, hypersaline water may drift out of the LEPA along the seabed into candidate Area 3, but this is not expected to have any notable impact.</p> <p>H. The salinity should be constrained to 35.7 – 37.7 parts per thousand, and based on the proponent's literature</p>	<p>environment (EPA 2016) and are not expected to compromise the EPA's environmental objectives for Marine Fauna.</p> <p>C. Salinity and temperature will be monitored at three locations on the Low Ecological Protection Area boundary (100 m from the discharge point) as well as at two reference sites using calibrated loggers deployed for a minimum period of six months between December and May. Loggers will be positioned at the northern, southern and western sides of the LEPA boundary and at reference sites located north and south of the diffuser, approximately 0.5 m from the seafloor. The LEPA boundary is the point where the regulator expects compliance with salinity and temperature criteria will be maintained.</p> <p>D. The risk due to osmotic stress has been assessed using a multiple-lines of evidence approach including assessment against known tolerances, assessment against salinity criteria and assessment via toxicity testing of the effluent. The risk assessment was outlined in the ASDP PER (Water Corporation 2022) and further detail specific to western rock lobsters and abalone is provided in Section 3 of <a href="#">the ASDP RtS Supporting Document (Water Corporation 2023b)</a>.</p> <p>E. The diffuser performance assessment makes a direct comparison between the measurements and the expectations derived from the model to ensure the model faithfully replicates the hydrodynamic and dispersal processes. As a result, the point where the comparison is conducted is not critical as long as the modelling and measurements are based on the same location. The LEPA boundary was the focus of the modelling (for compliance purpose) and represents the best location for collecting validation data to facilitate a like vs like comparison.</p> <p>F. Noted</p> <p>G. Noted</p> <p>H. Noted</p>

No.	Submitter	Submission and/or issue	Response to comment
		review, the published tolerance threshold for temperate marine organisms is between 45 and 70 parts per thousand (Table 5-6, page 98 of PER Document). The highest salinity will be concentrated for the most part in the 70m buffer around the outlet. Accordingly, while hypersaline water may drift along the seafloor into Candidate Area 3, according to available modelling, this is not likely to have a significant impact.	
	ANON-TXV1-UQBP-B	My thoughts on Desal are not high as they are high energy users plus they usually in my experience with RO plants they have a high percentage of waste water which if taking salt from the water this waste must be higher than the original water intake, I would assume.	A thorough planning process assessed a range of water supply options prior to pursuing the Proposal and before construction of the other desalination plants. Desalination provides the secure water source required to meet the needs of a growing population that doesn't depend on rain. The desalination plant has been designed to ensure the discharge has a minimal impact on the surrounding environment. Due to the high energy swell, the discharged concentrated seawater mixes quickly. The plant discharges are required to meet stringent environmental protection criteria.

## Marine fauna

No.	Submitter	Submission and/or issue	Response to comment
	ANON-TXV1-UQB2-D ANON-TXV1-UQBP-B ANON-TXV1-UQB6-H (DPIRD) DBCA	<p>A. Reef structures in the Alkimos area provide important nursery and refuge habitats for a variety of demersal fish and commercially important invertebrates, including western rock lobster, Roe's abalone and octopus. The direct or indirect disturbances from this proposed development could potentially result in localised depletions.</p> <p>B. The seawater intake can lead to impingement and entrainment of commercially valuable species, particularly at post-larval and juvenile stages, which can cause localised population depletions. Low flow rates should be a requirement to mitigate these issues and the implementation of regular monitoring of intake screens to quantify such impact upon aquatic species is also recommended.</p>	<p>A. Refer to the proponent response to EPA Services comment 2a on Marine Fauna in the <a href="#">ASDP RtS EPA Comments (Water Corporation 2023a)</a> for an assessment of the potential impacts on western rock lobster and abalone.</p> <p>B. Refer to the proponent response to EPA Services comment 2b, 2c and 2d on Marine Fauna in the <a href="#">ASDP RtS EPA Comments (Water Corporation 2023a)</a> for consideration of impingement and entrainment.</p>

No.	Submitter	Submission and/or issue	Response to comment
		<p>C. I would like to know what salt levels of the discharge water from the desal plant will be? Knowing that western rock lobster do not like change in salinity, I am sure there will be many other species of marine life that do not like this higher salinized water.</p> <p>D. The report provides no timelines for the construction of the undersea pipelines and related structures. The timing of such construction events and pipeline construction needs to be cognisant of peak commercial and recreational fishing activity. The peak recreational fishers potting activity for rock lobster in the Alkimos area will occur from mid-November until year end. During this period rock lobster will be moving from coastal reefs to offshore waters to begin their “whites” migration along the seabed. The Department recommends that construction should not occur during this period.</p>	<p>C. The salinity of the discharge water is expected to fall between 69.3 and 71.2 ppt (depending on the time of year) or roughly double the salt concentration of the source seawater. Refer to the proponent response to EPA Services comment 2a on Marine Fauna in the <a href="#">ASDP RtS EPA Comments (Water Corporation 2023a)</a> for an assessment of the potential impacts on western rock lobster.</p> <p>D. Tunnelling the undersea pipeline is expected to take 18 months with drilling conducted in four locations spread over a total period of two months. The type of non-impulsive noise generated by these activities (i.e. vibrations) is not expected to impact on western rock lobster behaviour. Short periods of elevated construction activity associated with vessel mobilising/demobilising materials and equipment, jack up/jack down, and transit are not expected to induce any physiological impacts on western rock lobster and behavioural impacts are expected to be localised and short lived. Refer to the proponent response to EPA Services comment 2a on Marine Fauna in the <a href="#">ASDP RtS EPA Comments (Water Corporation 2023a)</a> for an assessment of the potential impacts on western rock lobster.</p>
	DCCEEW	<p>DCCEEW has now reviewed the marine impact study for the Alkimos Desal Plant. We understand the assessment is looking at impact of construction noise, though the modelling doesn't try to investigate all sources. Our comments, observations and recommendations for DWER are below.</p> <p>The published ERD package includes a new marine noise study of specific relevance to EPBC listed marine and migratory species (Australian Sea-lion (<i>Neophoca cinerea</i>) - Vulnerable, Southern Right Whale (<i>Eubalaena australis</i>) - Endangered and Humpback Whale (<i>Megaptera novaeangliae</i>) – Vulnerable), and others.</p> <p>A. While the modelling is focussed on the health impact of noise to marine species, the modelling and metrics appear reasonable for the purpose, modelling for behavioural impacts is much more limited and should be better explained for any species that are at risk.</p> <p>DCCEEW recommendation: Please provide further explanation as to the suitability of the behavioural impact</p>	<p>Water Corporation Response: Items A, B, C.</p> <p>The noise impact assessment commissioned by Water Corporation (GHD 2022) focuses on the potentially significant impacts to vulnerable species to avoid/manage/monitor/mitigate likely and significant impacts. The GHD (2022) survey is typical of underwater noise assessments applied to contemporary environmental impact assessment in WA. The potential for behavioural impacts is less thoroughly considered given a lack of scientific understanding required to develop credible triggers/thresholds (see next paragraph) and the likelihood that over the short construction period impacts on behaviour will be transient and of low magnitude.</p> <p>Behavioural impacts in response to anthropogenic noise are difficult to quantify due to difficulty attributing observed behavioural change to specific acoustic stimulus, a vast combination of potential avoidance metrics/behaviours, significant variability in the type and magnitude of man-made sound and large within-species variability due to factors such as prior exposure, sensitization, age, gender and health (Erbe et al., 2018). As a result, credible criteria to determine behavioural response generalised across species, populations, environments and situations are not well defined. Further, most studies on behavioural impacts of underwater noise on marine fauna (such as whales)</p>

Blue text represents February 2023 amendments

No.	Submitter	Submission and/or issue	Response to comment
		<p>modelling to identify impacts and implications for the species concerned. Modelling should have regard to any impact criteria available in conservation advice, recovery plans or guidance material.</p> <p>B. Generally the report's conclusions on health impacts leap from a technical measurement (e.g. VHF-hearing whales staying within 450m of the noise source for 12 hours may suffer damage) to an acceptability conclusion (this is ok) without detailed discussion of why this conclusion is reasonable. The only relevant statement appears to be based around the expectation that the fauna will move before damage occurs.</p> <p>DCCEEW recommendation: DWER should seek further discussion or advice on the acceptability of these distance-based impacts and the response of marine fauna. Please ensure discussion and assessment of impacts has regard to available conservation advice, recovery plans, guidance material, etc available for the relevant species.</p> <p>C. The report's focus is on health impacts, with limited information (and no modelling) of behavioural impacts to marine species. The assessment officer will need to seek further modelling and/or expert advice to predict and understand these impacts prior to making a decision on acceptability. Behavioural impacts may include:</p> <ul style="list-style-type: none"> <li>A. Use of the area for foraging and breeding;</li> <li>B. Departure of fauna from the area entirely;</li> <li>C. Stress response impacts.</li> </ul> <p>DCCEEW recommendation: DWER should seek further modelling to identify behaviour thresholds and advice on the acceptability of behavioural changes resulting from exceeding these thresholds. Discussion of impacts and assessment should have regard to relevant conservation advice, recovery plans, guidance material, etc available for the relevant species.</p>	<p>relate to the use of air-guns during seismic surveys (e.g. DEWHA 2008, Salgado-Kent et al. 2016). In WA, objectives-based management measures are applied where an environmental outcome is not measurable against criteria.</p> <p>On the basis that there is an absence of scientific data to inform the behavioural response of marine fauna to underwater noise, rather than monitor for a specific outcome as defined by triggers/thresholds, objective based management defines the desired state for an environmental factor and describes the management actions that must be implemented to ensure that state is achieved. The Proposal already intends to apply objective based management provisions to manage potential impacts on marine fauna due to underwater noise (see Table 2.1 in the Construction Marine Environmental Management Plan; Attachment A of <a href="#">ASDP RtS Supporting Document (Water Corporation 2023b)</a>). With the objective being to protect sensitive marine fauna from noise-related impacts, the management actions include:</p> <ul style="list-style-type: none"> <li>• conducting construction activities outside of key marine mammal migration periods wherever practicable,</li> <li>• developing an appropriate alternative management strategy based on enforcement of a suitable marine mammal exclusion zone if migration periods cannot be avoided,</li> <li>• prior to construction, ensuring contractors and the proponent have a common understanding of the management procedures for marine mammal interactions, and</li> <li>• (if necessary) the extent of the marine mammal exclusion zone.</li> </ul> <p>Management measures will be finalised in the contractor's Project Execution Plan which will be submitted to the DWER for approval. While the objectives-based protocols for managing physiological impacts of underwater noise on marine fauna that were included in the Construction Marine Environmental Management Plan are based on the outcome of the GHD (2022) assessment, the same provisions would be applied to manage behavioural responses. On this basis, Water Corporation proposes that despite science providing very limited tools to robustly assess for potential impacts on marine fauna behaviour, the objectives-based management protocols (i.e. avoid period where fauna are present and/or exclusion zones) ensure that those impacts on the most sensitive species are broadly managed regardless.</p>

Blue text represents February 2023 amendments

No.	Submitter	Submission and/or issue	Response to comment
		<p>E. The report cites mitigation and management measures that are not provided.</p> <p>DCCEEW recommendation: DWER should seek a copy of the proposed mitigation and management measures, including a risk assessment and management plan.</p> <p><b>Additional Comments DCCEEW (18 Jan 23)</b></p> <p>Based on the Water Corporation's response DCCEEW is generally satisfied the provided Marine Noise Study (August 2022) provides adequate consideration of potential impacts to the Australian Sea-lion (<i>Neophoca cinerea</i>), Southern Right Whale (<i>Eubalaena australis</i>) and Humpback Whale (<i>Megaptera novaeangliae</i>) that may arise from the proposed action, subject to the following 3 points:</p> <ol style="list-style-type: none"> <li>1. Response to items A, B and C needs to be incorporated into the final ERD package.</li> <li>2. The proposed "appropriate alternative management strategy based on enforcement of a suitable marine mammal exclusion zone if migration periods cannot be avoided" needs to be provided with justifications, be approved by DCCEEW, and then be incorporated into the final ERD package.</li> <li>3. Response E: The described mitigation and management measures should be justified against objective criteria and appended to the Marine Noise study.</li> </ol>	<p>Water Corporation Response: Item E</p> <p>Objectives-based protocols for managing physiological impacts of underwater noise on marine fauna are included in the Construction Marine Environmental Management Plan (Attachment A of ASDP RTS Supporting Document (Water Corporation 2023b)). These protocols are broadly consistent with those in the EPBC Act policy statement 2.1 (DEWHA 2008) for managing offshore seismic surveys.</p> <p><b>Response to Additional Comments DCCEEW (18 Jan 23)</b></p> <ol style="list-style-type: none"> <li>A. The State environmental assessment process does not update the ERD package. The Response to Submissions Document forms a component of the assessment documentation for consideration in assessment. The ERD is therefore not required to be updated.</li> <li>B. The ASDP Construction Marine Environmental Management Plan (CMEMP) included a management target to undertake construction activities outside of the May to November marine mammal migration period where practicable, and if this was not possible, an appropriate alternative management strategy was to be developed, based on the enforcement of a suitable marine mammal exclusion zone. For large construction project such as ASDP, the details of any alternative management strategies are typically developed in consultation with the contractor and included in the contractor-specific Project Execution Plan once the final design and construction methods are known. In this instance, Water Corporation acknowledges the importance of identifying appropriate alternative management strategies in advance and, in consultation with potential contractors, have prepared a standalone ASDP Marine Mammal Management Plan (MMMP), which is appended to the revised CMEMP.</li> </ol> <p>The MMMP is an objective-based management plan that was prepared according to the EPA's (2021) <i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans</i> and includes management targets, management actions, monitoring and reporting. These objective-based provisions (Table 2.1 of the MMMP) are based on best practice for managing underwater piling noise developed by the South Australian Government (DPTI 2012) and for seismic surveys as described in <i>EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales</i>.</p> <p>DPTI (2012) suggests that noise from high intensity sources (piling and seismic surveys) can be suitably managed by implementing their approach and for the much lower noise intensity from the construction activities</p>

Blue text represents February 2023 amendments

No.	Submitter	Submission and/or issue	Response to comment
			<p>expected for ASDP (i.e. drilling) temporal constraints would be unusual, inconsistent with the risk, inconsistent with the described best practice and unnecessary. Temporal constraints could even be detrimental if they extend the duration of noise generating activities by forcing construction into unfavourable conditions. Noting this, Water Corporation propose to manage the potential impacts of underwater noise on marine mammals – particularly the Southern Right Whale (<i>Eubalaena australis</i>) and Humpback Whale (<i>Megaptera novaeangliae</i>) – by avoiding the May to November migration period where practicable and where avoidance cannot be achieved, by implementing the MMMP.</p> <p>Table 2.1 of the revised CMEMP includes the following management actions to mitigate potential impacts of underwater noise on marine fauna:</p> <ul style="list-style-type: none"> <li>• Implement appropriate risk mitigation strategies to minimise potential noise-related impacts.</li> <li>• Construction will be conducted outside of the May – November marine mammal migration periods, OR within an appropriate marine mammal exclusion zone wherever practicable as described in the Marine Mammal Monitoring and Management Plan (MMMP) (Appendix A).</li> </ul> <p>C. As documented in the response to item 2 (above), a standalone ASDP Marine Mammal Management Plan (MMMP) (Appendix A) has been prepared and is appended to the revised CMEMP. The MMMP is an objective-based management plan that includes management targets, management actions, monitoring and reporting. These objective-based provisions (Table 2.1 of the MMMP) are based on best practice for managing underwater piling noise developed by the South Australian Government (DPTI 2012) and for seismic surveys as described in <i>EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales</i>.</p> <p>The MMMP (Appendix A) proposes a conservative marine mammal safety zone of 1 km radius from the source of the underwater construction noise, which is twice the maximum radius within which temporary threshold shift (TTS) in marine mammals is expected to be restricted (based on the acoustic modelling of the construction activities completed by GHD (2022); attached as Appendix C of the ERD (Water Corporation 2022)). The proposed safety zone approach is the accepted management and mitigation procedure for high intensity (piling and seismic survey) noise generating activities, which are of higher intensity than the construction methods proposed for the ASDP. Use of the TTS impact zone as the basis for defining the marine mammal safety zone is in line with the approach outlined</p>

No.	Submitter	Submission and/or issue	Response to comment
			<p><i>in EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales.</i></p> <p>The MMMP (Appendix A) has been appended to the revised CMEMP, which is the management plan that will be implemented during ASDP construction activities. It is not appropriate to append the MMMP to the marine noise study (GHD 2022; attached as Appendix C of the ERD ERD (Water Corporation 2022)), which was commissioned to inform an appropriate management framework rather than to stipulate the framework itself.</p>
	ANON-TXV1-UQB2-D	<p>A. WAFIC is pleased to see communication with commercial fishers has been identified in the Social Impact Assessment and acknowledges this consultation will be important in managing potential impacts and conflicts, especially surrounding construction activities and location of exclusion zones. WAFIC requests this ongoing consultation is a requirement of the commissioning and operation phases.</p> <p>B. Impacts associated with brine reinjection were assessed as minor. This assessment has been made on the assumption that brine will be effectively dispersed. The associated impacts of brine reinjection are of importance particularly in relation to benthic habitats for commercially valuable species and should not be dismissed based on assumptions.</p>	<p>A. Water Corporation acknowledges WAFIC's comment regarding consultation being important in managing potential impacts and conflicts, particularly pertaining to construction activities and location of exclusion zones. Water Corporation has committed to ongoing engagement with stakeholders, including WAFIC, throughout planning and design, construction, and operation of the proposed Alkimos Seawater Desalination Plant. Water Corporation will establish a Community Reference Group to support this consultation process and will be pleased to continue to communicate directly with WAFIC on any matters relevant to its stakeholders.</p> <p>B. The assessment of brine dispersal was based on hydrodynamic modelling. The model uses complex computer simulations to project the movement of water and contaminants taking into account water levels, tides, currents and waves. The models make accurate projections of discharge plume behaviour (including dilution) and allow comparison of expected contaminant distribution with environmental criteria.</p>

## Flora and vegetation

No.	Submitter	Submission and/or issue	Response to comment
	ANON-TXV1-UQB8-K	The literature and data by the early 2000's have shown conclusively that <i>Phytophthora cinnamoni</i> does not exist in	Although through the Ecoscape (2018) site assessment dieback was not detected, management plans have been implemented to ensure vehicle, equipment and human movement does not introduce this to the site. Water

Blue text represents February 2023 amendments



No.	Submitter	Submission and/or issue	Response to comment
		<p>the Swan Coastal alkaline soils where the Water Corporation Alkimos Project is located. Glevan confirmed this known fact.</p> <p>The public data by the early 2010's showed that that at least 4 other pathogenic introduced Phytophthora species were known at many sites in the same alkaline soils and the Project areas. Glevan Assessment report did not mention this fact.</p> <ul style="list-style-type: none"> <li>• <i>Phytophthora multivora</i></li> <li>• <i>Phytophthora inundata</i></li> <li>• <i>Phytophthora nicotianae</i></li> <li>• <i>Phytophthora boodjera</i></li> </ul> <p>A numbers of papers by the late 1990's showed that a natural pathogenic fungus, <i>Armillaria luteobubalina</i>, was very common along the western and southern coastal alkaline soil areas of WA and was a major threat to the plant communities in the area and needed to be considered, along with development, as a major threat to the native plant communities in these areas. The Glevan Assessment b report did not consider this fact.</p> <p>Thus the results and recommendations made by Consultants on the effects of the Water Corporation Alkimos Project on the general vegetation Dieback caused by introduced or native plant-pathogens in the same area is suspect. Identification methods for <i>A luteobubalina</i> and ecological characteristic to look for that indicate possible infestation by this pathogen are given. Glevan reports seeing similar manifestations of <i>A luteobubalina</i> infestations in their field work in the project area.</p>	<p>Corporation is committed to addressing the information provided in submission ANON-TXV1-UQB8-K will include the following dieback and fungal species in the TCEMP for management:</p> <ul style="list-style-type: none"> <li>• 1. <i>Phytophthora multivora</i></li> <li>• 2. <i>Phytophthora inundata</i></li> <li>• 3. <i>Phytophthora nicotianae</i></li> <li>• 4. <i>Phytophthora boodjera</i></li> <li>• 5. <i>Armillaria luteobubalina</i></li> </ul> <p>The amended TCEMP is included in the <a href="#">ASDP RTS Supporting Document (Water Corporation 2023b)</a> Attachment E</p>
	ANON-TXV1-UQBT-F	<p>A. The construction of the plant and the pipeline to the Wanneroo reservoir will impact remnant vegetation including sections of Bush Forever area and significant ecological communities. We note the alignment of the pipeline to make use of roads and property boundaries in order to limit clearing of vegetation. Even so, the proposal will have an impact footprint of 44ha. Detailed design and the management of construction activity must</p>	<p>A. The Water Corporation proposal is in concept design and continues to apply the mitigation hierarchy including reviewing the requirement for clearing of native vegetation has been avoided along large sections of the pipeline by following road reserves and already cleared areas and tracks.</p>

Blue text represents February 2023 amendments



No.	Submitter	Submission and/or issue	Response to comment
		<p>ensure that the clearing footprint is as contained as possible.</p> <p>B. Based on the last published vegetation extent statistics (DBCA, 2018), only 34% of preEuropean vegetation remains on the Swan Coastal Plain. Considering the limitations of the vegetation extent mapping which captures also degraded areas (thus the published figures are considered an overestimate of the real extent), then considering further loss of vegetation that occurred just locally since 2018 and the extent of already approved development, it is reasonable to conclude that the vegetation extent status on the Swan Coastal Plain has reached the 30% threshold. Therefore, any future projects should only be allowed on land already cleared. It is difficult to accept that Main Roads would not accommodate the required pipelines within verges of road reserves.</p>	<p>B. The Water Corporation will continue to minimise impact to native vegetation on the Swan Coastal Plain.</p>
	DBCA	<p>A. 'Flora, Vegetation and Fauna Assessment - Spring 2017' (AECOM, 2018b) – not provided in the appendix of the consolidated report.</p> <p><b>Additional Comment DBCA (6 Feb 23)</b>  DBCA was unable to locate the AECOM 2018b report within the Alkimos Seawater Desalination Plant: Flora and Vegetation Consolidation Report' (Stantec, 2022) which was the document included in the "Environmental Review" available on the EPA website. This is the area that DBCA was directed to as part of the 'request for advice' from DWER. Further queries to Water Corporation during DBCA's assessment were unable to locate this report and it was therefore not assessed. On review of the AECOM 2018b memorandum available online, as the document does not include figures, DBCA is unable to review the study area covered by the 2018 surveys or the spatial results of these surveys. It is noted that the survey did identify an occurrence of a State listed TEC (SCP26a).</p> <p>B. The level of confidence in the findings and accuracy of the summary of residual impacts presented in the ERD; in particular, advise on potentially impacted State-listed Floristic Community Types and if required, any recommended further work. Due to the omission of the</p>	<p>A. <a href="http://www.epa.gov.au/proposal/alkimos-seawater-desalination-plant">Water Corporation reconfirms that the www.epa.gov.au/proposal/alkimos-seawater-desalination-plant website under the '1. Referral' tab supports the 'Flora, Vegetation and Fauna Assessment - Spring 2017' (AECOM, 2018b)</a> as provided in Appendix G of the Alkimos Seawater Desalination Plant, Environmental Review Document (Water Corporation 2022) submitted to the EPA on 12 April 2019 for decision on assessment as part of the Proposal referral documentation. The Appendix G (AECOM 2018b) was subject to public comment published on the EPA website from 15 May to 21 May 2019 and has remained available to the public since this period. <a href="#">With reference to TEC information all surveys prior to 2021 are consolidated in Appendix K (Stantec 2021) of the ASDP Environmental Review Document – Public Review (Water Corporation 2022a). Additional TEC surveys are reported in the ASDP Response to Submissions – Supporting Document (Water Corporation 2023b) Appendix K (Anders 2023; GHD 2023)</a></p> <p>B. Water Corporation acknowledges the survey gaps in the information presented including detailed analysis to determine FCT's. Water Corporation since publishing the ASDP ERD (Water Corporation 2022) has commissioned further surveys to inform data gaps, please refer to supporting <a href="#">ASDP Response to Submissions – Supporting Document (Water</a></p>

Blue text represents February 2023 amendments

No.	Submitter	Submission and/or issue	Response to comment
		<p>AECOM 2018b assessment and the exclusion of areas from the Study area (Figure 9-2 of the ERD), environmental information within a large portion of the development envelope (DE) could not be reviewed. Consequently, DBCA can not provide advice regarding the accuracy of the identified residual impacts across the entirety of the project area.</p> <p><b>Additional Comment DBCA (6 Feb 23)</b>  It is noted that a further survey report was provided with the RtS documentation (FCT Definition Study, GHD, Jan 2023). This report focused on the determination of floristic community types in a section of the study area. Following review of the report DBCA considers the report conclusions regarding the study area's FCTs are appropriate. It is noted that a targeted flora survey was not conducted as part of the GHD survey despite the area containing records of threatened flora. The presence of threatened flora in this section of the study are therefore has not yet been addressed.</p> <p>C. The ERD is updated to focus on those values which occur in the DE and not the Study area, with the terminology used in relation to the DE, Disturbance Footprint (DF), and Impact Footprint (IF) being consistent across the supporting documentation and the ERD.</p> <p>D. Spatial data related to quadrat locations and FCT extents should be provided with the report. - Include quadrats Alk05, Alk08, Alk10 and Alk20 in FCT analysis where vegetation is in good or better condition - Future analysis of Swan Coastal Plain FCTs should also include analysis against the Gibson et al. (1994) dataset.</p> <p><b>Additional Comment DBCA (6 Feb 23)</b>  Additional data and analysis in relation to the AECOM 2018a report was not provided, therefore this comment has not been addressed. It is noted that figures showing FCT extents which align with PECs and TEC's are included in the ASDP RtS Supporting Document (Water Corporation 2022c) - Figure 9-3ah. which partially addressed this recommendation.</p> <p>E. Ecoscope include all quadrat data from the Gibson et al. (1994) dataset for FCT analysis as per Methods for survey</p>	<p><a href="#">Corporation 2023b</a>). An area of 0.11 Ha of FCT20a/28 remains undefined and Water Corporation will undertake further survey to accurately define the area of FCT prior to commencement of works. Water Corporation commit to avoid all FCT 20a in the implementation of this proposal.</p> <p><a href="#">An additional targeted flora survey was completed by SLR (2023) and is provided in the ASDP Response to Submissions – Supporting Document (Water Corporation 2023b) Appendix K (Anders 2023; GHD 2023).</a></p> <p>C. In the <a href="#">ASDP Response to Submissions – Supporting Document (Water Corporation 2023b)</a> section 5 focuses on impacts within the development envelope.</p> <p>D. Refer to response B and Water Corporation reaffirms to commitment of avoid FCT 20a if it is identified within the development footprint.</p> <p><a href="#">With reference to TEC, PEC and FCT information all surveys prior to 2021 are consolidated in Appendix K (Stantec 2021) of the ASDP Environmental Review Document – Public Review (Water Corporation 2022). Additional surveys are reported in the ASDP Response to Submissions – Supporting Document (Water Corporation 2023b) Appendix K (Anders 2023; GHD 2023).</a></p> <p>E. Refer to response B, <a href="#">Water Corporation is unable to have the AECOM (2018) report updated and has undertaken further surveys to support the</a></p>

Blue text represents February 2023 amendments

No.	Submitter	Submission and/or issue	Response to comment
		<p>and identification of Western Australian threatened ecological communities, Species and Communities Program (2022).</p> <p><b>Additional Comment DBCA (6 Feb 23)</b> A revised Ecoscape report was not provided with the RtS documentation therefore this comment has not been addressed</p> <p>F. If confirmation of ‘undetermined’ FCT’s on site is required - - weed species should be excluded from the analysis; - - quadrat photographs should be provided to assist in evaluating FCT assignments; and - additional survey and rescoring of quadrats, earlier in spring, should be undertaken.</p> <p><b>Additional Comment DBCA (6 Feb 23)</b> FCT Analysis should also be consistent with DBCAs’ Methods for survey and identification of Western Australian threatened ecological communities, Species and Communities Program’ (2022). It is not clear if the FCT analysis of undetermined FCTs in the Strategen 2017 report is required. This remains outstanding however as no new information was provided</p> <p>G. Additional targeted flora surveys should be undertaken within the DE to adequately identify threatened and priority flora species, in particular Melaleuca sp. Wanneroo (G. J. Keighery 16705) and Eucalyptus argutifolia.</p> <p><b>Additional Comment DBCA (6 Feb 23)</b> Targeted flora surveys, for both threatened flora species listed, and in relevant sections of the study area, have not yet been undertaken*. Surveys should be undertaken at the appropriate time of year and be completed to inform the impact assessment. <i>*DBCA understands a targeted survey for threatened flora species will be conducted at the end of Jan 2023</i></p> <p>H. The ERD should be reviewed and revised accordingly to accurately reflect the ecology of the relevant species’ and communities; provide an accurate assessment of State listed impacts; and provide an accurate reflection of the results of on- ground surveys.</p> <p><b>Additional Comment DBCA (6 Feb 23)</b></p>	<p><b>assessment.</b> Water Corporation will apply appropriate FCT analysis as required by appropriate EPA technical guidance. Water Corporation will apply appropriate FCT analysis as required by appropriate EPA technical guidance. With reference to TEC, PEC and FCT information all surveys prior to 2021 are consolidated in Appendix K (Stantec 2021) of the ASDP Environmental Review Document – Public Review (Water Corporation 2022a). Additional surveys are reported in the ASDP Response to Submissions – Supporting Document (Water Corporation 2023b) Appendix K (Anders 2023; GHD 2023)</p> <p>G. Water Corporation completed a survey for Melaleuca sp. Wanneroo as requested (SLR 2023a). The survey report is included in ASDP Response to Submissions – Supporting Document (Water Corporation 2023b) Appendix K.</p> <p>H. Water Corporation acknowledges the survey gaps in the information presented including detailed analysis to determine FCT’s. Water Corporation since publishing the ASDP ERD (Water Corporation 2022a) has commissioned further surveys to inform data gaps, please refer to supporting document ASDP RtS Supporting Document (Water Corporation 2022c). Additional information is included in ASDP Response to Submissions – Supporting Document (Water Corporation 2023b) Appendix K.</p> <p>I. Water Corporation has committed to inform survey gaps Water Corporation has committed to implementing the TCEMP, Attachment E, ASDP RtS Supporting Document (Water Corporation 2023b) and Water Corporation acknowledge DBCA as a key stakeholder. Water Corporation commits to</p>

Blue text represents February 2023 amendments

No.	Submitter	Submission and/or issue	Response to comment
		<p>Until surveys and analysis are completed, revised where necessary and reviewed, an accurate reflection of project impacts cannot be confirmed</p> <p>I. Additional assessment should focus on:</p> <ul style="list-style-type: none"> <li>the determination of the presence and extent of the State listed TECs SCP26a and SCP20a – e.g. in the Carabooda Tank Site (proposed offset) and pipeline corridor. To provide context of impacts, the full extent of identified occurrences should be identified during the assessments.</li> <li>the potential location of threatened flora species Eucalyptus argutifolia and Melaleuca sp. Wanneroo (G.J. Keighery 16705) within and adjacent the DE and proposed offset sites.</li> </ul> <p><b>Additional Comment DBCA (6 Feb 23)</b> Additional surveys should be undertaken at the appropriate time of year and with analysis of results completed to inform the impact assessment.</p> <p>J. A detailed construction environmental management plan is to be prepared, prior to the project commencing, to address specific mitigation and management of direct and indirect project attributable impacts. DBCA should be consulted in relation to the mitigation and management of BC Act values and conservation estate</p> <p>K. Avoidance of direct impacts to conservation estate, particularly encroachment into Neerabup National Park, should be avoided at the detailed design stage.</p> <p><b>Additional Comment DBCA (6 Feb 23)</b> Noted, DBCA should be contacted early if the development envelope encroaches any areas of the national park, irrelevant of the vegetation value site contains.</p>	<p>avoid further impacts to vegetation values in Neerabup National Park.<b>Additional comment</b> The area of Neerabup National Park proposed to be impacted by ASDP is already impacted through the implementation of the State Government infrastructure project 'Romeo Road works between the Mitchell Freeway extension and Wanneroo Road'. No additional impact to the Neerabup National Park is proposed.</p>

## Landforms

No.	Submitter	Submission and/or issue	Response to comment
	ANON-TXV1-UQBT-F (Quinns)	<p>Design and construction should protect the landforms</p> <p>The dune landforms at Alkimos have been recognised as significant in representing geomorphic development of the</p>	<p>Section 5 of the Response to Submissions Supporting Document (Water Corporation 2023b) details further assessment of landforms in relation to the proposal.</p>

Blue text represents February 2023 amendments

No.	Submitter	Submission and/or issue	Response to comment
		<p>coast. We are disappointed that past planning decisions have enabled development affecting the integrity of the dunefield here. As far as possible the design and construction of the plant should limit further impacts on landforms. The management of the conservation zone in the Alkimos water precinct should protect the dunes.</p>	<p>The proposal impacts 4.64 ha of the Quindalup South Third Dune Phase (Q3) within Area 10b. Given Area 10b was protected in Ministerial Statement 722 (through the appeals process), Water Corporation commit to the implementation of offset strategies to counterbalance the Significant Residual Impact (SRIs) to landforms within Area 10b.</p> <p>The Proposal can, therefore, be managed to meet the EPA's objective for landforms "To maintain the variety and integrity of significant physical landforms so that the environmental values are protected".</p>
	<p>ANON-TXV1-UQB1-C DMIRS with attachment</p>	<p>The proposal area intersects a registered State Geoheritage Site, specifically Geosite 2, Alkimos Dune Complex. This site was officially added to the Register of State Geoheritage Sites at the listing's inception in 2003, but was first identified as a site of significance in 1979 (Lemmon et al., 1979).</p> <p>It should be noted that in GSWA's opinion, the protection of the geoheritage values should be ranked equally important as the more commonly considered conservation values of flora and fauna or culture; however, these considerations have previously not been given equal weighting.</p> <p>The land owned by the Water Corporation contains the largest unaltered extent of dunes within the original Geoheritage Site extent, and therefore is considered the best chance of preserving representative outcrops of all major dune phases. The Alkimos Dune Complex Geoheritage Site is currently listed as being of National significance, although other authors (e.g. Semeniuk 2004) have considered the site of International significance. We would be grateful if Water Corporation and EPA continues to consult with GSWA regarding the geoheritage of the Alkimos area in order to maintain the Alkimos Dune Complex Geoheritage Site long-term.</p> <p>With regard to the application of revegetation and erosion control, although there is no text within the report that suggests the methods proposed might cause damage to the landforms, it should be remembered that the Quindalup Dune System is an active and dynamic system, where the younger phases have a current and continuing effect on older</p>	<p>The Section 4 of the ASDP RtS Supporting Document (Water Corporation 2022c) provides an updated assessment of impacts to Landforms reflecting the requested change for proposal.</p> <p>Water Corporation confirms that all Quindalup South Third Dune Phase (Q3) not impacted by the proposal will be protected through Ministerial Statement 722 conservation areas and or ASDP Offset provisions.</p>

No.	Submitter	Submission and/or issue	Response to comment
		<p>outcrops. The natural expressions of these processes, including dune migration and erosion, should be permitted to continue wherever possible. It is also worth recognising that not all phases, and not all lithologies within the phases, are naturally vegetated, and natural hardgrounds should not be altered in order to force revegetation. Such practices, which prioritise fauna and flora over geoheritage, have resulted in the reduction of integrity in other dune complexes across the Swan Coastal Plain.</p> <p>However, on balance, if the Water Corporation commits to maintaining the remaining areas of dune within the water treatment plant land parcel, and other adjacent areas can be conserved with minimal change to the landforms, the geoheritage impact of this proposal, although significant, is considered acceptable.</p>	

## Subterranean fauna

No.	Submitter	Submission and/or issue	Response to comment
		No submission issues raised	

## Terrestrial environmental quality

No.	Submitter	Submission and/or issue	Response to comment
		No submission issues raised	

## Terrestrial fauna

No.	Submitter	Submission and/or issue	Response to comment
	ANON-TXV1-UQBT-F ANON-TXV1-UQB3-E DBCA	<p>A. We are concerned about further loss of black cockatoo foraging habitat and potential roost sites as a result of the proposal. This adds to pressures on these threatened species when there is a critical need to protect habitat to address the decline in their populations.</p> <p>B. According to the ERD, the proposed project involves 'land disturbance resulting in loss of fauna habitat and habitat fragmentation', which will result in 'significant impact' on conservation significant fauna, including Carnaby's Cockatoo and Forest-Red Tailed Black Cockatoo (p.302).</p> <p>C. The Water Corporation anticipates that some 43 hectares of Black Cockatoo habitat will be lost, which amounts to 'significant residual impact that will require an offset' (Table 15.2). The Water Corporation proposes to use an area of naturally vegetated northern jarrah forest at Gobby Road in Keysbrook, which it already owns, to offset this lost habitat. Although this offset may accord with the Commonwealth Environment Protection and Biodiversity Conservation Act, the overall habitat for this threatened species that is endemic to south western Western Australia will be ultimately diminished. Such destruction is unacceptable, given that the Perth population of the cockatoo has already declined by 35 per cent since 2010, according to Birdlife Australia.</p> <p>D. The ERD should accurately recognise the different habitat requirements of Carnaby's and Forest Red-Tailed Black Cockatoos to provide an accurate assessment of habitat impacts for each species. In addition, calculations of threatened black cockatoo habitat value should be reviewed to ensure consistency and accuracy of impacts. Identifying potential risks to conservation significant values cannot occur until an accurate assessment of values and associated impacts has been undertaken.</p>	<p>A. Water Corporation have proposed an Offset Strategy in Attachment D of the ASDP RtS Supporting Document (Water Corporation 2022c). The strategy proposes to protect landholdings supporting black cockatoo habitat on the swan coastal plain for perpetuity to counterbalance the impacts of implementing the Proposal.</p> <p>B. Refer to Comment A above</p> <p>C. Refer to Comment A above. Water Corporation landholdings identified for offset will be protected from development for perpetuity in addition to the land proposed to be purchased for inclusion with the State conservation estate. The Implementation of the ASDP will result in increased conservation lands protecting Black Cockatoo habitat for perpetuity.</p> <p>D. Water Corporation has undertaken four fauna surveys to accurately understand the potential impacts to black Cockatoo's. Two surveys are included within the ASDP PER (Water Corporation 2022a). Two further surveys were undertaken in November 2022, the data from the additional surveys inform Chapter 6.0 ASDP RtS Supporting Document (Water Corporation 2022c) and Chapter 6.2.3 ASDP Request to Amend Proposal under Section (s.) 43A (Water Corporation 2022d), the November 2022 surveys report are currently being completed and will be provided to DWER when available. Water Corporation have taken a</p>



No.	Submitter	Submission and/or issue	Response to comment
		<p><b>Additional Comment DBCA (6 Feb 23)</b>  DBCA accepts the conservative approach, which may result in an over-estimation of impacts and corresponding offset requirements</p> <p>E. The ERD does not adequately recognise potential risks outside of the impact footprint, however due to the linear nature and width of the pipeline corridor, it is likely that risks to individual occurrences and populations can be mitigated and managed. A detailed construction environmental management plan is to be prepared, prior to the project commencing, to address specific mitigation and management of direct and indirect project attributable impacts. DBCA should be consulted in relation to the mitigation and management of BC Act values and conservation estate.</p> <p><b>Additional Comment DBCA (6 Feb 23)</b>  The Water Corporation response does not align with the original DBCA recommendation, which also did not relate specifically to terrestrial fauna</p>	<p>highly conservative approach and have assumed that all Black Cockatoo habitat relates to both the Carnaby's and Forest Red-Tailed Black Cockatoos.</p> <p>E. Refer to A. Water Corporation recognises the Potential breeding trees for Carnaby's Black Cockatoo's and Forest Red-tailed Black Cockatoo's (Black Cockatoo's) are an important resource for the species. The woodland, parkland, planted vegetation and gardens, wetlands and riparian vegetation fauna habitat units were identified a potential breeding habitat for black cockatoos. A total of 183 potential breeding trees with a suitable DBH were identified within the Development Envelope, 104 of the 183 trees proposed to be impacted (in the Development Footprint). A total of 79 potential breeding trees within the development envelope will not be cleared, be protected during construction activities and the TCEMP is proposed to ensure rootzones will not be disturbed (<a href="#">Appendix E, ASDP Response to Submissions – Supporting Document (Water Corporation 2023b)</a>).</p> <p>Impacts to habitat trees have been avoided through minimising impacts to vegetation in the design of the Proposal. This is demonstrated by the reduction in impact on Black Cockatoo Foraging Habitat from 128 ha in the DE and 82 ha in the DF (ASDP ERD - Water Corporation 2022) to 68 ha and 52 ha respectively in the <a href="#">ASDP Response to Submissions – Supporting Document (Water Corporation 2023b)</a></p> <p><b>Additional comment</b>  Indirect impacts to habitat are addressed within the TCEMP (<a href="#">Appendix E, ASDP Response to Submissions – Supporting Document (Water Corporation 2023b)</a>) and includes the implementation of Tree Protection Zones, buffers within the project area and incremental dewatering to manage risk of dewatering to vegetation.</p>

## Inland waters

No.	Submitter	Submission and/or issue	Response to comment
		No submission issues raised	



## Air quality

No.	Submitter	Submission and/or issue	Response to comment
		No submission issues raised	

## Greenhouse gas emissions

No.	Submitter	Submission and/or issue	Response to comment
	ANON-TXV1-UQBZ-N	<p>I wish to draw attention to the lack of detail on how the desalination plant's greenhouse gas emissions (GHG) will be mitigated. The only detail I am able to find is table 13-3 on page 267 which cites an annual power consumption of over 500,000,000 kWh drawn from the grid at an estimated 0.7 tonnes CO2-equiv per MWhr. This means the Alkimos desalination plant will emit an estimated 0.7 x 500,000 = 350,000 tonnes CO2-equiv per annum. This GHG output needs to be mitigated in its entirety and I would ask that this form an essential requirement of the Environmental Review, as was required at Water Corp's Binningup 100GLpa desalination plant (Southern Seawater Desalination Plant Performance and Compliance Report 14 April 2019 – 13 April 2020).</p> <p>However, given the Water Corporation's continued inability to achieve compliance with Ministerial Statement 792 (MS792) for its Binningup desalination plant pertaining to its obligation that ""The Proponent shall ensure that all electricity used by the plant is purchased from renewable sources, and the associated Renewable Energy Certificates are surrendered"" (M11-1, M11-2; (refer ref above)), it would appear that very strict compliance will be required to ensure that GHG emissions from the Alkimos plant do not suffer the same fate."</p>	<p>Water Corporation has committed to the delivery of net zero Scope 1 and 2 GHG emissions for construction and operation. The ASDP currently proposes to draw energy for power from the South West Interconnected System (SWIS) on this basis on this ASDP GHG emissions are provided in the ASDP PER (Water Corporation 2022) (in the Executive summary and in Section 11, Table 11-3. The <a href="#">most current</a> ASDP GHG Management Plan addressing emissions and management is included in Appendix G of the <a href="#">ASDP Response to Submissions – Supporting Document (Water Corporation 2023b)</a>.</p> <p>As a GTE, Water Corporation is working with the State to decarbonise the SWIS. Water Corporation's Energy Procurement Plan will provide over 400MW of wind energy to SWIS by 2032. The 400MW provision will power 1,576,800 WM hours per annum. ASDP at full capacity will require 400,000MW hours per annum. The renewable energy provision to power ASDP will be provided to the SWIS, over and above independent emissions reductions achieved by SWIS. Approximately 450,000MW hours of renewable energy will be provided to the SWIS by 2024, with a further 800,000MW hours supplied to the SWIS by 2028. Providing renewable energy to the SWIS (over and above the independent SWIS emission reductions achieved) is the method ASDP proposed to meet net zero scope 2 GHG emissions for construction and operation.</p>
	ANON-TXV1-UQB3-E	<p>According to the ERD, the Water Corporation is committed to 'zero net GHG emissions during the construction and operation of the Proposal by offsetting GHG emissions via authorised Offsets or production and purchase of an</p>	<p>As a GTE, Water Corporation is working with the State to decarbonise the SWIS. Water Corporation's Energy Procurement Plan will provide over 400MW of wind energy to SWIS by 2032. The 400MW provision will power 1,576,800 WM hours per annum. ASDP at full capacity will require 400,000MW hours per annum. The</p>

Blue text represents February 2023 amendments

No.	Submitter	Submission and/or issue	Response to comment
		<p>equivalent amount of renewable energy or a combination of the two' (p. 330). We recommend that all water source development should aim to minimise carbon emissions by targeting sources requiring lower energy inputs, and relying only on renewable energy sources, not on fossil fuels. The Water Corporation's reliance on offsetting the Alkimos plant's GHG emissions is ultimately short-sighted, for as the South West Interconnected System (SWIS) undergoes decarbonisation, the plant's carbon offsetting will also diminish. Without Appendix M, the ERD provides no clarity as to how the Water Corporation will ensure the project maintains net zero GHG emissions. Given that Perth's declining winter rainfall is largely the result of greenhouse gas (GHG) emissions, it seems foolhardy to persist with the development of water sources that will only serve to exacerbate a principal cause of the city's growing water insecurity and accelerate the need for further source development.</p>	<p>renewable energy provision to power ASDP will be provided to the SWIS, over and above independent emissions reductions achieved by SWIS. Approximately 450,000MW hours of renewable energy will be provided to the SWIS by 2024, with a further 800,000MW hours supplied to the SWIS by 2028. Providing renewable energy to the SWIS (over and above the independent SWIS emission reductions achieved) is the method ASDP proposed to meet net zero scope 2 GHG emissions for construction and operation.</p>
	ANON-TXV1-UQBT-F	<p>CO2e emissions from electricity used for the operation of the proposed plant are noted in the document as being moderate (up to 168,896 tonnes/year at 100 GL/year water output - pages 323-324). They constitute the largest component of estimated carbon emissions from the construction and operation of the proposal. We are concerned about the contribution to total carbon emissions at a time when it is critical to reduce atmospheric carbon. We welcome the commitment by the Water Corporation to make the plant net zero through design using gravity based water intake and outfall, energy efficiency measures and energy recovery. The document says that no residual emissions requiring offsetting are expected. Appropriate monitoring will be important to show if the assumptions play out and if not, so that corrective active or offsetting occurs.</p>	<p>Water Corporation has committed to the delivery of net zero Scope 1 and 2 GHG emissions for construction and operation. The ASDP currently proposes to draw energy for power from the South West Interconnected System (SWIS) on this basis on this ASDP GHG emissions are provided in the ASDP PER (Water Corporation 2022) in the Executive summary and in Section 11, Table 11-3. The <a href="#">most current</a> ASDP GHG Management Plan addressing emissions and management is included in Appendix G of the <a href="#">ASDP Response to Submissions – Supporting Document (Water Corporation 2023b)</a>. The ASDP GHG Management Plan is revised to include additional information the Water Corporation's Energy Procurement Plan to provide 400MW of wind energy to SWIS by 2032.</p> <p>As a GTE, Water Corporation is working with the State to decarbonise the SWIS. Water Corporation's Energy Procurement Plan will provide over 400MW of wind energy to SWIS by 2032. The 400MW provision will power 1,576,800 WM hours per annum. ASDP at full capacity will require 400,000MW hours per annum. The renewable energy provision to power ASDP will be provided to the SWIS, over and above independent emissions reductions achieved by SWIS. Approximately 450,000MW hours of renewable energy will be provided to the SWIS by 2024, with a further 800,000MW hours supplied to the SWIS by 2028. Providing renewable energy to the SWIS (over and above the independent SWIS emission</p>

No.	Submitter	Submission and/or issue	Response to comment
			<p>reductions achieved) is the method ASDP proposed to meet net zero scope 2 GHG emissions for construction and operation.</p> <p>The ASDP GHG Management Plan addressing emissions and management is included in Appendix G of the <a href="#">ASDP Response to Submissions – Supporting Document (Water Corporation 2023b)</a>.</p>
	ANON-TXV1-UQBP-B	Have you looked at alternate ways to get salt from water that don't require this high energy, high maintenance expenses and high waste?	<p>Water Corporation is seeking to construct highly efficient desalination technology to minimise energy use further are seeking to implement the proposal in construction and operation with net zero Scope 1 and 2 emissions to minimise GHG emissions.</p> <p>See response above to ANON-TXV1-UQBT-F (Quinns) for the proposed renewable energy proposal.</p>

## Social surroundings

No.	Submitter	Submission and/or issue	Response to comment
	ANON-TXV1-UQBY-M	<p>"We are residents of XXXX, Jandabup and our property backs on to Lake Jandabup. The Water Authority in its plans to build a pipeline from Alkimos desalination plant, proposes to run the pipeline along Rousset Rd/Franklin Rd/Rome road into the Wanneroo reservoir.</p> <p>I would suggest where Rousset Rd crosses Townshend Rd the pipeline continues due south to the boundary of lake Jandabup and then follow the existing firebreak around to Franklin Park, crossing Franklin Rd into Rome Rd.</p> <p>This proposal would alleviate the digging up of roads and their reinstatement - a figure I would suggest would run into millions of dollars. This common sense approach would save many millions.</p>	<p>Water Corporation is seeking to amend three sections totalling over 7 km of the terrestrial pipeline route through the request to change the proposal as outlined in ASDP EP Act s 43A Request (Water Corporation 2022d) submitted with the Response to Submissions. The section changes are to avoid impacts of the pipeline on Rousset Road/Townsend Road. Water Corporation is aware of the constraints the development process will create as the detailed process continues to minimise all environmental and social impacts.</p>
	ANON-TXV1-UQBN-9	A review of the project's spatial data against the Aboriginal Heritage Register of Places and Objects, as well as the DPLH Aboriginal Heritage Database, concludes that a portion of the	a) Water Corporation confirms the change to proposal under S43A ( <a href="#">Water Corporation 2023c</a> ) seeks to avoid cultural heritage impacts to Aboriginal heritage

Blue text represents February 2023 amendments

No.	Submitter	Submission and/or issue	Response to comment
		<p>proposed development intersects the boundary of Aboriginal site ID 3503 (Honey Possum Site) and Aboriginal heritage place ID 22160 (Marrynginup). Based on the information held by DPLH, approval under the Aboriginal Heritage Act 1972 (AHA) is required for the proposed works.</p> <p>As you would be aware the new Aboriginal Cultural Heritage Act 2021 comes into effect on 1 July 2023 and any approvals sought under the current AHA 1972 will expire in 5 years.</p>	<p>sites Place ID 3503 Honey Possum Site and Place ID 22160 Marrynginup through a pipeline re alignment.</p> <p>b) The <a href="#">change in proposal (Water Corporation 2023c)</a> includes the re-alignment of the pipeline to avoid Aboriginal heritage sites Place ID 3503 Honey Possum Site and Place ID 22160 Marrynginup avoids each site by approximately 380 m and 900 km respectively. No direct or indirect impacts are expected.</p> <p>The Alternative route that avoids Place ID 22160 Marrynginup takes a route that has been surveyed by Brad Goode and Associates in December 2022 (Brad Goode and Associates, 2023).</p> <p>This archaeological survey was undertaken with traditional owners present. A report is being prepared and will be provided by 30 January 2023.</p>

## Human health

No	Submitter	Submission and/or issue	Response to comment
.	ANON-TXV1-UQBU-G	<p>The sea is filled with nuclear waste you going to kill your children and grand children They will die at the age of 19 with cancer. It is better to supply inland fresh water a 200 --600km radius from Perth lots of water You can recycle sewage water Water is too precious to use once!!</p> <p>In Windhoek Namibia is a recycle plant of water from sewage!! In South Africa Lesotho highland project builds a dam at a cost of 32.562 billion. They pump water over the Drakensberg mountain into the Vaalriver to the Vaaldam To supply water for 16 million people, Johannesburg,</p> <p>Witwatersrand area which is 600km away from Lesotho!!!</p> <p>The Hoover dam in the USA is 29% full no rainfall or massive snow fall. It will run dry and 60 million people have to migrate</p>	<p>The existing Water Corporation seawater desalination plants source water risk assessments and the Alkimos SDP Risk assessment have not identified nuclear waste as a risk on the following basis:</p> <ul style="list-style-type: none"> <li>Australian government legislation and policy prohibits the import of radioactive waste <ul style="list-style-type: none"> <li>Source: Australian Radiation Protection and Nuclear Safety Agency (<a href="https://www.arpansa.gov.au/understanding-radiation/radiation-sources/more-radiation-sources/radioactive-waste-safety#:~:text=Australia's%20commitment&amp;text=Australian%20government%20legislation%20and%20policy,the%20intermediate%20level%20waste%20classification.">https://www.arpansa.gov.au/understanding-radiation/radiation-sources/more-radiation-sources/radioactive-waste-safety#:~:text=Australia's%20commitment&amp;text=Australian%20government%20legislation%20and%20policy,the%20intermediate%20level%20waste%20classification.</a>)</li> </ul> </li> <li>Australian produced radioactive waste is managed in accordance with national and international standards, Australian Radiation Protection and Nuclear Safety Act 1998 and the Australian Radiation Protection and Nuclear Safety Regulations 2018. The act states that when the CEO of ARPANSA makes a decision on a facility licence '<i>the CEO [...] must also take into account international best practice in relation to radiation protection and</i></li> </ul>

No	Submitter	Submission and/or issue	Response to comment
		<p>to the north. They want to supply water out of the sea to kill their children, and grand children!!!</p> <p>Fukushima nuclear contaminates the Pacific Ocean with 300 ton everyday since 2011!!</p> <p>And they can't stop it it will continue for 1000's of years.</p>	<p><i>nuclear safety</i>'. High level radioactive (HLW) waste is not stored or disposed of in Australia.</p> <ul style="list-style-type: none"> <li>• There are no radioactive waste storage facilities near Water Corporation desalination seawater intakes.</li> <li>• From the Assessment Report - <i>Assessment of the impact on Australia from the Fukushima Dai-ichi nuclear power plant accident 2012</i> Australian Radiation Protection and Nuclear Safety Agency (Julia Carpenter and Rick Tinker) <a href="https://www.arpansa.gov.au/sites/default/files/legacy/pubs/technicalreports/tr162.pdf">https://www.arpansa.gov.au/sites/default/files/legacy/pubs/technicalreports/tr162.pdf</a> of the impact on Australia from the Fukushima Dai-ichi nuclear power plant accident report - International Ocean modelling, predicts a period of 5 to 15 years for radioactive material from the Fukushima Dai-ichi NPP accident to reach Australian waters, by which time the radioactivity of the material is modelled to be significantly diluted to levels at or below the level of detection.</li> </ul> <p>Water Corporation distribution networks are routinely monitored for radiological values downstream (in the suburbs that receive water from our desalination plants) of our existing seawater desalination plants against the Australian Drinking Water Guidelines 2011 Version 3.7 (NHMRC 2022) at one yearly or five yearly intervals.</p> <p>The frequency of monitoring in the distribution network is based on the estimated annual radiation dose. The estimated annual radiation dose (ARD) is calculated based on radium-226 and radium-228 results, dose coefficient and average annual consumption of water (as per ADWG).</p> <p style="text-align: center;"><i>From radium-226 and radium-228 in mBq/L (millibecquerels per litre)</i></p> $ARD (mSv/year) = [(radium-226Bq/L/1000) \times 0.00028mSv/Bq] + [(radium-228Bq/L/1000) \times 0.00069 \times 730L/year]$ <p>Annual radiation doses of &lt;0.5 mSv is monitored at five yearly intervals, while annual radiation doses of 0.5 mSv is monitored quarterly. Water Corporation monitoring results downstream of SSDP and PSDP are returned at &lt;0.5 mSv (with the previous results of annual dose rate &lt;0.062 mSv and &lt;0.052 mSv) triggering monitoring frequency at five yearly intervals as per the ADWG.</p> <p>The maximum annual radiological dose (ARD) for drinking water is 1.0 mSv, [ADWG Chapter 7 - For radiation protection purposes, the Australian national reference level for commodities including drinking water is 1 mSv/year (ARPANSA 2017).</p>

No	Submitter	Submission and/or issue	Response to comment
			<p>Uranium (another potential source of radioactive material) is monitored yearly (as per ADWG) downstream in the suburbs that receive water from our desalination plants of SSDP and PSDP, with results below the detection limit of &lt;0.001 mg/L. The health guideline for Uranium is 0.02 mg/L. (ADWG p.1043 – the health guideline is based on uranium chemical toxicity which is more restrictive than its radiological toxicity. Uranium monitoring is undertaken downstream within the Integrated Water Supply Scheme network at all localities distributed with desalinated water.</p> <p>Desalinated water is generally considered to have very low mineral content with the desalination processes such as reverse osmosis and distillation effective in the removal of radionuclides [Reference ADWG 2011 Version 3.7 (Updated September 2022) page 254]</p>
	ANON-TXV1-UQBP-B	What are the hazards that have been raised in your JSA's and how are you reducing these hazards or eliminating them?	The ASDP detailed design and construction contract remains within the procurement processes. The successful contractors will be required to meet all relevant occupational health and safety standards and will assess all hazards for elimination, avoidance and management within Job Safety Assessments.

## Consultation

Submitter	Submission and/or issue	Response to comment
<p>ANON-TXV1-UQBT-F</p> <p>ANON-TXV1-UQB2-D</p>	<p>The documentation for this proposal is voluminous. This detailed consideration of how the proposal will affect the environment and the management of these impacts is valued. Our comments are based on review of parts of the Environmental Review document. As volunteers we had limited capacity in the public comment period to read and digest the detail presented. This points to issues with effective community participation in 3 environmental assessments of projects like this. Remedies have been proposed in the past, such as resourcing community interests to engage in assessment processes.</p> <p>WAFIC is pleased to see communication with commercial fishers has been identified in the Social Impact Assessment</p>	<p>Water Corporation acknowledges the comment about the challenges of effective community participation in the environmental assessment process, particularly with complex proposals. The process of assessment has been defined by the EPA, which included a four-week public comment period. To reduce the complexity of the information available for public review, Water Corporation has also made publicly available supporting communications material, such as a website, a project video and fact sheets. Water Corporation is committed to ongoing communication with the community as the proposal progresses through planning and design, construction, and operation.</p> <p>Water Corporation thanks WA Fishing Industry Council (WAFIC) for its time and resources in the consultation process up to this point. We are particularly grateful</p>

Blue text represents February 2023 amendments

Submitter	Submission and/or issue	Response to comment
	and acknowledges this consultation will be important in managing potential impacts and conflicts, especially surrounding construction activities and location of exclusion zones. WAFIC requests this ongoing consultation is a requirement of the commissioning and operation phases.	<p>for WAFIC's feedback on, and dissemination of, project information for commercial fishers.</p> <p>Water Corporation acknowledges WAFIC's comment regarding consultation being important in managing potential impacts and conflicts, particularly pertaining to construction activities and location of exclusion zones. Water Corporation has committed to ongoing engagement with stakeholders, including WAFIC, throughout planning and design, construction and operation of the proposed Alkimos Seawater Desalination Plant. Water Corporation will establish a Community Reference Group to support this consultation process and will be pleased to continue to communicate directly with WAFIC on any matters relevant to its stakeholders.</p>

## Peer review

Submitter	Submission and/or issue	Response to comment
	No submission issues raised	

## Offsets

Submitter	Submission and/or issue	Response to comment
ANON-TXV1-UQBT-F  DCCEEW  DBCA	<p>A. Avoiding habitat loss should be the priority. We acknowledge the proposed offset package to redress the vegetation that will be lost due to the proposal. The inclusion of local offset sites is welcome, however the future tenure and management of some of these is unclear (i.e. Carabooda tank site, Eglinton site). The location of the 65ha where management works will be funded is also unclear. The offsets strategy should be tightened to ensure intended outcomes are realised.</p> <p>B. The distance to the proposed Gobby Road Offset site. This wide geographical separation is not compatible with Section 6 of the Offsets policy which states proposed offset sites</p>	<p>A. Water Corporation will secure the protection of vegetation and habitat proposed to counter balance impacts of the ASDP through 2 mechanisms; through ceding land to the State conservation estate, or placing land covenants over land holdings to ensure conservation of the environmental values. Water Corporation has proposed a combination of local and strategically important vegetation linkages to counter balance proposed impacts.</p> <p>B. Water Corporation has proposed a combination of local and strategically important vegetation linkages to counter-balance proposed impacts. The Gobby road site is important counter-balance site supporting known Black Cockatoo activity. In most cases this will be as close to the impact site as</p>

Blue text represents February 2023 amendments



Submitter	Submission and/or issue	Response to comment
	<p>should in most cases be as close to the impact site as possible.</p> <p><b>Additional Comments DCCEEW 17 Jan 23</b></p> <p>DCCEEW accepts the proposed Gobby Road offset site has potential to offer an ecological benefit the black cockatoo species for which the offset is being sought. However ecological benefit and capacity to offset a specific significant residual impact at a specific location are not the same thing.</p> <p>Additional scientifically robust justification is required to demonstrate negligible ill effects to the actual population black cockatoos at the Alkimos site (e.g. through the provision of addition offsetting activities closer to the impact site). This additional justification needs to be included in the offset strategy document.</p> <p>Please note also that DCCEEW has concerns with the provided offset calculations for the Gobby Road site (more comments below).</p> <p>C. Provision of offsets (Department’s Environmental Management Plan Guidelines (2014) and the department’s Draft Offset Management Plan Template)</p> <p>D. Rehabilitation contributions to offsets to an equal or greater value</p> <p>E. Inconsistencies of offset calculations eg: Key areas of concern that significantly impact the derived values are as follows:</p> <p>1) Stated Habitat Quality and Habitat Quality Change (Like for Like). The Department notes several of the proposed offset sites experience an increase in condition based primarily on acquisition, transfer and protection. These projected increases in condition cannot be accepted without a supporting discussion of future expectations at the site and a clear</p>	<p>possible. However, if it can be shown that a greater conservation benefit for the impacted protected matter can be achieved by providing an offset further away, then this will be considered”. (Page 15, Section 6, DCCEEW Offsets Policy, <a href="https://www.dcceew.gov.au/sites/default/files/documents/offsets-policy_2.pdf">https://www.dcceew.gov.au/sites/default/files/documents/offsets-policy_2.pdf</a>).</p> <p>Although the Gobby Road site comprises different habitat and vegetation to the ASDP site and is on the outer extent of consideration as an offset, Water Corporation believes that the significance of the site overrides the geographical separation. Particularly as the site would provide security to a high-quality foraging, roosting and breeding habitat for both black cockatoo species impacted by the proposal (Kirkby, pers coms. 13/12/2022). Therefore, Water Corporation is still proposing to continue using the Gobby Road Offset site for Black Cockatoo habitat offsets. The revised Offset Strategy is provided in Attachment D of the ASDP Rts Supporting Document (Water Corporation 2023b).</p> <p><b>Additional response</b></p> <p>Water Corporation has developed an Offset Strategy using land acquisition as the primary tool to deliver offset value. Table 3-7 details the value of each land acquisition site and what it offers to each Black Cockatoo species. It is acknowledged that the Gobby Road site and Gidgegannup site may not directly benefit the specific subpopulation of Black Cockatoos impacted by the Proposal, the proposed Offset sites will provide a positive outcome on a species level, given both sites contain foraging habitat and potential nesting value for all three black cockatoo species.</p> <p>It should be noted that the Alkimos site, Carabooda Tank site and Eglinton site provide a benefit to over 10 percent of the Black Cockatoo foraging habitat offset requirements. The locations of these site would directly benefit the specific local subpopulation of Black Cockatoo species (with the additional management proposed in the updated Offset Strategy).</p> <p>C. The revised Offset Strategy provided in Attachment D of the ASDP Rts Supporting Document (Water Corporation 2023b).</p> <p>D. The revised Offset Strategy provided in Attachment D of the ASDP Rts Supporting Document (Water Corporation 2023b)..</p>



Submitter	Submission and/or issue	Response to comment
	<p>explanation of any proposed management activities will contribute to the nominated change in quality (see OIP requirement above).</p> <p>2) Risk of loss of MNES values are unrealistic, Any stated risk of loss must be fully demonstrable within a regulatory framework that would actually permit it to occur.</p> <p>3) Time until ecological benefit are unrealistic.</p> <p>4) Confidence values are ambitious and require justification. Justification of confidence values must include discussion of how the projected habitat quality improvement would be achieved under proposed management.</p> <p>F. The Department had expected the Offset Strategy would be finalised and approved before the ERD was published for public comment. This remains a prerequisite action for the commencement of the proposed decision stage of the EPBC assessment process.</p> <p>G. 2. Provide any available information about the status of negotiations between DBCA and Water Corporation regarding potential offsets. DBCA have undertaken preliminary discussions with Water Corporation regarding the project since 2020. These discussions have predominantly related to the early identification of acquisition offsets associated with the projected impacts. More recently, Water Corporation met with DBCA's Land Services Unit in September 2022 to request DBCA's involvement in identifying and acquiring suitable offsets sites. To date, no potential offset acquisition sites have been identified by DBCA and discussions are ongoing.</p> <p><b>Additional Comment DBCA (6 Feb 23)</b>  Discussions between DBCA and the owners of potential offset properties are ongoing and at initial stages with potential acquisition not confirmed. Inclusion of these properties in the offset strategy should be undertaken under the recognition that other options may need to be considered if acquisitions are unsuccessful or the properties do not meet offset requirements.</p> <p>H. Advise whether the on-ground management offsets for black cockatoos are likely to be available, and the likely</p>	<p>E. The revised Offset Strategy provided in Attachment D of the <a href="#">AASDP Rts Supporting Document (Water Corporation 2023b)</a>. the working versions of the offset calculation tables are provided.</p> <p>F. The revised Offset Strategy provided in Attachment D of the <a href="#">ASDP Rts Supporting Document (Water Corporation 2023b)</a>..</p> <p>G. As this land acquisition is currently a private land holding, the specific details remain confidential. A separate summary report will be provided only to the Regulators, to prevent complications with the land purchase. Unfortunately, at this stage DBCA are unable to confirm any specific arrangements with Water Corporation until such time as they are the landowner.</p> <p><b>Additional response</b></p> <p><a href="#">Water Corporation is committed to deliver an Offset Strategy that offsets the impacts of the ASDP project. If this particular offset fails, Water Corporation remains committed to an alternative site with equal value or better value to ensure a strategic contribution is made to the conservation of biodiversity.</a></p> <p>H. At this stage, Water Corporation is no longer proposing to undertake on-ground management activities to offset significant residual impacts on Black Cockatoo species from the Proposal. However, the option is still included in the Offset Strategy, as on-ground management is still considered to be the most ecologically beneficial offset for impacts to Black Cockatoo habitat loss.</p> <p>I. Discussions with DBCA are positive in relation to the transfer of the Gobby Road site into the Conservation estate. However, until such time as the contractual arrangements are made, DBCA is unable to provide confirmation that the transfer will occur.</p> <p>J. The revised Offset Strategy provided in Attachment D of the <a href="#">ASDP Rts Supporting Document (Water Corporation 2023b)</a>.</p> <p><b>Additional response</b></p>

Blue text represents February 2023 amendments

Submitter	Submission and/or issue	Response to comment
	<p>timeframe for securing a formal agreement on the location(s) and completion criteria of proposed on-ground management offsets. Dependent on the specific offset requirements, it is likely that a suitable offset site for black cockatoos could be identified. It should be noted that the majority of land acquisitions deemed suitable for addition to DBCA's Comprehensive and Representative (CAR) reserve system comprise of intact vegetation in Very Good or better condition. The 'improvement' of habitat value in many of these properties can be limited, due to the existing condition of the vegetation.</p> <p>I. The Offset Strategy identifies that the 'Gobby Road' land acquisition site is proposed to be transferred into Conservation State. Please indicate whether DBCA is likely to accept management of this site, should it contain the values proposed to be offset.</p> <p>J. Mechanisms to provide adequate protection of offsets areas, proposed to counterbalance residual impacts, are identified.</p> <p><b>Additional Comment DBCA (6 Feb 23)</b> Noted that protection mechanisms (i.e. covenants and transfer to DBCA) now included in the revised Offset Strategy. DWER to determine if these proposed mechanisms provide adequate protection.</p> <p>K. Where offset sites are proposed to offset significant residual impacts to State listed TECs, confirmation of the relevant ecological community occurrence should be determined prior to their proposed allocation as offsets.</p> <p><b>Additional Comment DBCA (6 Feb 23)</b> The revised Offset Strategy does not include any new information to confirm the TEC occurrences at the Eglinton and Carabooda Tank sites.</p> <p><b>Additional Comment DCCEEW (17 Jan 23)</b></p> <ul style="list-style-type: none"> <li>DCCEEW notes that some revegetation/rehabilitation actions are described in the Enabling Earthworks Revegetation Plan attached to the Terrestrial Construction Environmental Management Plan (Dec 2022). This document appears to be a work in progress as it contains comments in red text.</li> </ul>	<p>Noted</p> <p>K. The revised Offset Strategy provided in Attachment D of <a href="#">ASDP Rts Supporting Document (Water Corporation 2023b)</a>.</p> <p><b>Additional response (DBCA)</b></p> <p>The Offset Strategy commits to a survey to confirm the TEC and Floristic Community Type of each Offset site.</p> <p><b>Additional response (DCCEEW)</b></p> <p>The Offset Strategy provides a high-level commitment to the offsetting of each specific residual significant impact.</p> <p>An Offset Management Plan will be developed for each offset site prior to commencement of construction.</p>

Blue text represents February 2023 amendments

Submitter	Submission and/or issue	Response to comment
	<p>Reference is made to provision of offsets, however the rehabilitation objectives and completion criteria described therein fall well short of what is required in an OIP or Offset Management Plan (OMP).</p> <p>Please see the response letter for general comments regarding the need for Offset Management Plans (OMP's) specific to each of the offset sites being proposed.</p> <p>See above. Any proposed gains achieved through rehabilitation must be supported by OMP's specific to the areas being rehabilitated.</p> <ul style="list-style-type: none"> <li>DCCEEW notes the proposed on-ground management actions (65 ha) while still likely to occur are no longer proposed as an offset for significant residual impacts to the CBC and FRTBC. Note: On this basis the information contained on page 34 of the offset strategy describing the offset provided by on-ground management is redundant and should be removed.</li> </ul> <p>Gidgegannup offset site:</p> <p>Section 3.1.5 of the Draft Offset Strategy (Dec 2022) describes a new proposed offset site described as "Gidgegannup Property". Details are largely confidential. The property is in private ownership.</p> <p>Provided information states only that the Gidgegannup site contains 200 + ha of CBC and FRTBC foraging habitat and 300 + significant trees and that Water Corp intends "... the site will be secured, through purchase by DBCA, transfer to the conservation estate, or a conservation covenant, within 1 year of the impact occurring."</p> <p>DCCEEW acknowledges the proponent's description of the present negotiations, however, the attribution of values to the proposed Gidgegannup offset site will only</p>	<p><b>Additional response</b></p> <p>Water Corporation would like to retain the ability to provide an on-ground management offset in the future if it can be agreed. At this stage the other offsets account for the full requirement.</p> <p>Gidgegannup site.</p> <p>Further investigations will be provided before any impact to Black Cockatoo values occurs.</p>

Blue text represents February 2023 amendments

Submitter	Submission and/or issue	Response to comment
	<p>occur when DCCEW is provided adequate information to appraise the site and the benefits to the EPBC matters for which the offsets are being sought.</p> <p>As with the proposed site at Gobby Road, additional scientifically robust justification is required to demonstrate negligible ill effects to the actual population black cockatoos at the Alkimos site (e.g. through the provision of addition offsetting activities closer to the impact site). This additional justification needs to be included in the offset strategy document.</p> <p><b>Offset Calculations – Provision of appropriate information:</b></p> <p>It is important to understand the Commonwealth offset calculator is a tool used by DCCEW to determine the viability of proposed offsets. The key role of the proponent is to provide information to DCCEW that will adequately inform DCCEW's determination of values to be used in offset calculations. All provided assertions must be justifiable. To this end the information provided for each site and for each future scenario at each site must be based on similar treatment of information that is relatively current and derived using accepted methods and/or based on verifiable published sources. This information needs to be provided in a format that enables easy comparison across the respective sites.</p> <p><u>The attribution of start and future quality values for offset calculations</u></p> <p>All qualitative assertions must be verifiable. Surveys for each of the proposed offset sites must be provided as attachments to the Offset Strategy document.</p> <p>The Offset Strategy must contain a tabular summary of the survey data across all sites (impact + proposed offsets) that inform the following:</p> <ol style="list-style-type: none"> <li>1. A floristic and structural description (e.g. Jarrah open woodland over banksia midstorey)</li> <li>2. A condition ranking against a consistent scale (e.g. Keighery)</li> </ol>	<p>Where available the start and future values were based on the vegetation condition labels provided in the Flora and Vegetation Surveys. (e.g. Pristine, Excellent, Very good). These are not attributed a number value, so one was assumed from a scale of 1 to 10.</p>

Blue text represents February 2023 amendments

Submitter	Submission and/or issue	Response to comment
	<p>3. A habitat quality rating for any protected fauna (same methodology for each site)</p> <p>4. A summary of evidence of habitation and or use of the site by any protected fauna</p> <p>5. A summary of the incidence size and proximity of known local populations of the relevant protected fauna likely to frequent/utilise the respective sites, including the presence of linking corridors.</p> <p>6. Citations to the relevant parts of appropriate surveys or other provided documents used to inform the preceding 5 points.</p> <p><u>Quality decline without offset:</u></p> <p>The Department's view is that most established sites reflect an equilibrium state determined by the long-term use history of the site. On this basis the Department will not accept projected quality declines unless there is demonstrative evidence this equilibrium state is going to be or likely to be disrupted (i.e. by intentional or unpreventable changes in the management of the site).</p> <p><u>Risk of Loss</u></p> <p>The Department considers the provided risk of loss values are not well supported by evidence. Any stated risk of loss must be informed by local trend data such as described by the National Environmental Science Program Guidance for deriving Risk of Loss estimates when evaluating biodiversity offset proposals under the EPBC Act (NESP paper) (Attachment 3) but also demonstrable within a regulatory framework that would actually permit it to occur. Sites with pre-existing MNES values would likely be afforded similar protection under the EPBC Act noting that this is independent of State EP legislation. Please note the Department draws a clear distinction between risk of loss (total extinguishing of MNES values) and potential habitat quality decline (resultant of changed management).</p> <p>Based on the above the Department's starting position is typically 0% ROL. The Department's choice to move away from this value will be informed by the <i>potential</i> risk of loss as outlined</p>	<p>All sites are shown to remain the same quality, if not offset.</p> <p>The risk of loss projected value was estimated on the basis that the offset site could be developed (e.g. in accordance with the approved planning scheme). This development would likely degrade the value of the offset significantly (if cleared).</p> <p>Given Water Corporation owns the land parcels, it has control over the future of each offset site and could develop in accordance with relevant planning mechanisms.</p>

Blue text represents February 2023 amendments

Submitter	Submission and/or issue	Response to comment
	<p>in the NESP paper AND evidence of <i>actual</i> risk of loss that could include provisions of the relevant regional planning or town planning scheme, existing planning and/or environmental approvals to clear, basis raw material extraction, evidence of supplementary approvals to support changed land use (e.g. ground or surface water license, subdivision approval), and the portion of the offset site to which those plans, approvals and licenses apply. Any assertions of risk of loss must be supported by evidence there would be no requirement for additional offsets for the loss of MNES values.</p> <p><u>Time to benefit</u></p> <p>The Department considers the provided values unrealistic noting that 'time until ecological benefit' denotes the time required to achieve the actual nominated change in habitat quality and not simply the time required to achieve some form of benefit.</p> <p>Time until ecological benefit values must be supported by verifiable evidence. In particular, the Offset Strategy must include an evidentiary discussion of the time required to achieve the projected outcomes.</p> <p>Time to benefit is logically shorter where the required or projected gains are smaller (such as single point gains produced by altered management that could be assumed to occur over a few years). Time to benefit for planting and rehabilitation initiatives is generally accepted by the Department to be 20 years, however the anticipated condition gains are typically much greater. The Department may attribute a shorter period where demonstrative evidence is provided to this effect, noting this should include appropriate management plans, completion objectives and contingency actions.</p> <p><u>Confidence</u></p> <p>Department confidence (and the attribution of confidence values in the calculations) is determined by the quality and completeness of the provided information and by the magnitude of any stated changes in quality. High levels of confidence are</p>	<p>The time to benefit is expected to occur within one year of the impact occurring in accordance with the commitment in the offset strategy, given the sites are predominantly existing vegetation. Efforts to improve the offset would serve to improve the value of the offset further.</p> <p>It is not proposed to undertake significant improvements of the offset sites. The actions being undertaken will more likely provide protection to the habitat, with minor improvements to the quality of the habitat, from weed control or replanting</p>

Blue text represents February 2023 amendments

Submitter	Submission and/or issue	Response to comment
	<p>typically linked to conservative projections. Justification of confidence values must include discussion of how the projected habitat quality improvement would be achieved under proposed management. This discussion should include reference to peer-reviewed evaluations of the effectiveness of site-based measure(s) for impacted Matters of National Environmental Significance (MNES), or for abating a substantial threat to MNES. The provided discussion should account for any purported condition decline as well as the likelihood of achieving condition improvement (as appropriate).</p> <p><u>Indirect Offsets option</u></p> <p>Indirect offsets equating to 10% of the total offset requirement may be applicable if this is desired by the proponent. Please note the Department will not consider any indirect offset until it is satisfied the direct offset package is at least 90%, and the remaining offset &lt;10% has been suitably budgeted.</p>	<p>degraded sites. Given these actions are relatively easy to achieve the level of confidence is high.</p> <p>No indirect offsets are proposed.</p>

## Other

Submitter	Submission and/or issue	Response to comment
	No submission issues raised	

## References

AECOM 2018b, Flora, Vegetation and Fauna Assessment - Spring 2017.

Australian Radiation Protection and Nuclear Safety Agency (2017) RPS G-s – The Australian Context. Australian Government

Blue text represents February 2023 amendments

Brad Goode and Associates, (2023) Heritage Assessment of the ASDP Project Alternative Pipeline Routes, January 2023.

DEWHA 2008, EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales, Australian Government

Ecoscape 2018, CW03472 Eglinton Groundwater Investigations Flora, Vegetation, Fauna and Dieback Survey: Site 2, Prepared for Water Corporation, February 2018.

EPA 2015, Perth, and Peel @ 3.5 million: Environmental impacts, risks, and remedies - Interim strategic advice of the Environmental Protection Authority to the Minister for Environment under section 16(e) of the Environmental Protection Act 1986, Perth WA.

EPA (2016) Technical Guidance: Protecting the Quality of Western Australia's Marine Environment. Environmental Protection Authority, Perth, Western Australia, December 2016.

Erbe, C., Dunlop, R., and Dolman, S. (2018). "Effects of noise on marine mammals," in Effects of Anthropogenic Noise on Animals, New York

GHD (2022) Alkimos Seawater Desalination Plant: Marine Noise Study. Report prepared for Water Corporation by GHD Pty Ltd, Perth, Western Australia, 31 August 2022.

Kirkby, 2022, Pers comms, discussion with T. Kirkby on suitability of the Gobby Road offset site.

National Health and Medical Research Council (2022) Updated guidance on radiological water quality Version 3.7, January 2022.

Salgado Kent C, McCauley RD, Duncan A, Erbe C, Gavrilov A, Lucke K, Parnum I (2016) Underwater Sound and Vibration from Offshore Petroleum Activities and their Potential Effects on Marine Fauna: An Australian Perspective. APPEA Report, ISBN Number: Report 2015-13.

Water Corporation (2022) Alkimos Seawater Desalination Plant, Environmental Review – Public Review. Assessment No. 2210 (WA); 2019/8453 (Commonwealth) September 2022.

Water Corporation (2023a) Alkimos Seawater Desalination Plant, Environmental Review Document Assessment No. 2210, Response to EPA Services Comments. February 2023.

Water Corporation (2023b) Alkimos Seawater Desalination Plant, Response to Submissions Supporting Document. February 2023.

Water Corporation (2023c) Alkimos Seawater Desalination Plant, Environmental Protection Act 1986 – Section 43A, Request to amend a proposal during assessment, Assessment No 2210 (WA) February 2023.



Water Corporation (2007). Water forever: towards climate resilience. Water Corporation, Western Australia.

Blue text represents February 2023 amendments