

Template

Proposal Content Document

Proposal Content Document dated 9 April 2024

Table 1: General proposal content description

Proposal title	Alkimos Seawater Desalination Plant
Proponent name	Water Corporation
Short description	<p>The construction and operation of a 100 GL per annum seawater desalination plant (SDP) and a 4.9 GL per annum groundwater treatment plant (GWTP) at the Alkimos water precinct.</p> <p>The source water for the desalination process will be delivered through the construction of a pipeline directly west of the proposed SDP. By-products of the desalination process will be returned further offshore to the marine environment through a separate pipeline.</p> <p>In order to distribute the drinking water into Perth's Integrated Water Supply Scheme (IWSS), the project includes a 32.93 km pipeline from the Alkimos site to the Wanneroo Reservoir, and other significant distribution points along the pipe route (Figure 1A).</p>

Table 2: Proposal content elements

Proposal element	Location / description	Maximum extent, capacity or range
Construction Elements		
Total DE	Figure 1	142.73 ha, including: <ul style="list-style-type: none">• Marine infrastructure DE of 11.42 ha• Terrestrial DE of 131.31 ha
Marine Infrastructure	Figure 2A	Marine DE of 11.42 ha, includes subsurface tunnelling, comprising: <ul style="list-style-type: none">• 3.03 ha subsurface tunnel footprint<ul style="list-style-type: none">o 2.6 km seawater intake pipeline lengtho 4.5km outlet pipeline length• 8.39 ha vertical risers (intake and outfall) disturbance footprint. Disturbance of up to 4.09 ha of vegetated benthic communities and habitats (BCH) within the Marine DE.

Water Treatment Facility	Alkimos Water Precinct Figure 3A	The water treatment facility DE of up to 32.96 ha including, and not limited to the following infrastructure: <ul style="list-style-type: none"> • Seawater Desalination Plant (SDP) infrastructure (Site earthworks and western berm construction, marine tunnel boring machine launch pit, water treatment buildings and water storage tanks. • the Groundwater Treatment Plant (GWTP) infrastructure, and • access roads and support buildings. Construction includes disturbance of up to 27.78 ha of native vegetation.
Integration Pipeline	Alkimos Water Precinct to Wanneroo Reservoir See Figure 4A-Figure 10A	The Pipeline DE from the Plant Site boundary to the Wanneroo Reservoir, into the IWSS, with a spur pipeline to the Carabooda Tank. The Pipeline DE comprises of the following attributes: <ul style="list-style-type: none"> • Pipeline DE area of 98.4 ha • Pipeline DE corridor width of 30 m • Pipeline DE Length of 32.93 km • Pipeline Disturbance Footprint area of 52.15 ha • Pipeline Disturbance Footprint Corridor width of 16 m • Pipeline diameter of 1600 mm disturbance of up to 23.39 ha of native vegetation within the 16 m wide disturbance footprint corridor
Operational elements		
Seawater Intake	2.6 km from intake Pump Station	Two approximately 8.5m diameter screened intake 360 ML/d (at 50 GL/a) up to 720 ML/d (at 100 GL/a) Maximum velocity 0.15 m/sec
SDP Outlet	4.5 km from outfall tank	Two approximately 7m diameter rosette diffuser 210 ML/d (at 50 GL/a) up to 420 ML/d (at 100 GL/a) with a maximum salinity of 75,200 mg/L
Drinking water production	Within Alkimos water precinct	Seawater desalination: - 100 GL/a ultimate drinking water production capacity

		(Stage 1 – 50 GL/a in 2 x 25 GL/a treatment trains. Stage 2 – 50 GL/a in 2 x 25 GL/a treatment trains) Groundwater treatment: - 4.9 GL/a (excluding abstraction)
Proposal elements with greenhouse gas emissions		
Construction elements:		
Scope 1	Land clearing: 13,784.7 t CO ₂ -e (between 2023 – 2027) Plant and equipment: 18,962 t CO ₂ -e (between 2023 – 2025)	
Scope 2	Tunnel Construction: 3,468 t CO ₂ -e (2023 – 2027)	
Operation elements:		
Scope 1 (100GL Plant)	Operational commissioning: 635 t CO ₂ -e (2027-2028) Operations: 421 t CO ₂ -e (2028 onwards)	
Scope 2 (100GL Plant)	Operational commissioning: 40,040 t CO ₂ -e (2027-2028) Operations (treatment): 133,251 t CO ₂ -e (2028 onwards) Operations (clearwater pumping): 35,645 t CO ₂ -e (2028 onwards)	
Water Corporation proposes to achieve net zero Scope 1 & 2 greenhouse gas emissions for construction and operations of the project.		
Rehabilitation		
A berm to the west of the Alkimos water precinct will be stabilised to prevent wind erosion and revegetated with native vegetation. All cleared land outside the required 5m wide maintenance corridor along the terrestrial pipeline to the Wanneroo Reservoir will be revegetated with native vegetation following completion of the pipeline.		
Commissioning		
<i>Seawater Desalination Plant (SDP)</i> Operational commissioning of the SDP is expected to occur for up to 12 months. During commissioning, water will be sourced through the seawater intake and discharged through the outfall.		
<i>Pipeline</i> Once constructed, the pipeline will be pressure tested in sections and disinfected. Water will be sourced from potable supply and neutralised prior to discharge to the terrestrial environment.		
Other elements which affect extent of effects on the environment		
Proposal time	Maximum project life	100 years
	Estimated Construction phase (subject to State water source requirements)	Stage 1 – 2023-2028 (first 50 GL capacity plant and proposal infrastructure) Stage 2 – 2029-2032 (second 50 GL capacity plant and integration works)

Operations phase	2028 onwards
Decommissioning phase	Decommissioning of original facility by 2128.