Proposal Content Document

Table 1: General proposal content description

Proposal title	Alkimos Seawater Desalination Plant
Proponent name	Water Corporation
Short description	The construction and operation of a 100GL per annum seawater desalination plant and a 6 GL per annum groundwater treatment plant at the Alkimos water precinct. The source water for the desalination process will be delivered through the construction of a pipeline directly west of the proposed Alkimos treatment plant site. By-products of the desalination process will be returned further offshore to the marine environment through a separate pipeline. In order to distribute the drinking water into Perth's Integrated Water Supply System (ISWW), the project includes a 33.5 km pipeline from the Alkimos site to the Wanneroo Reservoir, and other significant distribution points along the pipe route.

Table 2: Proposal content elements

Proposal element	Location / description	Maximum extent, capacity or range
Construction elements		
Marine infrastructure	Figure 2-1	Marine infrastructure (12.2 ha) installed using tunnel boring machines to drill beneath sensitive marine habitats, consisting of a 2.9 km seawater intake pipeline and a separate 4.4 km outfall pipeline, both terminating in a pair of vertical risers. Includes disturbance of up to 2.3 ha of benthic communities and habitat (BCH) within the 12.2 ha development envelope.

Water treatment facility	Alkimos Water precinct See Figure 2-2	The water treatment facility development envelope (up to 29 ha) includes and is not limited to the following infrastructure: • 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 24.15 ha of native vegetation within the 29 ha development envelope.
Integration pipeline	Alkimos water precinct to Wanneroo Reservoir See Figure 2-2	The pipeline development envelope (99.3 ha) consists of a 30 m wide pipeline corridor that will contain the 33.5 km long 1400 mm diameter pipeline running from the water treatment precinct to the Wanneroo Reservoir and into the IWSS, with a spur pipeline to the Carabooda Tank. Construction of the pipeline includes disturbance of up to 20.38 ha of native vegetation within the 16 m wide disturbance footprint corridor (impact footprint). Existing cleared areas along the pipe route will be used for construction laydown and site offices to avoid further impact.
Operational elements		
Seawater intake	2.9 km offshore (Figure 2-5)	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 Outfall	4.4 km offshore (Figure 2-6)	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 (4 x 25 GL/a stages or 1 x 50GL/a + 2 x 25GL/a) Groundwater treatment: - 6 GL/a (excluding abstraction)

Proposal elements with greenhouse gas emissions		
Construction elements:		
Scope 1	Land clearing: 13,784.7 t CO2 -e (total between 2023 – 2027) Plant and equipment: 18,962 t CO2 -e (total between 2023 – 2026)	
Scope 2	Tunnel Construction: 3,468 t CO2 -e (total between 2023 – 2027)	
Operation elements:		
Scope 1	Operational commissioning: 635 t CO2 -e (for 1 year of commissioning) Operations: 421 t CO2 -e per annum (2028 onwards)	
Scope 2	Operational commissioning: 40,040 t CO2 -e (for 1 year of commissioning) Operations (treatment): 133,251 t CO2 -e per annum (2028 onwards) Operations (clearwater pumping): 35,645 t CO2 -e per annum (2028 onwards)	
Scope 3	Purchased goods: 9,365 t CO2 -e per annum (2028 onwards) Indirect fuel and electricity emissions not reported in scope 1 and 2. (losses in the transmission system): 5,250 t CO2 -e per annum (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 6m wide maintenance corridor along the terrestrial pipeline to the Wanneroo Reservoir will be revegetated with native vegetation following completion of the pipeline.		
Commissioning		
Seawater Desalination Plant (SDP) 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.		
Pipeline Once constructed, the 1400mm 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*	Construction phase	2023 – 2028
	Operations phase	2028 onwards
	Decommissioning phase	n/a