

# Proposal Content Document

## Proposal Content Document dated 5 March 2025

**Table 1:** General proposal content description

<b>Proposal title</b>	Alkimos Seawater Desalination Plant	No change	Alkimos Seawater Desalination Plant
<b>Proponent name</b>	Water Corporation	No change	Water Corporation
<b>Short description</b>	<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 33.04 km pipeline from the Alkimos site to the Wanneroo Reservoir, and other significant distribution points along the pipe route (Figure 1).</p>	Change to 6GL to match MS 1207.	<p>The construction and operation of a 100 GL per annum seawater desalination plant (SDP) and a 6 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 33.04 km pipeline from the Alkimos site to the Wanneroo Reservoir, and other significant distribution points along the pipe route (Figure 1).</p>

**Table 2:** Proposal content elements

Proposal element	Location / description	Existing maximum extent, capacity or range	Proposed amendment	Combined maximum extent, capacity or range
<b>Construction Elements</b>				
Total DE	Figure 1	<ul style="list-style-type: none"> <li>Marine infrastructure Development Envelope (DE) of 11.42 ha.</li> <li>Terrestrial DE of 184.32 ha.</li> </ul>	66.37 ha increase; including: <ul style="list-style-type: none"> <li>66.37 ha increase to the Marine infrastructure DE.</li> </ul>	<ul style="list-style-type: none"> <li>Marine infrastructure Development Envelope (DE) of 77.79 ha.</li> <li>Terrestrial DE of 184.32 ha.</li> </ul>

Proposal element	Location / description	Existing maximum extent, capacity or range	Proposed amendment	Combined maximum extent, capacity or range
			<ul style="list-style-type: none"> <li>No change to the Terrestrial DE.</li> </ul>	
Marine Infrastructure	Figure 2	<p>Marine DE of 11.42 ha including subsurface tunnelling, comprising:</p> <ul style="list-style-type: none"> <li>3.03 ha subsurface tunnel footprint</li> <li>2.6 km seawater intake pipeline length.</li> <li>4.5km outlet pipeline length.</li> <li>8.39 ha vertical risers (intake and outfall) disturbance footprint.</li> </ul> <p>Disturbance of up to 4.09 ha of vegetated benthic communities and habitats (BCH) within the Marine DE.</p>	<p>66.37 ha increase to the Marine DE including subsurface tunnelling, comprising:</p> <ul style="list-style-type: none"> <li>0.24 ha reduction to the subsurface tunnel footprint</li> <li>0.09 km reduction to the seawater intake pipeline length.</li> <li>0.50 km reduction to the outlet pipeline length.</li> </ul> <p>0.29 ha increase to the vertical risers (intake and outfall) disturbance footprint.</p> <p>1.38 ha reduction to vegetated BCH within the Marine DE.</p>	<p>Marine DE of 77.79 ha including subsurface tunnelling, comprising:</p> <ul style="list-style-type: none"> <li>2.79 ha subsurface tunnel footprint</li> <li>2.5 km seawater intake pipeline length.</li> <li>4.0 km outlet pipeline length.</li> <li>8.68 ha vertical risers (intake and outfall) disturbance footprint</li> </ul> <p>Disturbance of up to 2.71 ha of vegetated BCH within the Marine DE.</p>
Water Treatment Facility	Alkimos Water Precinct	<p>The water treatment facility DE of up to 32.96 ha including, and not limited to the following infrastructure:</p> <ul style="list-style-type: none"> <li>Seawater Desalination Plant (SDP) infrastructure (Site earthworks and western berm construction, marine tunnel boring machine launch pit, water treatment buildings and water storage tanks.</li> <li>the Groundwater Treatment Plant (GWTP) infrastructure, and</li> </ul>	No change	<p>The water treatment facility DE of up to 32.96 ha including, and not limited to the following infrastructure:</p> <ul style="list-style-type: none"> <li>Seawater Desalination Plant (SDP) infrastructure (Site earthworks and western berm construction, marine tunnel boring machine launch pit, water treatment buildings and water storage tanks.</li> <li>the Groundwater Treatment Plant (GWTP) infrastructure, and</li> </ul>

Proposal element	Location / description	Existing maximum extent, capacity or range	Proposed amendment	Combined maximum extent, capacity or range
		<ul style="list-style-type: none"> <li>access roads and support buildings. Construction includes disturbance of up to 27.78 ha of native vegetation.</li> </ul>		<ul style="list-style-type: none"> <li>access roads and support buildings. Construction includes disturbance of up to 27.78 ha of native vegetation.</li> </ul>
Integration Pipeline	Alkimos Water Precinct to Wanneroo Reservoir Figure 3	<p>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:</p> <ul style="list-style-type: none"> <li>Pipeline DE area of 151.36 ha.</li> <li>Pipeline DE corridor width of up to 70m (laydown areas and Wanneroo reservoir up to 435 m width to allow for operational flexibility).</li> <li>Pipeline DE Length of 33.04 km.</li> <li>Pipeline Disturbance Footprint area of 23.17 ha.</li> <li>Pipeline Disturbance Footprint Corridor width of up to 27m (laydown areas and Wanneroo reservoir up to 70m).</li> <li>Pipeline diameter of 1600 mm disturbance of up to 23.17 ha of native vegetation within the predominately 16 m wide disturbance footprint corridor</li> </ul>	No change	<p>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:</p> <ul style="list-style-type: none"> <li>Pipeline DE area of 151.36 ha.</li> <li>Pipeline DE corridor width of up to 70m (laydown areas and Wanneroo reservoir up to 435 m width to allow for operational flexibility).</li> <li>Pipeline DE Length of 33.04 km.</li> <li>Pipeline Disturbance Footprint area of 23.17 ha.</li> <li>Pipeline Disturbance Footprint Corridor width of up to 27m (laydown areas and Wanneroo reservoir up to 70m).</li> <li>Pipeline diameter of 1600 mm disturbance of up to 23.17 ha of native vegetation within the predominately 16 m wide disturbance footprint corridor</li> </ul>

Proposal element	Location / description	Existing maximum extent, capacity or range	Proposed amendment	Combined maximum extent, capacity or range
<b>Operational Elements</b>				
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	0.09 km reduction to the seawater intake pipeline length. Remove diameter of the screened intake structures. 78 ML/d increase at 50 GL/a and 156 ML/d increase at 50 GL/a  No change	2.5 km from intake Pump Station. Two screened intake structures 438 ML/d (at 50 GL/a) up to 876 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	0.5 km reduction in the distance from the outfall tank. Change from rosette diffuser to a linear diffuser.  Increase of outfall volume of 97 ML/d at 50GL/a  Increase of outfall volume of 192 ML/d at 100GL/a  A reduction in maximum salinity by 7,200 mg/L.	4.0 km from the outfall tank. One linear diffuser 307 ML/d (at 50 GL/a). up to 612 ML/d (at 100 GL/a)  with a maximum salinity of 68,000 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).	No change	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).
<b>Proposal elements with greenhouse gas emissions</b>				
Construction elements:				
Scope 1	Land clearing: 13,784.7 t CO <sub>2</sub> -e (between 2023 – 2027) Plant and equipment: 18,962 t CO <sub>2</sub> -e (between 2023 – 2025).		No change	Land clearing: 13,784.7 t CO <sub>2</sub> -e (between 2023 – 2027) Plant and equipment: 18,962 t

Proposal element	Location / description	Existing maximum extent, capacity or range	Proposed amendment	Combined maximum extent, capacity or range
				CO2 -e (between 2023 – 2025).
Scope 2	Tunnel Construction: 3,468 t CO2 -e (2023 – 2027).		No change	Tunnel Construction: 3,468 t CO2 -e (2023 – 2027).
<b>Operation elements:</b>				
Scope 1 (100GL Plant)	Operational commissioning: 635 t CO2 -e (2027-2028) Operations: 421 t CO2 -e (2028 onwards).		No change	Operational commissioning: 635 t CO2 -e (2027-2028) Operations: 421 t CO2 -e (2028 onwards).
Scope 2 (100GL Plant)	Operational commissioning: 40,040 t CO2 -e (2027-2028) Operations (treatment): 133,251 t CO2 -e (2028 onwards) Operations (clearwater pumping): 35,645 t CO2 -e (2028 onwards).		No change	Operational commissioning: 40,040 t CO2 -e (2027-2028) Operations (treatment): 133,251 t CO2 -e (2028 onwards) Operations (clearwater pumping): 35,645 t CO2 -e (2028 onwards).
Water Corporation proposes to achieve net zero Scope 1 & 2 greenhouse gas emissions for construction and operations of the project.			No change	Water Corporation proposes to achieve net zero Scope 1 & 2 greenhouse gas emissions for construction and operations of the project.
<b>Rehabilitation</b>				
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.			No change	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.
<b>Commissioning</b>				

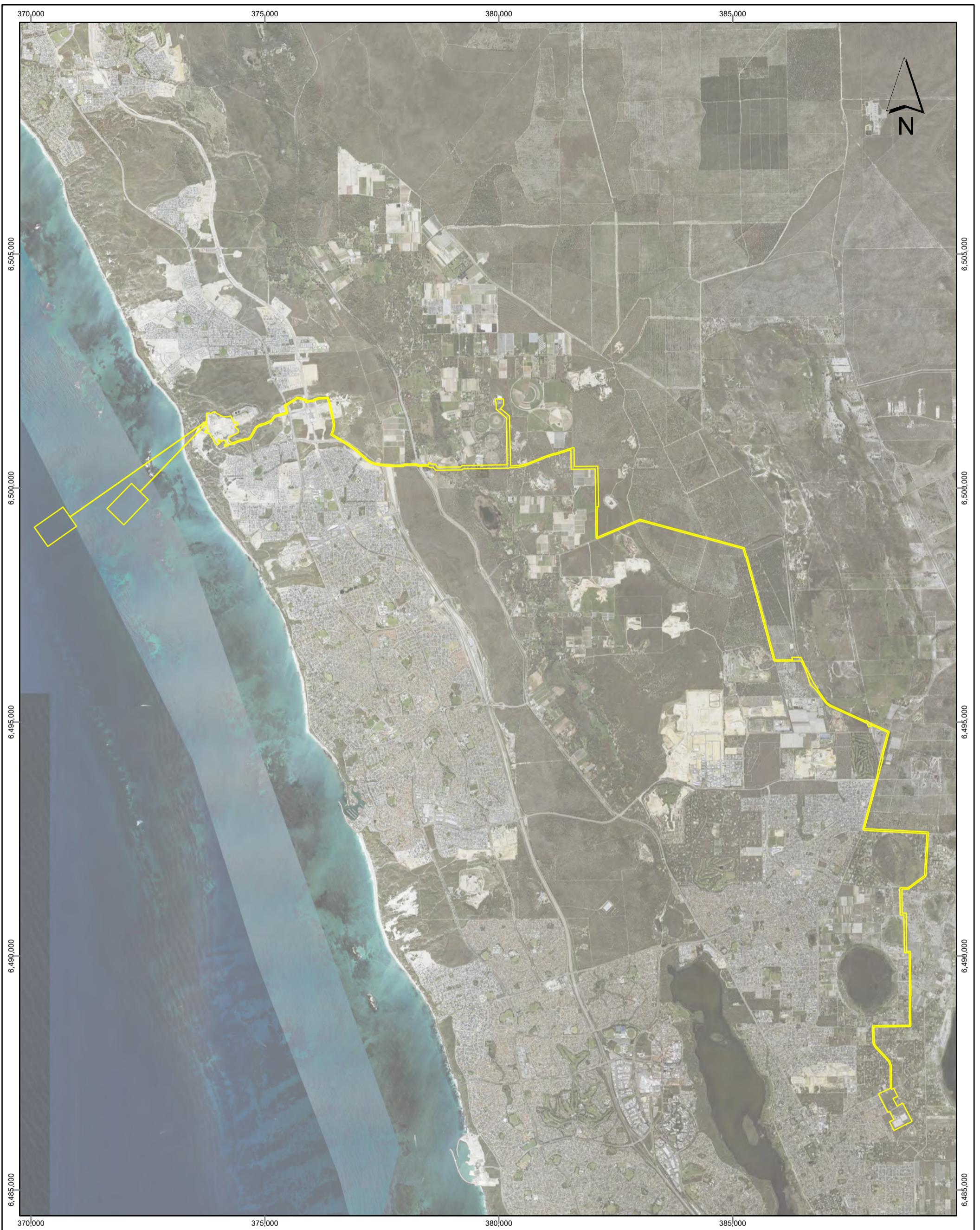
Proposal element	Location / description	Existing maximum extent, capacity or range	Proposed amendment	Combined maximum extent, capacity or range
<i>Seawater Desalination Plant (SDP)</i> Operational commissioning of the SDP is expected to occur for up to 12 months. During commissioning, water will be sourced through the seawater intake and discharged through the outfall.			No change	<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.			No change	<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.
<b>Other elements which affect extent of effects on the environment</b>				
Proposal time	Maximum project life.	100 years.	No change	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).	No change	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.	No change	2028 onwards.
	Decommissioning phase.	Decommissioning of original facility by 2128.	No change	Decommissioning of original facility by 2128.

## PCD MAPS

Figure 1 <https://nexus.watercorporation.com.au/otcs/cs.exe/app/nodes/186517724>

Figure 2 <https://nexus.watercorporation.com.au/otcs/cs.exe/app/nodes/186516823>

Figure 3 <https://nexus.watercorporation.com.au/otcs/cs.exe/app/nodes/186548159>



**LEGEND**  
 ■ Development Envelope (MS1207 45C Submitted 8 Oct 2024)



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 kilometres  
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 Vertical Datum: AHD

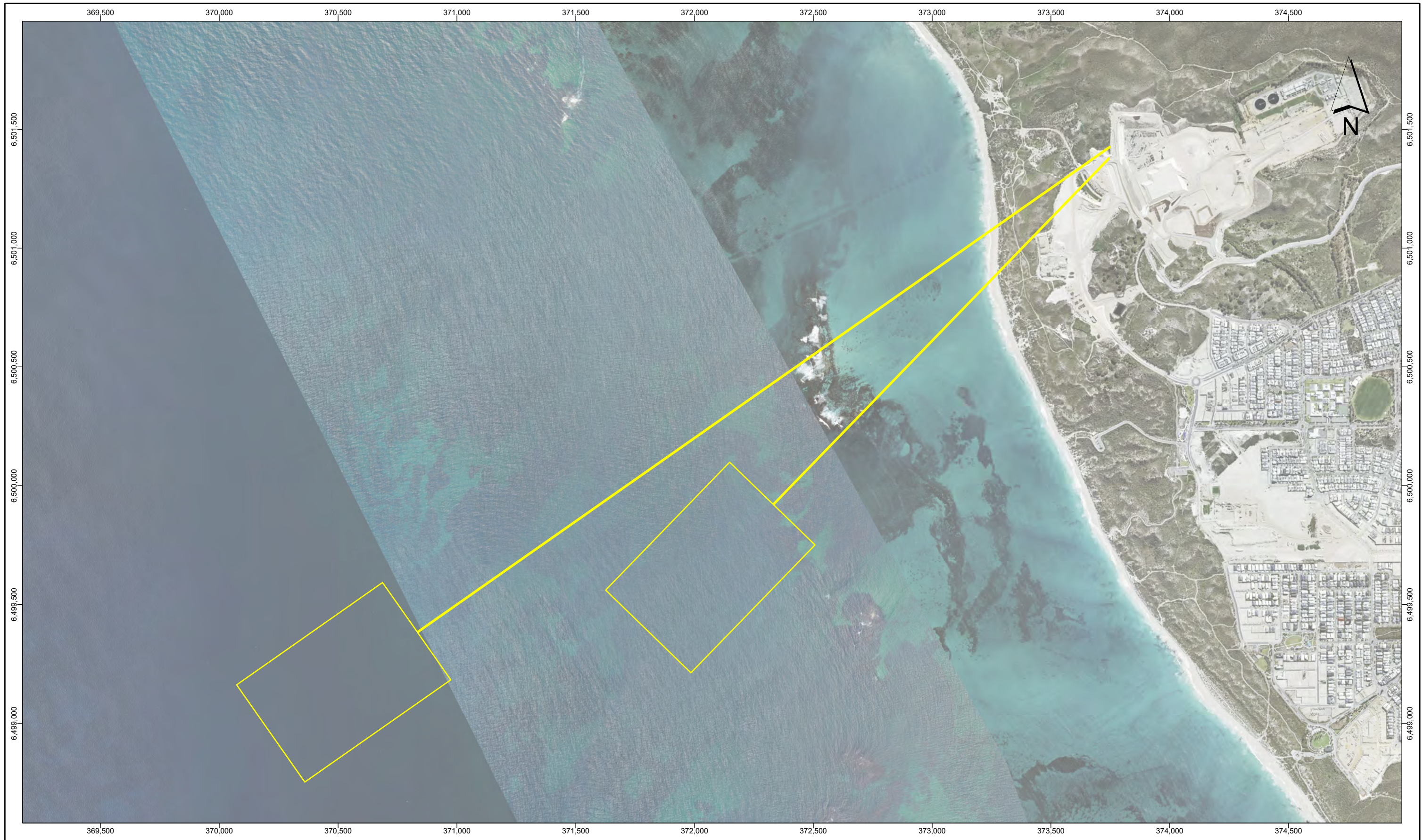
AUTHOR: POWERAO DATE: 17/12/2024  
 BRANCH: APDG – ENVIRONMENTAL BUSINESS UNIT

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Alkimos Seawater Desalination  
 Plant Terrestrial and Marine  
 Development Envelope

Figure 1



**LEGEND**  
 Development Envelope

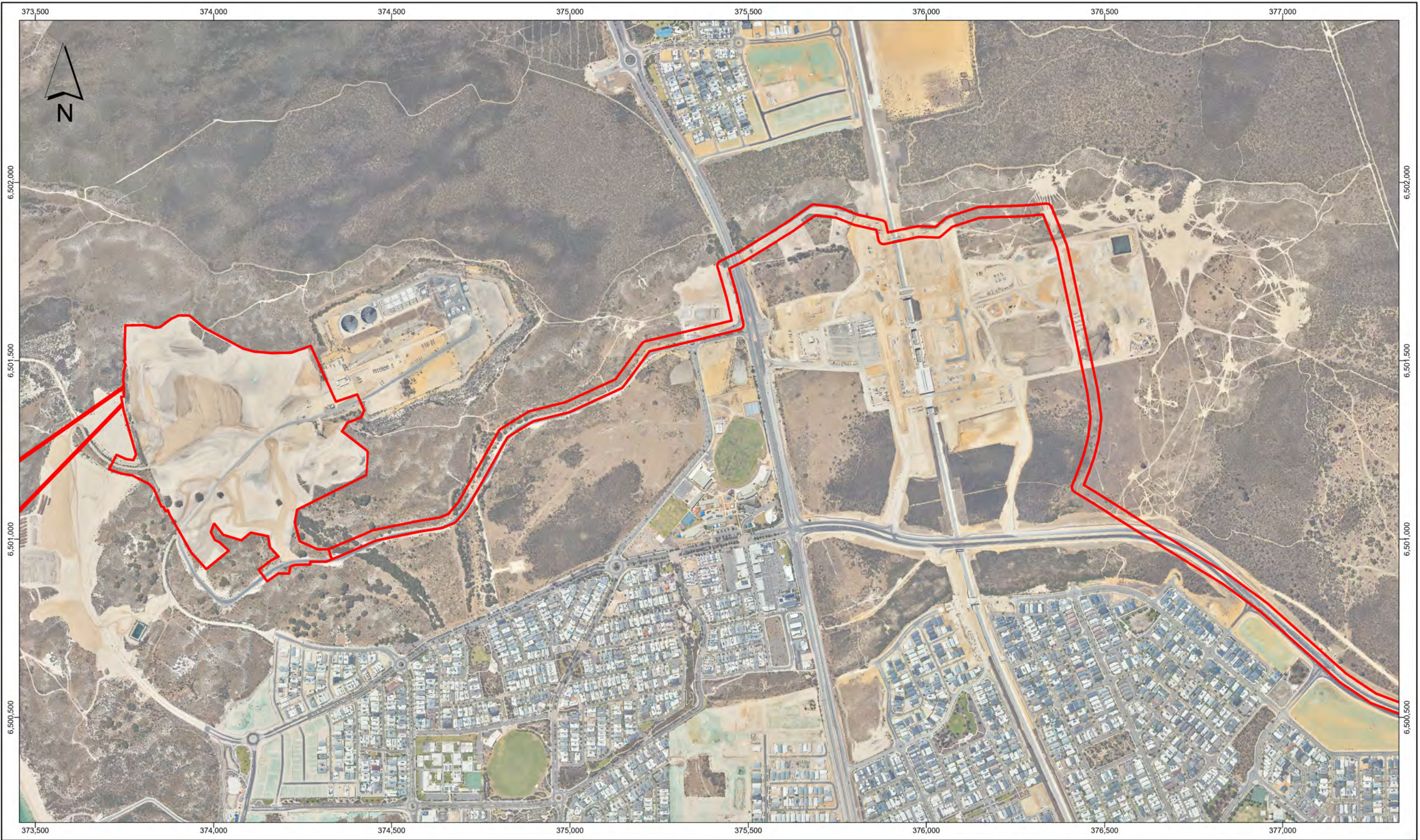


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 Vertical Datum: AHD  
 AUTHOR: POWERA0 DATE: 18/12/2024  
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Alkimos Seawater Desalination Plant Marine Development Envelope

Figure 2



**LEGEND**  
▭ Development envelope



1:10,000 at A3  
 0 100 200 300 400  
 Metres  
 Coordinate System: GDA 1994 MGA Zone 50  
 Vertical Datum: AHD  
 AUTHOR: POWERA0    DATE: 11/09/2024  
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Alkimos Desalination Plant

Development Envelope

Figure 3



**LEGEND**  
 Development envelope

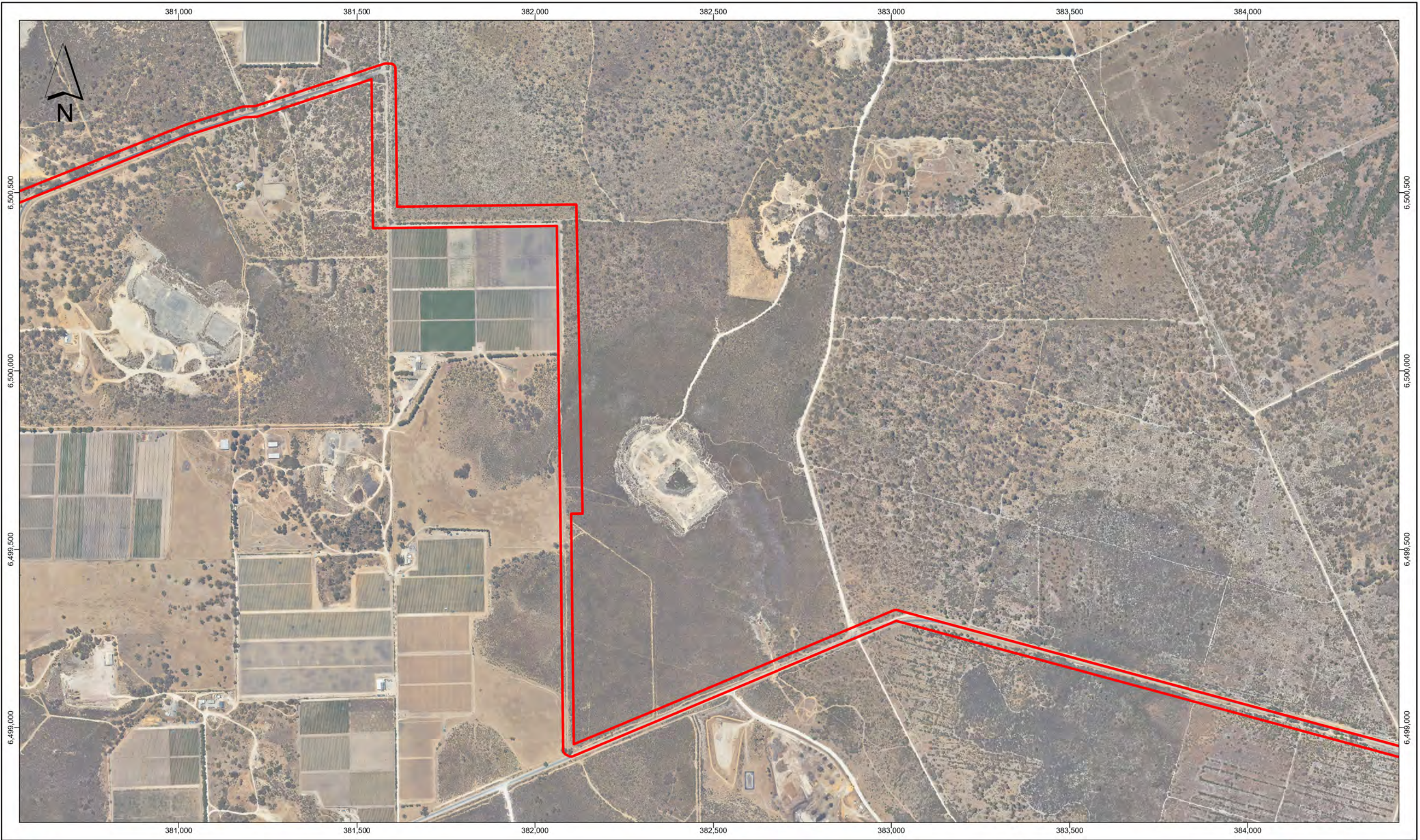


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Alkimos Desalination Plant

Development Envelope



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Alkimos Desalination Plant

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**Alkimos Desalination Plant**  
**Development Envelope**



**LEGEND**

 Development envelope



1:15,000 at A3  
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