



Application for Works Approval Amendment

Part V Division 3 of the *Environmental Protection Act 1986*

Works Approval Number	W6523/2021/1
Works Approval Holder	Water Corporation
ACN	28 003 434 917
File Number	DEC14838/2
Premises	Alkimos Wastewater Treatment Plant 11 Brindabella Parkway, Alkimos WA 6038 Legal description – Lot 3000 on Deposited Plan 415979 Certificate of Title Volume 2968 Folio 329
Date of Report	13 December 2022
Decision	Revised works approval granted

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an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

Works Approval W6523/2021/1 is held by the Water Corporation (Works Approval Holder) for the Alkimos Wastewater Treatment Plant (WWTP) (the Premises), located at 11 Brindabella Parkway, Alkimos WA 6038.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the construction and operation of a larger bioselector. As a result of this assessment, Revised Works Approval W6523/2021/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Amendment summary

The Water Corporation was granted Works Approval W6523/2021/1 on 4 January 2022. Upon technical review of all existing assets, the works approval holder identified that the current bioselector capacity is not suitable to take the full flow of 26MLD approved in the works approval. Therefore, as flow increases, it will be necessary to increase the volume of the bioselector to ensure good settleability of the treated wastewater and maintain low levels of suspended solids. The existing bioselector will need to be extended to achieve a total volume of 1,300m³ based on a soluble chemical oxygen demand (sCOD) of 312mg/L in the influent.

On 18 October 2022, the Works Approval Holder submitted an application to the department to amend Works Approval W6523/2021/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). To achieve a total volume of 1,300m³ the bioselector would need to be divided into 6 equal chambers, each with the same overall volume to allow for the sCOD to be taken up by the substrate.

2.3 Part IV of the EP Act

The Alkimos WWTP is subject to an existing Ministerial Statement (MS) 755 issued under Part IV of the EP Act. The Environmental Protection Authority report for MS755 is titled Alkimos Wastewater Treatment Plant Site B (Assessment 1529) Water Corporation, Report and recommendation of the Environmental Protection Authority (Bulletin 1239, November 2006). Offshore discharge of treated wastewater to the marine environment, compliance reporting relating to offshore discharge, and odour emissions are regulated under Part IV of the EPA by MS755.

A request (change to implementation conditions) was submitted to the Environmental Protection authority (EPA) by the Water Corporation on 4 December 2020 requesting a change to the proposal, allowing other venting methods in addition to venting via the stack and to change Condition 12 (Odour). On 4 January 2021, the Minister for Environment (the Minister) requested the EPA inquire into and report on the matter of changing Schedule 1 and Condition 12 of MS755 pursuant to section 46 of the Environmental Protection Act 1986 (EP Act) related to infrastructure description changes.

On 23 November 2021 the Minister agreed to the amendment of MS755, which included provisions for the regulation of odour emissions under a Part V licence.

2.4 Part V of the EP Act

The premise currently operates as a prescribed premise under Category 54: Sewerage Facility and Category 61: Liquid Waste Facility licenced under Part V of the Environmental Protection Act 1986 (EP Act) (L8434/2010/1).

Construction of Stage 1 was completed under Works Approval W4423/2008/1. Stage 1 had a nominated Category 54 throughput and treatment capacity of up to 20 ML/day as reflected in the operating licence L8434/2010/1 and is presently treating an average throughput of 12 ML/day.

The Alkimos WWTP Stage 2 upgrade approved under Works Approval W6523/2021/1 granted on 4 January 2022 involves the equipping of oxidation ditch 3 and upgrade to sewage and liquid waste treatment infrastructure. The works will bring the WWTP to a maximum treatment capacity of 26 ML/day.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during construction and operation which have been considered in this Amendment Report are detailed in Table 1 below.

Table 1 also details the proposed control measures the Works Approval Holder has proposed to assist in controlling these emissions, where necessary.

Table 1: Works Approval Holder controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Noise	Vehicle movement Use of machinery and equipment	Air/windborne pathway	No additional controls have been proposed for noise emissions in addition to those proposed in the original works approval application.
Dust	Vehicle movement and mobile plant Movement of soil, stockpiling of soil and other materials Construction activities	Air/windborne pathway	No additional controls have been proposed for dust emissions in addition to those proposed in the original works approval application.
Odour	Effluent	Air/windborne pathway	All bioselector odour emissions generated during construction will be vented via the odour extraction point to the photo-ionisation unit for treatment.
Treated wastewater	Changes to effluent treatment	Ocean outfall	The proposed works are not expected to adversely impact the current quality of treated wastewater Prior to construction, partial Isolation of the existing bioselector is required by bypassing existing chambers 2 and 3. Any reduction in sludge settleability caused by bypassing chambers 2 and 3 will be captured within the oxidation ditches and removed as part of the desludging process approved under the granted works approval.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Works Approval Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 2 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020)).

Table 2: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Immediate surrounds	The site has a 600 m odour buffer surrounding the premises. The odour buffer at the Alkimos WWTP is currently Water Corporation owned and protected and will not be cleared or disturbed as a result of this proposal.
Residential	The nearest residential receptors are located 740 m northeast and 850 m south of WWTP infrastructure.
Environmental receptors	Distance from prescribed activity
Specified Ecosystems	<p>The premises is surrounded by Banksia Woodlands, Coastal sand dunes of the Swan Coastal Plain.</p> <p>The existing Alkimos WWTP site is cleared of all native vegetation. The proposed upgrade of the Alkimos WWTP will require no clearing of or impact on surrounding native vegetation.</p>
Underlying groundwater (non-potable purposes)	<p>Groundwater beneath the premises is between 5 and 20 m (below ground level). Groundwater in the superficial aquifer is recharged by rainfall infiltration and flows westwards to discharge to the ocean.</p> <p>The premises sits within the following protected water source areas:</p> <ul style="list-style-type: none"> • Perth Coastal and Gwelup Underground Water Pollution Control Areas; • Priority Drinking Water Catchment Priority 3; and • Surrounded by Wellhead Protection Zones.
Open water bodies	Indian ocean located approximately 1,200 m to the west of the premises.
TECs/PECs	<p>Three threatened ecological communities exist within 1km of the premises boundary, these being:</p> <ul style="list-style-type: none"> • Melaleuca huegelii - Melaleuca systema shrublands on limestone ridges (floristic community type 26a) – Endangered; • Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain – Critically endangered.

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the Works Approval Holder has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Works Approval Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the Works Approval Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

The Revised Works Approval W6523/2022/1 that accompanies this Amendment Report authorises construction and operation of a larger biselector. The conditions in the Revised Works Approval have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the Premises. A risk assessment for the operational phase has been included in this Amendment Report, however licence conditions will not be finalised until the department assesses the licence application.

Table 3. Risk assessment of potential emissions and discharges during construction and operation of the bioselector

Risk Event					Risk rating ¹ C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
Construction								
Construction, mobilisation and positioning of infrastructure Vehicle movement Use of machinery and equipment	Dust	Air/windborne pathway causing impacts to health and amenity	The nearest residential receptors are located 740 m northeast and 850 m south of WWTP infrastructure.	Refer to Section 3.1	C = Minor L = Rare Low Risk	Y	<u>Conditions 5, 6</u>	The works approval specifies the minimum requirements for the CEMP to manage dust emissions.
	Noise				C = Minor L = Rare Low Risk	Y	<u>Conditions 5, 6</u>	The applicant has committed to having a Construction Environmental Management Plan (CEMP) which will address the potential for noise emissions and provide mitigation measures. The works approval specifies the minimum requirements for the CEMP to manage noise emissions
	Litter				C = Slight L = Unlikely Low Risk	Y	<u>Conditions 5, 6</u>	The works approval specifies the minimum requirements for the CEMP to manage litter.

Risk Event					Risk rating ¹ C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
	Odour				C = Minor L = Unlikely Medium Risk	Y	Conditions 1, 2, 3, 4, 7 and 12 <u>Conditions 5, 6</u>	All bioselector odour emissions during construction will be vented via the odour extraction point to the photo-ionisation for treatment. The works approval specifies the minimum requirements for the CEMP to manage odour emissions.
Discharge of lower quality treated wastewater on the premises, from equipment being taken offline as required during works	Low quality treated wastewater	Direct discharge via the ocean outlet causing ecosystem disturbance.	Marine ecosystems - Indian Ocean, located 1,200 m west	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Y	Conditions 7 & 12	The proposed construction works are not expected to adversely impact the current quality of treated wastewater. The existing conditions of Licence L8434/2010/1 and the discharge requirements of Ministerial Statement 755 provide sufficient control to mitigate the potential for adverse emissions through wastewater discharge to the Indian Ocean.

Risk Event					Risk rating ¹ C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
Operation								
Operation of the bioselector	Odour	Air/windborne pathway causing impacts to health and amenity	The nearest residential receptors are located 740 m northeast and 850 m south of WWTP infrastructure.	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Conditions 1, 2, 3, 4, 7 and 12 <u>Conditions 5, 6</u>	All bioselector odour emissions will be vented via the odour extraction point to the photo-ionisation for treatment. The increase of flow through the photo-ionisation unit during operation is considered minor (1.5%) and will not impact the capacity of the odour treatment infrastructure. The works approval specifies the minimum requirements for the CEMP to manage odour emissions.
Loss of containment	Wastewater discharge to the environment	Overland flow and infiltration to soil and groundwater causing ecosystem disturbance	Soil profile Groundwater dependent vegetation and beneficial uses of groundwater	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Y	Conditions 7 & 12 <u>Condition 8, 9, 17 and 18</u>	The operation of the proposed infrastructure does not alter the risk as previously assessed for equivalent infrastructure for Licence L8434/2010/1.
Discharge of treated wastewater	Wastewater discharge to the	Direct discharge via the ocean outlet causing ecosystem	Indian Ocean, located 1,200 m west	Refer to Section 3.1	C = Major L = Unlikely	Y	Conditions 7 & 12 <u>Condition 8, 9, 17 and 18</u>	The proposed works are not expected to adversely impact the current quality of

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Risk Event					Risk rating ¹ C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
	environment	disturbance			Medium Risk			treated wastewater. The existing conditions of Licence L8434/2010/1 and the discharge requirements of Ministerial Statement 755 provide sufficient control to mitigate the potential for adverse emissions through wastewater discharge to the Indian Ocean.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2020).

Note 2: Proposed Works Approval Holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

4. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Works Approval Holder was provided with draft amendment on 24/11/2022	The bioselector will have six chambers of almost equal sizes, but they may have slight variations as advised by the lead designer. Update the condition wording for the bioselector to achieve a total volume 1,300m ³ divided in to six chambers.	The condition has been amended to allow for slight variations in the chambers, whilst still maintaining the same total treatment volume.

5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Works Approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

5.1 Summary of amendments

Table 5 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Works Approval as part of the amendment process.

Table 5: Summary of works approval amendments

Condition no.	Proposed amendments
7	Bioselector design and construction requirements added to Table 2.
33	Condition updated to include requirements for recording details of complaints

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY						
Application type						
Works approval	<input type="checkbox"/>					
Licence	<input type="checkbox"/>	Relevant works approval number:		None	<input type="checkbox"/>	
		Has the works approval been complied with?			Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Has time limited operations under the works approval demonstrated acceptable operations?			Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?			Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Date Report received:				
Renewal	<input type="checkbox"/>	Current licence number:				
Amendment to works approval	<input checked="" type="checkbox"/>	Current works approval number:	W6523/2021/1			
Amendment to licence	<input type="checkbox"/>	Current licence number:				
		Relevant works approval number:		N/A	<input type="checkbox"/>	
Registration	<input type="checkbox"/>	Current works approval number:		None	<input type="checkbox"/>	
Date application received		18/10/2022				
Applicant and Premises details						
Applicant name/s (full legal name/s)		Water Corporation				
Premises name		Alkimos Wastewater Treatment Plant				
Premises location		Lot 1050 on Deposited Plan 412130				
Local Government Authority		City of Wanneroo				
Application documents						
HPCM file reference number:		DEC14838/2~1				
Key application documents (additional to application form):		Alkimos 26MLD Bioselector Extension Supporting Information Report (W6523) (2) Appendix A - Etkimo Bioselector Sampling				

Scope of application/assessment		
Summary of proposed activities or changes to existing operations.	<p>The Water Corporation is upgrading the Alkimos WWTP to achieve 26MLD under Works Approval W6523/2021/1 issued by the Department of Water and Environmental Regulation.</p> <p>Upon Technical review of all existing assets, it was identified that the Bioselector current capacity is not suitable to take the full flow of 26MLD. Therefore, as flow increases, it will be necessary to increase the volume of the Bioselector to ensure good settleability of the treated wastewater and maintain low levels of suspended solids.</p> <p>In order to treat flows up to 26MLD per day. The existing Bioselector will need to be extended to achieve a total volume 1300m³ based on a sCOD (soluble chemical oxygen demand) of 312mg/L in the influent.</p>	
Category number/s (activities that cause the premises to become prescribed premises)		
Table 1: Prescribed premises categories		
Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity
54 - Sewage facility	26,000 m ³ per day.	No proposed throughput increase
61 - Liquid waste facility	10,000 tonnes per year	No proposed throughput increase
Legislative context and other approvals		
Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Ministerial statement No: 755 EPA Report No: 1529
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title <input checked="" type="checkbox"/>
Has the applicant obtained all relevant planning approvals?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Under Section 137 of the Water Services Act 2012, the Water Corporation is exempt from the requirement (under the Planning and Development Act 2005) to

		obtain development approvals for Public Water Works under a Local Planning Scheme.
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	The Alkimos WWTP Development Area Footprint area sits with the following protected water source areas: Perth Coastal and Gwelup Underground Water Pollution Control Areas Priority Drinking Water Catchment Priority 3 Surrounded by Wellhead Protection Zones.
Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx</i>)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A

Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A