



Application for Works Approval

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

Works Approval Number W6523/2021/1

Applicant 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 04/01/2022

Decision Works approval granted

TRACEY HASSELL
A/SENIOR MANAGER WASTE INDUSTRIES

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

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1. Decision summary

This Decision Report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction, commissioning and time limited operations associated with oxidation ditch 3, replacement of existing Band Screens, and the desludging of oxidation ditches 1 and 2. As a result of this assessment, Works Approval W6523 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) 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 Background

The Water Corporation (the Applicant) has been operating the Alkimos Wastewater Treatment Plant (WWTP) since 26 May 2011 under L8434/2012/1. On 3 August 2020, the applicant submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

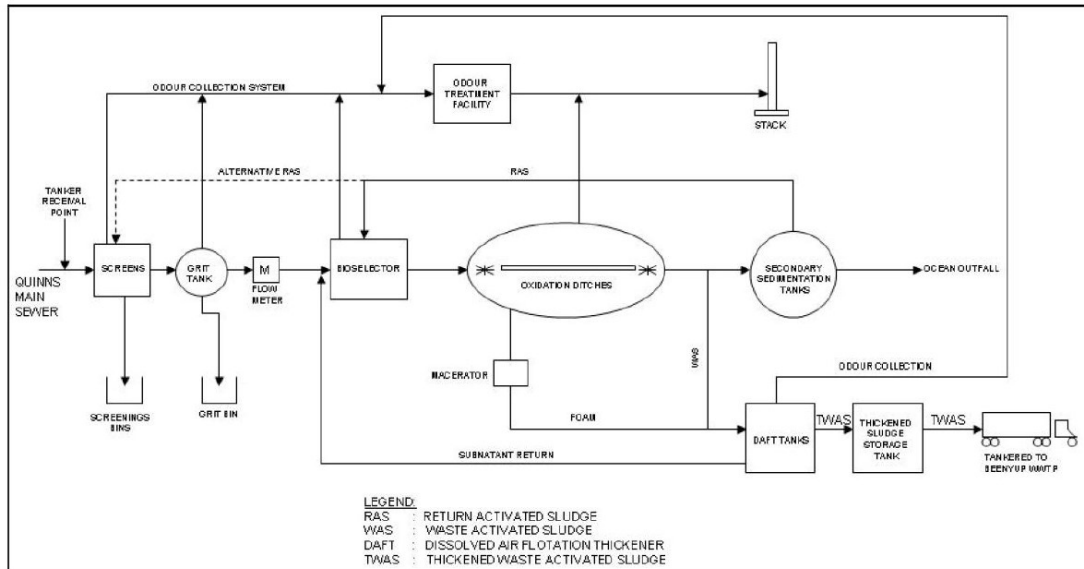
The Premises is situated approximately 40 km northwest of Perth CBD and approximately 1.3 km inland from the Indian Ocean. The WWTP is situated in a shallow basin, surrounded by undulating vegetated dunes, with typical ground levels between 10 and 18 m Australian Height Datum (AHD). The dunes form a rim around the WWTP site, with lower rim heights between 16 m and 40 m AHD. The rim is at its highest along the eastern and southeast sections sloping down towards the entrance to the WWTP in the southwest corner of the basin.

2.2.1 Existing Infrastructure

The Alkimos WWTP current has an approved treatment capacity of up to 20 ML/day with the current average throughput of 12 ML/day. The treatment process at the premises consists of the following infrastructure:

- Inlet works (inlet screens);
- Grit removal;
- Bioselector and two operational covered oxidation ditches;
- Secondary sedimentation;
- Return activated sludge system;
- Wastewater activated sludge system;
- Sludge thickening; and
- Odour treatment systems.

The treatment process diagram is shown in Figure 1 below:



2.3 Proposed infrastructure changes

The Water Corporation have proposed the following infrastructure changes at the premises:

- Installation of weir downstream of each band screen;
- Replace existing DN600 flowmeter with DN900 flowmeter;
- Restore functionality of the grit tank systems to achieve design capacity of 38 ML/day;
- Replace 4 x 132 kw motors and gearboxes with 160 kw gearboxes in oxidation ditches 1 & 2 to reduce solid retention time to 9 days;
- Install 2 x 160 kw high-efficiency aerator systems in oxidation ditch 3;
- Replace 3 x return activated sludge pumps to increase capacity to 520 L/s each;
- Replace 2 x waste activated sludge pumps to achieve the capacity of 55 L/s in duty/standby mode;
- Install polymer system to the dissolved air flotation tank in order to maintain thickening performance;
- Desludging of bio selector and oxidation ditches prior to equipping, seeding and commissioning works; and
- Change in drainage configuration whereby drainage from inlet works, odour treatment, DAFT Tank slab, Thickened Sludge Storage Tank slab, vehicles wash down area, administration building, Oxidation Ditches and Secondary Sedimentation Tanks will be directed to upstream of the inlet screens for deragging and degritting.

To allow the upgrade of the Alkimos WWTP, the following works are proposed to be undertaken to maintain operation and treatment wastewater quality during the works:

- Operational interruptions (shutdown/startup) for installation/upgrade works;
- Cleaning (desludging/de-gritting/de-ragging) of bio-selector; and
- Staggering cleaning (desludging/de-gritting/de-ragging), and commissioning of each oxidation ditch.

Final treated effluent quality disposed of via the ocean outfall will be maintained by keeping at least two oxidation ditches in operation. This operation is achieved by splitting flow across two oxidation ditches at any given time to maintain current treatment capacity.

Upon the completion of the construction works, the applicant will inform DWER of commissioning start and end dates and provide Construction Quality Assurance documentation. Commissioning of the oxidation ditches, including desludging is expected to take up to 12 months.

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

2.5 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 has 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 will involve sewage and liquid waste treatment and discharge (via the exiting designated marine outfall). It will have a maximum treatment capacity of 26 ML/day once oxidation ditch 3 is equipped. The Delegated Officer notes that all oxidation ditch shells were constructed in 2011.

2.6 Odour reports

To support the works approval application, the Water Corporation provided a detailed Odour Risk Assessment report and an Odour Monitoring Recommendations report that assessed, modelled, and quantified the risk of odour emissions in accordance with the department's *Guideline: Odour Emissions* (DWER 2019) and outlined the proposed monitoring to be undertaken during the construction and time limited operations. A revised Odour Management Plan was also submitted as part of the Works Approval application. The department undertook a review of the supplied reports and a summary of key matters relevant to this assessment is provided below.

- The release of odours from an uncovered oxidation ditch is typically associated with low concentration odour plumes that disperse over a relatively short distance. The expected distance of disposal is less than the distance from the infrastructure to the nearest sensitive receptor.
- Interpretation of the data provided in the reports suggests that “ponding” of odour emissions,

not vented via the stack, within the shallow basin area, may occur during light winds or stable conditions but the collected odour plume is not likely to change the consequence to amenity experienced by any emission of odour related to the proposed activities. This is due to volume of the basin and the presence of low basin walls in the westerly (seaward) direction which is likely to promote drainage of any ponded air that has accumulated in the basin

- The Odour Risk Assessment report states that the low odour high volume air extracted from oxidation ditches 1 and 2 is used to dilute the high strength low volume inlet works odorous air during venting from the stack. It is anticipated that the increased sewage inflow rates will result in increased inlet works odour concentration and/or volume. This is likely to vary the nature of the odour emission source previously assessed for the stack emissions in that it may result in an increase in odour concentration or volume of odorous air emitted from the stack.
- It is noted that whilst dispersion modelling has been undertaken to compare current odour emissions to proposed odour emission contours, the model used was considered to not adequately capture the influence of the basin on plume dispersion.

2.7 Odour complaints history

As part of the works approval process, complaint history has been reviewed. The department, the Water Corporation and the City of Wanneroo have not received any odour complaints related to the premises since the WWTP began operation on 26 May 2011.

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 *Guidance Statement: Risk Assessments* (DER 2017).

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 premises works, commissioning and time limited operations which have been considered in this Decision Report are detailed in Table 1 below. Table 1 also details the proposed control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Noise	Vehicle movement Use of machinery and equipment	Air/windborne pathway	<p>All vehicles and equipment will be equipped with appropriate noise controls.</p> <p>The topography and the development area footprint area sitting lower than topographical contours contributes to reducing this risk by the contours acting as a sound dampener.</p> <p>All plant, equipment and vehicles will be regularly inspected and maintained.</p> <p>Night construction work is not anticipated to occur.</p> <p>There is an existing 600 m odour buffer to the nearest sensitive receptor. The odour buffer is Water Corporation owned, protected and will not be cleared or disturbed.</p> <p>Construction Environmental Management Plan (CEMP) to be prepared detailing how noise emissions will be managed to comply with the Noise Regulations, and must include using the quietest reasonably available equipment for the works, and a complaints response process.</p>

Emission	Sources	Potential pathways	Proposed controls
Dust	<p>Vehicle movement and mobile plant</p> <p>Movement of soil, stockpiling of soil and other materials</p> <p>Construction activities</p>	Air/windborne pathway	<p>The project will utilise pre-cast concrete structures reducing construction timeframes and limit the construction works required.</p> <p>Hardstand areas will be created around infrastructure areas.</p> <p>Visual inspections of dust emissions on site will be undertaken.</p> <p>Wetting down of unsealed surfaces as required.</p> <p>Site preparation and excavations will not be conducted if wind conditions are extreme.</p> <p>Trucks are to be washed down before leaving the premises to stop the spread or generation of dust offsite during construction activities.</p> <p>Speed limit on-site will be adhered to on unsealed and sealed roads/tracks.</p> <p>There is an existing 600 m odour buffer to the nearest sensitive receptor. The odour buffer is Water Corporation owned, protected and will not be cleared or disturbed.</p> <p>Construction Environmental Management Plan (CEMP) to be prepared detailing how dust emissions will be managed and mitigated.</p> <p>Complaints management procedure.</p>

Emission	Sources	Potential pathways	Proposed controls
Odour	Effluent	Air/windborne pathway	<p>To minimise disruptions to the treatment process, the majority of works will occur while the plant is operational to reducing offline times.</p> <p>Only one oxidation ditch will be desludged at a time.</p> <p>H₂S monitoring will occur during the desludging process to monitor emissions and to inform tiered trigger thresholds for mitigation measures to be deployed.</p> <p>Construction Environmental Management Plan (CEMP) to be prepared that will include an Odour Contingency Plan for the oxidation ditch desludging process will be prepared by the engaged contractor.</p> <p>Oxidation ditch 1 and 2 will have the covers replaced as soon as reasonably practicable after a desludging sequence.</p> <p>No sludge will be removed in slurry form from an oxidation ditch.</p> <p>A complaints register will be kept during the desludging process and proving process.</p> <p>Vehicles used to transport sludge will be contained vessels to reduce the likelihood of odour release on transport.</p> <p>A weather station will be installed at the WWTP before desludging works to understand prevailing conditions and to assist the desludging process and timing.</p> <p>Desludging will occur during summer periods reduce sludge drying times.</p> <p>Desludging and reactivation of an oxidation ditch will occur over a two-month period.</p> <p>There is an existing 600 m odour buffer to the nearest sensitive receptor. The odour buffer is Water Corporation owned, protected and will not be cleared or disturbed.</p> <p>Complaints management procedure.</p>

Emission	Sources	Potential pathways	Proposed controls
Uncontrolled discharge of chemical	Accidental spills or loss of containment Mishandling of chemicals Refuelling activities Leaks from machinery/vehicles	Seepage to soil and groundwater	<p>All hazardous chemicals and hydrocarbons are to be kept in appropriately bunded areas compliant with <i>AS1940: The storage and handling of flammable and combustible liquid</i>.</p> <p>Appropriate spill kits, containment and recovery equipment will be kept and maintained on-site. Spill kits will be strategically situated throughout the site.</p> <p>Any spills will be controlled, contained and cleaned up in accordance with a Spill Management Procedure.</p> <p>Fuel will be stored within self-bunded tanks.</p> <p>Mobile equipment will be fitted with a spill kit.</p> <p>Staff and contractors involved in the handling of hazardous chemicals and fuels will be suitably trained.</p> <p>Hardstand areas created will be sufficiently graded and bunded to contain spills or accidental discharges to land/waters.</p> <p>Hydrocarbon and chemical storage areas will be inspected on a regular basis.</p> <p>Construction Environmental Management Plan (CEMP) to be prepared detailing the management of chemicals during the works.</p>

Emission	Sources	Potential pathways	Proposed controls
Uncontrolled discharge of solid waste and desludging material (including liquid waste).	Accidental spills or loss of containment	Seepage to soil and groundwater	<p>Sludge removal from equipping (clean out of the oxidation ditches) will be carried out using the following methodology to prevent loss of leachates, dry material correctly and transported to appropriate handling facility:</p> <p>Sludge will be dewatered within a single oxidation ditch at a time.</p> <p>Oxidation ditch treated wastewater will be transferred to the neighbouring two online ditches.</p> <p>Oxidation ditch sludge will be dewatered using a dewatering container vessel inside of the ditch. Once the sludge is dried in the dewatering container vessel, it will be tested against landfill classification requirements.</p> <p>Excess leachate remaining will be returned to the head of the WWTP for reprocessing.</p> <p>Sludge will then be lifted out of the ditch and placed onto a sealed vessel truck and taken to a licenced landfill for disposal.</p> <p>Construction Environmental Management Plan (CEMP) to be prepared detailing the management of chemicals during the works.</p>
Indian Ocean	Changes to effluent treatment	Ocean outfall	<p>Two oxidation ditches will be in operation at all times to maintain treatment quality during equipping and desludging works.</p> <p>When being desludging is being undertaken the oxidation ditch will be isolated from the WWTP system.</p> <p>Leachate from oxidation ditches undergoing desludging will return to the head of the works for retreatment.</p> <p>Oxidation ditches will undergo a proving requirements prior to being returned to service.</p> <p>Operational monitoring as per the licence will occur during the equipping phase.</p> <p>Construction Environmental Management Plan (CEMP) to be prepared to ensure there are no process upsets or degradation of treated wastewater quality.</p>
Litter	Windblown waste	Air/windborne pathway	Waste materials from equipping/construction activities will be collected in skip bins in dedicated waste storage areas on-site and disposed at an appropriately licenced landfill facility or reused where possible.
Commissioning and Operation			

Emission	Sources	Potential pathways	Proposed controls
Noise	Vehicle movement Use of machinery and equipment	Air/windborne pathway	<p>Existing operational controls</p> <p>Night equipping works is not expected. If required Water Corporation will seek relevant approvals from DWER and the Local Government authority, will prepare a Noise Management Plan and will undertake community consultation.</p> <p>There is an existing 600 m odour buffer to the nearest sensitive receptor. The odour buffer is Water Corporation owned, protected and will not be cleared or disturbed.</p>
Dust	Vehicle movement Plant operations	Air/windborne pathway	<p>Existing operational controls</p> <p>There is an existing 600 m odour buffer to the nearest sensitive receptor. The odour buffer is Water Corporation owned, protected and will not be cleared or disturbed.</p>
Odour	Effluent	Air/windborne pathway	<p>There is an existing 600 m odour buffer to the nearest sensitive receptor. The odour buffer is Water Corporation owned, protected and will not be cleared or disturbed.</p> <p>H2S monitoring for oxidation ditches 1 & 2 will be replicated for oxidation ditch 3.</p> <p>Operational measures will be adopted if unreasonable emissions exceed trigger thresholds. These could include but are not limited to:</p> <ul style="list-style-type: none"> • operational adjustments of the treatment process¹ • revision of the odour field investigations in the next 12 months after commissioning to confirm performance.

Emission	Sources	Potential pathways	Proposed controls
Uncontrolled discharge of chemical	Accidental spills or loss of containment Mishandling of chemicals Refuelling activities Leaks from machinery/vehicles	Seepage to soil and groundwater	All hazardous chemicals and hydrocarbons are to be kept in appropriately bunded areas compliant with AS1940. Appropriate spill kits, containment and recovery equipment will be kept and maintained on-site. Spill kits will be strategically situated throughout the site. Any spills will be controlled, contained and cleaned up in accordance with a Spill Management Procedure. Fuel will be stored within self-bunded tanks. Mobile equipment will be fitted with a spill kit. Staff and contractors involved in the handling of hazardous chemicals and fuels will be suitably trained. Hardstand areas created will be sufficiently graded and bunded to contain spills or accidental discharges to land/waters. Hydrocarbon and chemical storage areas will be inspected on a regular basis. During operations, all chemicals will be stored in purpose-built areas that comply with <i>AS3780: the storage and handling of corrosive substances</i> . This includes hardstands and bunds capable of containing a significant failure of storage tanks.
Indian Ocean	Changes to effluent treatment	Ocean outfall	Duplication of treated wastewater quality monitoring requirements in accordance with MS755 and L8434/2010/1 for oxidation ditch 3. Oxidation ditches will be arranged in a three-way split-flow configuration to ensure that ditches are evenly loaded, and treated wastewater performance targets are maintained.

Note 1: Under Section 53 of the EP Act, it is an offence to alter a prescribed premises, which causes an emission or alters the nature of volume of the waste, noise, odour or electromagnetic radiation emitted, otherwise than in accordance with a works approval, licence, closure notice or an environmental protection notice.

3.1.2 Receptors

In accordance with the *Guidance Statement: Risk Assessment* (DER 2017), the Delegated Officer has excluded employees, visitors and contractors of the applicant'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

(Guidance Statement: Environmental Siting (DER 2016)).

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 with 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>The Premises falls with a large scale ESA of NES (Banksia Woodlands of the Swan Coastal Plain) and State PEC/TEC Buffers relevant to the EPBC Aquatic Root Mat Community 1 of caves of the Leeuwin Naturaliste Ridge and Melaleuca Systema shrublands on limestone ridges.</p> <p>65 threatened fauna species have been sighted the proximity of the prescribed premises. Species include Calyptorhynchus latirostris and Synmon gratiosa.</p>

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guidance Statement: Risk Assessments* (DER 2017) for each identified emission source 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 applicant 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 applicant'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 applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

Works Approval W6523 that accompanies this Decision Report authorises construction and time-limited operations. The conditions in the issued Works Approval, as outlined in Table 3 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 Decision Report, however licence conditions will not be finalised until the department assesses the licence application.

Table 3: Risk assessment of potential emissions and discharges from the Premises during construction, commissioning and time limited operations

Risk Event					Risk rating ¹	Applicant controls sufficient?	Conditions ² of works approval	Justification
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
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	S = 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				S = 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	Applicant controls sufficient?	Conditions ² of works approval	Justification
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
Interruption of treatment process to upgrade/install new equipment/infrastructure	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 and 12 <u>Conditions 5, 6</u>	To minimise disruptions to the treatment process, the majority of works will occur while the existing plant is operating, reducing the amount of time parts of the plant will be offline. The works approval specifies the minimum requirements for the CEMP to manage odour emissions. The Delegated Officer notes that no odour complaints have been received since the WWTP began operation in 2011.
Desludging of Oxidation Ditches 1 and 2	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 = Possible Medium Risk	Y	Conditions 1, 7 & 12	The Delegated Officer has determined that the odour controls proposed by the applicant are required to be implemented to control the risk of odour emission impacts on sensitive receptors. The works approval specifies the minimum requirements for the CEMP to manage odour emissions. The Delegated Officer notes that no odour complaints have been received since the WWTP began operation in 2011. However, desludging has not occurred on a regular basis since the plant began operations.

Risk Event					Risk rating ¹	Applicant controls sufficient?	Conditions ² of works approval	Justification
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
	Uncontrolled discharge of liquid and solid wastes	Infiltration through soil profile to groundwater Movement through groundwater	Soil profile Groundwater dependent vegetation and beneficial uses of groundwater	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Conditions 7 & 12	The Delegated Officer considered the proposed controls to be adequate to address odour emissions from uncontrolled discharge of solid waste and desludging material.
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.
Accidental spills or loss of containment Leaks from machinery/vehicles	Chemical spill	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 = Minor L = Unlikely Medium Risk	Y	N/A	Minor hydrocarbon and chemical spillages are adequately regulated by the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i> .
Commissioning and time limited operations								
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	Refer to Section 3.1	S = Minor L = Rare Low Risk	Y	Conditions 5, 6	The works approval specifies the minimum requirements for the CEMP to manage dust emissions.

Risk Event					Risk rating ¹	Applicant controls sufficient?	Conditions ² of works approval	Justification
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
	Noise		infrastructure.		C = Minor L = Rare Low Risk	Y	<u>Conditions 5, 6</u>	The works approval specifies the minimum requirements for the CEMP to manage noise emissions. The Delegated Officer considers that the provisions of the <i>Environmental Protection (Noise) Regulations 1997</i> are sufficient to regulate noise emissions during time-limited operations.
	Litter				S = 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	Applicant controls sufficient?	Conditions ² of works approval	Justification
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
Commissioning of oxidation ditches	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 = Possible Medium Risk	Y	Conditions 1, 2, 3,4, 7 and 12 <u>Condition 8, 9, 16, 17 and 18</u>	<p>Conditions 8 and 9 require the submission of an Environmental Compliance Report to verify the works have been constructed in accordance with the relevant requirements.</p> <p>Conditions 16 requires an odour field assessment (OFA) to be undertaken during commissioning testing of all three oxidation ditches in accordance with the DWER Odour Emissions Guideline. to determine the extent of possible odour impacts to sensitive receptors. This assessment allows further validation of odour controls once operational in combination with the odour field assessment published in November 2019.</p> <p>Conditions 17 and 18 require the submission of an Environmental Commissioning Report to verify infrastructure against manufacturer's specifications.</p> <p>The Delegated Officer notes that no odour complaints have been received since the WWTP began operation in 2011.</p>

Risk Event					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of works approval	Justification
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
Operation of infrastructure Receipt, processing and treatment of wastewater, and the discharge of wastewater	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 = Possible Medium Risk	Y	Conditions 1, 2, 3,4, 7 and 12 <u>Condition 8, 9, 17 and 18</u>	Conditions 8 and 9 require the submission of an Environmental Compliance Report to verify the works have been constructed in accordance with the relevant requirements. Conditions 17 and 18 require the submission of an Environmental Commissioning Report to verify infrastructure against manufacturer's specifications. The Delegated Officer notes that no odour complaints have been received since the WWTP began operation in 2011.
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 environment	Direct discharge via the ocean outlet causing ecosystem disturbance	Indian Ocean, located 1,200 m west	Refer to Section 3.1	C = Major L = Unlikely Medium Risk	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 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.

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Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guidance Statement: Risk Assessments* (DER 2017).

Note 2: Proposed applicant 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
Application advertised on the department's website (21/04/2021)	None received	N/A
Local Government Authority advised of proposal (27/04/2021)	<p>The City of Wanneroo replied on 3/06/2021 after considering the extent of the proposed upgrade works. The City of Wanneroo understands that the works will be undertaken via DWER licensing Conditions of Approval for the control of noise, odours and dust likely to emanate from the sewerage treatment facility.</p> <p>The design, construction and operations of the new works thereafter are to ensure all noise, dust and odours do not emit pollution over the property boundary likely to affect surrounding sensitive premises.</p> <p>The City's Customer Services officer also confirmed that there are no complaints relating to this property.</p>	N/A
Department of Health (DOH) advised of proposal (27/08/2021)	<p>DOH advised that they have no objection to the proposal subject to the following:</p> <ul style="list-style-type: none"> • Implementation of proposed risk mitigation controls during equipping and ongoing operations as per Works Approval Application (including commitment to conduct ongoing odour source monitoring and community odour survey). • A Community Engagement Strategy in coordination with Local Government being implemented, for any odour or noise complaints. • Notification of any potential leaks or spills during the commissioning of works. • Maintenance of training records for Oxidation Ditch technology operators. 	<p>The Delegated Officer has considered the recommendations provided by DOH.</p> <p>An odour field assessment will also be required during commissioning operations to determine the extent of odour impacts on sensitive receptors following the upgrades.</p> <p>The <i>Wastewater Overflow Notification and Response Procedures 2021</i> outline the Responsibilities that Water Service Providers have in notifying relevant Government agencies of spills of treated and untreated wastewater.</p>

Consultation method	Comments received	Department response
EPA were provided with the draft works approval on 4/11/2021	EPA advised Part V on 22/11/2021 that the draft Part V Works Approval conditions appear to meet the intent of the draft Conditions 12-8 to 12-11 in EPA Report 1707.	The Delegated Officer considers that the draft conditions of the Works Approval enable the conditions of MS755 to be implemented.
Applicant was provided with draft documents on 6/12/2021	Refer to Appendix 1	Refer to Appendix 1

5. Conclusion

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

References

1. Alkimos WWTP 26 MLD Upgrade Stage 2 Works Approval Application Supporting Information, June 2020.
2. Alkimos WWTP MS755 Odour Management Plan 26 MLD Alkimos Works Approval Application Supporting Information, June 2020.
3. Department of Environment Regulation (DER) 2016, Guidance Statement: Environmental Siting, Perth, Western Australia.
4. Department of Water and Environmental Regulation (DWER) 2019, Guideline: Decision Making, Perth, Western Australia
5. DER 2015, Guidance Statement: Setting Conditions, Perth, Western Australia.
6. DER 2017, Guidance Statement: Risk Assessments, Perth, Western Australia.
7. DWER 2019, Guideline: Industry Regulation Guide to Licensing, Perth, Western Australia
8. Tonkin & Taylor Pty Ltd, Odour Monitoring Recommendations, Alkimos Wastewater Treatment Plant 26 MLD Upgrade, March 2020.
9. Tonkin & Taylor Pty Ltd, Odour Risk Assessment Report, Alkimos Wastewater Treatment Plant 26 MLD Upgrade, March 2020.
10. Tonkin & Taylor Pty Ltd, Odour Survey Monitoring Plan, Alkimos Wastewater Treatment Plant 26 MLD Upgrade, September 2019.
11. Tonkin & Taylor Pty Ltd, Odour Survey Monitoring Results, Alkimos Wastewater Treatment Plant – Site B, June 2020.

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment	Department's response
N/A	Please allow a minimum period of 3 years for the approval duration.	Not actioned as requested. The Delegated Officer notes that the works approval has an expiry of 5 years. This is greater than the three year requested by the applicant. No action required.
26	<p>Would DWER at this stage consider changing the Stack Trigger Value from 1.5ppm to 8ppm in the works approval.</p> <p>If DWER is unable to change the trigger value from 1.5ppm at this stage, would DWER consider reassessing this trigger value after 12 months of verification against the Theoretical Maximum Model and Submission on the new Odour Management Plan in the Licencing stage?</p>	<p>Until such time that the odour field assessment (OFA) has been undertaken in accordance with Condition 16 of the works approval, DWER does not support the increase of the trigger level value above that previously approved under the licence and previous ministerial statement. Not actioned as requested.</p> <p>Pending commissioning and results of the OFA, the Water Corporation may apply to change the trigger value via a licence amendment.</p>
Condition 7, Table 2	<p>Analysis of the existing band screens has identified the existing screens can receive 662 litres per second at 26MLD.</p> <p>Band Screen will not be upgraded currently have an available capacity up to 26MLD.</p>	Condition 7, Table 2 of the licence has been amended to remove the replacement of the band screens.
	Change flowmeters to flowmeter as only one flowmeter is being changed as part of the works approval.	The typographical error has been corrected.
	<p>Delete and amend aerator capacity. The Water Corporation did not supply this number in the works approval application. However, this number may have existed on similar approvals or historical approvals. The efficiency of aerators in practicality is at best up to 2.8 O₂/kWhr (not observed in practice) and at normal operation is approximately 1.7 O₂/kWhr.</p> <p>The Water Corporation notes that aerator capacity ratings don't necessarily determine if it is suitable for the treatment capacity as run time is an influencing factor.</p>	The Delegated Officer duplicated the aerator capacity for oxidation ditch 3 as previously provided for oxidation ditches 1 and 2. Table 2 has been amended to ensure suitability of aerator capacity is demonstrated in construction and commissioning.

Condition	Summary of applicant's comment	Department's response
	Amend condition to refer to surface aerators.	Table 2 amended to reflect replacement and installation of surface aerators with 160 kW motor and gearboxes and propulsors.
	Change the reference to the wastewater activated sludge pump to waste activated sludge pump.	The typographical error has been corrected.
	The incorrect flow rate for the waste activated sludge pump was supplied in Works Approval Application. The waste activated sludge pump has a capacity of 55 L/s.	The Delegated Officer considers this to be a reasonable request and the change to the waste activated sludge pump does change the outcome of the risk assessment undertaken. Table 2 has been amended.
	Existing wording for the polymer system is not completely correct.	Table 2 has been updated.
	Existing wording for the drainage configuration is not completely correct.	Table 2 has been updated to reflect a more accurate description of the drainage works.
Condition 12, Table 3	Amend condition to refer to oxidation ditches 1 and 2 being desludged.	Condition 12, Table 3 has been amended to ensure that only oxidation ditches 1 and 2 are referenced.
Condition 12, Table 3	Amend condition to allow desludging activities to be undertaken outside of the summer period.	<p>The Delegated Officer notes that this condition duplicating a proposed control that was taken directly from the Licence Holder's application documents.</p> <p>The Delegated Officer considers this to be a reasonable request. Condition 5 requires the works approval holder to submit a Construction Environmental Management Plan prior to construction activities commencing that identifies, and provides mitigation and management measures to prevent potential odour emissions from the desludging activities. Therefore, Table 3 has been amended.</p>
Condition 19	Environmental Compliance Report condition number is incorrectly referenced.	The typographical error has been corrected.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY		
Application Type	Works approval	
Date application received	3/08/2020	
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 (The current licence refers to Lot 1012 which has been retired due to subdivision changes).	
Local Government Authority	City of Wanneroo	
Application documents		
HPCM file reference number:	DEC14838/2~1	
Key application documents (additional to application form):	Alkimos WWTP 26 MLD Upgrade Stage 2: Works Approval Application Supporting Information June 2020 Alkimos Wastewater Treatment Plant OMP (Odour Management Plan) 2020 Appendix C: In relation to the Works Approval Supporting Information Appendix D: In relation to the Works Approval Supporting Information	
Scope of application/assessment		
Summary of proposed activities or changes to existing operations.	The works approval is to equip and operate oxidation ditch 3 and replace the existing band screens. These upgrade works will allow the Alkimos WWTP to increase treatment and throughput capacity from 20 to 26 ML/day	
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.	Increase from 2,000 to 2,600 cubic metres per day.
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 checked="" type="checkbox"/> No <input type="checkbox"/>	A section 45(C) (Changes to proposals after s.45(5) statement issued') and a section 46 (Changing implementation conditions) has been submitted by the Water Corporation related to infrastructure

		description changes. DWER have placed the validation of the Works Approval on hold subject to the application being reviewed by EPA Services. The Part V assessment was placed on hold until such time that MS755 is amended.
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 Ministerial statement No: 1174 EPA Report No: 1707
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
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" 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"/>	CPS No: 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"/>	No clearing is proposed.
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"/>	Licence / permit not required.
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. Ocean outfall regulated under Part IV of EP Act
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 xxx</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