



Application for Works Approval

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

Works Approval Number W6397/2020/1

Applicant Water Corporation

ACN 003 434 917

File Number DER2020/000170

Premises Wickham Wastewater Treatment Plant
Lot 120 Roebourne – Point Sampson Road
WICKHAM WA 6720

Legal description -
Crown Reserve 37120
Lot 120 on Plan 214456
Certificate of Title Volume LR3062 Folio 671

Date of Report 04 August 2020

Decision Works approval granted

**A/MANAGER WASTE INDUSTRIES
INDUSTRY REGULATION**

An officer delegated by the CEO under section 20 of the EP Act

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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 and operation of the Premises. As a result of this assessment, Works Approval W6397/2020/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

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

2.2 Application summary and overview of Premises

On 9 April 2020, the Water Corporation (applicant) submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act). The application is to undertake construction works to improve sewage treatment using a dissolved air flotation (DAF) unit at the applicant's existing Premises.

The applicant operates a Category 54 sewage facility at Lot 120 on Plan 214456, Wickham (the Premises), approximately 1.65 km east of the Wickham townsite. The premises treats sewage to a secondary standard via a facultative pond system. Treated wastewater is discharged to either a tertiary treatment plant for further treatment and reuse within the Wickham townsite or to three lined ponds for evaporation. The proposed works will further reduce the solids content of treated wastewater being discharged to the tertiary treatment plant.

The Premises relates to the category and assessed design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in Works Approval W6397/2020/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guidance Statement: Risk Assessments* (DER 2017) are outlined in Works Approval W6397/2020/1.

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 construction and operation 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 | | | |
| Dust | Vehicle and machinery movements | Air/windborne pathway | None |
| | Lift-off from fill/spoil stockpiles and earthworks | | |
| Noise | Vehicle and machinery operation | Air/windborne pathway | None |
| | Construction activities | | |
| Treated wastewater | Containment loss during pipeline tie-ins | Seepage to soil and groundwater | <ul style="list-style-type: none"> • Isolation of pipelines before cut-in works • Visual/quality monitoring of tanks • Hydrostatic testing of pipelines and tanks using potable water. |
| Commissioning and Operation | | | |
| Treated / partially treated wastewater | Containment loss by overflow from DAF tanks and associated pipelines | Surface run-off and overland flow | <ul style="list-style-type: none"> • SCADA monitoring system • High level alarm • 300mm overflow pipeline with overflow directed back to treatment ponds. • DAF units constructed above a concrete hardstand with partial bunding and drainage back to the treatment ponds. |
| | Containment loss by leakage from DAF tanks and associated pipelines | Seepage to soil and groundwater | <ul style="list-style-type: none"> • Hydrostatic testing of pipelines and tanks prior to commissioning and operation • SCADA monitoring system • Regular maintenance inspections |
| Treatment chemicals | Containment loss by overflow from storage tanks and associated pipelines | Surface run-off and overland flow | <ul style="list-style-type: none"> • Minimal storage quantities • Chemical storage in bunded vessels |

| Emission | Sources | Potential pathways | Proposed controls |
|------------------------|---|-----------------------------------|---|
| | Containment loss by leakage from storage tanks and associated pipelines | Seepage to soil and groundwater | <ul style="list-style-type: none"> Hydrostatic testing of pipelines and tanks prior to commissioning and operation Chemical storage in bunded vessels |
| Leachate / supernatant | Solids transfer pump station | Seepage to soil and groundwater | <ul style="list-style-type: none"> Solids transfer pump-well constructed of concrete. Overflow pipeline located approximately 2 m below top of pump well directing back to treatment ponds. |
| | DAF and Ultra Filtration (UF) sludge dewatering | Surface run-off and overland flow | <ul style="list-style-type: none"> Bunded concrete hardstand sloped to fall to a concrete drainage apron with a sub-surface pipeline redirecting leachate back to the facultative pond. |
| | | Seepage to soil and groundwater | |
| | Pond desludging | Surface run-off and overland flow | <ul style="list-style-type: none"> Bunded and compacted hardstand sloped to fall to a concrete drainage apron with a sub-surface pipeline redirecting leachate back to the facultative pond. |
| | | Seepage to soil and groundwater | |
| | Odour | DAF tanks | Air/windborne pathway |
| Sludge dewatering | | | |
| Pond desludging | | | |

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 and Figure 1 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 |
|------------------------------|--|
| Closest residential receptor | 1.63 km west of the Premises boundary. |

| Environmental receptors | Distance from prescribed activity |
|--|---|
| <p>Surface water – Saline coastal flats</p> | <p>Adjacent to the east of the Premises and approximately 260 m east of the location of the proposed works.</p> |
| <p>Groundwater – Superficial aquifer. The water table depth shows a high degree of seasonal variation rising 1 – 2 m following intense rainfall and tidal events. Groundwater flow direction is inferred as east or northeast towards the tidal flats and ocean. There are no registered groundwater bore users downgradient of the Premises. Use of groundwater in the area is for non-potable purposes due to its high salinity of 30,000 mg/L TDS.</p> <p>Site specific investigations recorded the following soil profile at the Premises:</p> <ul style="list-style-type: none"> • Topsoil: 0.1 to 0.2 m thick, comprising pale brown to brown fine to medium grained sand, with traces of organic matter. • Fill: up to 0.4 m thicknesses of fill observed in some locations, comprising clayey sand. This fill is likely related to construction of tracks at the premises. • Aeolian Sand: Observed across the majority of the premises, and comprising pale brown to brown, fine to medium grained, sub-rounded sand, with traces of fines or shell fragments. • Duricrust / Cemented Sand: areas of very weakly cemented sand were intersected locally, in intervals of up to 0.2 m thick. • Marine Muds: the aeolian sand is underlain by soft, compressible marine muds, which comprise interbedded layers of loose sand, silty sand and silts and clays. This layer is located approximately 1.65 m AHD when present below aeolian sands or extends from the surface at approximately 3.2 m AHD in low lying areas. | <p>Approximately 1.8 – 6.2 mbgl across the Premises and 5 – 6.2 mbgl at the location of the proposed works.</p> |



Figure 1: Potential receptors surrounding the premises. The premises boundary is shown in pink.

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 W6397/2020/1 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 amendment to instrument L6245/1991/8 is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the new infrastructure at 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 operation

| Risk Event | | | | | Risk rating ¹ C = consequence L = likelihood | Applicant controls sufficient? | Conditions ² of works approval | Justification for additional regulatory controls |
|--|--|--|--|----------------------|--|--------------------------------|---|--|
| Source/Activities | Potential emission | Potential pathways and impact | Receptors | Applicant controls | | | | |
| Construction | | | | | | | | |
| Containment loss during pipeline tie-ins | Treated / partially treated wastewater | Seepage to soil and groundwater potentially causing impact to groundwater quality | Groundwater | Refer to Section 3.1 | C = Minor L = Rare Medium Risk | Y | N/A | N/A |
| | | Overland runoff potentially causing ecosystem disturbance or impacting surface water quality | Tidal salt flats | Refer to Section 3.1 | C = Minor L = Rare Medium Risk | Y | N/A | N/A |
| General construction activities | Noise | Air/windborne pathway causing impacts to amenity | Closest residential receptor (1.63 km) | Refer to Section 3.1 | Incomplete source-pathway receptor linkage due to distance (1.63 km) | | | |
| | Dust | Air/windborne pathway causing impacts to health and amenity | Closest residential receptor (1.63 km) | Refer to Section 3.1 | | | | |

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| Risk Event | | | | | Risk rating ¹ C = consequence L = likelihood | Applicant controls sufficient? | Conditions ² of works approval | Justification for additional regulatory controls |
|--|--|--|------------------|----------------------|---|--------------------------------|---|--|
| Source/Activities | Potential emission | Potential pathways and impact | Receptors | Applicant controls | | | | |
| Commissioning | | | | | | | | |
| Commissioning of DAF units and geobag dewatering system | Treated / partially treated wastewater | Seepage to soil and groundwater potentially causing impact to groundwater quality | Groundwater | Refer to Section 3.1 | C = Moderate L = Unlikely Medium Risk | Y | Conditions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 | N/A |
| | | Overland runoff potentially causing ecosystem disturbance or impacting surface water quality | Tidal salt flats | | | | | |
| Operation (including elements of time-limited-operations) | | | | | | | | |
| Containment loss from DAF tanks and associated pipelines | Treated / partially treated wastewater | Overland runoff potentially causing ecosystem disturbance or impacting surface water quality | Tidal salt flats | Refer to Section 3.1 | C = Moderate L = Unlikely Medium Risk | Y | Conditions 1, 2, 11, 12, 13, 15, 16, 17 | N/A |
| | | Seepage to soil and groundwater potentially causing impact to groundwater quality | Groundwater | | | Y | | N/A |

| Risk Event | | | | | Risk rating ¹ C = consequence L = likelihood | Applicant controls sufficient? | Conditions ² of works approval | Justification for additional regulatory controls |
|---|------------------------|--|------------------|----------------------|---|--------------------------------|---|--|
| Source/Activities | Potential emission | Potential pathways and impact | Receptors | Applicant controls | | | | |
| Containment loss from chemical storage tanks and associated pipelines | Treatment chemicals | Overland runoff potentially causing ecosystem disturbance or impacting surface water quality | Tidal salt flats | Refer to Section 3.1 | C = Moderate L = Rare Medium Risk | Y | Condition 1, 2, 11, 12, 13 | N/A |
| | | Seepage to soil and groundwater potentially causing impact to groundwater quality | Groundwater | | | | | |
| Continuous sludge dewatering | Supernatant / leachate | Overland runoff potentially causing ecosystem disturbance or impacting surface water quality | Tidal salt flats | Refer to Section 3.1 | C = Moderate L = Unlikely Medium Risk | Y | Condition 1, 2, 11, 12, 13 | N/A |
| | | Seepage to soil and groundwater potentially causing impact to groundwater quality | Groundwater | | | | | |

| Risk Event | | | | | Risk rating ¹ C = consequence L = likelihood | Applicant controls sufficient? | Conditions ² of works approval | Justification for additional regulatory controls |
|---|--------------------|--|--|----------------------|--|--------------------------------|---|---|
| Source/Activities | Potential emission | Potential pathways and impact | Receptors | Applicant controls | | | | |
| Pond desludging | | Overland runoff potentially causing ecosystem disturbance or impacting surface water quality | Tidal salt flats | | C = Moderate L = Rare Medium Risk | N | Condition 1, 2, 14 <u>Condition 1</u> | A maximum permeability was not listed for the compacted gravel hardstand. DWER considers that non-concrete hardstands used for waste containment should be compacted to achieve a permeability less than 1×10^{-9} m/s where their thickness is below 600 mm. |
| | | Seepage to soil and groundwater potentially causing impact to groundwater quality | Groundwater | | | | | |
| Treatment of sewage by DAF tanks Continuous sludge dewatering Pond desludging | Odour | Air/windborne pathway causing impacts to health and amenity | Closest residential receptor (1.63 km) | Refer to Section 3.1 | Incomplete source-pathway receptor linkage due to distance (1.63 km) | | | |

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 (28/05/2020) | None received | N/A |
| North West Regional Delivery (DWER) advised of proposal (25/05/2020) | None received | N/A |
| Local Government Authority advised of proposal (22/05/2020) | None received | N/A |
| Applicant was provided with draft documents on (03/07/2020) | <p>The Applicant responded on 28 July 2020 providing an updated site plan, naming conventions for sample points and further clarifications requested in the draft.</p> <p>The Applicant provided the following general comment:</p> <p><i>At Wickham, these new DAF units are designed for clarification of the existing pond treated effluent, as a pre-treatment for the existing Ultra Filtration (UF) process.</i></p> <p><i>For the flotation of algae to be successful a coagulant is required. As Aluminium Chlorohydrate (ACH) is already available on site for UF, ACH will be used as the coagulant for the proposed DAF units.</i></p> <p><i>The DAF sulfuric acid dosing pumps (currently used for UF) will operate as required to maintain a pH in the DAF flocculation tank.</i></p> <p><i>During commissioning, DAF operation will be similar to normal operation, being:</i></p> | The provided information will be incorporated into the finalised instrument and decision report. |

| | | |
|--|--|--|
| | <ul style="list-style-type: none"> • <i>DAF treated wastewater will be feeding DAF clear water tank, which will feed UF</i> • <i>DAF off spec. treated wastewater and DAF Overflow will be diverted back to Fac pond</i> • <i>DAF Thickened sludge will be feeding geobags, geobag supernatant will go back to Fac pond by gravity, geobag solid waste will be discharged off site (to landfill)</i> • <i>Pond overflow will be discharged to environment, as per existing set-up</i> <p><i>Therefore, there is no additional site environmental risk with the installation of new DAFs as there currently is on site.</i></p> | |
|--|--|--|

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. Department of Environment Regulation (DER) 2016. *Guidance Statement: Environmental Siting*. Perth, Western Australia.
2. DER 2017. *Guidance Statement: Risk Assessments*. Perth, Western Australia.
3. DER 2015. *Guidance Statement: Setting Conditions*. Perth, Western Australia.
4. Senversa 2019. *Baseline Assessment Wickham Wastewater Treatment Plant, Wickham WA*. Unpublished report.

Appendix 2: Application validation summary

| SECTION 1: APPLICATION SUMMARY (as updated from validation checklist) | | | | |
|---|--|--|---|-------------------------------|
| Application type | | | | |
| Works approval | <input checked="" type="checkbox"/> | | | |
| Licence | <input checked="" 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 type="checkbox"/> | Current works approval number: | | |
| 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 | 9 April 2020 | | | |
| Applicant and Premises details | | | | |
| Applicant name/s (full legal name/s) | Water Corporation | | | |
| Premises name | Wickham WWTP | | | |
| Premises location | Crown Reserve 37120 Lot 120 on Plan 214456 Certificate of Title Volume LR3062 Folio 671 | | | |
| Local Government Authority | City of Karratha | | | |
| Application documents | | | | |
| HPCM file reference number: | DER2020/000170 | | | |
| Key application documents (additional to application form): | Wickham Wastewater Treatment Plant DAF Installation Supporting Information Baseline Assessment Wickham Wastewater Treatment Plant, Wickham WA (Senversa 2019) Engineering Drawing Package HT77 | | | |
| Scope of application/assessment | | | | |
| Summary of proposed activities or changes to existing operations. | Construction of a dissolved area flotation tertiary treatment system at the existing Wickham WWTP premises licenced under L6245/1991/8. | | | |

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

| Prescribed premises category and description | Assessed design capacity | Proposed changes to the production or design capacity |
|--|--------------------------|---|
| Category 54: sewage facility | 950 m ³ /day | None. The application is for improved effluent quality. |

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: N/A 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 type="checkbox"/> No <input checked="" type="checkbox"/> | Ministerial statement No: N/A EPA Report No: N/A |
| Has the proposal been referred and/or assessed under the EPBC Act? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Reference No: 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"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input type="checkbox"/> Expiry: Other evidence <input type="checkbox"/> Expiry: |
| Has the applicant obtained all relevant planning approvals? | Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> | Approval: Expiry date: If N/A explain why? Public works |
| 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 No clearing is proposed. |
| 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"/> | Application reference No: N/A Licence/permit No: N/A 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"/> | Application reference No: Licence/permit No: Licence / permit not required. |

| | | |
|--|--|--|
| <p>Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?</p> | <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> | <p>Name: Pilbara Surface and Groundwater Areas Type: Proclaimed Groundwater Area and Surface Water Area Has Regulatory Services (Water) been consulted? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Regional office: North West</p> |
| <p>Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?</p> | <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> | <p>Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/></p> |
| <p>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>)</p> | <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> | <p>N/A</p> |
| <p>Is the Premises within an Environmental Protection Policy (EPP) Area?</p> | <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> | <p>N/A</p> |
| <p>Is the Premises subject to any EPP requirements?</p> | <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> | <p>N/A</p> |
| <p>Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i>?</p> | <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> | <p>Classification: N/A Date of classification: N/A</p> |