Government of Western Australia
Department of Environment Regulation

Works Approval

Environmental Protection Act 1986, Part V

Works Approval Holder: T & J.J Nominees Pty Ltd

Works Approval Number: W5919/2015/1

Registered office: Unit 5, 213 Walcott Street
NORTH PERTH WA 6006

ACN: 165 696 908

Premises address: White Lakes Brewing
Lot 71 on Diagram 90934
Mandurah Road
BALDIVIS WA 6171
as depicted in Schedule 1

Issue date: Monday, 11 January 2016

Commencement date: Monday, 11 January 2016

Expiry date: Thursday, 10 January 2019

The following category/s from the *Environmental Protection Regulations 1987* cause this Premises to be a prescribed premises for the purposes of the *Environmental Protection Act 1986*:

Category number	Category description	Category production or design capacity	Approved premises production or design capacity
25	Alcoholic beverage manufacturing: premises on which an alcoholic beverage is manufactured and from which liquid waste is or is to be discharged onto land or into waters.	350 kilolitres or more per year	1ML per annual period

Conditions
This Works Approval is subject to the conditions set out in the attached pages.

Date signed: 11 January 2016
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Jonathan Bailes
Manager Licensing (Process Industries)
Officer delegated under section 20
of the *Environmental Protection Act 1986*

Works Approval Conditions

1 General

1.1 Interpretation

1.1.1 In the Works Approval, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 In the Works Approval, unless the contrary intention appears:

'Act' means the *Environmental Protection Act 1986;*

'AS/NZS 5667.10' means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of waste waters;*

'averaging period 'means the time over which a limit or target is measured or a monitoring result is obtained;

'CEO' means Chief Executive Officer of the Department of Environment Regulation;

'CEO' for the purpose of correspondence means;

Chief Executive Officer
Department administering the *Environmental Protection Act 1986*
Locked Bag 33
CLOISTERS SQUARE WA 6850
Email: info@der.wa.gov.au;

'Commissioning' means the process of operation and testing that verifies the works and all relevant systems, plant, machinery and equipment have been installed and are performing in accordance with the design specification set out in the works approval application;

'MBBR' means Moving Bed Bioreactor;

'NATA' means the National Association of Testing Authorities, Australia;

'NATA accredited' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

'Premises'means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Works Approval;

'Schedule 1' means Schedule 1 of this Works Approval unless otherwise stated;

'spot sample 'means a discrete sample representative at the time and place at which the sample is taken;

'Works Approval' means this Works Approval numbered W5919/2015/1 and issued under the Act;

'Works Approval Holder' means the person or organisation named as the Works Approval Holder on page 1 of the Works Approval;

'WWTP' means Wastewater Treatment Plant as proposed to be installed by the Works Approval Holder and having performance specifications committed to in the Works Approval Application Form submitted to DER, dated 8 October 2015.

1.1.3 Any reference to an Australian or other standard in the Works Approval means the relevant parts of the standard in force from time to time during the term of this Works Approval.

1.1.4 Any reference to a guideline or code of practice in the Works Approval means the current version of the guideline or code of practice in force from time to time, and shall include any amendments or replacements to that guidelines or code of practice made during the term of this Works Approval.

1.2 General conditions

1.2.1 The Works Approval Holder shall construct the works in accordance with the documentation detailed in Table 1.2.1:

Table 1.2.1: Construction Requirements[1]

Document	Parts	Date of Document
Works Approval Application Form	All	8 October 2015 (as noted in the Acknowledgement section of the Application Form)

Note 1: Where the details and commitments of the documents listed in condition 1.2.1 are inconsistent with any other condition of this works approval, the conditions of this works approval shall prevail.

1.2.2 The Works Approval Holder shall commission the WWTP for a period not exceeding 4 months.

1.3 Commissioning

1.3.1 The Works Approval Holder shall ensure that where wastes produced on the Premises are not taken off-site for lawful use or disposal, they are managed in accordance with the requirements in Table 1.3.1.

Table 1.3.1: Management of waste during commissioning of WWTP

Waste type	Disposal strategy	Operational requirements
Treated wastewater	Irrigation within premises boundary	(i) Wastewater quality analysis results confirming that treated wastewater to be irrigated complies with limits specified in Condition 2.1.1 of this Works Approval must be available to the Works Approval Holder before irrigation can commence; (ii) Wastewater to be irrigated must not exceed the numeric limits specified in Condition 2.1.1 of this Works Approval; (iii) Irrigation must not occur within 100m of a surface water body; (iv) Bunding/cut-off drains must be maintained adjacent to wastewater irrigation areas; (v) Irrigation generated run-off, spray drift or discharge must not occur beyond the boundary of the Premises; (vi) Treated wastewater must be evenly distributed over the irrigation area; (vii) irrigation must be managed in such a way that soil erosion does not occur within the irrigation area; (viii) Vegetation cover must be maintained over the wastewater irrigation areas; and (ix) Irrigation must not occur on land that is water logged.
	Temporary storage on site	Treated wastewater must be stored in tanks on a concrete pad until final disposal offsite or by irrigation onsite.
Sludge from WWTP	Temporary storage onsite	Must be stored in the sludge holding tank on a concrete pad until final disposal offsite.

2 Emissions

2.1.1 The Works Approval Holder shall not cause or allow emissions to land greater than the limits listed in Table 2.1.1.

Table 2.1.1: Emission limits to land during commissioning of WWTP

Emission point reference	Parameter	Limit (including units)	Averaging period
Discharge by irrigation anywhere within the Premises boundary	Total Nitrogen	<15 mg/L	Spot sample
	Total Phosphorous	<8 mg/L	
	Total Suspended Solids	<30mg/L	
	5 Day Biochemical Oxygen Demand (BOD)	<20 mg/L	
	Load of Total Nitrogen	<46.7 kg/ha	Duration of commissioning
	Load of Total Phosphorus	<3.3 kg/ha	
	Load of Biochemical Oxygen Demand (BOD 5-day)	< 30 kg/ha	Daily

3 Monitoring

3.1.1 The Works Approval Holder shall ensure that:
(a) all wastewater sampling is conducted in accordance with AS/NZS 5667.10; and
(b) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in relevant table.

3.1.2 The Works Approval Holder shall undertake the monitoring specified in Table 3.1.1 during the commissioning period.

Table 3.1.1: Monitoring of effluent quality

Monitoring point reference[2]	Parameter	Units	Averaging period	Frequency[1]
Outlet of MBBR Product Tank[3]	pH[1]	-	Spot sample	Weekly for six consecutive weeks
	Total Nitrogen	mg/L		
	Total Phosphorous	mg/L		
	Residual chlorine	mg/L		
	Biochemical Oxygen Demand	mg/L		
	Effluent flow rate	kL/day or m^3/ day	24 hours	Continuous for the duration of discharge

Note 1: In-field non-NATA accredited analysis permitted.
Note 2: Identified in Map of monitoring points in Schedule 1.
Note 3: Flowmeter to be installed on the MBR Product tank outlet pipe.

4 Improvements

4.1.1 The Works Approval Holder shall complete the improvements in Table 4.1.1 by the date of completion in Table 4.1.1.

Table 4.1.1: Improvement program

Improvement reference	Improvement	Date of completion
IR1	The Works Approval Holder shall submit to the CEO a Nutrient Irrigation Management Plan (NIMP) which accounts for cumulative nutrient loading to the proposed irrigation area identified. The NIMP must include but not be limited to: (i) Identification of irrigation area within the premises boundary; (ii) Assessment of adequacy of existing irrigation area based on soil limiting: (a) Hydraulic loading rates; (b) Nutrient loading rates; and (c) Biochemical Oxygen Demand loading rates; (iii) Detailed assessment of total nutrient application rate to the existing irrigation area on the premises (t/ha/year); (iv) Nutrient balance which clearly identifies availability of nutrients from each source, vegetation uptake rates, soil storage capacity and environmental loss during the assessment year and accounts for any nutrient credits for following years; (v) Monthly water balance assessing adequacy of storage capacity of existing wastewater treatment/ storage system; (vi) Contingency plan for storage of wastewater during wet weather periods when irrigation may not occur or irrigation volumes may be lower; (vii) Qualitative and quantitative risk assessment to determine acceptable nutrient application rate to minimise potential of soil, surface water and groundwater contamination; (viii) Identification of improvements required; and (ix) Details of proposed management measures (if applicable) including timelines, to be implemented to reduce the risk of potential environmental impacts that may occur as a result of exceeding the recommended nutrient loading rates.	Within 30 days of completion of commissioning

5 Information

5.1 Reporting

5.1.1 The Works Approval Holder shall submit a compliance document to the CEO, following the construction of the works and prior to commissioning of the same.

5.1.2 The compliance document shall:
(a) certify that the works were constructed in accordance with the conditions of the works approval; and
(b) be signed by a person authorised to represent the Works Approval Holder and contain the printed name and position of that person within the company.

5.1.3 The Works Approval Holder shall submit a commissioning report for the WWTP, to the CEO within one month of the completion of commissioning.

5.1.4 The Works Approval Holder shall ensure the Commissioning Report includes;
(a) a summary of the monitoring results recorded under condition 3.1.2;
(b) a list of any original monitoring reports submitted to the Licensee from third parties for the commissioning period;
(c) a summary of the environmental performance of the WWTP as installed, against the design specification set out in the works approval application;
(d) a map identifying area (in hectare) where irrigation was undertaken during commissioning;
(e) a review of performance against the works approval conditions; and
(f) where they have not been met, measures proposed to meet the design specification and/or works approval conditions, together with timescales for implementing the proposed measures.

5.2 Notification

5.2.1 The Works Approval Holder shall ensure that the parameters listed in Table 5.2.1 are notified to the CEO and are in accordance with the notification requirements of the table.

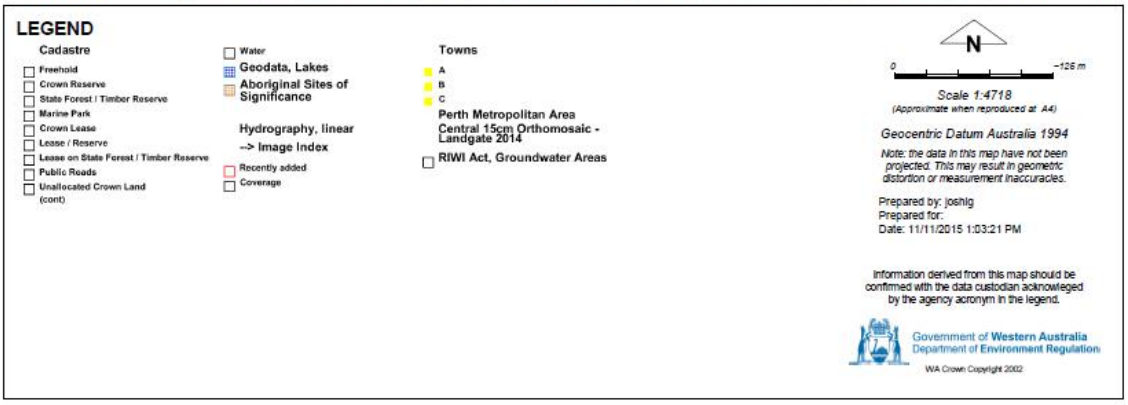
Table 5.2.1: Notification requirements

Condition or table (if relevant)	Parameter	Notification requirement	Format or form
1.2.2	Commencement of commissioning	At least 7 days prior to start	None specified
	Completion of commissioning	No later than 7 days after completion	
-	Complaints regarding construction or commissioning activities authorised under this works approval and action taken	As soon as practicable but no later than 5pm of the next usual working day.	

Schedule 1: Maps

Premises map

The Premises is shown in the map below. The pink line depicts the Premises boundary.



Map of monitoring locations

Monitoring locations referenced in Condition 3.1.2 are specified below.

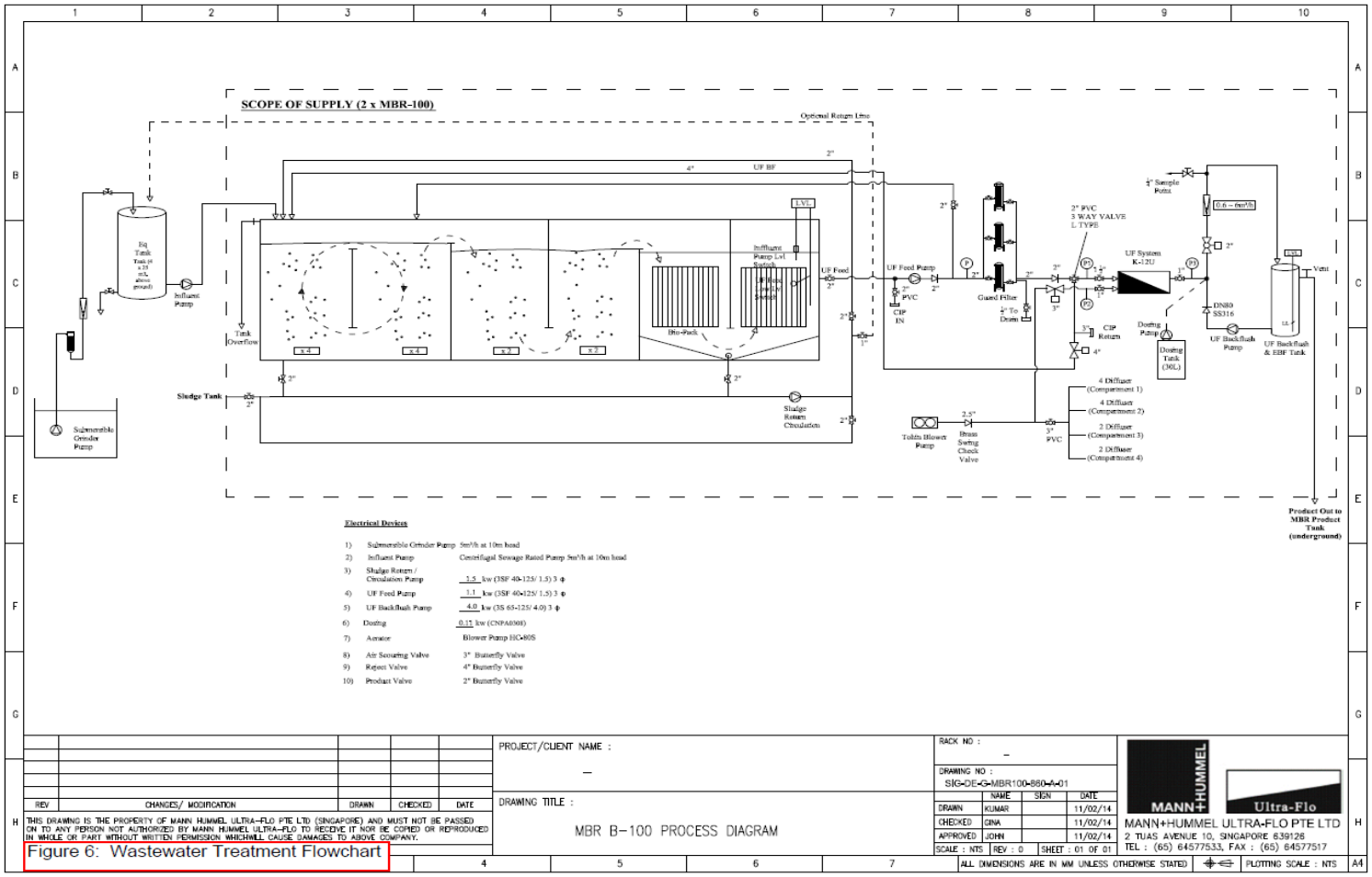


Figure 6: Wastewater Treatment Flowchart

Government of Western Australia
Department of Environment Regulation

Decision Document

Environmental Protection Act 1986, Part V

Proponent: T & J.J Nominees Pty Ltd

Works Approval: W5919/2015/1

Registered office:	Unit 5, 213 Walcott Street NORTH PERTH WA 6006
ACN:	165 696 908
Premises address:	White Lakes Brewing Lot 71 on Diagram 90934 BALDIVIS WA 6171
Issue date:	Thursday, 31 December 2015
Commencement date:	Monday, 4 January 2016
Expiry date:	Thursday, 3 January 2019

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER) has decided to grant a works approval. DER considers that in reaching this decision, it has taken into account all relevant considerations.

Decision Document prepared by:	Gargi Joshi Licensing Officer
Decision Document authorised by:	Ed Schuller Delegated Officer

Contents

1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986*. Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

2 Administrative summary

Administrative details		
Application type	Works Approval ☒ New Licence ☐ Licence amendment ☐ Works Approval amendment ☐	
Activities that cause the premises to become prescribed premises	**Category number(s)**	**Assessed design capacity**
	25	1ML per annual period
Application verified Application fee paid	Date: 14 October 2015 Date: 21 October 2015	
Works Approval has been complied with Compliance Certificate received	Yes☐ No☐ N/A☒ Yes☐ No☐ N/A☒	
Commercial-in-confidence claim	Yes☐ No☒	
Commercial-in-confidence claim outcome		
Is the proposal a Major Resource Project?	Yes☐ No☒	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986*?	Yes☐ No☒	Referral decision No: Managed under Part V☐ Assessed under Part IV☐
Is the proposal subject to Ministerial Conditions?	Yes☐ No☒	Ministerial statement No: EPA Report No:
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the *Environmental Protection Act 1986*)?	Yes☒ No☐ Department of Water consulted Yes ☒ No ☐	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes☐ No☒		
Is the Premises subject to any EPP requirements? Yes☐ No☒		

3 Executive summary of proposal and assessment

T & J.J Nominees Pty Ltd propose to construct a brewery with design capacity of 1 ML/year and initial expected throughput of 200 kL/year. The premises currently has an operational tavern. The proposed brewery will be housed within the existing function centre building on site. External equipment will include water and wastewater tanks and treatment equipment, as well as the grain silo and spent grain bin.

Key stages in the beer manufacturing process will include:

- Milling the grain in rollers to release enzymes and sugars from the barley kernels;
- Mashing the crushed barley with hot water at temperatures 50^{o}C to 78^{o}C;
- 'Lautering' to separate the liquid extract from barley husks to get a clear 'wort'. Spent grain from lautering will be taken offsite as a supplementary feed for cattle;
- Bringing the clarified "wort" to boiling temperature in the kettle and addition of 'hops' to give the beer its unique aroma and bitterness in flavour;
- Transferring the 'hopped wort' to the whirlpool, to further clarify the liquid, by removing the sediment from the hops by centrifugation;
- Cooling the wort extract, by heat exchange with cold water, to around 12^{o}C for fermentation;
- Addition of yeast to the cooled wort extract and fermenting for around 4-7 days until all the sugar is converted into alcohol;
- Removing the yeast once fermentation is complete and transferring the beer to cold storage vessels for maturation in tanks pressurised with CO_2 and maintained at zero degrees C for a minimum of 10 days; and
- Filtration to clarify the beer prior to transfer to the serving tanks. The yeast will be removed in the beer filter, and the alcohol adjusted to 5.0% to enhance the beer flavour.

Water used in beer manufacturing will be sourced from the existing Water Corporation pipeline and electricity sourced from the grid. Wastewater from the brewing process is proposed to be directed to a Moving Bed Bioreactor (MBBR) capable of treating up to 15 kL of wastewater per day to a High Exposure Risk Level standard, as outlined in the Department of Health's *Guidelines for the Non-Potable Uses of Recycled Water in Western Australia 2011*.

Outputs from the process will include beer (initially 200 kL/yr and increasing up to a maximum of 1 ML/yr based on market demand), wastewater (initially 3 kL/day, up to a maximum of 15 kL/day) and spent grain. Spent grain will be stored in a bin at the rear of the site before being collected and taken away for use as stock feed.

The construction process will involve the installation of the brewery equipment onto the existing floor surface, as well as installation of external tanks, the WWTP and connecting pipes. The WWTP will be installed onto a concrete pad. No major earthworks are proposed.

Commissioning of the beer manufacturing process is proposed under works approval. Commissioning will involve running the system with water to detect any leaks or system failures. The next step would include running smaller batches of beer through the brewing system and making necessary adjustments until the desired result is reached. See Appendix A for details of commissioning and verification monitoring proposed for the wastewater treatment plant on the premises. Commissioning process is expected to take up to four months.

DER's assessment of the proposal indicates that emissions and discharges associated with construction and commissioning of the processes can be managed through conditions of this works approval. It is recommended that as per DER's current practice, a works approval be granted for a period of three years.

4 Decision table

All applications are assessed in line with the *Environmental Protection Act1986*, the *Environmental Protection Regulations 1987*and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
General conditions	W1.2.1 Licence	**Construction** DER has assessed risk of emissions and discharges from the premises based on the information provided in the works approval application document submitted by the proponent and stipulated regulatory controls accordingly. In order to ensure that the proponent undertakes works only as authorised under the works approval, condition 1.2.1 has been added. **Operation** Emissions Description- Normal operation *Emission*: Emissions to stormwater from activities on the premises such as storage/ handling of chemicals used in the process, storage/ handling of sludge from proposed WWTP, irrigation runoff of treated wastewater. *Impact:* Stormwater contamination due to activities on the premises which may lead to contamination of surface water bodies in vicinity. Lake Walyungup is located approximately 150 m west of the Brewery. Mandurah Road separates the brewery from the lake. There is potential for minor breach of legal requirements if contaminated stormwater from the premises results in deterioration of water quality or ecosystem health of Lake Walyungup. *Controls*: Brewery infrastructure and associated storage requirements will be within an enclosed building. Sludge from the wastewater treatment process will be contained in a holding tank for disposal offsite. The proponent has committed that significant quantities of chemicals or fuel will not be stored onsite. Proponent has committed to install stormwater infrastructure such that there are no offsite discharges. Planning	Works Approval Application Form, dated 8 October 2015 *Environmental Protection (Unauthorised Discharges) Regulations 2004*

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		approval granted by the City of Rockingham requires the proponent to ensure that stormwater is not discharged offsite. Proponent has indicated that stormwater will be directed to soak wells onsite. Risk Assessment *Consequence:* Minor *Likelihood*: Unlikely *Risk Rating:* Moderate Regulatory controls Discharge of stormwater offsite will not be authorised under the licence to maintain consistency with local government planning approval. Licence may include a condition authorising containment infrastructure on the premises for storage of wastewater, sludge and chemicals. Any unauthorised discharge to the Walyungup lake can be managed under the *Environmental Protection (Unauthorised Discharges) Regulations 2004*. Residual Risk *Consequence:* Minor *Likelihood*: Rare *Risk Rating:* Low	
Premises operation	- W1.3.1	**Construction** No premises specific conditions relating to construction have been specified in the works approval. **Commissioning** W1.3.1 has been specified to manage potential emissions during commissioning. See Appendix A - Emissions to land (commissioning) for details of DER's risk assessment	Works Approval Application Form, dated 8 October 2015

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		and decision making. **Operation** See Appendix A - Emissions to land (operation) for details of DER's risk assessment and decision making.	
Emissions general	W 2.1.1	The proponent is seeking authorisation to commission the proposed wastewater treatment plant under the works approval. The works approval application notes that treated wastewater during commissioning may have higher contaminant concentration than the design specifications of the wastewater treatment plant and proposes to discharge this wastewater to land during commissioning. See Risk Assessment for *Emissions to land* for details. Condition W2.1.1 has been specified which authorises discharge to land during commissioning only if wastewater quality analysis indicates that parameters analysed are below the limits specified in the works approval.	Works Approval Application Form, dated 8 October 2015
Point source emissions to air including monitoring	W1.2.2	**Construction** No significant point source emissions to air are expected during construction. Proponent has indicated that electricity from the grid will be used. No conditions relating to point source emissions to air are specified on the works approval. **Commissioning** Commissioning will involve running the system with water to detect any leaks or system failures. The next step would include running smaller batches of beer through the brewing system and making necessary adjustments until the desired result is reached. Point source emissions characteristic of those detailed under 'operation' can be expected during commissioning. However these are not expected to be significant given the proposed short duration of commissioning (4 months) and the fact that only smaller batches will be run through the system. See details under 'operation' for risk	Works Approval Application Form, dated 8 October 2015; National Pollutant Inventory: Emission estimation technique manual for Beer and ready-to-drink alcoholic beverage manufacturing;

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		assessment and controls proposed by proponent. W 1.2.2 has been added to ensure that commissioning is undertaken within the period specified.	Version 1.2; March 2007;
	Licence	**Operation** Emissions Description- Normal operation *Emission:* There is potential for emissions of volatile organic compounds during beer manufacturing process (boiling/ cooling of wort). Carbon dioxide gas that is used to pressurise beer storage vessels may be released from vents when brewing vessels are evacuated and cleaned. CO_2 emissions are also likely from the fermentation process. Proponent has indicated that grid electricity will be used as the power source. No use of boilers has been proposed during beer manufacturing process. *Impact:* Some odour emissions may be characteristic of VOCs released. A residential receptor is located at a distance of 90 meters north-east of the premises. Other receptors outside the premises boundary include a church approximately 70m north. The premises also has an operating tavern. There is potential for localised impact and local concern. Key impact associated with emissions of CO_2 is the potential contribution to global warming. *Controls*: A vapour condensing unit will be installed to manage gaseous emissions from the brewery manufacturing process. The brewery manufacturing infrastructure will be located inside an enclosed area. Risk Assessment *Consequence:* Minor *Likelihood*: Unlikely *Risk Rating:* Moderate Regulatory controls No additional monitoring or reporting conditions are proposed. Other regulatory mechanisms such as Emission Estimation Techniques prescribed under the National Pollutant Inventory can be used to determine point source emissions of VOCs during	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		operations. Residual Risk *Consequence:* Minor *Likelihood*: Unlikely *Risk Rating:* Moderate	
Point source emissions to surface water including monitoring	-	**Construction, Commissioning and Operation** Lake Walyungup is located approximately 150 m west of the Brewery. No point source emission to surface water is proposed during construction, commissioning or operation. No conditions are proposed on the works approval or licence. Any unauthorised discharge to the Walyungup Lake can be managed under *Environmental Protection (Unauthorised Discharges) Regulations 2004*.	Works Approval Application Form, dated 8 October 2015; *Environmental Protection (Unauthorised Discharges) Regulations 2004*
Point source emissions to groundwater including monitoring	-	**Construction, Commissioning and Operation** The proposed premises is located within the 'Stakehill groundwater area' proclaimed under the *Rights In Water and Irrigation Act 1914*. No direct discharge to groundwater is proposed during construction, commissioning or operation. No conditions are proposed on the works approval or licence. The proponent is proposing to irrigate treated wastewater on the premises. Potential impacts from irrigation of wastewater are assessed under Emissions to land section of this Decision Table.	Works Approval Application Form, dated 8 October 2015; *Rights In Water and Irrigation Act 1914*
Emissions to land including monitoring	-	**Construction** No point source emissions to land are proposed during construction. No conditions are proposed to authorise these through works approval.	Works Approval Application Form, dated 8 October 2015;

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
	W1.2.2, W1.3.1, W2.1.1, W3.1.1-3.1.2 IR1 and IR 2 (on works approval)	**Commissioning** The proponent is proposing to undertake commissioning of the proposed wastewater treatment plant and irrigate wastewater to land during commissioning. Conditions have been added to the works approval to manage discharge of wastewater during commissioning. See Appendix A for details of DER's risk assessment and decision making. **Operation** The proponent is proposing to irrigate treated wastewater to land during operations. The works approval application indicates that initial throughput from the premises is not likely to exceed 200kL per annual period. The application has identified that disposal strategy for higher treated wastewater generation volumes for production capacity greater than 200kL/ year has not been finalised yet. Should a licence be granted to the premises, conditions may be added to the licence to ensure that treated wastewater irrigation during operation does not exceed the nutrient, BOD or hydraulic loading limits for soil types at the premises or cause indirect impact on groundwater quality. See Appendix A for details of DER's risk assessment and decision making.	Department of Health Guidelines for the *Non-potable Uses of Recycled Water in Western Australia; August 2011* (DoH Guidelines)
Fugitive emissions	-	**Construction** Emissions Description *Emission:* Fugitive emissions commonly associated with construction include dust emissions due to major earthworks, civil works on site. Construction will involve the installation of the brewery equipment onto the existing floor surface, as well as installation of external tanks, the WWTP and connecting pipes. *Impact:* A residential receptor is located at a distance of 90 meters north-east of the premises. Other receptors include a church approximately 70 meters north of the premises boundary. The premises also has an operating tavern. There is potential for limited, short term impact and possible complaints if fugitive dust emissions are not managed appropriately.	*Environmental Protection Act 1986* (EP Act)

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Controls: The Brewery will be developed by utilising existing infrastructure (current function centre). Minimal earthworks are proposed to be undertaken for construction of a concrete pad for installation of proposed wastewater treatment plant. Risk Assessment *Consequence:* Insignificant *Likelihood*: Unlikely *Risk Rating:* Low Regulatory controls Unreasonable emissions from construction activities on site can be managed under general provisions of the *Environmental Protection Act 1986*. No additional conditions are proposed to be added to the works approval. Residual Risk *Consequence:* Insignificant *Likelihood*: Unlikely *Risk Rating:* Low **Commissioning** Dust emissions associated with alcoholic beverage manufacturing are not anticipated during commissioning. No conditions are proposed to be added to the works approval. **Operation** Dust emissions associated with alcoholic beverage manufacturing are not anticipated during operations. No conditions are proposed to be added to the licence.	
Odour	-	**Construction** Odour emissions associated with alcoholic beverage manufacturing are not anticipated during construction. No conditions are proposed to be added to the works approval.	*Environmental Protection Act 1986*

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
	W1.2.2, W2.1.1	**Commissioning and Operation** See Appendix A for DER's assessment and decision making.	
Noise	-	**Construction** <u>Emissions Description</u> *Emission:* Noise emissions associated with construction activities such as major earthworks, civil works on site. Construction will involve the installation of the brewery equipment onto the existing floor surface, as well as installation of external tanks, the WWTP and connecting pipes. *Impact:* A residential receptor is located at a distance of 90 meters north-east of the premises. Other receptors include a church approximately 70 metres north of the premises boundary. The premises also has an operating tavern. There is potential for limited, short term impact and possible complaints. *Control:* The Brewery will be developed by utilising existing infrastructure (current function centre). No major earthworks are proposed during construction. <u>Risk Assessment</u> *Consequence:* Insignificant *Likelihood*: Unlikely *Risk Rating:* Low <u>Regulatory controls</u> *Environmental Protection (Noise) Regulations 1997* are considered appropriate to manage noise emissions during construction. No further works approval conditions are considered necessary. <u>Residual Risk</u> *Consequence:* Insignificant *Likelihood*: Unlikely *Risk Rating:* Low	*Environmental Protection (Noise) Regulations 1997*

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Commissioning and Operation Emissions Description *Emission:* Noise emissions are likely during commissioning and operation. Noise emitting equipment within the WWTP consists of four centrifugal pumps, two peristaltic diaphragm pumps and one air blower. The brewing process does not require high noise-emitting equipment. *Impact:* A residential receptor is located at a distance of 90 meters north-east of the premises. Other receptors include a church approximately 70 metres north of the premises boundary. The premises also has an operating tavern. There is potential for limited impact and possible complaints. *Controls:* Noise generating equipment associated with operation of the WWTP will be housed inside the MBBR unit. Noise modelling has not been undertaken, however the application document states that expected noise readings at a distance of 2m will be less than 68dB. Therefore, noise emissions at closest sensitive receptor are expected to be approximately 32dB which conforms to the requirements of the EP (Noise) Regulations. The application document notes that this calculation is based on noise emissions travelling across a flat surface with no obstructions, whereas the premises will have three sheds between the WWTP and the nearest sensitive receptor. Additionally, the MBBR unit will be located behind a low retaining wall. The brewery manufacturing equipment will be housed within existing building on site which is expected to provide barrier. The proponent has committed to comply with noise limits specified in EP (Noise) Regulations. The proponent has committed to liaison with the closest receptor during commissioning and conducts noise monitoring if issues are raised. Risk Assessment *Consequence:* Minor	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Likelihood: Possible *Risk Rating:* Moderate <u>Regulatory controls</u> The EP (Noise) Regulations are considered appropriate to manage noise emissions during commissioning and operation. Licence will include condition requiring the licensee to implement a complaints management system. <u>Residual Risk</u> *Consequence:* Minor *Likelihood*: Possible *Risk Rating:* Moderate	
Monitoring general	W3.1.1	See Appendix A – *Emissions to land* section for details of risk assessment and decision making. **Construction and Commissioning** Conditions 3.1.2 is specified on the works approval to monitor quality of treated wastewater during commissioning. Condition 3.1.1 has been added to the works approval to specify that wastewater sampling is conducted in accordance with AS5667.10 and that all laboratory samples are analysed by a NATA accredited laboratory. **Operation** Should a licence be granted to the premises, general monitoring conditions that specify monitoring standards, frequency, calibration and requirement that wastewater samples are analyses by a NATA accredited laboratory may be added.	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Monitoring of inputs and outputs		See Appendix A – *Emissions to land* section for details of risk assessment and decision making. **Construction and Commissioning** Conditions 3.1.2 is specified on the works approval to monitor quality of treated wastewater during commissioning. **Operation** Proponent is proposing to irrigate treated wastewater onsite during operation. The Licence will include conditions for regular monitoring of quality of wastewater being discharged.	
Process monitoring	-	**Construction, Commissioning and Operation** No conditions relating to process monitoring have been specified on the works approval or are recommended to be added to the licence.	
Ambient quality monitoring	-	**Construction, Commissioning and Operation** No conditions relating to ambient monitoring have been specified on the works approval or are recommended to be added to the licence.	
Meteorological monitoring	-	**Construction, Commissioning and Operation** No conditions relating to meteorological monitoring have been specified on the works approval or are recommended to be added to the licence.	
Improvements	IR1	See Appendix A - Emissions to land for details of DER's risk assessment and decision making.	
Information	W5.1.1 – W5.1.2	**Construction** Conditions W5.1.1 has been added requiring submission of a compliance document following construction of works associated with brewery manufacturing and proposed wastewater treatment plant and prior to commissioning.	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		W5.1.2 specifies information and authorisation requirements for compliance document to be submitted.	
	W5.1.3- W5.1.4	**Commissioning** Condition 5.1.3 requires submission of commissioning report once proposed WWTP has been commissioned. Condition 5.1.4 details information requirements for the commissioning report.	
	W5.2.1	Notification requirements have been specified in condition 5.2.1 to manage commissioning process and potential complaints during commissioning.	
	Licence	**Operation** Conditions regarding records keeping, submission of Annual Audit Compliance Report and Annual Environmental Report and establishing a complaints management system will be added to the licence.	
Works approval duration	-	The works approval has been granted for a duration of three years.	

5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
26/10/2015	Application advertised in West Australian (or other relevant newspaper)	No comments received.	Not applicable.
26/10/2015	Application referred to the City of Rockingham as stakeholder	The City of Rockingham's response dated 11 November 2015 notes no objection to proposal provided it complies with the relevant planning approvals.	Planning approval requirements have been considered in the decision document to ensure consistency. No other changes required.
13/11/2015	Technical advice requested from Department of Water due to location of premises within Stakehill groundwater area, proximity to Lake Walyungup and proposal for irrigation of treated wastewater	Advice received 7 December 2015. Department of Water recommends that monitoring regime proposed during commissioning should be continued through operation stage. Recommended water monitoring parameters and frequencies are outlined in Water Quality Protection Note 22 - Irrigation with nutrient-rich wastewater (DoW, 2008). Department of Water can provide advice on determining if the Nutrient Irrigation Management Plan provides an acceptable level of risk management for water resources.	This works approval only authorises construction and commissioning of the brewery and the WWTP. Ongoing monitoring requirements will be determined at the licence assessment stage, should the proponent seek a licence to operate. The works approval conditions require submission of a NIMP. DER will consult with Department of Water once the NIMP is submitted.
16/12/2015	Proponent sent a copy of draft instrument	Irrigation during commissioning should be authorised without including any limits. The approach is not consistent with recent works approval (W5897/2015/1) granted. Nutrient discharge during commissioning should	Decision Document details DER's risk assessment and decision making process. Risk of emissions to land during commissioning has been assessed to be 'moderate' and not 'low'. The proponent has not submitted a Nutrient Irrigation

Date	Event	Comments received/Notes	How comments were taken into consideration
		be accounted for in the total loading limit per year. Given the low risk of impacts over the short period, the limits cannot be justified.	Management Plan (NIMP) or provided wastewater disposal/ contingency strategy as part of their application to demonstrate potential nutrient loading that may be expected during commissioning. Given location of the premises in a groundwater area, limiting emissions to land is considered appropriate management strategy that is consistent with DER's *Guidance Statement: Regulatory principles*, published July 2015 which dictates that outcome based conditions can be included to address risks. The limits are not considered to restrict commissioning activities if irrigation is not undertaken. DER may consider amending the works approval if a satisfactory NIMP is provided prior to commissioning. Any commitments made in NIMP will likely be imposed as conditions of licence.
		TSS concentration of 30mg/L and BOD of 20mg/L is considered appropriate.	Proponent had initially committed to meeting 'High Exposure Level' treated wastewater quality criteria as defined in the DoH Guidelines. The new performance specification for TSS and BOD proposed complies with 'Medium Exposure Level' criteria. No change to other parameters such as E.coli, turbidity, pH are proposed. Decision Document and conditions have been updated accordingly.
		Noise monitoring is considered onerous. A suggested approach would be to liaison with the closest receptor during commissioning and conduct noise monitoring only if issues were raised.	Approach suggested is considered acceptable. EP (Noise) Regulations 1997 will be used to manage noise emissions during commissioning and operation.

6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High

Appendix A

ODOUR EMISSIONS

Emission Risk Assessment- Commissioning
Commissioning the beer manufacturing equipment will involve running the system with water to detect any leaks or system failures. Smaller batches of beer will be run through the brewing system and necessary adjustments made until the desired result is reached. Wastewater treatment plant is also proposed to be commissioned at works approval stage.

Emissions Description

Emission: Odour emissions from brewery operations are generally associated with wort boiling, maturation and fermentation vessels, brewery wastewater, leaks of coolant (ammonia) and storage of spent grains. These emissions can also be expected during commissioning. Commissioning of wastewater treatment plant and irrigation of wastewater, likely containing higher contaminant loads, is proposed. Odour emissions are likely due to higher BOD loads in wastewater irrigated.

Impact: A residential receptor is located at a distance of 90 meters north-east of the premises. Other receptors include a church located approximately 70 metres north of premises boundary. These receptors are in the direction of prevailing winds. The premises also has an operating tavern. The separation distance between the premises and receptors is less than that recommended (500 metres) in DER's draft *Guidance Statement: Separation Distances, August 2015* for premises undertaking alcoholic beverage manufacturing. There is potential for short term impact and possible complaints due to odour emissions.

Controls: A vapour condensing unit will be installed to manage gaseous/ odour generating emissions from the brewery manufacturing process. The brewery manufacturing infrastructure will be located inside an enclosed area. The proposed WWTP will use MBBR technology and will be fully contained within a sea container. Spent grain will be stored in bins with lid and disposed offsite as cattle feed.

Risk Assessment
Consequence: Minor
Likelihood: Possible
Risk Rating: Moderate

Regulatory controls
Condition 1.2.2 has been added to ensure that commissioning is undertaken within the period specified. Condition 2.1.1 has been added to the works approval to manage discharge of wastewater during commissioning. Unreasonable odour emissions during commissioning can be managed using general provisions of the EP Act.

Residual Risk
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Moderate

Emission Risk Assessment- Operation

Emissions Description

Emission: Odour emissions from brewery operations are generally associated with wort boiling, maturation and fermentation vessels, brewery wastewater, leaks of coolant (ammonia) and storage of spent grains. Irrigation of treated wastewater is proposed. Higher BOD loads in wastewater irrigated may cause odour emissions. Storage or onsite disposal of sludge generated from the WWTP could cause odour emissions as well.

Impact: A residential receptor is located at a distance of 90 meters north-east of the premises. Other receptors include a church approximately 70 metres north of the premises boundary. These receptors are in the direction of prevailing winds. The premises also has an operating tavern. The separation distance between the premises and receptors is less than that recommended (500 metres) in DER's draft *Guidance Statement: Separation Distances, August 2015* for premises undertaking alcoholic beverage manufacturing. There is potential for short term impact and possible complaints due to odour emissions.

Controls: The WWTP tanks will be located within a sea container to minimise odour potential. The brewery equipment will be located inside existing building. A vapour condensing unit will be installed to capture emissions of any volatile organic compounds during manufacturing process. Spent grain will be stored in bins with lids for disposal offsite. Wastewater will be treated to Class A treatment standard as per DoH Guidelines and regular monitoring will be undertaken. Sludge from wastewater treatment will be stored in a tank and disposed offsite at an authorised facility.

Risk Assessment
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Moderate

Regulatory controls
Licence may include a condition requiring the licensee to implement a complaints management procedure. DER will monitor the complaints data. Should nuisance odour emissions from the premises become a concern, the licensee may be asked to investigate operational or management control measures or techniques for odour abatement at source.
Conditions specifying limits on quality of wastewater to be irrigated onsite may be included.
Licence will not authorise discharge of WWTP sludge or spent grain on site.

Residual Risk
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Moderate

EMISSIONS TO LAND

The WWTP proposed will treat wastewater generated from brewery operations only and will not be used for treating sewage.

Emission Risk Assessment- Commissioning
Emissions Description

Emission: The proponent is proposing to commission the WWTP and irrigate wastewater onsite during commissioning. Brewery wastewater typically contains high biochemical oxygen demand (BOD), chemical oxygen demand (COD) and high nutrient loading (TN, TP). The proponent has referenced *Department of Water's 'Water Quality Protection Note 22: Irrigation with nutrient-rich wastewater'* and identified that soil types at the premises can be classified as soil risk category 'A'.

Impact: The premises is located within Stakehill Groundwater Area proclaimed under the RIWI Act. Soil risk category identified by the proponent indicates that soils in proposed irrigation area are likely to be characterised as 'coarse grained' and may include sands and gravel. These soils are known to have higher permeability and lower phosphorus retention index compared to sandy loams/ loams/ clay loams or clays.

The premises is located within Stakehill groundwater area, Outridge subarea. Department of Water's report titled *Rockingham—Stakehill groundwater management plan, Report No. 23, published November 2008* identifies that water table in the area is

shallow (about 2m AHD) and that groundwater is recharged mainly through infiltration. The report also notes that groundwater flow discharge occurs radially into Lake Walyungup among other receptors. Beneficial use of groundwater in the area has been identified to be for purposes such as residential, irrigation for horticulture and general agriculture.

The proponent has noted that contaminant concentrations in treated wastewater during commissioning are likely to be higher than the performance specifications of the WWTP.

Nutrient loading limits specified in WQPN 22 are based on 'annual application' of wastewater to a given area. Irrigation with wastewater containing higher nutrient concentrations may result in greater nutrient loads being applied to land within a short period. In addition, irrigation of wastewater at rates exceeding the hydraulic and nutrient loading limit of soil type at the premises can accelerate nutrient leaching into groundwater. Irrigation with wastewater having high BOD loads can impact soil structure and may also cause odour emissions. There is potential for alteration of local groundwater quality if irrigation is not appropriately managed.

Proposed irrigation area is likely to cover the entire premises which includes an operating tavern. There may be potential risk to public health if wastewater irrigated during commissioning does not meet the compliance values for disinfection as identified in the DoH Guidelines.

Controls: The Proponent has committed that design specifications of the wastewater treatment technology chosen can treat wastewater to standards specified for 'High Exposure Risk Level' in accordance with the DoH Guidelines, once commissioning is complete. The proponent has committed to undertake validation and verification monitoring for at least six weeks, in accordance with DoH Guidelines (See Table 2 below).

Table 2: Validation and verification monitoring regimen for WWTP proposed by proponent

Exposure Risk Level (level of human contact)	Parameter	Effluent compliance value	Influent monitoring frequency	Effluent monitoring frequency
High[1]	BOD[2]	<20 mg/L	Not required	Weekly
	SS[2]	<30 mg/L	Not required	Weekly
	pH	6.5 – 8.5[1]	Continuous online or weekly	Continuous online
	Turbidity	<5 NTU[1]		Continuous online
	Chlorine[3]	0.2 – 2 mg/L[1]	Not required	Continuous online
	Total Nitrogen[4]	<15 mg/L	Not specified	Not specified
	Total Phosphorus[4]	<8 mg/L		

Note 1: As defined in the DoH Guidelines
Note 2: Effluent compliance value for BOD and SS proposed by proponent, meet 'Medium Exposure Risk Level' as defined in DoH Guidelines
Note 3: Total chlorine residual after a minimum contact time of 30 minutes.
Note 4: As committed by the proponent in the works approval application supporting documents.

Risk Assessment
Consequence: Moderate
Likelihood: Possible
Risk Rating: Moderate

Regulatory controls
The works approval authorises discharge of wastewater during commissioning only in instances where 'Effluent compliance values' identified in Table 2 of this document and specified through works approval conditions are complied with. The proponent may need to consider temporary

storage requirements for treated wastewater during commissioning to account for time lag between sample collection and receiving wastewater quality analysis results from a NATA accredited laboratory and also for periods when treated wastewater irrigation may not be possible due to wet weather.

The following conditions have been added to the works approval to manage commissioning of the WWTP:

- Condition 2.2.1 specifies treated wastewater quality limits that must be complied with prior to irrigation of treated wastewater;
- Condition 2.2.2 specifies nutrient and BOD loading limits for irrigation. These limits have been specified for duration of commissioning and are based on maximum annual loading limits specified in WQPN 22 for soil risk category 'A'. ;
- Condition 1.3.1 specifies requirements to manage irrigation during commissioning;
- Condition 3.1.2 specifies treated wastewater quality monitoring requirements;
- Condition 3.1.1 requires that wastewater sampling is conducted in accordance with AS/NZS 5667.10 and that analysis is carried out by a NATA accredited laboratory;
- Condition 1.2.2 specifies limit on duration of commissioning the WWTP;
- Reporting requirements have been added through condition 5.1.3 and 5.1.4 regarding submission of commissioning report; and
- Notification requirements have been added regarding commencement and completion of commissioning and for reporting of any potential complaints received.

Residual Risk
Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate

Emission Risk Assessment- Operation
Emissions Description (Emissions to land- irrigation)

Emission: The proponent is proposing to irrigate wastewater on an ongoing basis onsite during commissioning. Brewery wastewater typically contains high biochemical oxygen demand (BOD), chemical oxygen demand (COD) and high nutrient concentrations (TN, TP). Application identifies that soil types at the premises can be classified as soil risk category 'A' as described in the *Department of Water's 'Water Quality Protection Note 22: Irrigation with nutrient-rich wastewater'* (WQPN 22) will be used.

Impact: The premises is located within Stakehill Groundwater Area proclaimed under the RIWI Act. Soil risk category identified by the proponent indicates that soils in the proposed irrigation area can be characterised as 'coarse grained' and may include sands and gravel. These soils are known to have higher permeability and lower Phosphorus retention index compared to sandy loams/ loams/ clay loams or clays.

The premises is located within Stakehill groundwater area, Outridge subarea. Department of Water's report titled *Rockingham—Stakehill groundwater management plan, Report No. 23, published November 2008* identifies that water table in the area is shallow (about 2m AHD) and that groundwater is recharged mainly through infiltration. The Report also notes that groundwater flow discharge occurs radially into Lake Walyungup among other receptors. Beneficial use of groundwater in the area has been identified to be for purposes such as residential, irrigation for horticulture and general agriculture.

Irrigation of wastewater at rates exceeding the hydraulic and nutrient loading limit of soil type at the premises can accelerate nutrient leaching into groundwater. Irrigation with wastewater having high BOD loads can impact soil structure and may also cause odour emissions. There is potential for alteration of local groundwater quality if irrigation is not appropriately managed.

Proposed irrigation area is likely to cover the entire premises which includes an operating tavern. There may be potential risk to public health if wastewater irrigated does not meet the compliance values for disinfection as identified in the DoH Guidelines.

Controls: The proponent has proposed to undertake ongoing monitoring of treated wastewater quality (See Table 3 below) and to restrict treated wastewater application rates so as to achieve TN loading rate to 140 kg/ha/year and TP loading rate of 10 kg/ha/year of TP. Irrigation is proposed to be undertaken on 0.9ha irrigation area currently available.

The works approval application supporting document notes that on account of anticipated treated wastewater quality and limit on volume of wastewater that can be irrigated, nutrient loading rates, it is expected that on average up to 3000L per day of treated wastewater can be irrigated onsite (commensurate to initial expected throughput of 200kL/ year for beer manufacturing).

DER notes that above assumptions, do not account for limitation placed by soil hydraulic loading limits and BOD loading limit on treated wastewater volume discharged. Also, potential reduction in treated wastewater volumes that may be irrigated during wet weather period has not been considered. It is expected that Nutrient Irrigation Management Plan takes into account these factors while determining irrigation area required.

Premises throughput is likely to increase with maximum design capacity being 1ML per year of beer manufactured. At this stage, the proponent has not determined a final disposal strategy for expected increase in wastewater generation volume. The proponent is investigating alternative strategies such as offsite disposal of treated excess wastewater, increasing size of irrigation area or disposing treated wastewater through municipal sewer.

Table 3: Ongoing monitoring regimen for WWTP as proposed by proponent

Parameter	Effluent monitoring frequency
Volume of wastewater irrigated	Monthly
pH	
TN	
Ammonium- Nitrogen	
Nitrate- Nitrogen	
Nitrite-Nitrogen	
TP	
BOD_5	
TSS	
TDS	
E. coli	

Note 1: Total chlorine residual after a minimum contact time of 30 minutes.

Risk Assessment
Consequence: Moderate
Likelihood: Possible
Risk Rating: Moderate

Regulatory controls
While disposal of wastewater when the premises starts operating at throughputs higher than 200kL per year is an issue relevant to operation, DER notes that works approval assessment is based on 'design capacity' of the operation. On this ground, improvement requirement IR1 has been included on the works approval requiring submission of Nutrient Irrigation Management Plan (NIMP) for the premises. Based on hydraulic and nutrient loading rates identified in the NIMP, a minimum area required for irrigation of wastewater will be determined. Wastewater that cannot be irrigated in accordance with approved nutrient and hydraulic limiting loading rates may need to be

disposed offsite at authorised facilities. The condition specifies that the NIMP includes a risk assessment for potential impacts on groundwater quality.

In order to manage ongoing operation of the wastewater treatment plant, following conditions may be included on the licence:

(i) Limits on treated wastewater quality will be included for TN, TP, BOD, pH, SS and residual chlorine;
(ii) Limits on irrigation rate of wastewater (kg/ha/year) based on outcomes of the NIMP;
(iii) Monitoring requirements for treated wastewater quality (TN, TP, BOD, pH, TDS, TSS and residual chlorine) and volume of wastewater irrigated;
(iv) Conditions monitoring methods and requirement for using a NATA accredited laboratory for analysis of samples;
(v) Conditions restricting/ preventing irrigation of wastewater when rainfall is imminent and specifying minimum separation distance to be maintained from the wet weather groundwater level; and
(vi) Reporting requirements for submission of monitoring reports, Annual Environmental Report, Annual Audit Compliance Report and notification of exceedances of limits specified on the licence.

DER notes that the effluent monitoring frequency proposed by proponent (in Table 3) may be reviewed at licensing stage. Volume of wastewater irrigated will need to be measured continuously for the duration of discharge and reported through Annual Environmental Report.

Residual Risk
Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate

Emission Risk Assessment- Operation

Emissions Description (Emissions to land- overflow from WWTP)
Emission: Potential emissions to land from overflow of wastewater treatment tanks. Brewery wastewater typically contains high BOD, COD and nutrient concentrations.
Impact: Lake Walyungup is located approximately 150 m west of the Brewery. Mandurah Road separates the brewery from the lake. Overflow of WWTP may cause localised impact and local attention.
Controls: The WWTP has a level switch installed to prevent overflows. The WWTP will be based on a concrete pad. The MBBR unit will be located in a sea container.

Risk Assessment
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Moderate

Regulatory controls
Condition may be included on the licence regarding immediately recovering, or remove and disposing of spills of environmentally hazardous materials outside an engineered containment system. Significant spills may be managed under other provisions of the EP Act.

Residual Risk
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Moderate