



Application for Licence

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

Licence Number	L8081/2006/4
Applicant	Summer Honey Pty Ltd
ACN	141 184 947
File number	ILS2014/000016-1~5
Premises	<p>Boston Brewing Co at Willoughby Park 678 South Coast Highway, HAY, WA 6333</p> <p>Legal description Lot 42 on Plan 93593 and Lot 1 on Plan 72333 As defined by the premises maps attached to the issued licence.</p>
Date of report	09 January 2024
Proposed Decision	Licence granted

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1. Decision summary

Licence L8081/2006/3 is held by Summer Honey Pty Ltd (licence holder) for the Boston Brewing Co at Willoughby Park (the premises), located at Lot 42 on Plan 93593 and Lot 1 on Plan 72333, 678 South Coast Highway, Hay.

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the operation of the premises. As a result of this assessment, licence renewal L8081/2006/4 has been granted.

The renewed licence issued consolidates and supersedes the existing licence previously granted in relation to the premises.

2. Scope of assessment

2.1 Purpose and 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 Application summary and overview of premises

On 28 November 2023, the applicant submitted an application for a licence renewal application to the department under section 57 of the *Environmental Protection Act 1986* (EP Act).

The application seeks to renew licence L8081/2006/3 relating to beer and ready to drink alcoholic flavoured beverages and irrigating treated wastewater to land at the premises. The premises is approximately 2.6 km east from the Denmark town site.

The premises relates to category 25 with an assessed production capacity of not more than 1,340 kilolitres of beer/ready to make alcoholic beverages produced per year (840 kL beer and 500 kL ready to make beverages), under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in licence L8081/2006/4. The application has been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020).

2.2.1 Background

Licence L8081/2006/3 expires on 21 March 2024. The licence was amended on the 15 July 2022 and was assessed for an increase in alcohol production with construction upgrades to the wastewater treatment plant (WWTP) and irrigation. The prescribed premises consists of two adjacent properties, Lot 42 on Plan 93593 and Lot 1 on Plan 72333 owned by Timiama Nominees Pty Ltd.

- Lot 42 on Plan 93593 (contains, the brewery and bottling buildings, wastewater treatment plant (WWTP) and irrigation areas (L1 and L2))
- Lot 1 on Plan 72333 (contains irrigation area (L3)).

Timiama Nominees Pty Ltd and Summer Honey Pty Ltd have the same director and secretary and are part of the Fowler Group of Companies. A deed of covenant exists over both properties under Timiama Nominees for undertaking of the brewery and wastewater irrigation.

2.3 Overview of Operations

The following outlines the key infrastructure and operations of the brewery, wastewater treatment plant (WWTP), wastewater disposal and solids management within the premises. This information has been

sourced from the applicant and licence amendment issued on 15 July 2022.

2.3.1 Brewery

Ready to drink alcoholic beverages

The ready to drink alcoholic beverages include alcoholic ginger beer and lemonade. The licence holder stated that 500 kL/yr of ready to drink alcoholic beverages are made per annum. The beverages are made from mixing neutral spirits, flavoring, and carbonated water within the brewery building. The brewery purchases 1,000 L spirit containers for the beverages. No distilling occurs within the premises. No solids and minimal wastewater are generated from the production. All product is directed to kegs or to the canning facility. Minimal rainwater is used in the cleaning of the ready to drink alcoholic beverage production where it is not expected to contribute significantly to the effluent stream.

Beer production

Beer production occurs within a brew house. The production circuit comprises a barley mill, mash tun, a kettle, a fermenter, filtration unit and beer tanks. The water has contact with the malted barley in the mash tun. The wort is transferred to the kettle where it is boiled, and hops and spices are added. The wort is then transferred to one of 12 fermenter tanks (total capacity 45,600 L) where yeast and dry hops are added, creating alcohol and carbon dioxide. Once the wort has fermented the finished beer is filtered and stored in brite beer tanks (total capacity 9,000 L) and transferred to kegs or to the canning facility. The spent grain/hops are collected and removed from the property.

Beer and alcoholic beverage products are also stored in the canning facility within six brite tanks (beer, total capacity of 34,800L) and kegs (ready to drink alcoholic beverage products) before being packaged within the canning facility.

2.3.2 Wastewater treatment plant (WWTP)

Wastewater generated from the beverage operations is treated through a WWTP. The plant includes brewery building drains, collection sump, two sludge tanks (known as a box drain or septic tank), a limestone trickle tank to increase pH and precipitate phosphorus, two combined settling and aeration tanks with aspirators, and two storage tanks for treated wastewater. Wastewater will flow from the brewhouse drains to the collection sump and gravity flow into two sludge tanks (box drain / baffled poly septic tank) with a maximum capacity of 6,500 L. Solids are settled out in the sludge tanks and then trickle fed to the 32-kL limestone tank.

The wastewater flows into two poly lined steel wastewater tanks that have open tops consisting of two combined / settling and aerobic tanks (maximum capacity of 200 kL). A 1.5 kW floating aspirator (pump) is manually operated in a recirculation loop and simple surface sprays are used for aeration in the settling /aeration tanks. In addition, two lined steel tanks with a maximum storage capacity of 1,000 kL will be used for storage of wastewater during winter when irrigation is not permitted. The sludge tanks are buried and the settling, aerobic and storage tanks are placed upon sand pads. Four filters are placed within the WWTP to remove suspended material. These filters occur before the flow meter, on exit of the settling/aerobic tank that feeds the irrigation line, and within the recirculation loop for each of the two settling/aerobic tanks (see Figure 1 below).

Treated wastewater is either removed from the premises by a licensed waste carrier or pumped to the irrigation areas. Sludge from the sludge tanks is removed by a licensed waste carrier bimonthly.

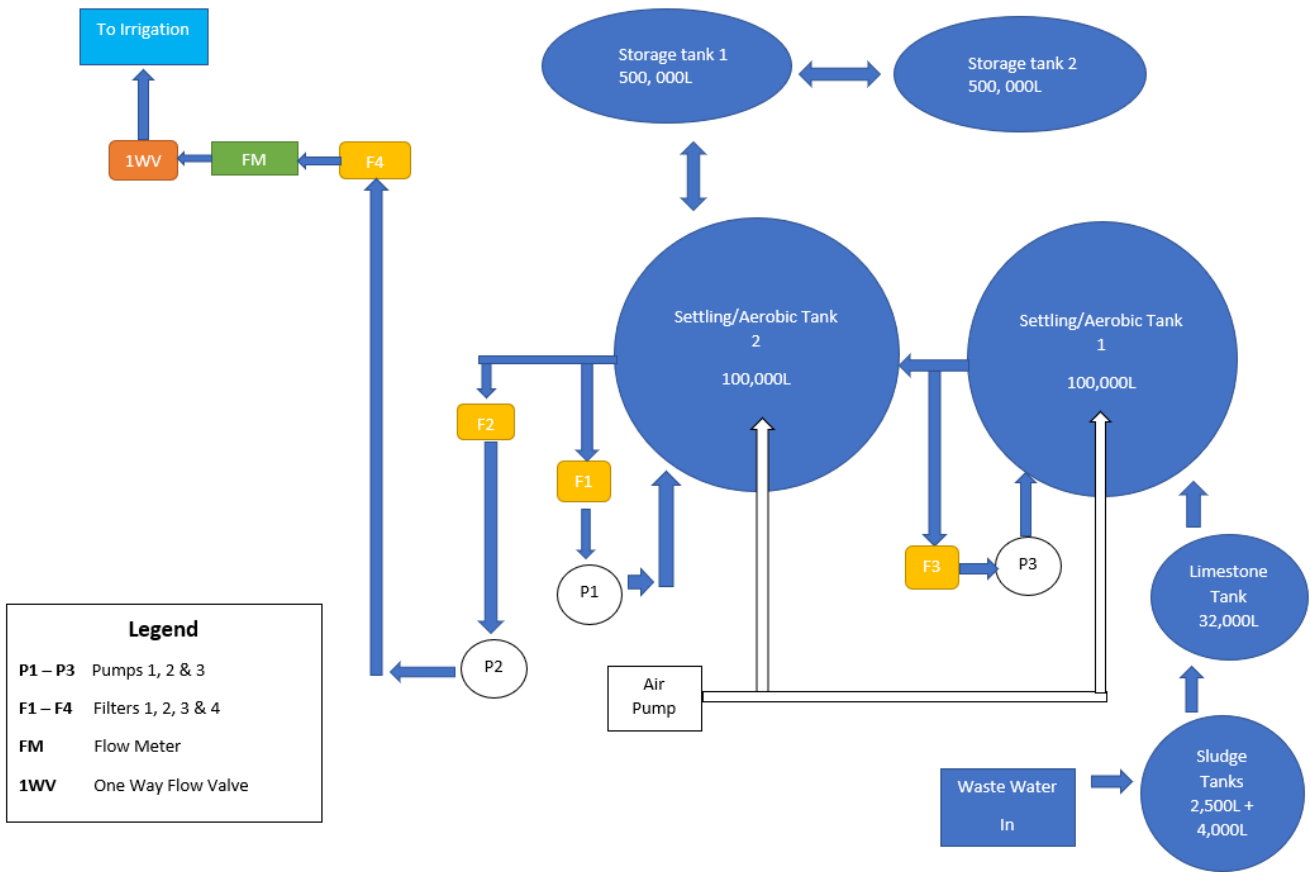


Figure 1: WWTP and flow pathway

Stormwater accessing the wastewater stream

A 1000 m² hardstand area with disused stainless steel storage tanks from the previous winery operation directs all stormwater from within the hardstand into the wastewater collection sump. The licence holder has stated that the physical arrangement of the stormwater collection channels in the hardstand area makes it difficult to separate the stormwater from the brewery wastewater. This clean stormwater is mixed with the brewery wastewater and is treated through the WWTP and included within the beer to wastewater ratio.

Volume of wastewater produced

Wastewater is produced from the cleaning of the beverage production infrastructure. Using the 2018 to 2019 submitted Annual Environmental Reports data for total volumes for beer and wastewater produced, an average of 1 L of beer produced makes 3.92 L of wastewater. The 2020, 2021 and 2022 wastewater periods have not been used as flow rate measurements were incomplete as the flow meter was not working and rates were partially estimated. It is noted that a new flow meter has been installed and recording flow rates from June 2022. The estimated wastewater produced from ready to drink alcoholic beverages is minimal and not been considered.

Based on the beer production of 840 kL/yr, 3,301.2 kL/yr of wastewater is expected to be generated. This includes the stormwater flows accessing the WWTP from the hardstand, but excluding wastewater generated from the ready to drink beverages.

Installation of WWTP infrastructure (as per amended licence issued 15 July 2022)

The licence holder provided an update indicating that the following WWTP infrastructure are still yet to be installed, they are: second sludge tank, pH adjustment tank and phosphorus precipitation, floating aspirator, and four overtopping alarms.

The delegated officer has determined to update the WWTP infrastructure installation condition

by removing the items installed and leaving the remaining outstanding items within the revised licence.

2.3.3 Treated wastewater disposal (irrigation)

The licence holder generates an estimated 3,301.2 kL/yr (840 kLx3.93 kL/yr) based on the expected wastewater production rate of 3.93 kL per 1 kL of beer produced. Two lined steel tanks with a maximum holding capacity of 1,000 kL are used to hold wastewater for the months of June, July, and August.

Wastewater is pumped from the WWTP aerobic/settling tank and or storage tanks through a flow meter to the irrigation fields via a manual operated valve. There are three areas currently authorised to be irrigated within the existing licence (L1 and L2) and a third irrigation area (L3) once the area is planted with citrus trees and matured to 5 years in the ground. The three irrigation areas have surface 'wobbler' type sprinklers. The combined irrigation area is 2.42 ha and consists of the following (licence holder supplied):

- 0.5 ha existing olive trees (L1);
- 0.93 ha existing karri and lemon gum trees and pasture/turf (L2), and
- 0.99 ha proposed citrus trees (yet to be planted consisting of 350 citrus trees) (L3) treated with amended soils.

The licence holder has an existing Nutrient Irrigation Management Plan (NIMP) 2022 that outlines application rate of a minimum of 4 mm/day/ha in summer with an irrigation duration between two to eight hours. The irrigation diameter of the proposed and existing sprinklers in L1, L2 and L3 are a minimum of 3 m.

A licence amendment to increase brewery production issued on 15 July 2022, reviewed the nutrient and loading impacts on sensitive receptors, and the nature of the wastewater characteristics. The Amendment Report outlines the decision for emission and discharge limits, treated wastewater, and groundwater monitoring. That amended licence and amendment report will be kept on the department website as a record of its decision-making.

The licence holder has indicated that during 2023 wastewater was not irrigated to land but removed offsite by a wastewater carrier, due to a combination of the WWTP improvements was not undertaken and the existing wastewater quality cannot meet the existing licence water quality limits.

Installation of irrigation infrastructure (as per amended licence issued 15 July 2022)

The licence holder provided an update indicating that the following irrigation infrastructure is yet to be installed in irrigation area L3, they are sprinkler system, amended soils, and citrus plants.

The delegated officer has determined to keep the work requirements for the irrigation area L3 within the revised licence.

In addition, the delegated officer has determined to add a condition for yearly soil sampling to monitor soil health and plant nutrient uptake ability. The nature of the wastewater is salty where buildup in the soil can inhibit nutrient uptake and cause dispersive soil, reducing infiltration. Monitoring soil health can ensure proactive management actions can be undertaken by the licence holder to ensure dispersive soils are not caused by long-term irrigation activities.

2.3.4 Solids management

Spent grain / hops from the brewing process are deposited into one tonne sealed containers. The spent grain is given to farmers to use as a food source for livestock. The containers are stored near the loading dock and removed every few days.

Sludge from the sludge tanks is removed bimonthly by a controlled waste contractor. Limestone and sludge from the pH tank are removed and limestone is replaced when infiltration is inhibited by

precipitation of solids. The sludge is not stored within the premises once removed from the tanks.

3. Legislative context and other approvals

3.1 Part V of the EP Act

The Department of Water and Environmental Regulation (DWER) maintain an Incident Compliance Management System (ICMS) database for all reported incidents and compliance matters. Table 1 lists the incidents and non-compliances for licence L7719/2001/(1-7) that have been recorded for the licence held by Summer Honey Pty Ltd as trustees for Northern Lights Unit Trust and Summer Honey Pty Ltd.

Table 1: Summary of recent incidents and compliance matters

ICMS number	Date reported	Incident / compliance matters
25329	02/3/2012	Annual Environmental Report (AER) and Annual Audit Compliance Report AACR). Following non compliances: Conditions 5a,5 b, 5c and Condition 6(i) monitoring data not supplied AACR – not signed by authorised person, submitted late and did not provide details of non-compliances.
26323 26337: 26338: 26339: 26340:	15/10/2012	Compliance inspection 15/10/2012 logged the following non-compliances: ICMS 26323: potential pond seepage; ICMS 26336: flow meter maintenance; they flow meter was not maintained or hooked into the irrigation system. ICMS 26337: understanding of AS 5667and NATA accreditation; inadequate awareness of sampling, handling and analysis of wastewater monitoring. ICMS 26338: solid waste management; marc and solid waste from the winery and brewery process is dumped of the bare ground and left in-situ. ICMS 26339: wastewater interceptor discharge, Environmental Field Notice (EFN) 10453 issued, the waste caught by the screen in the wastewater discharge interceptor is manually flushed into the environment via a PVC pipe. ICMS 26340: works to premises undertaken without a works approval (brewery development).
28628	15/03/2013	AACR/AER for the 2012 period received late.
29742	23/03/2013	AER for the 2012 period Condition 6 breach.
29743	23/03/2013	AER for the 2012 period Condition 7 breach
33626	01/01/2014	AACR and AER 2013 review non-compliance with Condition 1. Pond liner improvement condition undertaken, premises was in under 'care and maintenance'.
33627	23/06/2014	AACR and AER review, identified non-compliance with Condition 7.
35146	22/10/2014	Compliance inspection on 22/10/2014 logged the following non-compliance: Condition 4 (meter device) was not able to measure the volume of wastewater discharged from the WWTP to the irrigation area.
36967	03/03/2015	AACR and AER submitted late. Non-compliance to Condition 4, monitoring.
69114	14/02/2023	Environmental Compliance Report submitted on 14/02/2023 indicated that Condition 5 (bores were not correctly installed, licence holder was requested to redrill monitoring bores as per

		the Condition 5 requirements. Bores were installed and the item is now resolved.
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4. Risk assessment

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

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

4.1 Source-pathways and receptors

4.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this decision report are detailed in Table 2 below. Table 2 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 2: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Operation			
Nutrient and sediment laden wastewater (generated during the storage, processing and cleaning of the alcoholic beverage manufacturing equipment and canning facility.)	Beer manufacturing and packaging	Runoff/direct discharge from brewery operations and infiltration	<p>Brewing operations and cleaning are within an enclosed shed with a concrete graded floor that directs liquid waste to the collection sump.</p> <p>Spills and wastewater within the brewery building are collected through a network of grated drains that flow into an external wastewater collection sump and on to the WWTP,</p> <p>Brewery operation is with an enclosed shed.</p> <p>All plant and equipment used for the production and packaging of beer (excluding water tanks) must be operated within the brewery building with a sealed concrete surface.</p> <p>The brewery building must be graded to receive all wastewater from the brewery operations and direct it to the collection sump.</p> <p>The collection sump must be kept free of solids and direct all wastewater to the sludge tanks for treatment.</p>
Chemical laden wastewater generated from the storage or cleaning of the alcoholic beverage manufacturing equipment and canning facility.	Storage and use of chemicals	Overland runoff from brewery operations, direct infiltration	<p>All chemicals are stored within bunded facilities in accordance with AS1940-2017 and AS3780-2008.</p> <p>Brewery chemical use is with an enclosed shed.</p> <p>Spills and leaks of chemical products within the brewery building are collected through a network of grated drains that flow into an external wastewater collection sump to the WWTP,</p>
Odour from brewery wastewater	Management of brewery wastewater	Air / wind dispersal	<p>Wastewater sludge is vacuumed bimonthly from the sludge tank.</p> <p>An aspirator to be installed into the aerobic tank to improve aeration and reduce BOD.</p>
Nutrient laden wastewater processed		Overtopping, spills and leaks of tanks,	Wastewater sludge is vacuumed bimonthly from the sludge tank and reported.

Emission	Sources	Potential pathways	Proposed controls
through the WWTS		and pipes	Visual inspections to prevent leaks and spills. Level sensors with high alert alarms on tanks and maintained. Excess wastewater to storage and treatment containment is trucked offsite
Nutrient laden solids and leachate from spent grains and hops prior to removal off site	Management of brewery solid waste	Direct discharge to land and seepage / infiltration	Stored in one tonne container with no drainage within in the docking area. Removed from site every few days. Liquids must not be emitted from the storage bins.
Nutrient rich wastewater to land	Onsite disposal of wastewater via irrigation to land 2.42ha	Direct discharge of wastewater to land	Not irrigate wastewater from June to August inclusive. 1,000 kL (2x 500 kL) storage tanks for wastewater. Limestone trickle wastewater tank to raise pH and precipitate soluble phosphorus. Irrigated to establish crops consisting of citrus and olives and pasture. Irrigation area of 2.42 ha 'Wobbler' sprinklers used for irrigation. Sprinkler diameter adjusted to a minimum spread of 3 m. Monthly monitoring of wastewater quality (pH, EC TDS, TP, TN, BOD, Na., Ca, Mg and SARs). Groundwater monitoring from 3 wells for water level (monthly for first year then quarterly), quarterly monitoring for pH, EC, TN, NH-3, NO2, TP, PO4, TDS and Arsenic. Manually record monthly flow with a mechanical flow meter on the outlet from the aerobic wastewater treatment tank. No stock grazing on irrigation areas. Grass will be mowed every three weeks and trees pruned annually. No fertiliser is applied to irrigation areas. L3 irrigation area treated with 10% blend of Man gypsum (amended soil) and planted with 350 citrus trees In emergencies wastewater will be tanker truck off site if the WWTP or sprinklers have been compromised. Irrigation will be shut off during or following intense rainfall events. Weather station to inform irrigation area of rainfall events. Restriction of irrigation during the months of May to September. pH and TDS limit for wastewater quality. Wastewater is applied evenly over the entire irrigation area, with no run-off beyond the irrigation area and no soil erosion occurs. Irrigation to occur on a rotational basis ensuring areas are dry for 24 hours between applications. Irrigation is not undertaken 12 hours before, during or 24 hours immediately after a rainfall event.
Wastewater to land with excessive hydraulic loading			

Emission	Sources	Potential pathways	Proposed controls
			Nutrient loading limits for TN, TP and BOD. Irrigation limits for TDS and pH. Irrigation limit on L3 irrigation area. Volume (in m ³ or kL) of treated wastewater removed for off-site disposal. The volume of wastewater irrigated each month. Reporting of all results of monitoring on an annual basis.

4.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020), the delegated officer has excluded the applicant’s employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Table 3 below provides a summary of potential human and environmental receptors that may be impacted because of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental Siting* (DWER 2020)).

Table 3: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Closest rural residential receptor	370m from the southeast from the WWTP. 450m from the southern edge of the WWTP
Closet residential subdivision in Hay	490m from the southwest edge of the WWTP
Environmental receptors	Distance from prescribed activity
1st order tributary of Denmark River	200m north from the irrigation area (L3) 140m northwest from the irrigation area (L2)
2 nd order tributary to Wilson Inlet	880m east of the irrigation areas (L1 and L2)
Farm dams on neighboring properties.	150m east of the irrigation area (L1 and L2)) 80 and 146 m north of the irrigation area (L3) Farm dams are in the form of soaks for stock watering, which are dug into the ground and expose shallow groundwater and capture surface water flows. Water Quality Protection Note (WQPN) 22 (DoW 2008) Appendix C point 2 outlines that stock watering points are sensitive water resources).
Soil	Dempster slope phase (254KdDMs). Duplex sandy gravels and pale deep sand with lateritic duricrust. Soil has good to high permeability and very high to moderate phosphorus export. (Department of Agriculture NRI-WA database). Davidson (1994) has calculated hydraulic conductivity rates (ability of liquid to move through soil) for soil types in Western Australia. Sandy soils can infiltration up 50 metres per day. The

	lower duricrust would become a confining layer and result in low permeability and direct any nutrients via surface water and leaching through the topsoil layers. Hence, any irrigation on this soil type when the soil is saturated (wet season) or applied above the hydraulic conductivity of the soil would result in wastewater leaching towards the surface water environments due to gravitational drainage and surface runoff.
Groundwater	Groundwater if present is in weathered profile or within fractured fresh bedrocks. Shallow groundwater flows along the topography that flows towards two farm dams and first order tributary of the Frankland River north of the irrigation areas. Depth to groundwater is not confirmed. Landgate aerial April 2020, indicates all adjacent farm soaks contain water. This is the time of year that has the lowest groundwater level. Indicating that groundwater would be within 2 metres of the surface in winter.
Waterways Conservation Act Management Area (WWC Act)	Entire premise lies within the Wilson Inlet Management Area.
Wilson Inlet Management Strategy (2013 – 2022) (Department of Water and Environmental Regulation supported strategy) (WICC2012)	Entire premises fall within the Wilson Inlet Management Strategy. Recommendation actions 1.1, 9.1 and 9.2 relates to the premises for the reduction in nutrient export and improved nutrient management on landscapes.

4.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and considers potential source-pathway and receptor linkages as identified in Section 4.1. 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 4.1), 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 licence 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 4.

Licence L8081/2006/4 that accompanies this decision report authorises emissions associated with the operation of the premises i.e. alcoholic beverage production, wastewater treatment and irrigation to land of treated wastewater.

The conditions in the issued licence, as outlined in Table 4 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 4: Risk assessment of potential emissions and discharges from the premises during operation

Risk events					Risk rating ¹ C = consequence L = likelihood	Justification for additional regulatory controls	Regulatory controls-conditions of licence
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls			
Operation							
Beer manufacturing and packaging	Nutrient and sediment laden wastewater (generated during the storage, processing and cleaning of the alcoholic beverage manufacturing equipment and canning facility.)	Runoff/direct discharge from brewery operations and infiltration causing contamination of soils, groundwater, and surface water	1st order tributary of Denmark River 500 m north and 2nd order tributary to Wilson Inlet 880m east of the beer manufacturing shed. Farm dam 180 m and 250 m east of the manufacturing shed. Groundwater estimated to be within 2 m of the surface.	All alcohol production occurs within an enclosed shed, capturing all spills with sealed graded floor directing wastewater to collection sump. Sump is maintained to be free of solids. See Table 2	C – Minor : low level on-site impacts. L – Unlikely : Not likely to occur in most circumstances. Medium Risk Acceptable, generally subject to regulatory controls.	The brewery and ready to make alcoholic beverages are manufactured and bottled within an enclosed building on a concrete hardstand that is graded. All spills are directed to the collection sump with solids removal and wastewater directed to the sludge tanks that are bimonthly vacuumed out. The delegated officer considered the distance to receptors, the licence holders' controls and determined that the risk of contaminated discharge to the environment (soil, ground and surface waters) was medium. The delegated officer applied the licence holders' operational controls and infrastructure requirements critical for maintaining an acceptable level of risk as conditions in the licence.	N/A
Storage and use of chemicals	Chemical laden wastewater generated from the storage or cleaning of the alcoholic beverage manufacturing equipment and canning facility.	Overland runoff from brewery operations, direct infiltration causing contamination of soils, groundwater, and surface water	1st order tributary of Denmark River 500 m north and 2nd order tributary to Wilson Inlet 880m east of the beer manufacturing shed Farm dam 180 m 250 m east of the manufacturing shed. Groundwater estimated to be within 2 m of the surface.	All chemicals stored in banded facility to AS1940-2017 and AS3780-2008. Chemical use is within enclosed shed, spills and leaks contained in wastewater drainage system. See Table 2	C – Minor : low level on-site impacts. L – Unlikely : Not likely to occur in most circumstances. Medium Risk Acceptable, generally subject to regulatory controls.	All chemicals are stored in banded areas that meet AS1940-2017 and AS3780-2008. Chemical use is within the enclosed production shed and all spills and leaks are directed to the wastewater treatment facility via the collection sump. The delegated officer considered the distance to receptors, the licence holders' controls and determined that the risk of contaminated discharge to the environment (soil, ground and surface waters) was medium. The delegated officer applied the licence holders' operational controls and infrastructure requirements critical for maintaining an acceptable level of risk as conditions in the licence.	N/A
Management of brewery wastewater	Odour from brewery wastewater	Air / wind dispersal of odour interfering with the health, welfare, convenience, comfort, or amenity of nearby residents.	Closest rural residential receptor 370 m southwest from the WWTS and 450 m south of the WWTS. Closest residential subdivision in Hay 490 m southwest of the WWTS.	Wastewater sludge is vacuumed out bimonthly from sludge tank and aspirator (once installed) operates in the aerobic tank. See Table 2	C – Minor : Minimal off-site impacts to amenity on local scale. L – Rare : Likely to only occur under exceptional circumstances. Low Risk Acceptable, generally not subject to regulatory controls.	With the nature of brewery wastewater there is an inherent risk of odour causing impacts to offsite receptors, particularly from anaerobic settling tanks and cleaning of sludge tanks. The department has no recorded odour complaints relating to operation of the premises. Furthermore, it is expected that once the aspirator in the aerobic tank is installed this will reduce odour emissions through the reduction in BOD. The delegated officer assessed the risk as low and does not reasonably foresee off site receptors being impacted by odour from the brewery operations. The delegated officer applied the licence holders' operational controls and infrastructure requirements critical for maintaining an acceptable level of risk as conditions in the licence.	N/A
	Nutrient laden wastewater processed through the WWTS	Overtopping, spills and leaks of tanks, and pipes causing contamination of soil, groundwater, and surface waters.	1st order tributary of Denmark River 200m north and 2nd order tributary to Wilson Inlet 880m east of the irrigation area. Farm dam 150 m east, 80 m and 146 m north of the irrigation area. Groundwater estimated to be within 2 m of the surface.	Licence holder is yet to install sensor and high-level alarms in the settling, aerobic and storage tanks, sludge tank kept covered and sludge removed bimonthly. Excess wastewater to storage is removed offsite. See Table 2	C – Minor : Mid-level on-site impacts, mid-level off-site impacts on local scale. L – Possible : Could occur at some time. Medium Risk Acceptable, generally subject to regulatory controls.	Wastewater within the brewery shed drains into the main drainage channel and is collected into the wastewater collection sump. This is gravity fed to the sludge tanks (box drains /septics) and flows into the settling and aerobic tanks. The wastewater tanks are connected by pipes to the storage tanks with a manual valve to the irrigation sites. The licence holder is yet to install sensors and high-level alarms on the settling, aerobic and storage tanks. Excess wastewater to storage requirements is carted off site and the sumps are vacuumed out bi-monthly The delegated officer considered the licence holders controls and the risk of overtopping, spills, and leaks from the WWTS contaminating soil, ground, and surface waters to be medium. The delegated officer considered the licence holders controls to be critical for maintaining an acceptable risk as conditions in the licence. The outstanding requirement for installing sensors and alarms on tanks will remain.	N/A
Management of brewery solid waste	Nutrient laden solids and leachate from spent grains and hops prior to removal off site	Direct discharge to land and seepage / infiltration causing contamination of soil and ground and surface waters	1st order tributary of Denmark River 200m north and 2nd order tributary to Wilson Inlet 880m east of the irrigation area. Farm dam 150 m east, 80 m and 146 m north of the irrigation area Groundwater estimated to be within 2 m of the surface.	Solids are stored in 1-tonne containers with no drainage in docking area and removed from site every few days. See Table 2	C – Minor : Low level impact to amenity. L – Rare : Likely to occur only in exceptional circumstances. Low Risk Acceptable, generally not subject to regulatory controls.	Solids are placed into a 1 tonne solid container and stored in the docking area. The contents are removed every few days. The delegated officer does not reasonably foresee off site impacts from solids leachate from the brewery operations and has assessed the risk as low. The delegated officer will regulate the licence holder's control. To ensure the risk event is maintained at a low level.	N/A
Onsite disposal of wastewater via irrigation to land 2.42ha	Nutrient rich wastewater to land	The discharge of wastewater to land through irrigation has the potential to contaminate soil, ground, and surface water on	1st order tributary of Denmark River 200m north and 2nd order tributary to Wilson Inlet 880m east of the irrigation area. Farm dam 150 m east, 80 m and 146 m north of the irrigation area Groundwater estimated to be within 2 m of the surface.	No irrigation June – August, 1ML storage, wastewater is treated by settling, pH buffering, phosphorus precipitation and aerobic treatment. Irrigation area 2.42 ha. Monthly wastewater sampling, groundwater sampling, flow	C – Moderate : Mid-level on-site impacts, mid-level off-site impacts on local scale. L – Possible : Could occur at some time. Medium Risk Acceptable, generally subject to	The delegated officer notes that WWTP and irrigation area L3 upgrades have not been completed from previously assessed licence amendment issued on 15 July 2023. The delegated officer notes the current wastewater treatment plant (sump tanks, settling / aeration tanks) does not effectively reduce nutrients, resulting in ineffective treatment and poor-quality water being discharged to the environment. The existing licence conditions for a limestone trickle tank and aspirator will increase pH, assist in phosphorus removal, and reduce BOD through aeration, improving wastewater treatment. The level of improvement	Annual soil monitoring for soil and plant health function.

Risk events					Risk rating ¹ C = consequence L = likelihood	Justification for additional regulatory controls	Regulatory controls-conditions of licence
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls			
		the premises and surrounding land.		measurements. Irrigation area harvested, L3 has amended soil, wastewater limits for irrigation, Nutrient loading limits, excess wastewater removed offsite. See Table 2	regulatory controls.	<p>is unvalidated currently as the works have not been undertaken and wastewater data provided for assessment.</p> <p>The existing conditions for L3 irrigation area including soil amendment and no irrigation until citrus is mature (5 years in the ground) have been assessed previously through the licence amendment to be sufficient to ensure adequate phosphorus, nitrogen, and BOD uptake. Existing wastewater quality concentration limits, nutrient loadings, and operational controls are considered insufficient to manage the risk of excessive nutrients to land, causing leaching and runoff to groundwater and surface water bodies.</p> <p>The delegated officer considered the licence holders' controls and the risk of excessive nutrients to land from irrigated treated wastewater contaminating soil, ground, and surface waters to be medium.</p> <p>The delegated officer considered the licence holders controls to be critical for maintaining an acceptable risk as conditions in the licence. The outstanding requirement for installing wastewater treatment infrastructure and L3 irrigation requirements will remain. The existing wastewater operational requirements, groundwater monitoring and reporting are considered sufficient to manage the risk.</p> <p>The nature of the wastewater is salty and prone to ranging low to high pH values, overtime this can create soil health issues within the soil structure creating dispersive soils and reducing plant nutrient uptake and infiltration of the soil. The delegated officer has determined to add yearly soil monitoring of the three irrigation areas to monitor soil health and plant nutrient uptake ability. The soil health monitoring will consist of surface and mid-depth composite samples analysed for sodicity, exchangeable sodium percentage, cation exchangeable capacity, phosphorus adsorption, electrical conductivity, and pH.</p>	
	Wastewater to land with excessive hydraulic loading				<p>C – Moderate: Mid level on-site impacts, mid-level off-site impacts on local scale.</p> <p>L – Possible: Could occur at some time.</p> <p>Medium Risk</p> <p>Acceptable, generally subject to regulatory controls.</p>	<p>The delegated officer considered the likelihood of irrigating the land with excessive hydraulic loading with wastewater from the WWTP. The delegated officer considered the licence holders controls, the existing conditions with the licence, the soil type, soil hydraulic conductivity, distance to ground and surface water environments and determined that the risk was medium.</p> <p>The delegated officer notes that existing conditions for upgrades to the WWTP and irrigation area L3 have not occurred to date and that these outstanding infrastructure upgrades and operational requirements will remain as they are considered essential to manage the risk of excessive hydraulic loading to land causing excessive irrigation contaminating soil, ground, and surface waters.</p> <p>The delegated officer determined that the licence holders' controls were sufficient to manage the risk.</p>	N/A

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

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

5. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 11 December 2023	No comments were received.	N/A
Shire of Denmark advised of proposal on 14 December 2023	The Shire of Denmark did not respond.	The delegated officer notes that the Shire of Denmark granted development approval on 10 August 2021 (A413 (2021/179)) for the existing operations.
Applicant was provided with draft documents on 18 December 2023	The Applicant responded on the 19 December 2023 with no comments.	The delegated officer notes this information.

6. Decision

Based on the assessment in this decision report, the delegated officer has determined that the application to renew licence L8081/2006/4 will be granted with a 20-year duration, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

This determination is based previous licence amendment assessment for the WWTP and irrigation upgrades issued on 15 July 2022 including:

- existing wastewater treatment plant upgrades to improve wastewater quality are implemented, and
- existing irrigation area L3 upgrades to soil, planting and irrigation timeframes are implemented.

Furthermore, the delegated officer determined to regulate soil monitoring for each irrigation area to determine the capability of the soils to assimilate treated wastewater. The reasons for this decision are outlined in Table 4.

The delegated officer has determined, subject to regulatory controls outlined in Table 4, that the irrigation of wastewater to land does not present an unacceptable risk of impacts to the environment.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. DWER, 2022, *Summer Honey Pty Ltd Licence L8081/2006/3, issued 15 July 2022*, Perth

Western Australia.

5. DWER 2022, *Summer Honey Pty Ltd Amendment Report for Licence L8081/2006/3 issued on 15 July 2022*, Perth western Australia.
6. GHD 2022, *Boston Brewery Co. – Wastewater Management System, Nutrient Irrigation Management Plan*, Perth, Western Australia
7. Summer Honey Pty Ltd, Application and supporting documents for licence renewal, Demark, Western Australia.