



<b>Licence number</b>	L8081/2006/4
<b>Licence holder</b>	Summer Honey Pty Ltd
<b>ACN</b>	141 184 947
<b>Registered business address</b>	433 Riverton Drive East SHELLEY WA 6148
<b>DWER file number</b>	ILS2014/000016-1~4
<b>Duration</b>	22/03/2024 to 21/03/2044
<b>Date of issue</b>	09 January 2024
<b>Premises details</b>	Boston Brewing Co at Willoughby Park  678 South Coast Highway, HAY, WA 6333  Legal description -  Lot 42 on Plan 93593 and Lot 1 on Plan 72333.  As defined by the premises maps in Schedule 1

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i> )	Assessed production capacity
Category 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.	1,340 kL per annual period of beer and ready to drink beverages

This licence is granted to the licence holder, subject to the attached conditions, on 09 January 2024, by:

**Manager, Process Industries**

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

## Licence history

Date	Reference number	Summary of changes
17/03/2016	L8081/2006/3	Licence reissued (renewed) wine production
09/09/2016	L8081/2006/3	Amendment Notice 1. Licence holder-initiated amendment to decommission existing wastewater ponds and replace with two 62kL steel wastewater tanks.
25/02/2019	L8081/2006/3	Amendment Notice 2. CEO initiated amendment to extend the licence expiry date by 5 years.
15/07/2022	L8081/2006/3	Licence holder initiated amendment to increase beverage production throughput, change the facility from a winery to a brewery, install new wastewater treatment infrastructure and an additional wastewater irrigation area.
09/01/2024	L8081/2006/4	Licence reissued (renewed)

## Interpretation

In this licence:

- (a) the words ‘including’, ‘includes’ and ‘include’ in conditions mean “including but not limited to”, and similar, as appropriate;
- (b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (c) where tables are used in a condition, each row in a table constitutes a separate condition;
- (d) any reference to an Australian or other standard, guideline, or code of practice in this licence:
  - (i) if dated, refers to that particular version; and
  - (ii) if not dated, refers to the latest version and therefore may be subject to change over time;
- (e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and
- (f) unless specified otherwise, all definitions are in accordance with the EP Act.

**NOTE:** This licence requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this licence.

## Licence conditions

The licence holder must ensure that the following conditions are complied with:

### Infrastructure and equipment

- The licence holder must ensure that the site infrastructure and equipment listed in Table 1 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 1.

**Table 1: Infrastructure and equipment requirements**

Site infrastructure and equipment		Operational requirements	Infrastructure location-Schedule 1
<b>Brewery production and cannery shed</b>			
1	<div>1x 1,800L brew kit (mash tun and kettle combined)</div> <div>1x mill</div> <div>           Fermentation vessels            1 x 1,200 L            3x 1,800 L            5x 3,600 L            3x 7,000 L         </div> <div>           Bright tanks            1x 7,000 L            1x 2,000 L         </div> <div>Cool room</div> <div>Four head canning line</div> <div>           Canning storage tanks            3x 8,000 L            3x 3,600 L         </div>	(a) All plant and equipment used for the production and packaging of beverages (excluding water tanks) must be operated within the brewery building.  (b) The brewery building floor must be graded to receive all wastewater and spillages from the brewery operations and direct it to the sludge tanks via the solids collection sump.	As depicted in Figure 2: Map of the infrastructure and site layout of the prescribed premises. as brewery shed.
<b>Ready to make alcohol</b>			
2	1,000 L flexi alcoholic spirit containers.	(a) All spirits must be stored within the brewery production shed.  (b) Distillation must not take place on the premises.	As depicted in Figure 2: Map of the infrastructure and site layout of the prescribed premises. as brewery shed.
<b>Wastewater treatment system</b>			

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Site infrastructure and equipment		Operational requirements	Infrastructure location-Schedule 1
3	1 solids collection sump	(a) Sludge tanks must be covered to exclude rainfall whilst holding wastewater.	As depicted in Figure 2: Map of the infrastructure and site layout of the prescribed premises. as sludge tanks, limestone trickle filter, wastewater tanks 1 and 2, and storage tanks
	2,500 L and 4,000 L sludge tanks (box drain / septic tank)	(b) Sludge is removed from the sludge tanks by a controlled waste contractor at least every 2 months.	
	1 x 35,000 L pH adjustment tank	(c) Limestone and sludge within the pH tank must be removed and replaced when infiltration is inhibited by precipitated solids.	
	2x 100,000 L PVC lined steel settling/aerobic tanks	(d) No discernable seepage or leakage of wastewater from any tank or interconnecting pipes.	
	1.5 kW floating aspirator	(e) Wastewater to be pumped in a recirculation loop in the aeration tank.	
	4x inline filters within transfer pipes	(f) Floating aspirator in the settling/aeration tanks to be operated and maintained in good working order.	
	2x 500 kL PVC lined steel storage tanks	(g) Inline filters must be maintained in working condition free of solids.	
			(h) Level sensors connected to high level alarms maintained in working order to alert before overtopping occurs within each of the storage, aeration and settling tanks.
<b>Solids management</b>			
4	Impervious solid's bin (1 tonne)	(a) All spent grains and hops must be stored within the solids bin located within the docking area. (b) Solids bin must be emptied weekly and removed offsite.	As depicted in Figure 2: Map of the infrastructure and site layout of the prescribed premises.as brewery shed
<b>Irrigation of wastewater</b>			
5	Irrigation areas (2.42 ha) L1, L2 and L3 including irrigation system	(a) Irrigation area L3 must not be operated prior to submission of the Environmental Compliance Report required by Conditions 3 and 4.	As depicted in Figure 2: Map of the infrastructure and site layout of the prescribed premises. L1, L2 and L3
	Irrigation piping	(b) Flow meter must be maintained to enable the cumulative volume of wastewater discharged to the irrigation area to be accurately measured.	
	Manual valve	(c) Flow meter must be calibrated according to manufacturer's specifications.	
	"Wobbler" type sprinklers that deliver wastewater no greater than a rate of 4mm/hr and at a minimum diameter of 3 metres	(d) Irrigation manual valve, pumps, pipelines, and other fittings must be maintained and inspected daily for ruptures or leaks when irrigating.	
	Pump	(e) No wastewater irrigation occurs between 1 June and 31 August (inclusive).	
	Flow meter on outlet from 100 kL	(f) Irrigation in May must not exceed a total of 200 kL and applied no greater than 2.2 mm per day. (g) Irrigation in September must not exceed a total of 200 kL and applied no greater than 3.1 mm per day. (h) Wastewater must be treated through basic settling,	

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Site infrastructure and equipment		Operational requirements	Infrastructure location- Schedule 1
	aerobic / settling tank	aeration, and pH adjustment, prior to being irrigated. (i) Irrigation is not undertaken 12 hours before, during, or 24 hours immediately after a rainfall event over 2 mm. (j) Irrigation occurs on a rotational basis ensuring that areas are not irrigated for at least 24 hours between applications. (k) No irrigation generated run-off occurs beyond the boundary of the irrigation areas. (l) All citrus and olive trees in irrigation areas L1 and L3 are pruned at least once per annual period. (m) All fruit is harvested from the mature citrus trees. (n) Grassed areas in irrigation area L1, L2 and L3 are mowed, and grass clippings removed at least once every 3 weeks when actively growing. (o) No soil erosion occurs. (p) Healthy vegetation (grass and trees) is maintained over irrigation areas. (q) No stock to be held or grazed on irrigation areas.	
<b>Monitoring wells</b>			
6	Monitoring wells MW1 MW2 and MW3	(a) Monitoring wells must be maintained to be capable of measuring water level and extra groundwater samples.	MW1, MW 2, MW3

**Installation of irrigation and wastewater treatment infrastructure**

2. The licence holder must install the equipment or infrastructure listed in Table 2, in accordance with:
- (a) the corresponding installation requirements; and
  - (b) at the corresponding infrastructure location;
- as set out in Table 2.

**Table 2: Installation requirements**

Item	Infrastructure	Installation requirements	Infrastructure location- Schedule 1, Figure 2 Map of infrastructure
1	1x 4,000 L enclosed below ground sludge tank (box drain / septic tank)	<b>1.</b> All tanks must be constructed of an impervious material free of leaks <b>2.</b> The pH tank and storage tanks must be installed on a hardstand.	proposed additional sludge tank
2	1x 35,000 L pH adjustment tank		proposed limestone trickling filter
3	1.5kW floating aspirator	<b>3.</b> Must be installed within the existing 62 kL aerobic tank	wastewater tanks 1 and 2
4	4x tank overtopping alarm systems	<b>4.</b> Must install sensor levels connected to high level flashing alarms within the two wastewater storage tanks, and two settling/aerobic tanks.	storage tanks, wastewater tanks 1 and 2

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Item	Infrastructure	Installation requirements	Infrastructure location- Schedule 1, Figure 2 Map of infrastructure
5	“Wobbler” sprinkler irrigation system (or equivalent) connected to the central hydrant (riser / hydrant).	5. Sprinkler irrigation system to be installed within the irrigation area (L3), to ensure wastewater can be evenly spread across the entire irrigation area.	irrigation area 3 (L3)
6	L3 Irrigation area planted with 350 citrus trees	6. Amended soils must be applied to L3 within 5 years of the citrus trees being planted at a rate of 20t/ha or more.  7. Irrigation of L3 may only use the irrigation limit values for mature citrus trees in Table 3 once the trees have been in the ground for a period of at least 5 years and have had amended soils applied.	

3. The licence holder must, within 30 calendar days of the infrastructure items required by condition 2 being installed:
  - (a) undertake an audit of their compliance with the requirements of condition 2; and
  - (b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.
4. The Environmental Compliance Report required by condition 3, must include as a minimum the following:
  - (a) certification by a person authorised to represent the licence holder that each item of infrastructure or component thereof, as specified in condition 2, have been installed in accordance with the relevant requirements specified in condition 2;
  - (b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 2; and
  - (c) be signed by a person authorised to represent the licence holder and contains the printed name and position of that person.
5. The licence holder must ensure that emissions from the discharge point listed in Table 3 for the corresponding parameter do not exceed the corresponding limit when monitored in accordance with condition 6.

**Table 3: Emission and discharge limits**

Discharge point	Parameter	Limit
Irrigation area L1, L2 and L3 (without 350 or more mature citrus trees) as shown Schedule 1, Figure 1.	pH	≥6 and ≤9
	Total nitrogen	Not more than 140 kg/ha/annual period
	Total phosphorus	Not more than 10 kg/ha/annual period
	Biochemical oxygen demand	Not more than 1500kg/ha/month
Irrigation area L3 (with 350 or more mature citrus plants)	pH	≥6 and ≤9
	Total dissolved solids	A concentration of not more than 1,425 mg/L

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Discharge point	Parameter	Limit
in the ground as shown Schedule 1, Figure 1	Total nitrogen	Not more than 140 kg/ha/annual period
	Total phosphorus	Not more than 34 kg/ha/annual period
	Biochemical oxygen demand	Not more than 1500kg/ha/month

## Monitoring

### Monitoring of emissions to land

6. The licence holder must monitor emissions in accordance with the requirements specified in Table 4 and record the results of all such monitoring.

**Table 4: Emissions and discharges monitoring**

Discharge point	Monitoring location	Parameter	Units	Frequency	Averaging period	Method
Irrigation area (L1, L2, and L3) as shown in Schedule 1 Figure 1.	Wastewater sampling point	Volumetric flow rate (cumulative)	L/day	Continuous when discharging	Daily	N/A
		pH <sup>1</sup>	-	Monthly	Spot sample	AS/NZS 5667.1 and AS/NZS 5667.10
		Electrical conductivity <sup>1</sup>	dS/m			
		Total nitrogen	mg/L			
		Total phosphorus				
		Total dissolved solids				
		Total suspended solids				
		BOD				
		Sodium ion (Na <sup>+</sup> )				
		Calcium ion (Ca <sup>2+</sup> )				
		Magnesium ion (Mg <sup>2+</sup> )				
		Sodium adsorption ratio	-	Quarterly	-	

<sup>1</sup> In field non-NATA accredited analysis permitted for pH and electrical conductivity.

### Monitoring of ambient soil

7. The licence holder must monitor soil during for concentrations of the identified parameters in accordance with Table 5: and record the result of all such monitoring.

**Table 5: Monitoring of ambient soil concentrations during time limited operations**

Monitoring location as shown in Schedule 1 Figure 1	Parameter	Unit	Frequency
Irrigation areas L1, L2 and L3: Surface composite sample, comprising 10 samples collected from 0-10 cm across each irrigation area	pH	-	Once per year in November each year.
	Electrical Conductivity	dS/cm	
	Phosphorus adsorption	mgP/kg	
	Sodicity (exchangeable sodium)	-	

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Monitoring location as shown in Schedule 1 Figure 1	Parameter	Unit	Frequency
Irrigation areas L1 L2 and L3: Deep composite sample comprising of 3 samples collected from 40 -50 cm across each irrigation area.	percentage) (ECP)		
	Sodium Adsorption Ratio (SAR)	-	
	Cation exchange capacity (CEC)	-	

*Monitoring of ambient groundwater*

8. The licence holder must monitor groundwater for concentrations of the identified parameters in accordance with Table 6 and record the results of all such monitoring.

**Table 6: Groundwater monitoring**

Monitoring well location	Parameter or measurement	Units	Frequency	Averaging period	Sampling method
MW1, MW2, MW3 as shown in Schedule 1 Figure 1	Standing water level	m AHD; and mbgl	Monthly until 12 months of consecutive data has been recorded, then quarterly thereafter in (March, June, September and December)	Spot sample	In-field measurement
MW1, MW2, MW3 as shown in Schedule 1 Figure 1	pH <sup>1</sup>	-	Quarterly (March, June, September, and December)	Spot sample	AS5667.1 AS5667.11
	Electrical conductivity <sup>1</sup>	dS/m			
	Total nitrogen	mg/L			
	Ammonia nitrogen				
	Nitrate nitrogen				
	Total phosphorus				
	Reactive phosphorus (or orthophosphate)				
	Total dissolved solids				
	Arsenic				

<sup>1</sup> In field non-NATA accredited analysis permitted for pH and electrical conductivity.

9. The licence holder must ensure that all non-continuous analysis undertaken pursuant to conditions 6, 7 and 8 is undertaken by a holder of a current accreditation from the National Association of Testing Authorities (NATA) for the methods of analysis relevant to the corresponding relevant parameter.
10. The licence holder must ensure that:



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- (a) monitoring is undertaken in each monthly period such that there are at least 15 days in between the days on which samples are taken in successive months; and
- (b) monitoring is undertaken in each quarterly period such that there are at least 45 days in between the days on which samples are taken in successive quarters.

## Records and reporting

11. The licence holder must record the following information in relation to complaints received by the licence holder (whether received directly from a complainant or forwarded to them by the Department or another party) about any alleged emissions from the premises:
  - (a) the name and contact details of the complainant, (if provided);
  - (b) the time and date of the complaint;
  - (c) the complete details of the complaint and any other concerns or other issues raised; and
  - (d) the complete details and dates of any action taken by the licence holder to investigate or respond to any complaint.
12. The licence holder must:
  - (a) undertake an audit of their compliance with the conditions of this licence during the preceding annual period; and
  - (b) prepare and submit to the CEO by no later than 30 March after the end of that annual period an Annual Audit Compliance Report in the approved form.
13. The licence holder must maintain accurate and auditable books including the following records, information, reports, and data required by this licence:
  - (a) the calculation of fees payable in respect of this licence;
  - (b) the works conducted in accordance with condition 2 of this licence;
  - (c) any maintenance of infrastructure that is performed in the course of complying with condition 1 of this licence;
  - (d) monitoring programmes undertaken in accordance with conditions 6, 7 and 8 of this licence; and
  - (e) complaints received under condition 11 of this licence.
14. The licence holder must submit to the CEO by no later than 30 March after the end of each annual period, an Annual Environmental Report for that annual period for the conditions listed in Table 7, and which provides information in accordance with the corresponding requirement set out in Table 7.

**Table 7: Annual environmental report**

Condition or table	Requirement
1	Volume (in m <sup>3</sup> or kL) of wastewater removed for off-site disposal Amount (tonnes) of sludge removed from the sludge drains, settling/aerobic tanks for off-site disposal.
5, 6,	Volume (m <sup>3</sup> or kL) of wastewater applied to irrigation area (L1, L2 and L3). Wastewater monitoring data in tabulated and graphical form including the sampling

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Condition or table	Requirement
	<p>date.</p> <p>Tabulated loadings of nitrogen, phosphorus and BOD applied to irrigation area (L1, L2 and L3) including an explanation of the basis for determining loading rates.</p> <p>An assessment and interpretation of the data including comparison to historical trends and loading limits.</p> <p>Copies of laboratory sample analysis reports.</p> <p>Log reports of details of vegetation and fruit removal from the irrigation areas.</p>
7	<p>Soil monitoring data in tabulated and graphical formats including the sampling date.</p> <p>An assessment and interpretation of the data including comparison to historic trends.</p> <p>Copies of laboratory sample analysis reports</p>
8	<p>Groundwater monitoring data in tabulated and graphical formats including the sampling date.</p> <p>As assessment and interpretation of the data including comparison to historical trends.</p> <p>Copies of laboratory sample analysis reports.</p>
11	A summary of complaints recorded for the annual period.
12	A summary of the compliance against each licence condition

## Definitions

In this licence, the terms in Table 8 have the meanings defined.

**Table 8: Definitions**

Term	Definition
ACN	Australian Company Number
AHD	Australian height datum
Amended soils	means a product with a high iron oxide content that is added to soil to bind phosphorus.
Annual Audit Compliance Report (AACR)	means a report submitted in a format approved by the CEO (relevant guidelines and templates may be available on the Department's website).
annual period	a 12 month period commencing from 1 January until 31 December of the same year.
AS 1726	means the current version of Australian Standards AS 1726: <i>Geotechnical site investigations</i>
AS/NZS 4482.1	means the current version of Australia / New Zealand Standard AS/NZS 4482.1 <i>Guide to the investigation and sampling of sites with potentially contaminated soil</i>
AS/NZS 5667.1	means the current version of Australian / New Zealand Standard AS/NZS 5667.1 <i>Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples</i>
AS/NZS 5667.10	means the current version of Australian / New Zealand Standard AS/NZS 5667.10 <i>Water Quality – Sampling, Part 10: Guidance on sampling of waste waters</i>
AS/NZS 5667.11	means the current version of Australian / New Zealand Standards AS/NZS 5667.11 <i>Water Quality – Sampling, Part 11: Guidance on sampling of groundwaters</i>
ASTM D5092/D5092M-16	means the ASTM international standard for <i>Standard practice for design and installation of groundwater monitoring bores (Designation ASTM D5092/D5092M-16)</i>
averaging period	means the time over which a limit is measured or a monitoring result is obtained
BGL	below ground level
BOD	biochemical oxygen demand
books	has the same meaning given to that term under the EP Act.
CEO	<p>means Chief Executive Officer of the Department.</p> <p>“submit to / notify the CEO” (or similar), means either:</p> <p style="padding-left: 40px;">Director General Department administering the <i>Environmental Protection Act 1986</i> Locked Bag 10 Joondalup DC WA 6919</p> <p>or:</p> <p style="padding-left: 40px;"><a href="mailto:info@dwer.wa.gov.au">info@dwer.wa.gov.au</a></p>

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Term	Definition
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
dS/m	decisiemens per metre
emission	has the same meaning given to that term under the EP Act.
harvest	means the quantity of a natural product gathered in a single season.
Mature citrus tree	means a citrus tree that has been in the ground for at least 5 years.
kg/ha	kilograms per hectare
kL	kilolitres
L/day	litres per day
licence holder	means the occupier of the premises, being the person to whom this licence has been granted, as identified on the front of this licence
m	metres
mbgl	metres below ground level
Mg <sup>2+</sup>	magnesium ion
mg/L	milligrams per litre
monthly	means a one-month period from the first day of a month until the last day of that same month
Na <sup>+</sup>	sodium ion
NATA	means the (Australian) National Association of Testing Authorities
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 premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in Schedule 1 to this licence
pruned	means the activity of cutting off branches from a plant, to encourage growth, export nutrient and to maintain or increase productivity.
quarterly	means the 4 inclusive periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September and 1 October to 31 December in the same year
rainfall event	means greater than or equal to 2 mm of precipitation within a 24-hour period
spot sample	means a discrete sample representative at the time and place at which the sample is taken
µS/cm	microsiemens per centimetre
waste	has the same meaning given to that term under the EP Act
Treated wastewater	means water that has passed through the wastewater treatment system

## END OF CONDITIONS

## Schedule 1: Maps

### Premises map

The boundary of the prescribed premises and monitoring and discharge points is shown in the map below (Figure 1).



**Figure 1: Map of the boundary of the prescribed premises and locations of the irrigation areas and groundwater monitoring points.**

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## Site layout map

The location of the infrastructure within the premises is shown in the map below (Figure 1).



Figure 2: Map of the infrastructure and site layout of the prescribed premises.

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Schedule 2: Nutrient loading calculator

Irrigation areas <sup>1</sup> : size, volume irrigated, irrigation days				Annual period (as defined by your licence) <sup>2</sup>												Volume irrigated during annual period (kL) <sup>3</sup>	
	Size (ha)			January	February	March	April	May	June	July	August	September	October	November	December		
EXAMPLE irrigation area:	25	volume irrigated	kL	20,000	20,000	18,000	15,000	0	0	0	0	15,000	18,000	20,000	25,000	151,000	
		days of irrigation	days/month	29	28	30	25	0	0	0	0	20	25	30	27		
Irrigation Area 1:		volume irrigated	kL														
		days of irrigation	days/month														
Irrigation Area 2:		volume irrigated	kL														
		days of irrigation	days/month														
Irrigation Area 3:		volume irrigated	kL														
		days of irrigation	days/month														
Wastewater quality <sup>4</sup>	EXAMPLE sampling date:			20/01/2022	15/02/2022	17/03/2022	19/04/2022	12/05/2022	12/06/2022	9/07/2022	15/08/2022	12/09/2022	15/10/2022	13/11/2022	7/12/2022		
	EXAMPLE total nitrogen		mg/L	13.2	21.3	17.6	19.2	42.4	25.1	30.4	40.3	34.8	38.7	44.6	47.3		
	EXAMPLE BOD		mg/L	4.8	12.1	6.1	4.9	4.8	4.1	3.3	5.2	4.4	5.2	5.1	7.5		
	Sampling date:																
	For wineries to indicate sampling period: <sup>5</sup>																
	Total nitrogen		mg/L														
	Total phosphorus		mg/L														
Biochemical oxygen demand		mg/L															
Nutrient and BOD loadings <sup>6</sup>				January	February	March	April	May	June	July	August	September	October	November	December	kg/ha/annual period <sup>7</sup>	
EXAMPLE total nitrogen loadings				10.6	17.0	12.7	11.5					20.9	27.9	35.7	47.3	183.5	
EXAMPLE BOD loadings			kg/ha/month	3.8	9.7	4.4	2.9					2.6	3.7	4.1	7.5	38.8	
			kg/ha/day	0.13	0.35	0.15	0.12					0.13	0.15	0.14	0.28		
Irrigation Area 1	Total nitrogen	kg/ha/month															
	Total phosphorus	kg/ha/month															
	Biochemical oxygen demand	kg/ha/month															
		kg/ha/day															
Irrigation Area 2	Total nitrogen	kg/ha/month															
	Total phosphorus	kg/ha/month															
	Biochemical oxygen demand	kg/ha/month															
		kg/ha/day															
Irrigation Area 3	Total nitrogen	kg/ha/month															
	Total phosphorus	kg/ha/month															
	Biochemical oxygen demand	kg/ha/month															
		kg/ha/day															
Explanatory notes and calculations:																	

Licence limits <sup>8</sup>				
		kg/ha/annual period	kg/ha/mo nth	kg/ha/d ay
Irrigati on area 1	TN			
	TP			
	BO D			
Irrigati on area 2	TN			
	TP			
	BO D			
Irrigati on area 3	TN			
	TP			
	BO D			

White cells should be filled in where applicable. Pale yellow cells will calculate automatically.
NOTE 1 - Where there is irrigation to more than 3 areas, additional copies of this sheet should be completed.
NOTE 2 - This sheet should be completed for your annual period as defined by your licence. <i>E.g. If your annual period is from 1 October to the 30 September in the following year, for the 2022-2023 annual period, you should include data from January - September 2023, and October - December 2022.</i>
NOTE 3 - Volume irrigated during the annual period (kL), for each irrigation area is the sum of the monthly volumes irrigated to that area. <i>E.g. For the example shown: Volume irrigated during annual period = 20,000 (Jan) + 20,000 (Feb) + 18,000 (Mar) + 15,000 (Apr) + 15,000 (Sep) + 18,000 (Oct) + 20,000 (Nov) + 25,000 (Dec) = 151,000 kL. Noting that for the example there was no irrigation during the months of May, June, July or August.</i>
NOTE 4 - The sampling and analysis of your wastewater quality should be undertaken in accordance with your licence conditions. For sampling less often than monthly, i.e. quarterly, 6-monthly, or annually: for months where no sampling is required, wastewater quality should be taken to be equivalent to the most recent sample taken. <i>E.g. Quarterly sampling during Feb, May, Aug and Nov - total nitrogen concentrations were analysed to be 7, 11, 8 and 13 mg/L respectively in the wastewater. For March and April, as February was the most recent sample taken, total nitrogen concentration is estimated to be 7 mg/L. Similarly, for June and July, as May was the most recent sample, total nitrogen concentration is estimated to be 11 mg/L. There will be no sampling date associated with non-sampling months.</i> If your licence requires you to monitor loading rates for additional parameters (e.g. inorganic nitrogen, reactive phosphorus etc.) additional copies of this sheet should be completed for the additional parameters.
NOTE 5 - For wineries to indicate sampling period - this row is only required to be completed if your licence condition specifies a sampling period e.g. pre-vinatge, peak vintage, late vintage, post vintage, non-vintage. Indicate which sampling date corresponds with which period.
NOTE 6 - Parameter loading (TN, TP or BOD) each month per hectare for each irrigation area (kg/ha/month): $\frac{\text{monthly concentration of parameter (TN, TP or BOD) in mg/L} \times \text{monthly volume of wastewater irrigated to irrigation area (kL)}}{1000}$ <div>size of irrigation area</div> <i>E.g. Using the example shown, for total nitrogen for January: 13.2 mg/L * 20,000 kL / 1,000 = 264 kg/month. 264 / 25 ha = 10.6 kg/ha/month (for January).</i>  Loading of parameter (BOD) each day per hectare for each irrigation area (kg/ha/day): $\text{BOD loading (kg/ha/month)} \div \text{number of days of irrigation during that month}$ . <i>E.g. Using the example shown, for BOD for October: 3.7 kg/ha/month / 25 days of irrigation during October = 0.15 kg/ha/day (for October)</i>
NOTE 7 - To calculate annual loading of parameter (TN, TP or BOD) per hectare (kg/ha/annual period): sum of monthly loadings (kg/ha/month). You should calculate an annual loading (kg/ha/annual period) for each relevant parameter for each irrigation area. <i>E.g. Using the example shown, for total nitrogen: 10.6 (Jan) + 17 (Feb) + 12.7 (Mar) + 11.5 (Apr) + 20.9 (Sep) + 27.9 (Oct) + 35.7 (Nov) + 47.3 (Dec) kg/ha/month = 183.5 kg/ha/annual period</i>
NOTE 8 - Relevant licence limits to be entered. Where TN = total nitrogen, TP = total phosphorus, and BOD = biochemical oxygen demand. Once applicable licence limits have been entered, the calculated loadings will become red text if they exceed the relevant limit.

Note: Licence holders can request a digital Excel spreadsheet (with in-built formulas) on request.

Send all requests to [info@dwer.wa.gov.au](mailto:info@dwer.wa.gov.au)

**Attention: Process Industries** and quote the licence number.