Government of Western Australia
Department of Water and Environmental Regulation

Licence

Licence number	L8983/2016/1
Licence holder	T & J.J Nominees Pty Ltd
ACN	165 696 908
Registered business address	Unit 5, 213 Walcott Street NORTH PERTH WA 6006
DWER file number	DER2016/001332
Duration	12/12/2016 to 11/12/2036
Date of amendment	14/02/2024
Premises details	White Lakes Brewing Lot 71 on Diagram 90934 and Lot 2 on Diagram 31973 as shown in Schedule 1

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed production throughput**
Category 25: Alcoholic beverage manufacturing: premises on which an alcoholic beverage is manufactured and from which liquid waste is or to be discharged onto land or into waters.	Not more than 1,800 kL of beer and cider produced per annual period

This licence is granted to the licence holder, subject to the attached conditions, on 14 February 2024 by:

Caron Goodbourn

Digitally signed by Caron Goodbourn
Date: 2024.02.14 14:13:58 +08'00'

MANAGER, PROCESS INDUSTRIES
REGULATORY SERVICES

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

Licence history

Date	Reference number	Summary of changes
06/12/2016	L8983/2016/1	Licence granted.
26/10/2020	L8983/2016/1	Amendment application to increase authorised irrigation area. CEO initiated amendments to convert licence into the 2020 format and other administrative corrections and updates.
14/02/2024	L8983/2016/1	Amendment application to increase production, change the wastewater disposal (irrigation area) and install and operate the new brewery infrastructure and wastewater storage tanks

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.

Conditions

Infrastructure and Equipment

1. The licence holder must ensure that the infrastructure and equipment specified in column 1 of Table 1 and located at the corresponding infrastructure location in column 3 are maintained and operated in accordance with the requirements specified in column 2 of Table 1.

Table 1: Infrastructure Requirements

Items	Column 1 Site infrastructure and equipment	Column 2 Operational Requirement	Column 3 Infrastructure location
1	Brewery building, housing the following: • Lauter tun • Kettle • Whirlpool tank (2,500 L) • Brewing water and glycol storage tanks • Fermenter tanks (10 x 5,000L) • Fermentation tanks (4 x 12,500L) • Bright beer tanks (4 x 2,000L tanks) and filtration unit • Bright beer tanks (2 x 15,000L) • HDPE, stackable spent grain bins • Vapour condensing unit (receives steam from the kettle)	(a) All plant and equipment used for the production and packaging of beverages (excluding water tanks) must only be operated within the brewery building; (b) Gases released from the brewing process must be directed to the environment through a vapour condensing unit; (c) All process water and wash down water from the beer manufacturing and processing area must be directed to the brewery wastewater treatment plant (WWTP) via the subsurface collection sump and pumped discharge pipeline.	Figure 1 in Schedule 1, shown as: Microbrewery
2	Brewery wastewater treatment plant (WWTP) comprising of: • A bitumen or concrete hardstand • A moving Bed Bioreactor Wastewater Treatment Unit • Raw wastewater tanks (2 x 23,000 L) • HDPE below-ground wastewater collection sump (3,000L) • HDPE sludge storage container (1,200 L) • HDPE phosphorus reduction reagent storage container (100L) and • A sea container housing an air blower and pumps. Treated wastewater storage tanks: • 50,000 L tank (HDPE) • 2 x 25,000L tanks (HDPE) once installed. • 79,000 L (in aggregate) tanks once installed.	a) Not more than 15kL/day of wastewater may be directed to the WWTP. b) The WWTP must be placed on a hardstand; c) The centrifugal pumps, peristaltic diaphragm pumps, and the air blower must be contained within an enclosed sea container unit to mitigate noise emissions; d) All sludge waste removed from the WWTP must be stored in an enclosed HDPE container prior to off-site disposal at a licensed liquid waste facility; e) The hardstand containing the WWTP must be maintained to prevent any leaks or spills of wastewater discharging to the environment; f) Tap (FM1 / SP1) to be maintained in good working order to enable the collection of monthly samples; and g) All tanks containing wastewater must have a working high-level alarm to prevent over-topping.	Figure 1 in Schedule 1, shown as: WWTP infrastructure FM1 / SP1

3	1 Ha land application area (L1) consisting of: • Kikuyu grass • pipes and sprinklers • Flow meter (FM1)	a) Only treated wastewater must be discharged to the land application area (L1); b) Sprinkler irrigation system maintained to ensure no blockages, even and effective spray, and working stopping and cut-off mechanisms. c) A flow meter (FM1) capable of accurately monitoring the daily volume of wastewater discharged to L1 must be maintained in working order; d) No irrigation generated runoff, spray drift or discharge occurs beyond the boundary of the irrigation areas; e) Treated wastewater is evenly distributed over the irrigation areas; f) No soil erosion occurs; g) Healthy grass cover must be maintained and managed correctly to allow for biomass removal (frequency of cutting and kilograms of grass removed must be recorded in wet or dry weight). h) Irrigation does not occur when the irrigation area is visibly waterlogged and/or has water pooling on the surface; and i) Irrigation is not undertaken when rain is imminent, falling or for 12 hours after a rain event greater than 2mm.	Figure 1 in Schedule 1 shown as. Irrigation area (L1) FM1 / SP1 Treated effluent pipeline.

Works

2. The licence holder must install by 30 June 2024 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

Items	Column 1	Column 2	Column 3
	Site infrastructure and equipment	**Installation Requirements**	**Infrastructure location**
1	Fermentation tanks (4 x 12,500L) Bright beer tanks (2 x 15,000L)	(a) All brewing tanks must be installed within the brewery building.	Figure 1 in Schedule 1, shown as: Microbrewery
2	2x 25,000L HDPE wastewater storage tanks HDPE treated wastewater storage tank(s) (79,000L in total)	(a) All tanks and interconnecting pipes must be constructed of an impervious material free of leaks. (b) Must install high-level alarms within all wastewater tanks.	Figure 1 in Schedule 1, shown as: WWTP infrastructure
3	1 ha wastewater irrigation area including delivery pipes and sprinklers.	(a) Sprinkler irrigation system to be installed within the irrigation area (L1), must be installed to provide an even spread of wastewater across the entire irrigation area.	Figure 1 in Schedule 1 shown as Irrigation area (L1)

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 and site plans for the 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.

Treated Wastewater Limits and Monitoring

5. The licence holder must not cause or allow emissions to land greater than the limits specified in column 3 of Table 3.

Table 3: Limits for emissions to land

Column 1	Column 2	Column 3
Emission point reference on Figure 1 in Schedule 1	**Parameter**	**Limit (including units)**
L1	Total nitrogen	<180kg/ha/annual period
	Inorganic nitrogen	<11mg/L (spot sample)
	Total phosphorus	<20kg/ha/annual period
	Reactive phosphorus	<1.2mg/L (spot sample)
	Biochemical Oxygen Demand (BOD_5)	<1500kg/ha/month
	pH	5.5-7.5 (spot sample)
	SAR and EC	Within the "stable soil structure" range depicted in Figure 2 in Schedule 1 (spot sample)

6. The licence holder must ensure that parameters specified in column 3 of Table 4 are monitored at the monitoring point specified in column 2 of Table 4 and in accordance with requirements specified in columns 4, 5 and 6 of Table 4.

Table 4: Emissions to land monitoring requirements

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Emission point reference	**Monitoring point reference**	**Parameter**	**Units**	***Averaging period***	**Frequency**	**Sampling Method**
L1	Figure 1 Schedule 1 shown as FM1 – flow meter	Volume of wastewater discharged	L	Daily	Continuous when discharging	-
	Figure 1 Schedule 1 shown as SP1 – off-take sampling point on irrigation pipe within two metres upstream of the flow meter	pH[1]	-	Spot sample	Monthly when discharging, sampled at least 15 days apart	*AS/NZS 5667.1 & AS/NZS 5667.10*
		Electrical conductivity	dS/m			
		Total nitrogen	mg/L			
		Nitrite - nitrate nitrogen				
		Ammonia - nitrogen				
		Reactive Phosphorus as P				
		Total phosphorus				
		Total dissolved solids				
		Biological oxygen demand				
		Total				

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Emission point reference	**Monitoring point reference**	**Parameter**	**Units**	***Averaging period***	**Frequency**	**Sampling Method**
		suspended solids				
		Potassium				

Note 1: In-field non-NATA accredited analysis permitted

Groundwater Monitoring

7. The licence holder must install and commission ~~a~~ groundwater monitoring wells that satisfies the requirements in Table 5.

Table 5: Groundwater monitoring wells installation requirements

Column 1	Column 2	Column 3	Column 4
Monitoring Bores	**Location and Reference on Figure 1 in Schedule 1**	**Timeframe**	**Installation Requirements**
New monitoring wells: MB1, MB2, MB3	As depicted in Schedule 1, Figure 1: Map of groundwater monitoring well locations labelled as MB1, MB2, MB3	Must be constructed, developed (purged), and determined to be operational by no later than 90 calendar days from the date of issue of this licence.	<u>Well design and construction:</u> Designed and constructed in accordance with *ASTM D5092/D5092M-16: Standard practice for design and installation of groundwater monitoring bores*. Well must be constructed with a screened interval from the water table to a depth of 2 metres below the water table and 1 metre above the water table and positioned to be capable of detecting groundwater flow and leaching from the premises. See Schedule 1 Figure 3 for generic installation requirements.
			<u>Logging of borehole:</u> Soil samples must be collected and logged during the installation of the monitoring wells. A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS1726. Any observations of staining / odours or other indications of contamination must be included in the bore log.
			<u>Well construction log:</u> Well construction details must be documented within a well construction log to demonstrate compliance with *ASTM D5092/D5092M-16*. The construction logs shall include elevations of the top of casing position to be used as the reference point for water-level measurements, screen positions and the elevations of the ground surface protective installations.

			Well development: All installed monitoring wells must be developed after drilling to remove fine sand, silt, clay, and any drilling mud residues from around the well screen to ensure the hydraulic functioning of the well. A detailed record should be kept of well development activities and included in the well construction log.
			Installation survey: the vertical (top of casing) and horizontal position of each monitoring well must be surveyed and subsequently mapped by a suitably qualified surveyor.
			Well network map: a well location map (using aerial image overlay) must be prepared and include the location of all monitoring wells in the monitoring network and their respective identification numbers.

8. The licence holder must within 30 days of all groundwater monitoring wells, required by condition 7, being constructed, submit to the CEO a well construction report evidencing compliance with the requirements of condition 9.

9. The report required by condition 8 must:

a) be certified by the driller that each item of infrastructure or equipment specified in Table 5 meets the corresponding specifications and at the locations set out in Table 5 and Figure 1 and has been constructed with no material defects; and

b) be signed by a person authorised to represent the licence holder and contains the printed name and position of that person within the company.

10. The licence holder must undertake groundwater monitoring at locations specified in column 1, for parameters specified in column 2 and in accordance with requirements specified in columns 3, 4, 5 and 6 of Table 6.

Table 6: Groundwater quality monitoring requirements

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Monitoring wells and reference on Figure 1 in Schedule 1	**Parameter**	**Units**	**Averaging period**	**Frequency**	**Sampling Method**
MB1, MB2, and MB3 once installed, and MB4, MB5	Standing water level	m(AHD) mBGL	-	Collected quarterly, at least 45 days apart	-
	pH[1]	-	Spot sample		*AS/NZS 5667.11*, using low flow sampling
	Electrical conductivity[1]	dS/m			
	Total nitrogen (TN)	mg/L			
	Nitrite plus nitrate nitrogen				
	Ammonia nitrogen				
	Total phosphorus (TP)				
	Reactive phosphorus as P				
	Total dissolved solids (TDS)				

Note 1: In-field non-NATA accredited analysis permitted.

Soil Monitoring

11. The licence holder must ensure that parameters specified in column 2 of Table 7 are monitored at the sampling point specified in column 1 of Table 7 and in accordance with requirements specified in columns 3, 4, and 5 of Table 7.

Table 7: Soil profile sampling and monitoring requirements

Column 1	Column 2	Column 3	Column 4	Column 5
Soil monitoring points as referenced in Figure 1 in Schedule 1	**Parameter**	**Units**	**Frequency**	**Sampling Method**
SS1, SS2, SS3, from 0-10cm, 40-70cm, and 100 – 150cm depth	pH	-	Annual	AS/NZS 4482.1
	Electrical conductivity	dS/m		
	Moisture content	%		
	Cation Exchange Capacity	meq/100g		
	Total Nitrogen (TN)	mg/kg		
	Total Phosphorus (TP)			
	Phosphorus Retention Index (PRI)[2]	mL/g		
	Sodium Absorption Ratio (SAR)	-		

Note 1: A composite sample, made up of a minimum of three sample points along the sampling traverse running north south in irrigation areas L1.

Note 2: As per Methods for analysis of Phosphorus in Western Australian Soils, Perth, Chemistry Centre, Allen D. and R. Jeffery (1990).

Management

12. The licence holder must ensure that all analysis for monitoring required by conditions of the licence is submitted to and tested by a laboratory with current NATA accreditation for the methods and analysis specified.

Information

13. The licence holder must maintain accurate and auditable records in relation to the calculation of fees payable in respect of this licence.

14. The licence holder must record the number and details of any complaints received by the licence holder relating to the premises, and any action taken by the licence holder in response to the complaint. Details of complaints must include:

(a) an accurate record of the concerns or issues raised, for example, a copy of any written complaint or a written note of any verbal complaints made;
(b) the name and contact details of the complainant, if provided by the complainant;
(c) the date of the complaint; and
(d) the details and dates of the actions taken by the licence holder in response to the complaints.

Reporting

15. If the licence holder exceeds a limit specified in this licence, they must notify the CEO within 24 hours of becoming aware of the exceedance.

16. The licence holder must provide to the CEO by 31 July each year, an Annual Audit Compliance Report indicating the extent to which the licence holder has complied with the conditions in this licence for the Annual Period.

17. The licence holder must provide to the CEO by 31 July each year, an Annual Environmental Report satisfying the requirements of Table 8 for the Annual Period.

Table 8: Annual Reporting Requirements

Column 1	**Column 2**
Condition	**Requirements**
-	Total volume of beverage manufactured in kL per annual period and kL/month
1 (Column 2, Item 3, g)	Frequency of grass cut and the kilograms of cut grass in dry or wet weight (biomass) removed each month and the annual period.
5	Emissions to land monitoring: (a) Data, including: ○ laboratory data sheets and data in a tabulised from ○ the daily, monthly and cumulative volume of treated wastewater irrigated to land in cubic metres for that quarter; ○ the monthly calculations of nutrient loading rates for the parameters listed in column 2 of Table 3 and comparison against the nutrient loading limits specified in column 3 of Table 3; ▪ this calculation must be provided in the form of the "Licence holder loading rates calculator" (Schedule 2); (b) Review, assessment, and interpretation of the data including comparison to historical trends.
7	Groundwater monitoring: (a) Laboratory data sheets and data in a tabularised form; (b) Review, assessment, and interpretation of the data including comparison to historical trends.
10	Soil monitoring: (a) Laboratory data sheets and data in a tabularised form; (b) Review, assessment, and interpretation of the data including comparison to historical trends.
14	Complaints – summary of records and actions

Definitions

In this Licence, the terms in Table 9 have the meanings defined.

Table 9: Terms and definitions

Term	Definition
Annual Period	a 12 month period commencing from 1 July until 30 June in the immediately following year.
Annual Audit Compliance Report	means a report submitted in a format approved by the CEO (relevant guidelines and templates may be available on the Department's website).
AS/NZS 4482.1	Australian Standard AS/NZS 4882.1 2005 Guide to the investigation and sampling of sites with potentially contaminated soil – Non-volatile and semi-volatile compounds.
AS/NZS 5667.1	Australian Standard AS/NZS 5667.1 Water quality - Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.
AS/NZS 5667.10	Australian Standard AS/NZS 5667.10 Water quality - Sampling – Guidance on sampling of waste waters.
AS/NZS 5667.11	Australian Standard AS/NZS 5667.11 Water quality - Sampling – Guidance on sampling of groundwaters.
Averaging period	means the time over which a limit is measured or a monitoring result is obtained.
CEO	means Chief Executive Officer of the Department. "submit to / notify the CEO" (or similar), means either: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 or: info@dwer.wa.gov.au
Condition	means a condition to which this licence is subject under s 62 of the EP Act.
Department	means the department established under section 35 of the Public Sector Management Act 1994 (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
Discharge	has the same meaning given to that term under the EP Act.
Emission	has the same meaning given to that term under the EP Act.
EP Act	*Environmental Protection Act 1986 (WA).*
Hardstand	means a surface with a permeability of 1x10-9 metres/second or less.
HDPE	high-density polyethylene.

Licence	refers to this document, which evidences the grant of licence by the CEO under s 57 of the EP Act, subject to the conditions.
Licence holder	refers to the occupier of the premises being the person to whom this licence has been granted, as specified at the front of this licence.
mAHD	metres Australian Height Datum.
mBGL	metres below ground level.
NATA	means 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	refers to the premises to which this licence applies, as specified at the front of this licence and as shown on the map in Schedule 1 to this licence.
Quarter	means a three month period ending on 31 January, 30 April, 31 July and 31 October in each year.
SAR	means Sodium Absorption Ratio
Spot sample	means a discrete sample representative at the time and place at which the sample is taken.
Waste	has the same meaning given to that term under the EP Act.
WWTP	means the Moving Bed Bioreactor wastewater treatment plant installed at the Premises.

Schedule 1

Premises map

Premises map showing the prescribed premise boundary in red and position of key infrastructure (Figure 1).

Figure 1: Premises map showing, premises boundary, WWTP, microbrewery, irrigation area, sampling locations, flow meter (FM1), treated wastewater sampling location (SP1) and effluent pipeline.

Relationship between Sodium Adsorption Ratio and Electrical conductivity

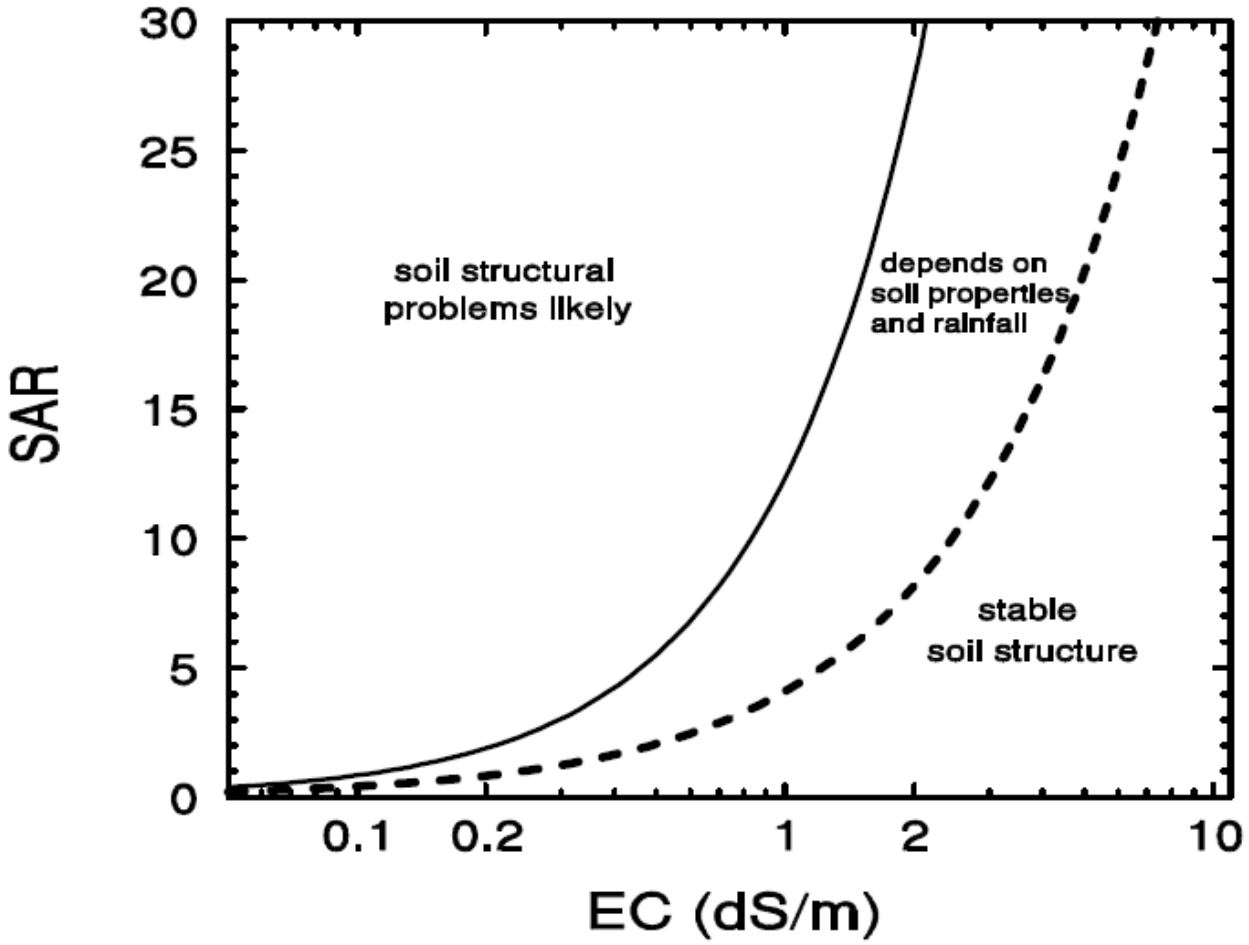

Figure 2: Relationship between Sodium Adsorption Ratio and Electrical conductivity of irrigation water for prediction of soil structural stability (ANZECC 2000).

Monitoring well installation.

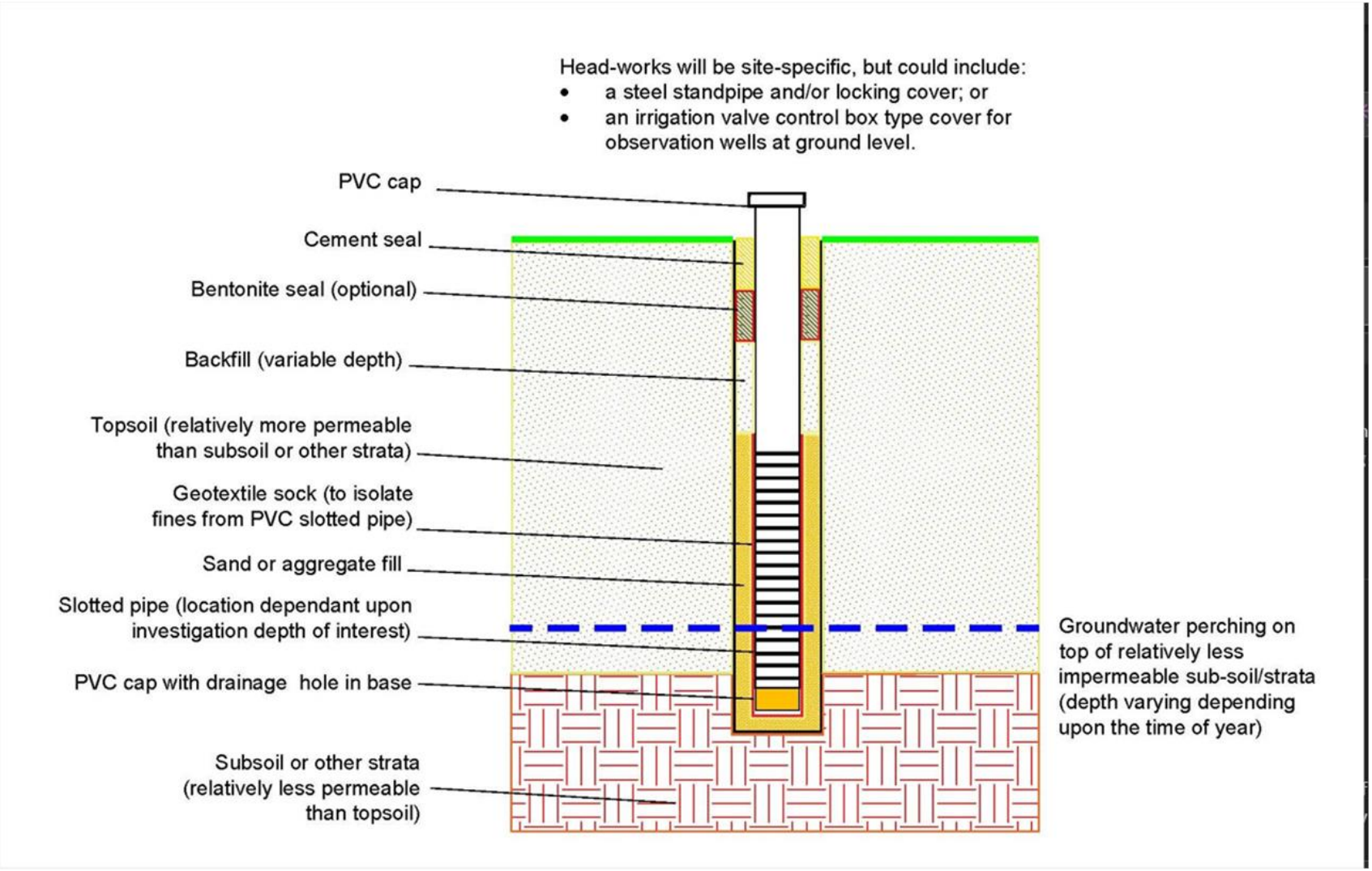

Figure 3: Monitoring well installation requirements within the premises.

Schedule 2: Nutrient loading calculator

Irrigation areas[1]: size, volume irrigated, irrigation days				Annual period (as defined by your licence)[2]												Volume irrigated during annual period (kL)[3]
	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[4]	*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:[5]															
	Total nitrogen	mg/L														
	Total phosphorus	mg/L														
	Biochemical oxygen demand	mg/L														

Nutrient and BOD loadings[6]			January	February	March	April	May	June	July	August	September	October	November	December	kg/ha/annual period[7]
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													

Licence limits[8]				
		kg/ha/annual period	kg/ha/month	kg/ha/day
Irrigation area 1	TN			
	TP			
	BOD			
Irrigation area 2	TN			
	TP			
	BOD			
Irrigation area 3	TN			
	TP			
	BOD			

Explanatory notes and calculations:

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. *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.*
NOTE 3 - Volume irrigated during the annual period (kL), for each irrigation area is the sum of the monthly volumes irrigated to that area. *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.*
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. *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.* 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): monthly concentration of parameter (TN, TP or BOD) in mg/L * monthly volume of wastewater irrigated to irrigation area (kL) ÷ 1000 size of irrigation area *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).* Loading of parameter (BOD) each day per hectare for each irrigation area (kg/ha/day): BOD loading (kg/ha/month) ÷ number of days of irrigation during that month. *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)*
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. *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*
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

Attention: Process Industries and quote the licence number.