



Application for Licence

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

Licence Number	L7719/2001/8
Applicant	Ausvinex Pty Ltd
ACN	602 669 876
File number	DER2014/003052-1~7
Premises	Capel Vales Wines 118 Mallokup Road CAPEL WA 6271 Legal description Lots 5, 12, 13 and 14 on Deposited Plan 232930 As defined by the premises map attached to the issued licence
Date of report	20 November 2023
Decision	Licence granted

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the operation of a wine production facility at Capel Vale, 118 Mallokup Road Capel, WA (premises, Capel Vale). As a result of this licence renewal application assessment, replacement licence L7719/2001/8 has been granted.

2. Scope of assessment

2.1 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 12 July 2023, Ausvinex Pty Ltd (the applicant) submitted a licence renewal application to the department under section 57 of the *Environmental Protection Act 1986* (EP Act).

The application seeks to renew licence L7719/2001/7 relating to wine making and irrigating treated wastewater to land at the premises. The premises is approximately 1.2 km north of Capel town site.

The premises relates to the category 25 with an assessed production capacity of not more than 450 kilolitres of wine produced per year, under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in licence L7719/2001/8. The application has been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020)

2.2.1 Background

The premises was first issued with a licence L7719/1 on 30 December 2002. Licence L7719/2001/7 expires on 18 December 2023. The prescribed premises consists of four properties, Lot 5 is owned by Sespsco Nominees Pty Ltd, Lots 12, 13 and 14 owned by Primax Pty Ltd.

- Lot 5 on Deposited Plan 232930 (contains the winery and bottling process buildings, wastewater treatment plant (WWTP), and irrigation area);
- Lot 12 on Deposited Plan 232930 (no known activities);
- Lot 13 on Deposited Plan 232930 (contains treated wastewater irrigation holding pond, and irrigation area), and
- Lot 14 on Deposited Plan 232930 (contains grape vines).

Sespsco Nominees Pty Ltd have a lease agreement with Ausvinex Pty Ltd until 30 June 2025 with an option for renewal. Primax Pty Ltd have lease arrangement in place for Lots 13 and 14 with Ausvinex Pty Ltd until 30 June 2025, with renewal options.

A wastewater pipeline runs through two properties not within the existing licence; connecting Lot 5 with Lot 13, they are:

- Mallokup Road and adjacent road reserve object identification:620986 / Land identification:3647794; and
- Undeveloped road reserve object identification:718423 / Land identification:3647796

The department considered that Lots 5 and 13 continuous areas are bisected by road reserves under the management of the Shire of Capel. The underground pipeline that connects Lot 5 to Lot 13 traverses and runs along the road reserves with approval from the Shire of Capel (see section 3.2.1 for further details). In considering this, the boundary of the road reserve that contains the pipeline will

therefore be included within the prescribed premises boundary.

2.3 Overview of Operations

The following outlines the key infrastructure and operations of the winery, wastewater treatment plant (WWTP), wastewater disposal and solids management within the premises. This information has been sourced from the applicant and from a site visit undertaken by DWER officers in September 2023.

2.3.1 Winery

Once grapes are picked / received, they are crushed and fermented. The licence holder's previous licence has an approved production capacity of 1,500 kL of wine per year. On average a winery crushes 1 tonne of grapes to make 770 litres of wine, thus the maximum tonnage of grapes that was authorized to be processed on the premises was 2,100 tonnes per annual period.

The applicant has indicated that they intend to process wine in the short and medium term at a smaller amount, indicating a revised annual assessed production capacity of not more than 450 kL. This reduction in assessed capacity will reduce the environmental risk posed from wastewater storage and discharges from an aging, poorly maintained wastewater treatment system.

The produced wine is stored and aged within the premises before being bottled. Bottling occurs within a separate building that is used as a restaurant and cellar door. The bottling area wastewater drains are connected to the wastewater treatment plant (WWTP) via an underground wastewater pipeline. Wine is transported from the winery to the bottling area via an underground dedicated wine pipeline and temporarily stored within storage vessels in the bottling area.

Winery spills, leaks and wash-down wastewater from the winery and bottling operations drain towards grated floor drains into two uncovered collection sumps that are pumped to the wastewater treatment plant.

The winery consists of:

- 47 fermentation tanks of varying sizes, with a total volume of 806,920 litres.
- 108 storage tanks of varying sizes, with a total volume of 4,598,600 litres.
- Hardstand that directs liquid to floor drains and two outside collection sumps.
- De-stemmer / crusher that directs marc/lees to outside area with a grated drain that leads to the WWTP sumps.
- Enclosed omni bins on the outside hardstand.
- Bottling building with an underground wastewater pipeline to the WWTP and dedicated underground wine pipeline connecting the winery to the bottling building.

2.3.2 Wastewater treatment plant (WWTP)

The WWTP is located on the north side of the winery building and backs onto the Capel River which lies 40 meters north. The WWTP includes in-situ overflow basin, two uncovered collection sumps, solids screen and sedimentation tank, three uncovered 10 kL settling tanks, one 47 kL uncovered aeration tank, one 47 kL uncovered post settling tank, and two 90 kL uncovered concrete storage tanks, and is designed to treat a maximum of 30,000 L of wastewater per day. A sump pump moves wastewater from the collection sumps through a 5 mm aperture rotating screen. The wastewater flows through a tortuous baffle wedge with a capacity of 9.6 kL, where sludge is deposited into a sedimentation tank and solids deposited into an omni bin located on a broken concrete pad.

Wastewater flows via gravity into three 10 kL settling tanks then into a 47-kL aerated tank, and into a 47 kL post settling tank. A blower aerates the aeration tank. Wastewater then gravity flows into two 90 kL concrete irrigation storage tanks that are aerated. Wastewater is pumped through a 1.125 km underground pipeline to the irrigation holding pond, where it is diluted between December to May at

a ratio of 1:4 with bore water from the Leederville aquifer. The sedimentation, aeration and holding tanks have valves for the removal of sludge waste. The applicant advises that visual checks are undertaken of the sumps and tanks monthly and sludge is removed as required. An overflow earthen basin has been excavated within the Capel River foreshore to capture any sump and tank overflow and leaks. The earthen overflow basin is flooded in winter on occasion by the bursting of the Capel River banks from high river flows.

The delegated officer noted on a site inspection that the WWTP infrastructure was old and presented in poor condition. The layout and open nature of the WWTP and winery processing areas indicated that stormwater would be captured and directed to the WWTP. The WWTP was not contained within secondary containment and that any spill from the WWTP would contaminate the foreshore soil and the Capel River.

The delegated officer determined to condition incident overflow reporting in the renewed licence.

The revised assessed production capacity of 450 kL/per year will remain, until the licence holder applies for a licence amendment to increase production and the application will need to be supported by an upgraded WWTP, including wastewater containment infrastructure.

2.3.3 Treated wastewater disposal (Irrigation) – from 2008 NIMP

The 2008 NIMP stated the following:

A synthetic lined holding pond with a total volume of 1,150 m³ holds groundwater pumped from the Leederville aquifer (GWL111149) and is aerated. A clay lined irrigation pond with a total volume of 5,150 m³ holds treated wastewater that is diluted with rainfall and / or aerated bore water. A 0.5 metre freeboard is maintained on the irrigation pond that has an above ground bund to prevent runoff entering the pond. Airstones are suspended in the irrigation pond with constant aeration by an electric pump, to further aid in maintaining aerobic digestion. Prior to release of treated wastewater to irrigate the vines a water sample is taken and analysed from the outflow point W1 at the pump shed where the outflow meter M1 is located.

An estimated 1:4 ratio of treated wastewater to rainfall/bore water is manually managed in the irrigation pond. Prior to diluted treated wastewater irrigation, the wastewater is filtered through a series of disc filters to remove suspended solids to prevent blocking of trickle (dripper) irrigation lines. This occurs after sampling point W1. Diluted wastewater is directed to the irrigation lines within Lot 13 and / or pumped back up the wastewater pipeline to Lot 5 for irrigation. Valves on Lot 5 irrigation pipelines are manually turned on to receive the diluted wastewater.

Trickle irrigation lines are placed throughout the vines and irrigation occurs on Lot 5 (7.1 ha) and Lot 13 (4.5 ha), totaling 11.6 ha. Irrigation of diluted wastewater no longer occurs on Lots 12 or 14. The drippers are spaced 0.9 m along vine rows and irrigate at a rate of 1.6 litres/hour or 0.5 mm/hour.

The maximum amount of treated wastewater stored within the irrigation pond is 3,178 m³ in October, resulting from the accumulation of rainfall and treated wastewater during May to October inclusive when no vineyard irrigation occurs.

The licence holder applies additional fertiliser (NPK) spray applications to the grape vines, twice a year.

The delegated officer has considered the wastewater irrigation details provided by the licence holder from their application and NIMP and has determined to reduce the size of the irrigation area 21.94 ha to 11.6 ha and exclude Lot 14 from wastewater irrigation activities and remove Lot 12 from the premises operations as this Lot has been sold.

2.3.4 Solids management

Marc and lees and other unrecovered grape solids from the destemming/crushing process are pumped into 1-tonne omni bins located outside on a concrete hardstand that drains to the WWTP. Marc and lees are pumped into 1-tonne omni bins with lids and are stored on concrete hardstand area

adjacent to the winery building until removed from the site. The applicant estimated that up to 100 tonnes of grape solids are removed off-site from January to May by local farmers.

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 licence holders Primax Pty Ltd and Ausvinex Pty Ltd.

It is noted that insufficient annual reporting and review of environmental impacts of the existing operations has occurred throughout the history of the licence. The Nutrient Irrigation Management Plan (NIMP) required a review in 2016 for a reduction in irrigated land, noting that no evidence has been provided to the department indicating that this review occurred, and that recently licence limits of water quality variables have been exceeded (see section 4 for further discussion).

Table 1: Summary of recent incidents and compliance matters

ICMS number	Date reported	Incident / compliance matters
40289	6/01/2016	Review of submitted AER indicated that the Nutrient Irrigation Management plan had not been updated to reflect area reduction that is needed to satisfy condition 1.3.3 / Table 1.3.2
69117	9/03/2023	Review of AACR, licence holder self-reported non-compliances: Condition 3.1.1, sample was not preserved in accordance with AS/ANZ5667.1 Condition 3.3.1 – wrong parameter sampled and analysed; total phosphate was analysed not total phosphorus. Condition 2.2.2, BOD and TSS exceeded limits on sample taken on the 7/01/2022. Condition 4.3.1, failed to notify the CEO within 24 hours of a licence exceedance.

3.2 Other legislative approvals

3.2.1 Local government approvals

The Shire of Capel confirmed on the 29 September 2023, that the pressure mains (wastewater pipeline) are located within an existing undeveloped road reserve for most of their length and that they extend north from Lot 13 towards Capel Vale Winery crossing perpendicular at Mallokup Road to Lot 5.

A letter exists between Capel Vale Winery and the shire outlining each party's obligations should the road be damaged by pipeline burst. The shire advised that they have no issue with the alignment of the pressure mains operated by Capel Vale Winery through road reserves under their management.

3.2.2 Rights to Water and Irrigation Act 1914 (RIWI)

The Primax Pty Ltd holds two groundwater licences, they are:

- GWL59290, to take 3,000 kL of water per year from the Leederville aquifer in the Busselton Capel Groundwater Area for the purposes of commercial use, irrigation of grape vines and vegetables and winery purposes on Lot 5 on Deposited Plan 232930.
- GWL111149, to take up to 40,000 kL of water per year from the Leederville aquifer in the Busselton-Capel Groundwater Area, for the purposes of grape vine irrigation on lots 5, 12, 13 and 14 on Deposited Plan 232930.

4. Monitoring data

4.1.1 Water Quality data

The existing licence requires the licence holder to undertake monitoring of wastewater from W1 – the outflow to the irrigation areas. Monitoring required is cumulative volumetric flow rate (M1), and treated wastewater monthly sampling for pH, total nitrogen (TN), total phosphorus (TP), total dissolved solids (TDS), total suspended solids (TSS) and biological oxygen demand (BOD). The licence has conditions for water quality and loading limits to land, including water quality limits for TSS, BOD and pH, and annual load limits for total nitrogen and phosphorus, and monthly load limits for BOD. The delegated officer reviewed the applicants water quality data submitted within Annual Environmental Reports (AERs) from 2018 - 2023. It was determined that the water quality data provided by the licence holder was not able to be verified as laboratory analysis data sheets were not provided.

Furthermore, on examination of the submitted water quality data from 2015 - 2022, variables were missing, loads miscalculated through averaging loads over months when not irrigating. Information to quantify the area irrigated each year was not provided, thus loads were not able to be re-calculated accurately.

The delegated officer considered information provided within the Nutrient Irrigation Management Plan (NIMP) that is included as an existing licence condition (condition 1.3.3). The NIMP provided calculations for loads based on averages from 2004, 2005 and 2006 data. The NIMP indicates that 152.6 kg/year of total nitrogen (TN), 103.4 kg/year of total phosphorus (TP) was applied each year from diluted wastewater irrigation. The NIMP used the irrigation area of 21.94 ha to calculate loads for TN as 7.29 kg/ha/annual period and TP as 4.92 kg/ha/annual period. Using the same figures and irrigation area of 11.6 ha, the loading rates are recalculated as 13.16 kg/ha/yr for TN and 8.91 kg/ha/yr for TP.

The existing licence hold licence limits for TN and TP as 250 kg/ha/yr for TN and 30 kg/ha/yr for TP. These figures appear to be not specific to the existing NIMP, premises and its existing operations.

Therefore, when considering that recent loading levels have not been able to be substantiated, the delegated officer will revise the loading limits in line with the existing NIMP and add a 20% buffer for seasonal and yearly variations, with the revised loading limits for the irrigation of diluted wastewater on the premises as:

- 15.80 kg/ha/yr for TN and
- 10.70 kg/ha/yr for TP

Considering that wastewater loading levels are based on the existing 1500 kL wine production limit and that this will be reduced to 450 kL wine production per year. The amount of wastewater produced will be proportionally reduced, thus this calculation is conservative.

Table 2 outlines the water quality data from 2018 to 2023. It is noted that TSS exceeds the conditioned limits frequently and BOD twice. Furthermore, it is noted that electrical conductivity data in 2022 was concerningly high. The high levels of salt would cause contamination of soils and effect vegetative growth and cover. It was reported by the licence holder within the 2022-2023 AER that excessive hydraulic irrigation was undertaken in February 2023 due to issues with wastewater treatment and holding capacity of contaminants. The premises does not have any groundwater monitoring bores, and it is unknown whether leaching through the soil profile to the groundwater is occurring from the irrigation operations.

The delegated officer has determined to add 290 mS/m (2.9 dS/M) electrical conductivity irrigation limits in the revised licence in line with ANZECC long term irrigation guidelines for moderate salt tolerant crops.

Table 2: Irrigated wastewater quality data (licence holder supplied).

Vintage / Year	Month	pH	Salinity ¹ mg/L	EC mS/m	BOD mg/L	TDS mg/L	TSS mg/L	TN mg/L	TP mg/L	Flow kL	
Limits		<6.5 - >9			<150 mg/L		<100 mg/L				
² ANZECC 2000-Primary Industries ¹		5.5-9.0		⁴ 130-290 Moderate salt crops			<40	25-125 ³	0.8-12 ³		
	2018		No data								
Non-vintage	2019	December	No data								577
Pre-vintage	2020	January	8.63	332	51.9	76	95	105	3.7	0.63	964
Vintage	2020	February	7.42	331.52	51.8	22	274	44	2.3	0.38	1256
Vintage	2020	March	7.59	449.28	70.2	75	440	43	4.4	0.71	1176
Vintage	2020	April	8.74	673.92	105.3	68	980	200	5.7	0.87	522
Post-vintage	2020	June	8.22	659.84	103.1	58	708	118	4.8	1.31	no flow data
Pre-vintage	2021	January	7.91	433.92	67.8	33	393	173	3.9	0.72	2152
Vintage	2021	February	7.37	347.52	54.3	16	374	49	2.9	0.49	1811
Pre-vintage	2022	January	8.59	10,739	1678	348	960	470	0.2	3.4	2118
Vintage	2022	February	7.25	3,852	602	94.5	420	<50	2.4	0.5	1729
Pre-vintage	2023	January	7.5	353.28	55.2	73	320	15	2.4	0.55	1237
Vintage	2023	February	7.3	341.12	53.3	234	320	68	1.8	0.69	6572
Vintage	2023	March	7.2	343.04	53.6	77	380	22	1.4	0.52	2257

Note 1: Salinity converted from electrical conductivity (EC)

Note 2 National Water Quality Management Strategy Paper No. 4 – Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 3 Primary Industries long term irrigation (over 20 years), 2000, ARMC and ANZECC (ANZECC 2000).

Note 2- pH has been adjusted to suit southwest swan coastal plain lower pH values within ground water. pH has been adjusted from 6 – 9 to 5.5 -9.

Note 3 – ANZECC 2000, requires site specific assessment to determine actual value.

Note 4 – Salinity levels have been set based on effects to crop yields for rye grass and general pasture.

Note- Red indicates existing licence limit exceedances.

Note – Blue indicates salinity levels at soil and plant contamination levels.

4.1.2 Groundwater levels

Figure 1 below outlines the seasonal groundwater movement of the superficial groundwater from bore SCPD20B, located 130 m east of irrigation Lot 14. The irrigated Lot 13 and Lot 14 lie on the same elevation. Figure 1 indicates that seasonal groundwater reaches 0.2 m from the surface and falls to 2.4 m below ground. The high groundwater table indicates that leaching of contaminants through the soil profile is likely if irrigation is undertaken in winter when the groundwater is above 1 m from the surface. Furthermore, irrigation of contaminants when vegetation is not growing and accessing the nutrients will result in contaminants leaching below the root zone and being diluted within rising groundwater.

On the site inspection undertaken on 19 September 2023, groundwater was observed close to the surface on Lots 5, 13 and 14, with water pooling on the surface in some areas.

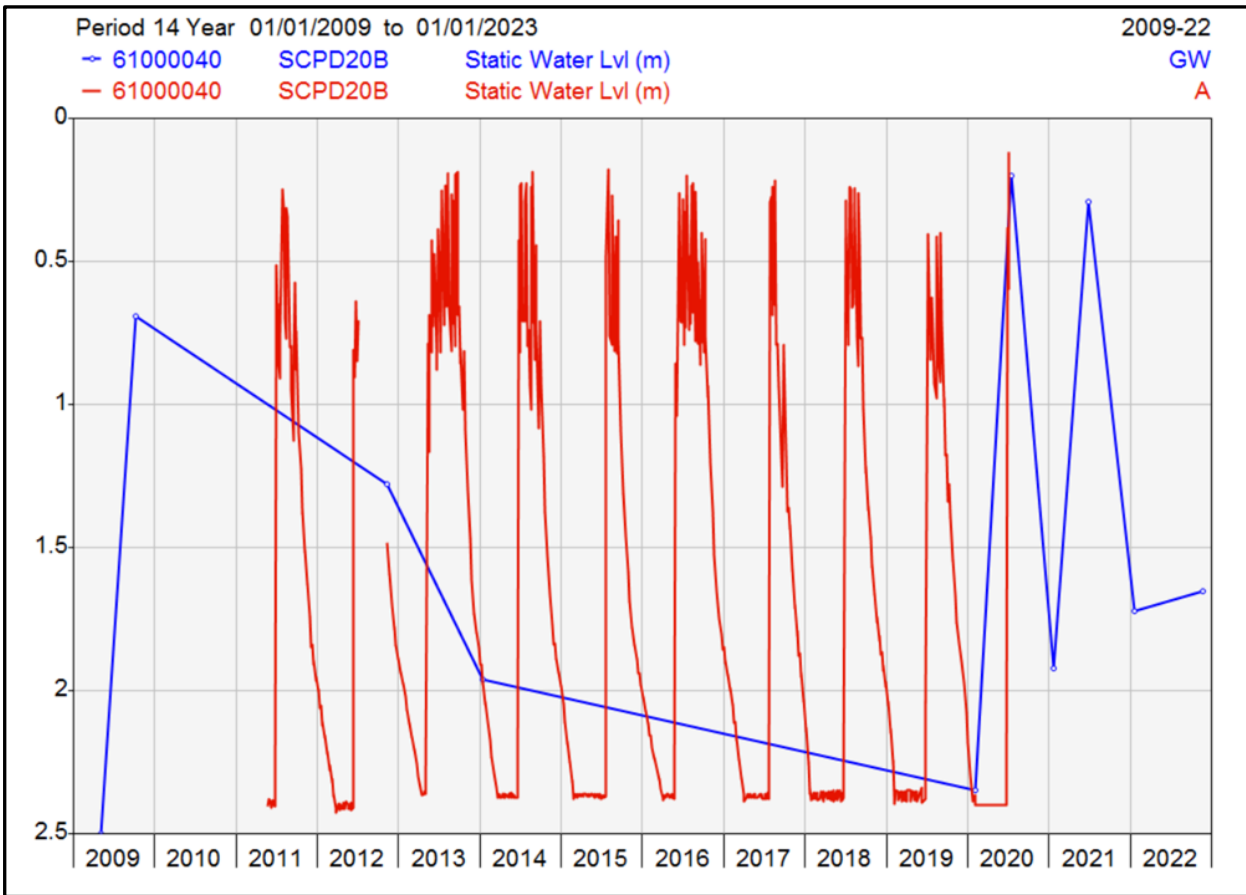


Figure 1: Groundwater level for bore SCPD20B

The NIMP outlines that surface water monitoring occurs from two sites, three times a year from drains that exit Lot 13 and Lot 5. The surface sampling data have not been provided to the department. Noting the high groundwater table of the irrigation area, diluted wastewater irrigation concentration limits have been exceeded and that no groundwater monitoring bores exist within the premises.

5. 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.

5.1 Source-pathways and receptors

5.1.1 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 3 below. Table 3 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 3: 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 bottling facility.)	Wine manufacturing and packaging	Runoff, direct discharge from winery operations and direct infiltration.	External hardstand to winery building has wastewater draining to two sumps. Earth bunded area behind sump/WWTP to capture overflows. Manufacturing occurs inside the winery building. Bottling occurs within the enclosed bottling building. Winery has internal drain connecting to sumps that flow to the WWTP.
Storage and use of chemicals	Chemical laden wastewater generated from the storage or cleaning of the alcoholic beverage manufacturing equipment and bottling facility.	Overland runoff from winery operations and direct infiltration	Use potassium based cleaning agents, using potassium hydroxide and citric acid. Do not use sodium-based cleaning agents. Discharge is to the WWTP. Chemical cleaning occurs inside the winery building.
Odour from winery wastewater	Management of winery wastewater	Air / wind dispersal	Blower to aerate the first aeration tank
Nutrient and salt laden wastewater processed through the WWTP		Overtopping, spills and leaks of tanks, and pipes causing contamination	Earthen basin behind sump to capture overflows. Visual checks to detect spills or leaks. Float switches utilised in the aeration, post settling tanks and irrigation holding tanks to prevent overtopping. Sludge removed from tanks as required. Surface water monitoring of drains at two points three times a year for TN, TP, TSS, EC and pH. Reduce production from 1500 – 450 kL/year of wine
Nutrient and salt-rich wastewater discharging to land.	Transfer of treated wastewater via an underground pipeline	Direct discharge to land and seepage / infiltration	Visual checks for leaks of underground pipeline.
Nutrient laden solids and leachate from mars, lees, and sludges prior to removal from offsite	Management of winery and WWTP solid waste	Direct discharge to land and seepage / infiltration	Marc and lees transferred to the outside grated sump and pumped to omni bins. Omni bins are sealed and have lids for storage of marc and lees. Omni bins stored on concrete and gravel hardstand. Sludge from tanks is removed as required and taken immediately offsite. Reduce production from 1500 – 450 kL/year of wine
		Odour	Omni bins have lids and are closed. Sludge is removed from tanks and immediately removed offsite.

Emission	Sources	Potential pathways	Proposed controls
Odour	Storage of diluted treated wastewater	Air / wind dispersal	Airstones in the irrigation holding pond. Treated wastewater is diluted 1:4 with bore water. Reduce production from 1500 – 450 kL/year of wine
Nutrient and salt-rich wastewater discharging to land.		Overflowing, and seepage / infiltration contaminating soil and groundwater.	Freeboard of 0.5m is maintained on the irrigation holding pond. Holding pond has a raised outer bund to prevent stormwater discharging into the pond. Wastewater is produced from December to May only and not through the high rainfall season. The pond is clay lined to a permeability of $2.3 \cdot 10^{-10}$ m/s certified on 21/2/2003 by Material Consultants Pty Ltd Reduce production from 1500 – 450 kL/year of wine
Nutrient and salt rich wastewater to land. (From NIMP April 2008)	Onsite disposal of wastewater via irrigation to land 14 ha	The discharge of wastewater to land through irrigation has potential to contaminate soils, ground and surface water.	Irrigation rates of 1.6 L/hour No irrigation between May to October Grapes are harvested each year, removing nutrients. All nutrients / fertilisers are applied between November to April inclusive. Ryegrass and clover are maintained within mid rows of vineyards remove nutrients and prevent erosion. Soil sampling every two years (pH, salinity, nutrients, potassium, sulphur, exchangeable calcium, magnesium, sodium, PRI) adjusting fertiliser program. Nutrition levels of vines monitored annually using petiole analysis. Surface water monitoring of drains at two points three times a year for TN, TP, TSS, EC and pH. Contingency plan that surplus wastewater is removed off site. Reduce production from 1500 – 450 kL/year of wine
Wastewater to land with excessive hydraulic loading (From NIMP April 2008)			No irrigation from May to October inclusive. Irrigation rates of 1.6 L/hour Drip irrigation system Water meter on outflow point for irrigation. Irrigation scheduling based on combination of soil moisture readings from gypsum blocks, pan evaporation, rainfall data. Drains are maintained in irrigation areas to reduce waterlogging in winter. Drains direct all water to the Capel River and Layman Gully. Rainfall gauge Irrigation meter and meter on production bore.

5.1.2 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 4 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 4: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Closest rural residential receptors	31 m from the southwest boundary of the irrigation area. 26 m from the northern boundary of the irrigation area. 32 m from the southern boundary of the irrigation area. 31 and 38 m from the eastern boundary of the irrigation area. 344 and 330 m east of the holding pond 327 m southeast of the holding pond 250m northeast of the holding pond. 60 m from the southeastern boundary of the winery/ WWTP. 150 m from the northern boundary of the winery / WWTP
Environmental receptors	Distance from prescribed activity
Capel River Layman Gully	15 m (lot 5) and 170 (lot 12) m from the eastern boundary of the irrigation areas 40 m (lot 5) from the eastern boundary of the wastewater treatment plant/winery. 23 m (lot 5) and 500 m (lot 13) from the northwestern boundary of the irrigation area.
Proclaimed under <i>Rights to Water and Irrigation Area 1914</i> (RIWI) Busselton Capel Groundwater Area, Perth Superficial Swan Surface water - Capel River System	Capel River RIWI licensed water users 509 m (lot 12) north and 312 m (lot 5) east of the irrigation areas. Superficial groundwater flows towards Capel River Reference bore SCPD20B, located 130 m east of the irrigation area (lot 13), indicates that groundwater is within 0.2 m from the surface. DWER three-dimensional elevation of the premises indicates that superficial groundwater will move in a northeast direction towards the Capel River and northwest direction to Layman Gully.
Wetlands – Multiple use palusplain	All irrigation areas, winery and wastewater treatment plant located within a palusplain, subject to seasonal water logging and / or high seasonal groundwater table.
Soil – Pinjarra P6C Phase	Guildford formation, moderately to well-draining soils on brown alluvial loams/earths.
Threatened fauna Priority <i>Tyto novaehollandiae novaehollandiae</i> – masked owl Specially protected – conservation dependent <i>Phascogale tapoatafa wambenger</i> - South-	Located within the premises southern irrigation area

western brush-tailed phascogale Threaten - endangered <i>Calyptorhynchus latirostris</i> – carnabys cockatoo Specially protected – migratory <i>Macronectes giganteus</i> – southern giant petrel	
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5.2 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 5.1. 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 5.1), 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 5.

Licence L7719/2001/8 that accompanies this decision report authorises emissions associated with the operation of the premises i.e. wine production and irrigation of wastewater activities.

The conditions in the issued licence, as outlined in Table 5 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 5: 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							
Wine manufacturing and packaging	Nutrient and sediment laden wastewater (generated during the storage, processing and cleaning of the alcoholic beverage manufacturing equipment and bottling facility.)	Runoff/direct discharge from winery operations and infiltration causing contamination of soils, groundwater, and surface water	Capel River 40 north from the winery building. Seasonal groundwater within 1m of the surface	Manufacturing occurs inside a building. Wastewater drains to sump, sump has banded overflow area. Sump is visually inspected. Sludge removed from sump as required. Reduction in wine production. Refer to Section 5.1.1	High level onsite impacts, mid-level local scale impacts short term impacts to Capel River. C- Major The risk event will probably not occur in most circumstances. L = Unlikely Medium Risk	Wastewater generated from the winery and bottling processes are drained via underground pipes and drains to two sumps before being transferred to the WWTP. The sumps are located on north side of the winery building, 40 metres from the Capel River. An earthen basin on the Capel River foreshore has been dug to capture any overflow from the sumps. The earthen basin is subject to occasional high river flows. The delegated officer considered the location of the sumps, Capel River and licence holder's controls and determined the risk of contaminating soil, groundwater, and surface waters to be medium.	Reporting • A logbook of the daily sump inspections must be produced within the Annual Environmental Report. • Any overflow or spill must be reported to the CEO within 24 hours
Chemical laden wastewater generated from the storage or cleaning of the alcoholic beverage manufacturing equipment and bottling facility.	Storage and use of chemicals	Overland runoff from winery operations, direct infiltration cause contamination of soils, groundwater, and surface water.	Capel River 40 north of the winery building. Seasonal groundwater within 1m of the surface	Chemical cleaning occurs inside the winery and bottling buildings. The wastewater drains to sump and WWTP, sump has banded overflow area. Use potassium-based cleaning agents. Refer to Section 5.1.1	High level onsite impacts, mid-level local scale impacts short term impacts to Capel River. C- Major The risk event will probably not occur in most circumstances. L = Unlikely Medium Risk	The licence holder's controls were assessed and were considered unacceptable to mitigate against the risk of untreated wastewater impacting on the soil, groundwater, and surface waters of the Capel River. The delegated officer determined to regulate reporting and logbook requirements for daily visual inspections of the sumps whilst the winery processing occurs, notification of any overtopping or spills and minimum desludging requirements of the sumps. The delegated officer determined to apply the licence holder's infrastructure and operation requirements as they are considered critical for maintaining an acceptable level of risk.	Operational • Sludge from sumps must be removed a least once per annual period. • The licence holder must visually inspect the sumps daily whilst the winery processing occurs from December to May.
	Odour	Air/wind dispersal affects the health and amenity of receptors.	Closest rural residential receptors are 60 m southeast and 150 m north of the winery/WWTP	Aeration tank has a blower. Treated wastewater transferred to irrigation holding pond. Reduction in wine production. Refer to Section 5.1.1	Low-level onsite impacts, minimal local scale impacts. C- Minor The risk event may only occur in exceptional circumstances. L = Rare Risk = Low	With the nature of winery wastewater there is an inherent risk of odour causing impacts to offsite receptors, particularly from anerobic settling tanks and cleaning of sludge tanks. The department has no recorded odour complaints relating to operation of the wastewater treatment plant. Noting that the winery processes wine from December to May and that the blower aspirator in the aerobic and holding tanks 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 winery operations.	N/A
Management of winery wastewater	Nutrient and salt-laden wastewater processed through the WWTP	Overtopping, spills and leaks of tanks and pipes cause contamination of soil, groundwater, and surface water.	Capel River 40 m north of the winery/WWTP building. Seasonal groundwater within 1m of the surface. Land surface drains direct to Capel River	Two sumps transfer wastewater from the winery building and bottling building to the WWTP. Basin area for sump and WWTP containments overflow. Float switches on tanks, Sludge removed from tanks as required. Visual inspection of tanks for leaks/spills. Reduction in wine production. Refer to Section 5.1.1	High level onsite impacts, mid-level local scale impacts short term impacts to Capel River. C- Major The risk event could occur at some time. L = Possible Risk =High	Wastewater within the winery and bottling building are directed to two collection sumps that pump wastewater through a screen and into 3 settling tank then to an aerobic tank and post settling tank. Wastewater gravity flows into an irrigation holding tanks before being pumped through an underground pipeline to the irrigation holding pond all within 40 metres of the Capel River. The delegated officer considered the open tanks, lack of high-level tank alarms, the location of the WWTP abutting the Capel River foreshore, the old condition of the WWTP infrastructure, broken concrete slab abutting the sump that holds the waste products bin from the screening process, that tanks had float switches, sludge was removed from tanks as required, there was an overflow banded area on the Capel River foreshore subject to river inundation, the reduction in winery production, and that the winery WWTP operation was linked to the winery process season from December to May. The delegated officer considers the risk of overtopping, spills, and leaks from the WWTP contaminating soil, groundwater, and surfaces waters of the Capel River environments to be high. The licence holder's controls were assessed and were considered unacceptable to mitigate against the risk of untreated wastewater impacting on the soil, groundwater, and surface waters of the Capel River environment. The delegated officer determined to regulate reporting and logbook requirements for daily visual inspections of the WWTP whilst the winery processing occurs, notification of any overtopping or spills, minimum desludging requirements of the containments and reduction in winery production limit. The delegated officer determined to apply the licence holder's infrastructure and operation requirements as they are considered critical for maintaining an acceptable level of risk.	Reporting • A logbook of the daily WWTP inspections must be produced within the Annual Environmental Report. • Any overflow or spill must be reported to the CEO within 24 hours Operational • Sludge form sedimentation tank, aerobic tanks and irrigation tank, must be removed a least once per annual period. • The licence holder must visually inspect the WWTP tanks daily whilst the winery processing occurs from December to May
Transfer of treated wastewater via an underground pipeline	Nutrient and salt-rich treated wastewater discharged to land.	Leaks and ruptures of the pipeline cause contamination of the soil, groundwater, and surface water.	Seasonal groundwater within 1m of the surface. Land surface drains direct to Layman Creek and Capel River	Visual inspection of the wastewater treatment pipeline. Refer to Section 5.1.1	Onsite impacts mid-level, low-level off-site impacts C= Moderate The risk event could occur at some time	Treated wastewater from the bottling and winery manufacturing are pumped from the irrigation holding tanks through a 50 mm under/aboveground poly pipe 1.125 km long, through Lot 5, Mallokup Road reserve and an unnamed road reserve through to Lot 13 to the irrigation holding pond. The licence holder has indicated that the pipe has burst over time and that on inspection sections of the pipe were observed above ground and subject to people and vehicle movements. The pipeline is visually inspected once a month, wastewater is pumped from Lot 5 WWTP to Lot 13 irrigation holding pond, and diluted wastewater is pumped from the holding irrigation pond back through the pipeline to irrigation Lot 5 vines. The Shire of Capel have indicated that no further	Operational • The visual inspections are logged. • Treated wastewater is directed via the underground pipeline. • Diluted wastewater is directed

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			
					L= Possible Risk = Medium	approvals are required for Capel Vale Winery to management a pipeline within their managed lands. The delegated officer determined the risk to be medium. The licence holder's controls were assessed as insufficient to mitigate against the risk of wastewater contaminating soil, groundwater and surface water. The delegated officer determined to apply the licence holder's operation requirements as they are considered critical for maintaining an acceptable level of risk, with additional regulatory controls for logbook pipeline inspections and reporting.	via the underground pipeline. Reporting <ul style="list-style-type: none"> A logbook of the daily WWTP inspects must be produced within the Annual Environmental Report. Any overflow or spill must be reported to the CEO within 24 hours
Management of winery solid waste	Nutrient laden solids and leachate from mars, lees, and sludges prior to removal from offsite	Direct discharge to land and seepage / infiltration causing contamination of the soil, groundwater, and surface water.	Capel River 40 north of the winery/WWTP building. Seasonal groundwater within 1m of the surface. Land surface drains direct to Layman Creek and Capel River	Marc, lees stored in sealed containers on hardstand, sludge pumped out and removed from site as required. Refer to Section 5.1.1	Low level onsite impacts, minimal local scale impacts. C- Minor The risk event may only occur in exceptional circumstances. L = Rare Low Risk	Solids are placed into a 1 tonne solid container (omni bins) and stored on a hardstand on the southern side of the winery building. The bins have lids and are self-contained. Sludge from WWTP containments is pumped out directly to a waste controller tanker. The delegated officer does not reasonably foresee off site impacts from solids leachate from the winery operations and has assessed the risk as low. The delegated officer will regulate the licence holder's controls, to ensure the risk event is maintained at a low level.	N/A
Storage of treated wastewater	Odour	Air/wind dispersal affecting the amenity of receptors.	Closest rural residences 344 and 330 m east, 327 m southeast and 250 m northeast of the holding pond.	Airstones operate via an electric pump continuously. Treated wastewater is diluted 1:4 with bore water/rainfall. Reduction in wine production. Refer to Section 5.1.1	Low-level impact on amenity C= Minor The risk event will probably not occur in most circumstances. L = Unlikely Risk = Medium	Treated wastewater is pumped into the irrigation holding pond and diluted with bore water, air stones are placed within the pond to aerate the diluted wastewater. The delegated officer considered the licence holder's controls, the distance to receptors and that a member of the public commented that the irrigation pond was odorous at times. The delegated officer considered the risk of odour emissions to be medium. The licence holder's controls were assessed and were considered acceptable to mitigate against the risk of diluted wastewater held within the irrigation pond impacting on the closest receptors. The delegated officer determined to apply the licence holder's infrastructure and operation requirements as they are considered critical for maintaining an acceptable level of risk. Furthermore, the delegated officer determine that a standard complaint management condition to be suitable to monitor for future complaints for odour emissions emanating from the irrigation holding pond.	Reporting <ul style="list-style-type: none"> Complaints management recording. Operational <ul style="list-style-type: none"> Aerator is maintained and operated in irrigation pond.
	Nutrient laden wastewater discharging to land	Leaks and overtopping of the holding pond cause contamination of the soil and groundwater.	Seasonal groundwater within 1m of the surface. Land surface drains direct to Layman Creek and Capel River	Pond is clay lined. Wastewater is produced from December to May only and not during high rainfall season. Bund around the perimeter of the pond. 0.5 m freeboard is maintained. Reduction in wine production. Refer to Section 5.1.1	Onsite impact is minimal. C = Slight The risk event will probably not occur in most circumstances. L = Unlikely Risk = Low	Treated wastewater is diluted with bore water/rainfall and held within the irrigation holding pond. The irrigation pond is lined with clay that has a permeability of 2.3 ⁻¹⁰ m/s, the winery produces wastewater from December to May (outside of the high rainfall period) and there is bunding above the ground level around the pond to prevent stormwater ingress. The delegated officer does not reasonably foresee off site impacts from leaks or overtopping of the irrigation pond and has assessed the risk as low. The delegated officer will regulate the licence holder's controls, to ensure the risk event is maintained at a low level.	N/A
Onsite disposal of wastewater via irrigation to land 11.6 ha	Nutrient and salt-rich wastewater to land.	The discharge of wastewater to land through irrigation has potential to contaminate soils, groundwater, and surface water.	Capel River is 15 m (Lot 5) and 170 m (Lot 12) from the eastern boundary of the irrigation area. Layman Gully is 23 m (Lot 5) and 500 m (Lot 13) from the north-western boundary of the irrigation areas, seasonal groundwater is within 0.2 m of the surface on a palusplain wetland.	No irrigation between May to October inclusive. Licence nutrient loading limits. Irrigation rates 1.6 L/hour via dippers. Grapes are harvested, fertiliser between November – April, soil is sampled every 2 years, surface water sampling three times a year, contingency plan that surplus wastewater is removed offsite. Wastewater is diluted with bore water at 1:4. Reduction in wine production. Refer to Section 5.1.1	Low level onsite impact, minimal offsite impacts. C = Minor The risk event will probably not occur in most circumstances. L = Unlikely Risk = Medium	The delegated officer notes that wastewater is treated for BOD with limited nutrient and salt removal. The treated wastewater is diluted with bore water/rainfall and that the existing licence has nutrient loading limits for irrigation unrelated to the licence holders NIMP (2008). In addition, the irrigation area had decreased from 21.94 ha to 11.6 ha. The delegated officer reviewed the wastewater data submitted within recent AERs and determined that TSS and BOD exceeded existing licence limits and that electrical conductivity levels were high, exceeding ANZECC 2000 long term irrigation limits, that could lead to potential damage to crops and soil. A review of nutrient loading based on the NIMP (2008) and revised irrigation area indicated that loading limits were lower than the existing limits (see section 5). The delegated officer determined to revise the loading limits to reflect the NIMP (2008) and revised irrigation area and provided a 20% buffer for variation from year to year. The delegated officer considered the distance to surface water, the high groundwater, the water quality data submitted from the licence holder, the licence holder's prior compliance to the existing licence, and the existing controls and determined the risk to be medium. The licence holder's controls were assessed and were considered unacceptable to mitigate against the risk of diluted wastewater impacting on the soil, groundwater, and surface waters of the Capel River. The delegated officer determined to revise loading limits and add additional water quality parameters (EC) for wastewater. The delegated officer determined to apply the licence holder's infrastructure, operational and surface water monitoring outlaid within the licence holders NIMP (2008), as they are considered	Monitoring and emission limits <ul style="list-style-type: none"> Wastewater sampling for electrical conductivity with a limit of 290 mS/m (2.9 dS/M). Loading limits 15.80 kg/ha/yr for TN and 10.70 kg/ha/yr for TP

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			
						critical for maintaining an acceptable level of risk.	
	Wastewater to land with excessive hydraulic loading				Low level onsite impact, minimal offsite impacts. C = Slight The risk event will probably not occur in most circumstances. L = Unlikely Risk = Low	The grape vines are irrigated with diluted wastewater from November to April each year. No irrigation occurs from May to October in the wettest time of the year. Irrigation is delivered through drippers with a rate of 1.6 litres/hour. The delegated officer does not reasonably foresee off site impacts from excessive hydraulic loading from irrigation of diluted wastewater and has assessed the risk as low. The delegated officer will regulate the licence holder's proposed controls to ensure the risk event is maintained at a low level.	N/A

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

6. Consultation

Table 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 1 August 2023	No submissions received.	N/A
Neighbouring residents were invited to provide comment on the application on 2 August 2023.	A stakeholder commented that the winery irrigation holding pond was odorous from time to time.	The department has reduced the assessed production capacity of the winery and therefore wastewater to mitigate the risk of odour (and nutrient) impacts
Shire of Capel advised of proposal on 2 August 2023	Shire of Capel replied on 29 September 2023 indicating that the underground pipeline did not require further approval and that they had no further comments.	The delegated officer notes this information.
Applicant was provided with draft documents on 17/10/2023	The Applicant responded on the 14 November 2023, refer to Appendix 1	Refer to Appendix 1

7. Decision

Based on the assessment in the decision report, the delegated officer has determined to grant a licence with an assessed production capacity of 450 kL of wine per annual period. This determination was based on the following:

- being a licence holders proposed control to reduce the volumes of wastewater that will be generated;
- a reduced wastewater disposal (irrigation) area from 21.94 to 11.6 Ha;
- that no wastewater can be discharged (irrigated) from May to October inclusive due to saturated soil conditions, and
- an aging, dilapidated WWTP that is in need of upgrade works and not fit for purpose for a larger production throughput

The delegated officer has proposed the following revised and /or additional controls in the renewed licence:

- revised loading limits for total nitrogen and total phosphorus,
- addition of electrical conductivity to wastewater monitoring with limits set on electrical conductivity concentration limits;
- revised reporting requirements for wastewater analysis and assessment;
- inclusion of irrigation discharge requirements from the NIMP (2008), and
- new reporting requirements on all offsite disposal of wastewater, sludge, and marc/organic materials.

In reissuing the renewed licence, the delegated officer has updated the format of the licence and included the existing winery, bottling, wastewater treatment plant and pipeline infrastructure not previously listed, and has updated the irrigation practices provided by the licence holder. In

noting that the irrigation area has significantly changed and that loading rates are provided within the existing NIMP (2008). The delegated officer has determined to update the existing nutrient loading rates to align with the NIMP assessment with a 20% buffer and has provided a loading spreadsheet to assist in calculating accurate loads from irrigating treated wastewater to 11.6 ha of vines.

In noting the 2018 – 2022 water quality data of the treated wastewater for irrigation, concentration limits have remained with the addition of electrical conductivity.

The delegated officer is satisfied that the above controls, once implemented, will lower the overall risk of the premises, and ensure that the winery operations can operate in a manner that does not pose an unacceptable risk of impacts to public health and the environment.

It is noted that should the licence holder require an increase in wine production in future, a licence amendment will need to address the aging WWTP infrastructure.

References

1. Agribusiness Research and Management (ARM) 2008, *Nutrient and Irrigation Management Plan (NIMP) – Stirling Vineyard, Capel Vale Wines*, Capel, Western Australia.
2. Australian Water and Wastewater Association, 1998, *Effluent Management Guidelines for Australian Wineries and Distilleries*, Artarmon, New South Wales
3. Ausvinex Pty Ltd, 2023, *Licence renewal application and supporting documents*, Perth, Western Australia
4. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
5. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
6. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
7. DWER 2022, *Capel Vale Wines, Licence L7719/2001/7, issued June 2022*, Perth, Western Australia
8. DWER 2022, *WQPN 73 – Wineries and distilleries*, Perth, Western Australia
9. Environmental Protection Authority, 2016, *EPA Guideline for Wineries and Distilleries*, Adelaide, South Australia.
10. Grape and Wine Research and Development Corporation 2011, *Operational guidelines - Winery Wastewater Management and Recycling*, Adelaide, South Australia.

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment	Department's response
Licence – assessed production capacity	<p>BOD management can be operating when operating at a high crush level up to 2,500 tonnes of grapes.</p> <p>With the size of the WWTP the winery could take on contract winemaking and increase their production volume including bottling.</p>	<p>As outlined in the draft decision report, the assessed production capacity was reduced from 1,500 kL/year to 450 kL/year based on several factors including:</p> <ul style="list-style-type: none"> the previous seven years production volumes ranged from 185 kL to 447 kL/year; the aging condition of the wastewater treatment plant (WWTP), and the department has concerns the WWTP is not capable of adequately treating the wastewater volumes generated from producing 1,500kL/year of wine. <p>The delegated determined that the aging and dilapidated condition of the WWTP containment infrastructure and its proximity to the Capel River poses an unacceptable risk of untreated wastewater gaining access to the river through spills, leaks, or overtopping events if more than doubling of wastewater is to be considered and directed to the WWTP. The condition of the WWTP compounded by a proposed increased production throughput also poses an unacceptable odour risk from the operation of the plant.</p> <p>Other factors accounting for the delegated officer decision to reduce the assessed production capacity relate to a reduced wastewater disposal (irrigation) capacity:</p> <ul style="list-style-type: none"> that the licence holder reduced the size of disposal areas from 21.94 ha to 11.6 ha; and the observed high groundwater/inundation underlying the much of the disposal area i.e., reduced water uptake ability by the vines. <p>The licence holder can undertake a licence amendment to increase production in the future and address the issue of the aging WWTP.</p> <p>The Delegated officer notes that the licence holder has agreed to reduce the assessed production capacity to 450kL/year to reduce the risk and mitigate the need for groundwater monitoring bores and upgrades to the wastewater treatment plant in the short term, which can be considered at a later date if and when the licence holder considers increasing production.</p>
Condition 2, Table 2	That potassium (may have meant phosphorus) and nitrogen in the irrigated wastewater does not replace the need for fertiliser on the vines, and that they are penalised for applying it onto the wines.	<p>The existing licence holders licence limits for TN and TP are 250 kg/ha/yr for TN and 30 kg/ha/yr for TP. These figures are not specific to the existing NIMP, premises and its existing operations. The delegated officer calculated revised loading limits in line with the existing NIMP and has added a 20% buffer for seasonal and yearly variations, with the revised loading limits for the irrigation of diluted wastewater on the premises as:</p> <ul style="list-style-type: none"> 15.80 kg/ha/yr for TN and 10.70 kg/ha/yr for TP <p>This calculation is conservative and has been set based on the existing water quality characteristic of the treated wastewater.</p>