



Application for Licence

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

Licence Number	L9413/2023/1
Applicant	FBROS Pty Ltd
ACN	634 416 078
File number	DER2023/000675
Premises	Funk Cider 2.0 38 Swan Street, HENLEY BROOK, WA 6055 Legal description Lot 123 on Plan 3820 As defined by the premises maps attached to the issued licence
Date of report	15/04 2024
Decision	Licence granted

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1. Decision summary

FRBOS Pty Ltd (the applicant) submitted an application for a licence under Division 3 Part V, of the *Environmental Protection Act 1986* (EP Act). To operate a facility to produce cider, beer and juice beverages under category 25 (alcoholic beverage manufacturing) and category 24 (non-alcoholic beverage manufacturing) in Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations).

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the operation of the beverage manufacturing facility at Funk Cider 2.0, 38 Swan Street, Henley Brook, WA (premises, Funk cider). As a result of this assessment, licence L9413/2023/1 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 16 October 2023, the applicant submitted an application for a licence to the department under section 57 of the *Environmental Protection Act 1986* (EP Act). The application is to seek a licence relating to alcoholic and non-alcoholic beverage manufacturing at the premises and associated wastewater treatment and on-site disposal (irrigation).

The premises relates to the categories 24 and 25 and assessed combined production capacity of 400 kL/annual period (combined juice, cider and beer) under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations).

The premises is approximately 0.9 km southeast of Averley townsite.

The application has been considered in line with *Guideline: Risk Assessments* (DWER 2020)

2.2.1 Background

The site was historically operated as a licensed winery. The winery closed and the licence was surrendered (date unknown). In 2021 the applicant received planning approval for a 'microbrewery' and commenced construction of the brewery.

On 3 February 2022 DWER wrote to the applicant advising them of their licensing obligations under the *Environmental Protection Act 1987*, recommending that they submit a works approval application for the establishment of brewery, including the construction of a beverage manufacturing wastewater treatment plant and disposal system as soon as possible.

The premises was granted works approval W6679/2022/1 on 1 December 2022, which was subsequently amended on 24 July 2023. The applicant submitted an Environmental Compliance Report on 7 and 14 December 2022 and 17 August 2023. Following the submission of these reports, compliance with works approval W6679/2022/1 was determined and the operating licence application was accepted for assessment.

Funk Cider is currently operating under time limited operations (TLO) under works approval W6679/2022/1 which authorises the production of up to 50 kL of fruit juice and up to 350 kL of cider and beer (combined) per year, processing wastewater from manufacturing operation through a WWTP and discharging (irrigating) treated wastewater to a dedicated irrigation area within the

premises.

Works approval W6679/2022/1 is currently under appeal with a singular appellant, and the appeal is yet to be determined.

2.3 Infrastructure and operational aspects

Beverage production infrastructure (from applicant)

Funk Cider manufacturing facility infrastructure, as it relates to categories 24 and 25 occur in an enclosed beverage production building housing the following:

- Apple belt press, including bin tipper, washer / elevator / crusher and belt press
- Citrus Line, including bin tipper and citrus pressing machine
- Mango destoner
- Coolroom and freezer
- Refrigeration units located externally to coolroom in the southwest of the production shed.
- Noise attenuating wall
- Fermentation tanks
- 10, 000 L juice settling tank:
- Carbonation / brite tanks:
- Beer tanks
- Externally located waste tanks and 10 x 500 kg waste pulp bins with plastic liners

Outside WWTP, designed to treat up to 7 kL of wastewater per day, comprising of:

- Holding tank (7 kL, below ground enclosed and sealed polyethylene)
- pH closed-loop dosing system
- Sequence Batch Reactor unit (23 kL enclosed and sealed polyethylene fitted with overflow outlet, sensors, and warning alarms) with submersible aerator.
- Irrigation tank (5 kL enclosed and sealed polyethylene)
- Water storage tanks (2 x 23 kL).
- Drum filter and 1 kL solid waste collector
- 2 x 23 kL enclosed and sealed polyethylene balance tanks with lift pumps
- Multicyclone with back flush draining to the holding tank
- Disc filter on the outflow pipe
- Post treatment telemetered flow meter (M1) with batching controller
- Pumps, pipes, and associated overflow drainage infrastructure
- Treated wastewater irrigation area, 1,193 m² with above ground drippers.

Operations (from applicant)

Production at the site will include the manufacture of alcoholic apple cider (approximately 75% of the production capacity), beer (15%) and cold pressed juice (10%), with a maximum total alcoholic beverage (cider and beer) production of 350 kL/year and non-alcoholic beverage (juice) production of < 50 kL/year. The premises will operate across all months of the year, with busier periods and higher production anticipated in the summer months. Fruit processing for the juice and cider

includes a combination of crushing, pressing, destoning apples, citrus, pomace, and mangoes.

To produce beer, malt is mashed in the mash lauter tank, wort is drawn and moved to the kettle whirlpool tank where it is boiled. The liquid is then cooled and directed to the fermenting tanks and finally packaged.

Fruit pulp and skins and spent grain and hops are stored in plastic mega bins outside before being transported off-site by a contractor on a weekly basis.

Spills, leaks and washdown wastewater are directed through floor drains and floor drainpipes to the holding tank in the WWTP.

Wastewater treatment plant (from applicant)

Wastewater will primarily be generated from apple crushing, keg washing, tank cleaning, filtering, and floor wash-down activities within the production shed. It is estimated that 1,150 kL per year of wastewater will be generated from the existing operations.

Wastewater volumes are expected to peak during summer with about 1,500 L of wastewater generated per day in December. The applicant estimates that about 1,000 kL of wastewater will be generated per year from 350 kL of alcoholic beverage manufactured, which is a ratio of about 3 litres of wastewater generated for every 1 litre of beer/cider produced. The 50 kL of non-alcoholic juice produced per year, is expected to contribute 150 kL of wastewater per year. The total wastewater produced is expected to be 1,150 kL per year (3,150.7 L/day). The maximum authorised wastewater treatment rate is 4,631 litres per day, as specified in the applicant's 'approval to construct or install an apparatus for the treatment of sewerage' issued by the Department of Health on 10 August 2022.

The delegated officer will condition the maximum amount of wastewater to be treated per day in line with the Department of Health approval to construct or install an apparatus for the treatment of sewerage' issued 10 August 2022 rate of 4,631 litres/day.

Figure 1 outlines the existing infrastructure for the WWTP.

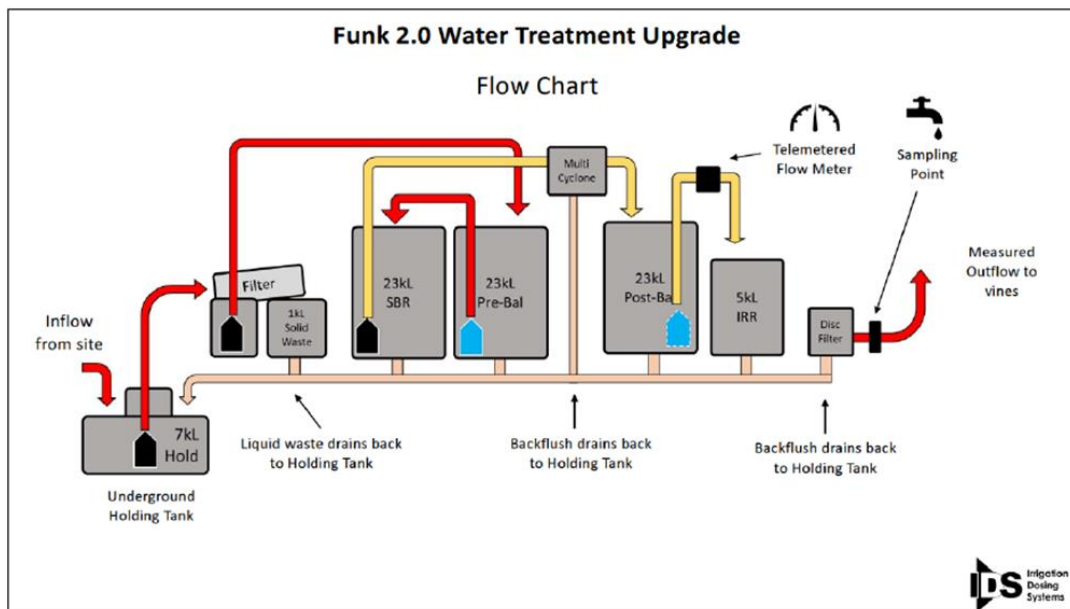


Figure 1: Wastewater treatment plant layout and flow pathway.

Discharge of treated wastewater (from applicant)

The applicant intends to irrigate with treated wastewater, a one-hectare winter crop (*Canola brassica*) and/or oats and a summer crop (grapes vines, sunflowers, sorghum, and/or millet). The crops will be planted out between rows of existing grape vines. The winter crop will be seeded in April and harvested in September/October and the summer crop in November harvested in February with vines pruned.

The applicant has indicated that 2 t/ha of canola and 9 t/ha of oats will remove 538 kg of total nitrogen and 62 kg of phosphorus. Sunflowers, sorghum, and/or millet are expected to remove 100 kg/ha of total nitrogen and 17.2 kg/ha of total phosphorus.

Irrigation will be delivered through a dripline for the vines and a separate dripline for the crop cover areas. Irrigation will cease when excessive rain occurs or until ponding surface ponding has dispersed. A 23-kL holding tank will hold treated wastewater during those periods.

Sludge from the WWTP settling tanks will be transported off site by a licensed liquid waste contractor in accordance with the *Environmental Protection (Controlled waste) Regulations 2004*.

Solids management (from applicant)

All organic solid wastes generated from juice, cider, and beer manufacturing are stored in plastic and or wooden bins that are lined with plastic, with the plastic folded over on top to enclose the organic material. The bins are removed weekly from the premises for off-site disposal.

2.4 Incidents complaints and site visit

The department manages an Incident and Complaints Management System (ICMS), the following incidents and complaints listed in Table 1 have been lodged against the premises. It is noted that odours from alcoholic beverage manufacturing and storage of solid waste have been the main issues of the complaints.

Table 1: Incidents and complaints management system (ICMS)

Date	ICMS number	Complaint
20/06/2022	65930	Eight complaints from a single complainant have been lodged to DWER. Key issues raised are: <ul style="list-style-type: none"> • Odours from brewery operations and decaying organic material outside the building. • Noise emission emanating from the large green shed. • Wastewater spills from the WWTP • Leachate from decaying organic material from bins outside. • Odours and brewery operations
18/04/2023	68782	
22/05/2023	70065	
22/05/2023	70163	
16/09/2023	71437	
6/10/2023	71793	
17/11/2023	72314	
22/01/2023	73935	

Site Visit

An unannounced site visit was undertaken by DWER officers on the 29 November 2023. The following was observed :

- Production shed was found to be clean and tidy.
- Limited odour observed on the western boundary of the premises.
- Odour was observed adjacent to the WWTP. The lid of the initial holding tank did not seal due to the presence of pipes. Evidence of foam overflow from one of the WWTP tanks. The alarms were not triggered when foam overflows.
- Sludge from WWTP was stored onsite in IBCs.
- There was evidence of leachate from the solid waste bins on the western side. The solid bins were open plastic / wooden crates with openings. The ground on which the crates were stored was unsealed gravel.

The delegated officer has considered the findings of the site visit and reported complaints and conditioned:

- **That all sludge containing IBCs must be stored on a hardstand**

- All solid waste pulp must be stored in lidded, plastic lined bins to prevent odour and leachate and emptied every 48 hours during November to April and weekly from May to October, to prevent odour from decomposition during hot weather.

2.5 Other relevant approvals

Local Government

The City of Swan approved a development application for the brewery- DA967/2020 on 7 July 2021.

Health Act 1911(as amended)

The Department of Health granted an *approval to construct or install an apparatus for the treatment of sewerage* 10 August 2022 for the brewery wastewater treatment and disposal (irrigation) system.

2.6 Nutrient and hydraulic wastewater review

2.6.1 Wastewater quality

The applicant provided nine treated wastewater samples collected between February 2023 to November 2023 within their submitted Environmental Compliance Reports for W6679/2022/1.)

Table 2: Wastewater quality (supplied by the applicant)

Date	BOD mg/L	EC μ S/cm	TDS mg/L	TN mg/L	TP mg/L	TSS mg/L	pH
09-Feb-2023	2,400		2,740	57.20	9.34	1,400	5.89
23-Mar-2023	580			15.00	2.80	260	7.50
23-Mar-2023	570			30.00	4.00	580	7.40
04-Apr-2023	760			0.90	0.44	50	5.40
14-Sep-2023	523		2,080	0.90	0.08		7.09
14-Sep-2023	880		3,570	2.30	0.31		7.06
13–Nov-2023	1130			4.0	0.71	86	7.6
Median	760		2,740	4	1	260	7
Average	978		2,797	16	3	475	7
Applicants predicted criteria⁵	500		350	30	10		6.5-8.5
Typical range of raw brewery wastewater ¹	1,200 – 3,600			25 - 80	10 – 50		4.5-12
Primary effluent quality following treatment ²	120-250			30-55	6-14		
Secondary effluent quality following nutrient removal treatment ²	20-30			10 - 50	6-12		
Nutrient removal effluent quality following nutrient removal treatment ²	5 - 20			5 - 20	<2		

ANZECC 2000 – Primary Industries ³	<15		3000	25 – 125 ⁴	0.8 - 12 ⁴		6-9
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¹Kebede, T. B. 2018. *Wastewater treatment in brewery industry*, review. International Journal of Engineering Development and Research. Available at: <https://www.ijedr.org/papers/IJEDR1801124.pdf>

² Treatment process category D from Appendix 6 of ARMCANZ and ANZECC 1997. *National Water Quality Management Strategy – Australian Guidelines for Sewerage Systems – Effluent Management*. Commonwealth of Australia.(NWQMS)

³ National Water Quality Management Strategy Paper No. 4 – Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 3 Primary Industries, 2000, ANZECC and ARMCANZ (ANZECC 2000).

⁴ ANZECC 2000, requires site specific assessment to determine actual value

⁵ Applicant submitted water quality criteria for the WWTP

Biological oxygen demand

The National Water Quality Management Strategy guidelines for sewerage systems and effluent management (NWQMS) recommends that for primary treatment systems, typical biological oxygen demand (BOD) ranges for treated effluent should range between 120-250 mg/L. Wastewater from the existing treatment system at the premises is 3 times above this typical BOD range. It is noted that applicant has indicated that optimisation of the WWTP solids management is currently underway and is anticipated to achieve water quality BOD target of < 500 mg/L.

Nutrient levels

Nutrients including total nitrogen and total phosphorus reported levels were within acceptable treatment range.

pH

The pH of the wastewater was within acceptable treatment range.

Total dissolved solids,

Total dissolved solids (TDS) represent measurements of salts. TDS measures breakdown of arrange of dissolved substances. The applicant provided a limit threshold for TDS from wastewater treatment as 350 mg/L. The TDS figures supplied in the two September samples are high, and within DPIRD's 2022 irrigation categories of salty water (1425 – 2850 mg/L). Where irrigation of TDS above 1,425 mg/L will result in a minimum 25% yield loss, that increases with the increase in salts within the wastewater. Therefore, the existing wastewater quality is likely to affect yields of the proposed crops and have implications on the uptake of nutrients applied through the wastewater. The treatment of salts within the wastewater and limiting salts applied will be required to irrigate long term sustainable crops.

Sodium adsorption ratio (SAR) indicates the amount of sodium relative to calcium and magnesium in water. When SAR is high in wastewater it can affect the exchangeable sodium percentage of the soil. High SAR levels will adversely affect the soil structure resulting in dispersive soils, reduced infiltration, and drainage. SAR was not tested in the wastewater, however with the high TDS levels, a risk of medium to long term effects to soil structure could occur. The NSW Department of Primary Industries (DPI) indicate a SAR level >6 has increasing effect on all soils at moderate salinity levels (2.5 dS/m (1,600 mg/L)).

The delegated officer has determined to add the following treated wastewater limits in the works approval in line with ANZECC long term irrigation guidelines and NSW DPI, they are:

- **290 mS/m (2.9 dS/m or 1,856 mg/L) electrical conductivity irrigation limits**
- **5.5-9.0 pH**
- **<6 SAR**

2.6.2 Irrigation of wastewater

In the absence of a Western Australian Guideline, the department uses the US EPA 2006 to calculate hydraulic loading and NSW EPA 1998 to calculate nutrient loading rates and applies these in assessing the impact of the proposed irrigation.

Hydraulic loading impact analysis

The applicant has proposed a 12-month irrigation schedule with irrigation to stop when rain occurs or ponding on the surface. Rainfall in Perth (using BoM site Perth Airport 009021) exceeds evaporation from June to August. Indicating that without advanced soil moisture and weather monitoring programs, irrigation during these months is likely to lead to excessive hydraulic loading to the soils.

The delegated officer has determined to condition a 39-week irrigation schedule from September to May with no irrigation from June to August (subject to details of soil moisture probes being supplied by the applicant).

A 39-week irrigation schedule has been used to assess hydraulic loading impact analysis.

The preliminary assessment¹ of the wastewater hydraulic loading at the premises indicates that the size of the irrigation area (1 ha) is sufficient to enable moisture to be taken up by vegetation or retained within the soil profile without excessive moisture seepage into groundwater from irrigation over a 39-week irrigation schedule.

¹ The preliminary assessment of hydraulic loading can be calculated using the following equation (US EPA, 2006):

$$A = (3.65 \times Q) / (L \times T_{app})$$

Where:

- A = land area (hectares)
- Q = flow rate of wastewater (m³/day) – proposed 4,210 L/day = 4.21 m³/day (based on full production producing 1,150 kL/year of wastewater)
- L = wastewater hydraulic loading to soil (cm/week) – assumed to be 4 cm/week (US EPA, 2006)
- T_{app} = period of wastewater application each year (weeks) – the applicant has indicated that irrigation will occur 39 weeks of the year.

Using the above values in the equation gives a land area of approximately 0.05 ha.

The applicant has installed two 23 kL holding tanks and a 5 kL irrigation tank for treated wastewater storage (totaling 51 kL). The applicant has indicated that production is reduced in winter producing an average of 575 L/day of wastewater requiring a minimum of 52.3 kL (13 weeks storage) of wastewater storage. DWER has considered the total existing storage capacity and that the additional 1.3 kL (52.3 – 51 kL) of storage required could easily be stored within the existing containers of the wastewater treatment plant and has considered that the winter storage capacity as being adequate.

Nutrient loading impact analysis - nitrogen

A preliminary assessment² of nutrient loading rates within the proposed irrigation areas indicates that 1 ha is a sufficient land area for crops to remove all the nitrogen that is applied in the irrigated wastewater.

² The land area required to ensure that a particular crop takes up all the nitrogen applied within a disposal area can be estimated using the following equation (NSW EPA, 1998):

$$A = (C \times Q) / L_N$$

Where:

- A = land area (m²)
- C = concentration of N in wastewater (mg/L) – 4 mg/L
- Q = treated wastewater flow rate (L/d) – proposed 4,210 L/day
- L_N = critical loading rate (uptake rate) for N for a specific crop (mg/m²/day) – considered to be approximately 25 mg/m²/day (refer to appendix 6 in NSW EPA, 1998)

Using the above values in the equation gives a required land area of 0.05 ha for a 39-week irrigation period. It is noted that this preliminary assessment is based on results of the median of seven sampling events provided by the applicant.

The above calculations are used as an estimate of the land area required for irrigation and may not accurately represent what may occur onsite. The results indicate that if 4,210 L/day of wastewater is irrigated over 39 weeks overloading of nitrogen at the premises is unlikely.

Nutrient loading impact analysis - phosphorus

Unlike nitrogen, phosphorus that is applied to crops in irrigation water is not directly taken up by vegetation. It takes between 6 to 12 months of phosphorus to be chemically changed in the soil by microbes to be available in a form for plant uptake. The operational life of a wastewater irrigation

scheme is limited by the phosphorus storage capacity of the soil profile between the land surface and the groundwater.

The NSW EPA 1998 land area requirement was used to calculate phosphorous loading rate to land area, (refer to equation in nitrogen loading impact analysis) using the median phosphorus concentration of 1.0 mg/L. A land area of approximately 0.11 ha is required for a 39-week irrigation schedule.

Nutrient loading impact analysis – biological oxygen demand

The NSW EPA 1998 land area requirement was used to calculate BOD loading rate to land area (refer to equation in nitrogen loading impact analysis) using a median BOD concentration of 760 mg/L. A land area of approximately 0.11 ha is required for a 39-week irrigation schedule.

Nutrient balance

The applicant did not provide a nutrient balance but provided harvesting rates recommended by the Department of Primary Industries and Regional Development (DPIRD) based on irrigation over 12 months for 1,150 kL/yr wastewater for two crops, consisting of a winter canola/oats and summer vines / sunflower / sorghum / millet. DWER has calculated that the loading rate based on the median wastewater figures and the applicant's wastewater treatment limits (Table 2), noting both are below the uptake of two season harvested crops.

Table 3: Nutrient loading analysis

	TN - median	TN - criteria	TP - median	TP - criteria	BOD - median	BOD - criteria
Nutrient concentration	4 mg/L	30 mg/L	1 mg/L	10 mg/L	760 mg/L	500 mg/L
Annual volume wastewater	1,150 kL					
Annual nutrient load / ha	4.6 kg/yr/ha	34.5 kg/yr/ha	1.15 kg/yr/ha	11.5 kg/yr/ha	874 kg/yr/ha	575 kg/yr/ha
¹Summer crop (sunflowers 4 t/ha)	100 kg/ha/yr		17.2 kg/ha/yr			
¹Winter crop (1 t/ha canola and 9 t/ha oats)	358 kg/ha/yr		62 kg/ha/yr			
DWERW6679/2022/1 works approval load	100 kg/ha/yr		8 kg/ha/yr		1500 kg/ha/month	
DWER conservative load based on 100% summer crop	100 kg/ha/yr		17 kg/ha/yr		1500 kg/ha/yr	

¹DPIRD recommended, PIRRS (2022) Soil Smart: Understanding Your Soils. Primary Industries and Resources Rural Solutions SA Solis and Land Management Consultants

The delegated officer considered that nutrient loading levels are unlikely to exceed crop demands, however noted that the two seasoned cropping between grape vines is not typical and unlikely to produce best practice cropping yields. The delegated officer considered the loading levels, cropping, the distance to groundwater, soil analysis (see below) and hydraulic connectivity of the ground and surface water and determined to condition crop and harvesting requirements to ensure nutrient uptake and apply nutrient loading limits. Loading limits have been calculated based on a summer crops optimum nutrient removal (conservative assessment), for irrigation of treated wastewater on the premises as:

- **100 kg/ha/yr for total nitrogen**

- 17 kg/ha/yr for total phosphorus.
- 1,500 kg/month for biological oxygen demand (based on odour management, NSW EPA 1998)

Soil assessment

The applicant provided results of soil sampling of 5 sites within the irrigation area taken in 2022. Total Nitrogen ranged at surface between 620 to 1600 mg/kg, and at depth (1.2 metres below ground level (mbgl) from 150 – 220 mg/kg. Total phosphorus ranged at surface from 280 – 640 mg/kg and at depth (1.2 mbgl) 48 – 61 mg/Kg. The nitrogen and phosphorus levels indicate that there are high levels of nutrients readily available in the soil for plant and crop growth. PBI ranged at all levels from 52- 86. This indicates that the soil has low ability to hold phosphorus, indicating a high ability of the soil to leach phosphorus.

Noting that the 99 % of nitrogen was held in the total kjeldahl nitrogen organic form that is not readily assessable for plant uptake.

It is noted that brewery wastewater often contains high concentrations of salts and therefore irrigation needs to be managed to minimise the potential for adverse impacts on the structure of the soil. Of particular concern is the risk of soils becoming sodic and dispersive due to the disproportionately high concentration of sodium ions compared to calcium and magnesium ions in the wastewater. This may cause the infiltration capacity of the soil to air and water to be reduced, which may limit crop growth and hence the ability to take up nutrients.

The delegated officer noted that groundwater is 3-5 mbgl, the soil nutrient levels are high but in an unavailable organic form. Wastewater should be treated to a sufficient high level to prevent the degradation of soil and groundwater quality at the irrigation sites. Therefore, the applicants annual soil monitoring program will be expanded to include nitrogen oxides, total kjeldahl nitrogen, phosphorus absorption, sodium absorption ratio, cation exchange capacity, and exchangeable cations.

Furthermore, the applicant has two monitoring bores that are monitored twice a year.

The bores will be monitored quarterly, for additional parameters of electrical conductivity, total nitrogen, and total phosphorus.

3. 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.

3.1 Source-pathways and receptors

3.1.1 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 4 below. Table 4 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 4: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls (applicant supplied)
Operation			
Noise	Alcoholic and nonalcoholic beverage manufacturing in the production shed including canning	Air / windborne pathway	Noise wall around the refrigeration units to mitigate noise. Refrigeration unit compressors to operate as per specifications to minimise noise generation. Beverage production operating hours are Mon-Sat 7 am – 7 pm, and Sunday 9 am to 5 pm. Operation inside enclosed building. West roller door closed when undertaking canning operations. Complaints register to log and action complaints.
Odour			Operations inside building No more than one beer brew per week.
Odour	Storage of wastewater, solid organic waste prior to offsite disposal	Air / windborne pathway	Waste stored in bins enclosed in plastic liner on hardstand and removed weekly. Fruit waste stored in sealed bags in plastic bins and collected by farmers almost daily.
Nutrient rich wastewater, solids, leachate / sludge		Seepage to soil and groundwater	Washdown wastewater are directed through floor drains and floor drainpipes to the holding tank in the WWTP. Sludge to be disposed offsite by licensed liquid waste contractor. Bins are enclosed, lined and with plastic liner and placed on a hardstand. Waste bins emptied weekly by a contractor.
Odour from wastewater high in nutrients and BOD.	Treatment and storage of wastewater in the WWTP	Air / windborne pathway	All WWTP tanks are enclosed. Submergible aerator in aerobic tank
Leaks, spills and overtopping of WWTP containments		Seepage to soil and groundwater	Drains leading to holding tank fitted with strainers to remove large solids and to decrease nutrient levels. WWTP installed on hardstand. WWTP is designed to achieve the following treatment quality: BOD ,500 mg/L, TN <30 mg/L, TP <10 mg/L, TDS <350 mg/L, pH 6.5- 8.5 Tanks inspected daily to check for rupture/leaks and repaired as required. Pipework and pump installed to allow for sludge removal from tanks. High level visual warning alarms to indicate malfunction of pumps and high level of wastewater tanks. Audio alarms has a muting device.
Excessive nutrient loading to land	Onsite disposal of treated wastewater to land via irrigation.	Seepage to soil and groundwater	Irrigating to 1 ha of mixed grasses grapes with a winter and summer specific crops that are harvested. Drip lines installed to deliver even distribution of wastewater. 2x 23 kL and 1x 5 kL storage tanks (51 kL)
Excessive		Seepage to	

Emission	Sources	Potential pathways	Proposed controls (applicant supplied)
hydraulic loading applied to land		soil and groundwater	<p>Reduced production in winter, 575 L wastewater day.</p> <p>Visual inspection of the irrigation area daily to address leaks, blockages.</p> <p>Irrigation area banded to prevent surface runoff.</p> <p>Summer crop planted in November of sunflowers and sorghum between vines and harvested in February to remove nutrients. Vines pruned in February.</p> <p>Winter crop planted in April of canola and oats between vines and harvested in October to remove nutrients.</p> <p>Harvested biomass baled, dry weight recorded and removed off site.</p> <p>Monthly wastewater monitoring for pH, TDS, TN, TP, BOD,</p> <p>Two monitoring groundwater bores for pH, BOD, standing water levels.</p> <p>Annual soil monitoring for pH, EC, PBI, sodium, calcium, and magnesium.</p> <p>Telemetered soil moisture probes placed into irrigation area at 4 sites at 200, 500 and 1000mm below ground and connected to alert and irrigation shut off system (limited details supplied).</p>

3.1.2 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 5 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 5: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Site is surrounded by Rural residential – zoned Swan Valley Rural under City of Swan Town Planning Scheme.	<p>Residences are located:</p> <p>60 m northeast of the processing shed and 120 m northeast of the WWTP</p> <p>140 m west of the WWTP and processing shed.</p> <p>125 m and 145 m southeast from the WWTP and processing shed respectively.</p> <p>250 m and 205 m north of the WWTP and processing shed respectively.</p> <p>180 m and 210 m southwest of the WWTP and processing shed respectively.</p>
Environmental receptors	Distance from prescribed activity
<p><i>Rights to Water and Irrigation Act 1914</i> (RIWI)</p> <p>Swan River System – Proclaimed Surface water Area</p> <p><i>Swan River Trust Act</i> - Swan River (conservation</p>	<p>Entire premises located in the Swan River System</p> <p>Swan River is 250m east of the premises boundary.</p>

wetland, Bushforever site))	
Underlying groundwater (non-potable purposes)	3-5 mbgl (Geocortex – minimum groundwater contours) Groundwater flow southeast towards Swan River and west towards Henley Brook 41 licenced (RIWI) bore uses within 500 m radius
Wetlands, Multiple use sumpland - Henley Brook	Sumpland -151 m west from the western boundary Henley Brook – 200 m west from the western boundary.
Soils – Bhs – Belhus sand (swan)	Deep red-brown sand gradually grading to sandy clay loam.

3.2 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 3.1. 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 3.1), 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 Licence L9413/2023/1 that accompanies this decision report authorises emissions associated with the operation of the premises i.e. alcoholic and non-alcoholic beverage manufacturing, treatment of wastewater and irrigation to land.

The conditions in the issued licence, as outlined in Table 6 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 6: 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 conditions of licence
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls imposed as regulatory controls- refer Section 3.1			
Operation							
Beverage manufacturing including, cider, beer and juice in the processing shed and canning.	Odour	Air / windborne pathway causing impacts to health and amenity	Closest receptors are 60 m northeast, 140 m east, 145 m southeast, 205 m north and 210 m southwest of the processing shed.	Operations inside a building and no more than one beer brew per week.	Specific consequence criteria for public health are likely to be met, low level impact to amenity at local scale. C = Minor The risk event could occur at some point. L = Possible Medium Risk	All beverage manufacturing including beer, cider and juice are processed and packaged within an enclosed building. Beer manufacturing which is the main odour source is manufactured a minimum of once a week. The delegated officer considered the enclosed design of the operation, brewery manufacturing, the distance to the closest sensitive receptors, ICMS records and assessed the risk as medium. The applicants' controls were assessed as insufficient to mitigate against the risk of excessive odours from beverage manufacturing and affecting close residential receptor, and considered it necessary to specify the following: <ul style="list-style-type: none"> The beverage manufacturing building must be closed on the western side when beer manufacturing. The delegated officer applied the applicants controls and infrastructure requirements which are considered critical for maintaining an acceptable level of risk as conditions in the licence.	<i>Operational</i> The beverage manufacturing building must be closed on the western side when beer manufacturing other than forklift entry and exit.
	Noise			Operations inside building, west roller door closed when canning operations occur. Noise wall around refrigeration units, production hours during daytime, compliant register. Refer to Section 3.1	Specific consequence criteria for public health are likely to be met, low level impact to amenity at local scale. C = Minor The risk event will probably not occur in most circumstances. L = Unlikely Medium Risk	All beverage manufacturing including beer, cider, and juice are processed and packaged within an enclosed building. The west roller doors will be shut when the canning process is on operational display for visitors to the facility, the refrigeration units are located behind a noise insulation wall, and the licence holder is required to meet <i>the Environmental Protection (Noise Regulations) 1994</i> . The delegated officer considered the enclosed design of the operation, the noise wall, the distance to the closest sensitive receptors, ICMS records and that no noise assessment had been undertaken and assessed the risk as medium. The applicants' controls were assessed and considered unacceptable to mitigate the risk of excessive noise from beverage manufacturing and affecting close residential receptors. The delegated officer determined to condition a noise verification assessment by an acoustic specialist. The delegated officer applied the applicants controls and infrastructure requirements which are considered critical for maintaining an acceptable level of risk as conditions in the licence.	Noise verification assessment
	Nutrient and chemical-laden wastewater generated from the processing of the beverage manufacturing equipment and packaging.	Overland runoff potentially causing ecosystem disturbance impacting soil, or impacting surface water quality	Proclaimed surface water areas Swan River 25 m east and Henley Brook 200 m west of the premises boundary. Sumpland 150 m west of the premises boundary. Groundwater flowing to both surface waterbodies 3-5 mbgl in deep red brown sands.	All chemicals are stored in containers within the building, and all spills, leaks, and wastewater are directed to the drains to the 7 kL holding tank	Mid-level onsite impacts, low level offsite impacts at local scale. C = Moderate The risk event may only occur in exceptional circumstances L = Rare Medium Risk	All beverages are processed and packaged within a building with all spills and wastewater directed to a drain to the 7 kL collection sump (holding tank) with a fitted strainer. Chemical are stored in containers. The delegated officer considered the enclosed design of the operation, the distance to Swan River, Henley Brook, and groundwater and assessed the risk as medium. The applicants' controls were assessed and considered acceptable to mitigate the risk of wastewater impacting on the environment causing contamination. The delegated officer applied the applicants controls and infrastructure requirements, which are considered critical for maintaining an acceptable level of risk as conditions in the licence.	No regulatory controls
Storage of solid organic waste prior to offsite disposal	Odour	Air / windborne pathway causing impacts to health and amenity	Closest receptors are 60 m northeast, 140 m east, 145 m southeast, 205 m north and 210 m southwest of the processing shed.	Waste stored on a hardstand in bins outside and removed weekly. Fruit waste is stored in sealed bags in plastic bins and collected almost daily.	Specific consequence criteria for public health are likely to be met, low level impact to amenity at local scale. C = Minor The risk event will probably occur in most circumstances. L = Likely Medium Risk	All organic solids are stored in plastic bins (crates) and fruit waste in sealed plastic bags outside on bitumen hard stand and removed from the site daily to weekly. The delegated officer considered the outside storage of the solid materials, the distance to close sensitive receptors, ICMS records and assessed the risk as medium. The applicants' controls were assessed as insufficient to mitigate against the risk of excessive odours from organic solid storage and affecting close residential receptors, and considered it necessary to specify the following: <ul style="list-style-type: none"> All solid organic waste materials from beverage manufacturing must be stored with either lids on or removed every 48 hours from November to April and weekly from May to October. The delegated officer applied the applicants' controls and infrastructure requirements which are considered critical for maintaining an acceptable level of risk as conditions in the licence.	<i>Operational</i> <ul style="list-style-type: none"> All solid organic waste materials from beverage manufacturing must be stored with either lids on or removed offsite at a minimum every 48 hours from November to April and weekly from May to October
	Nutrient rich leachate from storage area	Overland runoff potentially causing ecosystem disturbance impacting soil, or	Proclaimed surface water areas Swan River 25 m east and Henley Brook 200 m west of the premises boundary. Sumpland 150 m west of	Organic waste stored in bins on a gravel hardstand.	Mid-level onsite impacts, low level offsite impacts at local scale. C = Moderate	All organic solids are stored in plastic bins (crates) with lids and fruit waste in sealed plastic bags outside on a bitumen hardstand and removed from the site daily to weekly. The delegated officer considered the outside storage of the solid materials on a bitumen hardstand, that hardstand was poorly maintained, the soil type of the premises, site visit, distance to groundwater and surface water bodies, ICMS records that included photographic evidence of leachate from the	<i>Operational</i> <ul style="list-style-type: none"> The solid organic waste materials bitumen hardstand must be kept free of gravel/clay with unimpeded drainage to the drain located within

Risk events					Risk rating ¹ C = consequence L = likelihood	Justification for additional regulatory controls	Regulatory conditions of licence
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls imposed as regulatory controls- refer Section 3.1			
		impacting surface water quality	the premises boundary. Groundwater flowing to both surface waterbodies 3-5 mbgl in deep red brown sands.		The risk event could occur at some point. L = Possible Medium Risk	stacked solid waste bins (grates) and assessed the risk as medium. The applicants' controls were assessed as sufficient to mitigate against the risk of leachate impacting soils and proclaimed surface water areas of the Swan River and Henley Brook. The delegated officer applied the applicants' controls and infrastructure requirements which are considered critical for maintaining an acceptable level of risk as conditions in the licence.	the bitumen hardstand.
Treatment and storage of wastewater in the WWTP	Odour from wastewater high in nutrients and BOD	Air / windborne pathway causing impacts to health and amenity	Closest receptors are 120 m northeast, 140 m east, 125 m southeast, 250 m north and 180 m southwest of the WWTP	All tanks are enclosed and submergible aerator in aerobic tank.	Specific consequence criteria for public health are likely to be met, low level impact to amenity at local scale. C = Minor The risk event may only occur in exceptional circumstances L = Rare Low Risk	With the nature of beverage manufacturing wastewater there is an inherent risk of odour causing impacts to sensitive receptors, particularly from settling, aerobic and storage tanks. The submergible aspirator in the aerobic tank will reduce BOD, and with the tanks being enclosed will reduce odour emissions. The delegated officer assessed the risk as low and does not reasonably foresee off-site receptors being impacted by odour from the beverage manufacturing operations. The delegated officer will regulate the licence holder's controls, to ensure the risk event is maintained at a low level.	No regulatory controls
	Leaks, spills and over topping of WWTP containments	Overland runoff potentially causing ecosystem disturbance or impacting soil, groundwater, and surface water quality	Proclaimed surface water areas Swan River 25 m east and Hemley Brook 200 m west of the premises boundary. Sumpland 150 m west of the premises boundary. Groundwater flowing to both surface waterbodies 3-5 mbgl in deep red brown sands.	Tanks inspected daily for leaks, drains leading to holding tanks fitted with strainers to remove large solids. Tanks and pumps have high-level alarms with muted audio.	Mid-level onsite impacts, low level offsite impacts at local scale. C = Moderate The risk event will probably not occur in most circumstances. L = Unlikely Medium Risk	Wastewater from the beverage manufacturing drains to the 7 kL collection sump before being transferred via sump pump to the settling tanks, aerobic tank, and storage tanks. Sludge is removed from the WWTP via a series of pipes. The delegated officer considered the enclosed design of the tanks, pipeline transfer of wastewater between tanks, strainer in collection sump, high level alarms on all tanks, daily inspection of WWTP containments, soil type, distance to proclaimed surface water bodies, groundwater levels, site visit and, ICMS records. The delegated officer considered the risk of overtopping, spills, leaks, and ruptures from the WWTP contaminating soil, ground, and surface water as medium risk. The delegated officer considered that the applicants' controls were not sufficient to manage the risk of spills, leaks and ruptures and considered it necessary to specify the following:	<i>Operational</i> <ul style="list-style-type: none"> Excess wastewater that exceeds storage and treatment containments is removed from the premises. 7 kL collection sump (holding tank), 1 kL solid waste tank and 23 kL pre-balance tank must be desludged a minimum of once a year. The strainer in the 7 kL collection sump (holding tank) is cleaned of solids once per week. Daily visual inspection of the WWTP
	Spills from desludging of containments			Pipework was installed in tanks for easy removal of sludge. Sludge removed from WWTP containments disposed of offsite by a licensed liquid waste contractor.	Mid-level onsite impacts, low level offsite impacts at local scale. C = Moderate The risk event may only occur in exceptional circumstances L = Rare Medium Risk	<ul style="list-style-type: none"> Excess wastewater that exceeds storage and treatment containments is removed from the premises. 7 kL collection sump (holding tank), 1 kL solid waste tank and 23 kL pre-balance tank must be desludged a minimum of once a year. The strainer in the 7 kL collection sump (holding tank) is clean of solids once per week. Visual inspection of the WWTP tanks. <p>The delegated officer applied the applicants' controls and infrastructure requirements which are considered critical for maintaining an acceptable level of risk as conditions in the licence.</p>	
Onsite disposal of treated wastewater to land via irrigation	Excessive nutrient loading to land			1 ha of irrigated land and harvested summer and winter crop to uptake nutrients, visual inspections of sprinklers and pipework, irrigation area banded, 12 month irrigation schedule, reduced wastewater production in winter monthly wastewater sampling, annual soil monitoring and twice yearly groundwater monitoring, 51 kL storage	Mid-level onsite impacts, low level offsite impacts at local scale. C = Moderate The risk event could occur at some point. L = Possible Medium Risk	Wastewater is treated, stored and irrigated 12 months of the year, two crops are harvested twice a year, wastewater, soil and groundwater monitoring are proposed. The delegated officer considered that the applicant intends to irrigate 12 months of the year, the 2022 soil samples, water quality wastewater data, harvesting schedule, low PBI within the soil, soil type and permeability, distance to groundwater levels, distance to proclaimed surface water areas, and ICMS records. The delegated officer considered the risk of excessive nutrients loading to land as a medium risk. The delegated officer considered that the applicants, controls were not sufficient to manage the risk of excessive nutrient loading and considered it necessary to specify the following:	<i>Loading and water quality limits</i> <ul style="list-style-type: none"> 100 kg/ha/yr for total nitrogen 17 kg/ha/yr for total phosphorus. 1,500 kg/month for biological oxygen demand 290 mS/m (2.9 dS/m or 1,856 mg/L) electrical conductivity irrigation limits 5.5-9.0 pH <6 SAR <i>Monitoring</i> <ul style="list-style-type: none"> Wastewater quality parameters SAR, EC Soil monitoring once every two years for parameters nitrogen oxides, total kjeldahl nitrogen, phosphorus adsorption, sodium absorption ratio, cation exchange capacity and exchangeable cations. Groundwater monitoring four times a year, including electrical conductivity,

Risk events					Risk rating ¹ C = consequence L = likelihood	Justification for additional regulatory controls	Regulatory conditions of licence
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls imposed as regulatory controls- refer Section 3.1			
	Excessive hydraulic loading applied to land				<p>Mid-level onsite impacts, low level offsite impacts at local scale.</p> <p>C = Moderate</p> <p>The risk event could occur at some point.</p> <p>L = Possible</p> <p>Medium Risk</p>	<p>Wastewater is treated and held in 51 kL of storage containments and irrigated 12 months of the year, production is higher in summer and lower in winter with wastewater production following suit.</p> <p>The delegated officer considered that rainfall exceeded evaporation from June to August, that reduced wastewater was produced in winter, the applicant proposed soil moisture probes with irrigation shut down (with no details), that sufficient wastewater storage containments were on site (51 kL storage and 1.3 kL in process tank), inspection of the sprinklers and pipework's, soil type, distance to proclaimed surface water bodies, groundwater levels and, ICMS records. The delegated officer considered the risk of excessive hydraulic loading to be medium in winter from June to August.</p> <p>The delegated officer considered that the applicants' controls were not sufficient to manage the risk of excessive hydraulic loading and considered it necessary to specify the following:</p> <ul style="list-style-type: none"> No winter irrigation from June to August until the licence holder submits details of the 4 moisture probes operations. Excess wastewater to storage containments to be carted offsite by and authorised waste carrier. <p>The delegated officer applied the applicants' controls and infrastructure requirements which are considered critical for maintaining an acceptable level of risk as conditions in the licence.</p>	<p>total nitrogen and total phosphorus.</p> <p><i>Operational</i></p> <ul style="list-style-type: none"> No winter irrigation from June to August until the licence holder submits details of the 4 telemetered soil moisture probes including: <ul style="list-style-type: none"> what the soil moisture trigger value(s) are. details of how the soil moisture trigger(s) were determined. depth and location of each soil moisture sensor. sensor shut off mechanisms for irrigation. maintenance and management of the telemetered soil moisture probes. Excess wastewater to storage containments to be carted offsite by and authorised waste carrier.

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

4. Consultation

Table 7 provides a summary of the consultation undertaken by the department.

Table 7: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 31 October 2023	None received	N/A
City of Swan advised of proposal on 31 October 2023	The City of Swan replied on 23 November 2023 confirming that a valid development approval (DA967/2020) exists on the premises for beverage manufacturing or processing, that does not affect the local amenity or the locality by emissions of noise, odours, or other waste	The delegated officer notes this information.
Western Australian Planning Commission (WAPC) advised of proposal on 31 October 2023	The Chairman of the Western Australian Planning Commission informed the department on 13 November 2023 that the proposed licence application for Funk Cider to produce cider, beer, and juice, and treat wastewater through a WWTP and irrigate to land is in accordance with existing approved uses applicable to the site.	The delegated officer notes this information.
A single direct interest Stakeholder advised of the proposal on 31 October 2023	<p>Stakeholder responded on 11 November 2023 providing the following statements:</p> <ul style="list-style-type: none"> • The proposal does not have WAPC approval. • No WAPC approval for disposal of industrial wastewater. • No City of Swan approval for discharge of wastewater to land. • Building approval issued by City of Swan is invalid without approval by WAPC. • Alcoholic beverage production requires a section 40 certificate from WAPC. None has been provided. • Swan Valley Planning Scheme No 1 (SVPS) prohibits prescribed premises in the Swan valley Priority agriculture zone. • Separation distance guidelines between the development and sensitive receptors have not been implemented by DWER. • Wastewater bypasses flow meter due to leakage. • No bunding of land application area and uneven distribution of wastewater. • Ponding of wastewater during winter. • NIMP is not complied with. • Saline wastewater is discharged. 	<p>Planning matters are not for DWER to assess other than they have development approval from local government. However, DWER notes the following:</p> <ul style="list-style-type: none"> • WAPC has indicated that the proposal is in accordance with existing approved uses applicable to the site. City of Swan has issued a development approval for the beverage manufacturing facility. • SVPS allows a brewery, cidery, or distillery to operate in a priority agriculture area if the permitted use relates to the predominant use of the land. • Section 40 certificates are a matter for the City of Swan. • Separation distance guidelines are guidelines that are primarily used to guide landuse planning decisions DWER considers separation distances based on environmental risk and on a case-by-case basis. <p>The hydraulic land capability was assessed, and the hydraulic loading did not exceed land capability, indicating that bunding is not required (see section 2.6).</p>

		<p>Even coverage of the irrigation area has been conditioned. (see condition1)</p> <p>DWER has considered all sensitive residential receptors for all emissions in its assessment and has applied a risk-based assessment to regulate appropriate controls.</p> <p>DWER has assessed and conditioned where appropriate all infrastructure and operational requirements including leakage from the flow meter causing discharges of wastewater to land. Furthermore, site inspection in November 2023 indicated there were no leaks from the flow meter.</p> <p>DWER has assessed the irrigation operation including applicants NIMP, and saline wastewater quality, and has conditioned regulatory controls within the licence for nutrient loading and wastewater concentration limits. See section 2.6.2.</p>
Applicant was provided with draft documents on 30/1/2024 and follow up questions on 18 March 2024.	Applicant responded on 13 March 2024 and 5 April 2024	Refer to Appendix 1

5. Decision

Based on the assessment in this decision report, the delegated officer has determined that the proposal does not pose an unacceptable risk of impacts to sensitive receptors.

Conditions have been imposed on the works approval based on the applicants' controls described above as they are considered reasonable and appropriate to maintaining an acceptable level of risk.

To address the potential for impacts to water resources from continued irrigation of salt and nutrient enriched wastewater, and to enable proactive management to protect the downgradient proclaimed water resources, several regulatory controls in addition to the applicant derived controls have been imposed on the works approval.

A licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 3 Primary Industries.
2. City of Swan, 2021, *Development approval for Lot 123 Swan Street, Henley Brook, DA967/2020, issued 7 July 2021*, Midland, Western Australia
3. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
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5. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
6. DWER 2022, WQPN 73 – Wineries and distilleries, Perth, Western Australia 7. Environmental Protection Authority, 2016,
7. DWER 2022, *FBROS Pty Ltd Works Approval W6679/2021/1 and Decision Report issued 1 December 2022*. Perth Western Australia.
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11. Environmental Protection Authority (EPA) 2005, *Guidance for the Assessment of Environmental Factors – Separation distances between Industrial and Sensitive Land Uses*, Perth, Western Australia.
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13. Environmental protection Authority (EPA) Guideline for Wineries and Distilleries, Adelaide, South Australia
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15. NSW Department of Primary Industries 2016, *Primefact1344: Interpreting water quality test results*, Sydney, New South Wales NSW Environmental Protection Authority (EPA) 1998, *Environmental & Health Protection Guidelines: On site sewerage management for single households, NSW EPA Technical Guidelines*
16. US Environmental Protection Authority (EPA), 2006, *Process design manual, land treatment of municipal wastewater effluent, Report EPA/625/R-06/016*.

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

Condition	Summary of applicant's comment	Department's response
Licence		
Condition 1 Table 1 Infrastructure and equipment requirements Item 1	Funk cider has concerns on the requirement of western roller doors being closed when canning brewery operations were undertaken and accepts this condition as long as door can open for allow forklift operations (exits and enters).	Noted.
Condition 1 Table 1 Infrastructure and equipment requirements Item 3	The 2x 23 kL water storage tanks should be deleted as they are a duplicate of the 2x 23 kl balance tanks with pumps. This does not affect the Decision Report (section 2.6.2) holding capacity assessment.	This is noted and considers that the storage may impact on wastewater processing, noting that excess wastewater must be removed from site (item 3j)
Condition 1 Table 1 Infrastructure and equipment requirements Item 4	The applicant does not agree to no winter irrigation. The applicant will install four telemetered soil moisture probes at four sites across the irrigation area. The probes will be positioned at 200, 500 and 1000mm below ground and measure moisture, pH and EC. Visual inspections of the irrigation area to ensure excessive irrigation beyond irrigation area will occur.	The delegated officer considers that telemeters moisture probes can prevent hydraulic loading. However, the applicant did not provide critical details of the moisture probes operations. The licence will be updated to include: No winter irrigation from June to August until the licence holder submits details of the 4 telemetered soil moisture.
Condition 1 Table 1 Infrastructure and equipment requirements Item 5	The applicant provided information that clay/gravel covered the bitumen hardstand and that a drain directed leachate to the WWTP. That solid bin could not be stored in the storage area for health reasons, that lids on solid waste bins was cost prohibitive and roof area to be unfeasible. The bins would be double plastic lined and removed twice week in summer once week in winter to reduce odours.	The delegated officer considers in summer fruit solid waste will decompose within 2 days and cause odour and will impose conditions in respect to waste pulp storage: