Amendment Report

Application for a Licence Amendment

Division 3, Part V *Environmental Protection Act 1986*

Licence number	L8081/2006/4
Licence holder	Summer Honey Pty Ltd
ACN	141 194 947
File number	ILS2014/000016-1
Premises	Boston Brewing Co at Willoughby Park 678 South Coast Highway, HAY, WA 6333 Legal description Lot 42 on Plan 93593 As defined by the premises maps in Schedule 1 Prescribed premises
Date of report	30/06/2025
Decision	GRANTED

1. Amendment description

This amendment is made pursuant to Section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the existing licence issued under Part V, Division 3 of the EP Act. This notice of amendment is hereby given under Section 59B(9) of the EP Act.

In completing the assessment documented in this report, the department 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.

1.2 Background

Licence L8081/2006/3 (licence) is held by Summer Honey Pty Ltd (licence holder) for the operation of Boston Brewing Co at Willoughby Park (the premises), located at Lot 42 on Plan 93593 and Lot 1 on Plan 72333, 678 South Coast Highway, Hay which is about 2.6 km east from the nearest town of Denmark.

The premises relates to Category 25 with an assessed production capacity of not more than 1,340 kilolitres (kL) of beer/ready to make alcoholic beverages produced per year (840 kL beer and 500 kL ready to make beverages), under Schedule 1 of the Environmental Protection Regulations 1987 (EP Regulations) which are defined in licence L8081/2006/4.

The licence includes two adjacent properties, Lot 42 on Plan 93593 and Lot 1 on Plan 72333 owned by Timiama Nominees Pty Ltd.

- Lot 42 on Plan 93593 contains the brewery and bottling buildings, wastewater treatment system (WWTS) and approved wastewater irrigation areas L1 and L2.
- Lot 1 on Plan 72333 contains proposed irrigation area L3 - 0.99 ha of proposed citrus trees (yet to be planted) treated with amended soils

2. Proposed amendments

On 29 August 2024, the applicant submitted an application for a licence amendment to the department under Section 59B of the *Environmental Protection Act 1986* (EP Act). The application sought the following changes:

Wastewater Treatment System (WWTS) upgrades

- Inclusion of a Pewe screen
- Removal of the proposed 35,000 L trickling tank and 1.5 kW floating aspirator from the current proposed WWTS and conversion of one of the two existing 100,000 L tanks, currently used as settling/aerobic tanks, to be used as a pH control/equalisation tank
- Addition of one 'BioGill® Ultra unit' (BioGill unit) to be installed between the two 100,000L tanks to achieve a much more effective treatment process to the brewery wastewater that is expected to result in improved effluent quality and reduced sludge production.
- The application states that the BioGill unit is a non-submerged bioreactor system for highly effective reduction of soluble BOD and is expected to digest most of the soluble BOD and remove about 85% of total nitrogen and phosphorus from wastewater. The BioGill unit is designed for modularity, therefore once it is installed, the system can be easily adjusted by BioGill making it simple to expand the system if the facility increases capacity in the future.

Changes to wastewater flow:

Wastewater will first flow through a pewe screen before entering the 2,500 L sludge tank. From there, the wastewater will be directed through an equalisation and pH control tank whereby wastewater will be pumped through an external centrifugal pump to pull water from the tank to

the pH adjustment skid, with a target pH range from 6.5 to 8.5.

A tee will branch off the pipeline before the pH adjustment skid to direct wastewater to the BioGill unit. A manual ball valve will be used to modulate the flow of wastewater from the pipeline tee to the BioGill unit.

Wastewater will then flow to the 500,000 L effluent tank, followed by the 500,000 L storage and recirculation tank. The storage and recirculation tank will also direct sludge to the 4,000 L sludge tank. Finally, treated wastewater will be directed from the storage and recirculation tank through a flow meter, and then pass through a one-way flow valve to be discharged to the irrigation area.

A summary of the new WWTS flow diagram is presented in the amended licence.

Brewery production and cannery shed upgrades

- The four-head canning line will be removed and replaced with a six-head canning line
- Increase in number of 8,000 L canning storage tanks to five
- Addition of 1 x 2,000 L bright tank for carbonation (i.e. two in total)
- Addition of a Tunnel Pasteuriser for closed packing pasteurisation with pre-rinse functions

Changes to the premises boundary

Removal of Lot 1 on Plan 72333 from the prescribed premises which includes the removal of wastewater irrigation area L3 (0.99ha), and the relocation of monitoring well (MW03) from the Licence.

On 03 April 2025 and 29 May 2025, the licence holder requested the following additional changes to the application (further discussed in Appendix 1):

- An assessed production capacity of 567 kL per annual period (210 kL) and ready to drink beverages (357 kL).
- Relocation of the land application area L2 from the northern side of the premises to the existing vineyard.
- Change in wastewater treatment infrastructure from the 'BioGill® Ultra unit' to a 5 tower BioGill treatment system and the inclusion of three new sumps, three new wastewater tanks.
- Installation of the proposed brewery infrastructure 6 head canning line, canning storage tanks, bright tank, and tunnel pasteurizer.

3. Irrigation of brewery wastewater to land

3.1 Winter storage – water balance

During the 2023 reporting period, the licence holder identified that 5,319 kL of treated wastewater was removed offsite for disposal, as no wastewater irrigation occurred during that time (2023 AER). Based on this data, it is estimated that the premises' operations produced 5,319 kL of treated wastewater annually.

In accordance with the licence, irrigation is not permitted between 1 June and 31 August. Based on the treated wastewater data from the 2023 AER, the premises produced about 1,438 kL of treated wastewater during this period. Furthermore, the licence allows for a maximum of 200 kL of irrigation during May and September, which would require an estimated additional storage capacity of about 551 kL (2023 AER).

Based on these calculations, the premises' WWTS must be capable of storing at least 1,989

kL during the period from 1 May to 30 September. To account for a 15% buffer within the storage tank, the WWTS should have a minimum storage capacity of 2,288 kL for this period.

Additionally, prior to the winter period (before 1 May), the licence holder must ensure that all treated wastewater storage tanks are emptied to allow for the storage of up to 2,888 kL.

For the detailed calculations referenced above, please refer to Appendix 2 – Winter Storage Water Balance.

3.2 Hydraulic loading

An important factor in determining if an area of land is sufficient for wastewater disposal through irrigation is by calculating the hydraulic load. This can indicate if the irrigation wastewater is able to be adequately taken up by vegetation or meditated in the soil profile to a level in which it does not cause contamination or seepage to below the root zone and into groundwater or surface runoff into nearby receptors. A hydraulic loading test can be used in determining the area of land suitable using the following equation in Appendix 1 (US EPA, 2006). Results are summarised in Appendix 1.

Two scenarios were calculated, one using a generic pasture hydraulic loading rate of 4 cm/week and a generic forest loading rate of 2.5 cm/week with an irrigation flow rate of 5.16 kL/day. The period of irrigation is 39 weeks of the year, which excludes the period of heavy rainfall between 1 June and 31 August. This formula can also be re-arranged to determine the maximum flow rate of treated wastewater that can be applied to the irrigation area (1.43 ha) without exceeding the carrying capacity from the hydraulic loading.

Even under a conservative approach, the land required at the current irrigation flow rate of 5.16 kL/day is 0.1207 ha and a maximum flow rate of 61.12 kL/day (considering there is no irrigation during June, July and August, and a maximum irrigation of 200 kL per month during May and September), producing a maximum total annual irrigation of about 14,791 kL (*Total Annual Irrigation = Q X Number of Days Irrigation Occurs in Year).* In a scenario using these assumptions the proposed land area and flow rate are deemed to be sufficient for hydraulic loading.

Irrigation is not authorised during the winter months between 1 June and 31 August (inclusive) and is limited to 200 kL of wastewater application during May and September.

Irrigation must also not be undertaken 12 hours before, during, or 24 hours immediately after a rainfall event of over 2 mm.

4. Consultation

Shire of Denmark

The department consulted with the Shire of Denmark (the Shire) on 17 September 2024. Comments were received on 18 September 2024 outlining that the proposal is consistent with planning approvals granted, however, notes the new WWTS will be subject to approval by the Department of Health.

Licence holder

The licence holder was provided with a draft amended licence and amendment report on 16 January 2025. The applicant provided comment on 03 April 2025 and 29 May 2025. The licence holder's comments and requested changes are summarised in Appendix 1 and the updated NIMP and water balance is discussed in 4.1 below.

The department considered the comments resulting in a further revised licence and decision report being provided to the licence holder for comment on 17 June 2025. On 26 June 2025, the licence holder provided minor changes including using an existing 500 kL wastewater storage tank, description of irrigation infrastructure and updated figures.

4.1 Review of updated NIMP and water balance

As part of the applicant's response to the draft licence and decision report a NIMP and water balance was submitted for the change in the proposed new wastewater irrigation area. The delegated officer noted the following:

- Change of the location of L2 from the north of the premises above L1 to the vineyard area below L1.
- L2 would be irrigated to vines and kikuyu grass in between the rows of vines.
- Beer wastewater to beer production was a ratio of 4L:1L and ready to make alcohol production wastewater to production was a ratio of 0.5L:1L.
- 1,900 L of daily treated wastewater irrigation would occur in months May – August where rainfall as inputs exceeded outputs.
- The water balance for beer and ready-to-make alcohol production is based on the varying monthly production volumes, rather than an average daily production over the annual period.
- Nutrient uptake of nitrogen and phosphorus by the crops in the irrigation areas is a consistent value every month. This does not factor in the two different crops planted in each area with varying nutrient uptake values and varying growth periods.
- In the supporting information nitrogen uptake by the olive grove and the vineyard are different from the values used in the nutrient offtake.
- Unclear biomass management for the removal of the nutrients from the irrigation area.
- Drip irrigation infrastructure will be used to irrigate treated wastewater. It's noted that under poor management and high nutrient levels in treated wastewater, drip irrigation can be highly susceptible to clogging (Capara & Scicolone 2007).

5. Decision

<u>Reduction of wastewater irrigation area, removal of L3 and relocation of MW03</u>

Based on the hydraulic loading assessment, the delegated officer considers that the proposed reduced irrigation area can be managed to ensure excessive hydraulic loading does not occur. However, the delegated officer is unable to confirm that the premises has adequate winter storage capacity for the non-irrigation periods.

Based on the winter storage water balance calculations, the premises may require at least 2,288 kL storage capacity for the non-irrigation period of 1 May to 30 September.

To address the potential risks from inability to store 2,888 kL of treated wastewater during from 1 May to 30 September, the licence holder has indicated plans to install additional wastewater storage infrastructure.

The delegated officer also considers that the required soil, wastewater and groundwater monitoring within the licence will act as appropriate regulatory controls to manage hydraulic loading within the premises irrigation zone. Limitations to mitigate harm to the environment and nearby receptors from overland flow and nutrient leaching through the soil profile (Condition 1, Table 1(5)) have already been included on the licence upon granting of the premises operations. This is contingent on the licence holder installing a new monitoring well within the new irrigation zone (see Department initiated amendments below). The hydraulic loading calculations (Appendix 1) confirm that the proposed land area and flow rate are adequate to prevent excessive loading.

The licence holder also has the option to tanker excess liquid waste to a local licensed liquid

waste facility.

Department initiated changes

Conditions 6, 7 and 8- New Groundwater monitoring well MW03

The removal of L3 (0.9 ha) will result in the removal of Groundwater monitoring well (MW03) which is located within L3. Since groundwater monitoring is crucial for tracking potential contamination from wastewater it's important the licence holder installs a new monitoring well at the lowest geodetic gradient within the premises irrigation zone to replace MW03. The delegated officer has added additional regulatory control being the installation of a new monitoring well (and any additional GW monitoring requirements).

Condition 12, Table 6 - Monitoring of ambient soil

The delegated officer identified deficiencies in soil monitoring requirements and therefore has made changes to condition 12, Table 6: Monitoring of ambient soil concentrations. The deficiencies (and subsequent changes) relate to:

- Total Nitrogen and Total Phosphorus has been requested to be measured, but the critical parameter of plant available nitrogen and plant available phosphorus, respectively, has not been requested and therefore has been added into the monitoring table requirements.
- Phosphorus Buffer Index (PBI) has been requested but the specific method is not specified and therefore the PBI soil test method was included.
- Sodium, Calcium and Magnesium has been requested to be reported in the units mg/kg, instead of the standard units for soils exchangeable cations of cmol(+)/kg. The units can be converted, but this not a standard process for these elements. These elements don't need to be reported; it is Cation Exchange Capacity (CEC) and Exchangeable Sodium Percentage (ESP%) that are derived from the measurement of these elements that are the critical parameters. Therefore, the licence holder is now required to report on the soil CEC and ESP%.
- Sodium Adsorption Ratio (SAR) is generally not a measure of soil quality but rather is usually measured on wastewater. The critical parameter for soil is Exchangeable Sodium Percentage (ESP%), therefore the licence holder is now required to report Cation Exchange Capacity (CEC) converted to Exchangeable Sodium Percentage (ESP%).

The delegated officer has decided to update the location, parameters, units and frequency for improvements to the accuracy and feasibility of ambient soil monitoring in now condition 12, Table 5 of the licence.

Condition 17, Table 7- Annual Environmental Report (AER)

In addition, the delegated officer proposes to amend the AER reporting requirements in condition 17, Table 7, to include monthly photographic evidence of the irrigation flow meter, illustrating the date, the flow meter serial number and flow meter reading. The inclusion of monthly photographic evidence of the flow meter is necessary to ensure verification of flow readings and accurate recording of the volume of wastewater irrigated to land, improving the department's oversight of wastewater discharges.

Additional changes

In amending the licence, the delegated officer has also updated the licence history table, definitions table and premises maps, revised and realigned condition numbers for numerical consistency and corrected any clerical mistakes and unintentional errors.

7. Summary of amendments

The table below provides a summary of the proposed amendments and will act as a record of implemented changes. All proposed changes have been incorporated into the revised licence as part of the amendment process. A summary of the amendments is provided in Table 2 below

Table 2: Summary of amendments

Condition no.	Amendments
1, Table 1- 5(a)	Condition removed and irrigation area references updated to reflect new irrigation area and location
1, Table 1- 6	Reference to MW03 amended to as installed
2, Table 2- 5 & 6	Conditions removed due to referencing L3.
2, Table 2	WWTP and irrigation infrastructure added into works table.
5, 6, and 7	Groundwater monitoring well construction and compliance conditions added
8, Table 3	Removed L3 and added new limit (SAR)
9, Table 5	Monitoring of ambient soil updated
11, Table 6	MW03 reference amended as a new groundwater monitoring bore (once installed)
17, Table 7	AER reporting updated to reflect new irrigation zone, biomass remova and AER reporting requirement added regarding monthly photographic evidence for flow meter.
Definitions, Table 8	Organochlorines (OC) and Organophosphates (Ops) definitions included. Mature citrus trees definition removed, due to removal of L3.
Schedule 1: Maps	Premises maps updated, WWTP flow diagram and Figure 3- monitoring well installation added

8. Conclusion

Based on this assessment, it has been determined to amend the existing licence, subject to conditions which commensurate with the determined controls and are necessary for administration and reporting requirements.

9. References

1. **Capara, A & Scicolone, B** (2007), *Recycling of poor quality urban wastewater by drip irrigation systems*, Journal of Cleaner Production, vol 15.
2. **Department of Water and Environment Regulation** (2017). *Guidance Statement: Risk Assessments*, Perth, Western Australia.
3. **Department of Water and Environmental Regulation** (2019). *Guideline: Decision Making*, Perth, Western Australia.
4. **GHD Group Pty Ltd** (2023). *Boston Brewing Co. (Denmark) Annual Environmental*

Report (AER). Received 13 March 2024, Perth, Western Australia.

5. **GHD Group Pty Ltd** (2024). *Application Documents.* Received 29 August 2024, Perth, Western Australia.
6. **GHD Group Pty Ltd** (2022). *Boston Brewing Co. - Wastewater Management System Nutrient and Irrigation Management Plan- Summer Honey Pty Ltd.* Received 4 March 2022, Perth, Western Australia.
7. **Shire of Denmark** (2024). *E-mail dated 18 September 2024.*
8. **With Water** (2025), *21-day Draft Licence and Amendment Report Updated Response.* Received 29 May 2025, Perth, Western Australia.

Appendix 1:

Document reference	Summary of applicant's comment	Departments response
Licence		
Assessed production capacity on page 1.	Reduce the assessed production from 1,340 kL to 567 kL per annual period.	The reduction in the assessed production capacity will reduce the environmental risk and is accepted.
Condition 1, Table 1: Infrastructure and equipment requirements.	***Row 3, Wastewater treatment system*** i. Installation of a 1 kL sump for collection of waste prior to diversion to treatment. ii. pH correction and buffering tank now 4 kL not 100 kL. iii. 27 kL waste tank to be installed with a recirculation pump to return liquid back to the beginning of the WWTS leaving only sludge waste for offsite disposal. iv. The sludge is recorded off a water meter in order to not need to rely on trade waste contractor for volume recording.	The delegated officer notes the update to the infrastructure of the WWTP and has added the infrastructure in points i., ii., and iii. to condition 2, Table 2. Point iv., has been noted.
	Row 5, Irrigation area Change the irrigation area replacing the proposed area of L2 from a grass pasture to the north of the premises with the vineyards below L1 (olive trees) increasing the total irrigation area from 1.43 ha 1.9 ha. A NIMP and water balance was provided as supporting information. Applicant can carry out soil sampling if amendment is granted.	The delegated officer considers that the change in crop and increase in size of the irrigation area will reduce the environmental risk of treated wastewater irrigation to land. A lack of information is noted on the soil quality with the applicant stating that soil sampling can be requested. The NIMP and water balance are discussed in Section 4.1 of the decision report. The delegated officer has determined that due to the lack of information submitted in the 21-day response and that new irrigation area L2 has not

		been included as part of the original application and wasn't assessed in the draft decision report, a works condition for the construction of the irrigation infrastructure will be included in the amended licence. It's also suggested that if the applicant wants to amend conditions relating to emission limits and monitoring then this may require it to be backed up by an updated NIMP.
Condition 2, Table 2: Installation requirements	***Item 5, BioGill® Ultra unit and Pewe screen*** The applicant will not go ahead with the installation of the infrastructure and instead has reduced the annual production of beverage and has instead installed a 5 tower system. Replace PEWE screen with AWWS Auto-Rinse GreyFlow Pro	The works condition has been amended with the 5 tower system replacing the BioGill® Ultra unit and Pewe screen infrastructure.
	Item 6, Six-head canning line, storage tanks, bright tank and tunnel pasteuriser. The applicant has installed the infrastructure and provided images and signature as part of the 21-day response.	The item in the works condition is removed and the infrastructure has been added to the infrastructure table in condition 1.
Conditions 5, 6 and 7.	***Installation of monitoring well*** The applicant stated that 3x groundwater monitoring wells had been installed citing a document submitted by GHD demonstrates compliance for the conditions.	The GHD document demonstrated compliance for the three existing monitoring wells included in the previous licence but does not include compliance for the newly proposed monitoring well (MW03). The delegated officer has determined not to remove the conditions until compliance is demonstrated for MW03.
Condition 8, Table 3: Emissions and discharges.	***Use of potassium hydroxide as a cleaning agent instead of sodium hydroxide.***	The change in cleaning agent is noted by the delegated officer. Due to this change and likely increase in potassium concentration in the irrigated

	The applicant has started to use potassium hydroxide in replacement of sodium hydroxide in order to manage the SAR in the treated wastewater.	wastewater, potassium has been added as a parameter.
Condiiton 10, Table 5: Monitoring of ambient soil.	***Field measurement of texture using the hand bolus method*** That the soil description is not going to change much over one year. To achieve a consistent soil description BBCo would have to use the same person who is qualified to assess the soil by the Bolus Method and a sample from the same soil location every year. It's proposed that soil texture in the vineyard, if granted, will be determined by soil sampling. It's requested that this parameter be removed from the licence.	The delegated officer agrees with the operational challenge and accepts that soil texture will be removed from the monitoring requirements.
	Sampling of each major soil horizon must occur to 1 metre depth. The new irrigation areas are both within close proximity to each other and only cover an area that is 210m long x 87m wide. The soils appear homogenous through this part of the property. But, the soils will be tested if DWER approves BBCo request to irrigate to this area. It's requested that this condition can be deleted or put "on hold" until we have the soil report as it might be a waste of BBCo's money and resources.	The delegated officer disagrees with the reasoning to remove the soil sampling requirements from the licence. This is due to the lack of soil quality information and two different crops being irrigated with treated wastewater which take up varying amounts of nutrients. It's noted that once the soil monitoring data has been submitted to the department the licence holder may look to request changes to the licence based on the results.

Appendix 1: Nutrient and Hydraulic loading calculations

Hydraulic loading calculation

Formula	$A = (3.65 \times Q) / (L \times T_{app})$ [1] Where A = land area Q = flow rate of wastewater L = wastewater hydraulic loading to soil T_{app} = period of wastewater application per year	
	$Q = (A \times L \times T_{app}) / 3.65$ [2]	
Flow rate of wastewater (kL/day)	5.16	
Wastewater hydraulic loading to soil (cm/week)	4	2.5
Period of wastewater application per year (weeks)	39	
Land area (ha)	1.43	
A = Land area (ha) [1]	0.1207	0.1932
Q- Flow rate (kL/day) [2]	61.12	38.20

Appendix 2: Winter storage water balance

Monthly breakdown of treated wastewater production (2023, AER)

Table 4 Monthly breakdown of offsite wastewater disposal

Month	Monthly volume (kL)	Cumulative volume (kL)
January	57	57
February	88	145
March	99	244
April	82	326
May	21	347
June	80	427
July	60	487
August	37	524
September	80	604
October	57	661
November	40	701
December	95	796
Table notes: ND = no data		

Treated Wastewater calculations

- Total estimated treated wastewater production per year:

  Sum of cumulative volumes from January to December 2023 = **5,319 kL**
- Total treated wastewater production during non-irrigation period (June to August):

  Sum of cumulative volumes from June to August = **1,438 kL**
- Total treated wastewater production for storage during May and September:

  Sum of cumulative volumes for May and September minus the maximum irrigation of 200 kL during these months = **551 kL**
- Total treated wastewater storage required during non-irrigation period:

  Total for June to August + Storage required for May and September

  = 1,438 kL + 551 kL = **1,989 kL**

  Adding a 15% buffer for storage:

  1,989 kL × 0.15 = **298.35 kL**

  Total storage required = 1,989 kL + 298.35 kL = 2,287.35 kL

  Rounded to the highest whole number: **2,288 kL**