



## Application for a licence amendment

### Division 3, Part V *Environmental Protection Act 1986*

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<b>Licence number</b>	L9413/2023/1
<b>Licence holder</b>	FBROS Pty Ltd
<b>ACN</b>	634 416 078
<b>File number</b>	DER2023/000675
<b>Premises</b>	Funk Cider 2.0 38 Swan Street, HENLEY BROOK, WA 6055 Legal description Lot 123 on Plan 3820 As defined by the premises map in Schedule 1
<b>Date of report</b>	25 November 2024
<b>Decision</b>	Granted

## 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 the EP Act for a prescribed premises as set out below. 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>.

## Background

Licence L9413/2023/1 is held by FBROS Pty Ltd (Funk Cider; licence holder) for the operation of Funk Cider 2.0 (the premises), a brewery and fruit juice producer, located at 38 Swan Street in Henley Brook, WA 6055. The premises relates to categories and respective assessed design capacity under Schedule 1 of the Environmental Protection Regulations 1987 (EP Regulations), defined in the existing licence L9413/2023/1.

In 2021 the applicant received planning approval for a 'microbrewery' and commenced construction of the brewery.

On 3 February 2022 the department wrote to the applicant advising them of their licensing obligations under the EP Act, recommending that they submit a works approval application for the establishment of a brewery, including the construction of a beverage manufacturing wastewater treatment plant (WWTP) 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.

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

## Proposed amendments

A licence amendment application was received by the department on 26 August 2024 to replace wastewater irrigation limitations with soil saturation monitoring requirements.

An addendum to the application was received on 30 October 2024 seeking to add two beer production vessels and one carbonation/brite tank to the licence.

### Addendum - Addition of Works condition for production vessels

The licence holder is seeking to add additional production vessels. The vessels are proposed to enable a greater range of products to be produced onsite without increasing the production volume.

The proposed additional vessels are:

Carbonation / brite tanks:

- 3 x 950 L

Beer production consisting of:

- 2 x 3,750 L Uni-tanks
- 2 x 1,875 L Uni-tanks

### Replace wastewater irrigation limitations with soil saturation monitoring requirements

The licence holder is seeking approval to replace wastewater irrigation limitations in condition 1,

Table 1, 4(b) of the original licence, with soil saturation monitoring requirements, whereby irrigation will cease if free-flowing water is detected within 1 metre below ground level (mBGL).

Soil saturation is proposed to be monitored (at least once within every 24-hour period) within four irrigation zones (1, 2, 3, 4) through four related observation wells (OW1, OW2, OW3, OW4). If free-flowing water is detected in an observation well within 1 mBGL by the leak detection tape sensor, irrigation will cease in the related irrigation zone. Supporting information provided by the applicant regarding the proposed monitoring technology, satisfied the requirements of condition 1, Table 1, 4(c), as stated in correspondence to the licence holder dated 22 May 2024. Conditions are proposed to be added into the table to authorise the OW's construction and design, and irrigation control and monitoring technology.

The proposed irrigation control technology for soil saturation monitoring will have the following capacity:

- 4G connection to the Internet-of-Things (IoT);
- Collection of sensor reading hours, with the capacity to detect the presence of water in each OW at a depth of 1 mBGL;
- Logging/recording by Innovation Industries Pty Ltd. of the days that groundwater is detected in each OW;
- A web interface that allows the user to log in to see if the sensor has detected groundwater in OW; and
- Capacity to send email alerts if water is detected in an OW.

Soil saturation monitoring requirements for the four OW's are proposed to be added into condition 5, Table 5: Groundwater monitoring to detect 'standing water' at or below 1 mBGL, at least once every 24 hours.

Removal of condition 1, Table 1, 3(a)

The premises beverage production WWTP has two 23 kL balance tanks with lift pumps, that can accept up to 46 kL of wastewater per day, which is significantly greater than 4,631 L per day. The licence holder proposes to remove condition 1, Table 1, 3(a) as flow balancing is unlikely to be a constraint and therefore does not require a related flow rate limiting condition.

Wording change of condition 1, Table 1, 4(c)

The licence holder proposes to amend the irrigation limitation in condition 1, Table 1, 4(c) of the original licence, from "Irrigation is not undertaken 12 hours before, during, or 24 hours immediately after a rainfall event over 2 mm" to "Irrigation is not undertaken during, or 24 hours immediately after a rainfall event over 2 mm", as the licence holder is unable to accurately predict when a rainfall event will occur.

Additional Annual Environmental Report (AER) Reporting requirements

The licence holder proposes to report the number of days that soil saturation is present and to provide a summary of recommendations based on the review of all monitoring data collected, upon submission of their AER.

A summary of the requested amendments is presented in Table 1, below:

**Table 1: Summary of requested amendments:**

Condition no.	Proposed amendments (from application)
1, Table 1	Works conditions to be added for proposed additional vessels (addendum)
1, Table 1, 1	Additional vessels to be added into the infrastructure table (once installed)

1, Table 1, 3(a)	Remove condition
1, Table 1, 4(b)	Telemetered soil moisture probe requirements to be removed
1, Table 1, 4(b)	Proposed wording change
1, Table 1, 4(c)	Condition to be added to ensure irrigation must cease if free water is detected within 1 mBGL in the respective OW
1, Table 1, 5(a) to (h)	Well design and construction and irrigation control conditions to be added
2	Works notification requirement condition included regarding proposed works condition (condition 1)
5, Table 5	Monitoring of OW's soil saturation to be added
13, Table 6	Report on number of days that soil saturation is present and summary of recommendations
Schedule 1	Premises maps to be updated

## Decision

The Delegated Officer has determined the proposed changes to the licence as part of this amendment, is unlikely to result in changes to the premises' overall risk profile, therefore, the risk assessment has not been re-assessed as part of this amendment.

### Licence holder-initiated amendments

#### Addendum - Addition of Works condition for fermentation vessels

The Delegated Officer approves the proposed changes. Works conditions (new condition 1, Table 1) have been added to the licence and. New condition 2 has been added into requiring the licence holder to notify the CEO once the infrastructure has been constructed or installed in accordance with condition 1.

#### Replace wastewater irrigation limitations with soil saturation monitoring requirements

The Delegated Officer has determined to approve the proposed changes to replace wastewater irrigation limitations with soil saturation monitoring requirements, based on conditions which commensurate with appropriate regulatory controls. Condition 3, Table 2, 4(c) and 5(a) to (h) and have been added into the licence to require the maintenance and proper functioning of irrigation control equipment and observation wells. These measures are intended to monitor soil saturation and ensure that irrigation ceases if free water is detected within the relative irrigation zone. Condition 5, Table 5 now condition 7, Table 6: Monitoring of groundwater and soil saturation, has been updated to include monitoring of soil saturation in the OW's.

#### Removal of condition 1, Table 1, 3(a)

The Delegated Officer has decided to reject the proposed changes to remove requirement 3(a) from now condition 3, Table 2 of the Licence. This is because this condition was put on the licence to align with the Department of Health's (DoH) *'approval to construct or install an apparatus for the treatment of sewerage'* on 10 August 2022 authorising a maximum wastewater treatment rate of 4,631 L per day.

#### Wording change of condition 1, Table 1, 4(b)

The Delegated Officer has decided to approve the proposed wording change in now condition 3,

Table 2, 4(b) due to the licence holder's inability to predict when it is going to rain. The condition has changed from "Irrigation is not undertaken 12 hours before, during, or 24 hours immediately after a rainfall event over 2 mm" to "Irrigation is not undertaken during, or 24 hours immediately after a rainfall event over 2 mm."

#### Addition of AER reporting requirements

The department accepts the AER reporting requirement for the number of days that soil saturation is detected and to provide a summary of recommendations based on the review of all monitoring data collected and have added these requirements into condition 13, Table 7.

#### **Department Initiated amendments**

The Delegated Officer identified deficiencies in soil monitoring requirements and therefore has made changes to Condition 4, Table 4: Monitoring of ambient soil. The deficiencies (and subsequent changes) related 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
- Total Kjeldahl Nitrogen and Sodium Adsorption Ratio (SAW) normally measured on wastewater, not soil, so this requirement has been removed from soil monitoring requirements.
- Phosphorus Buffer Index has been requested but the specific method is not specified
- The correct measure of salinity (i.e. salts) is the units dS/m (or equivalent)
- 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
- Sodium Adsorption Ratio (SAR) cannot be measured on soil. The property is measured on wastewater. The critical parameter for soil is Exchangeable Sodium Percentage (ESP%)
- The sampling method is composite samples across the irrigation area, however this will have the effect of averaging any high ESP%, EC or pH values and this will make it impossible to identify any high values, if they exist.
- Soil profile samples have not been requested, only discrete depths (i.e. 0 to 100mm and 400 to 500mm) – this makes it impossible to determine the amount of available nutrients stored in the soil profile.

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 6, Table 5 of the licence. In amending the licence, the Delegated Officer has also revised and realigned condition numbers for numerical consistency, removed redundant conditions 8 and 9 from the original licence due to noise reporting requirements satisfied (correspondence dated 29 October 2024), updated 'Schedule 1- Maps' and corrected clerical mistakes and unintentional errors.

In addition, the Delegated Officer proposes to amend the AER reporting requirements in condition 13, Table 6, 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.

## Consultation

A direct interest stakeholder made a submission on 10 September 2024 on the application. A summary of the submission and the Departments response is outlined in Appendix 1.

The Department referred the draft licence and decision report to the licence holder. The licence holder provided its comments on 22 November 2024 requesting that the licence be issued as soon as possible..

## Summary of amendments

The below table 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 are provided in Table 3 below.

**Table 3: Summary of amendments:**

Condition no.	Amendments
1, Table 1	Works condition added for proposed additional vessels (addendum)
1, Table 1, 1	Infrastructure added into Table 2 (once installed)
1, Table 1, 3(a)	Condition removed from unamended licence
1, Table 1, 4(b)	Telemetered soil moisture probe requirements removed from the unamended licence and replaced with soil saturation monitoring requirements
Condition 3, Table 2, 4(b)	Proposed wording changed
3, Table 2, 4(c)	Soil saturation monitoring conditions added
3, Table 2, 5(a) to (h)	Well design and construction and irrigation control conditions added
2	Works – Notification requirement added
6, Table 5	Monitoring of ambient soil in Table 5 updated
7, Table 6	OW monitoring added
13, Table 7	AER reporting requirements regarding soil saturation detecting, recommendations and monthly photographic evidence for flow meter, added
Schedule 1	Premises maps updated, Figure 1 amended and Figures 2 and 3 added

## Conclusion

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

## References

1. **Bureau of Meteorology** (2024). *Daily rainfall for Millendon (Swan Valley) (nearest weather station to Henley Brook, about 10 km)*. (BOM) Daily Rainfall data – Millendon (Swan Valley). Viewed 15 November 2024, [http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p\\_nccObsCode=139&p\\_display\\_type=dataFile&p\\_stn\\_num=009281](http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_stn_num=009281).
2. **Department of Water and Environmental Regulation** (2024). *E-mail titled “Licence L9413/2023/1 – winter wastewater irrigation”*. Sent 22 May 2024, Perth, Western Australia.
3. **Enviro Consulting** (2024). *Addendum to Amendment Application, titled RE: APPLICATION FOR AN AMENDMENT TO LICENCE L9413 – Funk Cider 2.0*. Received 30 October 2024, Perth, Western Australia.
4. **Enviro Consulting** (2024). *Application Documents*. Received 26 August 2024, Perth, Western Australia.
5. **Enviro Consulting** (2024). *E-mail dated 17 October 2024, titled RE: Funk Cider Licence L9413 – October 2024 routine soil analysis*.
6. **Enviro Consulting** (2024). PDF document titled ‘*Groundwater Monitoring – September 2024*’. Received 21 November 2024, Perth, Western Australia.
7. **Enviro Consulting** (2024). *Photograph attachment in e-mail dated 20 November 2024, titled “Photo 3 – Soil core.jpg”*. Perth, Western Australia.
8. **Nearmaps** (2024). *Aerial Imagery for 38 Swan Street, Henley Brook, WA 6055*. Viewed 15 November 2024, [https://apps.nearmap.com/maps/#/8sn9jfQ-Q-i\\_aQUz79HZWQ/@-31.7997852,116.0018010,22.23z,0d/V/20241027](https://apps.nearmap.com/maps/#/8sn9jfQ-Q-i_aQUz79HZWQ/@-31.7997852,116.0018010,22.23z,0d/V/20241027).
9. **Stakeholder response** (2024). *PDF document*. Received 28 September 2024, Perth, Western Australia.
10. **Environment & Health Protection Guidelines** (2023). *Onsite Wastewater Management Guidelines*. June 2023. Viewed 14 November 2024, <https://www.olg.nsw.gov.au/wp-content/uploads/2023/06/Draft-update.pdf>.

## Appendix 1: Consultation

Table 4 below provides a summary of the consultation undertaken by the department regarding this amendment application.

**Table 4: Consultation**

Parties consulted	Summary of comments received 29/09/2024	Department's response
<p>The department referred the application to a direct interest stakeholder (nearby resident) on 10 September 2024.</p>	<p>The stakeholder's response expressed concerns regarding:</p> <ul style="list-style-type: none"> <li>(a) High salinity levels of the irrigated wastewater. The irrigation zone lies within the Leederville and Yarragadee aquifers in Perth. In accordance with the Water Allocation Policy, "water with a salinity of over 2,000 mg/L TDS is not suitable for drinking or for watering most crops or types of grasses. Such brackish or saline waters are usually only used for industrial purposes." The department's own policy outlines that the 'irrigation' of vines with saline water &gt;2,000mg/L TDS is not a suitable use of this effluent.</li> <li>(b) No evidence in the application to suggest the Department of Health has approved an amendment to its daily limit of 4,631 L of beverage production factory effluent discharged on site.</li> <li>(c) The possibility the licence holder will be authorised to irrigate unlimited volumes of nutrient rich-salty wastewater to land.</li> <li>(d) Application exhibits a lack of understanding of the soil attributes present at the site and that it is contrary to the Department of Health limits on the maximum daily volume of wastewater</li> </ul>	<ul style="list-style-type: none"> <li>(a) The licence holder must report on TDS (Condition 4, Table 4) of the irrigated wastewater. TDS includes dissolved organics and TDS does not represent salinity for beverage industry wastewater. The Delegated Officer has updated the ambient soil monitoring requirements (Condition 6, Table 5) for better accuracy in assessing salinity and sodicity. The licence now mandates soil sampling from both topsoil and subsoil to a depth of 1 metre within each irrigation zone (1, 2, 3, and 4). Additionally, the licence requires the reporting of Cation Exchange Capacity (CEC) and Exchangeable Sodium Percentage (ESP%) to monitor the impact of irrigated wastewater on soil.</li> <li>(b) The department notes this comment and has not accepted the licence holder's request to remove its daily limit of 4,631 L of beverage production factory effluent discharged on site (see Table 3, row 4 above).</li> <li>(c) The Delegated Officer has not authorised the licence holder to irrigate an unlimited volume of wastewater to land.</li> <li>(d) The department has previously assessed the irrigation operation including the NIMP, soil characteristics and saline wastewater quality, and has conditioned regulatory controls within the licence for soil management, nutrient loading and wastewater concentration limits. See section 2.6.2 of the licence's original decision report. The department reviewed the amendment and found no change to the irrigation zone's soil characteristics. Four boreholes (OW1-4) were drilled to 1.1 metres, with soil profiling and permeability tests completed on 16 May 2024. The NSW Government's 2023 guidelines require boreholes to a minimum of 1.0 metre or 0.6 metres below the irrigation point, with at least one test pit and two boreholes per irrigation area. This has been met with the licence holder's four boreholes, soil profiles, and permeability tests. The soil profile is a bright red colour with no mottling indicating that iron in in the oxidised form of haematite and unlikely to be saturating (see Image 1</li> </ul>



able to be directed to the WWTP.

- (e) Analysis of wastewater – KASA report outlines that the applicant predicted a final effluent level of 350 mg/L TDS (Total Dissolved Solids), however the applicant's supplementary KASA report shows results on 14 September 2023 that TDS values were 2,080 mg/L and 3,570 mg/L. The stakeholder states this wastewater is extremely toxic to Shiraz grapevines.
- (f) Salt loading, the stakeholder states that without off-site disposal or no discharge prohibition during winter months, the total amount of salt deposited into the vineyard can be estimated to be 6,033,300,00mg based on the TDS values of 2,080 mg/L and 3,570 mg/L.
- (g) Soil permeability – no soil inspection pits were dug to determine soil structure and texture, mechanical compaction impacting soil dispersion and that the upper-level of the soil's infiltration has been impeded, therefore the subsoil will encounter no saturation. Further concerns regarding the methodology used was not the correct methodology for irrigation and was more applicable for deep septic systems, not surface disposal of effluent. The stakeholder states that measuring soil permeability at 1 metre depth applies to domestic septic systems where the purpose is to determine the infiltration rate at the base of leach and pipe sewerage drains. The Western Australian Health Department provides contrasting instructions on how they measure soil permeability for sewerage systems

below).

**Image 1: Soil profile**



- (e) The department previously assessed the risks of wastewater irrigation and applied appropriate controls (see the original licence report). This amendment is administrative and does not change the risks, TDS values, soil permeability, or structure. The licence holder must report TDS wastewater sampling monthly when irrigating (Condition 5, Table 4).
- (f) Refer to comments (d) and (e) above
- (g) Refer to comments (d) and (e) above.
- (h) Refer to comments (d) and (e) above.

(Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974 Schedule 8 Method of determining absorptive capacity of soil.)

(h) Soil compaction zone – the stakeholder has advised that in the 1990’s a detailed effluent disposal investigation was conducted by Dr. J Chapmon and others at this site and the soil was described as having a dense (‘massive’) structure, with a band of compaction; “A compaction zone occurred at 300-400 mm depth due to trafficking.” The stakeholder expresses concerns that the permeability of the topsoil was not measured. The soil testing conducted by Enviro Consulting reported in the diagram of the Observation Well design that the top soil is relatively more permeable than subsoil and the subsoil is relatively less permeable than topsoil.

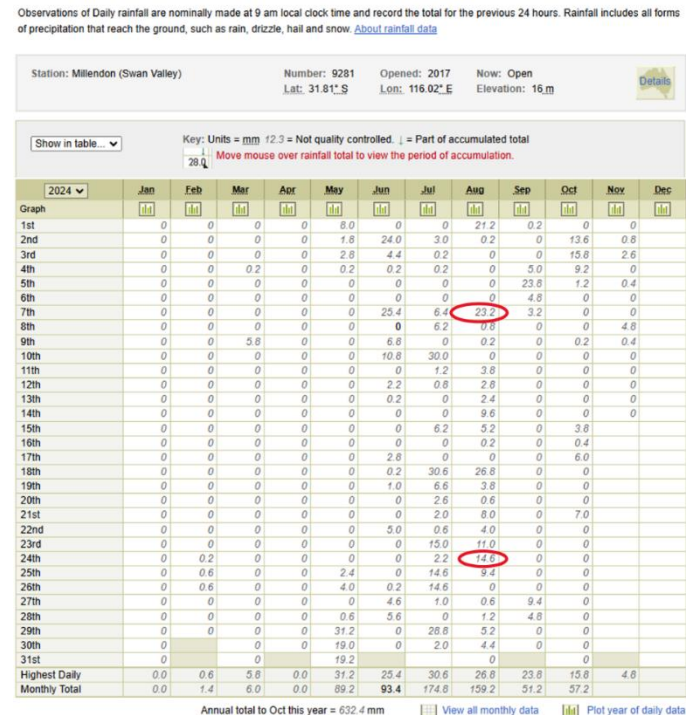
(i) Limiting layer and separation distance – the stakeholder has expressed concerns regarding the suitability of the soil for effluent discharge. The stakeholder outlines that they believe there is inadequate soil depth of 600 mm below the surface discharge points and that the limiting layer is most likely to be the compacted zone at 300-400 mm. The 1990’s investigation report showed a perched water table and salt scard.

(j) Ponding in vineyard – the stakeholder has outlined that photographs taken during the winter months in 2023 and 2024 show ponding on the soil surface after rain. Photographs of the vineyard have been provided for the dates 12 May 2024, 7 August 2024 and 24 August 2024,

(i) Refer to comments (d) and (e) above.

(j) Photographs from 7 and 24 August 2024 show pooling in the irrigation area, but rainfall on those dates was 23.2 mm and 14.6 mm, well above the area’s average of 5 mm per day (BOM data). These conditions likely represent above-average rainfall, not typical irrigation conditions. Aerial imagery from 16 June, 6 April, and 14 September 2024 shows no significant pooling. The licence also includes controls to prevent irrigation during or within 24 hours of rainfall over 2 mm (Condition 3, Table 2, row 4(b)).

**Figure 1: Daily rainfall for Millendon (Swan Valley) (nearest weather station to Henley Brook (about 10 km) (Bureau of Meteorology (BOM) Daily Rainfall data – Millendon (Swan Valley)).**



expressing concerns regarding spillage of wastewater from the WWTP suppressing vegetative growth. The stakeholder expresses concerns that the western head lane area regularly floods after light rainfall due to a combination of machinery compaction and soil structure collapse due to salty effluent discharges in the past.

- (k) Soil water – The stakeholder expresses concerns that wastewater with a high TDS will exert a strong osmotic pressure within the rootzone of plants countering the normal “suction” water uptake by the plant. The stakeholder states that the permeability test carried out by Enviro Consulting was conducted with clean water and would approximate domestic sewage osmotic strength. The stakeholder states that the effluent being discharged is not chemically similar to clean water and would be expected to exhibit a different permeability due to high suspended solids, BOD and salt.
- (l) Soil moisture testing – The stakeholder states that sensor installation and measurement was conducted on a single day and that during this period there was no recent precipitation since the start of May. The stakeholder expresses concerns the permeability tests were conducted on dry soil and therefore not representative of the permeability of wet soil which would occur during Winter months.
- (m) Leaching of salts – The stakeholder expresses concerns that the continual application of salty effluent during wet

**Figure 2: Nearmaps Aerial Imagery of the irrigation zone for Funk Cider 2.0 for the dates 16 June 2024, 6 April 2024 and 14 September 2024.**



	<p>winter months will negate the beneficial effect of winter rainfall flushing salt from the root zone.</p> <p>(n) Wastewater leakage at site – the stakeholder expresses concerns that for a considerable time untreated wastewater has been pooling on the surface of the unsealed driveway adjacent to the south-west corner of the factory shed</p> <p>(o) Unregulated discharge of effluent – The stakeholder expresses concerns regarding unlimited volumes of saline effluent discharged onto priority agriculture land has no credible scientific or technical explanation.</p>	<p>(k) Refer to comments (d) and (e) above.</p> <p>(l) The timing of a permeability test is important to ensure the results are representative of the typical soil conditions of the irrigation zone. This way the results accurately reflect the soil’s water movement properties. If the soil permeability test was conducted during or after rainfall the soil would be overly saturated and the permeability test may show artificially high infiltration rates due to the soil pores being already filled with water. This would not be an accurate representation of the subsoil during normal conditions. Soil permeability tests are best conducted once the soil has drained from any rainfall/water as the soil is then closer to it’s typical moisture content. The permeability tests were conducted on a day which represented a typical or intermediate moisture season (not too wet and not too dry) and therefore provided an accurate representation of how the irrigation zone’s soil will behave during most of the year.</p> <p>(m) Refer to comments (d) and (e) above.</p> <p>(n) The department is already in communication with the licence holder regarding the reported area on the site, appearing to show a leak and is in the process of resolving this issue.</p> <p>(o) Refer to comments (d) and (e) above.</p>
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