

Winery Wastewater & Grape Marc Monitoring Report

(Cllr Barsanti) (Report prepared by Jane Robertson)

E330-002-004

Purpose

1. The purpose of this report is to inform Council of the Compliance Group's ongoing monitoring of the discharge of winery wastewater and grape marc to land for the period 1 June 2013 – 31 May 2014.
2. **Jane Robertson will provide a short presentation on winery wastewater and grape marc monitoring (15 minutes).**

Background

3. Council has been monitoring winery waste annually since 1999 with reports being produced since 2005.
4. The 2014 New Zealand Winegrower's Vineyard Register & Annual Report indicates that Marlborough has 76.7% proportion of the grapes harvested in New Zealand (up from 73% in 2013); with 22,903 producing hectares and 329,572 tonnes produced in 2014 (up from 252,000 tonnes produced in 2013).
5. Liquid waste from the winemaking process predominantly consists of water used for cleaning floors, equipment, fermentation tanks and barrels. Liquid waste is typically seasonal in nature, with the highest volume generated at vintage time.
6. Grape marc is the solid end product once grapes have been pressed for juice. It contains seeds, stems, skins and pulp. An estimated 50,000 tonnes of grape marc was produced by Marlborough wineries in 2014.

Where monitoring was undertaken

7. There are 39 wineries in the Wairau/Awatare rural zones (Figure 1). Thirty-four wineries are located in the Wairau Plains, one is located north of Blenheim and four are located in the Awatare area. For the 2013/2014 monitoring period 36 wineries were inspected. The 3 wineries that were not inspected process under 100 tonnes and do not discharge to land.

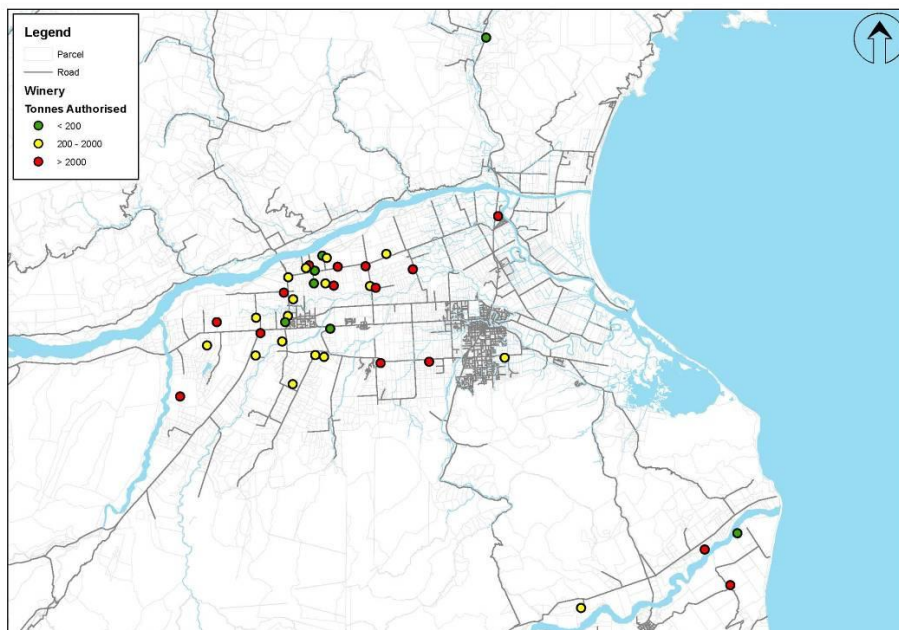


Figure 1: Map of wineries in Marlborough. Different colour dots represent the small (green), medium (yellow) and large (red) wineries.

8. The eleven wineries in the Riverlands and Cloudy Bay industrial zones that discharge directly to trade waste were not monitored for the 2014 vintage. No complaints were received for these wineries so they are not discussed further in this report.

How monitoring was undertaken

9. The thirty-six wineries that discharge wastewater to land were monitored according to resource consent conditions and/or the permitted activities provisions under the Wairau/Awatere Resource Management Plan (WARMP). Inspections templates were forwarded to wineries prior to vintage highlighting what information and records were required from them to demonstrate compliance with resource consent conditions and/or WARMP permitted activity standards.
10. Resource consents conditions for discharge of winery wastewater to land are imposed based on the individual wastewater systems and local environments; therefore, conditions vary for each winery. However, most wineries have similar conditions that deal with: record keeping wastewater volume; nitrogen loading to the land; wastewater and soil sampling; discharge rate; odour; buffer zones; and annual reporting to discuss trends, identifying any adverse environmental effects and making recommendations on any remediation or changes required.
11. The WARMP permitted standards for discharge of winery wastewater include: annual wastewater sampling (biological oxygen demand, faecal coliforms, pH); odour; nitrogen loading to the land; discharge rate; buffer zones to boundaries and water bodies; and no discharges into surface water bodies.
12. The grape marc storage at the wineries was inspected. Additional monitoring was also undertaken for the wineries that compost and/or spread grape marc directly to land to ensure appropriate location, leachate collection and compliance with the WARMP standards. Fifteen of the rural wineries and all of wineries located in the industrial zone have their grape marc transported offsite for compost, stockpiling and/or stock feed by farmers.
13. Meetings and discussions were held with some wineries and consultants to discuss areas of non-compliance and expectations for the 2014 vintage. These wineries responded positively to the requirement to undertake corrective actions identified and have demonstrated a willingness to undertake improvements to their operations and/or recording systems. There have been pleasing improvements in the compliance levels of these wineries.
14. A traffic light system was used for the third year to determine the compliance with consent conditions or plan rule permitted activity standards. The feedback from wineries is that this is a positive, useful and welcome approach to monitoring. Conditions or rules assessed as;
 - **green** are compliant and no action is required;
 - **amber** are assigned for relatively minor breaches requiring some corrective action; and
 - **red** are non-compliant and remedial actions may be required.

Monitoring results

15. Thirty six wineries submitted information (e.g., annual reports, wastewater and/or soil sample results) and data (e.g., records of daily wastewater volumes, discharge dates, disposal area sizes, pH) to assess compliance. Follow up was needed with some wineries to clarify the information and/or data provided. Five wineries provided additional information after compliance reports had been completed.
16. For the 2014 vintage there was an increase in the volume of grapes crushed at 33 of the 36 wineries monitored.
17. There was a range in processing capacity from the smallest rural winery which crushed 50 tonnes to the largest rural winery, which crushed over 29,000 tonnes. This year three wineries processed over 20,000 tonnes.
18. Five wineries have obtained new resource consent to increase their processing capacity and/or discharge to land in the last year. Three of these new resource consents were monitored for the first time this vintage.

19. The majority of wineries have taken on board the comments and recommendation from the previous 2012/2013 compliance reports. In general record keeping is improving.
20. This year 6 (17%) wineries (up from two (5%) wineries in 2013) were fully compliant with all conditions or rules and were assessed as **green**.
21. Two wineries had one condition or rule assessed as **amber**. Six wineries (17%) had one condition or rule assessed as **red**. Six wineries (17%) had two or more conditions or rules assessed as **red**. Fourteen wineries (38.8%) were assessed as **amber** and **red** on more than two conditions or rules. All other conditions were met and assessed as **green**.
22. The most common areas of non-compliance for this monitoring period were for exceeding the permitted ranges on one or more occasions for faecal coliforms (17 wineries), pH (8 wineries) and biological oxygen demand (BOD₅) (4 wineries). Some other breaches included exceeding total nitrogen loadings and not including all parameters in wastewater or soil sampling. These breaches were not considered significant enough to warrant enforcement action and no adverse environmental effects were observed at the time of the site inspections
23. Historically the main issue observed during inspections has been ponding in the wastewater disposal fields. Ponding can occur because irrigation rates are too high; wastewater is applied to soils that have reached field capacity (i.e., irrigating during high rainfall events); the disposal area is too small for the volume of wastewater discharged; mechanical failure and/or poor management of the wastewater system and disposal fields. Over-irrigation can lead to leaching of excess water to groundwater, and with it salts (e.g., sodium [Na⁺] and potassium [K⁺]), organic carbons (e.g., sugar and ethanol) and nutrients (e.g., nitrogen and phosphorous) not used by soil microorganisms or held by the soil matrix. Of particular importance is the potential for Na⁺ and K⁺ to accumulate in the soil profile, which may result in altered soil structure or poor plant growth.
24. For this monitoring period heavy rain in mid-April during vintage provided a challenge for many wineries. This did result in 10 wineries breaching discharge rate rules or conditions and 4 wineries breaching discharge volume conditions. However, there were only several instances of minor localised ponding with no ongoing environmental issues. Short term corrective actions were undertaken to address ponding including: ceasing discharge for the rest of vintage to allow a rest period for the soil; and/or using an alternative disposal area for discharge. The actions taken should have helped to avert the potential for wastewater entering underground aquifers, overloading of soil and altering of soil structure. More long term actions may include soil remediation (soil ripping and planting of different pasture species to improve uptake of wastewater); alterations to the wastewater and irrigation systems for more optimal volumes discharged; or retiring disposal areas and moving to land that is more appropriate for discharge. One winery has undertaken remediation of their disposal area.
25. There were significant issues with grape marc at one winery composting operation where grape marc was also brought onsite from a number of other wineries. There were discharge issues, problems with leachate collection and odour. This resulted in Council issuing an abatement notice. A resource application has been submitted to Council which is currently being processed.

Future activities

26. The 2014/2015 season will continue to focus on education about the criteria required for consent conditions and plan rule standards. This is to ensure accurate data and records are provided to Council to demonstrate compliance.
27. For the 2015 vintage there will be continued focus on checking the sites where grape marc is composted, stored and/or discharged directly to land to ensure that any adverse environmental effects are minimised or averted.
28. Policy have set up a focus group consisting of a number of representative from the industry to review draft discharge plan rules for the rural zone.

Comments

29. Industry has responded positively to the traffic light rating system as it allows wineries the opportunity to remediate inadvertent breaches and improve operations and management of the wastewater systems.
30. Based on the information provided for Council's compliance reports for the 2013/2014 season, the Compliance Group considers that some wineries still need improved record keeping for the entire reporting period.
31. It is anticipated that the ongoing communication with wineries will continue to lead to greater understanding of the requirements for the discharge of wastewater to land, which should result in more wineries being fully compliant. More importantly, environmental impacts will be identified and remediation actions can be implemented early.
32. Grape marc is an industry issue which needs careful management to ensure that there are no adverse environmental effects.

Summary

33. The Compliance Group is continuing to take a proactive and constructive partnership approach to monitoring the discharge of winery wastewater and grape marc with education and relationship building being key objectives. Consequently, good co-operation is received from the industry. The emphasis is on continuous improvement to ensure that environmental impacts are minimised or averted and compliance costs to both the Council and wine companies are minimised. However, if there is significant non-compliance and adverse environmental effects Council will take the necessary enforcement action.

RECOMMENDED

That the information be received.