SOUTH AFRICAN WINE AND SPIRIT BOARD

Scheme for Integrated Production of Wine

Integrated Production of Wine:

Guidelines for Wineries and Bottling Facilities

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In consultation with the Viticulture and Wine Industry

The inherent quality of grapes determined by the genetic characteristics of the cultivars and the application of the IPW guidelines for the farm can be negated by the wrong harvesting, winemaking and bottling procedures. Successful winemaking and handling requires large capital inputs and high quality manpower. Incorrect application of equipment and chemicals, wasteful use of water and electricity and the dumping of waste products in nature have a negative effect on the environment and on the image of wine. These processes must therefore carry the principles of IPW through to the final product.

The winery and its immediate environment should reflect an image of environmentally friendly and food safe production. Wine production will be evaluated according to the following guidelines to determine if wines qualify as IPW wines. For a wine to qualify for the IPW seal, only grapes and/or bulk wine that qualify for IPW may be used. In addition, the wine should be made and bottled at an IPW certified winery and/or bottling facility and all prescribed records must be kept.

These guidelines are applicable to wineries and bottling facilities. Where "winery" is stated in the text, it also applies to a bottling facility. Also refer to the IPW Manual for scoring of the guidelines (published separately on www.ipw.co.za).

1 IPW TRAINING

To implement IPW successfully and effectively requires thorough knowledge of the principles involved.

- At least one representative of the winery that is in direct control of production or winemaking should be formally appointed and should regularly attend an IPW training course. This representative should be responsible for completing the IPW self-assessment, and be present (or at least available) during IPW third party auditing.
- External consultants may assist with IPW management through document control and recordkeeping. However, unless it can be confirmed that the consultant has been appointed in a continuous decision making position in the winery and is suitably trained, the consultant may not represent the supplier or facilitate IPW third party audits on behalf of the winery.
- All course attendants will receive a certificate (valid for five years) to certify that they have attended an accredited IPW course (refer to the IPW Manual for the points awarded). An accredited IPW course should be attended every three years thereafter to ensure effective management of IPW in the winery.
- Additional to the certificate, a thorough knowledge of the IPW principles should be demonstrated by the person responsible for IPW in the winery.

2 PROPERTY MANAGEMENT

The winery should have a map (or Google Earth image) of the property on file indicating at least the following:

- Winery buildings
- Incoming water lines to the facility
- Dams/boreholes/springs/rivers/wetlands/storm water furrows on the property
- Wastewater lines and treatment system
- Wastewater containment dam(s) (if applicable)
- Area where wastewater is irrigated (if applicable) or disposed of (e.g. Municipal line)
- Relevant sewage systems (e.g. septic tank and soak-aways, conservancy tanks, entry point of Municipal line, composting areas etc.)
- Composting area

The winery should also have the following documentation available:

- Building plans approved by the Municipality and/or a certificate of occupancy issued by the Municipality should be available for a newly constructed packhouse or any expansions done since the previous audit. If applicable, evidence (e.g. Record of Decision (RoD) or environmental authorisation) issued by the Department of Forestry, Fisheries and the Environment should be available to confirm that construction or enlargement of the winery took place according to the relevant environmental legislation.
- A zoning certificate issued by the local municipality to confirm that the land where the winery is situated, is zoned as Agri-Industrial / Industrial land or that a winery may be operated under the current zoning of the property. Where wineries are situated on farms, the applicable land should be rezoned from Agricultural (Agriculture I) to Agri-Industrial (Agriculture II) if required by

the municipality. Wineries situated in industrial areas of towns should also provide a zoning certificate as confirmation of the property's zoning.

- A Certificate of Acceptability for Food Premises (Regulation 638) should be available as indicated in Government Notice No. (GN) 638 of 22 June 2018.
- Evidence must be provided to confirm that the water used in the winery, is registered at the relevant authority for the applicable use (industrial). Boreholes, river abstractions, spring abstractions, etc. must be registered at the Department of Water and Sanitation (DWS) as required by GN 538 of 2 September 2019.
- The abstraction and storage of water must comply with Section 22 of the National Water Act 1998 (Act No. 36 of 1998). Water use may be authorised through an existing lawful use declaration, Schedule 1, General Authorisation or Water Use License. Where the water use is authorised through a General Authorisation it must comply with the General Authorisation published in GN 538 of 2 September 2019.
- Should municipal water be used, evidence should be available in the form of municipal invoices. Some municipalities also require the registration of boreholes with the municipality (if applicable).
- A water meter (flow meter) should be installed on each supply line to the winery and readings should be recorded on a weekly basis (also refer to Guideline 9.1).
- A recent, complete chemical and microbial analysis of the water used in the winery should be available. Water samples should be taken as prescribed by SANS 5667-5: 2020. Analyses must be conducted at least once every twelve months by an accredited laboratory to determine whether the water quality conforms to the SABS 241-1: 2015 drinking water standard.
  The SANS 241-1: 2015 standard can be purchased on the following website https://store.sabs.co.za/catalog/product/view/id/2135761/s/sans-241-1-2015-ed-2-00-2
- The method of sewage disposal should be indicated, e.g., direct disposal into the municipal sewer or septic tank fitted with a soak-away, conservancy tank, sewage removal by a contractor/municipality, on-site treatment, etc. For direct disposal into the municipal sewer or removal by the municipality, municipal invoices/documentation should be provided as confirmation. Should an external company be responsible for the removal/disposal of sewage, records should be available as confirmation of its removal and safe and legal disposal.

3 QUALITY & TEMPERATURE OF INCOMING GRAPES (not applicable to bottling facilities)

Records should be kept of the percentage rot and temperature of each grape load received at the winery.

Rotten or diseased grapes may not be used to make IPW wines, except in the case of *Botrytis* infection for production of Special Late Harvest and/or Noble Late Harvest wines. A higher percentage of rotten grapes received will result in an increased Sulphur dioxide usage and energy consumption to ensure that quality wines would still be produced. Less than 5% rotten grapes are considered good, but more than 20% rotten grapes are rated poor.

During hand and mechanical harvesting, maximum care should be taken not to damage grapes and compromise quality. To preserve quality, grapes should be harvested at the lowest possible temperature and standing time should be reduced to a minimum. In case of mechanical harvesting, the machine should be set to limit damage to grapes and to minimize the loss of juice and inclusion of material other than grapes (MOG). Strict measures to limit oxidation should be implemented when grapes are transported over long distances. During transportation to the winery, grapes may not come into contact with substances that are not registered for use on grapes in an IPW programme (e.g. pesticides), or any other substances that may contaminate grapes (e.g. fertilisers, oils and lubricants). Decks of trailers or trucks should be of food grade material or coated in an acceptable manner. Should all grape loads for winemaking purposes arrive at the winery at temperatures under 25˚C, it is evaluated as good. Should the temperature of a grape load exceed 30˚C, it is evaluated as poor. If grapes are cooled at the winery before it is processed, the temperature of the incoming grape loads applicable to this guideline should be taken before grapes are cooled.

4 ENERGY USE AND CARBON EMISSIONS

Climate change is probably the most important environmental aspect currently under investigation in the world. As part of their purchasing structure, international markets are placing increasing focus on environmental impact caused by global warming. Global warming and its long-term effect on the agricultural industry will impact each and everyone. It fundamentally results from the emission of greenhouse gases including carbon dioxide (CO_2) and methane (CH_4) into the atmosphere. For reporting purposes, all greenhouse gas emissions are expressed in CO_2 equivalent emissions (ton CO_2e).

Various winery activities contribute to greenhouse gas emissions/CO_2e of which the largest contribution is from the combustion of fossil fuels which is directly used for transport and indirectly by using ESKOM for electricity generation. To ensure that wineries continuously decrease their CO_2e, various records should be kept benchmarking each winery activity before setting objectives for continual improvement in future.

4.1 Energy use

The winery (including the farm where applicable and if it is preferred) must keep records of monthly energy usage applicable to winery operations. These records should be summarised in table form to indicate the amount of each energy source used per month for each calendar year or financial year. Summaries should be available for at least two consecutive years for comparison purposes. To calculate carbon emissions and to measure continual improvement of energy usage, the following records are regarded as the most important:

- Electricity usage (kWh)
- Diesel usage (Liters)
- Petrol usage (Liters)
- Liquid Petroleum Gas (LPG) usage (kg)
- Any other fuels (e.g., coal, furnace oil, etc.) (kg or Liters)

This guideline is evaluated based on availability of records and not based on the amount of energy used. Above-mentioned records must also be available at smaller wineries.

Note: Transportation of grapes to the winery:

- The transport of grapes from a farm to a winery is measured as part of the farm's carbon footprint calculation. Even if the winery arranges and pays for grape transport, the carbon footprint is always calculated as part of the the farm's carbon footprint calculation.
- The transport of wine or juice from one winery to another winery will be entered in a separate field in the carbon calculator, i.e. "Distribution after winery gate". Keep in mind that this is not the the calculation for distribution to the market.
- Transport of wine from a winery to a bottling facility should also be entered in the field mentioned above, i.e. "Distribution after winery gate".
- For the transport of wine from wineries or bottling facilities to the market, separate records are kept under "Distribution". Contractors are mostly used for this purpose, and it is often out of the direct control of the winery.

To summarise:

- Farms always keep records of the transporting of grapes to wineries.
- Wineries always keep records of transport to other cellars or to bottling facilities.

4.1 Carbon footprint calculation

Wineries and bottling facilities (including the farm if applicable) must calculate their carbon emissions by using the internationally accepted Confronting Climate Change (CCC) protocol and calculator. The Confronting Climate Change project (www.climatefruitandwine.co.za) was co-funded by the wine industry via Winetech and was developed specifically to establish an agreed methodology to measure a winery's carbon footprint and to develop a South African wine industry benchmark. The Confronting Climate Change carbon footprint tool has been independently audited by the Carbon Trust, who have recognized the tool as being a reliable and credible resource for measuring the carbon footprint of the products of companies that represent the supply chains of the South African fruit and wine industry. The wine industry role players are therefore encouraged to utilise the tool.

To make this calculation possible, record-keeping is essential (also refer to Guidelines 4.1, 9.1, 11 and 13). Calendar, production, or financial years may be used in the calculation. The carbon footprint of least three consecutive years should preferably be calculated to eliminate seasonal differences, and to determine whether the carbon footprint tends to increase, decrease or more or less remains constant. If an increasing trend was observed, it should be justified. Each farm and/or winery is compared only to itself.

A management plan should be compiled to ensure a decrease in the carbon footprint if possible. Reference should be made to the focal points highlighted in the carbon footprint reports. The industry benchmarks included in the reports should be used as guideline to set goals for

improvement in accordance with the results and the farm and/or winery's circumstances. It is strongly advised that the plan be reviewed by the CCC team.

5 IMPLEMENTING AND MAINTAINING INFRASTRUCTURE AND EQUIPMENT

- Equipment must be covered with inert materials or be made of stainless steel or other inert material to prevent contamination of wine and to facilitate easy cleaning (e.g. free from cracks).
- Only food grade lubricants may be used.
- Floors should be free from cracks, allow free draining and should be cleaned regularly.
- Packaging and storage areas should be maintained to avoid rodent or pest access and a pest control program should be in place. Pest control bait stations must be clearly marked. The positions of the bait stations should also be indicated on a floor plan of the winery. Records should be kept of pest activity and bait placements.
- Toilet facilities with wash basins, soap and hot water (55˚C) or hand sanitizer should be available for use by all staff. These facilities should be well ventilated.
- The winery and storage areas must be well ventilated to avoid undesirable conditions (e.g. humidity, heat build-up, CO_2 build-up, etc.)
- Efficient lighting should be available to ensure safe operation of all equipment and to assist with cleaning.
- Thermometers used in tanks may not contain any mercury. Alcohol or digital types are preferred.
- All pipes, transfer lines and hoses must be stored to allow self draining. They must be flushed with potable water prior to use.
- An equipment and infrastructure maintenance schedule must be in place to ensure the integrity of all equipment and calibrations to avoid any food safety risks. Small wineries may use invoices as proof of repairs and services.

6 SO_2 LEVELS (not applicable where only bulk wines are produced or where no bottling is done under the winery's SAWIS number)

SO_2 additions before and after fermentation are common practice to ensure that wines are preserved. The total SO_2 levels of packed wines are evaluated according to Appendix 5A. Since SO_2 additions can still be made after bulk wines are delivered and/or blended, the winery and/or bottling facility that take ownership of the final bottled product, will be held responsible for the total SO_2 level of the wine (and not the initial producer of the bulk wine).

7 HANDLING OF FOOD GRADE CHEMICALS

7.1 Substances added to wine

Natural precipitants, filter materials, fining agents and other wine additives should be used that are free from Genetically Modified Organisms (GMO). Certificates to prove that all relevant substances added to the wine are GMO-free, should be available on file. Only compounds listed in *"Liquor Products Act, 1989 (Act No. 60 of 1989)* may be used (refer to Table 6 of the regulations, obtained from the website https://www.sawis.co.za/winelaw/southafrica.php).

7.1.1 Products possibly containing GMO's

Recent certificates to confirm that all relevant products are GMO free should be available. Also refer to Guideline 7.1.1 in the IPW Manual.

7.1.2 All other additives

Only legal additves may be used as indicated in the *"Liquor Products Act, 1989 (Act No. 60 of 1989. R*efer to Table 6 of the regulations, obtained from the website https://www.sawis.co.za/winelaw/southafrica.php.

Only settling and fining agents are evaluated in this guideline as the use of these substances may have a negative impact on the environment due to the disposal of used materials causing pollution. Refer to Guideline 7.1.2 and Appendix 5B in the IPW manual.

7.1.3 Filtration of wine

Using filter material impacts negatively on the natural environment either due the impact from mining the bentonite or diatomaceous earth, or as a result of the disposal of the used material that contains the filtered organic material that could leach from the filter material and pollute the environment. Also refer to Guideline 7.1.3 and Appendix 5B in the IPW Manual.

7.2 Storage and record-keeping of chemicals

7.2.1 Chemical stores

Wine additives and cleaning chemicals should be stored in separate, locked food grade stores that comply with the same basic requirements set out in the *Guidelines for handling, storage and disposal of agrochemicals in the South African wine industry*. Refer to the following weblink:

https://winetech.co.za/guidelines-for-handling-storage-and-disposal-of-agrochemicals-in-the-south-african-wine-industry/

The guidelines include good ventilation, storage on pallets (plastic pallets or wooden pallets covered with a plastic layer) and lockable doors is mandatory.

7.2.2 Traceability

Records as proof of the balance between the amount of each product purchased and used should be available (stock control record). Records should include the batch number of each product added to each wine batch for traceability purposes. Records should be kept of all additions, including the date, quantity, lot number of the additive, tank and wine batch to ensure traceability. Tank movements should also be recorded to enable accurate traceability. The Certificate of Analysis (COA) of each product received by the winery should be available. Ensure that the Material Safety Data Sheets (MSDS's) of all products used in the winery are also kept on file.

8 COOLING

Cooling is evaluated according to the type of refrigerant (e.g. R22, R407C, etc.) as well as the coolant (e.g. propylene glycol) used. Cooling systems should not contain substances/refrigerants that are harmful to the atmosphere and environment (refer to Appendix 5C). The maintenance of cooling units are important to ensure that refrigerants do not leak.

Refer to GN No. 37621 of 8 May 2014 (http://sawic.environment.gov.za/documents/3050.pdf) for the phase out schedule of HCFC's (e.g. R22). Although equipment using HCFC's may currently still be maintained, **the use of HCFC's will be completely phased out by 2040**. From 1 January 2040 no person is allowed to import, place on the market or use HCFC's. A person is prohibited from using HCFC's or any refrigerant or refrigerant blend either in pure form or as a component of blended refrigerants, in the construction, assembly or installation of any new refrigeration or air-conditioning or equipment from 1 January 2015.

9 WASTEWATER MANAGEMENT

Wastewater is defined as all water used and generated in the winery during processes like the cleaning of tanks, harvesting and winery equipment and floors, as well as winemaking processes (e.g. filtration, ion exchange, etc.), bleeding of cooling tower water and possibly laboratory wastewater.

Wastewater disposal on the winery premises or farm:

- The governing body for water related issues is the Department of Water and Sanitation (DWS) and the official Catchment Management Agency of the area (e.g. Breede-Gouritz Catchment Management Agency). DWS was previously known as the Department of Water Affairs (DWA) and before that as the Department of Water Affairs and Forestry (DWAF).
- Unless the water use is an Existing Lawful Use, or falls under Schedule 1, or the producer is in possession of a Water Use Licence issued by the DWS, wastewater should be managed in accordance with the DWS General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) as published in GN 665 on 6 September 2013 (https://www.gov.za/sites/default/files/gcis_document/201409/36820gon665.pdf).

  The current General Authorisation, as published in GN 665 of 6 September 2013, should have been revised by DWS before 6 September 2018. However, according to GN 383 (dated 12 July 2019) the continued application of Sections 21(e), 21(f), 21(g), 21(h) and 21(j) of GN 665 of 6

September 2013 is authorised until the new General Authorisation for waste related activities is gazetted.

- Where small wineries dispose less than 1 cubic meter (1 m^3 / 1 kL / 1 000 liter) wastewater into a septic tank and soak-away system on any given day in compliance with the DWS General Authorisation, the maximum points may be obtained for Guidelines 9.3 to 9.4, provided that the soak-away system is not situated in any of the water-controlled areas and must be situated above the 1 in 100 year flood line or riparian habitat whichever is the greatest, or alternatively at least 100 meters from a water resource whichever is the greatest or at least further than a 500 m radius from a borehole that is utilised for drinking water or stock watering, at least 500 m radius from the boundary of a wetland and on land that is not, or does not overlie a major aquifer. The winery should also meet the requirements of Guideline 9.1 (preferably daily water meter readings should be recorded) to confirm that the disposed volume is indeed less than 1 m^3 per day. Monthly quality monitoring should be done.

Direct disposal of winery wastewater into the municipal sewage system:

- If winery wastewater is directly disposed of into a municipal sewer, a formal agreement with the municipality (e.g., industrial effluent permit) **and** municipal accounts/invoices for industrial wastewater discharges should be provided as evidence, and to be able to obtain points for Guidelines 9.2 to 9.4.

Removal of winery wastewater by the municipality or a service provider:

- To obtain points for Guideline 9.3 the following records should be available: Removal records/invoices should confirm the volume of winery wastewater (the volume of sewage removed should also be confirmed, if applicable). In this case a "water balance" should be available to confirm that all generated wastewater has been contained and removed (i.e. volume of water used should correspond with volume of wastewater removed).
- To obtain points for Guideline 9.4 the following records should be available: Where wastewater is stored in tanks for removal by the municipality or another service provider, a formal agreement with the municipality or service provider shoud be available, confirming the removal of winery wastewater (including sewage if applicable). If a service provider is used, a copy of their effluent disposal permit should be available, confirming that industrial wastewater may be discharged at a presribed municipal wastewater treatment works by the service provider.
- If insufficient proof is available that all winery wastewater was contained and removed, wastewater quality monitoring should be done to determine the possible impact of wastewewater disposal on the environment (Guideline 9.2).

9.1 Monitoring wastewater quantity (see Appendix 5D)

- Volume records are required for all wineries and bottling facilities.
- **PLEASE NOTE:** If wastewater is directly disposed of into the municipal sewage system, monthly records would suffice. For all other wastewater end-uses, weekly records should be kept. **For all other wastewater end-uses it will be expected from IPW producers to keep weekly records of water consumption and wastewater volumes (if measured).**
- According to the DWS General Authorisation for wastewater management, wineries should monitor the volume of wastewater generated on a weekly basis for irrigation and river disposal, and on a monthly basis for evaporation, and records should be kept for auditing purposes.
- Where other facilities and/or processes contribute to the wastewater volume, these volume monitoring records should also be available. It is therefore important that effective water meter(s) are used. In most cases it is allowed to install an effective water meter onto the incoming line if it can be confirmed that the volume of water supplied to the winery is approximately equal to the amount of wastewater that exits the winery, e.g. evaporative cooling is not used, rain water does not enter the wastewater system, etc. Should the DWS specify that the volumes of wastewater that are generated are measured, an effluent meter should also be installed.
- It is important to attempt to separate uncontaminated rain and storm water from wastewater in order to limit the volume of wastewater to be managed.

9.2 Monitoring wastewater quality (see Appendix 5D)

According to the DWS General Authorisation for wastewater management, wastewater quality should be monitored monthly prior to storage or disposal. The chemical composition of wastewater gives an indication of the potential environmental and/or social impacts when wastewater is irrigated or disposed in the environment. Juice, wine and lees which are sources of organic carbon and inorganic components such as salts, acids, solids and cleaning chemicals can also enter the wastewater stream and lead to further contamination. Water samples should be taken as prescribed by SANS 5667-5: 2020.

Most wineries store and/or pre-treat their wastewater for re-use/irrigation or to reduce extreme variations in composition prior to irrigation/disposal. The following procedures should be used for taking representative wastewater samples:

- Sample the wastewater on a monthly basis on more or less the same date.
- Samples should be taken at the point of irrigation/disposal. DWS usually require that wastewater quality is also monitored on a monthly basis after treatment prior to entry into the wastewater/irrigation dam.
- Instead of a single grab sample, the sample should be composed of equal quantities of at least 5 samples taken regularly throughout the day, e.g. every 1.5 hours.
- Sample at least 1.5 L wastewater in a glass container and store below 4°C, or as suggested by the laboratory doing the analyses. The sample should be analysed within 48 hours after sampling.
- Avoid sampling at times when the inflows are very low, or when rainwater has a diluting effect.
- Keep a record of winery activities at the time when sampling takes place, especially when the total volume at the point of collection is dominated by one or two processes only.

Wastewater should be analysed for the following parameters by a SANAS accredited laboratory (the laboratory should be SANAS accredited for each parameter), depending on the end-use:

For irrigation, evaporation and disposal of wastewater into a soak-away system, as well as treated wastewater prior to storage, the following parameters should be analysed:

- Electrical conductivity (EC)
- pH
- Sodium adsorption ratio (SAR)
- Chemical oxygen demand (COD)
- Potassium (K)
- Faecal coliforms

For river disposal and irrigation during the winter months or rainfall the following parameters should be analysed:

- Electrical conductivity (EC)
- pH
- Sodium adsorption ratio (SAR)
- Chemical oxygen demand (COD)
- Potassium (K)
- Faecal coliforms
- Ammonia (ionised and unionised as N)
- Nitrate/nitrite as N
- Free chlorine
- Suspended solids
- Orhto-phosphate as P
- Fluoride
- Soap, oil and grease

Should DWS require analyses of additional parameters, these should also be included in the wastewater analysis.

9.3 Storing wastewater (see Appendix 5D)

A scientific study or wastewater management plan should be compiled to investigate all relevant aspects involving wastewater, soil and crop (if applicable), climate and the environment to ensure a sustainable wastewater end-use as well as compliance with legislation. This study will assist the cellar master/winemaker to ensure the following:

- Wastewater must be separated from storm and rainwater.
- Pipelines and furrows for conducting wastewater must be able to handle the maximum volume at any time and must be made of quality impervious material to prevent leakages.
- Catchment dams must be able to handle the maximum volume of wastewater at any one time and enough space should be allowed for possible unexpected volumes of wastewater.
- Catchment dams should be large enough to allow sufficient time for the settling of solids and break-down of organic matter before the water is released or used for irrigation.
- Catchment dams should be of adequate size to ensure that all wastewater generated during rainy spells can be contained. Irrigation may not take place during wet spells to minimize the risk of potential pollution of the environment caused by over-irrigation. In case of an evaporation dam system, it should also be taken into consideration that the volume evaporated may be less than the sum of the rainfall and the volume of winery wastewater generated.
- Catchment dams should be situated in such a way that there is no contact with storm and rainwater. The entire wastewater system (furrows and dams) should be lined to ensure that all wastewater is contained to minimize the risk of pollution.
- Irrigation systems must be designed in such a way that leakages do not occur. Irrigation should take place by means of moveable overhead irrigation lines to avoid over-irrigation. Note that flood irrigation may be considered a storm water disposal by DWS and is not allowed unless wastewater quality complies with the applicable limit for a river disposal (i.e. Special Limit or General Limit depending of the location of the disposal area).
- A soil study should be prepared by a professional (e.g. SACNASP geregistered) soil scientist to determine if the soil and crop are suitable for wastewater irrigation, and to determine if the available area is large enough to elimine the risk of over-irrigation and to ensure a sustainable practice.
- Soil samples should be taken from the wastewater irrigated soils on at least an annual basis and compared to a control soil sample to determine whether the wastewater irrigated soils deteriorated due to wastewater irrigation. These samples should be taken and the results interpreted by a professional (e.g. SACNASP accredited) soil scientist.
- Analyses should be done by a SANAS accredited laboratory.

If winery wastewater is legally disposed of into a soak-away system and proof can be supplied that less than 1 m^3 is disposed of per given day per title deed, a scientific study would not be compulsory. Note that the soak-away system, wastewater dam or irrigation area may not be situated in any of the DWS subterranean water-controlled areas and must be situated at least 50 m above the 1 in 100 year flood line or riparian habitat whichever is the greatest, or alternatively at least 100 meters from a water resource whichever is the greatest, or at least further than a 500 m radius from a borehole that is utilised for drinking water or stock watering, at least 500 m radius from the boundary of a wetland and on land that is not, or does not overlie a major aquifer.

9.4 <u>Disposal of wastewater</u> (see Appendix 5D)

Wastewater disposal on any premises is controlled by the Department of Water and Sanitation (DWS) and must comply with Section 22 of the National Water Act, 1998 (Act No. 36 of 1998).

A: Wastewater disposal on the winery premises or farm

- Water use may be authorised through an Existing Lawful Use declaration (e.g. documentation issued by the DWS prior to promulgation of the existing National Water Act No. 36 of 1998), Schedule 1, General Authorisation or Water Use License. Where the water use is authorised through a General Authorisation it must comply with all requirements of the General Authorisation as published in GN 665 of 6 September 2013.

- The current General Authorisation, as published in Government Notice No. 665 of 6 September 2013, should have been revised by DWS before 6 September 2018. However, according to Government Notice No. 383 (dated 12 July 2019) the continued application of Sections 21(e), 21(f), 21(g), 21(h) and 21(j) of Government Notice No. 665 of 6 September 2013 is authorised until the new General Authorisation for waste related activities is gazetted.

- The end-uses of wastewater are covered in different sections of the National Water Act, 1998 (Act No. 36 of 1998; Section 22) and the DWS General Authorisation for wastewater management. Refer to the web link https://www.gov.za/sites/default/files/gcis_document/201409/36820gon665.pdf:
  - Irrigation: Section 21 (e)
  - River disposal: Section 21 (f)
  - Evaporation, disposal into a soak-away system and storage of wastewater: Section 21 (g)

- Application for authrorisation and registration is submitted electronically on the website https://www.dws.gov.za/ewulaas/WUL.aspx. General Authorisation may be formally confirmed by DWS or the applicable Catchment Management Agency, but if the winery is not in possession of a formal document, all requirements of the General Authorisation as published in GN 665 of 6 September 2013 must still be met. If conditions of the DWS General Authorisation cannot be met, the owner must apply for a license at DWS for the wastewater end-use.

  The following wastewater uses must be registered with the DWS:

  a) Wastewater volumes:
  - Any volume of wastewater water that is irrigated per title deed per day/year must be registered in terms of Section 21(a).
  - The volume of wastewater evaporated per title deed, if more than 50 m^3 of wastewater is disposed of daily, must be registered in terms of Section 21(g).
  - Any volume of wastewater disposed of into a natural water resource per day/year must be registered in terms of Section 21(f).

  Where wastewater is legally disposed into a formal soak-away system (French drain) and it can be confirmed that less than 1 m^3 of wastewater is disposed per given day, the winery does not have to register their wastewater use with DWS.

  b) Storage of wastewater must be registered in terms of Section 21(g) the DWS General Authorisation if-
  - More than 500 m^3 of wastewater is stored for **re-use** (as part of production processes) per given day, it must be registered (maximum of 5 000 m^3 will be allowed per title deed) in accordance to the DWS General Authorisation.
  - More than 1 000 m^3 wastewater is stored for **disposal** (e.g., beneficial irrigation, evaporation or disposal into a natural water resource) on any day (up to a maximum of 10 000 m^3/property or 50 000 m^3/wastewater dam system) the water user must registered with DWS.
  - Any dam (including raw water and evaporation dams) that can hold more than 50 000 m^3 of water and of which the wall has a vertical height of more than 5 meters is declared as a safety risk dam. Such a dam must obtain a license from DWS, subject to various control measures for the construction and maintenance of such a dam. A raw water storage dam that holds more than 10 000 m^3 of water must be registered with DWS.

B: Wastewater received by third party

If wastewater is directly discharged into the municipal sewerage system, the following documentation would be required during the audit:

- Municipal authorisation or permit for the discharge of winery wastewater (e.g. “Industrial Effluent Permit”).
- Quality monitoring may not be compulsory in this case, unless specifically required by the municipality.
- All documentation with regards to wastewater disposal should be available during the audit, e.g. invoices confirming disposal, penalties payable due to non-compliance, reports as required by the municipality, etc.

If wastewater is removed by the municipality or a service provider, the following documentation should be available:

- Removal by the municipality: Municipal authorisation confirming the removal of winery wastewater from the premises (e.g. letter or permit).
- Removal by a service provider: Municipal authorisation for disposal of winery wastewater, including sewage if applicable (e.g. letter or permit).
- Water balance: Monitoring records should confirm the volume of winery wastewater that was generated (refer to Guideline 9.1). Records should confirm the removal of winery wastewater and sewage (if applicable), i.e. dates, document numbers en volumes of each removed. The water balance should confirm that the total amount of effluent generated was indeed removed, and that no discharge of wastewater into the environment occurred.
- Quality monitoring may not be compulsory in this case, unless specifically required by the municipality AND if it can be confirmed that no disposal of wastewater into the environment occurred.

Should wastewater be discharged to another property:

- A formal agreement should be concluded between all parties contributing to the wastewater stream and the owner of the property where the wastewater is discharged to. The agreement should include the responsibilities of each party in terms of the volume and quality of wastewater that may be discharged to the neighbouring property; details regarding the storage and disposal of wastewater (e.g. available storage capacity, the area and crop irrigated with wastewater etc.); the party responsible for volume and quality monitoring at the final point of disposal/irrigation; the party responsible for monitoring soil quality of the wastewater irrigated area (if applicable); an emergency procedure should wastewater quality not comply with the legal irrigation requirements at the point of disposal/irrigation; communication with DWS/BGMA and/or authorisation for the wastewater uses (this is usually the responsibility of the owner of the property where wastewater is stored and disposed/irrigated); etc.

C: General comments with regards to wastewater management

- As untreated wastewater from wineries, among others, does not qualify for disposal into natural water resources and all areas are not suitable for evaporation as end-use, it is strongly recommended that wastewater is treated or irrigated. If any person wishes to irrigate wastewater on any given day, he/she must comply with Section 21(e) of the DWS General Authorisation, which allows the irrigation of up to 2 000 m^3 wastewater per day per title deed (for crop production, including grazing), provided that wastewater quality complies with the legal requirements.

  Depending on the volume of wastewater irrigated on any given day per title deed, the following guidelines are prescribed in Section 21(e) of the DWS General Authorisation (also refer to Appendix 5G):

  <u>Irrigation of ≤ 50 m^3 wastewater per given day per title deed:</u>

  - The electrical conductivity (EC) should be ≤ 200 mS/m on any day
  - The pH must be between 6 and 9
  - The sodium adsorption ratio (SAR) must be ≤ 5
  - The chemical oxygen demand (COD) must be ≤ 5 000 mg/L
  - The Faecal coliform count should be ≤ 100 000 cfu/100 mL

  <u>Irrigation of 50 m^3 to 500 m^3 wastewater per given day per title deed:</u>
  - The electrical conductivity (EC) should be ≤ 200 mS/m on any day
  - The pH must be between 6 and 9
  - The sodium adsorption ratio (SAR) must be ≤ 5
  - The chemical oxygen demand (COD) must be ≤ 400 mg/L
  - The Faecal coliform count should be ≤ 100 000 cfu/100 mL

  <u>Irrigation of 500 m^3 to 2 000 m^3 wastewater per given day:</u>
  - The electrical conductivity (EC) must be ≤ 70 mS/m on incoming water any day up to a maximum of 150 mS/m
  - The pH must be between 5.5 and 9.5
  - Suspended solids must be ≤ 25 mg/L
  - Chloride as free chlorine must be ≤ 0.25m/L
  - Fluoride must be ≤ 1 mg/L
  - Soap, oil and grease must be ≤ 2.5 mg/L
  - The chemical oxygen demand (COD) must be ≤ 75 mg/L
  - The Faecal coliform count should be ≤ 1 000 cfu/100 mL
  - Ammonium (ionized and unionized) should be ≤ 3 mg/L
  - Nitrite / nitrate as nitrogen must be ≤ 15 mg/L
  - Orthophosphate as a phosphate should be ≤ 10 mg/L

- Wastewater may only be stored, disposed of or irrigated at least 50 m above the 1 in 100 year flood line or riparian habitat whichever is the greatest, or alternatively at least 100 m from a water resource whichever is the greatest, or at least further than a 500 m radius from a borehole that is used for drinking water or stock watering; should irrigate on at least a 500m radius outside the boundary of a wetland; and may not irrigate on land that is, or overlie, a major aquifer (to be indicated by DWS).
- Irrigation may not take place during the rainy season, during or just after rainfall, or on saturated soil.

- The authorised user must measure the quantity of wastewater irrigated on a weekly basis and the wastewater quality on a monthly basis at the point just before irrigation. Written records must be kept for inspection by the responsible authority.
- The area of irrigation must be demarcated on a suitable scale topographic map and details provided of the crops under irrigation, irrigation techniques and details of emergency procedures.
- Water logging or damaging of soil, occurrence of flies and mosquitoes, bad odors, secondary pollution, penetration of any water resources and unauthorised use of water by members of the public must be prevented at all times.
- Suspended solids must be removed from the wastewater as soon as possible after contamination (before irrigation) by implementing effective screens and disposed of efficiently and responsibly.
- Storm and rain water originating from the irrigation area must be collected to prevent contamination of clean water.
- Water for cooling and cleaning of tanks and other apparatus must be recycled, purified and re-used as far as possible.
- Water may only be treated with environmentally friendly chemicals.

Also refer to Appendices 5E, 5F and 5G. **Please note that legislation is amended on a frequent basis and these Appendices can only be used as a tool and the winery is not exempted from any legal requirements based on these Appendices.**

10 DISINFECTANTS AND CLEANING AGENTS

The winery and bottling facility must maintain a high standard of housekeeping and only environmentally friendly and food-safe cleaning agents should be used. All cleaning products should be SANS 1828 certified and all disinfectants should be SANS 1853 certified to ensure that the products are suitable for use in a food grade environment. The products used will be evaluated in terms of Appendix 5H.

11 MANAGEMENT OF SOLID WASTE

11.1 Disposal and recycling

11.1.1 Disposal of solid waste (including household waste and packaging material) **(refer to Appendices 5I and 5J)**

Packaging material of “dry” stock, excess apparatus and equipment, paint, oils, lubricants and solvents must be recycled or disposed of in an environment friendly way and in accordance to legislative requirements (also refer to Guideline 11.1.3 that follows).

- Waste bins must be used to collect and sort all waste of the winery (e.g. non-recyclable waste, glass, plastic, paper/carton, metal and used light bulbs).
- If solid waste is removed by a service provider, a copy of the applicable transport and disposal permits of the service provider should be obtained. Removal records and invoices should be available for auditing purposes.
- If solid waste is removed by the Municipality and/or disposed of at the Municipal waste disposal site, the applicable approval should be obtained from the Municipality for the removal and/or disposal of general waste. The necessary removal records and/or invoices should also be available for audit purposes.
- The amount and types of waste removed from the facility for re-use, recycling and disposal should be recorded and summarised on a monthly basis.
- For on-site waste disposal, the various end-use options and legal requirements for general waste management should be adhered to in accordance to the National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008). Refer to Appendix 5J for relevant legal requirements. **Please note that legislation is amended on a frequent basis and Appendix 5J can only be used as a tool and the winery is not exempted from any legal requirements based on Appendix 5J.**
- The aim of the wine producer should be to only participate in practices which are legal and environmentally sound.

11.1.2 Grape waste, lees and filter rests

- Skins, stems, pips and lees must be contained on an impenetrable layer (such as cement, plastic or suitable clay layer) and covered against rain, to prevent organic acids from seeping out and causing pollution of soil and soil water before having broken down sufficiently to serve as compost. In cases where this waste is disposed on compacted clay soil or on a low-risk site, proof must be provided (e.g. soil study, orthophotos, etc.) that all leachate will be contained.
- If no storage space is available, it should rather be used as animal feed or alternatively be supplied to an external company which can process it to compost or re-use it.
- This waste, as well as used sedimentation substances (e.g. bentonite, lees) and filtration material (e.g. diatomaceous earth), may only be stored temporarily before removal to prevent bad odours in the adjacent vicinity.
- Used filtration material, bentonite lees and wine lees should be made available for the recovery of alcohol or tartaric acid where possible to prevent soil and water pollution (which occurs when these substances are exposed to the soil too quickly).
- If used filtration material is not sent for recycling, the waste should be taken to a suitable disposal site to be destroyed as soon as possible, to prevent it from becoming a nuisance (e.g. bad odour). It may also be composted if it can be confirmed that pollution will not occur.
- If synthetic tartaric acid is used, a system for the effective disposal thereof must be in place.
- If any of the waste materials are removed by an external company or companies, the necessary documentation should be available during audits as confirmation (e.g. contracts, removal records, letters, etc.). The external companies should dispose/re-use the material in a responsible manner.

Composting:

- Refer to the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008). The Department of Forestry, Fisheries and the Environment also published National Norms and Standards for Organic Waste Composting in GN 561 of 25 June 2021 which apply to facilities that have a capacity to process compostable organic waste, in excess of 10 tonnes per day. An organic waste composting facility that has the capacity to process compostable organic waste in excess of 10 tonnes per day has to submit an application for the establishment of an organic waste composting facility to the relevant provincial authority.
- The owner of an organic composting facility with a capacity to process less than 10 tonnes per day of organic waste must register in terms of clause 3(3) of the NEM:WA National Norms and Standards for organic waste composting and align with the requirements of applicable integrated waste management by-laws and comply with the principle of “Duty of Care” as contained in section 28 of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998).
- It is important that cognisance should be taken of your “Duty of Care” towards the environment as stipulated by the NEMA. This means that, in terms of specifically composting activities, care should be taken to avoid the potential risk of ground and/or surface water contamination:
  - Locate the composting site on a relative flat area (Slope 2 - 3%), on a suitable impermeable layer, e.g. clay, concrete or plastic to contain leachate, thereby ensuring that the leachate generated from the compositing activities cannot contaminate water resources. Leachate should be contained and either re-used on the composting site or treated to DWS standards for river disposal.
  - The site must be at least 100 m away from any surface water resource.
  - Storm water must be diverted away from the compost heaps.
  - The risk of potential pollution could also be minimised by ensuring that only a small amount of material is stored at any one time.
  - Other nuisance factors related to composting activities such as flies, rodents and odors should be managed so that it does not cause a health risk or nuisance to the neighboring properties.

11.1.3 Recycling of solid waste

- Waste bins must be used to collect and sort all waste of the winery (e.g. non-recyclable waste, glass, plastic, paper/carton, metal, used light bulbs, oil, etc.).
- Empty cleaning chemical containers and other chemical containers should be recycled in an environmentally responsible manner and the applicable records must be available. If empty containers are returned to the supplying company, records of this practice should also be available.
- Where possible, material should be re-used (e.g. bottles, cartons and dividers).
- The recycling company that removes/receives the waste, should confirm per letter that waste material from the relevant winery or bottling facility is received by the recycling company and

that it is responsibly handled and recycled. The applicable waste permit(s) of the recycling company should be available.

- Records should be kept for each waste type as confirmation that recycling takes place.
- The amount and types of waste removed from the facility for re-use, recycling and disposal should be recorded and summarised on a monthly basis.

11.2 Cleaning of wastewater dams, pipes and other equipment

- Wastewater dams, tanks, pipes, screens and other equipment should be cleaned annually as large volumes of solids and sludge are collected in this way. The winery must develop a formal procedure for cleaning wastewater dams/tanks and screens and the procedure should also indicate where sludge is discarded. Cleaning records should be kept.
- An attempt should be made to conduct the cleaning operation in the summer months to allow rapid breakdown, thus minimising bad odours.
- Wastewater sludge may only be applied to the soil once the chemical composition thereof has been determined, indicating that it is suitable to be applied to a specific piece of land. If the sludge contains high concentrations of certain elements, it may negatively influence the soil, water sources and plant performance.
- Sludge can also be composted if it can be confirmed that it does not lead to pollution.
- Where sludge is removed by the municipality or a service provider, the necessary approval should be obtained from the municipality and removal and disposal records must be available.

12 AMBIENT NOISE

Noise from pumps, compressors, cooling apparatus and vehicles may cause a nuisance or disturbance to neighbours or neighbouring communities. The specific noise limits for different areas, e.g. industrial, urban, suburban or rural, may differ and are also influenced by the time of day when the noise occurs. Noise levels should, therefore, also be determined outside the winery at the point/-s where noise can cause problems. For this reason, for example, if the noise level of equipment or vehicles outside the winery exceeds 45 dB, these equipment or vehicles may only be used between 7h00 and 20h00.

13 PACKAGING MATERIAL (not applicable where only bulk wines are produced)

- Material must be constituted and treated in such a way that it is inert, food safe and environmentally friendly.
- Material should preferably be made of recycled material and should also be recyclable or biodegradable and manufactured locally.
- A summary should be available to indicate from which materials and where closures, capsules, labels, bottles, cartons and carton dividers are manufactured. The summary should also indicate whether the product has been made of recycled material and if the product is recyclable or biodegradable, and the country where it was manufactured.

14 BOTTLING (not applicable where only bulk wines are produced or if all wine is bottled off-site at a bottling facility. The guideline includes disgorgement.)

Procedures to address the following should be in place:

- Bottle breakages on bottling and disgorgement lines must be managed to avoid any contamination and an acceptable bottle breakage clean up procedure should be in place.
- Glass breakages on the bottling and disgorgement lines and in all pallets and cartons should be monitored and recorded during bottling. Effective glass removal practices must be implemented to ensure that no glass can be present in the final product. Air or water blasting is not allowed to clean up breakages during bottling.
- Broken glass should be collected and recycled as far as possible.
- Staff working in bottling and disgorgement areas is not allowed to wear any loose jewellery or accessories. Only clean clothes are allowed. No open footwear is allowed and appropriate protective clothing should be worn.
- Lights in areas where wine can be contaminated should be covered with Perspex.

15 BONUS POINTS

Bonus points may be awarded by the auditor based on environmental responsible initiatives implemented by the winery to reduce its carbon footprint or impact on the environment.

NOTE: The auditor is authorised to award bonus points for additional practices followed by the winery or bottling company based on his/her own discretion and the required evidence. No facility, irrespective of size, is however entitled to these bonus points.

Some applicable Acts:

National Healt Act No. 61 of 2003
Conservation of Agricultural Resources Act No. 43 of 1983 (CARA)
Liquor Products Act No. 60 van 1989
The Occupational Health and Safety Act No. 85 of 1993 (OHSA)
National Water Act No. 36 of 1998
National Environmental Management Act No. 107 of 1998 (NEMA)
National Environmental Management: Waste Act No. 59 of 2008 (NEM: WA)

Some applicable regulations and additional information:

2017 EIA regulations:
https://www.gov.za/sites/default/files/40772_gon327.pdf
https://www.gov.za/sites/default/files/40772_gon325.pdf
https://www.gov.za/sites/default/files/40772_gon324.pdf

R.683 Certificate of Acceptability for Food Premises:
https://www.gov.za/sites/default/files/gcis_document/201806/41730gon638.pdf

DWS General Authorisation for the storage and taking of water was revised as published in Government Notice No. 538 on 2 September 2016:
https://www.gov.za/sites/default/files/gcis_document/201609/40243gen538.pdf

DWS General Authorisation for wastewater storage and disposal as published in Government Notice No. 665 on 6 September 2013:
https://www.gov.za/sites/default/files/gcis_document/201409/36820gon665.pdf

The current General Authorisation, as published in Government Notice No. 665 of 6 September 2013, should have been revised by DWS before 6 September 2018. However, according to Government Notice No. 383 (dated 12 July 2019) the continued application of Sections 21(e), 21(f), 21(g), 21(h) and 21(j) of Government Notice No. 665 of 6 September 2013 is authorised until the new General Authorisation for waste related activities is gazetted:
https://www.gov.za/sites/default/files/gcis_document/201907/42576gen383.pdf

Refer to the following website for more information regarding the authorisation and registration of water uses with DWS:
- https://www.gov.za/sites/default/files/gcis_document/201703/40713rg10701gon267.pdf for procedural requirements for Water Use Licence Applications (WULA) and Appeals
- https://www.dws.gov.za/ewulaas/WUL.aspx (online submission of WULA)
- http://www.dwa.gov.za/Projects/WARMS/Registration/registration1.aspx (registration of water uses with DWS)

Guidelines for the utilisation and disposal of wastewater sludge, Volumes 1-5, Water Research Commission Reports TT 261/06, 262/06, 349/09, 350/09, 351/09, as amended from time to time. Refer to the website
https://www.wrc.org.za/wp-content/uploads/mdocs/TT%20351%20web.pdf

The national norms and standards for organic waste composting as published in Government Notice No. 561 on 25 June 2021:
https://www.gov.za/sites/default/files/gcis_document/202106/44762gon561.pdf

Refer to Government Notice 351 of 8 May 2014 for the phase out schedule of HCFC's as refrigerant: http://sawic.environment.gov.za/documents/3050.pdf).

SANS 10131: 2004 Above-ground storage tanks for petroleum products

F. IPW EVALUATION AND CERTIFICATION: WINERIES AND BOTTLING FACILITIES

1. REGISTRATION FOR IPW

Contact the IPW office for registration at (021) 889 6555 or complete the online registration form on www.ipw.co.za

2. IPW CERTIFICATE

An IPW Certificate is issued annually, subject to the following provisions:

2.1 An on-line self-evaluation form (available on the website www.ipw.co.za) must be completed by the facility by 31st of May each year as prescribed.

2.2 The self-evaluation form should be completed in reference with the IPW Manual for Wineries and Bottling Facilities (12th Edition, November 2022).

2.3 The qualifying score of **65%** or more must be attained.

2.4 The following criteria must be complied with:

- Grapes must be produced according to IPW guidelines.
- No non-permitted residues may be present in the wine.
- Prescribed record-keeping must be up to date.
- The winery must have all required written permission/permits/licenses for solid waste and wastewater management.
- Wine must be produced and bottled at IPW certified facilities.

2.5 If any of the criteria stipulated in 2.4 are not complied with, an acceptable action plan describing the steps to be taken to ensure compliance during the following season, must be in place.

The IPW certificate does therefore not automatically guarantee that the producer complies with all IPW criteria. An acceptable plan of action should therefore be in place to ensure compliance in the near future.

NOTE: Completion of Appendix 4

- Each winery or bottling facility must complete Appendix 4 fully on an annual basis, using the IPW Manual for Wineries and Bottling Facilities (12th Edition, November 2022) as reference (published on www.ipw.co.za).
- Wineries that make wine and bottle and/or disgorge wine on their premises (with own or mobile equipment) have to complete all the sections of the guidelines marked “A” (note that Point 14 does not apply to wineries that bottle at external / off-site bottling facilities).
- Wineries that use a mobile disgorgement and/or bottling facility must complete Point 14 in collaboration with the service provider.
- Wineries that use an external disgorgement facility and/or bottler must complete Point 13 in collaboration with the external facility/facilities. The external bottling facility must be IPW certified.
- Wineries that only produce bulk wine (i.e. wine is sold before bottling), only complete items marked with B (Points allocated are displayed below Appendix 4).
- Bottling facilities only complete items marked with C.

3. THIRD PARTY AUDITING

The IPW Scheme is unique and industry specific. The Scheme complies with international wine industry environmental sustainability criteria, including the 'Global Wine Sector Environmental Sustainability Principles' as published by the International Federation of Wine and Spirits (FIVS) and the 'OIV Guidelines for sustainable Viti-viniculture: Production, processing and packaging of products' as published by the International Organisation of Vine and Wine (OIV).

The IPW Scheme falls under the jurisdiction of the South African Wine and Spirit Board (WSB). To ensure compliance to the IPW Scheme, an independent third party auditing body, Enviroscientific, was appointed to conduct annual independent audits on all IPW registered entities.

Further technical information regarding registration as a member of the scheme, the IPW guidelines, manuals, certification and auditing policies are available from the IPW website at www.ipw.co.za or from the IPW office at (021) 889 6555.

IPW EVALUATION FORM: WINERY

APPENDIX 1

Evaluation per item according to guidelines	Score	Good 5	Avg 3-2	Poor 0	Total
1 IPW Training A, B, C	5				
2 Property management A, B, C	5				
3. Quality and temperature of incoming grapes A, B	5				
4. Energy use & Carbon Emissions					
4.1 Energy use [X2] A, B, C	10				
4.2 CO_2 Calculation A, B, C	10				
5 Implementing & maintaining Infrastructure & Equipment [X2] A, B, C	10				
6 SO_2-levels (Appendix 5A) [X2] A	10				
7 Substances added to wine (Appendix 5B)					
7.1.1 Products possibly containing GMO'S A, B, C	5				
7.1.2 All other additives A, B, C	5				
7.1.3 Filtration of wine A, B, C	5				
7.2 **Storage and record-keeping of chemicals**					
7.2.1 Chemical store A, B, C	5				
7.2.2 Traceability A, B, C	5				
8 Cooling (Appendix 5C) A, B, C	5				
9 Management of waste water (Appendix 5D – 5G)					
9.1 Monitoring wastewater quantity [X2] A, B, C	10				
9.2 Monitoring wastewater quality [X2] A, B, C	10				
9.3 Storing wastewater [X2] A, B, C	10				
9.4 Disposal of wastewater [X2] A, B, C	10				
10 Disinfectants & cleaning agents (App. 5H) A, B, C	5				

Appendix continues….

…Appendix 4 continued		Score	Good 5	Avg 2-3	Poor 0	Total
11 Management of solid waste (Appendix 5I – 5J)						
11.1.1 Disposal of solid waste	A, B, C	5				
11.1.2 Grape waste, lees and filter rests	A, B, C	5				
11.1.3 Recycling of solid waste	A, B, C	5				
11.2 Cleaning of wastewater dams, pipes and other equipment	A, B, C	5				
12 Ambient noise	A, B, C	5				
13 Packaging material	A	5				
14 Bottling	A, C	5				
15 **Bonus points**		(10)				
	TOTAL					

Qualifying score for a winery that make wine and bottle (A): Total of 107 points or more out of 165
Qualifying score for a winery that only make bulk wine (B): Total of 94 points or more out of 145
Qualifying score for bottling facilities (C): Total of 104 points or more out of 160

Hereby is confirmed that the evaluation forms were completed and submitted as prescribed, together with any action plans required, if any of the criteria to qualify for an IPW certificate under 2.3 and 2.4 of Section F were not complied with.

It is also confirmed that all evaluation forms and action plans from producers supplying grapes to the winery have been submitted to the winery (if applicable).

Name of winery/bottling facility

Telephone number

Responsible person

Signature

Date

SAWIS Producer No.

EVALUATION REGARDING TOTAL SO_2-LEVELS (mg/L) **APPENDIX 5A**

EVALUATION REGARDING TOTAL SO_2-LEVELS (mg/L)			
Wine type	**Good**	**Average**	**Poor**
Natural dry white wine, Rosé, Blanc de Noir and Sparkling wine (< 5g/l residual sugar)	< 110	110 - 140	>140
Natural dry red wine (< 5g/l residual sugar)	<100	100 - 130	>130
Natural white and red wine, Rosé, Blanc de Noir and Sparkling wine (> 5g/l residual sugar)	< 120	120 - 160	>160
Fortified wines	<100	100 - 150	>150
Noble late harvest and wine from naturally dried grapes (“Straw Wine”)	<200	200 - 240	>240

EVALUATION OF SUBSTANCES ADDED TO WINE BASED ON NEGATIVE ENVIRONMENTAL IMPACT[1]

APPENDIX 5B

Least	Less	Most
Precipitants and fining agents		
Egg albumen	Bentonite (Calcium/Sodium)	
Gelatin	Activated animal/plant charcoal	
Tannin	Polyvinyl-polypyrolidone (PVPP)	
Pectolytic enzymes[2]	Silicasol	
Ideal milk		
Fish collagen (Isinglass)		
Milk		
Rubigum / Arabic gum		
Casein		
Filter materials		
Crossflow filtration	Cellulose	Perlite
Flotation	Filter sheets	Diatomaceous earth
Candle filters		

[1] Only substances which are allowed in terms of table 6 of the “Liquor Products Act 60 of 1989” may be used. Refer https://www.sawis.co.za/winelaw/southafrica.php

[2] GMO-free certificate must be on file

EVALUATION OF COOLING SYSTEMS **APPENDIX 5C**

The most common refrigerants and coolants are indicated below:

Good	Average	Poor	
		Legal	Illegal
Ammonia[1] Propylene-glycol	HFC's: R134a R143 Azeotropic blends: R407C R407F R410A R507	Coolant: Diethylene-glycol[3] HCFC's: R22[2] = Freon 22 R141b R143a Azeotropic blends: R404A R409A R412A R502	CFC's: R11 R12

[1]Highly toxic - must remain in a closed system (not harmful to the atmosphere, but is a health risk).
[2]Interim product which will be phased out in time.
[3]Highly toxic and should not be used near food or drink for human consumption.

Refer to Government Notice 351 of 8 May 2014 (http://sawic.environment.gov.za/documents/3050.pdf) for the phase out schedule. From 1 January 2040 no person is allowed to import, place on the market or use HCFC's. A person is prohibited from using HCFC-22 (R22) or any refrigerant or refrigerant blend either in pure form or as a component of blended refrigerants, in the construction, assembly or installation of any new refrigeration or air-conditioning or equipment from 1 January 2015.

NOTE: Other legal refrigerants or coolants that are not indicated in table 5C may also be used. These refrigerants or coolants will then also be evaluated according to their Ozone Depletion Potential (ODP) and Global Warming Potential (GWP).

WASTEWATER MANAGEMENT **APPENDIX 5D**

Action	**Good (5)**	**Poor (0)**
Monitoring waste water quantity[1]	- Effective water meter in use. - Weekly with confirming records.	- Poor monitoring or no records.
Monitoring waste water quality[2]	- Monthly determination of COD, EC, pH, SAR, Na, Ca, Mg, K and Faecal coliforms at a SANAS accredited laboratory with confirming records (official laboratory reports). - Representative sampling just before disposal/irrigation.	- Longer than monthly or no monitoring.
Storing of wastewater[3]	- Scientific proof as confirmation that containment dam is large enough and sealed. - Beneficial irrigation: Soil study as proof of suitability of soil and that irrigation area is large enough. - Beneficial irrigation: Annual soil analyses of areas under wastewater irrigation (as well as control – "virgin soil"). - Evaporation: scientific study as confirmation that sufficient evaporation will take place without overflow.	- If any of the requirements under "Good" are not complied with.
Disposal of wastewater[4]	- Formal agreement with municipality in place for wastewater removal and/or disposal and compliance - Proven compliance with the DWS General Authorisation or Water Use Licence. - Registration of wastewater volumes at the DWS if applicable. - Registration of wastewater dams with DWS if applicable. - Formal agreement with neighbour for wastewater disposal if applicable.	- If any of the requirements under "Good" are not complied with.

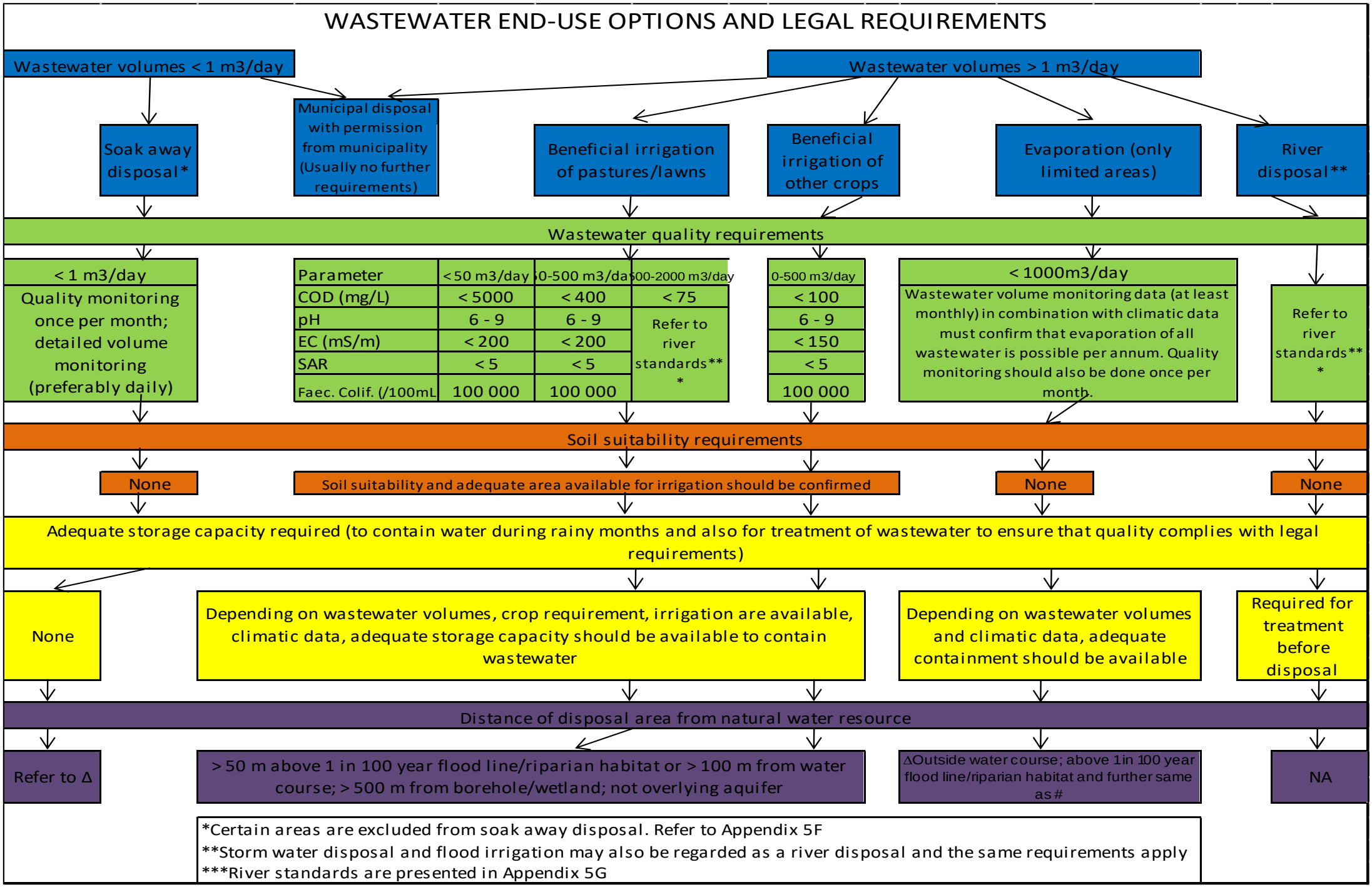
[1] Where monitoring occurred, but not on a weekly basis, the auditor could decide to award points for average score (2 or 3).

[2] Where monitoring occurred, but not on a monthly basis, the auditor could decide to award points for average score (2 or 3). Quality monitoring is not required if wastewater is legally removed by the municipality or directly disposed (legally) into the municipal sewer, unless required by the municipality.

[3] Where the scientific proof is not available, but according to the auditor highly unlikely that the size of the irrigation area and/or the wastewater containment dam is too small, the auditor could decide to award points for average score (2 or 3). A scientific report is not required if wastewater is legally removed by the municipality or service provider, or is directly disposed (legally) into Municipal sewer, unless required by the municipality. If the wastewater is removed by the municipality or service provider, the volume of water removed should correspond with the volume of water used in the winery. A scientific report is also not required if less than 1 m^3 of wastewater per day is legally disposed into a soak-away system.

[4] If it can be confirmed that the winery conforms to all legal requirements of the DWS General Authorisation or Water Use Licence, the auditor may decide to award 5 points. Where an application has not been submitted but a formal agreement and commitment to address wastewater management has been submitted to the DWS, some points can be awarded. The same is also applicable for the application of authorisation for the direct disposal of wastewater into the municipal sewer and/or removal of wastewater by the municipality or a service provider.

APPENDIX 5E: Diagram indicating various end use options for wastewater disposal according to DWS requirements in terms of the National Water Act, 1998 (Act no. 36 of 1998) (Note that waste legislation is amended frequently and this diagram is only a tool and the wine producer is by no means exempted from any legal requirements)



APPENDIX 5F: Subterranean government water control areas excluded from General Authorisation for disposal of waste

Primary drainage region	Tertiary/ Quaternary drainage region	Description of subterranean government water control area	Government Notice No.	Government Gazette Date
H	H30	Baden	136	1967-06-16
A	A30	Bo-Molopo	1324	1963-08-30
C	C30	Bo-Molopo	1993	1965-12-17
D	D41	Bo-Molopo	R634	1966-04-29
A	A24	Crocodile River Valley	208	1981-10-23
A	A21	Crocodile River Valley	18	1983-02-18
A	A21, A22	Kroondal-Marikana	180	1963-06-17
G	G10,G30	Lower Berg River Valley/Saldanha	185	1976-09-10
A,B	A60,B50,B31	Nyl River Valley	56	1971-03-26
G	G30	Strandfontein	2463	1988-12-09
M	M10,M20,M30	Uitenhage	260	1957-08-23
G	G30	Wadrif	992	1990-05-11
G	G20	Yzerfontein	27	1990-02-09
G	G30	Graafwater	1423	1990-06-29
A	A70	Dendron-Vivo	813	1994-04-29
A	A60	Dorpsrivier	312	1990-02-16
C	C24	Ventersdorp	777	1995-06-02

APPENDIX 5G: Legal standards for river disposal and beneficial irrigation of kikuyu

Parameter	River disposal		Beneficial irrigation of kikuyu	Beneficial irrigation of kikuyu (up to 2 000 m^3/day)
	General limit	Special limit		
Faecal Coliforms (per 100 ml)	1 000	0	100 000	1 000
Chemical Oxygen Demand (mg/l)	75	30	5 000 (if < 50 m^3/day is irrigated) 400 (if 50 – 500 m^3/day is irrigated)	75
pH	5.5 – 9.5	5.5 – 7.5	6 – 9	5.5 – 9.5
Ammonia (ionised and un-ionised) as Nitrogen (mg/l)	6	2		3
Nitrate/Nitrite as Nitrogen (mg/l)	15	1.5		15
Chlorine as Free Chlorine (mg/l)	0.25	0		0.25
Suspended Solids (mg/l)	25	10		25
Electrical Conductivity (mS/m)	70 mS/m above intake to a maximum of 150 mS/m	50 mS/m above background receiving water, to a maximum of 100 mS/m	200	70 mS/m above intake to a maximum of 150 mS/m
Ortho-Phosphate as phosphorous (mg/l)	10	1 (median) and 2.5 (maximum)		10
Fluoride (mg/l)	1	1		1
Soap, oil or grease (mg/l)	2.5	0		2.5
Dissolved Arsenic (mg/l)	0.02	0.01		
Dissolved Cadmium (mg/l)	0.005	0.001		
Dissolved Chromium (VI) (mg/l)	0.05	0.02		
Dissolved Copper (mg/l)	0.01	0.002		
Dissolved Cyanide (mg/l)	0.02	0.01		
Dissolved Iron (mg/l)	0.3	0.3		
Dissolved Lead (mg/l)	0.01	0.006		
Dissolved Manganese (mg/l)	0.1	0.1		
Mercury and its compounds (mg/l)	0.005	0.001		
Dissolved Selenium (mg/l)	0.02	0.02		
Dissolved Zinc (mg/l)	0.1	0.04		
Boron (mg/l)	1	0.5		
Sodium adsorption ratio (SAR)			< 5	< 5

EVALUATION OF DISINFECTANTS AND CLEANING AGENTS **APPENDIX 5H**

Good	Average	Poor
Anionic and non-ionic		Chlorine dioxide (in gas form)
Iodophores		Sodium hypochlorite
Peroxy-acetic acid		Sodium formulated
Hydrogen peroxide		Chlorinated alkaline products
Acid anionic compounds		Organic acid formulated products (e.g. citric acid)
Calcium- or Potassium hydroxide formulated products		Calcium hypochlorite
Inorganic acid formulated products (e.g. phosphoric and nitric acid)		Potassium hypochlorite
Ozone		
Quaternary ammonium compounds	Quaternary ammonium compounds containing chlorides	

NOTE: Ask the supplier or manufacturer of disinfectants and cleaning agents into which of the above chemical categories the product you obtain from them falls. A particular chemical formulation is often marketed under various brand names. Therefore the Material Safety Data Sheets (MSDS) and Certificates of Analysis/Conformance (COA/COC) indicating the chemical composition must be available for all disinfectants and cleaning agents.

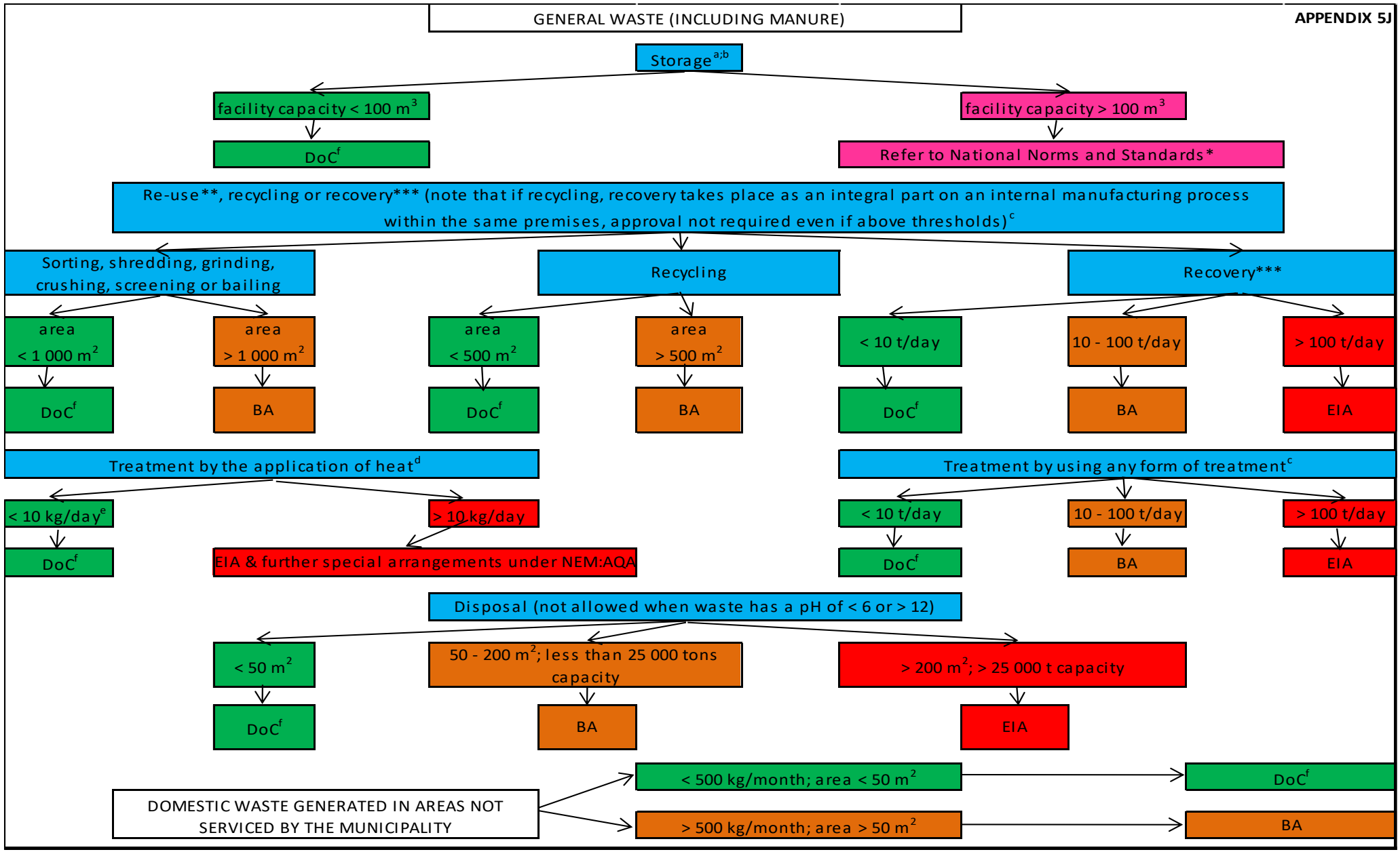
Should sodium hydroxide, chlorine dioxide, sodium hypochlorite, calcium hypochlorite or potassium hypochlorite be used for the treatment of incoming water or wastewater, it will be evaluated under Guideline 9.

SOLID WASTE MANAGEMENT **APPENDIX 5I**

Action	**Good (5)**	**Poor (0)**
Waste management[1]	- Removal of general waste by waste removal company. Invoices and a copy of waste disposal permit plus a summary of waste must be available. - Removal of general waste by Municipality (invoices) - Skins, stems, pips and lees diatomaceous earth, bentonite, spent filter material, sludge from catchment dams etc. must be stored on an impenetrable layer (such as cement, plastic or clay) and covered against rain. Proof of compaction/impenetrable characteristics of site is necessary. - Recovery of alcohol or tartaric acid where possible. - Determination of chemical composition before applied to soil. - Waste sorting and implementation of waste recycling programme (letters from recycling company and recycling records, including summary of each waste type)	- If any of the requirements under "Good" are not complied with, when it was possible.

[1] The auditor can decide to award 3 points if stored in/on a low risk area

APPENDIX 5J



Note that waste legislation is amended frequently and this diagram is only a tool and the wine producer is by no means exempted from any legal requirements based on the diagram

DoC = Duty of Care; BA = Basic Assessment; EIA = Environmental Impact Assessment

Note that persons who lawfully conduct waste management activities listed in the relevant Schedule on the date of the coming into effect of the Notice may continue with those activities until such time that the Minister by notice in the Gazette calls upon those persons to apply for waste management licences

APPENDIX 5J (continues)

[a]NN&S - National norms and standards for the storage of waste

[b]National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) - Government Gazette No. 37083, 29 November 2013 (Government Notice No. 926)

[c]National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) - Government Gazette No. 37083, 29 November 2013, (Government Notice No. 921)

[d]National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) - Government Gazette No. 37054, 22 November 2013, (Government Notice No. 893)

[e]Further special arrangemens also apply: e.g. Installation of monitoring equipment and continuous, on-line measurement of particulate matter (PM), O_2, CO, etc.; Air Quality Improvement Plan

[f]Even if a waste licence is not required, NEMA stipulates that each person as a "Duty of care" towards the environment and each person must ensure that the risk of pollution as a result of the activities be minimised and therefore conform to at least the following:

site > 100 m from a water resource and above 1:50 year flood line

site adequately fenced, locked and marked with relevant signs to restrcit animals and unauthorised entry

site should not overlie and area with shallow or emergent water tables

waste should not cause any nuisance conditions due to flies or other vermin

site located in previously disturbed areas and not in natural vegetation

*Refer to NN&S for storage of waste

According to the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014) - GG No. 37714, 2 June 2014, (Government Notice No. 928):

**Re-use = to utilise the whole, a portion of or a specific part of any substance, material or object from the waste stream for a similar or different purpose without changing the form or properties of such substance, material or object

***Recovery = the controlled extraction of a meterial/object from waste to a produce a product

General waste = waste that does not pose an immediate hazard or threat to health or the environment, and includes: domestic waste; building and demolition waste; business waste; inert waste; or any waste classified as non-hazardous waste in terms of the regulations made under section 69

Business waste = waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purpose, which include: Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing

Hazardous waste = any waste that contains organic or inorganic elements or compounds that may have a detrimental impact on health and the environment (includes hazardous waste portion of wastes from agricultur, horticulture, aquaculture, forestry, hunting and fishing
According to definition food preparation and processing waste is not hazardous (however, farm waste e.g. obsolete chemicals and empty agro-chemical containers are considered hazardous waste)

According to the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) - Government Gazette No. 36784, 23 August 2013, (Government Notice No.
Disposal (not allowed when waste has a pH of < 6 or > 12)

APPENDIX 5J (continues)
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) - National Norms and Standards for the storage of waste
Requirements for waste storage facilities
1- Registered with the competent authority within 90 days prior to construction and provide at least the following:
a) demarcation of area where facility will be located
b) name of facility
c) name of owner of facility
d) types of waste
e) size of facility
f) sources of waste
g) time frames for storage
h) coordinates of facility
2 - When choosing site, consider:
a) public health and environmental protection
b) requirements in respect of existing servitudes
3 - Training must be provided continuously and programme must include at least the following:
a) precautionary measures
b) procedures that must be applied to a particular type of work
c) procedures for dealing with spillages and accidents
d) appropriate use of protective clothing
e) risks of the hazardous substances to employees' health wich they are likely to be exposed to
Sufficient number of employees must be trained to cover for leave periods, etc.
An attendance register must be kept and signed by each employee at each training session
Only trained persons must be allowed to handle hazardous waste
4 - Emergengy Preparedness Plan must be in place including the following:
a) hazard indentification
b) prevention measures
c) emergengy planning
d) emergency response
e) remedial actions
Immediate action must be taken to contain spillage and prevent it from entering storm water drains or the environment
5 - Monitoring and inspection must be done
a) containers, tanks, valves, piping containing hazardous waste must be inspected for leaks, etc. on weekly basis
b) registered engineer must inspect tanks containing hazardous waste at least once per annum
c) secondary containment system must be examined once weekly or after each significant precipitation event
d) ventilation systems, sump pumps, emergency alarms, etc. must be inspected weekly
e) inspection must include review of adequacy and accessibility of spill response equipment
f) inspection and remedial action must be taken if environmental pollution is suspected
6 - Internal audits
a) must be conducted bi-anually
b) official report must be compiled to report findings (submitted to external auditor)
7 - External audits
a) must be conducted bi-anually by an independent external auditor
b) official report must be compiled to report findings (submitted to relevant authority)
c) audit report must - specifically state whether conditions of these standards are adhered to, etc.
8 - Relevant authority audits and inspections
a) reserves the right to audit and/or inspect without prior notification
b) all documentation must be available on request
9 - Reporting
a) an emergency incident must be reported in accordance with section 30 of NEMA
b) an action plan must be signed of by senior management
c) complaints register and incident report must be made available to external auditor and relevant authority
d) external audit reports must be submitted to the relevant authority within 30 days from the date on which the audit was finalised
10 - Records
a) the following documents must be available: number of waste storage containers; date of collection; authorised collector(s) and proposed final point of treatment/recycling/disposal
b) any deviations from the approved integrated or industry waste management plan must be recorded
c) records must be kept for at least 5 years
11- Minimum requirements during decommisioning phase
a) site must be rehabilitated to the satisfaction of the relevant authority and according to the rehabilitation plan
b) rehabilitation plan, including indication of end-use of the area must be submitted to DEA for approval not more than 1year prior to intended closure
c) the plan must indicate the measures for rehabilitatin contaminated areas within the facility and the manner in which waste resulted from decommissioning activities will be managed
d) the owner of the facility, including the subsequent owner of the facility will remain responsible for any adverse impacts on the environment, even after operations have ceased
12 - For additional info regarding a comparison between requirements for General and Hazardous waste storage facilities, refer to Comparison sheet