



SOUTH AFRICAN WINE AND SPIRIT BOARD

Scheme for Integrated Production of Wine

**Integrated Production of Wine:
Manual for Wineries and Bottling Facilities**

11th Edition: June 2020

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In consultation with the Viticulture and Wine Industry

This manual is designed to assist in the completion of the on-line self-evaluation form to obtain IPW compliance in terms of the IPW Guidelines for Wineries and Bottling Facilities, 11th Edition (June 2020), available from the website www.ipw.co.za.

Keep the IPW Guidelines for Wineries and Bottling Facilities (11th Edition, June 2020) at hand for easy reference.

- a. All changes like coding of newly registered chemicals or legislation will be made available on www.ipw.co.za and wineries will also be informed thereof.
- b. The IPW evaluation forms must be completed in accordance with each producer's own situation:

Winery with own farm: All evaluation forms (Appendices including Table 1, 2a, 2b and 2c) for the winery's own farm as well as for every other farm where grapes are sourced and Appendix 4 for the winery must be completed and electronically submitted via the IPW website by 31 May of each year.

Producer winery: The evaluation forms (Appendices including Table 1, 2a, 2b and 2c) of all farms from where grapes are sourced, must be electronically submitted via the IPW website before 31 May of each year **AND** Appendix 4 must be completed for the winery and also be electronically submitted via the IPW website.

Bottling facility: Appendix 4 must be completed for the bottling facility and must be completed and electronically submitted via the IPW website by 31 May of each year.

- c. All IPW members must complete and electronically submit the above mentioned forms via the IPW website by 31 May of each year.
- d. Please note that wineries have to ensure that all producers delivering grapes to their winery are registered on the IPW website **before receiving** their grapes.

Guidelines for the Winery and/or Bottling Facility

The IPW evaluation form: Winery (Appendix 4) is the form that must be completed and electronically submitted via the IPW website by 31 May of each year.

Appendix 4 is a points system, which you as the cellar master/winemaker must complete. You are, therefore, totally responsible for given scores. For that reason the score sheet must be completed honestly and in line with the IPW guidelines to be able to explain any of the scores to the most interested journalist, or buyer of your wine.

The points system works in such a way that it is impossible to score a point of 1 or 4 – only 0, 2, 3, or 5 points can be scored (except in unique cases where the auditor can use his/her own discretion). How you decide on a specific point OR how to score points when completing the self-assessment, is described below. The points are entered and carried over to the right hand column of the table and multiplied with 2 where applicable (at certain guidelines). Refer to the completed example of Appendix 4 where Bondal is our fictitious winery. The scores in the right hand column are now totaled. For a winery or bottling facility to qualify for IPW, a score of at least 60% should be obtained.

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 **Guideline 14 does not apply to wineries that bottle at external / off-site bottling facilities**), while wineries that only produce bulk wine have to complete the sections marked "B". **Bottling facilities** only fill in the sections marked as "C" if they bottle their wine and render bottling services (see the Bondal Winery example on page 10).

Completion of Appendix 4: IPW evaluation form: Winery and/or Bottling Facility.

AWARDING OF POINTS: Depending on the degree of compliance with the IPW Guidelines for Wineries and Bottling facilities 11th Edition (June 2020) available on www.ipw.co.za, 0, 2, 3 or 5 points should be awarded for each guideline.

The points awarded must be confirmed by relevant documentation to ensure that the self-evaluation can be proven to an independent person at any time and that the credibility of the system cannot be questioned. Each point awarded should represent the average situation in the winery during the past season.

Guideline 1: “IPW Training”

There is no limit to the number of people per winery that may obtain an IPW certificate, but it is of critical importance that the person or one of the persons directly responsible for decision-making regarding winery practices should obtain an IPW certificate. It is not sufficient that only the administrative clerk of the winery has a certificate. An IPW training certificate is issued to each person attending the training course presented during that year. A copy of the most recent training certificate should be kept on record and should be presented to the auditor as confirmation that a course was attended to obtain the necessary points as discussed below.

- If a person in a decision-making or management position in the winery obtained an IPW training certificate during the last 3 years, 5 points are awarded.
- If a person in a decision-making or management position in the winery obtained an IPW training certificate 4 years ago, 3 points are awarded.
- If a person in a decision-making or management position in the winery obtained an IPW training certificate 5 years ago, 2 points are awarded.
- If nobody in a decision-making or management position in the winery is in possession of an IPW training certificate, or if the IPW training certificate is older than 5 years, 0 points are awarded.
- If only a person in an administrative or consulting capacity has an IPW certificate, 0 points are awarded.

Guideline 2: “Zoning, incoming water registration and – analysis”

The winery should have a map (or Google image) of the property on file indicating at least the following: winery buildings, incoming water lines, water sources, wastewater lines and treatment system, wastewater containment dam(s) (where applicable), area where wastewater is irrigated (where applicable) or disposed of (e.g. Municipal sewerage) and relevant sewage system(s), e.g. septic tanks and drainage system, connection with Municipal sewerage line, composting area (if applicable), etc.

Records must also be available as proof of the legal construction or expansion (e.g. Record of Decision from the Department of Environmental Affairs, building plans approved by the Municipality or Certificate of Occupancy issued by the Municipality), zoning of the winery (Municipal Zoning Certificate), a R.638 Certificate of Acceptability for a Food Premises, registration of water used in the winery (or Municipal invoices for incoming water), as well as a recent SANS 241-1: 2015 drinking water analysis (within twelve months preceding the audit) of the incoming water used in the winery and details regarding sewage management.

- If all the required information can be supplied, 5 points are awarded.
- If some of the required information can be supplied, 2 - 3 points are awarded.
- If none of the required information can be supplied, 0 points are awarded.

Guideline 3: “Quality and temperature of incoming grapes” (not applicable to bottling facilities)

The following records must be available for each incoming grape load: date, tonnage, the rot percentage (the average percentage rotten grapes received during the harvest season should also be calculated and substantiated at the end of the season) and temperature of each incoming grape load before cooling (this will be an indication of the amount of energy required to cool down the grapes). The aim is to ensure that healthy grapes are received that was kept as cool as possible and to deliver grapes to the winery as soon as possible after harvest to prevent juice from fermenting or oxidizing. Evaluation is once again based on the general situation for all grape loads delivered during the season. Records/certificates should be obtained from suppliers as confirmation that the bins/containers of the trailers or trucks (for transport of grapes) are covered with inert food grade material. Without all required records, 5 points cannot be awarded.

- If the total intake over the season had less than 5% rotten grapes AND if grapes were delivered in trailers or trucks with decks of food grade material (or coated appropriately) AND grapes were delivered to the winery within one hour after harvesting was completed AND the grapes were reasonably cool (below 25°C), 5 points are awarded.
- If the total intake over the season had less than 5% rotten grapes AND if grapes were delivered in trailers or trucks with decks of food grade material (or coated appropriately) AND grapes were transported over longer distances and reached the winery more than 1 hour after harvesting was completed, but the temperature of the grapes was kept down (e.g. harvested very early, or at night, or by cooling) AND grapes were transported in small containers so that not too much juice accumulated in the bottom and it can be proven that steps were taken to prevent fermentation/oxidation of juice, 5 points are also awarded.
- If the total intake over the season had between 5% en 10% rotten grapes AND/OR if grapes were delivered in trailers or trucks with decks of food grade material (or coated appropriately); AND grapes were transported over longer distances and reached the winery more than 1 hour after harvesting was completed, but the temperature of the grapes was not too high and it can be proven that steps were taken to retard fermentation/ oxidization of juice, 3 points are awarded.
- If the total intake over the season had between 10% en 20% rotten grapes, AND/OR if grapes were delivered in trailers or trucks with decks of food grade material (or coated appropriately); AND grapes were transported over longer distances and reached the winery more than 1 hour after harvesting was completed, but the temperature of the grapes was not too high and it can be proven that steps were taken to retard fermentation/ oxidization of juice, 2 points are awarded.
- If the total intake over the season had more than 20% rotten grapes, AND/OR if grapes were not delivered in trailers or trucks with decks of food grade material (or coated appropriately); AND/OR grapes were transported over long distances and no steps were taken to keep grapes cool or to retard fermentation/ oxidation of juice, 0 points are awarded..

Even if no rotten grapes (i.e. 0%) are received by the winery (after e.g. sorting or selection in the vineyard), there must still be a record available to indicate that the percentage of rotten grapes was 0%. If grapes are cooled at the winery before it is processed, the temperature applicable to this guideline should be taken before grapes are cooled.

Guideline 4: “Energy Use and Carbon Emissions”

4.1 Carbon Emissions

The purpose is to facilitate continual improvement (and therefore reducing) energy usage and subsequent reduction in CO₂ emissions. If it is preferred to keep record of the whole farm’s energy usage (including the winery), it is acceptable, as long as it is calculated on the same basis each year. Monthly consumption of carbon based fuels and all other energy sources with correct units (and not in Rand values) for at least two years (calendar year or financial year) must be indicated in table form (see IPW Guidelines).

- If the winery has sufficient records for usage of electricity, diesel, petrol, LPG and other fuels used for winery operations has benchmarked itself and records for at least two years preceding the audit are available, 5 points are awarded.
- If records for usage of electricity, diesel, petrol, LPG and other fuels used for winery operations indicate continual improvement, 5 points are awarded.
- If the winery has limited records for usage of electricity, diesel, petrol, LPG and other fuels used for winery operations, 2 or 3 points are awarded.
- If the winery has no records for energy usage, 0 points are awarded.

4.2 Calculation of Carbon footprint

Wineries and **bottling facilities** are encouraged to calculate their carbon emissions using the internationally accepted protocol and calculator that is available from the website www.climatefruitandwine.co.za.

Points are awarded as follows:

- If the CCC calculator is completed with A, B or B1 rating AND **an** energy management plan is available, 5 points are awarded.
- If the CCC calculator is completed **with a C rating**, 2 - 3 points are awarded.
- If the calculation was not done, 0 points are awarded.

The auditor may award additional points for an A, B or B1 rating and if an energy management plan is on record.

Guideline 5: “Implementing and maintaining Infrastructure and Equipment”

This includes all winery equipment and appliances, i.e. also cement tanks. Smooth surfaces like stainless steel are easier to keep clean since the specific surface area thereof is smaller. Less water as well as cleaning agents and disinfectants are also required in comparison with surfaces with a rougher texture, e.g. plastic.

- If the winery conforms to ALL requirements under Guideline 5 AND all equipment are either coated with inert material at least every 5 five years or made from stainless steel, 5 points are awarded.
- If the winery conforms to ALL requirements under Guideline 5 AND more than half of the wine came into contact with equipment either coated with inert material at least every 5 five years or made from stainless steel, 3 points are awarded.
- If the winery conforms to ALL requirements under Guideline 5 AND only half of the wine came into contact with equipment either coated with inert material at least every 5 five years or made from stainless steel, 2 points are awarded.
- If the winery conforms to ALL requirements under Guideline 5 AND more than half of the wine came into contact with equipment made from fiber glass, 2 points are awarded.
- If more than 50% of the wine came into contact with equipment made from bronze, copper, lead or untreated cement, 0 points are awarded.

Guideline 6: “SO₂-levels”

This refers to the total SO₂-levels of the final or bottled product in terms of food safety. Appendix 5A **should be used** to evaluate the various wine types produced by the winery. The point awarded for this guideline is based on the evaluation of the weighted average of the total SO₂-levels of each wine type in terms of Appendix 5A, **and is applicable to** bottled **wines that were finally approved by the Wine and Spirit Board (WSR)** in the 12 month period prior to evaluation (self-evaluation and/or IPW winery audit). **A summary of SO₂-levels of bottled wines that were finally approved during the twelve months preceding the audit, is available for each winery on the www.ipw.co.za website.**

If the weighted averages of all wine types qualify as “good”, 5 points are awarded.

- If the weighted averages of more than half of the wine types qualify as “good” and the rest qualifies as “average” at least, 3 points are awarded.
- If the weighted averages of half of the wine types qualify as “average” at least and only a few wines are rated “poor”, 2 points are awarded.
- If the weighted averages of less than half of the wine types qualify as “average” and half or more qualify as “poor”, 0 points are awarded.

Guideline 7: "Handling of food grade chemicals"

7.1 Substances added to wine

7.1.1 *Products possibly containing GMO's*

- If updated non GMO certificates can be supplied for all relevant products (e.g. yeasts, enzymes, bacteria, etc), 5 points are awarded.
- If updated non GMO certificates can be supplied for some relevant products, 2 to 3 points are awarded.
- If updated non GMO certificates cannot be supplied for any relevant products, 0 points are awarded.

7.1.2 *All other wine additives*

Use Appendix 5B to evaluate all substances added to wine. The point awarded for Guideline 7.1.2 is determined as follows:

- If all substances used qualify as "least", 5 points are awarded.
- If half of the substances used qualify as "least" and the rest as "less", 3 points are awarded.
- If at least one of the substances used qualifies as "most", 2 points are awarded.
- If more than one of the substances used qualify as "most", 0 points are awarded.

7.1.3 *Filtration of wine*

Use Appendix 5B to evaluate filter material. The point awarded for Guideline 7.1.3 is determined as follows:

- If all substances used qualify as "least", 5 points are awarded.
- If wines are only cross flow filtered, 5 points are awarded.
- If half of the substances qualify as "least" and the rest as "less", 3 points are awarded.
- If at least one of the substances qualifies as "most", 2 points are awarded.
- If more than one of the substances qualifies as "most", 0 points are awarded.

7.2 Storage and record-keeping of chemicals

7.2.1 *Chemical stores*

- If food grade and non-food grade substances are stored separately AND wine additives and cleaning chemicals are stored separately AND storage areas are locked and well ventilated with sufficient light AND chemicals are stored on plastic pallets or wooden pallets covered with a plastic layer to minimize contamination, 5 points are awarded.
- If only some of the above-mentioned requirements are met, 2 - 3 points are awarded.
- If any risk of contamination occurs, 0 points are awarded.

7.2.2 *Traceability*

- If records as proof of balance between usage and purchasing (stock control record) of all products are available AND records are kept of the batch numbers of chemicals added to wine for traceability purposes AND all certificates of analysis (COA's) / certificates of conformance (COC's) are available, 5 points are awarded.
- If records as proof of balance between usage and purchasing of all products are available OR records are kept of the batch numbers of chemicals added to wine for traceability purposes OR all certificates of analysis (COA's) / certificates of conformance (COC's) are available, 2 - 3 points are awarded.
- If incomplete records as proof of balance between usage and purchasing of all products are available and incomplete records are kept of the batch numbers of chemicals added to wine for traceability purposes and all certificates of analysis (COA's) / certificates of conformance (COC's) are not available, 2 points are awarded.
- If none of the above-mentioned information can be supplied, 0 points are awarded.

Guideline 8: “Cooling”

Refrigerants of cooling systems are classified in Appendix 5C.

- If the refrigerant AND coolant in your winery’s cooling system qualifies as “Good”, 5 points are awarded.
- If the refrigerant AND/OR coolant in your winery’s cooling system qualifies as “Average”, 3 or 2 points are awarded.
- If the refrigerant AND/OR coolant in your winery’s cooling system qualifies as “Poor”, 0 points are awarded.

Should the winery not comply with any of the requirements of the guidelines for Wastewater Management (Guideline 9) and Management of Solid Waste (Guideline 11), it is of utmost importance that the Department of Human Settlements, Water and Sanitation (DWS) and other relevant Government Departments should be contacted to establish a plan to obtain compliance.

Guideline 9: “Wastewater management”

Water used for cooling and cleaning of tanks and other equipment should be recycled as far as possible. The legal requirements are set out in the sub-divisions under this guideline. If your winery currently does not comply with the legal requirements, it is important that you are able to show that you have set out a plan for obtaining compliance in conjunction with the relevant government department. All documentation must be available at the winery at all times. Refer to Appendix 5D.

9.1 Monitoring wastewater quantity:

- A point of 5 or 0 is awarded according to the Appendices indicated below.

9.2 Monitoring wastewater quality:

- A point of 5 or 0 is awarded according to Appendices indicated below.

9.3 Storing wastewater:

- A point of 5 or 0 is awarded according to Appendices indicated below.

9.4 Disposal of wastewater:

- A point of 5 or 0 is awarded according to Appendices indicated below.

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.**

Guideline 10: “Disinfectants and Cleaning Agents”

These products are classified in Appendix 5H.

- If all disinfectants and cleaning agents used in the winery qualify as “good”, 5 points are awarded.
- If more than half of the disinfectants and cleaning agents qualify as “good” and the rest qualify as “average”, 3 points are awarded.
- If most of the disinfectants and cleaning agents qualify as “average” and no more than 1 product qualifies as “poor”, 2 points are awarded.
- If more than one of the disinfectants and cleaning agents qualify as “poor”, 0 points are awarded.

Guideline 11: “Management of Solid Waste”**11.1 Disposal and recycling**

Most of the following are also subject to strict legislation and a score of only “Good” or “Poor” can be awarded. The winery manager must also ensure that if solid waste is removed by a waste removal

company, the necessary documents (e.g. permits) are obtained as proof that the waste removal company also complies with legislation.

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

- A point of 5 or 0 is awarded according to the mentioned Appendices.

11.1.2 Grape waste, lees and filter rests

- A point of 5 or 0 is awarded according to the mentioned Appendices.

11.1.3 Recycling of solid waste

- If it can be confirmed with relevant letters, removal records and waste summaries that all waste materials are recycled, 5 points are awarded.
- If it can be confirmed with relevant letters and removal records that some waste materials are recycled, 2 to 3 points are awarded.
- If no waste materials are recycled or no confirmation records of recycling are available, 0 points are awarded.

11.2 Cleaning of wastewater dams, pipes and other equipment

A point of 5 or 0 is awarded based on the mentioned Appendices.

Guideline 12: “Ambient Noise”

- If the winery is in possession of sufficient evidence (e.g. harvesting rules or an independent noise report) to prove that noise is limited between 20h00 and 7h00, 5 points may be awarded.
- If no records exist, but the winery is situated outside a residential area, 3 points may be awarded.
- No points are awarded where a winery is situated within 3 km of a residential area without the necessary records.

Guideline 13: “Packaging Materials” (not evaluated if only bulk wines are produced)

It is virtually impossible to award 5 points for Guideline 13, because all materials currently used in South Africa do not comply with all the requirements. To prove that the materials used for packaging are biodegradable or recycled is practically impossible. Your winery further has to belong to a formal recycling programme or has to be able to prove recycling in order to score 5 or even 3 points. **For IPW and your winery’s evaluation to be credible, points for the industry as a whole should not be higher than 2 or 3, except where proof of the contrary is available.**

A summary of all packing materials e.g. closures, capsules, labels, bottles, cartons and dividers used for wine packaging should be available. The summary should indicate of which materials and where all relevant packaging materials are manufactured and if the materials are biodegradable or recyclable, or made of recycled material.

- If a summary is available AND all packaging material in the winery are biodegradable or recyclable OR made of recycled material, 5 points are awarded.
- If some packaging material in the winery are biodegradable or recyclable OR made of recycled material, 2 to 3 points are awarded.
- If evidence could not be provided to confirm that at least some packaging material in the winery are biodegradable or recyclable OR made of recycled material, 0 points are awarded.

Guideline 14: “Bottling” (not evaluated if only bulk wines are produced, or when all wine is bottled off-site at an external facility)

- If the winery conforms to ALL the following requirements, five points are awarded:
 - A glass breakage procedure for bottling and disgorgement should be on file and implemented by the winery. Glass breakages on the bottling line and in all pallets and cartons should be monitored and recorded. The records should also confirm if no breakages occurred during a bottling or disgorgement run. 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 during clean up.
 - Broken glass should be collected and recycled as far as possible.
 - Bottle breakages on bottling lines must be managed to avoid any contamination and an acceptable bottle breakage clean up procedure should be in place.

- Staff working in bottling areas is not allowed to wear any loose jewelry 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 need to be covered with Perspex
- If the winery conforms to some of these requirements, 3 points are awarded.
- If the winery does not conform to at least some of these requirements, zero points are awarded.

Guideline 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.

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.

EXAMPLE: An example of how to complete Appendix 4 for the winery was completed for a fictitious winery named Bondal (see page 10).

EXAMPLE: BONDAL

IPW EVALUATION FORM: WINERY

APPENDIX 4

Evaluation per item according to guidelines		Score	Good 5	Avg 3-2	Poor 0	Total
1 IPW Training	A, B, C	5	5			5
2 Zoning, registration and analysis of incoming water	A, B, C	5		3		3
3. Quality and temperature of incoming grapes	A, B	5		3		3
4. Energy use & Carbon Emissions						
4.1 Carbon Emissions	[X2] A, B, C	10	5			10
4.2 CO ₂ Calculation	A, B, C	5			0	0
5 Implementing & maintaining Infrastructure & Equipment	[X2] A, B, C	10		3		6
6 SO ₂ -levels (Appendix 5A)	[X2] A	10		3		6
7 Substances added to wine (Appendix 5B)						
7.1.1 Products possibly containing GMO's	A, B, C	5	5			5
7.1.2 All other additives	A, B, C	5		2		2
7.1.3 Filtration of wines	A, B, C	5	5			5
7.2 Storage and record keeping of chemicals						
7.2.1 Chemical stores	A, B, C	5		3		3
7.2.2 Traceability	A, B, C	5	5			5
8 Cooling (Appendix 5C)	A, B, C	5	5			5
9 Management of waste water (Appendix. 5D – 5G)						
9.1 Monitoring wastewater quantity	[X2] A, B, C	10	5			10
9.2 Monitoring wastewater quality	[X2] A, B, C	10	5			10
9.3 Storing wastewater	[X2] A, B, C	10		3		6
9.4 Disposal of wastewater	[X2] A, B, C	10		2		4
10 Disinfectants & cleaning agents (App. 5H)	A, B, C	5	5			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		2		2
11.1.2 Grape waste, lees and filter rests	A, B, C	5		3		3
11.1.3 Recycling of solid waste	A, B, C	5		3		3
11.2 Cleaning of wastewater dams, pipes and other equipment	A, B, C	5		3		3
12 Ambient noise	A, B, C	5		3		3
13 Packaging material	A	5		3		3
14 Bottling	A, C	5	5			5
15 Bonus points (Responsibility towards environment)		(10)			0	0
TOTAL						115

Qualifying score for winery that make wine and bottle (A):
 Qualifying score for winery that only make wine (B):
 Qualifying score for bottling facilities (C):

Total of 96 points or more out of 160
 Total of 84 points or more out of 140
 Total of 84 points or more out of 140

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, in the IPW guidelines, are not complied with.

It is also confirmed that all evaluation forms and action plans from members have been submitted to the winery or are available online on www.ipw.co.za

 Name of winery/bottling facility

 Telephone number

 Responsible person

 Signature

 Date

 SAWIS Producer No.

EVALUATION REGARDING TOTAL SO₂-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 IMPACT¹
APPENDIX 5B

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

¹ Only substances which are allowed in terms of table 6 of the "Liquor Products Act 60 of 1989" may be used. Refer to http://www.sawis.co.za/winelaw/download/Regulations,_annotated_05_2019.pdf

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	<u>HFC's:</u> R134a R143 <u>Azeotropic blends:</u> R407C R407F R410A R507	<u>Coolant:</u> Diethylene-glycol ³ <u>HCFC's:</u> R22 ² = Freon 22 R141b R143a <u>Azeotropic blends:</u> R404A R409A R412A R502	<u>CFC's:</u> R11 R12

¹Highly toxic - must remain in a closed system (not harmful to the atmosphere).

²Interim product which will be phased out in time.

³Highly 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 quantity¹	<ul style="list-style-type: none"> - Effective water meter in use. - Weekly with confirming records. 	<ul style="list-style-type: none"> - Poor monitoring or no records.
Monitoring waste water quality²	<ul style="list-style-type: none"> - Monthly determination of COD, EC, pH, SAR, K and Faecal coliforms at a SANAS accredited laboratory with confirming records (official laboratory reports). - Representative sampling just before disposal/irrigation. 	<ul style="list-style-type: none"> - Longer than monthly or no monitoring.
Storing of wastewater³	<ul style="list-style-type: none"> - 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) - Evaporation: scientific study as confirmation that sufficient evaporation will take place without overflow 	<ul style="list-style-type: none"> - If any of the requirements under "Good" are not complied with.
Disposal of wastewater⁴	<ul style="list-style-type: none"> - Formal agreement with Municipality in place for wastewater removal and/or disposal and compliance - Proven compliance with the DWS General Authorisation - 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) 	<ul style="list-style-type: none"> - If any of the requirements under "Good" are not complied with.

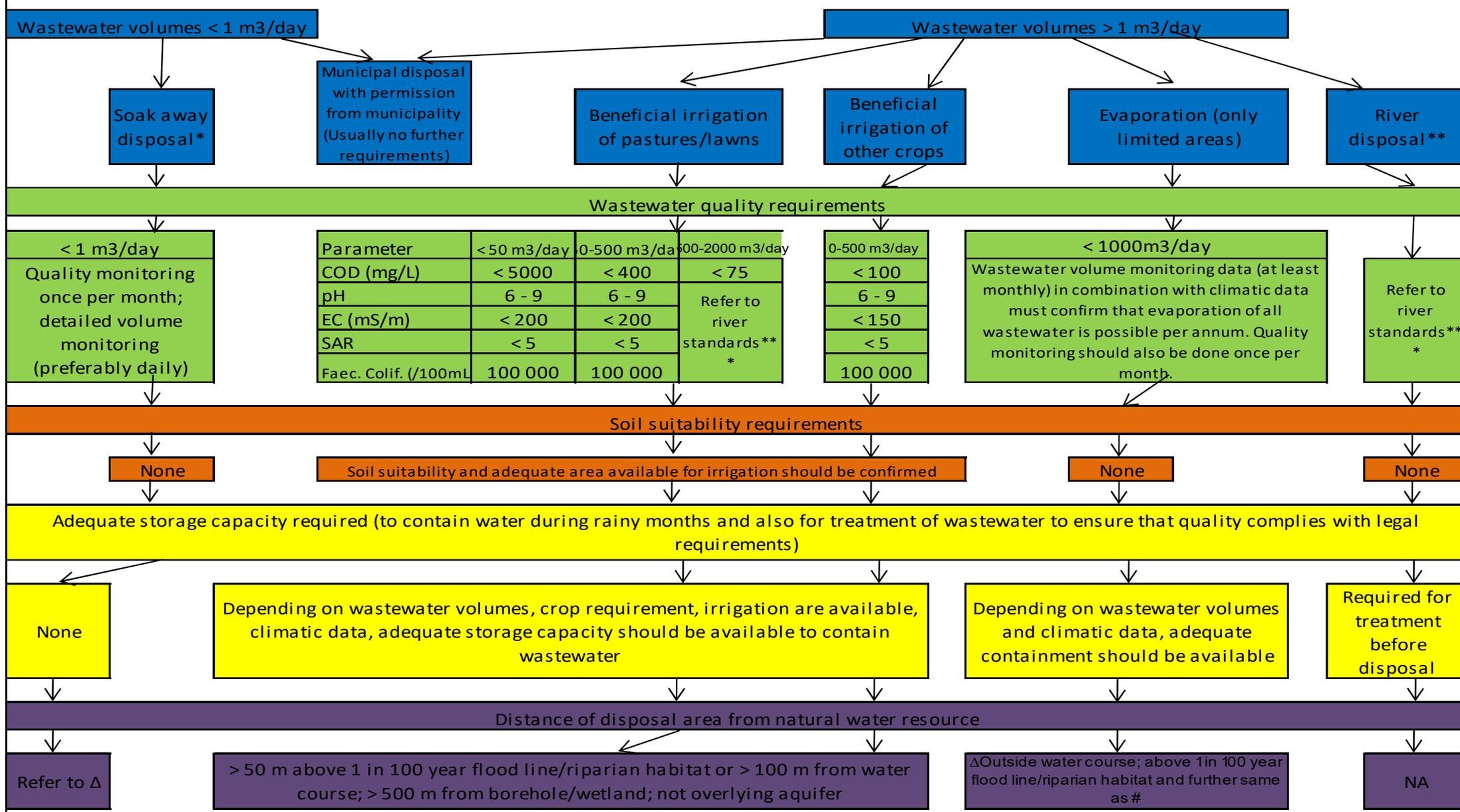
¹ Where monitoring occurred, but not on a weekly basis, the auditor could decide to award points for average score (2 or 3).

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 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). A scientific report is not required if wastewater is legally removed by the Municipality or directly disposed (legally) into Municipal sewer, unless required by the Municipality. If the wastewater is removed by the Municipality, 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 m³ 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, 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 Department of Water and Sanitation, 2 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.

WASTEWATER END-USE OPTIONS AND LEGAL REQUIREMENTS



*Certain areas are excluded from soak away disposal. Refer to Appendix 5F
 **Storm water disposal and flood irrigation may also be regarded as a river disposal and the same requirements apply
 ***River standards are presented in Appendix 5G

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.

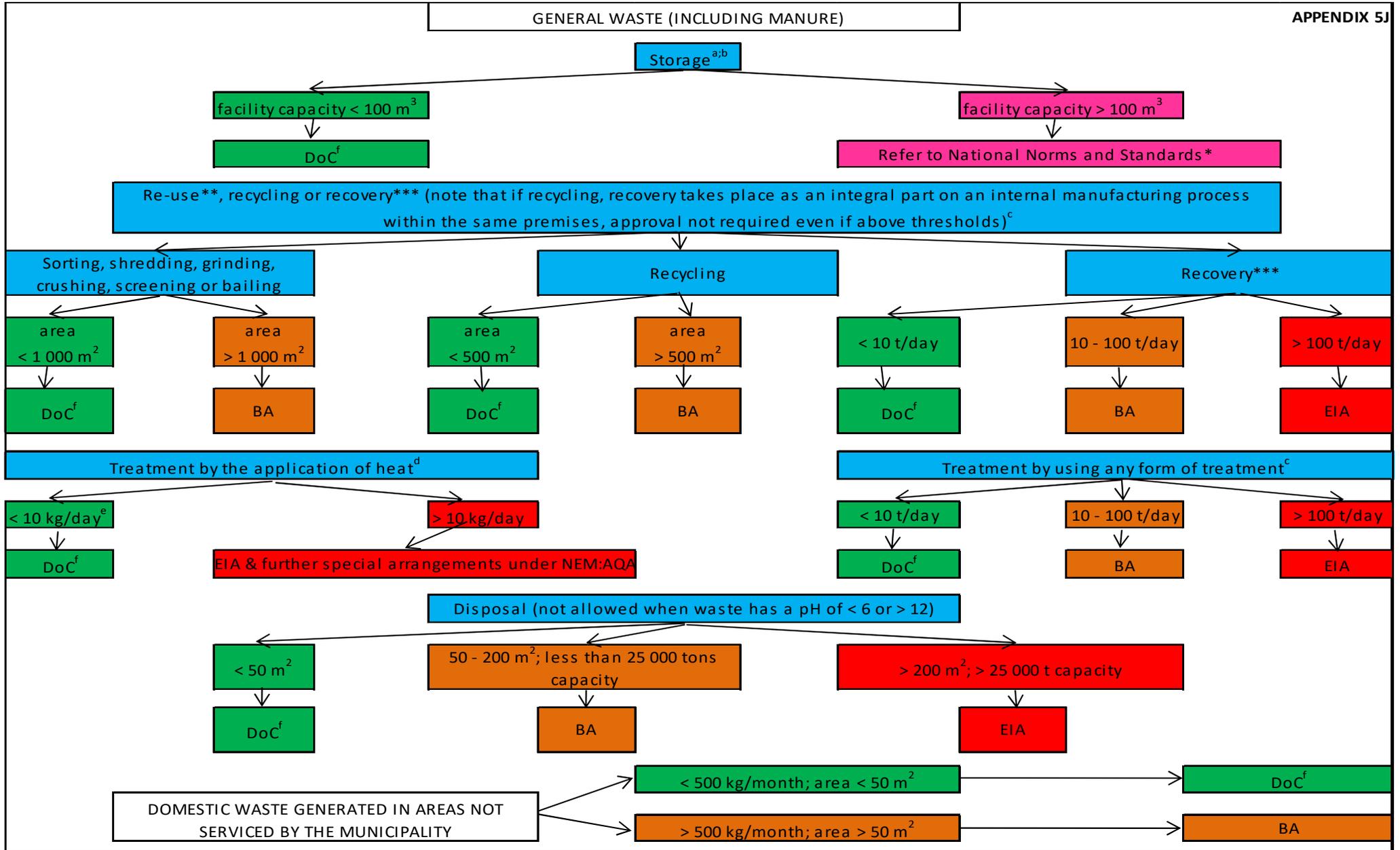
Should sodium hydroxide, chlorine dioxide, sodium hypochlorite, calcium hypochlorite or potassium hypochlorite be used for the treatment of incoming water or wastewater, it will be evaluated under Guideline 9.

SOLID WASTE MANAGEMENT

APPENDIX 5I

Action	Good (5)	Poor (0)
Waste management¹	<ul style="list-style-type: none"> - 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) 	<ul style="list-style-type: none"> - 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



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

^aNN&S - National norms and standards for the storage of waste

^bNational Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) - Government Gazette No. 37083, 29 November 2013 (Government Notice No. 926)

^cNational Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) - Government Gazette No. 37083, 29 November 2013, (Government Notice No. 921)

^dNational Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) - Government Gazette No. 37054, 22 November 2013, (Government Notice No. 893)

^eFurther special arrangements also apply: e.g. Installation of monitoring equipment and continuous, on-line measurement of particulate matter (PM), O₂, CO, etc.; Air Quality Improvement Plan

^fEven 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 restrict 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 material/object from waste to 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 agriculture, 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)

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 which 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 - Emergency Preparedness Plan must be in place including the following:

- a) hazard identification
- b) prevention measures
- c) emergency 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-annually
- b) official report must be compiled to report findings (submitted to external auditor)

7 - External audits

- a) must be conducted bi-annually 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 off 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 decommissioning 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 1 year prior to intended closure
- c) the plan must indicate the measures for rehabilitation of 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