

Generic HACCP Application: Production of Grape Wine

1. Introduction

Wine standards management plans (WSMPs) must be based on the principles of Hazard Analysis and Critical Control Point (HACCP) in relation to hazards. This document has been developed to provide guidance on the application of HACCP principles to the production of grape wine.

The application of HACCP is based on the expectation that the requirements of the Wine Regulations 2006 and the Wine (Specifications) Notice 2006, and any approved Code of Practice are being implemented. Hazard analysis focuses on the identification of hazards associated with the raw materials, inputs and processes, and their controls.

1.1 Scope

Products	Grape wine (still wine, sparkling wine and fortified wine made from red or wine grapes, wine-based liqueur).
Process	From receipt of raw materials to dispatch of bulk wine or packaged wine.

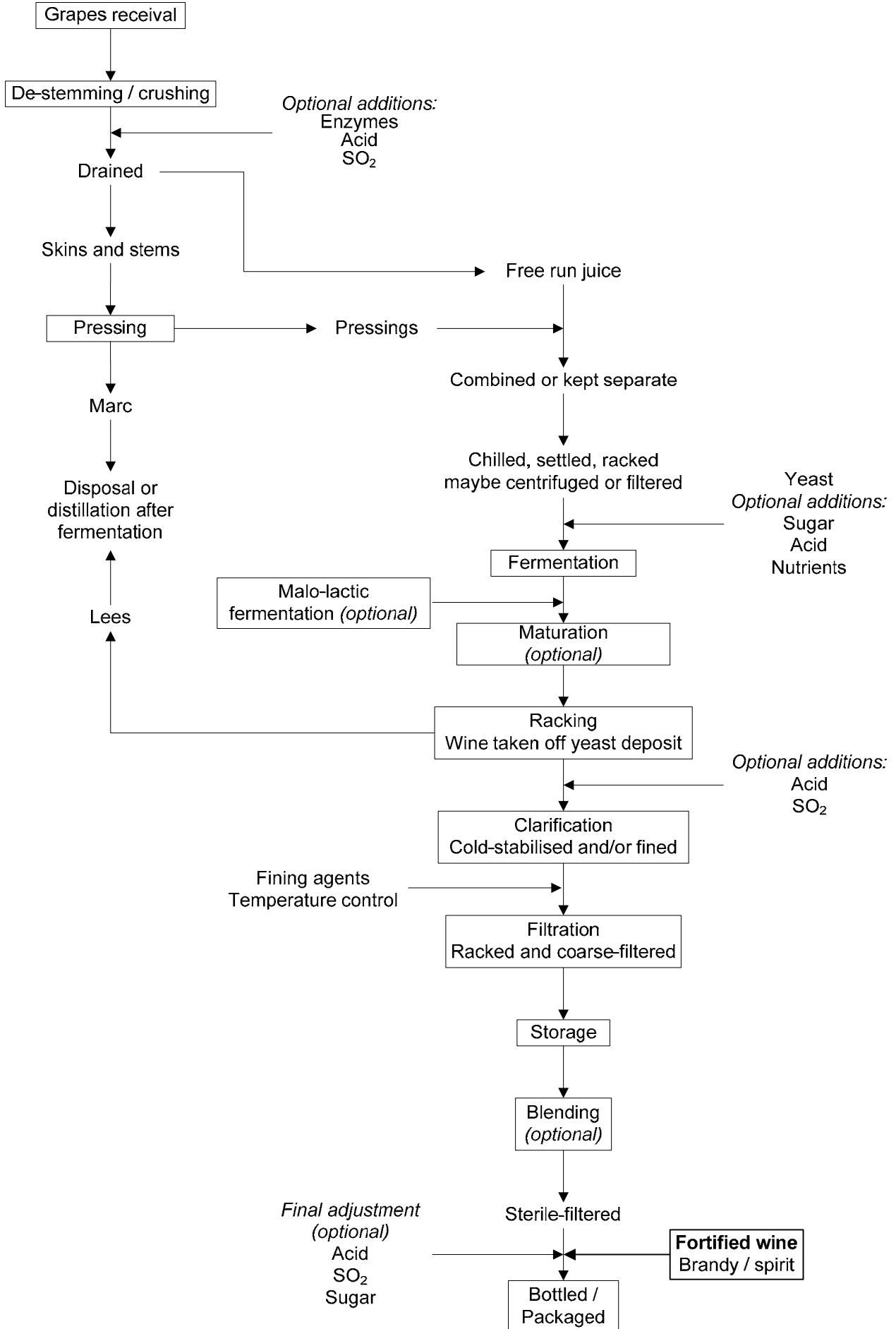
1.2 Intended Consumer and Product Requirements

Products	Grape wine
Intended consumer	General public – Adults (not intended for children)
Intended use of product	Direct consumption Culinary use
Regulatory standards that must be met	Product definition as specified in Standard 2.7.4 of the Food Standards Code. Permitted additives and level of use as specified in Schedule 1 of Standard 1.3.1 and 1.3.4 of the Food Standards Code. Permitted processing aids and level of use as specified in Standard 1.3.3 and 1.3.4 of the Food Standards Code. Permitted levels of contaminants and natural toxicants as specified in Standard 1.4.1 of the Food Standards Code. Permitted food contact materials as specified in Standard 1.4.3 of the Food Standards Code. Labelling as specified in Standards 1.1A.3, 1.2.2, 1.2A.2, 1.2.3, 1.2.5, 1.2.9 and 2.7.1 of the Food Standards Code. Labelling as specified in Clause 6 of the Wine (Specifications) Notice 2006.

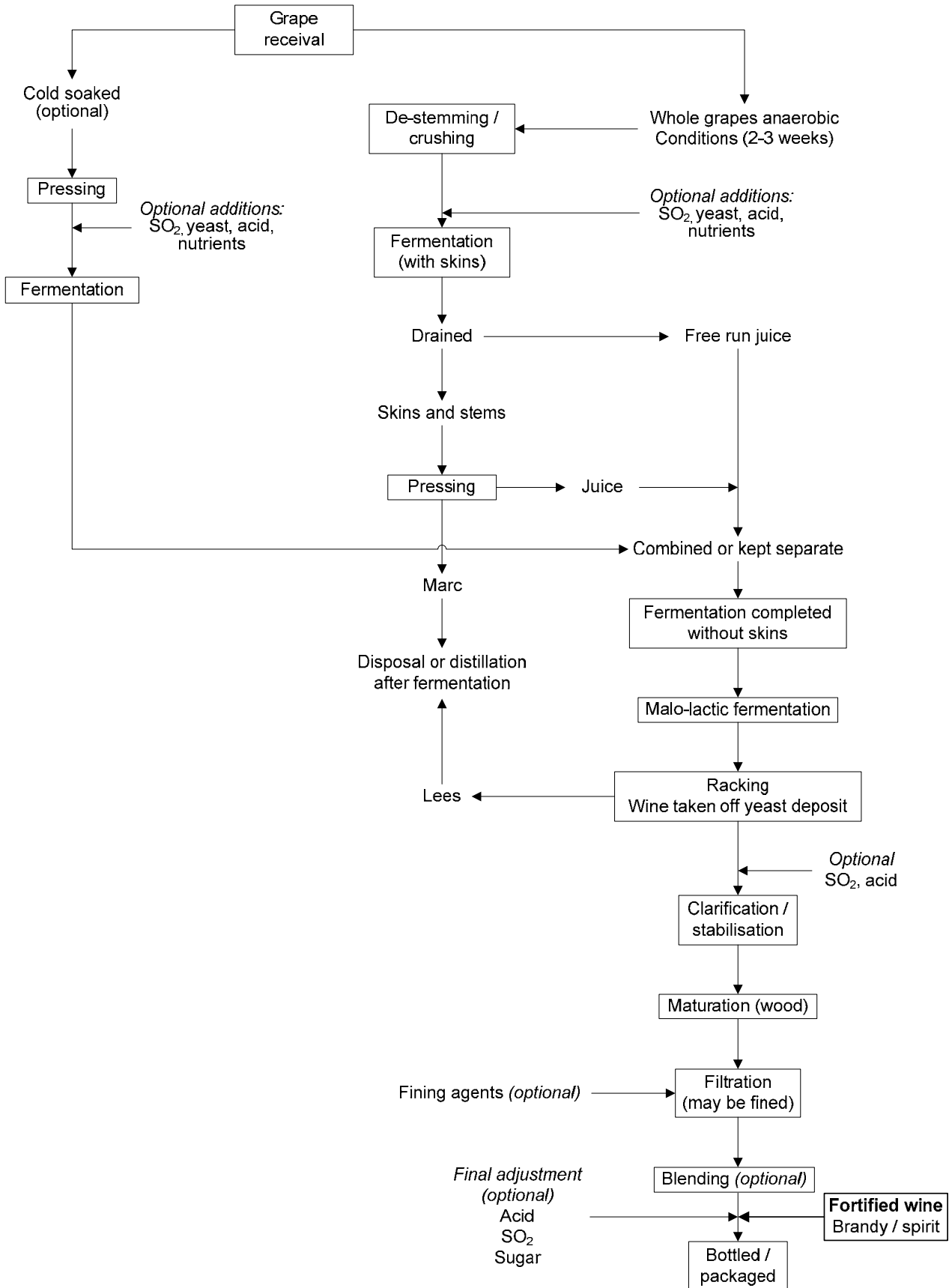
2. Process Description

The process flow diagrams shown are based on a generic process that incorporates most of the common steps involved in making grape wine. Some of the process steps are optional, and the sequence of the steps followed by an operator may differ from the ones shown. Where there are departures from the generic flow diagrams, winemakers must ensure that their processes are accurately reflected in their own wine standards management plan.

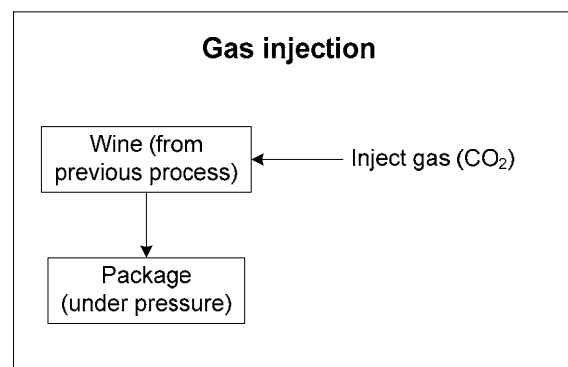
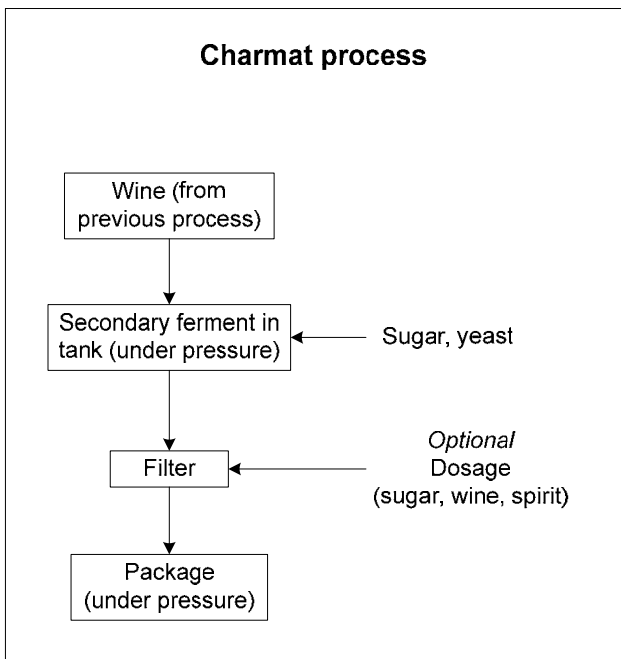
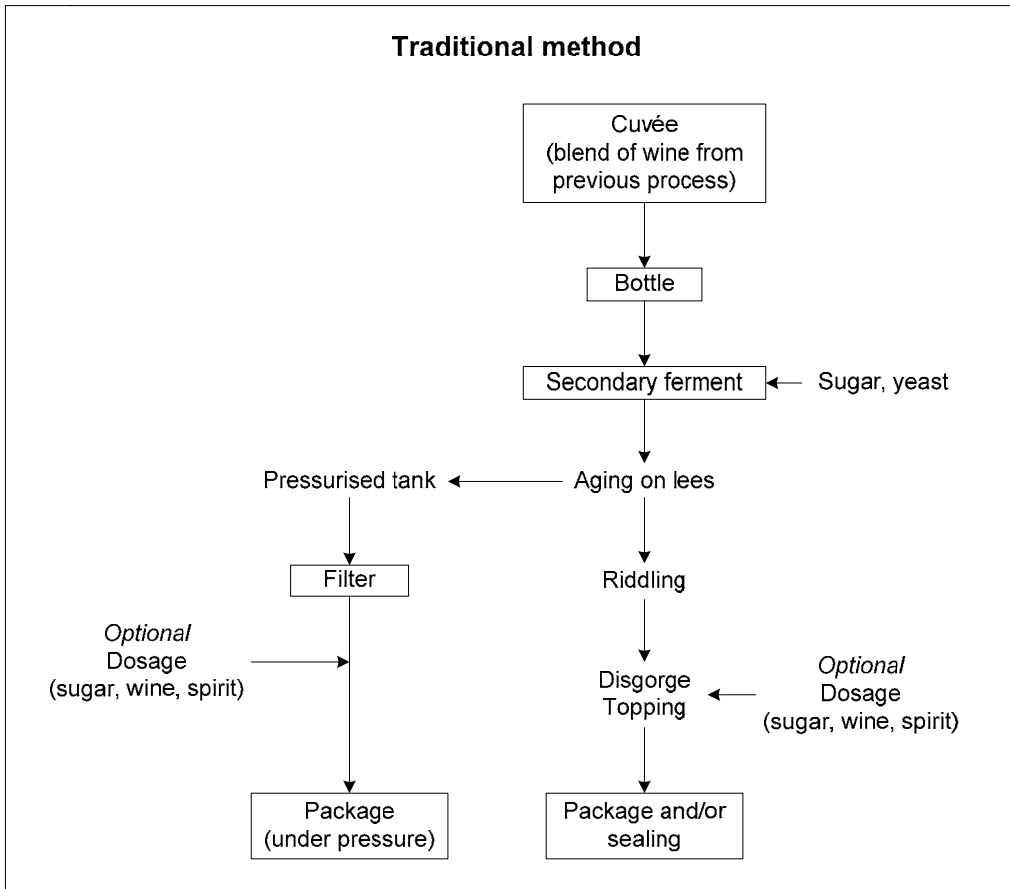
White wine



Red wine



Sparkling wine (three methods)



3. Hazard Identification Associated with Inputs

Table 1: Hazard Identification

Inputs	Description/specification	Biological hazard (B)	Chemical hazard (C)	Physical hazard (P)
Grapes	Sourced from a supplier that complies with regulations regarding the management of agrichemicals	None	Residues of agricultural chemicals (e.g. pesticides, fungicides) ¹ Oil or hydraulic fluid from machinery. ²	None
Clean water	Complies with the requirements defined in clause 4(1) of the Wine Specifications	None	None	None
Sugar	Food grade	None	None	None
Yeast	Suitable for food use	None	None	None
Brandy or other spirits	In accordance with Standard 2.7.5 of the Food Standards Code Used in fortified wines	None	None	None
Additives (e.g. preservatives, acid)	Food grade Permitted for use in wine and within limits specified in Standard 1.3.1 of the Food Standards Code	None	Sulphur dioxide ³ Dimethyl dicarbonate ⁴ Sorbic acid & its potassium, sodium and calcium salts ⁵	None
Processing aids (e.g. fining agents, enzymes, gases)	Food grade. Permitted for food use as specified in Standard 1.3.3 of the Food Standards Code	None	Allergens from fining agents with animal protein derivatives ⁶	None

¹ The application of agrichemicals to food crops in New Zealand must be in accordance with their label authorisation pursuant to the latest version of the New Zealand (Maximum Residue Limits of Agricultural Compounds) Food Standards.

² Although contamination with oil, hydraulic fluid or other such chemicals has been known to occur on very rare occasions, affected grapes are not used in wine making for qualitative as well as food safety reasons.

³ Sulphur dioxide may cause allergic reactions or exacerbate asthma in susceptible individuals.

⁴ Dimethyl dicarbonate may increase methanol levels in wine. However, it is very rarely used in winemaking. The *Food Standards Code* requires that usage must remain within 200 mg/kg and that the total level of methanol in wine is no more than 3g of methanol per litre of ethanol.

⁵ Excessive use of sorbic acid and its salts may increase the human metabolic level. The *Food Standards Code* requires that usage must remain within 200 mg/kg.

⁶ Residues of fining agents with animal protein derivatives can cause allergic reactions in susceptible individuals.

Inputs	Description/specification	Biological hazard (B)	Chemical hazard (C)	Physical hazard (P)
New glass bottles	Company specification	None	None	None
Used glass bottles ⁷	Company specification (e.g. if the bottle had been reused to contain chemicals)	Bacterial pathogens		Foreign objects (e.g. glass, metal)
Plastic wine bags or containers, corks, caps	Suitable for food use	None	None	None
Labels, metal foil, plastic cover, cases	Company specification	None	None	None

⁷ Used glass bottles are very rarely, if ever, used by wine makers because they are more susceptible to breakage and lack the aesthetic qualities of new glass bottles. If used, must have a specification or procedure to ensure suitable for winemaking.

4. Hazard Analysis and CCP Determination for the Production of Wine

Table 2: Hazard Analysis and CCP Determination

Process step	Inputs	Hazard reasonably likely to occur on or in the product at this step	Justification	Q1. Is there a control measure(s) for the hazard at this step? If yes, identify the control measure and then answer Q2. If no, consider hazard at next step.	Q2. Is this step a CCP?
1. Receiving	Fresh grapes	Material other than grapes (oil etc) Agrichemicals Sulphite ⁸	Known to occur	MOG: Minor contamination – no, major contamination – reject grapes Agrichemicals – yes, checking of spray diaries	No No
2. De-stemming/crushing	Fresh grapes	None			
	Clarifying agents	Presence of allergenic animal proteins	Refer to Table 1	No ⁹ - addressed at step 17.	No
	Sodium or potassium metabisulphite	Sulphite	Refer to Table 1	Yes – correct weighing and addition	No
3. Pressing	Fresh grapes / crushed grapes	None			
4. Fermentation	Juice/skins	None			
	Yeast, sugar, yeast nutrients	None			
	Other permitted processing aids and additives	None			
5. Racking	Unfinished wine	None			
	Sodium or potassium metabisulphite	Sulphite	Refer to Table 1	Yes – correct weighing and addition	No
6. Blending/adjustment	Unfinished wine	None			
	Sugar	None			
	Acidity regulators (e.g. tartaric acid, calcium carbonate)	None			
	Clean water	None			
	Dimethyl dicarbonate	Excess methanol	Refer to Table 1	Yes – correct addition	No
	Sorbic acid & its potassium, sodium and calcium salts	Excess sorbates	Refer to Table 1	Yes – correct weighing and addition	No

⁸ Sulphite added in the field is beyond the control of the winemaker.

⁹ Any risks associated with the potential presence of allergens from residues from fining agents are managed by labelling requirement in Standard 1.2.3 of the Food Standards Code.

	Other permitted additives and processing aids	None			
7. Malo-lactic fermentation	Unfinished wine Bacteria starter culture (optional)	None			
8. Maturation	Unfinished wine	None			
9. Clarification	Unfinished wine	None			
	Clarifying agents (e.g. bentonite, animal proteins, PVPP)	Presence of allergenic animal proteins	Refer to Table 1	No ¹⁰ – addressed at step 17	No
10. Filtration	Unfinished wine	None			
11. Addition of preservatives	Unfinished wine	None			
	Preservative (e.g. sulphite, sorbate)	Sulphite, sorbate	Refer to Table 1	Yes – correct weighing and addition of preservative	
12. Storage in tanks	Unfinished wine	None			
13. Final adjustment	Unfinished wine	None			
	Sulphite	Sulphite	Refer to Table 1	Yes – correct addition; testing of final level in wine Labelling at step 17	No
	Sugar	None			
14. Filtration	Wine	None			
15. Filling / Bottling	Wine	None			
	Bottles (i.e. rinsed new bottles; cleaned and sanitised reused bottles)	Glass fragments	Incorrect filler operation can result in breakage/chipping	Yes- correct equipment set-up, equipment maintenance, routine observation during filling, proper breakage procedures	No
16. Corking/capping	Bottled/package wine	None			
	Cork or plastic caps	None			
17. Labelling	Bottled/package wine	None			
	Labels	None		Sulphite declaration Allergen declaration	No
18. Packing	Bottled/package wine	None			

¹⁰ Any risks associated with the potential presence of allergens from residues from fining agents are managed by labelling requirement in Standard 1.2.3 of the Food Standards Code.

5. Outcome of CCP Determination

No CCP was identified for the production of grape wine. The control of hazards at key steps is expected to be adequately addressed by the Codes of Practice approved for wine standards management plans.

Since no CCP has been identified, the other HACCP principles that relate to a CCP (i.e. identification of critical limits, CCP monitoring, CCP corrective action) have not been applied to any steps in the process.