

National Phylloxera Management Protocol

*National Vine Health Steering Committee
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Disclaimer

This document has been developed in good faith and based on the best up-to-date technical information. However no warranty is made nor is any responsibility whatsoever taken by the NVHSC or its subcommittees in relation to the adoption and application of all or part of the protocol by individuals or organisations.

INTRODUCTION

The National Phylloxera Management Protocol has been developed by the National Vine Health Steering Committee (NVHSC) to prevent the spread of grapevine phylloxera. Through the application of a uniform national protocol, viticultural-based industries across Australia will be better placed to maintain and improve the security and quality of production. Industries will be able to achieve the highest attainable phytosanitary status in germplasm collections, planting material and vineyards.

Taking a national approach

The NVHSC recognises that with the growth in viticultural-based industries across Australia there comes an increased risk of phylloxera infestation through the movement of grapevines and grapevine material or associated contaminated items. The national protocol will raise awareness of the risks and provide those in the industry with consistent guidelines for their prevention or management. Companies with interstate connections will welcome the national protocol and an end to “border confusion”.

The national protocol does not replace existing state government legislation and it is important that relevant details of legislative and regulatory requirements are obtained from the department of Agriculture or Primary Industries in each state, or the Phylloxera & Grape Industry Board of South Australia.

Everyone associated with viticultural-based industries is urged to make themselves, their employees, visitors, clients and subcontractors familiar with the protocol and incorporate the National Protocol into company policy and training.

Dr Lois Ransom

Chair, NVHSC

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OVERVIEW

Role of the National Protocol

The National Protocol has been developed and is maintained by the National Phylloxera Technical Reference Group, on behalf of the National Vine Health Steering Committee.

The National Protocol is an **industry standard**. Its purpose is to define a set of agreed conditions under which a phylloxera risk vector may be moved from one region to another with a high degree of confidence that the movement will not lead to an infestation of phylloxera. It is *not* a legally enforceable document. The agreed conditions are based on an assessment of the risk of transfer associated with the risk vector, the research relating to survival of phylloxera in various situations, and the likelihood of phylloxera being present in the originating region.

NB Notwithstanding the conditions specified in this document, wherever possible, movement of risk vectors out of Phylloxera Infested Zones should be avoided.

Basic concepts underpinning the National Protocol

There are two important concepts that underpin the National Protocol. These are:

- National Phylloxera Management Zones
- Phylloxera Risk Vectors

Phylloxera management zones are classifications of geographical regions according to whether they have been found to have phylloxera or not. There are three types of zone:

- Phylloxera Infested Zones
- Phylloxera Exclusion Zones
- Phylloxera Risk Zones

All of Australia's grapegrowing regions have been classified in terms of these zones. The definitions of the zone categories can be found in the Glossary. The current list of recognised zones and a location map can be found in Appendix 1. It is important to note that these are industry terms and are not necessarily translated directly into state legislation.

The Protocol is designed to prevent the spread of grapevine phylloxera by:

- preventing the movement of phylloxera out of **Phylloxera Infested Zones (PIZ)** and out of **Phylloxera Risk Zones (PRZ)** where it may be present but undetected, and
- preventing the entry of phylloxera into **Phylloxera Exclusion Zones (PEZ)**.

Phylloxera risk vectors are defined items that could potentially transfer phylloxera from one place to another.

Because phylloxera only survives on *Vitis* genus vines (grapevines and ornamental vines), risk vectors are either grapevine material and grape products, or other items that come into contact with grapevine material, grape products or vineyard soil and therefore could be contaminated with phylloxera.

Risk vectors recognised in this document are:

- Grapevine material
 - Cuttings
 - Rootlings including grafted rootlings
 - Potted vines
 - Diagnostic samples
- Winegrapes
- Tablegrapes
- Winegrape products¹
 - Must
 - Juice
 - Marc
- Vehicles used in or near vineyards
- Vineyard equipment and machinery (used) – including grape bins
- Vineyard visitors
- Vineyard soil

The full definitions of these risk vectors can be found in the glossary on the following page.

Legislative requirements

Phylloxera is a quarantinable pest that is currently known to be present in Australia only in certain defined areas of Victoria and New South Wales (see map – Appendix 1). These are quarantine zones, and legislative controls apply to movement of host produce (risk vectors) out of these zones. In addition, there are other areas in these states that are defined as phylloxera exclusion zones and entry of risk vectors into these zones is also controlled by state legislation. All other states have legislation that restricts or prohibits the entry of phylloxera risk vectors, depending upon where it originates from. Movement of phylloxera risk vectors (also described as “hosts” within government legislation) across state borders or between defined quarantine zones or phylloxera exclusion zones *must comply with the relevant state legislation*. State legislation is *generally* based on the National Protocol.

See Appendix 3 for a list of contact details for Departments of Agriculture or Primary Industries in each state.

¹ Wine is not a risk product as the process of fermentation (for a minimum of four days) has been shown to be an effective disinfestation for phylloxera.

GLOSSARY OF TERMS

General phytosanitary terms

General phytosanitary terms and definitions used in this document are understood to have the meaning described in the International Standards for Phytosanitary Measures (ISPM No. 5 – *Glossary of Phytosanitary Terms*). The glossary can be obtained from the following website: www.aphis.usda.gov/import_export/plants/plant_exports/downloads/ISPM5.pdf

Terms specific to the wine industry and the movement of phylloxera risk vectors are defined below.

Risk vectors

Cuttings are portions of a grapevine cane taken for use as planting material, that have not been planted in soil or permitted to develop roots.

Diagnostic samples can be any part of the grapevine plant – taken for the purpose of carrying out a diagnostic test, such as petiole analysis, disease identification, DNA-typing or bud dissection. Diagnostic samples also include vineyard soil samples.

Fresh winegrapes are grapes grown for making into wine.

Grape bins are bins used for collecting winegrapes from a vineyard for transporting to a processing facility.

Grapevine material includes plant material of any *Vitis* genus – including *Vitis vinifera* (winegrape varieties), ornamental vines and American “rootstock” species. Material includes: cuttings, rootlings, grafted rootlings, plants, prunings, diagnostic samples, germplasm material and leaves, sticks, roots etc.

Juice is the liquid fraction from must, excluding skins, seeds, and other large solids, that may contain some suspended solids.

Must is the total product of crushing grape berries, includes juice skins, seeds, pulp and possibly some stems and leaves.

Marc is the solids residue from crushing or pressing of must (*pre-fermentation marc*) or wine fermented on skins (*post-fermentation marc*), containing skins, seeds and possibly stems.

Rootlings are grapevine plants that have been grown in a nursery so as to develop roots (including callus). *Graftlings* are grafted rootlings where a scion cutting has been grafted onto a rootling.

Table grapes are grapes labelled as being table grapes. Note: dried fruit are not included in the ambit of this document.

Vineyard equipment or machinery includes any used machinery or hand-operated equipment, tools, etc. that have been used in a vineyard. For example: grape harvesters, grape bins, tractors, spray equipment, shovels, pruning snips.

Vineyard soil is any soil that comes from within 100m of a living grapevine.

Vineyard vehicles are any vehicles that drive onto vineyard soil – eg trucks towing in equipment or delivering grape bins and cars driven by vineyard visitors.

Vineyard visitors are any people who enter the vineyard and walk amongst the vines – eg vineyard workers, consultants, supplier representatives, tourists.

Other relevant terms

Crushing facility is a grape receiving and processing facility that may supply must or juice to another facility for further processing.

Interstate certification assurance agreement (ICA) is a formal agreement between States to facilitate movement of quarantine risk materials and minimise the risk of spread of specified pests or disease in accordance with a defined, self-managed procedure. There are three such agreements that relate to phylloxera: ICA-22 (movement of grape must and juice); ICA-23 (movement of fresh winegrapes) and ICA-37 (hot water treatment of grapevines).

Permit is a general term for an official document obtained from a State Department of Primary Industries (or equivalent) as a necessary part of the process of moving a host product.

*Phylloxera Exclusion Zone (PEZ)*² is an area that is recognised by the NVHSC as being free of phylloxera. Such an area must have been demonstrated by scientific evidence to be free of phylloxera, AND be governed by appropriate legislation to control the movement of risk vectors into the area. There is a process defined as part of the National Protocol for upgrading the status of a grapegrowing region from PRZ to PEZ (see Appendix 3). A PEZ is an example of a **Pest Free Area** (ISPM 5).

Phylloxera Infested Zone (PIZ) is an area containing vineyards known to be infested with phylloxera or to have been infested with phylloxera. The boundaries of a PIZ must be a minimum of 5km from the closest infested vineyard. PIZs recognised by the NVHSC are the phylloxera control areas defined in state legislation as a result of an outbreak having been detected. A PIZ is an example of an **Infested Area** (ISPM 5).

Phylloxera Risk Zone (PRZ) is defined as any area not otherwise classified as a PIZ or PEZ. While the definition principally refers to grapegrowing regions, it is not restricted to these. Therefore all of Australia not already classified as a PEZ or PIZ is automatically classified as a PRZ.

Plant Health Certificate or Plant Health Assurance Certificate is an official document obtained from a State Department of Primary Industries (or equivalent) to certify that the requirements for movement of a risk vector have been met.

Receiving winery is a processing facility outside the grape source region where must or juice is sent for further processing.

² The schedule of currently recognised PEZs and PIZs and a map showing their location can be found in Appendix 1.

MOVEMENT PROCEDURES

Summary of movement procedures and relationship to risk vectors

The table below is an overview of the agreed conditions for movement of different risk vectors, according to where they are moving from/to.

<i>Risk vector</i>	PIZ to PEZ	PIZ to PRZ	PRZ to PEZ	PEZ to PEZ
<i>Whole winegrapes</i>	Prohibited	Prohibited	Procedure A	No treatment
<i>Grapevine material</i>	Prohibited	Prohibited	Procedure B	Procedure B1
<i>Diagnostic samples</i>	Procedure C	Procedure C	Procedure C	No treatment
<i>Must or juice</i>	Procedure D	Procedure D	Procedure D	No treatment
<i>Marc</i>	Procedure E	Procedure E	Procedure E	No treatment
<i>Tablegrapes</i>	Procedure F	Procedure F	Procedure F1	No treatment
<i>Vineyard equipment</i>	Procedure G	Procedure G	Procedure G	No treatment
<i>Vineyard visitors (clothing and footwear)</i>	Procedure H	Procedure H	Procedure H	No treatment
<i>Vineyard vehicles</i>	Procedure I	Procedure I	Procedure I	No treatment

Note that in practice movement of a risk vector would require compliance with state legislation – which may not be identical to the National Protocol. Plant Health Certificates or other certification will usually need to be issued in the state where the material is to move *from*, to ensure that the correct procedures have been carried out. Alternatively a *permit* may be issued, which authorises movement under certain conditions, or movement may be authorised under an Interstate Certification Assurance (ICA) arrangement.

List of procedures

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Movement of fresh winegrapes out of a PRZ into a PEZ		Procedure A
Requirements: source vineyard	<p>Vineyard must be inspected annually for phylloxera using the NVHSC approved survey protocol – and no phylloxera found.</p> <p>Vineyard must have protocols in place to prevent the entry of phylloxera (ie visitor and machinery disinfestation procedures, controlled access, documentation of source of planting material).</p> <p>Grapes must be packed in bins which have been cleaned free of all soil and plant material before delivery and securely covered after packing.</p>	
Requirements: transport	<p>Bins must be loaded onto a transport vehicle on a hard surface, not within the vineyard.</p> <p>Transport vehicle must be cleaned free of all soil and organic matter (see procedure I)</p> <p>Load must be securely covered.</p> <p>Transport should be via the most direct route possible and preferably not through a PIZ.</p>	
Requirements: receiving winery	<p>Secure receival area with hard stand³ and wash-down facilities.</p> <p>Waste water disposal away from vines.</p> <p>Inspect bins and transport vehicle for cleanliness and load security.</p> <p>Check origin of load.</p>	

³ Hard stand could include consolidated gravel or rubble surface. Excludes earth surfaces.

Movement of grapevine cuttings and rootlings from a PRZ into a PEZ		Procedure B
Requirements: cuttings	<p>Cuttings must originate from a nursery or vineyard that is inspected annually for phylloxera using the NVHSC approved survey protocol and no phylloxera found.</p> <p>Cuttings must be washed free of soil and excess organic matter.</p> <p>Nursery must be accredited under a vine improvement scheme or equivalent</p> <p>AND</p> <p>Cuttings must undergo disinfestation procedure below immediately prior to dispatch.</p>	
Requirements: rootlings and grafted rootlings	<p>Cuttings must be sourced from a vineyard or nursery as above AND be disinfested as below prior to growing on as rootlings.</p> <p>Rootlings must be grown in an area separate from commercial vine plantings. Protocols should be in place to protect the area from possible infestation (eg restricted access, footwear hygiene, no run-off of water from other vines)</p> <p>Nursery must be accredited under a vine improvement scheme or equivalent.</p> <p>AND</p> <p>Rootlings (including grafted rootlings) must undergo heat treatment as specified below immediately prior to dispatch.</p>	
Requirements: transport	<p>Transport should be via the most direct route and preferably not through a PIZ.</p>	
Disinfestation procedure:	<p>Cuttings / rootlings must be hot water treated immediately prior to despatch as follows:</p> <p>EITHER at 50°C +/- 1°C for 30 minutes</p> <p>OR at 54°C +/- 1°C for 5 minutes</p>	

Movement of grapevine cuttings, rootlings and green potted vines from a PEZ into another PEZ		Procedure B1
Requirements: cuttings	<p>Cuttings must be grown in a nursery or vineyard located in a PEZ.</p> <p>Cuttings must be washed free of soil prior to packaging for transport.</p> <p>Nursery must be accredited under a vine improvement scheme or equivalent</p> <p>OR</p> <p>Cuttings must undergo disinfestation procedure as per Procedure B.</p>	
Requirements: rootlings and grafted rootlings	<p>Original cuttings must have been grown in a nursery or vineyard located in a PEZ.</p> <p>Rootlings must be grown in an area separate from commercial vine plantings. Protocols should be in place to protect the area from possible infestation (eg restricted access, footwear hygiene, no run-off of water from other vines)</p> <p>Nursery must be accredited under a vine improvement scheme or equivalent</p> <p>OR</p> <p>Rootlings must undergo disinfestation procedure as per Procedure B.</p>	
Requirements: green potted vines	<p>Original cuttings must have been grown in a vineyard or nursery in a PEZ.</p> <p>Plants must be grown in a soil free medium prepared in accordance with the national nursery industry standard for soil free media.</p> <p>Plants must not be grown in contact with the ground (soil) – eg can be on raised frames, plastic or hard stand (concrete) areas.</p> <p>Nursery must be accredited under a vine improvement scheme or equivalent.</p>	
Requirements: transport	Secure transport via a direct route preferably not through a PIZ.	

Movement of diagnostic samples from a PIZ or PRZ into a PRZ or PEZ	Procedure C
Scope	This procedure applies to diagnostic samples of any part of the grapevine plant, AND vineyard soil samples. Note: where possible, diagnostic procedures should be carried out within the PIZ or PRZ where the material originates from – or moved to another region of equal or lower health status for testing.
General procedure	<ol style="list-style-type: none"> 1. Sample material MUST undergo one of the disinfestation procedures listed below, within the originating PIZ or PRZ region, before the sample is moved to another region for testing. 2. ONLY IF it is not possible to disinfest the material without compromising the integrity of the sample or the validity of the diagnostic procedure, or if there are no disinfestation facilities available in the region of origin, then movement may be allowed without disinfestation direct to the diagnostic laboratory, under strict conditions of security. 3. <u>Sample collection</u> Ensure that disinfestation procedure as per Procedure H is followed by those collecting samples. 4. <u>Sample dispatch</u> The laboratory to which the samples are being sent must be accredited/ approved by the State Department of Primary Industries or equivalent to handle potentially infested material. Samples are to be dispatched by overnight courier, express post or similar to minimise chance of sample being lost in transit, and to provide trace-back procedures if required. Samples must be labelled with the origin and nature of the sample, as well as contact details of the owner. 5. A log of samples dispatched should be kept until diagnostic testing has been completed and all samples accounted for. 6. The laboratory should be notified that a sample has been sent. 7. <u>Sample receipt</u> Samples are to be inspected on arrival. Samples received that do not meet the permit criteria are to be destroyed immediately. Samples are to be held in a secure area so that no material can be removed from the laboratory. 8. After analysis, samples and any unused material that were not disinfested beforehand must be disinfested using one of the approved disinfestation procedures (see below), or destroyed by an approved method – eg autoclaving.

Movement of diagnostic samples from a PIZ or PRZ into a PRZ or PEZ		Cont.d
Disinfestation procedures	<p>Any ONE of the following procedures:</p> <ol style="list-style-type: none"> a. Freezing to -18°C for 24 hours, pack in dry ice for transport b. Freezing and transfer under liquid nitrogen at -196°C c. Freeze drying d. Oven drying at 45°C for a minimum of 2 hours⁴ e. Sealed, unbreakable vessel (for juice samples) f. Hot water treatment at 54°C +/- 1°C for 5 mins or 50°C for 30 mins g. Fixative – devitalisation using formalin/acetic acid, gluteraldehyde, 70% ethanol or similar 	

⁴ Probes should be used with large samples to ensure middle has reached the required temperature.

Movement of must or juice from a PIZ or PRZ into a PEZ		Procedure D
Scope	This procedure applies to must and juice – ie the products of crushing/destemming and (optionally) pressing of red or white winegrapes.	
Requirements	<p>Product (must or juice) must EITHER</p> <p>Complete one of the disinfestation procedures described below</p> <p>OR</p> <p>Be moved under the conditions described in the rest of Procedure D.</p> <p>Products that have completed a disinfestation procedure as described below (wine or processed juice) may move out of a PIZ or PRZ into a PEZ unrestricted (with certification that the process has been completed and all conditions met).</p>	
Disinfestation procedures:	<p>Completed at least three days (72 hours) of fermentation</p> <p><i>Alternative procedures are not yet approved.</i></p>	

The remainder of this procedure applies to the movement of must or fresh juice that may potentially contain live phylloxera.

Movement of must or juice from a PIZ or PRZ into a PEZ	Cont.d
Requirements: crushing facility	<p>The crushing facility must have:</p> <ol style="list-style-type: none"> a. a hard stand⁵ tanker/truck cleaning and inspection area, preferably with a sealed wash down and drainage area b. a dedicated tanker loading area, with a hard stand surface⁶ c. a separate exit road for tankers, with a hard surface (preferably sealed), away from roadways adjacent to vineyards and roadways used for bringing grapes in to the receival point. d. appropriate signage and notices to ensure proper use of designated areas, applicable speed limits, restricted access areas etc.
Procedure: crushing facility	<ol style="list-style-type: none"> 1. Grapes grown in the PIZ or PRZ vineyard are transferred directly to the crushing facility and crushed, with or without destemming and pressing 2. Must or fresh juice is loaded onto the tanker in the designated loading area. Any spillage or overflow (solid or liquid) is washed off to the disposal system 3. The exterior of the tanker is thoroughly cleaned (see below). 4. Relevant details, including verification of protocol compliance, are entered on the movement document.
Requirements: transport	<ol style="list-style-type: none"> 1. Tankers must be in good condition, thoroughly clean and readily cleanable inside and out. 2. Tankers must be able to be sealed effectively to prevent leakage or spillage of must or juice. Valves should enable tankers to drain dry after emptying and cleaning. 3. The use of warning labels or stickers, on the tanker outlet valves, advising that the product originated in a PIZ or PRZ, is encouraged. 4. Drivers shall be equipped with an effective means of mobile communication such as CB radio or mobile phone. 5. It is recommended that dedicated tankers and trained staff be assigned to the duty of transporting grape products.

⁵ Hard stand could include consolidated gravel or rubble surface. Excludes earth surfaces.

⁶ A multi-purpose loading, cleaning and inspection area is acceptable

Movement of must or juice from a PIZ or PRZ into a PEZ	Cont.d
Procedure: transport to receiving facility	<p><u>Loading</u></p> <ol style="list-style-type: none"> 1. Tankers entering the crushing facility travel by specified roadways. 2. Tankers are parked initially on the designated loading area. 3. Drivers must not enter vineyards or grape processing areas. 4. All tanks are effectively closed and sealed. 5. The tanker is inspected before departure and documents signed. <p><u>Journey</u></p> <ol style="list-style-type: none"> 6. A travel plan showing the route to be taken to the destination outside the PIZ is prepared, recorded on the permit and subsequently followed. The route should be as direct as possible, confined to hard surfaced (preferably sealed) roads and preferably avoid passing through vineyards or their immediate surrounds. 7. The tanker travels to the destination along the predetermined route. 8. In the event of an accident and spillage of unfiltered juice or must, the disinfection procedure below must be followed.
Disinfection procedure for accidental spillage of must or juice en route from a PIZ or PRZ.	<p><u>In a PIZ:</u> Wash spilled material (liquid and solid) from the roadway well away from any vineyards. Restrict access by passing traffic and people, to avoid cross contamination.</p> <p><u>In a PEZ or PRZ remote⁷ from any vine:</u> As above.</p> <p><u>In a PEZ or PRZ close to grapevines:</u> Restrict access by passing traffic and people. If a minor spill, ie less than 100 litres:</p> <ol style="list-style-type: none"> 1. Wash material from roadway well away from vines 2. Attempt to contain spill with sand, block drainage toward grapevines. <p>If a major spill, ie greater than 100 litres:</p> <ol style="list-style-type: none"> 1. Notify Dept of Primary Industries or equivalent, who should take charge of clean-up as below. 2. Block drainage of the spill toward grapevines 3. Absorb spilled material with sand 4. Remove contaminated sand to a dry disposal area at least 500m from any grapevine 5. Disinfest the area as appropriate. <p><u>In a PEZ or PRZ adjacent to or actually in a vineyard:</u> Proceed as above. Quarantine the vineyard and test for the presence of phylloxera after two years and after four years.</p>

⁷ As a guide, “remote” is in excess of 100m; however topography and drainage patterns must also be considered. A vineyard on significantly higher ground than the spill site may be considered remote even if within 100m while vines down hill and in the path of a drain or gully may be at risk at distances over 300m.

Movement of must or juice from a PIZ or PRZ into a PEZ	Cont.d
Facilities: receiving facility	<ol style="list-style-type: none"> 1. The receiving winery should have a dedicated unloading area for must and fresh juice, separated from traffic to and from local vineyards (eg route of trucks delivering grapes to the winery). The unloading area <u>must</u> have a sealed⁸, hard surface with wash-down cleaning facilities and drainage to a defined area with no risk of wastewater or spillage running into vineyards. 2. Appropriate signs should be used to indicate designated areas and roadways, and access to these areas controlled – eg with physical barriers, bunting (flags), fencing etc. 3. All waste disposal (solid and liquid) must be controlled, eg with adequate divisional walls, guttering, pipelines and/or embankments to prevent untreated waste contacting vines⁹. 4. Waste water treatment facilities must comply with EPA installation and operational guidelines for prevention of accidental spillage. 5. Waste water treatment must be sufficient to avoid contact of untreated and potentially contaminated waste water with grapevines. Attention to be paid to the retention time, distance from vines and security to prevent cross-contamination. For example: <ol style="list-style-type: none"> i) direct land disposal, as with sprinklers, remote¹⁰ from vines ii) single or sequential settling ponds – retention time at least 72 hours and bottom delivery (submerged inlet) iii) closed sewerage system. 6. Waste water must not be reused after treatment for vineyard irrigation unless it has been further treated to ensure phylloxera removal or destruction. 7. Solids from solid traps in effluent systems must not be emptied onto vineyards unless disinfested (eg by pasteurization or composting – see Procedure G). 8. Appropriate fences, walls or other barriers must be provided around waste disposal areas to prevent casual contamination by persons and vehicles. 9. The winery is required to maintain sufficient security of vessels to prevent spillage of juice and must.

⁸ Bitumen, concrete or equivalent

⁹ Control measures may be temporary – ie only during time when product is being received from a PIZ

¹⁰ See note 7.

Movement of must or juice from a PIZ or PRZ into a PEZ	Cont.d
Procedure: receiving facility	<ol style="list-style-type: none"> 1. Trucks entering the winery premises travel by the specified roadways to the dedicated unloading area. 2. Before unloading is commenced, the permits, cart note and other documents are checked by the authorised officer of the receiving winery to verify that all prescribed procedures have been followed. 3. The transport vehicle is inspected for cleanliness (especially for any plant residues and soil) and adequate sealing of the tanks immediately upon arrival. 4. Fresh juice or must is pumped to a closed, secure fermentation vessel or to the supply vessel for heating and concentrating. Fermentation must be initiated within four (4) hours (must) or 24 hours (juice) of unloading¹¹. 5. Must from a PIZ may not be separated into juice and pre-fermentation marc at the receiving winery, ie it has to be fermented upon arrival for at least four days before separation of new wine from marc. 6. The truck and tanker is thoroughly cleaned with cold water and approved detergent compound OR pressure cleaned with hot water or steam. Provided that the outside of the tanker (including all surfaces on and below the tank) has been thoroughly hosed down before leaving the winery, tankers may be taken to an ICA-accredited truck depot for cleaning instead of being cleaned at the winery under specific arrangement as part of the ICA arrangement and with consideration of the risk associated with travel between the winery and depot. 7. Any spillage is dealt with as per normal winery hygiene procedures – this is safe provided that waste water management complies with the protocol. 8. There are no specific requirements for disinfestation of filtration or other winery equipment used in handling juice or must from a PIZ. Cleaning with water is sufficient provided that waste water management complies with the protocol.

¹¹ If the product is in a secure, banded area in a sealed vessel then it can be held indefinitely before commencing fermentation or other treatment. After seven days the product will be considered to be disinfested as research indicates that phylloxera cannot survive for more than seven days in must or juice. Any must or unsterilised juice that cannot be processed in accordance with the conditions of this protocol MUST be returned to the PIZ within 24 hours – it cannot be disposed of within the PEZ.

Movement of marc out of a PIZ or PRZ		Procedure E
Requirements	<p>Marc must undergo one of the disinfestation procedures described below. Marc that has not been disinfested (eg pre-fermentation marc) cannot be moved out of a PIZ or PRZ.</p> <p>Marc must be securely packed or covered to prevent spillage.</p> <p>Container and transport vehicle must be cleaned free of soil and organic matter.</p>	
Disinfestation procedure	<p>Completion of three days (72 hours) of fermentation</p> <p>OR</p> <p>Composting or pasteurisation as per Australian Standard AS 4454.</p>	

Movement of table grapes out of a PIZ into a PRZ or a PEZ	Procedure F																								
Requirements: source vineyard / packing shed	<p>Grapes packed for sale as tablegrapes must be free of soil and leaf material.</p> <p>Grapes must be packed into new containers or returnable plastic containers free of soil and plant material.</p> <p>Packed tablegrapes must undergo one of the disinfestation treatments specified below.</p>																								
Requirements: transport	<p>Containers must be loaded onto a transport vehicle on a hard surface¹², not within the vineyard.</p> <p>Transport vehicle must be cleaned free of all soil and plant material (see procedure I)</p> <p>Transport should be via the most direct route possible.</p>																								
Disinfestation procedure	<p>Packed with sulphur pads containing a minimum 970g/kg sodium metabisulphite at the rate specified on the label and in accordance with the manufacturer's instructions.</p> <p>OR</p> <p>Fumigated with methyl bromide following one of the treatments listed below.</p> <table border="1" data-bbox="501 1043 1369 1361"> <thead> <tr> <th data-bbox="501 1043 810 1160">Fruit Pulp Temperature</th> <th data-bbox="810 1043 932 1160">Dosage Rate (g/m³)</th> <th data-bbox="932 1043 1054 1160">Duration (hours)</th> <th data-bbox="1054 1043 1214 1160">Dosage at 30 minutes (75%)</th> <th data-bbox="1214 1043 1369 1160">Dosage at 2 hours (60%)</th> </tr> </thead> <tbody> <tr> <td data-bbox="501 1160 810 1205">21°C or greater</td> <td data-bbox="810 1160 932 1205">32</td> <td data-bbox="932 1160 1054 1205">2</td> <td data-bbox="1054 1160 1214 1205">24g/m³</td> <td data-bbox="1214 1160 1369 1205">20g/m³</td> </tr> <tr> <td data-bbox="501 1205 810 1283">15.5°C or greater but less than 21°C</td> <td data-bbox="810 1205 932 1283">40</td> <td data-bbox="932 1205 1054 1283">2</td> <td data-bbox="1054 1205 1214 1283">30g/m³</td> <td data-bbox="1214 1205 1369 1283">24g/m³</td> </tr> <tr> <td data-bbox="501 1283 810 1361">10°C or greater but less than 15.5°C</td> <td data-bbox="810 1283 932 1361">48</td> <td data-bbox="932 1283 1054 1361">2</td> <td data-bbox="1054 1283 1214 1361">36g/m³</td> <td data-bbox="1214 1283 1369 1361">29g/m³</td> </tr> </tbody> </table>					Fruit Pulp Temperature	Dosage Rate (g/m ³)	Duration (hours)	Dosage at 30 minutes (75%)	Dosage at 2 hours (60%)	21°C or greater	32	2	24g/m ³	20g/m ³	15.5°C or greater but less than 21°C	40	2	30g/m ³	24g/m ³	10°C or greater but less than 15.5°C	48	2	36g/m ³	29g/m ³
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¹² Hard surface could include consolidated gravel or rubble surface. Excludes earth surfaces.

Movement of table grapes out of a PRZ into a PEZ		Procedure F1
Requirements: source vineyard / packing shed	<p>Grapes packed for sale as tablegrapes must be free of soil and leaf material.</p> <p>Grapes must be packed into new containers or returnable plastic containers free of soil and plant material.</p> <p>EITHER</p> <p>(i) the source vineyard is to be inspected annually for property freedom (see below)</p> <p>OR</p> <p>(ii) fruit must be disinfested as per treatment options below.</p>	
Requirements: property freedom inspection	<p>Vineyard must be inspected annually for phylloxera using the NVHSC approved survey protocol – and no phylloxera found.</p> <p>Vineyard must have protocols in place to prevent the entry of phylloxera (ie visitor and machinery disinfestation procedures, controlled access, documentation of source of planting material).</p>	
Requirements: transport	<p>Containers must be loaded onto a transport vehicle on a hard surface¹³, not within the vineyard.</p> <p>Transport vehicle must be cleaned free of all soil and plant material (see procedure I)</p> <p>Transport should be via the most direct route possible.</p>	
Disinfestation procedure	<p>Packed with sulphur pads containing a minimum 970g/kg sodium metabisulphite at the rate specified on the label and in accordance with the manufacturer's instructions.</p> <p>OR</p> <p>Fumigated with methyl bromide (see Procedure F).</p>	

¹³ See note 12.

Movement of vineyard equipment out of a PIZ or PRZ	Procedure G
Scope	<p>Vineyard machinery and equipment is defined as <i>any</i> equipment, machinery or hand-held tools that have been used for vineyard operations. It includes, but is not restricted to, tractors, spray equipment, mechanical grape harvesters, excavators, pruning snips, shovels, back hoes, used trellis posts and netting¹⁴.</p> <p>This procedure also applies to grape bins used for collecting harvested grapes from a vineyard and delivering to a winery.</p>
Requirements	<p>A log of vineyard visits should be maintained by the machinery operator and shown to the vineyard manager before commencing work.</p> <p>Before leaving a PIZ or PRZ region, machinery must be cleaned AND disinfested¹⁵ in accordance with the procedure below. Cleaning should ideally take place before leaving the vineyard.</p>
Disinfestation procedure	<p>Cleaning</p> <ol style="list-style-type: none"> 1. Remove any parts of the machine or equipment which may hold and hide dirt and plant fragments. 2. Thoroughly clean the item with a steam cleaner or pressure water/air hose to ensure all soil and plant fragments are removed. <p>Disinfestation (one of the following methods¹⁶)</p> <ol style="list-style-type: none"> a. <u>Steam</u> <ol style="list-style-type: none"> i) Steam applied must be above 100°C as indicated by a jet of clear invisible steam between steam outlet and the visible condensate cloud. ii) Steam must contact all surfaces until the surface is left dry, not wet with condensate. b. <u>Hot water</u> <ol style="list-style-type: none"> i) Fully immerse the item in water at 70°C minimum, and hold in water for at least 2 minutes after it has reached 70°C. c. <u>Dry heat</u>¹⁷ <ol style="list-style-type: none"> i) Place the item in a suitable room, shed or container that can be heated up to the required temperature (see below) ii) Apply temperature probes to the item, and measure the surface temperature and preferably some deeper parts of the equipment iii) Heat up the room until the probes indicate that the machine has reached the required temperature (see below) iv) Hold in the hot room for a minimum of EITHER 1 and ½ hours after the machinery has reached 45°C OR two (2) hours after the machine has reached 40°C

¹⁴ In practice, it is unlikely that netting could be adequately cleaned and disinfested – therefore it is not recommended that this be transported out of a PIZ.

¹⁵ Cleaning needs to take place before disinfestation

¹⁶ In addition to the disinfestation methods listed, it is beneficial to park machinery in full sun wherever possible, to take advantage of natural heat disinfestation.

¹⁷ For mechanical harvesters, the dry heat treatment specified in point c is compulsory

Movement of vineyard visitors out of a PIZ or PRZ vineyard	Procedure H
Scope	<p>Vineyard visitors are defined as any people who enter the vineyard and walk amongst the vines – eg vineyard workers, consultants, supplier representatives, tradespeople, inspectors, maintenance personnel and tourists. The risk relates specifically to clothing and footwear.</p> <p>Note: the risk that visitors will pick up phylloxera crawlers on their clothing or footwear is particularly high between November and April, when phylloxera crawlers are likely to be present on the soil surface and in the canopy.</p>
General requirements	<ol style="list-style-type: none"> 1. It is recommended that unauthorised entry to a vineyard in any region be forbidden. The use of fences, barriers, signs and notices is encouraged. 2. Visitors must not remove vines (nor any parts of vines), grapes (nor any grape product other than packaged wine) nor soil from a PIZ vineyard. The use of signs and notices to advise visitors of legal restrictions and the vineyard/winery requirements is encouraged. 3. Visitors' vehicles should be confined to hard stand parking areas in full sun at least 100m from grapevines. 4. Visitors are encouraged to clean cars before leaving a PIZ or PRZ vineyard and to avoid travelling directly from a PIZ or PRZ vineyard to vineyards in a PEZ. The provision of wash-down facilities at the edge of the vineyard is encouraged. 5. Workers and visitors should visit phylloxera infested vineyards <i>after</i> visiting non-infested vineyards wherever possible. 6. Access to actual vine rows should be limited as much as possible. Authorised entry may be granted under controlled conditions: <ol style="list-style-type: none"> a. Resources and instruction on procedures are provided for those entering vineyards, and training for vineyard workers b. Authorised visitors wear gumboots provided by vineyard owner or disposable overshoes – or disinfest footwear as described below. c. Vineyard workers wear disposable, dedicated or cleaned clothing (eg overalls) for each vineyard. This applies especially between November and April when phylloxera crawlers are likely to be present in the canopy and there is a high risk of contamination of clothing. d. Vineyard workers wear dedicated footwear for each vineyard or disinfest footwear before leaving each vineyard (see below). The use of boots dedicated for vineyard use is recommended.

Movement of vineyard visitors out of a PIZ or PRZ vineyard	Cont.d
Disinfestation procedure	<ol style="list-style-type: none"> 1. When leaving the vineyard, disinfest footwear as follows: <ol style="list-style-type: none"> a. scrub boots with the scrubbing brush to remove mud – preferably in water and detergent b. dilute chlorine with water in a tub to give a 2% active sodium hypochlorite concentration and dip and scrub boots in the freshly prepared¹⁸ solution for a minimum of 30 seconds c. rinse thoroughly in clean water after immersion. 2. Wash and disinfect snips, small tools etc with 2% active sodium hypochlorite solution. 3. Change, wash or discard (if disposable) clothing before entering next vineyard.

Movement of vineyard vehicles out of a PIZ or PRZ vineyard	Procedure I
Transport requirements	<ol style="list-style-type: none"> 1. Avoid entry to vineyard as much as possible. Otherwise: <ol style="list-style-type: none"> a. when servicing vineyards, load and unload only on hard stand areas away from vines; do not enter the vineyard proper nor travel between vines except on formed hard roadways b. where possible restrict the number of vehicles and drivers entering and leaving a PIZ vineyard, eg allocate nominated trucks and drivers for this business. 2. Drivers should be advised of the risks of phylloxera, existing regulations and protocol and associated operating procedures. 3. Before leaving a vineyard in a PIZ or PRZ: <ol style="list-style-type: none"> a. ensure the vehicle (including trailer, tanker etc) is free of all soil and plant material by washing down (in the designated wash-down area) – concentrating on undersides, mudguards, springs, shackles and chassis b. wash any loading equipment used (eg pallet loaders, skid pins, and chains) c. clean and disinfest foot wear (see procedureH). Alternatively, the use of a dedicated pair of boots for a PIZ vineyard and otherwise stored in a sealed container is recommended for drivers delivering to PIZ vineyards. 4. Plan the travel route to follow hard formed, preferably sealed roads.

¹⁸ The active concentration of sodium hypochlorite solution declines over time, and should be changed frequently (eg every two hours) to ensure continued efficacy as a disinfestation treatment.

Appendix 1

Phylloxera management zones: definitions and descriptions

Phylloxera Infested Zone (PIZ)

A PIZ contains at least one vineyard known to be infested with phylloxera or to have been infested with phylloxera. The boundary of a PIZ must be set as a minimum of 5 km from the closest known infested vineyard.

The boundary of the PIZ may be defined by local government boundaries or other landmarks, provided they are a minimum of 5km from the closest infested vineyards. The boundaries of the infested region will be determined initially by the relevant State Chief Plant Health Regulatory Officer for the purposes of state quarantine activity, and will then be recognised by the NVHSC as a PIZ under the National Phylloxera Management Protocol.

A state Department of Primary Industries or equivalent may seek an upgrade in status for a PIZ based on evidence that phylloxera infestation is no longer present. Application is made to the NVHSC in accordance with the criteria specified in the *National Phylloxera Management Protocol: procedures for upgrading of phylloxera zone status (Appendix 2)*.

Phylloxera Exclusion Zone (PEZ)

A PEZ is an area that is recognised by the NVHSC as being a **pest free area for phylloxera**.

To acquire PEZ status, a region must have been established by historical information and/or a survey program as not being infested by phylloxera, AND be protected by appropriate legislation to control the movement of phylloxera host produce – including grapevine material, specified grape products and vineyard equipment – into the area. As a minimum, the requirements of the legislation must reflect the conditions for movement specified in this national protocol.

Application for an upgrade to PEZ status is made to the NVHSC and assessed in accordance with the criteria of the *National Phylloxera Management Protocol: procedures for upgrading of phylloxera zone status (Appendix 2)*.

Once PEZ status has been achieved, it must be actively maintained in accordance with the *National Phylloxera Management Protocol: maintenance of PEZ status*. This protocol reflects the **ISPM 4 Guidelines for the maintenance of pest free areas**.

Phylloxera Risk Zone (PRZ)

The boundaries of a PRZ are determined by default as all areas not defined as a PIZ or PEZ.

A state Department of Primary Industries or equivalent may seek an upgrade in status for a PRZ based on evidence that phylloxera infestation is not present. Application is made to the NVHSC in accordance with the criteria specified in the *National Phylloxera Management Protocol: procedures for upgrading of phylloxera zone status (Appendix 2)*.

All new or proposed grape growing regions in PRZs are encouraged to comply with PEZ entry protocols from the start and to seek PEZ status as soon as practicable.

Schedule of currently recognised PEZs and PIZs

As at June 2008.

Note: recently endorsed changes in status may not be reflected in state legislation.

Phylloxera Infested Zones (PIZ)

Victoria

- The North East Phylloxera Infested Zone
- The Nagambie Phylloxera Infested Zone
- The Upton Phylloxera Infested Zone
- The Mooroopna Phylloxera Infested Zone
- The Maroondah Phylloxera Infested Zone
- The Whitebridge Phylloxera Infested Zone

New South Wales

- The Counties of Camden and Cumberland near Sydney
- Hume-Corowa-Albury (local government areas of Albury, Hume and that part of Corowa within the county of Hume).

Phylloxera Exclusion Zones (PEZ)

Western Australia (state)

South Australia (state)

Northern Territory (territory)

Tasmania (state)

Victoria

- The Greater Sunraysia Phylloxera Exclusion Zone, incorporating the Shires of Greater Mildura, Swan Hill and Gannawarra.
- The Henty and West Wimmera Phylloxera Exclusion Zone, incorporating the Geographical Indication of Henty and shire of West Wimmera.
- Pyrenees / Grampians Phylloxera Exclusion Zone

New South Wales

- Whole state barring those areas recognised as PIZs (above)

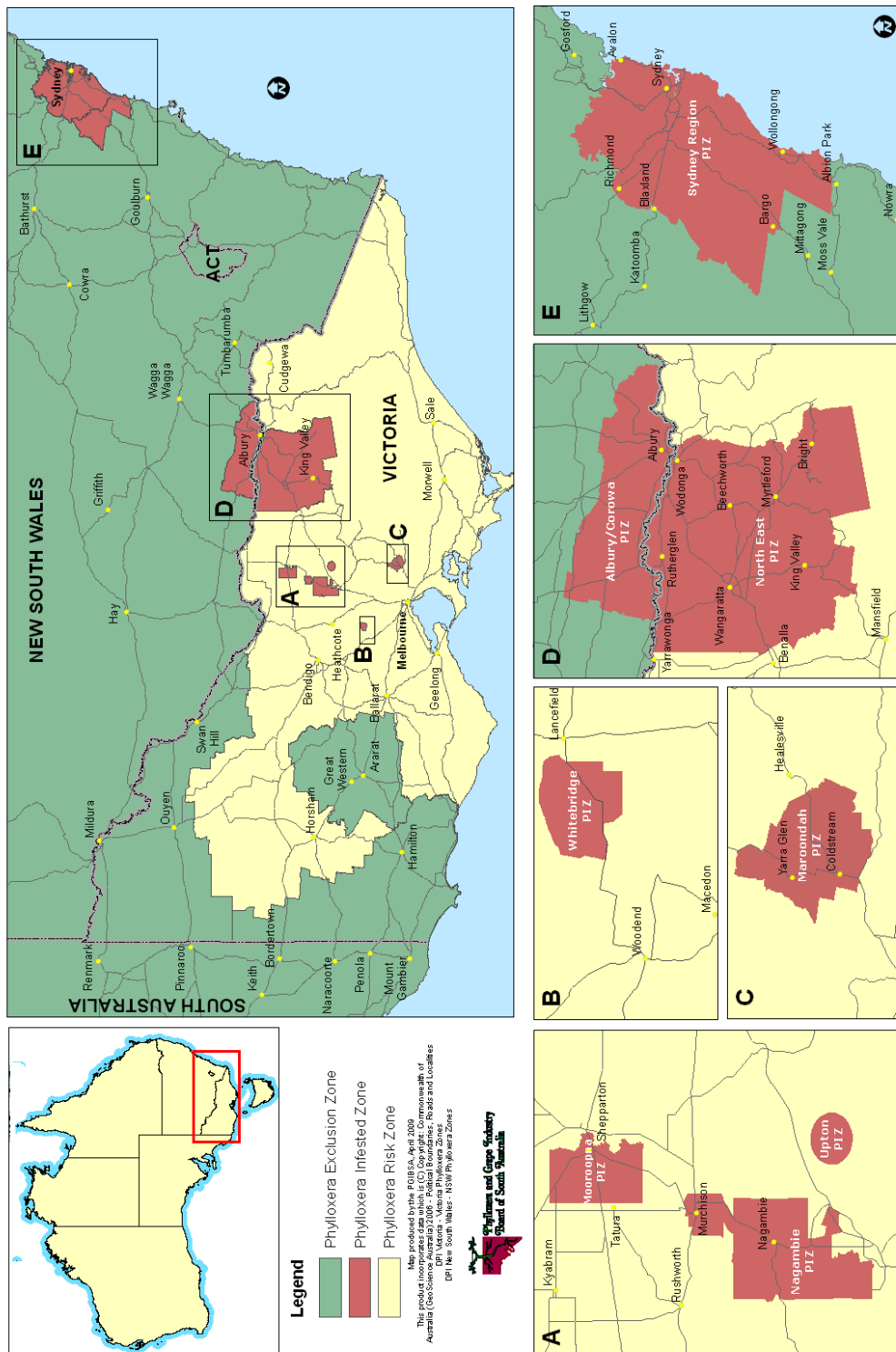
Transitional Phylloxera Risk Zones (upgrade process in progress)

Victoria

- Bendigo / Heathcote control zone (process due for completion in April 09)

Map of phylloxera management zones in Australia

Phylloxera Management Zones of Australia



Appendix 2

Status upgrade procedures

Note: these will be attached to the final version as a PDF.

Appendix 3

Contact details

For more information on the elements of the National Protocol and/or legislative requirements for moving phylloxera risk vectors between states, please contact the Department of Agriculture/ Primary Industries in your state, or the Phylloxera and Grape Industry Board of South Australia. Contact details are given below (current as at 1 July, 2008)

New South Wales

www.dpi.nsw.gov.au

- John Slack, NSW Department of Primary Industries

Ph: 02 6391 3593 Fax: 02 6391 3206 email: john.slack@dpi.nsw.gov.au

Queensland

www.dpi.qld.gov.au

- James Planck, Queensland Department of Primary Industries and Fisheries

Ph: 07 3239 3943 Fax: 07 3211 3293 email: planckj@dpi.qld.gov.au

South Australia

www.pir.sa.gov.au/planthealth

- Bruce Baker, State Quarantine Inspection Service

Ph: 08 8168 5203 Fax: 08 8344 6033 email: baker.bruce@saugov.sa.gov.au

- Sandy Hathaway, Phylloxera and Grape Industry Board of S.A.

Ph: 08 8362 0488 Fax: 08 8362 0499 email: sandyh@phylloxera.com.au

Victoria

www.dpi.vic.gov.au

- Gary D'Arcy, Department of Primary Industries

Ph: 03 9210 9390 Fax: 03 9210 9396 email: plant.standards@dpi.vic.gov.au

Western Australia

www.agric.wa.gov.au

- Greg Power, Agriculture Western Australia

Ph: 08 780 6277 Fax: 08 9780 6229 email: gpower@agric.wa.gov.au