



SA Plant Quarantine Standard

Condition 7 version 2.0

Changes incorporated from feedback received through industry consultation to version 1.1.

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A. Industry consultation overview

Since late October 2018, Vinehealth Australia has held meetings with Riverland, Adelaide Hills, McLaren Vale, Barossa, Langhorne Creek and Limestone Coast industry representatives and state bodies to discuss the process undertaken to develop a suite of proposed changes to the phylloxera-related conditions in SA's Plant Quarantine Standard (PQS) and plans for industry consultation.

A purpose-built industry consultation webpage was developed and launched in December 2018. Following this, a letter was sent to all registered vineyard owners and operators on Vinehealth's vineyard register advising of the Plant Quarantine Standard review and how to provide feedback into the review. In addition, the South Australian Wine Industry Association (SAWIA), Wine Grape Council of South Australia (WGCSA), regional wine industry associations, South Australian vine improvement associations, SA-based nurseries, SA-based CA12 accredited laboratories and select contractors and carriers were also advised of this review and of the feedback process.

In-depth industry consultation sessions began in late November 2018 and were held in McLaren Vale, Adelaide Hills, Langhorne Creek, Coonawarra and Barossa to review and discuss key proposed changes. Vinehealth Australia has also consulted with a large wine company and with Tarac. A nursery has also been consulted specifically about Clause 1 pertaining to the importation of grapevine propagation material and the vine improvement and nursery sector has also been invited to provide feedback.

SAWIA and WGCSA have been informed of progress of the industry consultations through written and verbal updates and a number of regional associations have also received written updates upon request.

Vinehealth Australia has placed significant emphasis on communications and awareness around this consultation, both prior to and during the consultation phase of the review. An industry journal article has been written and published, as well as numerous articles for Vinehealth's monthly e-Newsletter.

All consultation meetings held to date with industry have been resoundingly positive and valuable feedback has been logged from the sessions. All feedback received to date has been considered and has contributed to changes highlighted in version 2.0 of Condition 7. These consultation sessions have also served to educate attendees on import requirements, particularly for those previously unfamiliar with the SA Plant Quarantine Standard and have provided a forum to update Vinehealth Australia on other biosecurity issues facing growers in the regions.

This report provides a summary of the changes that have been proposed to version 1.1, as presented in version 2.0. It also provides responses to specific feedback and queries posed during the consultation sessions both directly relating to the PQS review and to general biosecurity and highlights a number of accreditation systems which Vinehealth feels must be developed and adopted in order to strengthen SA's borders.

B. Changes presented in Condition 7 version 2.0

As a result of industry consultation on Condition 7 version 1.1, multiple changes have been incorporated into version 2 based on feedback received. These changes are presented in the table below.

Area	Change
Updates to some general notes	<ul style="list-style-type: none"> Removal of original general note 1 'For all other entry conditions relevant to grape phylloxera but not stated in Condition 7, contact Biosecurity SA' in lieu of adding specific notes to the Clauses Addition of Phylloxera Interim Buffer Zone (PIBZ) to reflect change in SA PQS version 14.1 Removal of ICA-22 as valid interstate compliance arrangement
Formatting	<ul style="list-style-type: none"> Removal of CAPS LOCK 'Prohibited entry into South Australia' and repositioning next to heading it applies to In all locations where 'Consignment subject to Importer Registration and Direct Inspection' is applicable, reference to Flowchart 1 added Addressed spelling of Latin name for phylloxera
Definitions	<ul style="list-style-type: none"> Changes to equipment, grape must, Phylloxera Infested Zone, unfiltered (fresh) juice Addition of dismantled parts, grape-related materials, dormant, grape marc, Phylloxera Interim Buffer Zone (PIBZ), potted vine, stalks and stems Removal of steam, removal of definitions relating to ICA-22 (product (produce) movement declaration, transport controller), pre-fermentation marc, post-fermentation marc
Changes to specific Clauses	<p>Clause 1</p> <ul style="list-style-type: none"> Removal of 'visibly' from 1.2 1) (b) relating to washing dormant rootlings of soil, as the already present term 'completely' covers the intent more appropriately Bundle sizes for cuttings and rootlings halved to reflect current standard practice and to ensure improved efficacy of hot water treatment Addition of the words 'of South Australia's Plant Quarantine Standard' when referencing other Sections of the Standard
	<p>Clause 2</p> <ul style="list-style-type: none"> Addition of tillers and seeders to the overall definition of machinery Strengthened note on inability to use dry heat treatment for petrol-powered vehicles Additional note added about contacting biosecurity SA if importing machinery that has not been used on vineyard soil or in the production and manipulation of grapes or grapevines Improved description of 'dismantled parts' Removed hot water treatment for machinery
	<p>Clause 3</p> <ul style="list-style-type: none"> Additional note added about contacting biosecurity SA if importing equipment that has not been used on vineyard soil or in the production and manipulation of grapes or grapevines Strengthened applicability of the Clause 3 to 'used' equipment

Area	Change
	<ul style="list-style-type: none"> • Change to movement conditions for used trellis posts, vine guards, dripper tube, wire and clips to prohibited entry into SA irrespective of source phylloxera management zone • Removal of steam as a valid sterilisation option for hand tools • Addition of a section for previously used hand tools sent from South Australia to a service provider located in an interstate PEZ or state free of grape phylloxera, for servicing only
	<p>Clause 4</p> <ul style="list-style-type: none"> • Alterations to temperature and wording for fumigation of table grapes with methyl bromide aligned with ICA-04 • Addition of wording for grape products to emphasise the importance of the origin phylloxera management zone where the grapes were grown to produce the grape product • Introduction of prohibition of entry from grape must and unfiltered juice from a PRZ, PIZ or PIBZ, removing current ICA-22 accreditation • As a result of the removal of ICA-22, Importer Registration and Direct Inspection wording altered in 4.3 1) to remove reference to ICA-22 accredited business. • Change to filtered juice entry requirements to reflect SA PQS version 14.1 Condition 8E as an interim measure whilst an accreditation system for filtered juice from a PRZ/PIZ or PIBZ is written and implemented • Removal of reference to four days of fermentation in the wine reference • Change of grape marc entry conditions to reflect those of the raw product – grapes. Grape marc will no longer be presented as pre- or post-fermentation, rather by origin of the grapes grown to produce the marc. This change also reflects practice of mixing pre- and post-fermentation marc at wineries. Interim requirements for proof of origin are proposed in lieu of an accreditation system becoming operational. • Addition of stalks and stems to the grape marc section as industry consultation provided insight that this waste stream is not always mixed with grape marc and could pose a risk to SA if imported from a PRZ/PIZ or PIBZ
	<p>Clause 5</p> <ul style="list-style-type: none"> • Addition of wording to emphasise the importance of the origin phylloxera management zone where the grapevine material or vineyard soil was sourced (not the location of an interstate laboratory that may be forwarding the sample) • Removal of duplication of wording by adding in referrals to sections within the Clause • Reformatted 5.2 to display entry requirements by receiving laboratory type as per 5.1

C. Responses to industry feedback and additional work undertaken by Vinehealth Australia during the consultation phase of this PQS review

As a result of industry consultation on the SA PQS review, feedback was received on a range of areas. The table below presents responses to this feedback and also indicates endorsements for specific proposed changes.

Area	Responses to industry feedback and additional considerations by Vinehealth
Contribution to national phylloxera management	<ul style="list-style-type: none"> • A query was posed as to if any of the changes being proposed to Condition 7 will be adopted by other states. <ul style="list-style-type: none"> ○ Whilst Vinehealth’s regulatory remit extends only to SA’s PQS, we acknowledge that pests and diseases don’t observe state borders and therefore we need to contribute to minimising the spread of phylloxera at its source. As a result of this PQS review and in particular review of the latest science, we have engaged nationally on a number of occasions to advise other jurisdictions of our findings and the resulting proposed changes to the SA PQS, which we have encouraged other regulators to adopt to improve consistency across the industry. This is especially important given the increased movement by industry across state borders. ○ Vinehealth initiated a tri-state meeting in November 2018 between itself, NSW DPI and Agriculture Victoria to jointly review the latest phylloxera research and come to agreement on proposed changes to disinfestation procedures. ○ An Out of Session Paper was presented in November 2018 to the National Plant Health Committee’s Subcommittee for Domestic Quarantine Market Access (SDQMA) by Biosecurity SA on our evaluation of new science around dry heat treatment, calling for all jurisdictions and industry to update the 40°C dry heat treatment duration from 2 hours to 3 hours. South Australia incorporated this change into version 14.1 of the SA PQS released in March 2019 and Vinehealth is aware that Victoria has also updated their specifications as outlined in Industry Notices. ○ An Out of Session Paper written by Vinehealth was presented by Biosecurity SA in March 2019 to SDQMA calling for development of a dry heat treatment interstate certification assurance procedure. This paper was accepted. ○ Vinehealth is of the understanding that a lot of the work we’ve undertaken as part of this review has the potential to be incorporated into a National Phylloxera Management Protocol update and implementation of a National Phylloxera Management Strategy as has been agreed by all jurisdictions is needed.

Area	Responses to industry feedback and additional considerations by Vinehealth
Accreditation systems	<ul style="list-style-type: none"> • Feedback was provided on the need to ensure strong accreditation systems underpin SA’s entry requirements <ul style="list-style-type: none"> ○ Vinehealth strongly agrees with this sentiment. ○ We will work closely with Biosecurity SA on the development of some new accreditation systems we feel will strengthen our state borders. ○ Through this PQS review we have identified one accreditation system (ICA-22) to be removed. ○ We will advocate to Biosecurity SA for a suitable review timeline for all current accreditation systems relevant to Condition 7. • Through this review Vinehealth has also identified a national gap in regulator training and this will be included in the final project report.
Strengthening state borders	<ul style="list-style-type: none"> • Feedback was provided on the need to build in credibility for SA as a PEZ as part of the PQS review where possible. <ul style="list-style-type: none"> ○ We strongly believe that this PQS review will provide the changes needed to set SA up well into the future to maintain its PEZ status and reduce the risk of phylloxera entering SA. ○ Vinehealth continues to undertake a range of other work alongside this review to continue efforts to keep phylloxera out of SA.
Maintaining currency of hyperlinks	<ul style="list-style-type: none"> • Feedback was received on the need to ensure maintenance of hyperlinks in the new Condition 7, as they can often become redundant over time. <ul style="list-style-type: none"> ○ Vinehealth agrees and as part of its submission to Biosecurity SA and to the Minister for endorsement of the new Condition 7, a suggested schedule of review will be included to address currency of the content.
Verification of time/temperature specifications	<ul style="list-style-type: none"> • A query was posed as to if there is any new technology that could be employed to assist in verifying time/temperature specifications having been met during disinfestation. <ul style="list-style-type: none"> ○ Whilst Vinehealth has not undertaken investigations in this area as part of this PQS review, we endorse that review of operational procedures relating to all accreditation systems should involve acknowledgement of a range of methods to validate time/temperature specifications having been met. We are always open to receiving insights from industry on this at any time. Our call for accreditation of heat sheds is at least a first step.
Hot water treatment of propagation material	<ul style="list-style-type: none"> • Feedback was provided to better define the word ‘immediately’ relating to the time period hot water treatment must be carried out prior to dispatch where applicable in Clause 1, but this proved difficult. This term looks to have originated from the National Phylloxera Management Protocol and is not referenced in the Hot Water Treatment accreditation operational procedure (ICA-37). The term ‘immediately’ has therefore been retained in v2.0 of the consolidated Condition 7 in the absence of a viable alternative. This issue will however be flagged with the Vine Industry Nursery Association (VINA), to ensure that if their accreditation systems address this process, updates can be included in Clause 1 accordingly.

Area	Responses to industry feedback and additional considerations by Vinehealth
Sending propagation material from SA to other jurisdictions	<ul style="list-style-type: none"> • There was feedback from nurseries that there appears to be distinct differences placed on businesses sending propagation material into interstate PEZs – specifically Tasmania – requiring an additional mancozeb dip. Whilst this entry condition may be valid to prevent the introduction of Downy Mildew or another fungal disease, this inconsistency may warrant further discussion at a national level as part of an awareness measure for nurseries and will be discussed with VINA.
Dry heat treatment for machinery	<ul style="list-style-type: none"> • There was general endorsement from industry of the proposed change in Condition 7 version 1.1 for the 40°C dry heat treatment duration increase from 2 hours to 3 hours based on the review of latest science on key endemic phylloxera strains. <ul style="list-style-type: none"> ○ This change was made by Biosecurity SA to the SA PQS version 14.1 as a matter of urgency. • Industry’s increased awareness of phylloxera’s ability to survive dry heat treatment at 40°C for 2 hours, subsequently resulted in queries as to what temperature heat sheds interstate are running at, what the audit process is like and couldn’t we just remove the 40°C dry heat treatment option altogether? <ul style="list-style-type: none"> ○ As part of this review, Vinehealth has highlighted to Biosecurity SA that dry heat treatment is the only sterilisation method relating to phylloxera for which treatments are not currently being undertaken according to an accreditation system. As a result, regulators are not in a position to know what temperature interstate heat sheds are operating at (whether 40°C or 45°C), and therefore cannot contemplate removing the 40°C heat treatment at this stage, despite the concern over its efficacy against phylloxera if not conducted for the revised 3 hour duration. ○ Vinehealth Australia has written a paper on the need for a dry heat treatment accreditation system. This paper was presented by Biosecurity SA to the Subcommittee for Domestic Quarantine Market Access (a subcommittee of the national Plant Health Committee) and agreed upon by national regulators that this accreditation system be written and implemented. Vinehealth will work with Biosecurity SA to write this accreditation system with the aim to have it endorsed pre vintage 2020.
Hot water treatment for machinery	<ul style="list-style-type: none"> • The presence of hot water as a valid sterilisation method (alongside dry heat) for machinery was largely considered by industry as impractical for machinery with moving parts. This feedback resulted in the removal of hot water treatment for machinery in Clause 2. <ul style="list-style-type: none"> ○ One example was provided in feedback for where hot water could be a valid sterilisation option and this was for tillers. Upon reflection, whilst this could be a possibility for tillers it is highly unlikely given common dimensions and weight in particular, and therefore that the removal of hot water in Clause 2 is considered to still hold.

Area	Responses to industry feedback and additional considerations by Vinehealth
Harvesters from a PRZ/PIZ/PIBZ	<ul style="list-style-type: none"> • Some industry feedback was received stating that the lowest risk to SA from harvesters potentially bringing in phylloxera is to prohibit entry of all harvesters, irrespective of the source phylloxera management zone, and in particular from PRZ/PIZ/PIBZ. Whilst this is correct, we need to consider that if there is a valid sterilisation method available (in this case, dry heat), we cannot apply what could be considered as a barrier to trade. This principle of harvester movement is likely to be discussed further in time during discussions on national movement protocols. • We have however incorporated changes to the time/temperature specifications of dry heat to ensure efficacy against key endemic phylloxera strains and strengthened the cleaning step to also contribute to efficacy of the sterilisation.
Harvesters and other machinery	<ul style="list-style-type: none"> • Feedback was received on the need to develop a template for importing businesses to use as the basis of the certified statement documenting that a harvester or other machinery has not worked in a PRZ/PIZ/PIBZ in the previous 6 months. <ul style="list-style-type: none"> ○ Vinehealth will ensure that a template for this certified statement is available for use by importing businesses when the suite of proposed changes is implemented in the PQS.
Steam	<ul style="list-style-type: none"> • There was general endorsement from industry that based on Vinehealth’s review of latest science for the manner in which steam sterilisation would need to be carried out to be effective, warrants its removal as a valid disinfestation treatment for machinery in Clause 2 (as changed in Condition 7 version 1.1). <ul style="list-style-type: none"> ○ Additional discussion during the consultation sessions also highlighted the occupational health and safety concerns even if steam were to be allowable as a sterilisation method for hand tools. On this basis, steam as a sterilisation method (not cleaning method) has been removed from Condition 7 v2.0.
Supply chain considerations for setting valid sterilisation options	<ul style="list-style-type: none"> • There was general endorsement from industry that sterilisation options prescribed for specific machinery and equipment items in Clauses 2 and 3 must not contribute to supply chain issues. For example, industry endorsed that sodium hypochlorite sterilisation of any vessel that hold grapes from a PRZ/PIZ/PIBZ is inappropriate as this could lead to chlorine taint in wine.
Drones	<ul style="list-style-type: none"> • A query was posed as to how drones should be treated within the PQS, given their increasing use. <ul style="list-style-type: none"> ○ Vinehealth’s intention is that drones are treated in the same category as technical equipment in Clause 3.

Area	Responses to industry feedback and additional considerations by Vinehealth
Clean of soil and plant material imperative	<ul style="list-style-type: none"> • There was general industry endorsement for the increased emphasis on the cleaning process of grape harvesters and other machinery included in Clause 2 in Condition 7 version 1.1 to ensure efficacy of sterilisation methods undertaken thereafter. • There was general endorsement from industry that the ability to clean equipment from soil and plant material, prior to considering sterilisation, must continue to underpin and be the key driver of movement conditions into SA. <ul style="list-style-type: none"> ○ This endorsement validated the changes proposed to Clause 3 in version 2.0 of prohibiting entry to used trellis posts, vine guards, dripper tube, wire and clips, irrespective of source phylloxera management zone.
Table grapes	<ul style="list-style-type: none"> • There were a couple of queries on whether table grapes from a PRZ or PIZ are in practice, imported into SA, and if so, is this risk too great, despite the current import requirements and could this entry condition be removed? <ul style="list-style-type: none"> ○ Biosecurity SA was unable to validate whether this importation was occurring in practice. ○ Vinehealth plans to contact the table grape industry in attempt to verify table grape movements into SA.
ICA-22	<ul style="list-style-type: none"> • Consistent feedback from multiple regions was received to disallow must and unfiltered juice from a PRZ/PIZ to be able to enter SA for processing under ICA-22 as this is a real risk to SA and seems contrary to all other movement conditions requiring potentially infested items/material to be treated prior to entry into SA. <ul style="list-style-type: none"> ○ There was one region that considered that they would want the flexibility to be able to move must and unfiltered juice out of their region if they were to get phylloxera and that it could be a useful accreditation in this instance. ○ After considering both viewpoints we felt that it was necessary to place greater emphasis on strengthening our state borders to protect SA now (by disallowing ICA-22) and then look to assessing the use of the current or modified version of ICA-22 as part of the state outbreak management plan for phylloxera.

Area	Responses to industry feedback and additional considerations by Vinehealth
Filtered juice	<ul style="list-style-type: none"> • There was consistent agreement during the industry consultation that proof be required for filtered juice produced from grapes grown in a PRZ/PIZ/PIBZ to enter SA in Clause 4, as was proposed in Condition 7 v1.1; given the risk that unfiltered juice from a PRZ/PIZ/PIBZ poses to SA. <ul style="list-style-type: none"> ○ However, there is recognition that this could pose an additional burden on interstate regulators and therefore that the implementation of an accreditation scheme for this movement would be appropriate. This scheme also has the potential of encompassing proof of origin entry requirements for unfiltered juice and must from a PEZ which currently requires proof of origin via a PHC. ○ Prior to this accreditation scheme being implemented, movement conditions are best reverted back to those in the current PQS version 14.1. ○ There was also some feedback from industry as to how proof of filtration to 50 microns (or equivalent) would be achieved in practice and this will need further consideration and industry input as the accreditation system is developed. ○ There was also some feedback from industry that filtered juice from a PEZ should be required to have proof of origin. Upon reflection, the fact that filtration in itself is a processing step and that we are working towards requiring filtered juice from a PRZ/PIZ, or PIBZ to demonstrate filtration to 50 microns as a condition of entry, and that unfiltered juice from a PRZ/PIZ, or PIBZ is now being changed to prohibited, we feel that we have targeted the highest risk pathways for phylloxera entry into SA and that adding more regulation to filtered juice from a PEZ may be considered a barrier to trade and unwarranted.
Wine	<ul style="list-style-type: none"> • A query was received as to where the 'four days fermentation' wording came from that was included in Condition 7 version 1.1 in Clause 4, section 4.5 for Wine, and should this in fact refer to an alcohol percentage, e.g. 6%. <ul style="list-style-type: none"> ○ This wording was taken from the 2009 National Phylloxera Management Protocol. However, whilst the current Wine Australia definition for wine is that containing a minimum alcohol content of 4.5%, relevance of alcohol content to phylloxera survival has not been reported scientifically. As a result, no discreet definition for wine is presented in version 2.0.

<p>Grape Marc</p>	<ul style="list-style-type: none"> • There was consistent agreement during the industry consultation that proof be required for post-fermentation marc to enter SA in Clause 4, as was proposed in Condition 7 v1.1; given the risk that pre-fermentation marc from a PRZ/PIZ/PIBZ poses to SA. However, there was still a discrepancy in the entry conditions for grape marc compared to the raw product (winegrapes). <ul style="list-style-type: none"> ○ This has now been addressed in Clause 4 v2.0, where marc produced from grapes grown in a PRZ/PIZ/PIBZ is now prohibited entry into SA. ○ A review was also undertaken on the scientific studies underpinning the requirement of at least four days fermentation for marc to be considered 'post-fermentation marc' and in version 13 of the SA PQS, able to enter unrestricted. The definition of post-fermentation marc is based on old and few very research papers and lacks the scientific rigour around it given our new phylloxera strain knowledge to provide confidence in maintaining the current entry conditions around pre- and post-fermentation marc. In addition, industry feedback was that the four days of fermentation definition was ambiguous from a practical winemaking perspective (and potentially difficult to prove for a regulator if required) and that marc from a PRZ/PIZ/PIBZ could be coming into SA at present which poses a risk to SA. ○ Was some industry feedback that lowest risk to SA is to prohibit entry of all grape marc and stalks and stems irrespective of the source phylloxera management zone. Whilst this is correct, we need to align entry conditions of grape products with the raw product (winegrapes) for which entry is permitted from a PEZ based on proof of origin. Any additional regulation could be viewed as a trade barrier. ○ Industry practice being to mix white and red marc (pre-and post-fermentation) has also emphasised the critical nature of requiring proof of origin of the source grapes from a PEZ. • Industry feedback was received highlighting that it was common practice for wine businesses to 'mulch' rather than 'compost' grape marc, and therefore what the implications on this practice were likely to be, given the proposed changes to Clause 4. <ul style="list-style-type: none"> ○ Vinehealth's main aim with this PQS review is to strengthen state borders in response to increased biosecurity risks we are facing. Pre-fermentation marc from a PRZ/PIZ/PIBZ has been identified as a key risk to SA and therefore even at present, is prohibited entry into SA. However, the current allowable entry of post-fermentation marc was also identified as a risk in this review as little science has been completed to validate the four days in fermentation being consistent to negate the risk of viable phylloxera being present in the marc. As a result, Vinehealth is proposing in Condition 7 v2.0 that entry conditions for marc instead be aligned with those of grapes as the raw product. ○ Review of the scientific papers on composting are also not conclusive that composting according to AS 4454 is 100% effective against phylloxera, due to wild temperature and humidity variances in
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Area	Responses to industry feedback and additional considerations by Vinehealth
	<p>compost piles. As a result, the importance of time/temperature interaction in the efficacy of sterilisation techniques for phylloxera cannot be guaranteed through composting even undertaken in commercial facilities. It is then even more unlikely that composting or mulching undertaken in non-commercial settings would be more effective on phylloxera. Therefore, Vinehealth strongly recommends that grape marc arising from the processing of grapes grown in a PRZ/PIZ/PIBZ is not returned to vineyards, and this will additionally be communicated in Vinehealth's communications and awareness programs around vintage.</p> <ul style="list-style-type: none"> ○ There is also acknowledgement that grape marc can harbor other pests and diseases and this material if spread onto vineyards, may contribute to spread of these as well.
Diagnostic samples	<ul style="list-style-type: none"> ● A query was posed on how grape samples from a PRZ, PIZ or PIBZ are currently imported into SA for smoke taint analysis at a CA12 laboratory. <ul style="list-style-type: none"> ○ As there is a requirement for all diagnostic samples from a PRZ, PIZ or PIBZ to be disinfested in the origin phylloxera management zone prior to leaving, these samples must currently be frozen. Note that a change in v1.1 proposed a halving of the freezing time from 24 hours to 12 hours at -18°C.
Pest Risk Analysis	<ul style="list-style-type: none"> ● A query was posed on whether the Pest Risk Analysis completed as part of this PQS review could be broadened to include other pests. <ul style="list-style-type: none"> ○ Vinehealth's preference here is to encourage and contribute where applicable to the development of individual Pest Risk Analyses for each exotic or high priority endemic pest or disease, to ensure appropriate focus on each issue.
People management	<ul style="list-style-type: none"> ● A query was posed on whether people management (clothing, footwear) could become regulated and included in the PQS. <ul style="list-style-type: none"> ○ Whilst a plausible idea, this would be very difficult to regulate in practice. People management is considered best managed by land owners through best-practice farmgate hygiene.

Area	Responses to industry feedback and additional considerations by Vinehealth
Potential for additional disinfestation procedures	<ul style="list-style-type: none"> • A range of queries were posed on the effect of eliminating oxygen, the effect of sulphur and the effect of cold temperature on phylloxera survival and whether these could become the basis for additional disinfestation procedures. <ul style="list-style-type: none"> ○ <i>Eliminating oxygen</i>: A search has revealed no published scientific literature on the mortality of phylloxera when oxygen has been eliminated. ○ <i>Sulphur pads</i>: Powell and Clarke (2017) report that the use of sulphur pads containing a minimum 970g/kg sodium metabisulphite is a recommended disinfestation procedure in the National Phylloxera Management Protocol for the movement of table grapes out of a PIZ into a PRZ or a PEZ and is solely based on research conducted on a single root-galling strain in Australia by Buchanan (1990). (<i>Note - for SA, this method is currently only applicable to the importation of table grapes from a PRZ</i>). Buchanan found that at 5°C and 95% relative humidity, with a sulphur dioxide concentration of 5.2ppm only after 36 hours, did the sulphur dioxide released from sulphur pads achieve 100% phylloxera mortality in 10kg table grape consignments. If this sulphur dioxide concentration reached 12ppm, 100% phylloxera mortality was achieved after 24 hours. ○ <i>Potassium metabisulphite (PMS) in white juice</i>: Studies undertaken by Powell et al. (2014) assessed mortality of G4 strain first instars at 10°C and 2°C in white juice with sulphur added in the form of potassium metabisulphite. At 10°C, white juice with added sulphur resulted in 100% phylloxera mortality after 6 days, whereas with no PMS added, insects survived for 7 days. At 2°C, white juice with added sulphur resulted in 100% mortality after 2 days, which was the same duration as white juice with no added PMS. Powell concluded that the efficacy of sulphur against phylloxera in white juice was limited. ○ <i>Cold air temperature</i>: Whilst Powell (2017) reported that very few studies on chilling (cold temperature) have been published, he recommends that 4°C is not a suitable disinfestation treatment. At 4°C, first instars across seven endemic genetic strains tested were found to survive after 24 hours. ○ <i>Cold water temperature</i>: Powell and Clarke (2017) reported that phylloxera survival when immersed in water has been studied on a single endemic strain in Australia under controlled conditions at water temperatures between 2° to 25°C. These studies indicated that phylloxera survival in water is influenced by the water temperature and that the use of cold water as a disinfestation treatment against phylloxera (at least in the short term of 1-3 weeks) is likely to be ineffective. Studies undertaken by Powell et al. (2014) found that at 10°C water temperature, phylloxera was shown to survive 21 days, at 5°C survival reduced to 9 days, and at 2°C, survival reduced further to 7 days.

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D. Enhanced focus needed on accreditation systems beyond the end of this review

As a result of this SA Plant Quarantine Standard review, a need for additional accreditation systems has been identified, warranting action beyond the end of this review. The following are a set of recommendations to be prioritised and then actioned within the next six months capacity-dependent.

Issue area	Recommendation	Primary Owners
Grape bins from a PEZ	<p>Develop and obtain national endorsement for an accreditation system for any vessel that holds grapes (including grape bins, picking buckets, bulk tippers) being imported into SA from an interstate PEZ, to verify cleanliness from all soil and plant material through a Plant Health Assurance Certificate (PHAC) issued by an accredited business.</p> <p>Once this system is in place, changes will be required to Condition 7 Clause 3, 3.1 to reflect the new accreditation.</p>	Biosecurity SA, Vinehealth Australia
Dry heat treatment	<p>Develop and obtain national endorsement for a dry heat treatment accreditation system to facilitate accredited businesses undertaking dry heat treatment according to an operational procedure and providing importers into SA a Plant Health Assurance Certificate (PHAC) to demonstrate adherence to this operational procedure.</p> <p>Once this system is in place, changes will be required to Condition 7 Clause 2, 2.1 and 2.2 and Clause 3, 3.1 2) b) and 3.2 2) b) to reflect the new accreditation.</p>	Biosecurity SA, Vinehealth Australia

Issue area	Recommendation	Primary Owners
Filtered juice	<p>Develop and obtain national endorsement for a filtered juice accreditation system to facilitate accredited businesses to send and receive filtered juice into SA according to an operational procedure that ensures 50 micron filtration (or equivalent) has been achieved, that at present can be undertaken without restriction.</p> <p>Once this system is in place, changes will be required to Condition 7 Clause 4, section 4.4 to reflect the new accreditation as follows:</p> <ol style="list-style-type: none"> 1) (Filtered juice) Produced from grapes grown in a PEZ or state free of grape phylloxera may enter unrestricted without proof. 2) (Filtered juice) Produced from grapes grown in a PRZ, PIZ or PIBZ <ol style="list-style-type: none"> a) Processed (filtered, centrifuged, cold settled or other) to a 50-micron filtration rating (or tighter). b) Consignment subject to Importer Registration and Direct Inspection. [Flowchart 1]. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Proof: Consignment to be accompanied by a Plant Health Certificate (PHC), OR Plant Health Assurance Certificate (PHAC) OR Product Movement Declaration (PMD)</p> </div> <p><i>*Note – it is intended that this accreditation system be extended to unfiltered juice from a PEZ.</i></p>	Biosecurity SA, Vinehealth Australia

Issue area	Recommendation	Primary Owners
Grape marc	<p>Develop and obtain national endorsement for a grape marc accreditation system to facilitate accredited businesses to send and receive grape marc into SA according to an operational procedure that ensures the grape marc has been sourced from grapes grown in a PEZ only.</p> <p>Once this system is in place, changes will be required to Condition 7 Clause 4, section 4.6 to reflect the new accreditation as follows:</p> <ol style="list-style-type: none"> 1) (Grape marc) Produced from grapes grown in a PEZ or state free of grape phylloxera <ol style="list-style-type: none"> a) Permitted entry subject to proof of origin. b) Consignment subject to Importer Registration and Direct Inspection. [Flowchart 1]. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Proof: Consignment to be accompanied by a Plant Health Certificate (PHC), <i>OR</i> Plant Health Assurance Certificate (PHAC) <i>OR</i> Product Movement Declaration (PMD)</p> </div> 2) (Grape marc) Produced from grapes grown in PRZ, PIZ or PIBZ is prohibited entry into South Australia. <p><i>*Note – it is intended that this accreditation system could additionally be extended to cover stalks and stems from a PEZ if required.</i></p>	Biosecurity SA, Vinehealth Australia

E. Additional industry feedback on general biosecurity issues outside the bounds of the PQS review

During industry consultation on the SA PQS, feedback was received on general biosecurity issues pertinent to Vinehealth’s activities in protecting SA from phylloxera and other pests and diseases. Although these issues were outside the bounds of the PQS review itself, these issues were still recorded as part of industry feedback. The table below presents responses to this feedback.

Area	Responses to industry feedback and additional considerations by Vinehealth
Uninformed visitors	<ul style="list-style-type: none"> • There was feedback on issues vineyard owners are facing with regards to uninformed visitors <ul style="list-style-type: none"> ○ This included a heightened risk of vehicles from utility companies entering vineyards (e.g. from ETSA) that are not adhering to farmgate hygiene. As part of Vinehealth’s annual communication plan, we have identified the need to communicate the importance of farm-gate hygiene practices to utility companies as they pose a risk to SA. ○ Feedback was received that organic certifiers also post a risk to SA as they often have minimal knowledge of farmgate hygiene practices relevant to vineyards. Vinehealth will add this group to its annual communication plan. ○ Feedback was received suggesting Vinehealth contact Frost fan maintenance companies, power companies and NBN cabling companies to discuss biosecurity as they all pose a risk to SA vineyards. Vinehealth has added these groups to their annual communication plan.
Farmgate hygiene	<ul style="list-style-type: none"> • Feedback was received from multiple regions for Vinehealth to maintain its industry awareness focus on farm-gate hygiene, especially on footbaths, cleanliness of snips and importance of checking paperwork. <ul style="list-style-type: none"> ○ Vinehealth doesn’t underestimate the importance of its communications and awareness campaigns and this in fact is the most recognised of our activities by vineyard owners.