

Biodiversity Action Plan

Support materials V1.1



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BAP support materials updates

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1.1	QGIS mapping program details added	9
	Regulatory considerations and/or government approvals section added	12



Acronyms

BAP	Biodiversity Action Plan
ROC	Regional On-ground Coordinator
SWA	Sustainable Winegrowing Australia

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Dr Mary Retallack, Ngeringa, Mount Barker Summit, South Australia



EcoVineyards program

Context

Winegrape growers throughout Australia are being supported in their actions to enhance soil health, ground covers, and increase functional biodiversity in their vineyards via the National EcoVineyards Program.

Over the course of the program there will be many learning opportunities and strong regional collaboration to help future proof fruit quality, production, and the resilience of Australian vineyards.

All growers will benefit through the information-sharing activities associated with the National EcoVineyards Program including various grower-facing activities and deliverables (fact sheets, podcasts, webinars, social media posts etc.), grower discounts on supplies (where negotiated) and field walks associated with each demonstration site.

The National EcoVineyards Program is funded by Wine Australia with levies from Australia's grape growers and winemakers and matching funds from the Australian Government.

The program is delivered by Retallack Viticulture Pty Ltd with significant support from regional communities and founding partner the Wine Grape Council of South Australia.

Focus areas

The National EcoVineyards Program aims to accelerate adoption and practice-change outcomes detailed in Wine Australia's Strategic plan 2020-25 specifically:

- to increase the land area dedicated to enhancing functional biodiversity by 10 per cent, and
- to increase the use of vineyard cover crops and soil remediation practices by 10 per cent

The focus areas of the National EcoVineyards Program are:

- soil health,
- ground covers (including cover crops), and
- functional biodiversity.

More information

For more info about the EcoVineyards program visit:

- Facebook <https://www.facebook.com/ecovineyards/>
- Instagram <https://www.instagram.com/ecovineyards/>

Further supporting documentation including fact sheets and regional native plant species lists can be found in the knowledge hub at <https://ecovineyards.com.au>

Do you need assistance?

Please contact one of our Regional On-ground Coordinators in participating regions who can assist you <https://ecovineyards.com.au/rocs/> or contact the EcoVineyards team at admin@ecovineyards.com.au



How to develop a biodiversity action plan

When you develop your biodiversity action plan it is important to take the time to research the best approach that suits your needs and then plan your strategy. This will ensure you can use your time and budget effectively, work 'smarter' rather than 'harder' and reduce the possibility of setbacks.

Examples of biodiversity enhancement projects that you may wish to undertake include:

- Improving soil health,
- Incorporating supplementary flora via ground covers (including cover crops),
- Enhancing functional biodiversity by providing habitat for predatory species (and diversifying the species present),
- Carrying out revegetation of degraded areas,
- Looking after remnant vegetation,
- Rehabilitating watercourses on your property, and/or
- Other projects in or around your vineyard property that focus on habitat creation for fauna including microbats, insectivorous and raptor bird species.

Considerations

Some of the things you may wish to consider include:

- What are the key features and natural assets of your property?
- What is the capacity of the land and its restoration needs?
- What would you like to achieve and how will you achieve your goals?
- How will your project impact the existing and surrounding areas of your property?

Good management of a vineyard (and its surrounds) has the capacity to maximise profitability and returns while improving the condition of the natural resources

A good way to consider these points is to source a recent aerial map, which will provide you with a 'birds eye view' of the entire property and how it fits into the broader landscape (i.e., neighbouring properties, vegetation corridors, waterways etc.).

For example, if you choose to control woody weeds in a creek line, or in a patch of remnant vegetation near to a vineyard, it is important to ensure that any chemicals used do not cause damage to the grapevines, soil and/or waterway.

Having a good understanding of the local vegetation communities is another important step in planning the correct timing and strategy for managing invasive weed species.

Start your property planning process by sourcing a current aerial map of your property

The development of a biodiversity action plan will help you to focus your goals, identify potential challenges, solutions and plan your budget and time.



Getting started

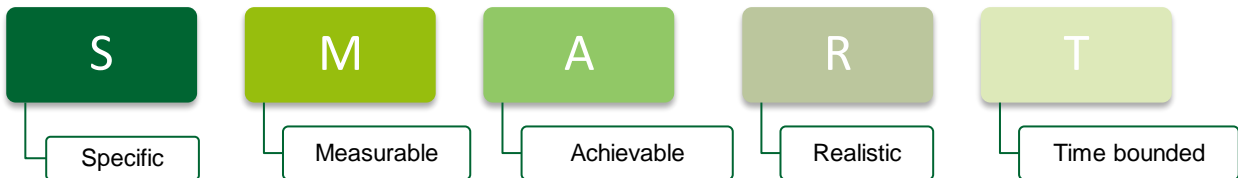
A. Assess the features of your property

- Get to know the key physical and permanent features of your property.
- A current map of your property can be obtained from [Google Earth Pro](#) (see further details in supporting document), or a range of other service providers.

See additional comments for WA growers on page 9.

B. Identify your goals and visions

When defining your goals and visions, aim for them to be:



Consider the capacity and resources of the property, the nature and long-term goals of your business, your lifestyle and values when making decisions.

C. Develop your plan

What should I highlight on an aerial map?

Once you have sourced an aerial photo or map of your property, either place clear plastic overlays over the top or use the mapping features in Google Earth or use a graphic design program like [Snagit](#) to highlight key features on your property.

D. Write a simple biodiversity action plan (see template below)

Ensure that your action plan addresses the following:

- Prioritise specific areas, do not try to do everything at once!
- Clearly define the desired short and long-term outcomes (ensure they are measurable and include a timeline),
- Management strategies (consider a range of options for managing each phase of the project),
- Costs (see if funding is available from external sources to complement your existing resources),
- Principle actions (address underlying issues before tinkering around the edges),
- Practical actions (what needs to be done, when and by who),
- Start/completion dates, and
- Monitoring and evaluation (set up photo points, how will you measure progress/success).

Use these support materials to help design your biodiversity action plan, using the BAP template (separate word document).



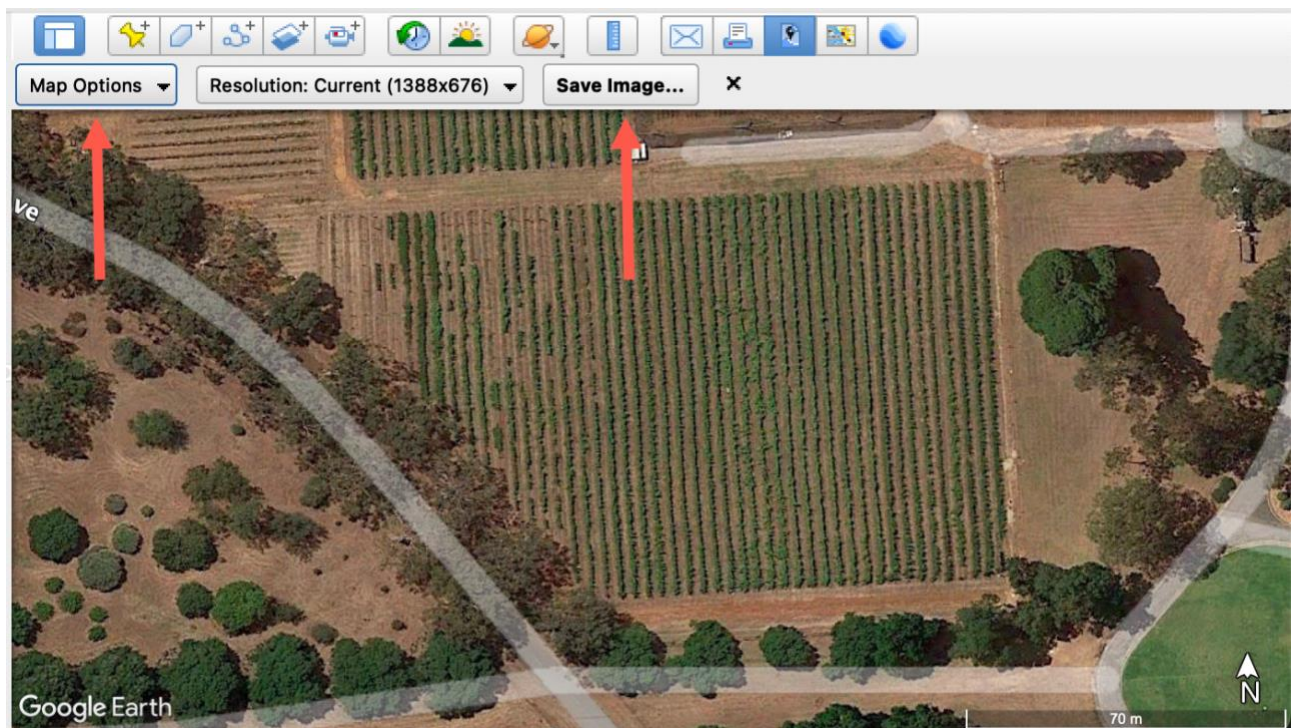
How to use Google Earth Pro to obtain a property map and insert layers

Download and install Google Earth Pro on your desktop <https://www.google.com/earth/versions/#earth-pro>

1. Enter your address in the search engine



2. Zoom in to your property until it fills the frame of the screen, rotate the image so that the boundaries are square with the frame. File > Save > Save image



3. You can determine the size of your action area using Google Earth. Go to Tools > Ruler > Line and change the unit of measurement to 'metres'. Use this tool to obtain the dimensions of your project area.
4. Use the placemark and polygon tools to name and identify activity areas (you can shade/border each area).



5. Once the polygon window has popped up, click the 'Measurements' tab and change the 'Area' to 'Hectares' or 'Square metres'.

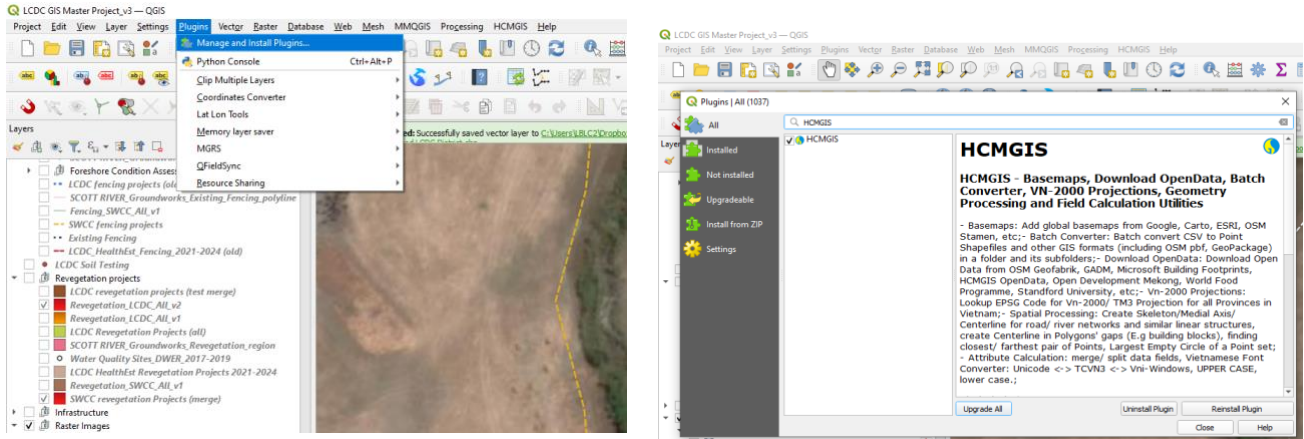
Then, click and release the left mouse button to add points to trace around the boundary of your site, eventually meeting back up with the point that you started.



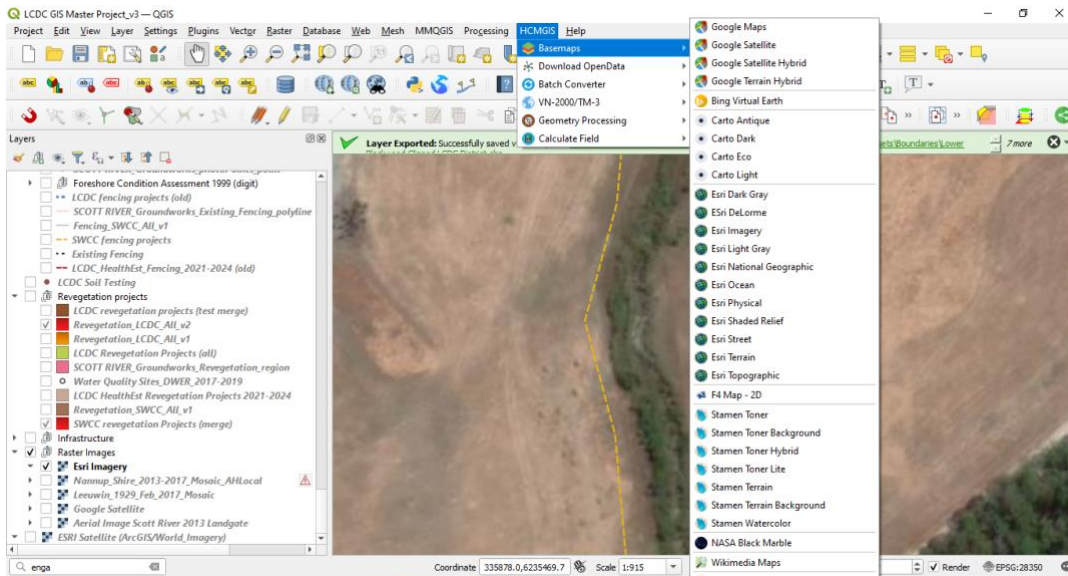
QGIS mapping program

Alternatively, if you are in WA or an area with outdated Google Earth coverage you may wish to use QGIS to access a recent property map.

1. Install QGIS on your computer <https://www.qgis.org/en/site/forusers/download.html>
2. Open QGIS (new or existing project) and install the plugin called HCMGS. To do this, click on Plugins and choose 'Manage and Install Plugins'. In the search button type HCMGS and install.



Once installed find it on the main Toolbar of QGIS. Click on it and click on ESRI Imagery.



There are multiple ESRI products that can be installed depending on your requirements.¹

NB: If you are in Margaret River the Lower Blackwood LCDC can assist with providing base aerial maps of the nominated EcoVineyards properties as either jpeg or pdf files.

¹ Notes supplied by Dr Chiara Danese, Lower Blackwood LCDC



Table 1: Vineyard biodiversity action planning (things to highlight on a map overlay)

Overlay 1: Physical and permanent property features		
Physical feature	Considerations	Comments
Changes in soil type	pH, sodicity, salinity, soil organic carbon, waterlogging, water repellent sands, rocky outcrops, fertility	
Areas of remnant / native vegetation	Different vegetation communities, and/or invasive weeds	
Waterways	Water quality, quantity, watercourse, drainage lines, soaks	
Topography	Exposed areas, steep slopes, inaccessible areas, rocky outcrops, frost risk areas, prevailing wind	
Overlay 2: Existing layout of the property		
Layout		Comments
Vineyard area	Sheds	
Dwellings	Wash down facilities	
Overlay 3: Best practice land management action areas		
Management of physical features	Considerations	Comments
Soil health, maintaining soil fertility and structure	Management of any marginal soil conditions	
Management of remnant vegetation, preservation of biodiversity	Management of woody / invasive weeds Fencing, stock exclusion (managed stocking during winter) Revegetation (all strata heights) Planting vegetation corridors to link islands of remnant vegetation (creation of wildlife corridors) Vermin control Bushfire prevention	
Management of soil erosion by wind or water, water quality	Sandy soils with poor soil structure Steep slopes and creek banks (revegetate) Areas prone to gulying during high rainfall or flood events Areas with little vegetation (revegetate to stabilise soil) Planting of buffer vegetation to minimise spray drift	



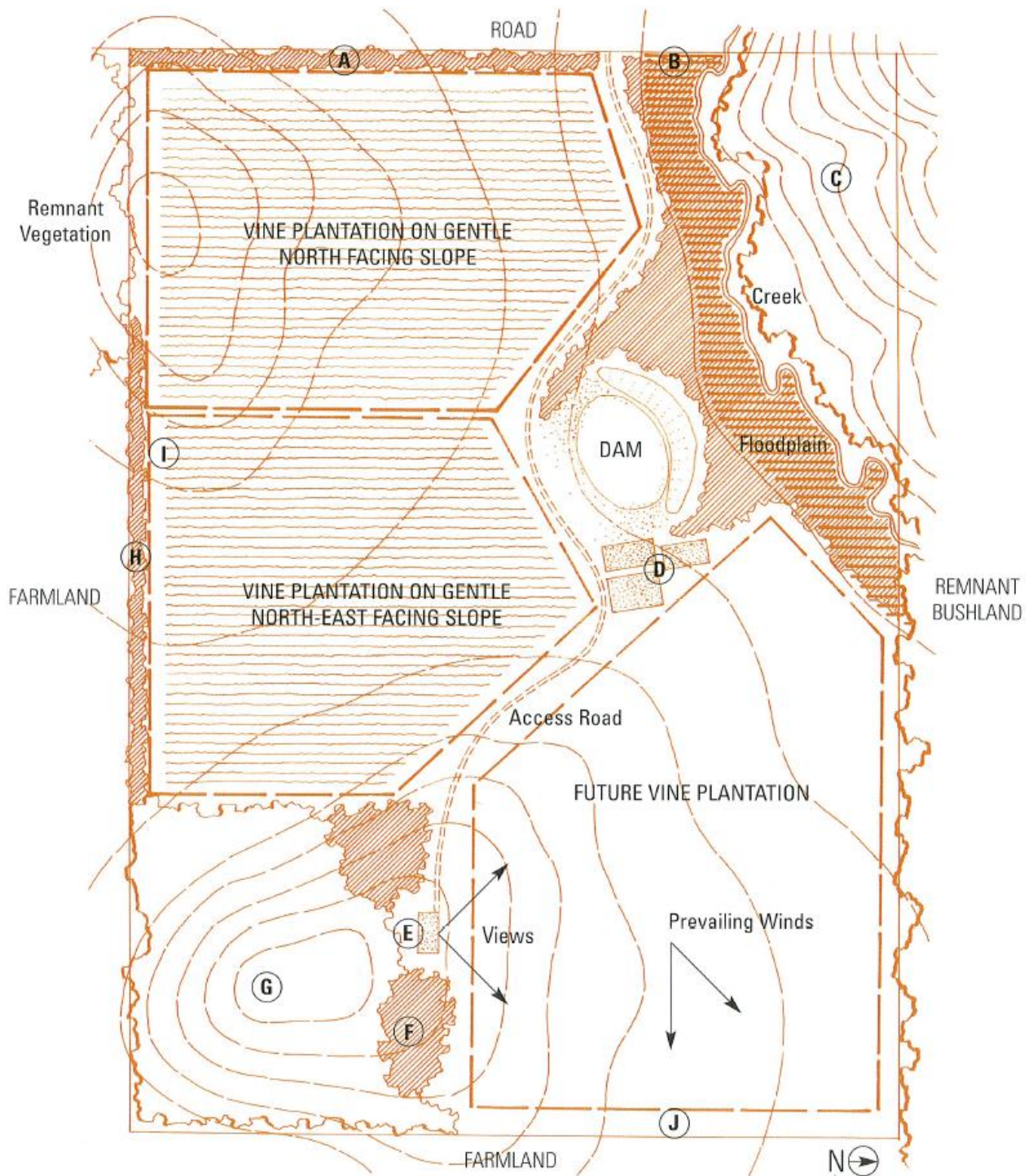


Figure 1. An example of the key features and natural assets on a vineyard property²

² Shire of Yarra Ranges (1999) *Planning a vineyard: a guide to selecting and planning a vineyard in the Shire of Yarra Ranges, Lilydale, Victoria.*



Table 2: Comments on the key features and natural assets of a vineyard property³

Comments	
A	Planting along road frontage to shelter vines from prevailing winds, enhance the appearance of the property, and to link remnant bushland. Consider native insectary species that can produce food and shelter for predatory arthropods, insectivorous birds and microbats in the vineyard and encourage raptor bird species, which are less likely to eat grapes and will actively deter pest bird species.
B	Planting along the creek using indigenous species including sedges and rushes to provide a buffer to the creek and protect against spray drift, erosion etc. This can help to buffer winds into the vineyard and act as a wildlife corridor. Remember to plant low ground covers, medium sized bushes and tall trees to provide a diversity of species. Try to mirror the local vegetation community where possible and focus on supporting vulnerable species.
C	Remnant vegetation on steep hillside – vegetation to be retained and managed to minimise fire hazard and weed invasion. Be careful not to cause erosion by disturbing the soil surface at vulnerable times of the year. Consider using liquid mulch containing native seeds on steep slopes.
D	Site of farm sheds, parking area and future winery/tasting area – location provides an opportunity to design the tasting room and/or educational biodiversity trail. Plant border vegetation to provide habitat for predatory arthropods, insectivorous bird and add to the attractiveness of the dam.
E	House site set below top of the hill and its outline absorbed into the backdrop of trees.
F	Revegetation around the house site, preferably using local native plants.
G	Remnant vegetation on steep hillside – vegetation to be retained and managed to minimise fire hazard and prevent noxious weed invasion.
H	Planting to shield vines from prevailing winds and to link areas of remnant vegetation.
I	Headlands at the end of the vine rows. Consider the use of low-lying native grasses in trafficable areas of the vineyard to ensure there is ground cover or low growing native insectary plants adjacent to strainer posts. Non-invasive volunteer weed growth is preferable to bare soils.
J	Space allocated for buffer plantings in the future.

³ Adapted from Shire of Yarra Ranges (1999) *Planning a vineyard: a guide to selecting and planning a vineyard in the Shire of Yarra Ranges, Lilydale, Victoria.*



OVERVIEW

Background

This biodiversity action plan outlines the biodiversity assets located on [insert vineyard name] and outlines actions to be taken to promote environmental stewardship on the property. Its purpose is to:

- A. Provide a clear framework for on-ground activities as a part of the National EcoVineyards Program.
- B. Benefit the broader wine growing enterprise (locally and regionally) to support a range of environmental stewardship reporting requirements including Freshcare certification, Sustainable Winegrowing Australia (SWA) membership and other programs seeking to demonstrate environmental credentials.
- C. Share our story with visitors to demonstrate ways we are working with the intelligence of nature. We have adopted an ecological focus to soften our environmental footprint and to showcase Australia's unique flora and fauna to consumers and the practical benefits that are provided through multiple ecosystem services and co-benefits.

Context

The property is located at [insert vineyard address] consists of a total of [insert property hectares] with [insert vineyard hectares] planted to [insert grapevine varieties].

Add in further current and historical context supplied by the landholder.

Biodiversity assets

Additional information

Note significant biodiversity assets including areas of remnant/native vegetation (paddock trees, windbreaks), water ways, dams etc. List your pre-European plant communities, Ecological Vegetation Classes (EVCs) or Plant Community Types (PCTs). Refer to the EcoVineyards knowledge hub and regional plant species lists for more information. Also include any endangered flora and/or fauna (if known).

Local plant communities: [insert details here]

Addressing any underlying issues

Additional information

Note woody and agricultural weedy species that need to be managed and any other preparation required prior to undertaking on ground works.

Management activities

Additional information

Summarise the key management activities that are included in the body of this plan including soil health, ground covers (including cover crops), functional biodiversity enhancement, revegetation etc.

Regulatory considerations and/or government approvals

Check to see if property owners require government approvals to undertake works on certain watercourses, remnant bushland areas or Aboriginal Heritage Sites.

Additional local resources

Additional information

Include a list of additional local resources and useful websites that relate to the work recommended above.



STEP 1: CREATE A BIODIVERSITY ACTION PLAN (BAP)

Vineyard map

Use Google Earth Pro, Google Maps, or an existing vineyard site map to identify the area for your project. The tools in Google Earth Pro can be used to name and identify each activity area using the polygon feature (see instructions on page 8).



Figure 2. Property location [image dated day month year] the proposed location of the photo point is marked with a red X [Photo: Google Earth]



Action areas - example

Outline a short description of what you would like to achieve and when

Focus on native insectary plants

Action areas	
A	<p>Action area A: Native insectary – around dam</p> <p>Plant sedges and rush species around the dam(s) to provide habitat for native arthropods and birds. For some background information see the fact sheet titled 'Sedges on edges' – Improving farm dams https://ecovineyards.com.au/wp-content/uploads/EcoVineyardsSedgesontheEdges.pdf</p> <ul style="list-style-type: none"> • Dam #1 is located at the north-western side of the property and the area to be planted measures approximately 100 m x 10 m = 1,000 square metres. • Dam #2 is located near the shed and each side is approx. 25m x 2 m x 4 sides = 200 square metres. • Dam #3 is located at the southern end of the property (not included on the map) which may also benefit from the planting of plants suited to wet areas.
B	<p>Action area B: Native insectary – shelter belt</p> <p>The approximate area of the existing shelter belt is 8 mx 220 m = 1,760 square metres.</p> <p>The area has already been planted with a range of shrubs and trees and the remaining area will be planted out with a diversity of native ground cover and mid-storey shrub species to a height of up to 2 metres.</p>
C	<p>Action area C: Native insectary – adjacent to strainer posts</p> <p>There is scope to establish ground cover and low growing shrubs adjacent to strainer posts in the vineyard.</p> <p>Currently, there are 82 strainers (46 strainers at each end of the block), and native plants will be planted adjacent to every first and fourth strainer post (in groups of 4 rows), so the bird nets can be easily installed and removed.</p> <p>Approx. 46 shrubs will be required for this area (plus ground cover plants if desired).</p>
D	<p>Action area D: Native insectary – undervine area</p> <p>You may wish to trial a range of low growing (< 30 cm) ground cover plants in the undervine area and observe how they perform in growing season 1 (winter 2023) and then scale up the volume from there in season 2 (autumn/winter 2024).</p>
E	<p>Action area E: Native insectary – in the vineyard midrow</p> <p>There is the capacity to plant to a mixture of native grasses (winter/spring and summer active) and forbs (flowering plants) from locally sourced seed. Thorough preparation is essential and specialised machinery is required to plant the midrow and/or undervine areas (more details below).</p>
F	<p>Action area F: Native insectary – nature room adjacent to art gallery</p> <p>There is scope to configure some of the plants in the main insectary area in a U shape (up to 15 plants spaced 1 metre apart with 5 metres across the top of the U shape) to create nature rooms for bespoke wine tasting and/or tourism experiences.</p>



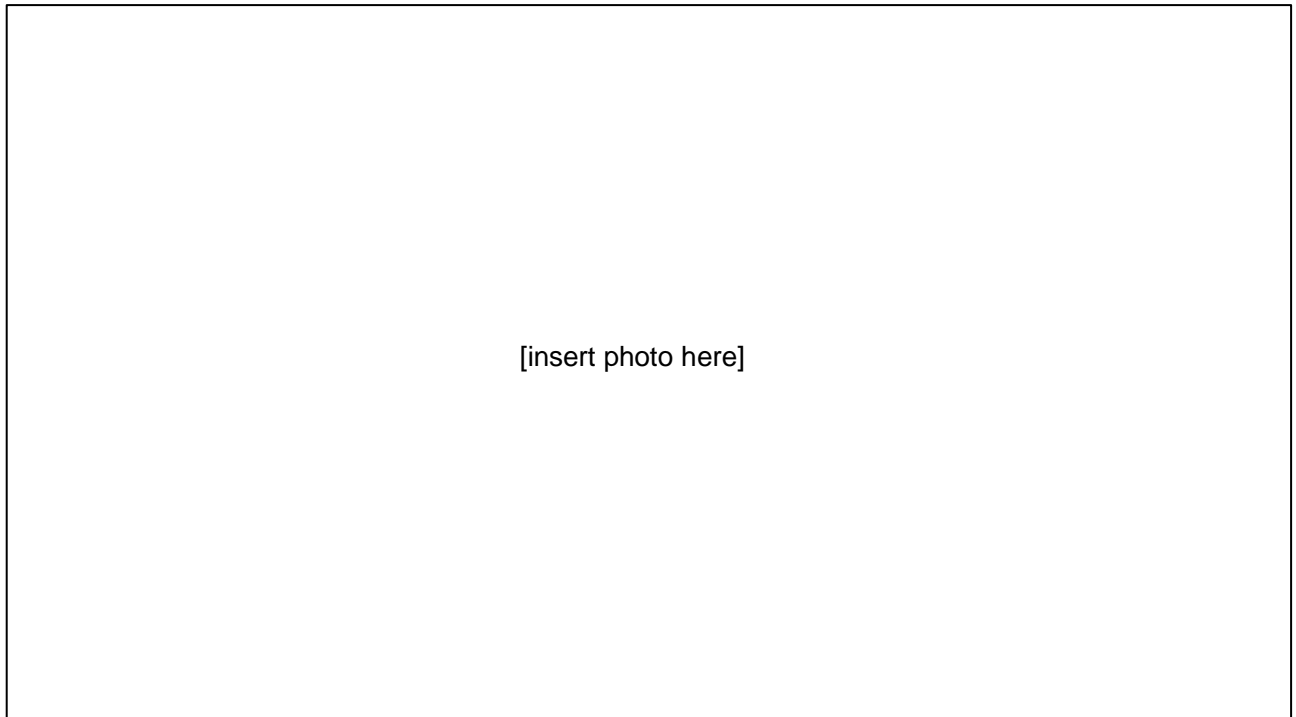


Figure 3. Photo of the site before commencement of demonstration area (Photo: credit)

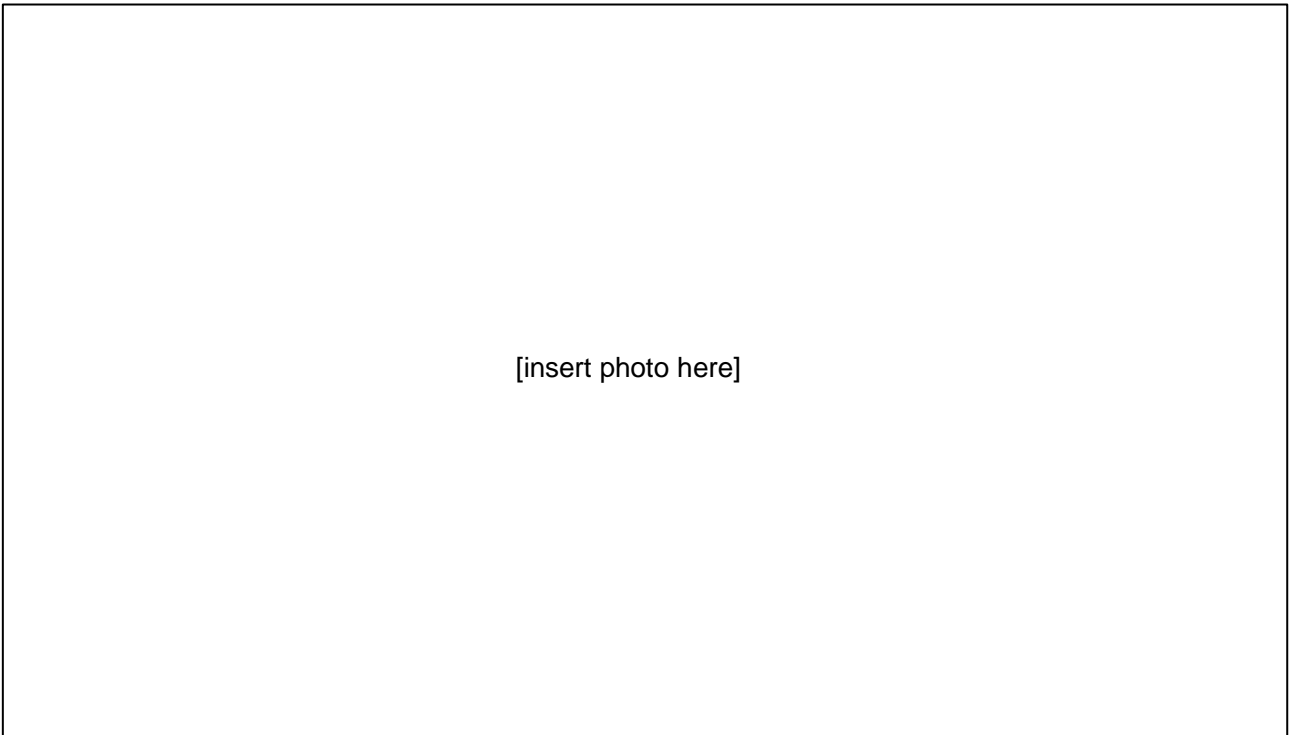


Figure 4. Photo of the site before commencement of demonstration area (Photo: credit)



Choosing your plants

Please refer to the native insectary plant guides that have been developed for your region or state. For more details see <https://ecovineyards.com.au/fact-sheets/>

Action area A: Native insectary – around dam

Plant selection: Source locally available sedges and rush species for planting around the perimeter of the dams. Seek advice from your local native plant nursery.

Action area B: Native insectary – shelter belt

Site preparation: Apply herbicide registered for use in vineyards (either conventional systemic or organically approved BioWeed Organic at high water rates or Slasher organic weedicide) to control any unwanted weed growth prior to planting. Use selective weedicide to remove broad leaved weeds amongst stands of native grasses.

Plant selection: Plant a diverse range of native ground cover and mid storey shrubs (up to 2 metres high).

Action area C: Native insectary – undervine area

Plant selection: Plant a diverse range of native ground cover plants (< 30 cm high) to assess their performance and then consider scaling up from there. Use weed mat and/or mulch to help smother weed competition and use tree/vine guards.

Some examples of low growing native groundcover plants include (or species from the same genus):

- *Goodenia blackiana*, goodenia
- *Kennedia prostrata*, running postman
- *Microlaena stipoides*, weeping grass
- *Rytidosperma geniculatum*, kneed wallaby grass
- *Scaevola aemula*, fairy fan flower

Action area D: Native ground covers and shrubs (tube stock)

You may wish to consider trialling a range of low growing woody perennial ground cover plants to assess their suitability for incorporation in the vineyard (either in the mid-row or undervine area) in subsequent years.

Species outside your local plant community list include (but there may be local alternatives):

- *Atriplex semibaccata*, creeping saltbush
- *Goodenia albiflora*, white goodenia
- *Goodenia blackiana*, goodenia
- *Kennedia prostrata*, running postman
- *Kunzea pomifera*, muntries
- *Myoporum parvifolium*, creeping boobialla
- *Scaevola aemula*, fairy fan flower

Decide what you would like to plant:

Native plants via tube stock (suggested plants listed above). Species selection will be dependent on the stock available from local nurseries, or native, perennial grasses (or a combination of both).



Action area E: Native insectary – in the vineyard midrow

Native perennial grasses

Specialised seeding equipment is required to sow seed over large areas, and this is best done by contacting a specialist contractor who can sow native seeds with specialised equipment. Alternatively, small trial areas can be hand sown with the seed lightly raked in.

- When sowing native grasses, the seed bed needs to be thoroughly prepared to remove any potential weed pressure during native seed germination, as native grasses and forbs don't compete well with weeds during establishment.
- Once they are established, it is reported they have the capacity to outcompete a range of weeds including wireweed, evening primrose and salvation jane.
 - For best results try to ensure that the seed bed is weed free. Native grasses are slow growers and effective weed control is highly desirable.
 - Before sowing, the soil surface should be loosened with either a rake or harrows to ensure adequate seed to soil contact.
 - Spread the seed evenly over the prepared surface and rake it in to a depth of 5 to 10 mm, so it is lightly covered. Seed sown deeper than 15 mm may not germinate.
 - Where possible, try rolling the area as it lightly presses soil particles together and ensures grass seeds are in contact with the soil. This will eliminate air pockets that could interfere with seed germination and growth and a rolled seedbed also holds moisture longer.

Action area F: Native insectary – nature room adjacent to art gallery

Configuration (nature rooms): There are several species which may be suited to the creation of nature rooms including (but not limited to):

- *Bursaria spinosa*, sweet bursaria
- *Dodonaea viscosa*, sticky hop bush
- *Leptospermum continentale*, prickly tea-tree
- *Leptospermum myrsinoides*, silky tea-tree
- *Myoporum insulare*, common boobialla

You may wish to consider a range of low-profile ground covers in the centre of these U-shaped plantings.

Check the suitability of plant recommendations to your local area and check availability of stock with your local nursery (they often have great local knowledge and insights).

Ordering plants

It is important to order plants as soon as possible, and in most cases by July or August in the season prior to give nurseries sufficient time to produce tube stock ready for planting and/or secure varieties and volumes of seed that may be required.

For native revegetation that is adding to or improving existing bushland, plant selection should be informed by an assessment of the native species and vegetation structure present in nearby bushland. If there is a high degree of variation in soil types and plant communities, it is important to choose plants that are suited to your specific conditions is crucial to the success of any revegetation project.



Signage

As a part of the initial EcoVineyards program and via collaboration with Wine Australia's SA Central regional program, biodiversity trail signage was developed for key plant species also highlighting the arthropods found in association. A series of plant markers were also developed for selected species. These signs may be of interest to you if you are planning an educational biodiversity trail for visitors.

Templates are available from the EcoVineyards website that can be modified using a style guide <https://ecovineyards.com.au/signage-2/>



Figure 5. Example of EcoVineyards educational signage [Photo: Mary Retallack]



Figure 6. EcoVineyards educational signage installed at Bondar Wines, McLaren Vale [Photo: Mary Retallack]



Work plan example

Each work plan will vary depending on the chosen project. An example work plan for the establishment of native plants is presented in **Table 3**.

Table 3. Work plan example for the establishment of native plants in year 1 (Autumn to Summer)

Autumn 2023					
Task	Timing	Action area	Person responsible	Date completed	
1	Install an Ocloc photo point (to be supplied) and take 'before' photos to monitor progress.	May 2023	All	Owner	
2	Collect soil sample to baseline soil health.	May 2023	# C	Owner and ROC	
3	Source the required tube stock and seeds (plant available stock this year and order extra plants for next year if needed).	May 2023	All	Owner and ROC	

Winter 2023					
Task	Timing	Action area	Person responsible	Date completed	
1	Take photos from the photo-point to monitor progress.	June 2023	All	Owner	
2	Install fencing to reduce grazing pressure on the plants during establishment.	June/July 2023	All	Owner	
3	Site preparation - spray out existing weeds in the planting areas (repeat if you have time before planting).	June/July 2023	All	Owner	
4	Plant the tube stock prior to the end of September and clearly label each plant on the stake (this is important to identify plant deaths and successes accurately). Place a guard around each tube stock plant, held in place with a wooden or bamboo stake (or repurpose old vine guards cut down to size). This is important to reduce the impacts of wind and to retain greater warmth and humidity as well as reducing grazing pressure. Either apply jute weed mat around each plant or mulch to inhibit weed growth and retain soil moisture once the plants have guards and stakes installed.	July/ August 2023	# A, B, C, D	Owner	



Spring 2023					
Task		Timing	Action area	Person responsible	Date completed
1	Take photos from the photo-point to monitor progress.	September 2023	All	Owner	
2	Monitor the plants and start watering them using a dripline (or by hand for the best results), if the soil dries out significantly. Monitor the weed pressure and either whipper snipper or apply herbicide to reduce weed competition on a regular basis until the plants are established.	September 2023 onwards	All	Owner	

Summer 2024					
Task		Timing	Action area	Person responsible	Date completed
1	Take photos from the photo-point to monitor progress.	December 2024	All	Owner	
2	Assess the number of plants that have successfully established and their rate of growth. Review tree guards and weed control to ensure optimal growth.	January 2024 onwards	All	Owner	
3	Water plants regularly in the first year if seasonal conditions are dry to ensure a high success rate.	January 2024 onwards	All	Owner	



Table 4. Work plan example for the ongoing management of the EcoVineyards demonstration site

Annual considerations (Year 2 and 3)		
Time of season	Season	Property management task examples
Growing season (grapevines are actively growing)	Spring	<ul style="list-style-type: none"> • Take a photo-point photo on 1 September. • Carry out weed control in areas of revegetation. • Replace any missing plants before the soil starts to dry out. • Trim native insectary plants that are establishing at the end of rows or as bio-hedges to achieve a compact growth habit. • Monitor the health of waterways and ground water at the start of the growing season. • Start bushfire clean up now to reduce the fuel load around dwellings. • Start woody weed control. Weeds such as blackberry, broom, olive, and gorse are best controlled during their main growing season from November till the end of February. Use a tree popper on weedy species with long tap roots. • Allow native grasses to set seed before slashing (only slash if required). • Monitor for predatory arthropods (insects and spiders) in the vineyard from early November to mid-December.
	Summer	<ul style="list-style-type: none"> • Take a photo-point photo on 1 December. • Monitor for predatory arthropods (insects and spiders) in the vineyard from early November to mid-December. • Ensure bushfire survival plan in place. • Continue with woody weed control. • Monitor for the presence of rabbits and hares and control if required. • Maintain fencing to deter kangaroo and deer damage, if required. • Continue with woody weed management.
	Autumn	<ul style="list-style-type: none"> • Take a photo-point photo on 1 March. • Plant native vegetation once opening rains have occurred. • Check the status of establishing plants and re-guard and stake as required. • Replant any plants that did not survive over the summer period. • Trim native insectary plants that are establishing at the end of rows or as bio-hedges to achieve a compact growth habit. • Assess the need for any soil amelioration or amendments prior to the start of the next growing season i.e., soil tests. • Monitor the health of waterways and ground water at the end of the growing season.
End of growing season (grapevine dormancy)	Winter	<ul style="list-style-type: none"> • Take a photo-point photo on 1 June. • Inspect plants to ensure weed management is maintained and doesn't retard plant growth. • Ensure there is sufficient round cover present to reduce the effects of erosion on waterways. • Ensure stream banks are adequately vegetated and check your spillway is the correct height, width and has good vegetative cover. • Carry out weed control in areas of revegetation. • Keep livestock including sheep out of waterlogged areas in the vineyard. • Place native plant order with local plant nursery for pick up next May/June



STEP 2: COSTING YOUR PROJECT

Decide what you would like to plant

- Native plants via tube stock. Species selection will be dependent on the stock available from local nursery.
- Native, perennial grasses/forbs, or introduced ground cover plants (including cover crops).

Indicative costings (ex GST)

- Tube stock will cost from \$0.80 to \$1.20 per seedling in cell-trays, from \$1.70 per plant for small plants (or \$2.50 to \$4 for forestry tubes in WA) propagated by seed, \$3.20 per plant by cuttings, \$3.75 per by division, or more depending on the size of the plant. Check with your local supplier.

A mallee flute tree guard (450mm High, 200mm sides) and hardwood stake (11 x 38 x 750mm) will cost approximately \$2.35 per combined unit (depending on supplier and number of units purchased).

Discounted pricing has been negotiated for EcoVineyards' participants at Arborgreen Landscape Products <https://www.arborgreen.net.au/ecovineyards-program/> if you wish to purchase guards/stakes etc.

NB: Alternatively, it may be possible to re-purpose old vine guards (cut down to size) to help save money (and the environment). For each re-purposed guard used, it may be possible to plant an additional tree!

- Native grasses will cost approximately \$1,500 to \$2,500 per hectare for the supply and sowing of seed (depending on sowing rate), plus travelling and staffing on-costs to be determined by the contractor. The recommended seeding rate kg/ha will depend on the species selected. Please seek an individual quote to help cost your project. The break-even point when compared to an annual cover crop is year 2 to 3 (with little intervention required thereafter).

Recommended native plant spacing

- Native grasses (0.3 to 1 m apart depending on species). Plant wallaby grasses in grouped areas so you can maintain weed control by mowing or herbicide around these areas. They can be planted 30 to 50 cm apart. Purchase forestry tubes in crates of 50 plants each.
- Shrubs (3 to 4 m apart) either randomly positioned (preferred) or in a straight line to assist with weed control.
- Large shrub/small tree (5 to 6 m apart)
- Large tree (10 to 15 m apart)

Calculating the planting area and the number of tube stock required (example)

Windbreak measuring 100 metres long x 15 metres wide with plants 2 metres apart

- **Area:** 100 m long x 15 m wide = 1,500 square metres (sqm).
- **Plant density:** 2 metres apart = 2 x 2 metres = 4 sqm.
- **Plants required:** 1,500 sqm (planting area) / 4 sqm (planting density) = approx. 375 plants are required.

If you are planting a hectare the equation would be 10,000 sqm / 4 square metres = 2,500 plants per hectare.

Calculating the planting area and number of tube stock required						
Calculator		Width		Length		Step 3.
						Area covered
Step 1.	Project area	15 m	x	100 m	=	1,500 sqm
Step 2.	Planting density	2 m	x	2 m	=	4.00 sqm
						=
Number of plants required						375 plants



Budget

Keeping track of your expenses and capture in-kind time.

Grower: Example		Region: Example			
Date	Activity	Number of plants	Grant cash expenses	Additional cash co-contribution	In-kind time captured
July 2023	Example: check fencing to ensure it will keep kangaroos out			TBC	
July 2023	Example: Herbicide (weed control)			\$100	4 hrs
July 2023	Example: Area B Existing purchase of shrubs (200 x \$2.00 ea) for shelterbelt insectary site	200	\$400		13 hrs
July 2023	Example: 200 x tree guards and stakes for shrubs and ground cover plants only (or reuse cut down vine guards)		\$290		
July 2023	Example: Mulch around plants as needed to smother weeds and conserve moisture		\$150		10 hrs
August 2023 to May 2024	Example: Slashing and general weed control				20 hrs
May/June 2024	Example: Area A Purchase tube stock – sedge and rush species (2,000 x \$2 ea) for planting on the dam banks	1500	\$3,000		50 hrs
May/June 2024	Example: Area B Purchase tube stock – ground cover plants (195 x \$2 ea) for shelterbelt insectary site	195		\$390	13 hrs
May/June 2024	Example: Area C Purchase tube stock – shrubs and ground cover species (46 x \$2 ea) for planting adjacent to strainer posts	45	\$90		3 hrs
May/June 2024	Example: Area D Purchase tube stock – ground cover species for undervine trial (3 plants per panel x 2 panels x 5 species) (30 x \$2 ea) for planting adjacent to strainer posts	30	\$60		2 hrs
May/June 2024	Example: Area E Sow native grasses in the mid-row.			\$1,122	
May/June 2025	Example: Area F Create nature rooms	30		\$60	2 hrs
May/June 2024	Example: 300 x tree guards and stakes for shrubs and ground cover plants only (or reuse cut down vine guards) - consider mallee mesh guards if needed to minimise kangaroo damage for plants adjacent to the strainers (if needed)			\$436	
TOTAL		2000	\$3,990	\$ 2,108	121 hrs

Please refer to the **EcoGrower time sheet and expenses claim plus plant calculator** (excel spreadsheet) supplied with your EcoGrowers induction pack and update regularly, so all the expenses and in-kind contributions are captured accurately



STEP 3: ACTION

You should now be well underway with your planting plan and the support needed to make your project a success. Don't forget to take photos from a set photo point, so we can share your progress!

Here are some more fact sheets to help you on your way:

- Setting up photo points [here](#)
- Revegetation site planning [here](#)
- Revegetation site preparation [here](#)
- Revegetation planting [here](#)
- Direct seeding [here](#)
- Maintenance, weeds and pests [here](#)
- Watering and tree guards [here](#)
- Revegetation - Years 2, 3 and 4 [here](#)
- Paddock trees – natural regeneration [here](#)
- Recording success [here](#)

For further information on developing a Biodiversity Action Plan and revegetation tips see <http://www.viti.com.au/pdf/Enhancing%20Biodiversity%20in%20the%20Vineyard%20-%20Workshop%20Notes.pdf>



STEP 4: MONITORING

There are a range of ways the impact of your biodiversity action plan can be assessed. You may wish to consider the following by benchmarking your progress at the start and then several years after commencement.

A. Photo Points

EcoGrowers are furnished with an Ocloc photo-point to take before, during and after photos and document the growth of plants from a standardised position during the project period.

Take photos at the start of each season 1 March (autumn), 1 June (winter), 1 September (spring) and 1 December (summer) each year.

B. Soil Testing

Soil testing may include, but is not limited to:

- Chemical
 - monitoring soil pH, salinity, organic carbon, sodicity (top-soil and sub-surface, rootzone)
 - availability of micro and macro-nutrients
- Biological
 - earthworm counts
 - soil macroorganism diversity
 - soil microorganism activity using calico strips
- Physical
 - soil penetrometer resistance
 - water infiltration rates
 - soil aggregate strength (slaking and dispersion)

For more information refer to the **Soil health indicators for Australian vineyards** booklet from www.ecovineyards.com.au

C. Grape yield

Measure grape yield from pre-identified and standardised panels of grapes before and after undertaking on-ground works adjacent to grapevines to assess any short- or long-term impacts on grape yields located close by (both positive and negative and between seasons).

D. Functional plant cover

The 'step point' method involves walking along a transect (mid-row area) or defined point-to-point location adjacent to the vineyard that is representative of a particular area. Record ground cover plants along a monitoring transect or from a photo point.

Start walking and take 25 evenly spaced steps and record observations at each step and observe what is touching the toe of your shoe. Plants can be categorised as either; functional plants which have a desirable effect on ecosystem function or less desirable weedy species.

Please ask the EcoVineyards team for more information when you are ready to assess your functional plant cover admin@ecovineyards.com.au



E. Predatory arthropods

Predatory diversity and abundance could be measured in insectary plantings around the vineyards as they establish seasonally each year. Monitoring will indicate the use of insectary plantings by different predatory arthropods and their ability to reduce pest insects in the vineyard.

To identify different predatory arthropods, refer to the Natural predators of vineyard insect pests booklet <https://ecovineyards.com.au/natural-predators-book/>

F. Microbats

EcoGrowers are furnished with two microbat boxes that have been constructed in partnership with Seaford Rotary to provide supplementary habitat if there are few naturally occurring tree hollows available.

You may wish to enquire to see if there is an old Anabat or new Chorus detector which have replaced the Anabat detectors (and can record microbats, birds, frogs, and other vocalising wildlife) available for hire through your local natural resources management board, Local land services or similar organisation.

G. Bird Surveys

EcoGrowers are furnished with a Oclor raptor perch. You may wish to contact your local natural resources management board, Local land services or similar organisation to see if they have the capacity to conduct a bird survey in the vineyard and neighbouring vegetation to monitor changes in bird richness (diversity) and abundance (number) for both insectivorous and raptor bird species.



FURTHER READING

Articles on functional biodiversity enhancement

- Retallack, M. (2011) **Vineyard biodiversity and insect interactions**. Grape and Wine Research and Development Corporation, Adelaide.
<http://www.viti.com.au/pdf/Rmir0811VineyardBiodiversityandInsectInteractionsBookletFINAL.pdf>
- Retallack, M. (2012) **Enhancing biodiversity in the vineyard**. Adelaide and Mount Lofty Ranges Natural Resources Management Board, Adelaide.
<http://www.viti.com.au/pdf/Enhancing%20Biodiversity%20in%20the%20Vineyard%20%20Workshop%20Notes.pdf>
- Retallack, M.J. (2018) **The importance of biodiversity and ecosystem services in production landscapes**. The Australian and New Zealand Grapegrower and Winemaker. Oct (657), 36 - 43.
<https://winetitles.com.au/gwm/articles/october-657/the-importance-of-biodiversity-and-ecosystem-services-in-production-landscapes/>
- Retallack, M.J. (2018) **The role of native insectary plants and their contribution to conservation biological control in vineyards**. The Australian and New Zealand Grapegrower and Winemaker. Nov (658). <https://winetitles.com.au/gwm/articles/november-658/the-role-of-native-insectary-plants-and-their-contribution-to-conservation-biological-control-in-vineyards/>
- Retallack, M.J. (2018) **Practical examples of ways to establish native insectary plants in and around vineyards**. The Australian and New Zealand Grapegrower and Winemaker. Dec (659), 38-41.
<https://winetitles.com.au/gwm/articles/december-659/practical-examples-of-ways-to-establish-native-insectary-plants-in-and-around-vineyards/>
- Retallack, M.J. (2019) **The functional diversity of predator arthropods in vineyards**. The Australian and New Zealand Grapegrower and Winemaker. Jan (660), 23-26.
<https://winetitles.com.au/gwm/articles/january-660/the-functional-diversity-of-predator-arthropods-in-vineyards/>
- Retallack, M.J. (2019) **Ways to monitor arthropod activity on native insectary plants**. The Australian and New Zealand Grapegrower and Winemaker. Feb (661), 40-43.
<https://winetitles.com.au/gwm/articles/february-661/ways-to-monitor-arthropod-activity-on-native-insectary-plants/>
- Retallack, M.J., Thomson, L.J, and Keller, M.A. (2019) **Native insectary plants support populations of predatory arthropods for Australian vineyards**. 42nd Congress of Vine and Wine, International Organisation of Vine and Wine (OIV), Geneva, Switzerland. https://www.bio-conferences.org/articles/bioconf/abs/2019/04/bioconf-oiv2019_01004/bioconf-oiv2019_01004.html

Copies of these publications can also be found here <https://ecovineyards.com.au/articles/>

Fact sheets and case studies

National EcoVineyards Program fact sheets can be downloaded here <https://ecovineyards.com.au/fact-sheets/>

EcoVineyards case studies can be downloaded here <https://ecovineyards.com.au/casestudies/>





ECO VINEYARDS

GROWING RESILIENCE NATURALLY

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Supporting partners



The National EcoVineyards Program is funded by Wine Australia with levies from Australia's grape growers and winemakers and matching funds from the Australian Government.

Acknowledgement of country

The EcoVineyards program acknowledges Aboriginal people as the First Peoples and Nations of the lands and waters we live and work upon and we pay our respects to their Elders past, present, and emerging. We acknowledge and respect the deep spiritual connection and the relationship that Aboriginal and Torres Strait Islander people have to Country.

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