



# Entwine Australia

## August 2015



entwine  
australia





COOPERATIVE  
RESEARCH CENTRE  
*for*  
VITICULTURE



**GEM Viticulture**

National Good Environmental  
Management Project



Winemakers' Federation of Australia

2009  
AWIS  
Entwine



AWRI

## Objectives

1. Foster environmental custodianship
2. Facilitate market access
3. Enhance brand Australia

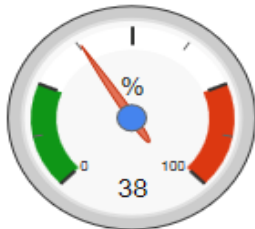


# entwine australia

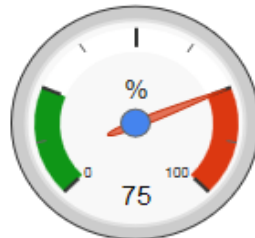


## Environmental metrics

Diesel (L)



Water (kL)



## Environmental certification



# entwine australia



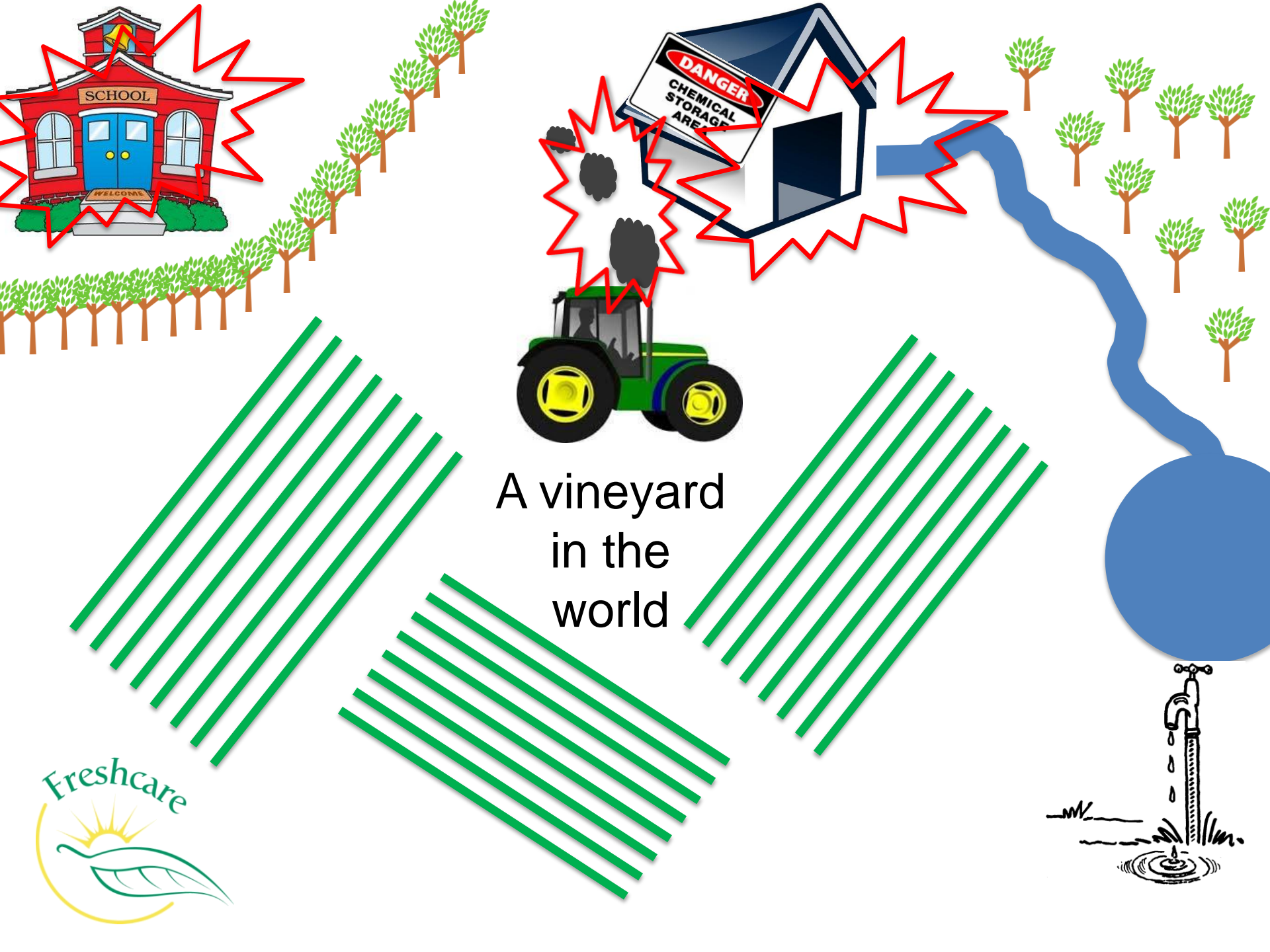
# entwine australia



- Vineyard + winery
- 100% Environment
- Process-based



- Vineyard only
- 95% Environment + 5% other
- Practice-based



A vineyard in the world





## Environmental Action Plan (EAP)

My property has: <i>(environmental issues)</i>	Y	N	Property location of environmental issue	What caused the problem?	How I will fix the problem	Year undertaken		
						201__	201__	201__
						Priority (High, Medium, Low)		
Spray drift								
Chem shed								
Tractor emissions								

Individual plan for improvement



1/5

3/5

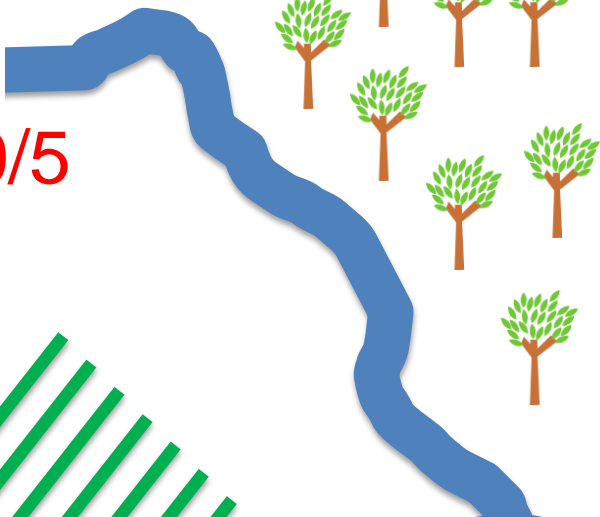


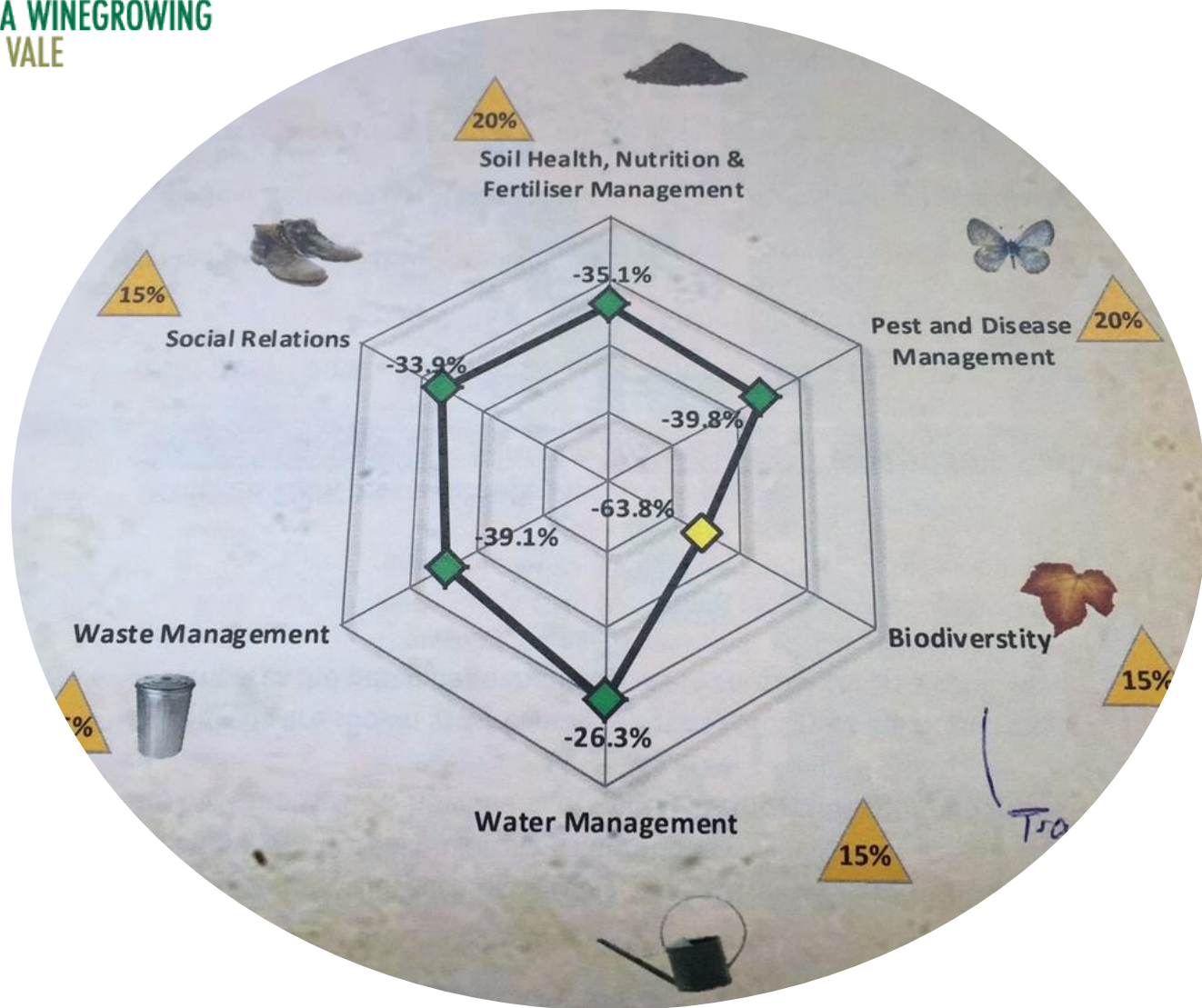
0/5

2/5



A McLaren  
Vale  
Vineyard







Supplier scorecard

Carbon labelling  
e- targets

Code of conduct  
2011  
Supplier audits 2012

Ethical sourcing  
policies

# Brand Australia



The Australian Wine  
Research Institute

- New Zealand
- South Africa
- Chile
- Germany
- Italy



- **USA** - California, Lodi, Long Island, Oregon, Washington, Sonoma

- **France** - Champagne, Bordeaux, Burgundy



Wine was made using responsible agriculture AND winemaking practices certified by an independent third party

# Australian wine carbon calculator

## Mobile Equipment - Fuel Quantity Based Scope 1

### User instructions

This worksheet calculates emissions from fuels combusted due to transport at the site or by the site company-owned vehicles.

Enter the volume of fuel used for each fuel type according to the units shown. The user is expected to add all separate accounts for the same fuel type.

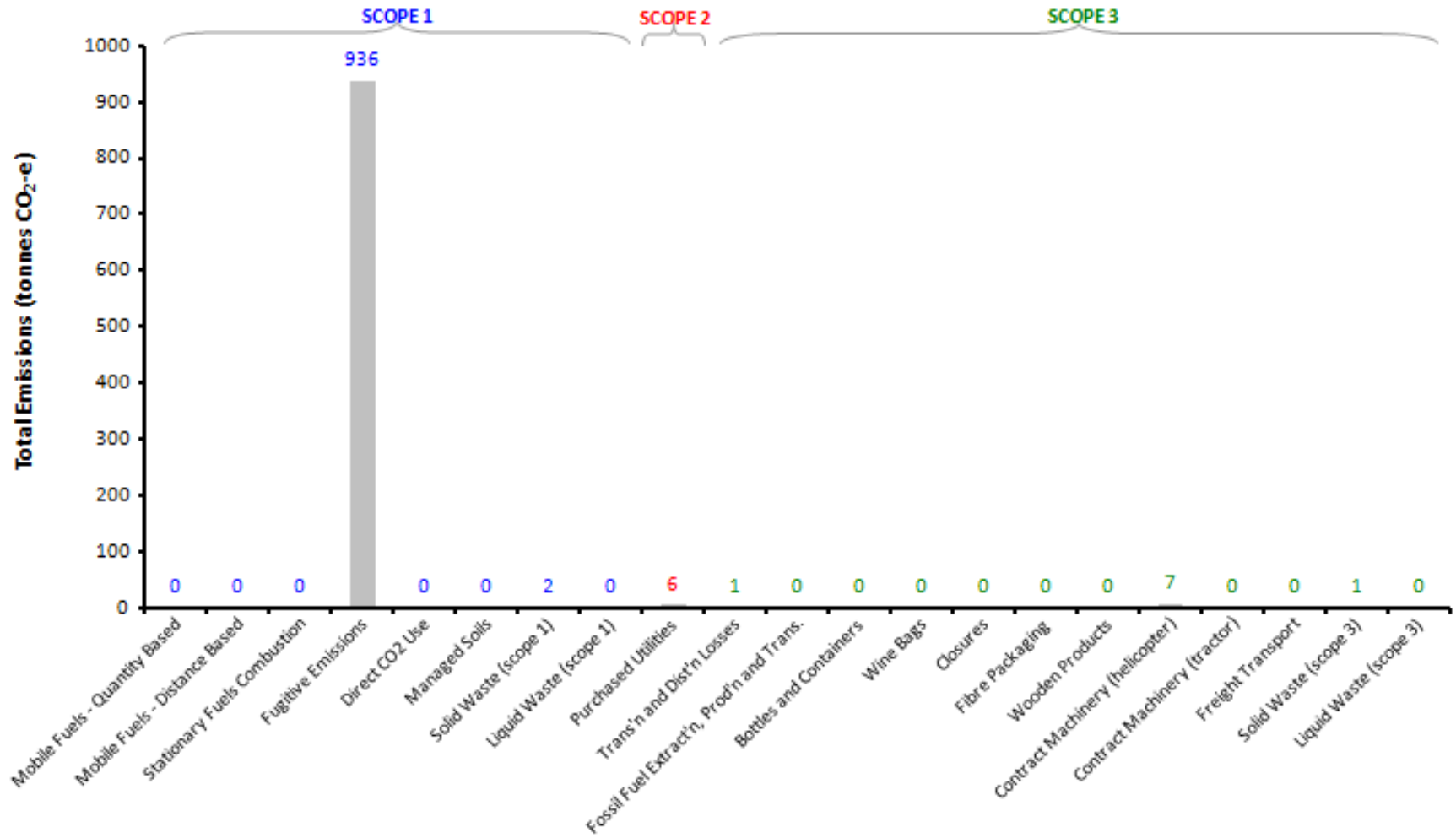
Note the user may separate out post-2004 vehicles and/or Euro design compliant heavy vehicles due to their improved catalytic conversion of exhaust methane and nitrous oxide.

If fuel volume records are not kept, estimated fuel usage can be calculated by the distance-based method in tab 2: 'Mobile - Distance Based'.

Take care not to double up on emissions by using both methods for the same vehicle(s).

Fuel data				Energy used		Emissions Factors (kg CO <sub>2</sub> -e/GJ)			Total Emissions	Quality Rank
Fuel type	Description/comment	Qty	Units	Energy Content Factor (GJ/unit)	Energy Consumed (GJ)	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	tonnes CO <sub>2</sub> -e	
General transport										
Gasoline			kL	34.2	0.0	66.7	0.60	2.3		NGA
Diesel oil			kL	38.6	0.0	69.2	0.20	0.5		NGA
Gasoline for use as fuel in an aircraft			kL	33.1	0.0	66.3	0.04	0.7		NGA
Kerosene for use as fuel in an aircraft			kL	36.8	0.0	68.9	0.01	0.7		NGA
Fuel oil			kL	39.7	0.0	72.9	0.06	0.6		NGA
Liquefied petroleum gas			kL	26.2	0.0	59.6	0.60	0.6		NGA
Biodiesel			kL	34.6	0.0	0	1.20	2.2		NGA
Ethanol for use as fuel in an internal combustion engine			kL	23.4	0.0	0	1.20	2.2		NGA
Biofuels other than those mentioned in the above items			kL	23.4	0.0	0	1.20	2.2		NGA
Natural gas (light duty vehicles)			cu.m	0.0393	0.0	51.2	5.50	0.3		NGA
Natural gas (heavy duty vehicles)			cu.m	0.0393	0.0	51.2	2.10	0.3		NGA
Post-2004 vehicles										
Gasoline (other than for use as fuel in an aircraft)			kL	34.2	0.0	66.7	0.02	0.2		NGA
Diesel oil			kL	38.6	0.0	69.2	0.01	0.6		NGA
Liquefied petroleum gas			kL	26.2	0.0	59.6	0.30	0.3		NGA
Ethanol for use as fuel in an internal combustion engine			kL	23.4	0.0	0	0.20	0.2		NGA
Heavy vehicles conforming to Euro design standards										
Diesel oil (Euro iv)			kL	38.6	0.0	69.2	0.05	0.5		NGA
Diesel oil (Euro iii)			kL	38.6	0.0	69.2	0.10	0.5		NGA

## General Summation - Comparison of all Emissions



# Entwine Members Registration

## Welcome to the Entwine Australia Membership Registration page.

Before commencing registration/renewal you will need the following:

- Company/site details (including google coordinates)
- Certification Details (including certification system, audit provider and certification number if fully certified)
- Entwine Australia Indicator data (for the previous full financial year)
- Payment details (Visa and Mastercard Credit card preferred but also allows for EFT and Cheque payments)

For more information about using the Entwine online system please download the **Entwine Online User Guide** [here](#)

All fees quoted are in Australian dollars and inclusive of GST. Fees are for one year's membership and are not refundable.

Individual sites will need to be submitted separately. For example, if you are seeking membership for a business containing both a winery and a vineyard you will need to create the site and submit data for each site and type of operation. Admin accounts may be provided upon request to allow members who manage multiple sites to login with one username and password.

[Click here to register as a new Entwine member](#)



Join or Login ▶

Entwine Member Search ▶

1. [Member details](#) > 2. [Certification](#) > 3. [Data](#) > 4. [Payment](#) > 5. Results

Reporting year


☒ In ticking the box you accept the [Terms and Conditions of service at this link](#) and acknowledge the collection and use of information according to the Privacy Policy [available at this link](#).

#### Vineyard size

---

Grapes harvested  t 


Vineyard area  ha 


Biodiversity area  ha 


#### Vineyard floor management - How much of your vineyard area is covered by each option listed below? Please state 0 if not applicable.

---

Permanent cover crop native  ha 

Permanent cover crop non native  ha 






Permanent cover crop volunteer  
sward  ha 

Annual cover crop  ha 

Bare soil  ha 







**Irrigation types - How many hectares are irrigated under each irrigation type?**

---

Irrigation type - Dripper	<input type="text" value="71"/>	ha 
Irrigation type - Undervine Sprinkler	<input type="text" value="0"/>	ha 
Irrigation type - Overhead Sprinkler	<input type="text" value="0"/>	ha 
Irrigation type - Flood	<input type="text" value="0"/>	ha 
Irrigation type - Non-irrigated	<input type="text" value="0"/>	ha 

**Water source - How much water is taken from each source listed below? Please**

---

River water	<input type="text" value="68.657"/>	ML 
Groundwater	<input type="text" value="33.587"/>	ML 
Surface water dam	<input type="text" value="0"/>	ML 
Recycled water from winery	<input type="text" value="0"/>	ML 
Recycled water from other source	<input type="text" value="0"/>	ML 
Mains water	<input type="text" value="0"/>	ML 

## Electricity

---

Electricity from the grid

kWh ?

Generated renewable electricity

kWh ?

## Fuel use (on site use only)

---

LPG (L)

510

L ?

Petrol

3674.68

L ?

Diesel (L)

17084.3

L ?

Biodiesel (L)

0

L ?

## Use of contractors

---

Harvesting

?

Spraying

?

Slashing

?

## Use of contractors

---

Harvesting



Spraying



Slashing



## Fertilisers

---

Synthetic nitrogen

kg N



Organic nitrogen

kg N



Urea

kg



Assist me:

[Click here for assistance calculating your fertiliser values.](#)

**Username/Entwine number:**

**Site name:**

1. [Member details](#) > 2. [Certification](#) > 3. [Data](#) > 4. [Payment](#) > 5. [Results](#)

#### Water use

Water used per litre of wine produced (L/L)	2.77
---	------

#### Wastewater

Wastewater per litre of wine produced (L/L)	1.53
Wastewater recycled (%)	100.00

#### Waste

Landfill per litre of wine produced (kg/L)	0.00
Recycling per litre of wine produced (kg/L)	0.15
Organic waste per litre of wine produced (kg/L)	0.00

#### Energy

Electricity per litre of wine produced (kWh/L)	383.08
Electricity per tonne of grapes crushed (kWh/t)	268.16
LPG per litre of wine produced (L/L)	8.26
Natural gas per litre of wine produced (GJ/L)	0.00
Total energy (GJ)	1,570.20
Total energy per litre of wine produced (GJ/L)	1.81

## Greenhouse gas emissions

### Scope 1

#### Fuel use

LPG	3,156.00	31.56	350.67	kg CO <sub>2</sub> e
Petrol	2,289.00	22.89	254.33	kg CO <sub>2</sub> e
Diesel	5,388.00	53.88	598.67	kg CO <sub>2</sub> e
Biodiesel	0.00	0.00	0.00	kg CO <sub>2</sub> e
Total	10,833.00	108.33	1,203.67	kg CO <sub>2</sub> e

#### Fertiliser emissions

Nitrous oxide	562.24	5.62	62.47	kg CO <sub>2</sub> e
Urea hydrolysis	7.33	0.07	0.81	kg CO <sub>2</sub> e
Total	569.57	5.70	63.29	kg CO <sub>2</sub> e

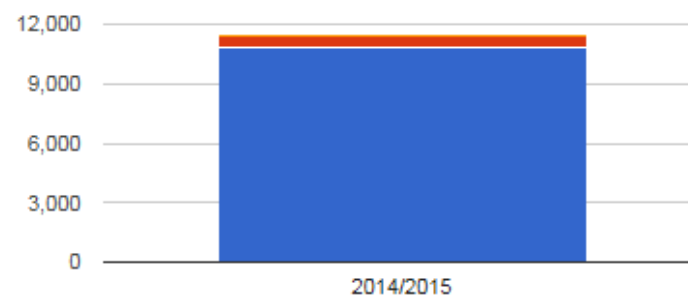
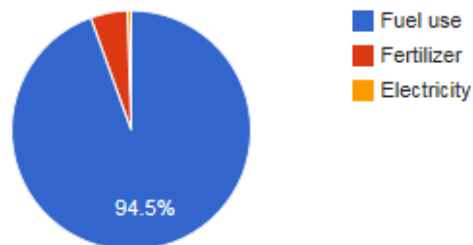
### Scope 2

#### Electricity

Total	62.00	0.62	6.89	kg CO <sub>2</sub> e
-------	-------	------	------	----------------------

### Summary

Fuel use	10,833.00	108.33	1,203.67	kg CO <sub>2</sub> e
Fertiliser	569.57	5.70	63.29	kg CO <sub>2</sub> e
Electricity	62.00	0.62	6.89	kg CO <sub>2</sub> e
Scope 1 total	11,402.57	114.03	1,266.95	kg CO <sub>2</sub> e
Scope 2 total	62.00	0.62	6.89	kg CO <sub>2</sub> e
On-site total	11,464.57	114.65	1,273.84	kg CO <sub>2</sub> e



**Username/Entwine number:** ENT00029

**Site name:** marcel's site

**Reporting year:** 2014/2015

1. [Member details](#) > 2. [Certification](#) > 3. [Data](#) > 4. [Payment](#) > 5. [Results](#)

Production metrics & emissions

**Benchmarking**

Summary metrics

Save Excel data

The benchmarking feature shows the user's progressive year-on-year performance in key areas, as well as comparative rankings for the selected year against other vineyards within the Entwine program. The drop down boxes below can be used to select the benchmark type to be displayed, and also to filter the results into different categories, for example: to compare with vineyards Australia wide or in the user's region only. Some guidance on reducing greenhouse gas emissions is provided in the popups next to a number of the graphs.

Assessment type

Comparison with other sites ▼

Basis

Per t grapes harvested ▼

Compare against

Australia ▼

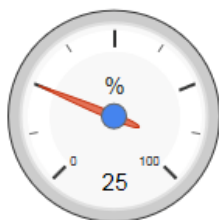
Vineyard size

All sizes ▼

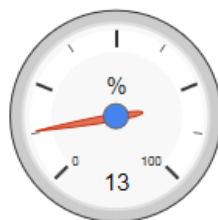
**Display benchmark results**

# 2015 Regional benchmarking

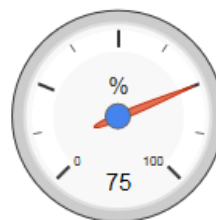
Tonnes harvested (t)



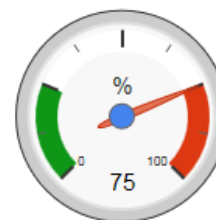
Vineyard area (ha)



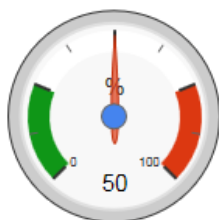
Yield (t/ha)



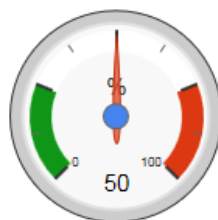
Water (kL)



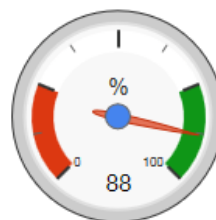
Nitrogen (kg)



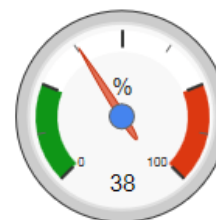
Total electricity (kWh)



Generated electricity (kWh)

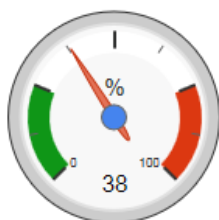


Diesel (L)

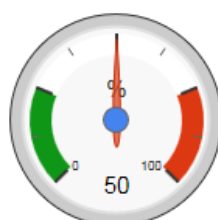


## Greenhouse gas emissions

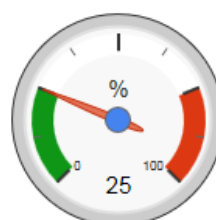
On-site total



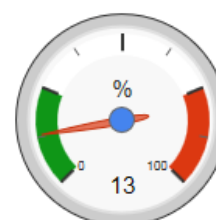
Fuel use ?



Fertilisers ?




Electricity ?





# Current Entwine member search

Member type:  
☐ Vineyard  
☐ Winery

Name / Keyword:

State:  

Zone:  

Region:  

# Current Entwine member search

Vineyard or Winery Site Name	State	Zone	Region	Membership
Dad's vineyard	SA	Barossa	Barossa Valley	Full
Joe's Fruit	SA	Barossa	Barossa Valley	Preliminary
Joe's Grapes	SA	Barossa	Barossa Valley	Preliminary
Joe's Vines	SA	Barossa	Barossa Valley	Full

Dad's  
vineyard

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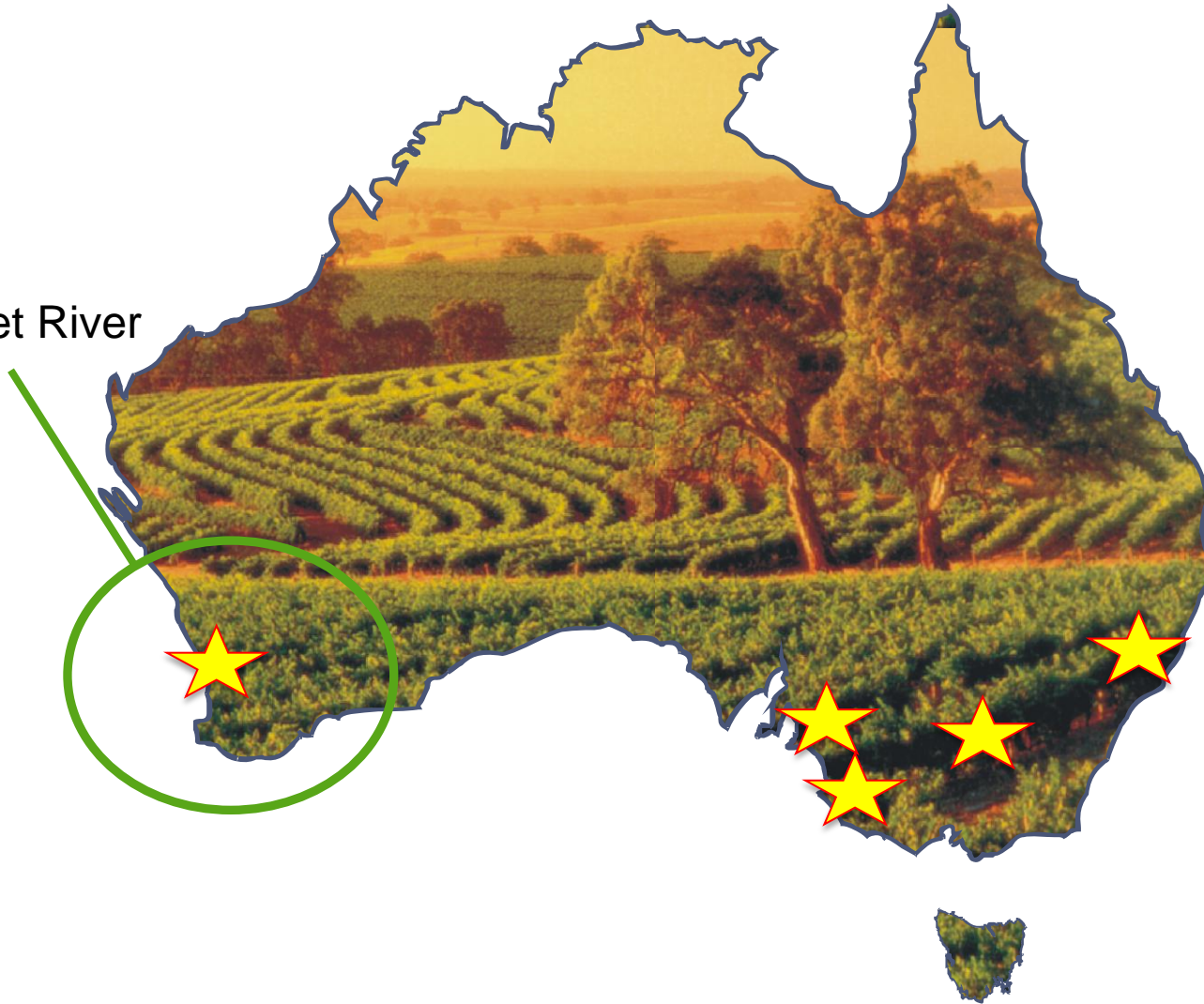
[NEWS](#)

[CONTACT US](#)

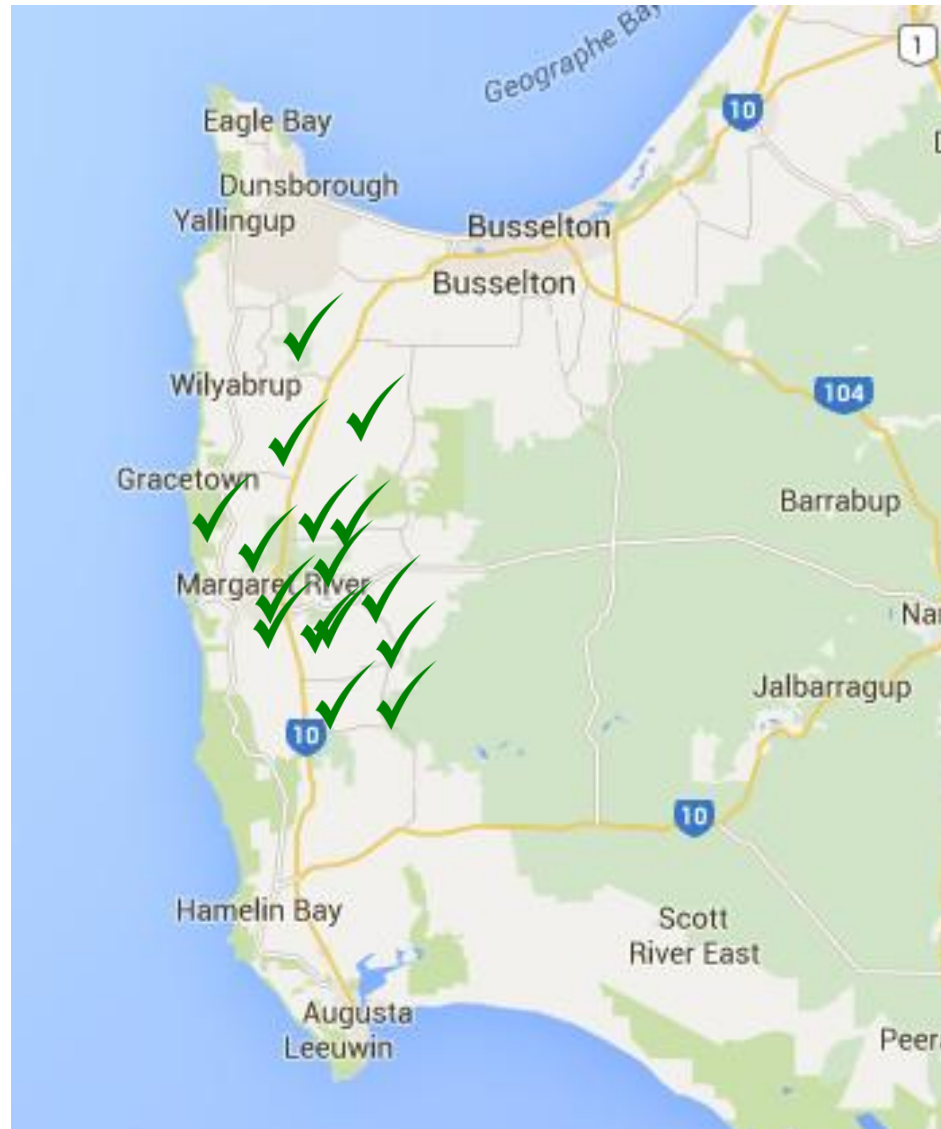


# 2015 Virtual Entwine trail

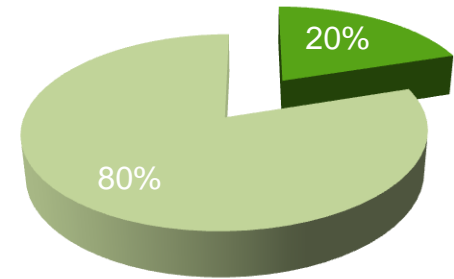
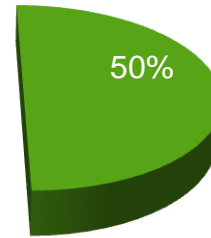
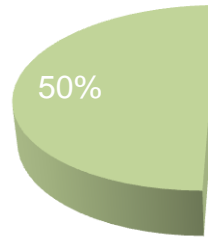
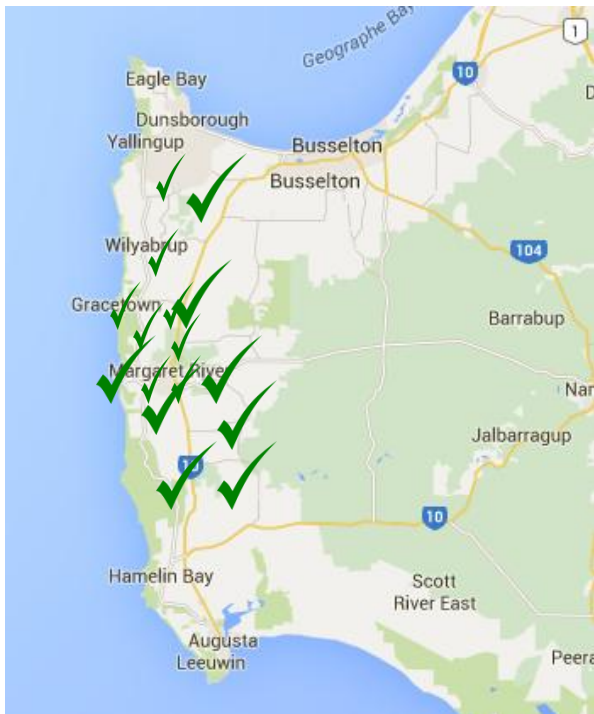
Margaret River



# Virtual Entwine trail – Margaret River



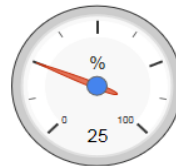
# Virtual Entwine trail – Margaret River



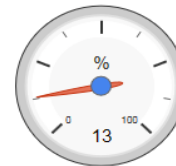
■ % Certified vineyard area

■ Renewable energy

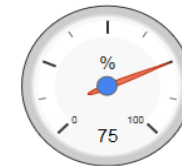
Tonnes harvested (t)



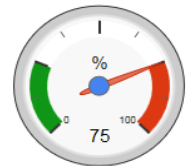
Vineyard area (ha)



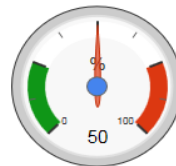
Yield (t/ha)



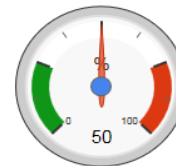
Water (kL)



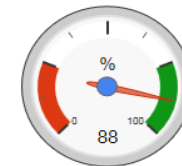
Nitrogen (kg)



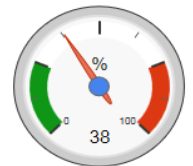
Total electricity (kWh)



Generated electricity (kWh)

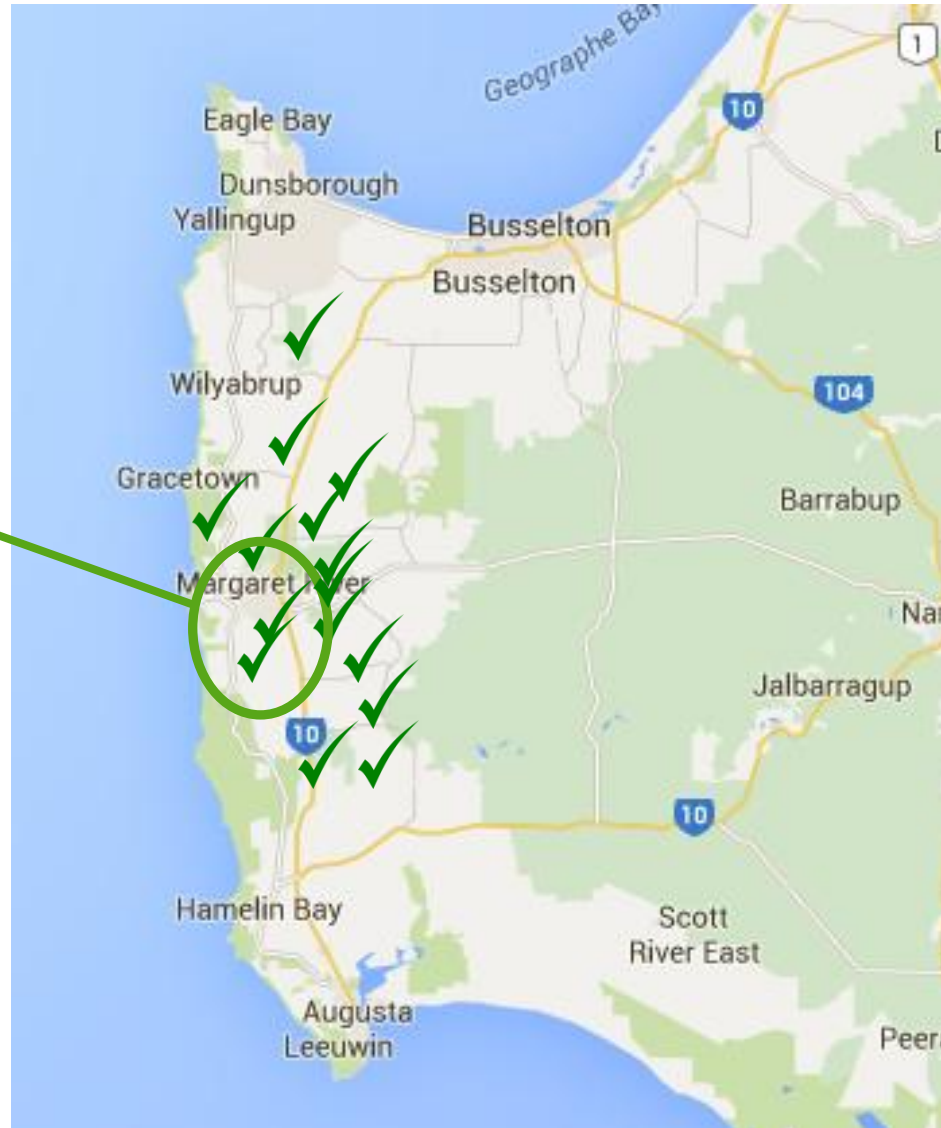


Diesel (L)



# Virtual Entwine trail – Margaret River

Growers Jo &  
Bill Jackson



# Virtual Entwine trail – Margaret River Growers Jo & Bill Jackson



**Entwine Australia – Jo and Bill Jackson**

**Certified member since October 2010**

## Grower profile

**Name:** Jo and Bill Jackson

**Region:** Margaret River, WA

**Vineyard area:** 160 Ha

**Tonnes grown:** 640 tonnes

**Wineries supplied:** Accolade, Devil's Lair



## Environmental focus – nitrogen use in the vineyard

Nitrogen (kg)



In 2010 Jo and Bill first used the Australian Wine Carbon Calculator. The result helped them to identify over use of nitrogen in the vineyard. Excessive use of nitrogen fertilisers was having a significant effect on disease levels in the vineyard, grape quality, the vineyard's contribution to greenhouse gas emissions and most importantly vineyard profitability.

Using tools like petiole analysis, visual assessment of vine vigour and measuring YAN at the winery, Jo and Bill reduced their nitrogen inputs by 60% over two years. They have seen a significant reduction in disease severity in the vineyard and increased the grading of their fruit from C to B grade. Jo and Bill's vineyard now ranks in the middle of all Entwine members in Margaret River.

# Entwine membership – increased accessibility

## Membership requirements

Certified  
member

1. Participation in and **triennial 3<sup>rd</sup> party audit** of an accepted program
2. Report indicators

Member

1. Participation in and **self-assessment** of an accepted program
2. Report indicators

Associate  
member

1. Report indicators

# Strategic direction - Entwine

## Provenance

Environment

Economic

Food  
safety

Social

Biosecurity



# Support from the team...



The Australian Wine  
Research Institute



08 8313 6600

helpdesk@awri.com.au



[http://www.awri.com.au/industry\\_support/entwine/](http://www.awri.com.au/industry_support/entwine/)



@The\_AWRI  
#entwine



The AWRI