Straw bale wineries

Wallington Wines

Straw bale was the natural choice for this working winery

BY LYNDA WILSON

When Margaret Wallington decided to establish a winery on her property outside Canowindra in NSW, one of the first requirements was for a working area. Having priced an insulated steel shed of the size required, she then decided to explore other options. The superb insulating properties of straw bale caught her attention and, once she established that the cost of a straw bale building compared favourably with the steel shed option, there seemed little reason not to pursue this option.

Margaret drew up the original plans and took them to Geoff McVey, an engineer recommended by Huff 'n' Puff Constructions, who did the structural engineering and final plans as required by council.

Speedy build

Deep concrete footings were poured, followed by the concrete slab. Bottom boxing was laid directly onto the slab, to raise the bales off the floor.

Locally grown triticale straw from the neighbouring property was used, which a local haymaking contractor bailed into 'jumbo' bales (2.7 x 0.9 x 0.9m). As this is a loadbearing structure, there was no need to try and fill gaps between the roof structure and the last bale. The walls were designed to a height of five bales (around 13m after compression).

The building is oriented along an E-W axis, with no openings on the east and west walls. The north wall has only one opening, a roller door for access. The southern wall has a large wooden doorway and a window covered with heavy wooden shutters. The openings for these were made to bale sizes, to minimise the amount of cutting of bales required, and the door and window were then made to fit the gaps.

The east and west walls are 13.5m long, using 25 bales each, while the north and south walls are 27m long, using around 50 bales each.

While the construction was completed under an owner builder licence, Margaret acted as project manager, organising materials, labour and contractors. She used local tradesmen and products, and many of the vineyard employees supplied general labour. It took only 12 weeks to get the building to lock up stage, with three men working full-time, along with some additional labour when required. Damn good project managing!

Heavy labour

The farm tractor with front-end loader was used for the heavy lifting, ensuring the bale walls went up in record time. The top plate was fitted, and wired down to the footings.

A crane was then used to lift the 32 trusses in place, evenly spaced at 0.9m intervals. The trusses were topped with the highest rated combined batt insulation/sisalation available, before the *Colorbond* roofing was fitted. The top plate wires had to be re-tensioned after the roof structure was complete, to allow for the settling of the bales.

First time renderer

Rendering commenced three weeks later; a spray render machine was used. It was the first time the contractor had rendered a straw bale building; he had built the concrete water tanks on site, and Margaret suggested he may like to do the rendering as well.

Once again, the top plate tensioning wires needed to be tightened up. Chicken wire was stretched and fixed over the bales, before three layers of lime render were applied. A final limewash coat was applied internally, and a coat of all weather outdoor paint externally.

There is a 1m overhang all around the building, which seems to be adequate as no obvious weathering has occurred after seven years. A 4m wide skillion roof has been added to the northern side, with a concrete slab, for wet work. This is supported at the building edge by hooked support brackets over the top plate, which were put in place during construction. To the south, a pergola with brick supports is covered with shade cloth during the summer, and provides the perfect setting for wine tastings and dinners, complemented by the magnificent views over the vineyard.

Rainwater is collected from the roof for use in the winery, while an *Envirocycle* waste water treatment system provides water to the surrounding trees.

Functional finish

While the render finish is quite rough, there has been no significant structural failure – only a few superficial cracks generated from the lintel /render joins. Power cables were fitted over the bales, not inside channels, and just covered with render. No internal ceiling linings have been fitted. After all, this is a working winery.

The huge straw bale winery building was completed in February 2000. The insulation qualities of the straw are used to maximum effect, creating a perfect environment for maturing wines. The temperature remains in the 17-20° range for most of the year. This varies slightly if the roller door is left open, or while fermenting is going on. To

Clockwise from above: The southern verandah offers stunning views over the vineyard; A deep reveal created by the single window functions as a serving hatch during tastings; The temperature remains constant – perfect for maturing wines; The outdoor wet area to the north; The final product.

control this internally generated heat, Margaret hoses down the concrete floors and leaves the doors open overnight, providing evaporative cooling while maintaining the higher humidity required for the fermenting process.

Vineyard statistics

The vineyard covers 17ha of the total 390ha property. Irrigation is supplied by catchment and bore water and is used sparingly to produce bunches of small intensely flavoured grapes.

The winemaking style is very traditional and labour intensive. Grapes are hand picked, crushed and de-stemmed, before being fermented – the reds in open vat with the cap being plunged manually, while whites are fermented in either oak or stainless steel. When the ferment is complete, a basket press is used before the wine is transferred to a variety of French and American oak barrels to mature.

Wallington Wines, Canowindra NSW
Wine tastings – 7 days by appointment, and usually the first weekend of the month – please phone to confirm. 02 6344 7153, www.wallingtonwines.com.au

Valhalla Wines

Straw bale winery with a Viking slant

BY JOHN KENNEDY

Rutherglen in Victoria is one of Australia's oldest wine regions where quality wines, including the luscious and acclaimed dessert wines of Muscat and Tokay and rich table wines, have been produced for over 150 years.

A new venture in the area is based around a prominent straw bale building, which has been under construction on the main road between Wahgunyah and Corowa in North East Victoria. Now

1. *The old Ford 5000 in action.*
2. *Scissor trusses going on.*
3. *Double layer of insulation for roof.*
4. *John Glassford helps with gable end infill.*
5. *Third and last coat of render going on.*
6. *Handmade by William 'de la doors' Banks – 0408 101 187.*
7. *First coat finished.*
8. *Third coat of render drying in the sun.*
9. *Interior with great temperature control.*

Photos by Anton Therkildsen unless indicated.

PHOTO: JOHN KENNEDY

structurally complete and scheduled for an official opening in late September, the project has already attracted lots of callers.

Anton Therkildsen has a Danish family background and in consequence he has named his new project Valhalla Wines. In Viking mythology, Valhalla is the great hall in the sky where a fallen warrior, after dying valiantly in battle, is taken for feasting and drinking with the gods!

Anton's wife, Antoinette Del Popolo, is a local medical practitioner, and they have two young children, Caleb and Ella.

After meeting in early 1998, it didn't take them long to discover a shared interest in good music, food, wine and a rural lifestyle. By Christmas 1999 they were married and had bought 25 hectares in Wahgunyah. In 2001 Anton planted a small vineyard on the block, with plans to ultimately have about 5.5 hectares of vines adjacent to a winery.

Deciding on straw

After investigation, Anton decided that a straw bale winery building, with an associated cellar door sales area, would provide the constant temperatures sought after for maturation – hopefully maintaining a year round temperature of about 20°C, without the assistance of heating or cooling. A visit to another straw bale winery, Lethbridge Winery in the Geelong area, confirmed his ideas.

The winery building has an area of about 288m^2, being a rectangular clear span space of 12 x 24m. The internal wall height is 3.8m, with six stacked rows of jumbo bales, with each measuring 2.4 x 0.9 x 0.6m.

The structure is load bearing, on a concrete slab with top and bottom timber plates. The bales are secured to the slab by a series of threaded reinforcing rods that protrude from the slab.

The windows are all double glazed, with window and door frames of steel.

The roof structure comprises complex timber trusses that, at their apex point, are 7.2m in height, while the *Colorbond* roof has a 25 degree slope.

Maintaining temperature

Anton reasoned that it was not much use counting on the straw bale walls alone to manage the temperature; all their good features would be lost if the roof space was not effectively

Some lessons learnt

- Do a straw bale course – we regret not having done this
- Research all the finishes required – placement of electricals and water, interfaces with different materials
- 'Mudding up' is very important to even out the wall and fix holes prior to rendering
- Steel window frames – ensure that the design allows for the compression of the bales either side of the frames. Ours didn't, which led to the top plate being slightly elevated above the frames
- It's amazing what can be done with a whipper snipper and a chain saw!

insulated. So the roof above the trusses is effectively double insulated: first with *Air-Cell* above the trusses, followed by the roof battens to give an air space, and finally a 100mm insulation blanket before the roofing was screwed on.

Anton thinks he has got it right, as a check on the temperature on a typically warm Rutherglen day showed that it was six degrees cooler inside than outside, even though a lot of the building openings were not yet covered at the time.

Project managing

Anton was not strictly an owner builder, as he effectively project managed his dream with the input of a number of trades.

He engaged John and Susan Glassford from Huff 'n' Puff Constructions as designers and consultants to help with the straw bale aspects. They spent several weeks working on site during the jumbo bale raising, which was helped by a tractor with forks to lift them into position.

The interior and exterior wall surfaces have been rendered with several coats of lime and sand render, to form a 40mm barrier. The last coat of render has had some oxide colouring added to give a natural earthen colour. Anton contracted this job to Beechworth based Australian Render Systems and says their heavy duty *Putzmeister* spray pump was one of the keys to the result.

The front entry door has a heavy weight oregon timber frame, with steel and wrought iron detailing and double glazing using safety glass. A feature sandblasted glass panel bears the Valhalla Wines logo of a Viking ship.

In the interests of environmental responsibility, all the wastes from the toilets and cellar door will be contained in an *A & A Worm Farm System.* This will treat the waste material before the liquid is run off to water a 400m^2 native woodlot. Similarly, all the winery waste water will go through a five point settling system, and will then irrigate a three hectare timber woodlot.

With the official opening proposed for late September, Anton is currently moving his winemaking equipment into the building, as well as the wines that are maturing in barrels. Valhalla Wines will be available through local restaurants, from the cellar door and via the Valhalla Wine Club. ■

Valhalla Wines is located in the Rutherglen wine region in North-East Victoria. It is on the Murray River, 45 minutes west of Albury/Wodonga. 02 6033 1438, www.valhallawines.com.au.

- **Huff'n'Puff**
Straw bale building technology. See Directory of services under NSW.

- **Morse McVey and Associates**
Engineering consultants. Nowra. *02 4423 2822, www.morsemcvey.com.au*

- **A & A Worm Farm Systems**
Waste treatment plants using worms. See display advert on inside front cover.

- **Terry Stevens Consulting Engineers** *Bendigo. 03 5444 1633*

- **Air-Cell Insulation**
Uniquely durable and versatile insulation. See display advert on inside front cover.

- **Other straw bale wineries**
Lethbridge Wines, Lethbridge Vic. *03 5281 7221*

Kabminye Wines, Barossa Valley SA. *08 8563 0889, www.kabminye.com*

Tamburlaine Wines, Pokolbin NSW. *02 4998 7570, www.mywinery.com*

Yarrh Wines, Murrumbateman NSW. *02 6227 1474, www.yarrhwines.com.au.*