Volume I

Environmental Assessment Report

Application no. 09_0177

Proposed Winery Expansion to 65,000T, Including:

- New Packaging Facility
- Waste Water Treatment Plant, and
- Associated Site Infrastructure

For

McWilliam's Wines
Jack McWilliam Road
Hanwood, NSW

Report Prepared for and on behalf of McWilliam's Wines by

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Executive Summary

McWilliam's Wines is a long established Australian Wine producer that has enjoyed significant growth over the past decade. Following a review of operations in 2005, the Company has embarked on a strategy to position themselves for future growth by consolidating their major winery operations at Hanwood, near Griffith in the Riverina. The next phase of the strategy and the subject of this proposal are to:

- Expand the Hanwood Winery capacity from a nominal 34,000 tonnes crush to 65,000 tonnes, over a period of approximately 15 years.
- Establish a Bottling facility at Hanwood, reducing the throughput at the existing leased facility at Chullora in Sydney's west.
- Upgrade the Hanwood site services including the construction of a new Waste Water Treatment Plant that will provide water suitable for irrigation of grapevines.

The proposed staged development has an estimated cost of $53M and will provide benefits for the Riverina including:

- Creation of approximately 120 new jobs both in construction and operational stages
- Potential for 'springboard' effects in stimulating economic activity in related sectors such as transportation, materials manufacturing and housing construction.
- The project supports the prominence of the Riverina Region in the context of the Australian wine industry and the global market.

The proposed development is considered to be classified as 'Designated Development' as listed in Schedule 3 of the Environmental Planning & Assessment regulation 2000. The proposal is also considered to be classified as a Part 3A Major Project under the provisions of the *Environmental Planning & Assessment Act 1979*.

This report provides an Environmental Assessment of the proposal in accordance with the Director Generals Requirements issued to McWilliams on 29th October 2009.

The key environmental issues associated with the project have been determined as:

1. Water management, including water supply, waste water treatment and reuse
2. Potential for odour nuisance from operations, in particular waste water treatment
3. Land management and the protection of groundwater associated with treated water reuse
4. Traffic management associated with expanded operations
5. Potential noise impacts from expanded operations

Each potential impact has been reviewed by relevant experts and a range of management strategies have been identified to minimise the impact that the development will have on the environment. Specific commitments are outlined in Section 7.

Table of Contents

Attachments

Attachment 1	Aerial Photo (showing site location) 0802-00-PL001 Rev E
Attachment 2	Existing Site Plan drawing 0802-05-PL002 Rev E
Attachment 3	Aerial Photo (showing pipeline route) 0802-05-PR120 Rev B
Attachment 4	Site Masterplan drawing 0802-05-PR100 Rev G
Attachment 5	Stormwater Drainage Concept Plan 0802-05-PR015 Rev B
Attachment 6	Staging Plan drawing 0802-05-PR150 Rev A
Attachment 7	Land Consolidation Plan drawing 0802-05-PR152 Rev A
Attachment 8	Site Elevations drawing 0802-05-PR155 Rev A
Attachment 9	Site Elevations drawing 0802-05-PR156 Rev A
Attachment 10	Packaging Building Stage 1 drawing 0802-70-PR160 Rev A
Attachment 11	Packaging Building Stage 2 drawing 0802-70-PR161 Rev A
Attachment 12	Administration Building Extensions C4a Drawing S1213AD 01 Rev D2
Attachment 13	Administration Building Extensions C4a Drawing S1213AD 02 Rev D2
Attachment 14	Evaporation Pan Sludge analysis
Attachment 15	Red Wine Process flow diagram 0802-ME001 Rev A
Attachment 16	White Wine Process flow diagram 0802-ME002 Rev A
Attachment 17	Dangerous goods storage MW-HANW-AR050 Rev C

Appendices

Appendix A	McWilliams concept design report for waste water – JJC Engineering
Appendix B	Land suitability investigation for McWilliams Wines - Cropsol
Appendix C	Odour Impact Assessment of Proposed Waste Water Treatment Plant at McWilliams Winery, Hanwood N.S.W. – OnSite Technology
Appendix D	Traffic and Parking Assessment report – Varga Traffic Planning
Appendix E	Noise Impact Assessment McWilliams Wines Expansion to Hanwood Winery, Jack McWilliams Road Hanwood NSW - Reverb Acoustics
Appendix F	McWilliams Hanwood Proposed Winery Expansion Project - OzArk
Appendix G	McWilliam's Wines - Report for Environmental Assessment for proposed winery expansion, Ecological assessment – GHD
Appendix H	Greenhouse Gas Calculations – JJC Engineering
Appendix I	Stormwater Management Plan – FMG Engineering
Appendix J	McWilliams Winery Groundwater Assessment – Murrumbidgee Irrigation Ltd.

1 INTRODUCTION

The McWilliam's family story began in Australia with the arrival of Samuel McWilliam in 1857 from Northern Ireland. Samuel married his wife Martha in Geelong in 1863 and it was one of their four sons, John James (J.J.) that first planted grapes in Corowa in the 1890's.

John moved his family to Junee in New South Wales in the early 1900's where he established a vineyard and winery and the firm J.J McWilliams and Sons. The decision to purchase land in the Mirrool was based on: the type of soil, availability of water and the future availability of transport – a proposed rail link from Hanwood to Griffith. John's eldest son, Laurence John Roy (Jack) McWilliam, received approval for the lease of Farms 130 and together with his father's block 133, created a 100 acre plot on what is today the site of the winery. Later that year, Jack planted 45,000 vine cuttings from Junee and in 1917 established the first winery in the MIA.

The early equipment included four open concrete fermenting vats, a must pump, a Bagshaw grape mill, a wine press, the New Way petrol engine and a hand wine pump and hoses. Water supply to the winery was provided by an underground aquifer and windmill. The first vintage in 1917 produced approximately 28,000 gallons (125,000 litres).

Today, the Company has vineyards in most wine growing regions of Australia including the Riverina, Hilltops and Hunter Valley regions of NSW, the Yarra Valley in Victoria, the Coonawarra region in South Australia and the Margaret River region in Western Australia.

In total, the Company processes approximately 40,000 tonnes of grapes per annum across 3 sites. It produces Table Wine, Fortified Wine and Sparkling Wine products for Domestic and International markets. Table Wine products currently account for approximately 75% of all production.

The Company's largest winery, and the centre for the majority of its wine production, is the original Hanwood site in the Riverina. The Hanwood site processes around 34,000 tonnes per vintage. The balance of production occurs at satellite wineries in the Hunter Valley and Coonawarra and under contract in Western Australia.

Nearly all wine bottling and packaging is carried out at McWilliam's packaging facility at Chullora, in the western suburbs of Sydney. A small portion is carried out under contract in Western Australia. Domestic product is dispatched to local distributors from Chullora and product for export markets is container packed at Chullora and shipped from the port of Sydney.

Until recently, McWilliam's operated three sites in the Riverina region, all established in the early 1900's; the large site at Hanwood and subsidiary sites at Yenda and Beelbangera. Processing was split between the sites. Hanwood was the main crushing and pressing site and at Yenda the wine was barrel matured and blended before being transported via rail tankers to Chullora. Beelbangera was and is still used for barrel maturation of fortified wine. The rail link between Yenda and Chullora ceased operating in 2004 forcing a change to road transport.

In 2005, following a sustained period of growth and considering the constraints of its existing sites, McWilliam's conducted a strategic review of its production and distribution footprint. The main objective of the review was to identify the most efficient production model for the Company in terms of grape growing and transportation, wine production, wine bottling and the transportation of finished product to domestic and international markets.

The outcome of the review identified the Riverina region as the most appropriate area at which to base its winemaking operations. It identified processing efficiencies by closing the Yenda site and concentrating future growth and modernisation at Hanwood. It also identified significant supply chain efficiencies in establishing bottling operations for its Table Wine production at Hanwood. Under this arrangement, the Chullora facility would continue packaging the Sparkling and Fortified products and other contract bottling arrangements.

The advantages for McWilliam's under this production model are:

- Single management function - all Table Wine processing, from fruit to the bottle, managed on the one site.
- Single laboratory function to monitor all aspects of quality control.
- Improved quality and reduced product loss as a result of less product movements.

Following the review in 2005, McWilliams long term plans were presented to stakeholders in a Planning Focus Meeting (PFM) in March 2006. With some uncertainty surrounding the timing of key elements of the strategy, the Company embarked on a staged project to consolidate the Yenda processes into Hanwood and to improve efficiencies at the Hanwood site. The project included:

- Relocation of winemaking equipment from Yenda to Hanwood.
- Accommodation of staff from Yenda and Hanwood in new Offices, Laboratory and amenities at Hanwood.
- Relocation of wine barrel operations from Yenda to new warehouse and barrel processing facilities at Hanwood.
- Installation of new wine storage tanks to replace the tanks unable to be relocated from Yenda.

- Replacement of old Hanwood winemaking equipment, introducing automation to reduce manual handling, product loss and water and electricity usage.
- Separation of heavy and light traffic on the site through the construction of new entrances and internal roads.
- Improvement of site infrastructure such as water supply and filtration, fire hydrant services and an expanded high voltage electricity supply to the site.
- Phased introduction of Stormwater management and separation.

The next major step for McWilliam's is to prepare the Hanwood site for growth in wine processing and for the introduction of wine bottling at the site.

This Environmental Assessment is based on the following proposed changes to the site:

- Staged expansion in winery capacity, from 34,000 tonnes per annum to 65,000 tonnes per annum, over approximately 15 years.
- Introduction of bottling at the site after 2014, with initial bottling capacity of 25M Litres per annum.
- Staged expansion of the bottling facility from 36M Litres per annum to 72M Litres per annum over approximately 25 years.
- Construction of a Waste Water Treatment Plant, for the treatment and re-use of wastewater. The treatment plant will also be staged to meet the growth of waste water volumes over time.

2 BACKGROUND

2.1 The site and the surrounding location

The proposed winery expansion including the packaging facility and waste water treatment plant will be located at the current Hanwood winery site. The treated waste water will be piped approximately 8km to a McWilliam's owned vineyard (Farms 195, 196 & 199) west of Hanwood township. The vineyard will require a new dam (Lagoon 7) constructed with a clay or other suitably impermeable liner to receive the treated water and existing equipment will be used to irrigate the vines. The relationship between the two properties is shown on drawing 0802-PL001 provided as Attachment 1

The Hanwood Winery site comprises Lots 165, 166, 168 & 171, DP 751709, Jack McWilliam Road which is located approximately 2km south of the village of Hanwood and 10km south of Griffith, NSW. The site is located within the City of Griffith local government area. Jack McWilliam Road is currently used for the purpose of rural industry and horticulture.

Figure 1: Aerial map of Griffith and Hanwood

The land surrounding the winery site to the north, east and south is primarily used for viticulture, while the site is bordered by a chicken feed mill to the west.

Farms 195, 196 & 199 are bounded by Walla Avenue, Jon Condon Road and Farrell Roads, comprising Lot 194 DP 756035 and Lots 72 & 73 DP 756034. Surrounding land is used for the purpose of predominantly horticulture with some cropping and rural industry (broiler farms).

Figure 2: McWilliam's winery and vineyards, Hanwood

2.2 Current Winery Operations at Hanwood

Currently, the Winery at Hanwood:

- Receives fruit via truck and crushes between 34,000 – 38,000 Tonnes of grapes per annum depending on vineyard yields. Fruit is typically harvested from mid January and the vintage period runs until late April.
- Processes red and white grapes for sparkling, table and fortified wine products. The process flow diagram for red and white wine production is provided as attachments 15 and 16.
- Predominantly sources fruit from the Riverina and Riverland regions but also takes fruit from the Hunter Valley, Riverland and Coonawarra areas.
- Receives grape juice and wine from third party producers via road tanker when required for further processing or blending

- Is equipped for all winemaking processes including crushing, pressing, fermentation for both red and white streams, heating, cooling and filtration.
- Dispatches Wine via road tankers to a leased facility in Chullora, Sydney for Packaging
- Provides employment for 43 winery and administration personnel and 38 casual employees over the vintage period.

Water is used for a number of purposes on site including cleaning operations that vary throughout the year. During vintage, crushers, fermenters, presses and tanks all need to be cleaned on a routine basis. Currently the wastewater is collected in gravity drains throughout the winery and pumped from sumps to the evaporation pans. The volume of wastewater that is evaporated is dependent on the weather and McWilliams need to develop a better system for waste water management as the winery grows and volumes increase.

Water is also used in cooling towers, that provide refrigeration to cool juice and wine, and to water lawns and gardens surrounding the winery.

The Existing Site Plan is shown on drawing 0802-05-PL002 provided as Attachment 2.

As McWilliams don't currently treat or dispose of wastewater to land, the environmental monitoring regime consists of recording water and energy use and reporting trends internally to their Operations Improvement Group. A draft Environmental Management Plan has been prepared in anticipation of receiving an EPA licence for the operation and undertaking more extensive monitoring of:

- Wastewater and treated water quality
- Irrigation volumes and soil chemistry in reuse areas
- Groundwater depth and quality in reuse areas

Dangerous Goods Storage
McWilliams utilise a number of Dangerous Goods on the Hanwood Site for the process of making wine as shown on Drawing MW-HANW-AR050C (Attachment 17). The proposed expansion is not expected to change the types of dangerous goods used on site, however quantities might vary over time.

2.3 Current Packaging Operations at Chullora

The Chullora Packaging Site and buildings in Sydney's west are leased by McWilliams and the operation has recently been outsourced under contract to Portavin, a specialist wine packaging company. The vast majority of McWilliams domestic market requirements are packaged at the facility. The operation:

- Bottles approximately 29ML of wine per annum.

- Operates predominantly on a 6 day week, running 2 shifts per day and increases shifts when required to meet demand.
- Receives empty glass bottles and other packaging materials on a just-in-time basis to minimise inventory.
- Bottles wine and packs bottles into 6 pack or 12 pack cartons depending on market requirements.
- Warehouses cartoned wine on block-stacked pallets for loading onto trucks for distribution to domestic markets. Shipping containers are also packed for export.
- Is equipped to bottle potable spirit products.

2.4 Recent Development Applications and Works in Progress

Over the past 6 years, a number of minor projects have been undertaken to consolidate Yenda operations into Hanwood and prepare the site for a major upgrade. A list of the recent Development Approvals and their status is provided in Table 1 below.

Table 1. Recently approved Development Applications

DA No.	Description	Status
DA 353/2005	27ML wine storage	Partly completed
DA 474/2005	10 X 130Te SWAPs	Completed
DA 208/2006	Construction of new barrel store building	Completed
DA 289/2006	12 X 100Te Drainers	Partly completed
DA 545/2006	Construction of new Administration building	Completed
DA 220/2007	12ML wine storage	Partly completed
DA 167/2008	8 X 130Te SWAPs	Partly completed
DA 85/2009	Stormwater Collection and Storage Lagoons	Completed
DA 152/2012	Site Entrance Signage	Not commenced

McWilliams also hold the following approvals for the operations at Hanwood:

- Dangerous Goods Licence
- Permit to receive concessional spirits under the Excise Act; Permit # 30446
- Liquor licence for cellar door sales LIQP700356987 and wholesale liquor sales LIQW800501082
- Groundwater Extraction licence # 40WA405446

2.5 Existing site assessment

McWilliams established the site nearly 100 years ago and it has operated as a winery ever since. In 2008, McWilliams redeveloped existing Evaporation Pan 1 into Stormwater Dam 3. In preparation for this redevelopment, McWilliams conducted a preliminary assessment of potential soil and sludge contamination. The methodology was:

- Grab samples of sludge from five of the evaporation pans were collected, mixed, and submitted as a single sample for analysis.
- From Evaporation Pan 1, a single sample of the clay base of the pan was collected from 100mm depth.
- Two samples were submitted to a NATA accredited laboratory for analysis.

The analytical results are summarised in Attachment 14, and compared to NEPM Health and Environment Investigation Levels.

None of the results approached NEPM HIL or EIL, consistent with expectations that wine industry wastewater was unlikely to pose a risk of soil contamination.

3 THE PROPOSAL

Under this proposal, McWilliam's will:

- Expand the Hanwood crush capacity from a nominal 34,000 tonnes to 65,000 tonnes at a rate that will ultimately be driven by sales but estimated to be over a period of approximately 15 years
- Construct a bottling and packaging plant on the Hanwood winery site. The facility would at first process approximately 36ML of wine per annum or 80% of the Company's production, while the balance remains at Chullora for the short term. The Hanwood packaging facility would ultimately have a bottling capability of 72ML of wine or 100,000 tonnes equivalent crush. Wine for bottling, over and above the site crushing capacity would be imported to Hanwood predominantly from sources outside the region.
- Build a best-practice waste water treatment plant to process waste water produced on the site. It is proposed that the treated water will be used for irrigation purposes which will require the construction of a pipeline to transport the treated water approximately 8km east to McWilliams existing vineyards.
- Create title to a portion of drainage reserve adjoining the winery site and consolidate this new allotment with the winery's allotments.

3.1 Winery Capacity Upgrade

McWilliams' long term plan is to grow the winery site at Hanwood to an ultimate capacity of 65,000T. This is the level at which it is considered the region's fruit would be exhausted for the style of Wines that the Company produces. The plan is to increase the winery's capacity at a rate to meet projected sales growth forecasts. This rate of growth is estimated to be approximately 4% pa. The long term growth forecasts are provided below in Figure 3 and Table 2.

Figure 3. McWilliams Growth Projections

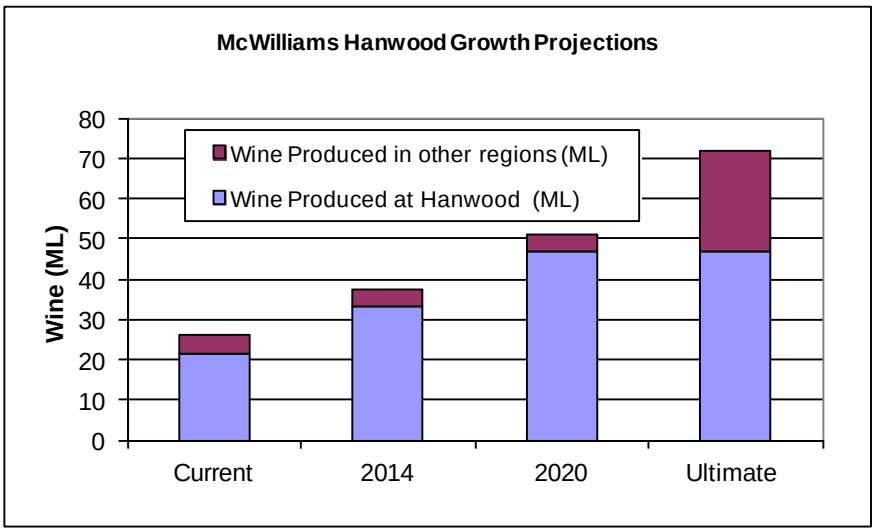


Table 2. Wine Production Growth estimates by source

Year	Grape Crush at Hanwood (T)	Wine Produced at Hanwood (ML)	Wine Produced in other regions (ML)	Total Wine to Packaging (ML)
Current	34,000	24.5	4.3	28.8
2014	45,000	33.0	4.3	37.3
2020	65,000	46.8	4.3	51.1
Ultimate	65,000	46.8	25.2	72.0

The upgrade to the winery to a capacity of 65,000T crush will be completed within the existing site, as shown on the Site Masterplan drawing 0802-05-PR100 provided as Attachment 4. The Masterplan indicates the approximate location of additional winery equipment, location of the Packaging facility and WWTP, and the additional supporting infrastructure required to make the facility operational. While the increased capacity will add more equipment, it is not expected to change the wine making process. A list of the equipment is provided in the table below:

Table 3: Winery Equipment staging

Equipment	Current 38,000T	STAGE 1 45000T	STAGE 2 55000T	STAGE 3 65,000T plus Imported Juice/Wine	Total
Crushers	2	0	1	1	**4**
Must Chillers	2	0	1	1	**4**
Presses:					
320 HL	3	0	0	0	**3**
680 HL	2	0	0	1	**3**
Drainers	7	1	2	2	**12**
SWAP 130T	14	4	4	8	**30**
Centrifuge	1	0	1	0	**2**
Storage (kL)	52600	7030	18170	33300	**111100**
Refrigeration (kW)	3100	1100	1100	2200	**7500**

3.2 Packaging Plant

The proposal includes the construction of a new bottling and packaging facility on the Hanwood site. The location of the facility and the associated internal roads are shown on the site Masterplan provided in attachment 4.

Construction of the facility will be staged to suit Company growth. Stage 1 is proposed to be approximately 13,000m2 in area and be equipped to bottle around 36ML of wine per annum. Refer drawing 0802-05-PR160 provided as Attachment 10. The final building will measure approximately 33,000m2 in area and process 72ML of wine per annum. Refer drawing 0802-05-PR161 provided as Attachment 11.

The main building will be a single-storey steel structure with external lightweight metal cladding. The building will have an eaves height of 7m and a maximum ridge height of approximately 12m. A 530m2 two-storey office, amenities and services building is proposed to be located alongside the northern wall of the main building.

The packaging building will consist of:

- A drive-through canopy area on the east side of the building for unloading raw materials and loading trucks
- A drive-through canopy area on the west side of the building for unloading empty bottles.
- Bottle storage and de-palletising area
- Storage of raw materials: cartons, labels and closures
- Wine buffer tanks and filtration equipment
- Bottle filling
- Carton erecting and packing
- Palletising
- Warehousing raw materials and finished goods

Typical operations will include:

- Raw materials and glass delivered to the site by heavy vehicles. Unloading of raw materials and glass by forklifts.
- Transfer of wine via pipework from the Hanwood winery to the Wine buffer tank area inside the building.
- Unloading wine (from other Company sites or from external sources) from road tankers directly to the wine buffer tank area.
- Bottle filling, carton packing and palletisation of finished products.
- Warehousing of semi-finished wine for maturation.
- Warehousing of finished wine prior to despatch.
- Loading of semi-trailers, B-Doubles or shipping containers with finished goods.
- Loading containers onto trucks with finished goods for export.

The finished goods warehouse area will be large enough to hold 4 weeks of production. It is expected that within this time Domestic product will be dispatched to State distribution warehouses and Export product will be dispatched on trucks or into shipping containers to the shipping port.

The following services and utilities will be required for the building:

- Potable water supply – via the existing site water storage and filtration plant, expanded to meet the additional demand
- Sterile filtered water – via a new membrane filtration plant located within the Packaging building

- Hot water for equipment clean-in-place processes - generated via new gas fired hot water boilers located within a plantroom adjacent to the Packaging building and fed from the site's natural gas supply.
- Compressed air for operating pneumatic equipment – via new air compressors located within a plantroom adjacent to the Packaging building.
- Electricity supply – via new HV transformers added to the site's existing ring main.

The facility will predominantly operate 6 days per week, with 2 x 8hr shifts per day. Additional operating hours may be necessary from time to time to meet exceptional demands.

It is estimated the Stage 1 facility will create an additional 28 permanent positions and potentially 6 casual positions at certain times of the year. These figures are estimated to grow to 84 and 28 respectively as the packaging facility reaches its capacity of 72ML per annum.

3.3 Waste Water Treatment and Reuse

Wastewater generation is expected to increase from the current level of 44ML pa to 146ML pa. Harvested stormwater from the site will increase the total amount of water for reuse to 171ML. The proposal includes the construction of a new Waste Water Treatment Plant (WWTP) that will produce treated water suitable for vineyard irrigation. McWilliams have a number of irrigated vineyards in the vicinity of the winery and the intention is to incorporate treated water into their overall irrigation water needs. A new pipeline of approximately 8km will be constructed to transport the treated water to McWilliams largest vineyards in the immediate irrigation district. The proposed route for the pipeline has been developed in consultation with GCC and MI and indicated on the aerial photograph provided as Attachment 3. The land in which the pipe runs is either Council road reserve or MI channel reserve that both the council and MI have rights to. At this stage, we do not believe that the route will enter any private land. The pipeline will not be required for some years, and when the time arrives, McWilliams will survey the route and lodge detailed plans with GCC and MI for approval.

A concept design for waste water management has been prepared including:

- The segregation of waste streams from stormwater
- Treatment of waste water
- Reuse of treated water
- Reuse of biogas
- Reuse of biosolids

The concept design report for waste water management is included in Appendix A.

It is proposed that the WWTP will be located on the winery site, south of the existing evaporation ponds in an area currently occupied by vineyards. The location is

shown on the Site Masterplan, Attachment 4, with elevations shown on drawings 0802-05-PR155 and PR156 provided as Attachments 8 and 9 respectively.

The treatment process selected has been proven in a number of wineries and will incorporate the latest developments in anaerobic treatment and energy efficient aeration. The key components of the plant are as follows:

Process function	Equipment Description
Screening of large solids	Rotary screen
Settling of fine solids	250kL concrete tanks
Surge and buffer storage	20ML Covered Anaerobic Lagoon (CAL) fitted with biogas recovery and mixing systems
Anaerobic treatment of organic compounds	
Aerobic treatment of organic compounds	Tank based SBR's fitted with fine bubble diffusers and roots style blowers
Biosolids handling	Conical bottom sludge thickening tank with options for future air or mechanical dewatering

3.4 Construction Process and Proposed Staging of the Works

As noted above, the winery is expected to grow incrementally over the next 15 years and the bottling capacity will come on line in discrete stages as new lines are installed. The waste water treatment plant will also be constructed in discrete stages to ensure there is sufficient capacity to:

- Store untreated wastewater prior to treatment
- Treat the wastewater load to a suitable standard
- Store treated water over winter, and
- have sufficient reuse capacity to use the treated water

The construction process will follow a similar pattern, with individual components of the wine making process being added as capacity requirements grow. Staged construction certificates will be sought as each new piece of equipment is added. For example, to reach Stage 1 capacity of 45,000 tonnes, the winery equipment required is 1 drainer, four 130kL SWAPS (fermenters) and additional tank farm storage for finished products. This new equipment will likely be added in several projects over a two or three year timeframe, so each construction project is contained to a small area of the winery. The construction would normally involve:

- The removal of top soil, which is normally retained on site for mounding as visual barriers
- The preparation of foundations and the pouring of concrete footings
- Erection of equipment (typically tanks constructed offsite) using cranes and lifting equipment
- Connecting power and piping to integrate into the existing flow scheme
- Commissioning and operation

As such, environmental impacts from the construction process should be readily contained and easier to manage. Potential impacts from noise, traffic and dust are not anticipated to be significant and mitigation measures such as limiting hours of construction, maintaining dust suppression activities will be detailed in project specific CEMP's.

The proposed route for the 8km pipeline has been selected to minimise the potential impacts on the landscape. Apart from the crossing of the Kidman Way which will be under bored, the remainder of the path is in gravel road reserves and will be excavated to GCC and MI specifications. As well as dust and noise control measures, the pipeline project CEMP will detail additional mitigation measures for traffic control, sediment and erosion control.

Staging
For the purposes of this EA, we have broken the growth of the facility into 3 stages as follows:

Table 4: Proposed staging

Stage	Crush up to (Tonnes)	Bottle up to (kL)	Waste Water Vol (ML)	WWTP Configuration
1	45,000		71.3	One SBR
2	55,000	36,000	118.0	CAL + 2 SBR's + Pipeline/Winter storage
3	65,000	72,000	171.0	CAL + 2 SBR's + Pipeline/Winter storage

Staging of the development is illustrated on drawing 0802-05-PR150 provided as Attachment 6.

3.5 Associated Site Infrastructure and Utilities

The expansion of the winery and packaging facility will require improvements in a range of site services and infrastructure.

- Extension of the HV ring main with additional transformers for Refrigeration, Packaging & Filtration and Waste Water Treatment areas
- An additional 35ML water storage lagoon (Dam 6) to store stormwater from roofed areas and raw water to feed to the winery and packaging plants
- Treated water storage dam at the irrigation site (Dam 7)
- Extension to the water filtration system
- Extension to Fire Hydrant services
- West car park extension for winery staff
- East car park for packaging employees
- Road works around the entrance to the site

New buildings and extensions are also planned in the following areas:

- Extension to Administration Building
- Workshop & store
- Product Filtration Building - staged
- Winery Amenities
- Extension to Premium Cellar/Barrel Store
- Security
- Drygoods storage
- Rotary Drum Vacuum (RDV) shed for wine filtration

The main items noted above are identified on the Site Masterplan (Attachment 4).

3.6 Lagoon construction

The proposal includes the construction of a number of lagoons for the purpose of storing raw water supplied to the site, treating wastewater, or storing treated wastewater prior to reuse. All lagoons will be constructed with liners, either from compacted clay or HDPE geomembranes to meet EPA permeability requirements. A summary of the existing and proposed lagoons is as follows:

Table 5: New and existing dam summary

Lagoon ID	Volume (ML)	Storage Function	New/Existing	Location
Evap pans	12	Waste wate	Existing	South of winery
Lagoon 1	10	Supply water	Existing	In front of office
Lagoon 2	10	Supply water	Existing	North of Winery
Lagoon 3	3.6	Containment	Existing	South of Winery
Lagoon 3A	1.6	Containment	Existing	SW corner of winery
Dam 4	35	Treated water	Existing	WWTP
Dam 5	26.9	Treated water	New	WWTP
Dam 6	35	Supply water	New	Adjacent to Dam 2
Dam 7	45	Treated water	New	Irrigation site
CAL	20	Waste water	New	WWTP
Sludge Lagoon	15	Biosolids	New	WWTP

3.7 Consultation

McWilliams have actively engaged with the key stakeholders throughout the development of the proposal. Key activities include:

Agency	Consultation
Griffith City Council	Discussed planning and traffic issues, pipeline route and stormwater drainage
Office of Environment & Heritage/EPA	Discussed environmental risks, process for review of proposal and draft versions of key reports for adequacy
Murrumbidgee Irrigation	Discussed pipeline route and stormwater drainage requirements into the MI drainage system
Neighbours	McWilliams are in the process of consulting with neighbours who they believe may be affected by the proposal. No issues have been raised to date

4 STATUTORY APPROVAL CONTEXT

4.1 Environmental Planning & Assessment Act 1979

The proposed development is considered to be classified as 'Designated Development' as listed in Schedule 3 of the *Environmental Planning & Assessment Regulation 2000*. The proposal is also considered to be classified as a Part 3A Major Project under the provisions of the *Environmental Planning & Assessment Act 1979*.

The following environmental planning instruments are considered to relate to the proposed development:

State Environmental Planning Policy (Infrastructure) 2007:

cl 101: Part of the subject land fronts a classified road (The Kidman Way). The following discussion is provided in relation Clause 101(2) of SEPP (Infrastructure) 2007:

(a): Vehicular access to the main winery site is provided off Jack McWilliam Road.

(b): The safety, efficiency and ongoing operation of The Kidman Way is not considered to be adversely affected by the proposal as a result of:

(i): the design of the winery site's existing access points;

(ii): the emission of smoke or dust from the sites;

(iii): the nature, volume or frequency of vehicles using The Kidman Way to enter or leave the sites. In this regard, the volume of vehicles likely to be associated with the proposal are considered to be similar or less than the volume of vehicles associated with the former land-use.

(c): The proposal is not sensitive to traffic noise or vehicle emissions.

cl104: The proposal is considered to be listed in Schedule 3 of the SEPP. On this basis, it is acknowledged that the DA will be referred to NSW Roads & Maritime Services (RMS) and the South-Western NSW Regional Development Committee. A Traffic Impact Assessment report has been prepared by Varga Traffic Planning ands is included in Appendix D of this report.

State Environmental Planning Policy (Rural Lands) 2008:

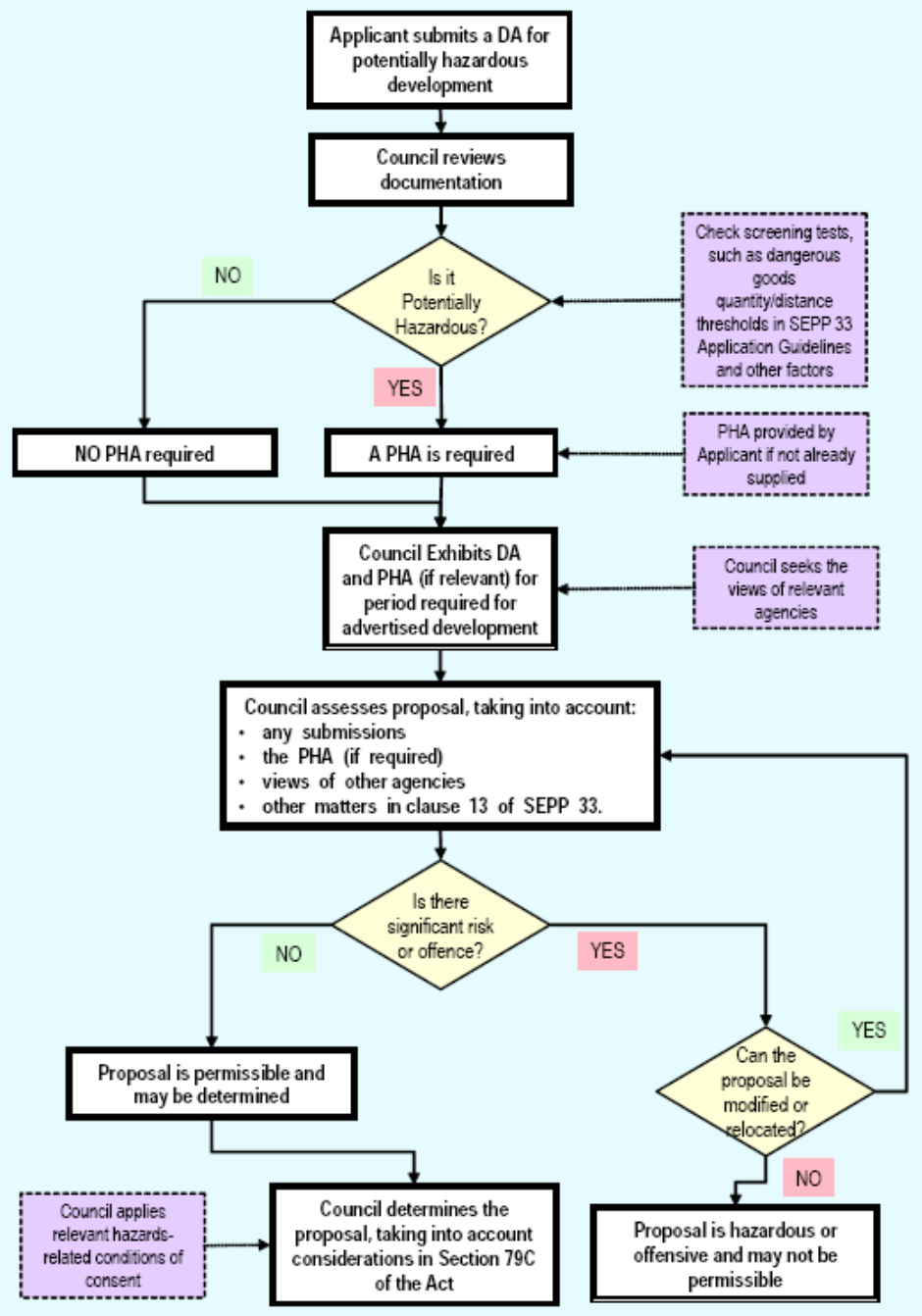
cl 7: The proposal is considered to be sympathetic with the principles listed in Part 2 of the Rural Lands SEPP.

cl 13: The site is not considered to be listed in state significant rural land.

State Environmental Planning Policy 33

The nature of the proposed development is considered to be identified as potentially hazardous and/or potentially offensive development. The following discussion is provided in relation to relevant clauses of SEPP33:

cl 3: The proposal could be considered to be defined as “potentially hazardous development” and/or “potentially offensive development”.
cl 8: Consideration has been given to current circulars and guidelines published by the NSW Department of Planning relating to hazardous development.
cl 12: A Preliminary Hazardous Analysis (PHA) needs to be prepared in accordance with circulars or guidelines published by the NSW Department of Planning if a proposal is considered to be defined as “potentially hazardous development”. The following figure is used to determine whether a proposal is potentially hazardous development:



Potential risk typically depends on the following five main factors:

- the properties of the substance(s) being handled or stored;
- the conditions of storage or use;
- the quantity involved;
- the location with respect to the site boundary; and
- the surrounding land use.

The procedure for considering whether a proposed development is “potentially hazardous development” using the risk screening method is outlined in the guideline. It primarily considers the first four of the abovementioned factors. Risk

screening is based on an estimate of the consequences of fire, explosion or toxic release from material(s) being handled. The risk screening takes into account information from the proponent about the properties of the materials, quantity of materials, type of storage or use, and location. A series of graphs and tables are provided below to assist in this estimation. The following table indicates what risk screening graph should be used to determine whether a PHA is required to be prepared in this instance. Current and future quantities of dangerous goods used on site are summarised in the following table:

Table 6: Dangerous Goods register

Item	Dangerous Goods Code		Current Quantity (Tonne)	Future Quantity (Tonne)	Above Threshold (Yes/No)
	Class	PG			
Ethanol	3	II	160	160	Yes (>25T)
LPG	2.1		2.2	4.2	No (<10T)
Liquid CO_2	2.2		6	12	No (N/A)
Sodium Hydroxide	8	II	2	4	No (<25T)
Sulphur Dioxide	2.3, 8		0.6	0.6	No (<2.5T)
Ammonia Solution	8	III	4	8	No (<25T)
Petroleum Fuel	3	II	0.5	0.5	No (<5T)
Diesel Fuel	3	II	0.5	1	No (<5T)

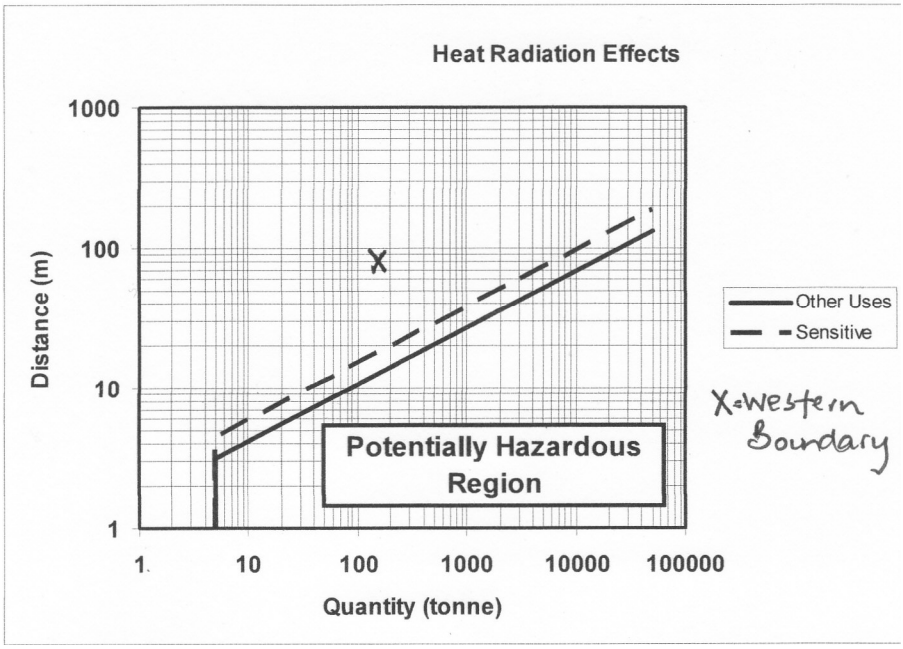
Based on this information and the table below, Figure 9 should be used to determine if the 160 tonne of Class 3 liquid is considered hazardous.

Class	Method to Use/Minimum Quantity
1.1	Use graph at Figure 5 if greater than 100 kg
1.2-1.3	Table 3
2.1 — pressurised (excluding LPG)	Figure 6 graph if greater than 100 kg
2.1 — liquefied (pressure) (excluding LPG)	Figure 7 graph if greater than 500 kg
LPG (above ground)	table 3
LPG (underground)	table 3
2.3	table 3
3PGI	Figure 8 graph if greater than 2 tonne
3PGII	Figure 9 graph if greater than 5 tonne
3PGIII	Figure 9 graph if greater than 5 tonne
4	table 3
5	table 3
6	table 3
7	table 3
8	table 3

The current storage area is located approximately 80 m from the sites nearest (western) boundary. These have been plotted on the graph below, which is an extract of the graph provided in Figure 9 of the SEPP33 Guideline. Given that the

distances between the storage area and the site's other boundaries are significantly larger, they have been excluded from the graph

Figure 9: Class 3PGII and 3PGIII Flammable Liquids



The graph identifies whether development (based on its distance from receptors is considered to be potentially hazardous. Given that the proposal does not fall within the 'potentially hazardous region' of the above graph, the preparation of a PHA is not considered to be necessary in this instance.

In addition to the abovementioned thresholds, a proposal may be considered to be potentially hazardous based on vehicular movements from the site. The table below requires a PHA be undertaken if more than 45 vehicular movements per week or 750 movements per annum are expected. McWilliams currently have 30 truck movements per year for Class 3 PGII Ethanol. On this basis, the proposal is not considered to trigger the vehicular movement threshold for potentially hazardous developments.

	Vehicle Movements		Minimum quantity* per load (tonne)	
	Cumulative	Peak		
Class	Annual *or*	Weekly	Bulk	Packages
1	see note	see note	see note	
2.1	>500	>30	2	5
2.3	>100	>6	1	2
3PGI	>500	>30	1	1
3PGII	>750	>45	3	10
3PGIII	>1000	>60	10	no limit
4.1	>200	>12	1	2
4.2	>100	>3	2	5
4.3	>200	>12	5	10
5	>500	>30	2	5
6.1	all	all	1	3
6.2	see note	see note	see note	
7	see note	see note	see note	
8	>500	>30	2	5
9	>1000	>60	no limit	

In summary, the proposed development is not considered to trigger the threshold levels within the risk screening process of SEPP 33. On this basis, preparation of a PHA is not considered to be necessary in this instance.

Griffith Local Environmental Plan 2002:

The following clauses of the Griffith Local Environmental Plan 2002 (GLEP2002) are considered to potentially apply to the proposal:

cl 10: The Jack McWilliam Road site is currently zoned *1(e) – Rural Industry & Employment* under the provisions of the Griffith Local Environmental Plan 2002 (GLEP2002). The existing winery operation is considered to be defined as "rural industry" in the GLEP2002 Dictionary. The use of land zoned *1(e) – Rural Industry & Employment* for the purposes of "rural industry" and expansion of an existing "rural industry" are considered to be permissible with development consent. The proposed development is considered to be consistent with the objectives of land zoned *1(e) – Rural Industry & Employment*.

The Walla Avenue/Gum Creek Road site is currently zoned *1(b) – Rural Agricultural Protection* under the provisions of the Griffith Local Environmental Plan 2002 (GLEP2002). The irrigation of wastewater associated with "rural industry" on land zoned *1(b) – Rural Agricultural Protection* is considered to be permissible with development consent. The proposed development is considered to be consistent with the objectives of land zoned *1(b) – Rural Agricultural Protection*.

cl 11: Noted.

cl 12: Noted.

cl 13: Not Applicable.

cl 14: Noted.

cl 15: Not Applicable.

cl 16: Not Applicable.

cl 17: Not Applicable.

cl 18: Not Applicable.

cl 19: Not Applicable.

cl 20: Not Applicable.

cl 21: Not Applicable.

cl 21A: Not Applicable.

cl 22: Not Applicable.

cl 23: Not Applicable.

cl 24: The proposal does not require the removal of any vegetation.

cl 25: Noted.

cl 26: The subject land is not considered to be identified as potentially flood prone land on Council's "100 year flood susceptibility" map.

cl 27: Not Applicable.

cl 28: Noted.

cl 29: Noted.

cl 30: Not Applicable.

cl 31: Not Applicable.

cl 32: Not Applicable.

cl 33: Not Applicable.

cl 34: Not Applicable.

cl 35: Noted.

cl 36: Noted.

cl 37: The subject site is not located within close proximity of a Heritage Item.

cl 38: Noted.

cl 39: The subject site is not located within a Heritage Conservation Area.

cl 40: Not Applicable.

cl 41: Noted.

cl 42: Not Applicable.

cl 43: Not Applicable.

cl 44: Not Applicable.

cl 45: Not Applicable.

cl 46: Noted.

cl 47: Not Applicable.

cl 48: Not Applicable.

cl 49: Not Applicable.

cl 50: This DA does not seek consent to open any new driveways.

cl 51: The following discussion is provided in relation to Clause 51(4) of the GLEP2002:

(4)(a): The proposal is not anticipated to constitute a traffic hazard or materially reduce the capability or efficiency of The Kidman Way.

(4)(b): The proposal is not considered impede through traffic on The Kidman Way.

(4)(c): The proposal is not anticipated to prejudice any future improvements to, or realignment of The Kidman Way.

(4)(d): The proposal is not considered to be sensitive to traffic noise.

(4)(e): The proposal will not result in a significant change in the appearance of the site from The Kidman Way.

(4)(f): Vehicular access to the winery site can be provided via Jack McWilliam Road.

(4)(g): Not applicable.

cl 52: Not Applicable.

cl 53: Noted.

cl 54: Noted.

cl 55: Not Applicable.

cl 56: Not Applicable.

cl 57: Adequate arrangements can be made for the supply of potable water and the disposal of sewerage & drainage.

cl 58: This DA does not include the erection of any new advertising signage.

Griffith City Council DCP No. 1 (Non-Urban Development):

Griffith City Council's *DCP No. 1 – Non-Urban Development* applies to development on land zoned *1(b) – Rural Agricultural Protection* and *1(e) – Rural Industry & Employment*. The following provisions of DCP 1 are considered to potentially apply to the proposal:

Table 1:

a(i): Not Applicable.
a(ii): Noted.
b(i): Noted.
b(ii): Noted.
c: Noted.
d: Noted.
e: Noted.
f(i): Not Applicable.

f(ii): Not Applicable.
g: Not Applicable.
h: Noted.
i: Noted.
j: Noted.
k(i): Not Applicable.
k(ii): Noted.
l: Noted.
m: Not Applicable.

Table 2:

a(i): Not Applicable.
a(ii): Not Applicable.
a(iii): Noted.
b: Noted.
c: Noted.
d: Noted.
e: Noted.
f: Not Applicable.

Table 7:

a: Noted.
b: Noted.

Griffith City Council DCP No. 20 (Off-Street Parking):

Griffith City Council's *DCP No. 20 – Off-Street Parking* applies to development for the purposes of "rural industry" on land zoned *1(e) – Rural Industry & Employment*. The following discussion is provided in relation to the requirements listed in DCP 20:

Part 1.7:

1.7.1 The parking ratio for "rural industry" is based on a comparative analysis of similar premises. Using this theory, the provision of 1 space per employee plus additional spaces for visitors is considered to adequately cater for rural industrial type developments such as wineries. Given that this development will employ approximately 115 staff, the eventual provision of over 200 parking spaces is considered to be more adequate.

1.7.2 (a): Not applicable.
(b): Not applicable.
(c): Not applicable.

1.7.3 Noted.
1.7.4 Noted.
1.7.5 Noted.

Part 1.8:

1.8.1 Given that parking can be accommodated on-site, provision of parking spaces off site is not considered to be required in this instance.

1.8.2 Given that parking can be accommodated on-site, payment of a cash contribution for parking is not considered to be required in this instance.

Part 1.9:

1.9.1 Not Applicable.

1.9.2 Noted.

1.9.3 Noted.

1.9.4 Not Applicable.

1.9.5 Noted.

1.9.6 Noted. It is acknowledged that Council will impose a condition of consent requiring the provision of dedicated parking spaces for disabled persons.

1.9.7 Noted. Adequate provision exists on site for vehicle loading & unloading activities.

1.9.8 Noted. Provision exists to park buses within proximity of the main administration building & wine tasting area.

1.9.9 Concession sought. Given the site's isolation from the Village of Hanwood and the City of Griffith, it is not proposed to provide a dedicated bicycle parking area. If required, staff can park bicycles within proximity of the winery's buildings

1.9.10 It is not proposed to provide dedicated motorcycle parking spaces. In this regard, provision exists for motorcycles to park in normal parking spaces.

Part 1.10:

1.10.1 Noted.

1.10.2 Noted.

1.10.3 Not Applicable.

1.10.4 Noted.

1.10.5 Noted.

1.10.6 Noted.

Part 1.11

1.11.1 Noted.

1.11.2 Noted.

1.11.3 Noted.

Griffith City Council DCP No. 25 Public Notification of Development Applications

Whilst Clause 3 of Part 5 of *DCP No. 25 – Public Notification of Development Applications (DCP25)* does not provide an exemption from notifying Development

Applications for expansion of rural industrial developments such as wineries, it is acknowledged that Council will notify the proposal to surrounding landowners and in the local newspaper. It is requested that the applicant be provided with the opportunity to comment on issues raised in any submissions received by Council.

4.2 Local Government Act 1993

The following commentary is provided in relation to approvals required under the provisions of Section 68 of the Local Government Act 1993 relating to potable water supply, disposal of sewerage and/or the disposal of drainage.

Connection to a reticulated potable water supply system:

Whilst the proposed development will result in an increase in water consumption, it is not proposed to provide any new/additional water connections to Council's reticulated potable water supply system. On this basis, this DA does not include an application to Council for any new connections to Council's reticulated water supply service under the provisions of Section 68 of the Local Government Act 1993 as permitted by Section 78A(3) of the Environmental Planning and Assessment Act 1979.

Connection to a reticulated sewerage system:

Council's reticulated sewerage system does not extend to the locality. On this basis, this DA does not include an application to Council any new connections to Council's reticulated sewerage system under the provisions of Section 68 of the Local Government Act 1993 as permitted by Section 78A(3) of the Environmental Planning and Assessment Act 1979.

Installation/operation on an on-site sewerage treatment system:

Council's reticulated sewerage system does not extend to the locality. The existing winery is serviced by an on-site sewerage treatment system located southwest of the Administration building. Considering that the proposal requires an environmental protection licence from the NSW Environmental Protection Authority (EPA), it is understood that operation of existing & proposed on-site sewerage systems will form part of this licence. On this basis, this DA does not include an application to Council to install or operate an on-site sewerage treatment system under the provisions of Section 68 of the Local Government Act 1993 as permitted by Section 78A(3) of the Environmental Planning and Assessment Act 1979.

Disposal of stormwater:

This DA includes an application to Council to alter the current arrangements for the disposal of stormwater under the provisions of Section 68 of the Local Government Act 1993 as permitted by Section 78A(3) of the Environmental Planning and Assessment Act 1979.

4.3 Roads Act 1993

The proposed development does not require the construction of any new public roads or any new driveways off surrounding public roads.

4.4 Native Vegetation Act 2003

The proposed development does not require the removal of any native vegetation or any regrowth.

5 IDENTIFICATION AND ASSESSMENT OF ENVIRONMENTAL RISKS

As part of the Environmental Assessment, a review has been conducted of the potential risks posed by the proposed upgrade. The risk assessment was conducted under the assumption that there are no risk reduction strategies to ensure all potential options are considered. As McWilliams already operate winery and bottling operations, and the EA report authors operate a number of waste water treatment and reuse facilities, the review of potential risks drew on existing knowledge. This review will help determine the Environmental Management Plan for the site once the project has been implemented. A Statement of Environmental Commitments is provided in Section 7. A detailed review of the environmental risks is provided in Section 6.

A table showing the potential environmental risks that have been identified is provided below in Table 7:

Table 7: Environmental Risk assessment.

Risk Area	Activity	Potential Environmental Effects
Air Quality	Transportation of raw materials to site	Generation of Greenhouse gas, odours
	Winery operations	Odour nuisance generated at the winemaking process
	Waste water treatment processes	Odour nuisance generated from liquid and solid wastes
	Transport of finished goods from site	Generation of Greenhouse gas, odours
Water	Onsite wine storage tanks and waste water lagoons	Spill or release impacting stormwater or groundwater
	Distribution of treated water	Pipe breakage or leak impacting stormwater or groundwater
Noise	Transportation of raw materials to site	Disturbance to neighbours from engine noise
	Winery operations, including waste water treatment	Noise generated by winemaking equipment, forklifts, loaders, blowers etc.
Waste	Wash down winemaking equipment	Treatment and disposal of waste water
	Residual solid wastes from winemaking	Disposal of grape stalks, skins, filter medium
	Residual solids from waste water treatment	Disposal or reuse of bio-solids
Land	Distribution and reuse of treated water	Residual nutrients and salts impacting soil and groundwater.
		Run-off from irrigation sites impacting other water sources
	Reuse of bio-solids	Residual nutrients impacting soil health

The key environmental issues identified for further assessment are:

1. Water management, including water supply, waste water treatment and reuse
2. Potential for odour nuisance from operations, in particular waste water treatment
3. Land management associated with waste water reuse
4. Protection of groundwater from waste water reuse
5. Traffic management associated with expanded operations
6. Potential noise impacts from expanded operations

Each of these issues, along with other potential environmental impacts is discussed in detail in section 6 of this report.

6 REVIEW OF ENVIRONMENTAL ISSUES

6.1 Soil and water

6.1.1 Raw water supply

Water supply to the site is drawn from the Murrumbidgee Irrigation (MI) system into an existing 10ML holding dam (Lagoon 1) in front of the administration office area. A second 10ML storage dam (Lagoon 2) located on the north side of Jack McWilliam Road currently provides additional winter storage when the MI supply network is shut down for maintenance. Both lagoon supplies are supplemented with stormwater from roof areas. A third feed storage dam (Lagoon 6) is proposed to be located adjacent to the north of Lagoon 2 to allow for additional winter storage as water volumes increase.

McWilliams also have an existing groundwater pumping licence 40WA405446 and have sunk a test well on the north east corner of Lagoon 2 as a contingency supply of water for the winery.

A filtration and chlorination plant treats the water to a suitable standard for the site's operations. The current water usage of 68.6ML pa is expected to grow to 163.9ML pa under this proposal.

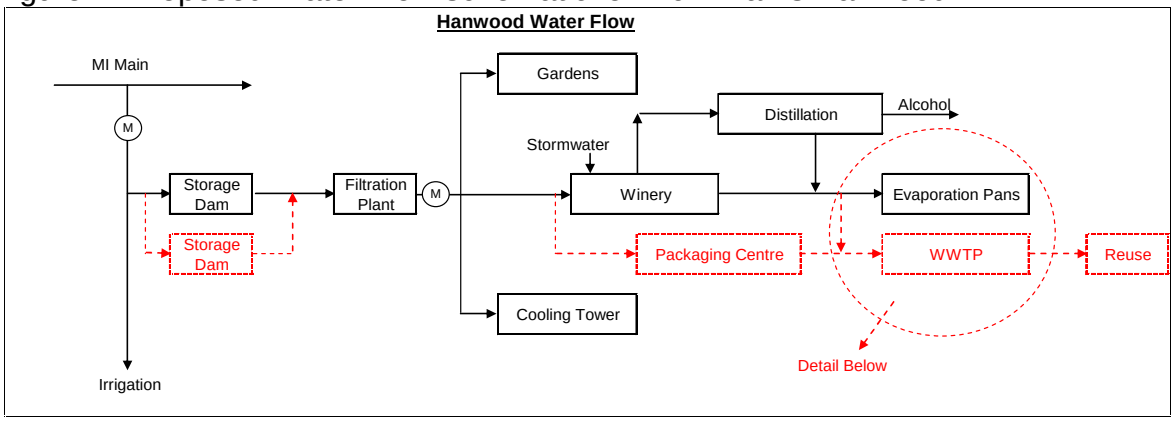
The site water balance is represented in Table 8 below:

Table 8: Site water balance

Water movements (ML pa)	Current	Proposed	Change
Raw water supply to winery from MI	***68.6***	***163.9***	***+95.3***
+ Stormwater harvested from roofs to supply	2.9	17.5	+14.6
- Evaporation losses, cooling towers, gardens etc.	18.6	36.8	-18.2
= Water supplied to the winery going to waste	***52.9***	***144.6***	***+91.7***
+ Stormwater harvested from site for reuse	11.4	26.6	+15.2
= Treated water for reuse	***64.3***	***171.2***	***+106.9***

The current water schematic (with changes shown in red) for the Hanwood site is provided in Figure 4 below

Figure 4: Proposed Water Flow schematic for McWilliams Hanwood



The additional water supply requirements of 95ML will be drawn from McWilliams existing MI allocation and no further approvals are necessary. The proposed development will add a third raw water storage dam (Lagoon 6, capacity 35ML) to buffer sufficient water to cover the winter months when the MI channels are shut down.

6.1.2 Storm Water Management

Stormwater management on the site has been improved by segregation and other various measures over the past five years. In principle, the stormwater catchments on site are directed as follows:

- “Clean” areas such as roofs are directed to the lagoons holding the raw water supply for the site operations
- Paved areas such as roadways and non processing areas that should be clean, but may be contaminated are directed through a gravity drainage system to the site bund - Lagoon 3.
- Outdoor processing areas drain to trade waste pumping stations. Under normal circumstances this stormwater is likely to be contaminated so it is treated as wastewater and pumped to the treatment plant. If the rainfall event is severe, if the treatment plant cannot accept the additional rainfall or the pump station malfunctions, the trade waste pump stations overflow through the gravity drainage system to the site bund – Lagoon 3.

Lagoon 3 is a plastic lined in-ground dam and serves as the emergency site bund. With a capacity of 3.6ML, it is designed to take a 1 in 10 year storm event on the developed catchment areas, in addition to a spill of 1.2 million litres from the site’s largest wine tank. Lagoon 3 is also capable of storing a 1:20 year storm event.

All water from Lagoon 3 is harvested for irrigation and will be treated beforehand through the treatment plant if required and then diverted to existing storage Lagoon 4.

Excess stormwater, from events greater than 1 in 20 years, is directed to the M.I. drainage system by overland flow through the three existing discharge points. The Stormwater Drainage Concept Plan, drawing # 0802-05-PR015 Rev B details the site catchment zones and the method of managing the destination of the water flow. The drawing is included as Attachment 5. The stormwater drainage concept plan was provided to FMG Engineering to undertake a Hydrological assessment to confirm that the design criteria could be met. The results of the study are detailed in a Stormwater Management Plan (Appendix I). The report concludes that for a 1 in 10 year ARI storm event, a total of 2.21ML of stormwater would be captured. Allowing for the additional bunding of the largest wine storage tank of 1.2ML, total storage requirement is 3.41ML and the 3.6ML capacity of the existing lagoon 3 is suitable combined with a planned 200kL rainwater tank at the packaging building.

6.1.3 Waste Water Management

Current Waste Water generation from winemaking operations is approximately 53ML pa from a crush of 38,000Te or 1.4kL/Te crush, consistent with industry benchmarks. Additional wastewater will be generated from the winery expansion as well as the introduction of a bottling facility on the site. Future waste water volume estimates have been extrapolated from historical performance and industry standards as follows:

Table 9: Waste water assumptions

Operation	Waste Water Expected	Ultimate Capacity	Waste Water Generated
Wine Making	1.3kL/Te Crush	65,000Te	85 ML
Wine Packaging	0.83L/L wine	72,000 kL	60 ML
Total Plant			145 ML

Winery waste water is characterised as a moderately strong and soluble organic waste stream, derived from juice from grapes (pre fermentation) and alcohol (post fermentation). The constituents change throughout the wine processing year with high levels of juice (sugars) prevalent during the vintage period when grape processing equipment is being cleaned at the end of each day or in between varieties. Once the juice has been fermented into wine, alcohol is the predominant organic constituent. Wine is also moderately acidic with pH levels typically around 4.0 due to the presence of organic acids. In the post vintage period, the waste stream also includes inorganic cleaning materials, in particular caustic soda (NaOH) that is used to clean tartrates and other precipitants off tank surfaces.

The conventional treatment for organic waste streams such as winery waste water is to use micro-organisms in a biological treatment process, similar to sewage treatment. Winery waste water is readily biodegradable and the industry standard treatment method is to biologically treat waste water and store over winter for reuse

on land during the following irrigation season. The key water quality parameters of untreated and treated winery waste water are provided below in Table 10.

Table 10: Waste Water quality parameters

Parameter	Units	Before treatment	After treatment
pH	Units	4.0	8.5
Biological Oxygen Demand	mg/L	5,000	<20
Chemical Oxygen Demand (COD)	mg/L	8000	150
Suspended Solids (SS)	mg/L	300	30
Total Nitrogen	mg/L	15	10
Total Phosphorus	mg/L	10	5
Total Dissolved Solids (TDS)	uS/cm	1600	1600

The current method for disposal of waste water is via evaporation pans located to the south of the winery. The capacity of the evaporation pans will not be sufficient to accommodate the increased water flows as outlined above. The proposal is to capture, treat and reuse the waste water for irrigation of vineyards, displacing a portion of the water drawn from the MI system. The evaporation pans will be retained and initially used to buffer waste water entering the treatment plant befor being utilised for the evaporation of some specific high salt waste streams and solids drying as part of the strategy to improve treated water quality.

The concept design for the Waste Water Treatment Plant (WWTP) has been completed by JJC Engineering and is provided as Appendix A. The proposal is to treat, store over winter and reuse the treated water for irrigation of McWilliams owned vineyard. The treated water reused on vineyards will displace water that is currently sourced from MI. The treated water will initially be used to supplement MI water on 46Ha of vineyard at the winery site, and as volumes grow, will be piped to McWilliam's larger vineyard holdings (442Ha) some 8 km to the west of the winery.

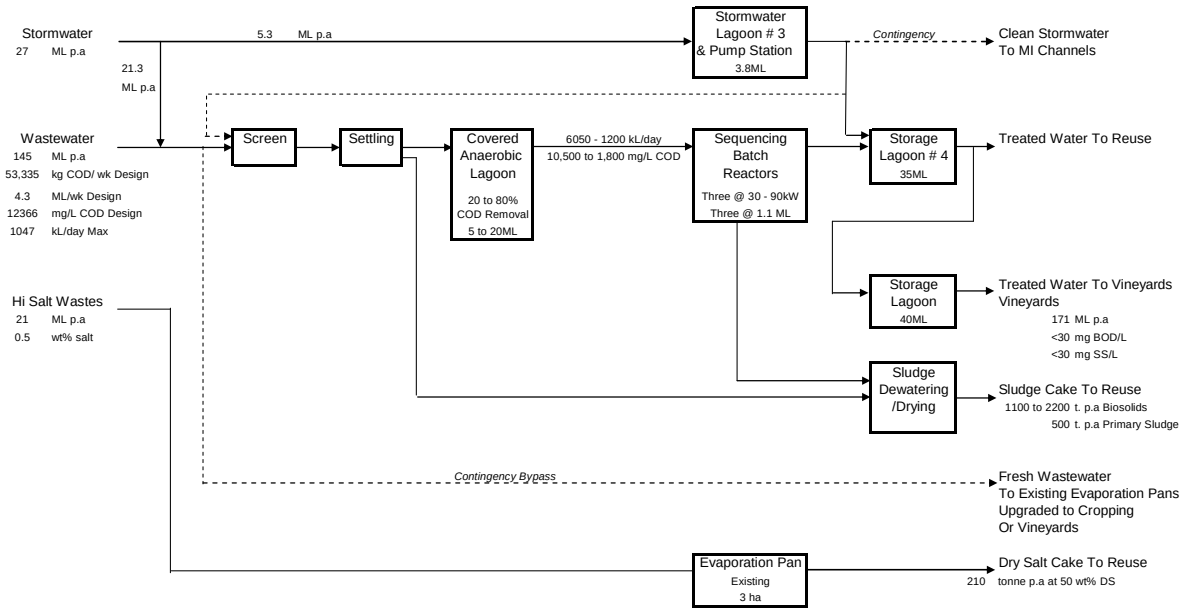
The treatment process will consist of the following components:

- Cleaner Production within the winery.
- Segregation of high salt wastes to evaporation.
- Screening of large solids.
- Settling of fine solids.
- Surge storage & anaerobic biotreatment.
- Aerobic biotreatment in tank based SBRs
- Storage of treated water in clay lined lagoons
- Reuse of treated water on vineyard
- Dewatering of Solids using air drying or mechanical dewatering
- Control and automation
- Environmental protection

The details of each component are provided in Appendix A.

The flow schematic for the ultimate case is provided below in figure 5:

Figure 5: WWTP concept design flow schematic



A number of the key assets required for the waste water system already exist, and other elements will be implemented in a staged process as treatment capacity is required. The first stage will be the implementation of one of the three Sequencing Batch Reactors (SBR's) that will produce treated water for reuse on vineyards adjacent to the winery. As waste water volumes grow, further SBR's and the Covered Anaerobic Lagoon (CAL) will be incorporated into the treatment scheme, and a pipeline to McWilliams major vineyards (Farms 195, 196 and 199) will be constructed to increase the reuse capacity. Table 11 shows the staged functionality of the treatment process:

Table 11: WWTP staged functionality

Component	Current	Stage 1	Stage 2	Stage 3
Coarse solids removal	Evaporation pans	Evaporation pans	Rotary Screen	Rotary Screen
Fine solids settling	Evaporation Pans	Evaporation pans	Settling tanks	Settling Tanks
Surge storage	Evaporation pans	Evaporation pans	CAL	CAL
Bio-treatment	Not required	1 SBR	CAL + 2 SBR's	CAL,+ 3 SBR's
Biosolids precessing	Not required	Evaporation pans	CAL	Sludge lagoon or Mech dwt'ng
Treated water storage	Not required	Lagoon 4 (exists)	Lagoon 4 + Lagoon 7	Lagoon 4 + Lagoon 7
Treated water reuse	Not required	Farms 128, 130	Farms 128, 130, 195, 196, 199	Farms 128, 130, 195, 196, 199

The potential environmental impacts from waste water management are a significant issue for the Wine Industry. The key issues for winery waste water treatment and the specific mitigation measures proposed at McWilliams are summarised below:

Potential Environmental Impact	WW Management Mitigation
Odour emissions from extended storage of untreated wastewater	McWilliams will transition to a covered storage lagoon for untreated waste water
Soil and groundwater contamination from uncontrolled disposal of WW	The proposal includes sufficient treatment and storage capacity to sustainably reuse treated water
Noise emissions from aeration equipment	The aeration equipment will be appropriately housed in noise enclosures
High GHG emissions from energy consumption for aeration	The WWTP will utilise anaerobic treatment as well as high efficiency aerobic equipment for treatment

A detailed assessment of each potential impact is outlined in the following chapters.

6.1.4 Soil and Groundwater (waste water reuse)

The proposal is for the treated wastewater to be stored over winter in clay lined dams and used on demand for irrigation of existing, established grapevines, thereby displacing raw water currently sourced from MI. McWilliams have a total vineyard area of 442Ha in the Hanwood area that is currently irrigated using MI channel water. Approximately 46Ha is adjacent to the winery and the remaining area is located 8km to the west of the winery. Treated winery wastewater is now commonly used for irrigation of grapevines in most grape growing areas of Australia with no

short term environmental impacts being apparent. The issues affecting the long term sustainability of irrigating with winery waste water are similar in nature to other moderately saline wastewater streams; namely, groundwater infiltration and soil sodicity. These impacts are specific to the irrigation site and situation.

Cropsol have investigated the potential environmental impacts from irrigating the treated waste water and their report is provided as Appendix B. The report covers:

A. A summary water balance of the proposed vineyard areas.
B. An assessment of the potential groundwater and surface water impacts associated with the storage of water and wastes, and the use of the treated winery wastewater in the vineyard areas.
C. A statement of the suitability of soil structure to accommodate the application of treated wastewater, and
D. Suggested guidelines for future monitoring regimes within the vineyard to collect soil, irrigation and wastewater data.

Water Balance

The water balance makes an assessment of the hydraulic needs of specific cropping systems, in this case grapevines grown in the Riverina. The climatic conditions were determined from long term averages collected at the CSIRO weather station in Griffith. Based on this data, the median rainfall is 401mm/yr and the evapotranspiration (ET_o) is 1,865mm/yr. Crop co-efficient (K_c) for grapevines have been used to determine the specific irrigation requirements (ET_{crop}). For an average year, the grapevines are expected to require 455mm/yr or 4.55ML/Ha. Across the 46Ha of vineyard surrounding the winery, this equates to an annual irrigation requirement of 209ML and for the total potential area of 442Ha, the theoretical average irrigation water requirement is 2,011ML pa.

The conclusion drawn by Cropsol was:

> *"Based on current wastewater loads of 44 ML, as well as projected final wastewater loads of 146 ML per annum, the total hydraulic loading through treated wastewater will currently be very low and only amount for 10 mm per annum, increasing over time to a total of only 33.8 mm per annum. This will initially amount to only 2.2% of the total water applied, peaking at 7.3% at projected full capacity.*
> *The total expected hydraulic loading can therefore be considered to be very low, even at peak capacity.*

With such large areas of existing vineyard, the proposed development has a water balance with sufficient capacity to manage the reuse of treated water.

Soil Physical Properties

A study of the soil physical properties was conducted from existing bore log data, previous CSIRO soil surveys as well as additional samples collected for this assessment.

The Winery Block has predominantly brown silty clays in the top layers, which change to silty loams to up to one meter in depth, and increasing fine sandy clay loams from 1.2 metres to 3 metres. Red brown sandy loams are found below approximately 3 metres, with coarse sands in layers below 4 metres.

In the McWilliam Road Block, predominantly brown silty clay loams in the top layers are found, changing from red-brown medium to light clays, to clay loams down to about one meter. Below one metre, fine sandy clay loams of light reddish brown textures dominate to about 3 metres in depth.

The large Joncondon Road Block has heavier red clay top soils to about 0.70 m depth in the northern section of the block, changing to dark brown medium clays towards the middle block, and dark brown clay loams in the southern part. The underlying layers to approximately 2.0 m are generally slightly lighter clays, with light grey colours in the northern section, red brown to light brown medium clays towards middle and southern sections. Especially in deeper layers below 3.5 metres, the content of fine sands increases.

In general, heavier soils, from silty clays to medium clays dominate the top soil profiles to a depth of approximately 1.5 metres throughout the proposed application areas. These soils can generally be described as having an adequate water holding capacity, of between 90-120 mm/m. They have slow infiltration rates which prevents the rapid drainage of water and leaching of nutrients.

The predominant heavier soil textures provide a good basis for the application of treated wastewater. Not only do they provide sufficient water holding capacity to absorb the volumes applied, but also prevent the rapid drainage of water and nutrients into lower layers.

Soil Chemical Properties

Representative soil samples were collected at two depths, 25cm and 75cm with chemical analyses conducted at Sydney Environmental and Soil Laboratories. In general terms, the soils in the irrigated areas are low in organic carbon and low in salinity. The treated wastewater is projected to have low levels of nitrogen, phosphorus and BOD and these nutrient loadings are expected to be taken up by the crops. The wastewater will also contain moderate levels of salinity, however the very low application rates are not expected to have any negative impact on the soil or crop yields. Cropsol recommend a range of parameters to be monitored as part of ensuring the sustainability of the treated water reuse including:

- In-storage wastewater quality monitoring
- Soil chemical and physical properties
- Soil profile water movement and content
- Climate data
- Drainage flows and drainage water quality
- Groundwater levels and water quality

While the long term impacts of treated water reuse on soil are difficult to predict, McWilliams will be implementing an Environmental Monitoring Plan (EMP) in consultation with the EPA to ensure that any adverse effects such as soil salinity increases are identified and addressed in a timely manner. The requirement for an EMP is included in the Statement of Environmental Commitments (Section 7).

Groundwater

The storage and reuse of waste waters may also pose a risk to groundwater resources. Currently the raw waste water is stored in clay lined evaporation pans and future storage of untreated wastewater will be provided in the plastic lined CAL. Treated waste water will be stored in Lagoon 4 (existing clay lined dam) and Lagoon 6 or 7 which will also be constructed with a clay liner to meet EPA permeability standards. The uses of appropriately constructed storages are intended to reduce the risk of infiltration of contaminants to the groundwater to acceptable levels. In addition, groundwater monitoring both up and downgradient of the storage lagoons should provide reassurance that the liner integrity is satisfactory.

The groundwater resources in the Griffith Area are routinely monitored by Murrumbidgee Irrigation (MI) for impacts associated with their irrigation network. An outline of the regional groundwater resources in the subject area has been provided by MI Hydro geologist Leonie Williams. A summary of the existing MI groundwater bores in the vicinity of the winery and irrigation site is provided below in Table 12.

Table 12: Groundwater depth

Bore Location (See map)	MI Bore number	Depth to GW (m)	GW EC (uS/cm)
Jack McWilliam Road (north of winery)	G152	11.6	12940
Old Wilbriggee Road (east of winery)	G689	4.33	700
North of farm 195	G378	16.16	628
East of farm 195	G1595	7.8	947
East of farm 195	G1740	7.86	947
East of farm 196	G269	11.15	11540
East of farm 196	G267	8.3	604
East of farm 199	G1679	8.85	789
Middle of farm boundary 196/199	G2485	11.65	1500
West of farm 196	G1732	9.26	3550
West of farm 196	G2483	8.45	2300
West of farm 196	G375	9.17	5000
West of farm 199	G2482	9.15	1700

Recommendations for the future monitoring of groundwater resources have been provided by MI and will form part of the EMP for the winery operations. Specific groundwater bores will be established in consultation with the EPA to ensure adequate monitoring is undertaken.

6.2 Solid Wastes

Solid waste streams from winery operations predominantly involve grape stalks and marc from the crushing process along with filter aids such as diatomaceous earth (DE), bentonite and perlite.

Stalks and Marc

The stalks are removed from the grape bunches at the crushing stage and stockpiled on site to dry out. The stalks decompose slowly and don't cause any odour nuisance in the process.

Grape marc is the solids residue after pressing the juice or wine from the skins and seeds. Grape marc is transported to Tarac's Griffith facility for the recovery of alcohol for reuse in the spirit industry. The spent marc is reused as a stock feed or spread on land as a soil ameliorant.

Lees and filter aids

Following fermentation and pressing, residual fine solids (lees) are separated from the wine using a variety of methods. The initial separation is completed using gravity separation in tanks with the settled solids then progressing to a second stage filtration to increase the recovery of wine. McWilliams predominantly use DE as a filter aid in Rotary Drum Vacuum (RDV) filters to clarify wine prior to packaging. The earth cake containing lees is progressively removed from the drum and collected in bins. The filter cake is transported to Australian Tartaric Products (ATP) near Mildura where the tartaric acid is recovered. The DE that remains on the drum at the end of a run is washed to drain and settled in the evaporation pans. The slurry dries to a wet spade-able cake and is scraped up and disposed to landfill. In this form, DE does not generate a dust nuisance and is not considered a health risk. In future, the lees and earth will be settled out in specially designed tanks. The tanks will be cleaned by removing the free liquid and sucking the solid slurry out with a licensed vacuum tanker for offsite disposal.

Biosolids

The biotreatment of organic wastes will produce biosolids – micro-organisms that have grown from the waste substrate. The biosolids need to be removed from the process to maintain an equilibrium. Biosolids are a stable source of organic carbon with low level of nutrients and a similar in constituents to poultry manure. The biosolids will be dried out on site and spread on vineyards as a soil ameliorant. Typical analysis of winery treatment plant biosolids is provided below in table 13.

Table 13: Typical biosolids analysis

Parameter (DWB)	Units	Winery Biosolids	Poultry manure*
Organic Carbon	%	25	33
Nitrogen (N)	%	2.3	4.3
Phosphorus (P)	%	0.5	2.1
Potassium (K)	%	0.7	2.4
Calcium (Ca)	mg/kg	130	40000
Magnesium (Mg)	mg/kg	30	7000
Sodium (Na)	mg/kg	960	5900
Chloride (Cl)	mg/kg	<120	7700
Zinc (Zn)	mg/kg	381	526
Copper (Cu)	mg/kg	157	140

* Haby's manure supplies, Barossa Valley

General solid waste

McWilliams collect, segregate and recycle other waste streams from the Hanwood site as follows:

- Packaging – Glass, Cardboard and Paper is collected and recycled in dedicated bins to the local firm "Griffith Recycling".
- Plastic drums used for delivery and storage of water treatment chemicals are recycled to local firm "Kurrajong Recyclers"

The quantity of solid waste from operations is expected to rise in line with crushing capacity. The method for dealing with these streams is well established, with the exception of the biosolids and increased capacity is not likely to have adverse environmental impacts. Packaging waste will increase substantially when the bottling facility is established and McWilliams will renegotiate recycling arrangements in order to minimise waste going to landfill. A summary of the solid wastes from processing are as follows:

Table 14: Solid waste summary

Waste Stream	Current Level	Future Level	Disposal Destination
Grape Marc	5,100 Tpa	9,750 Tpa	Tarac for reuse of alcohol and grape solids
Stalks	680 Tpa	1,300 Tpa	Composted on site and spread on vineyard
Primary sludge/Filter Aids	250 Tpa	200 Tpa	80% ATP for reuse, remainder to landfill
Biosolids	Nil	2,200 tpa	Reuse on vineyards

6.3 Air Emissions and Odour Management

Air emissions, in particular odour management can be a difficult issue for wineries to manage depending on their location and proximity to neighbours. In preparation for the expansion, McWilliams engaged specialist firm OnSiteTechnology (OST) in 2007 to conduct a study of the existing odour generated from the site and consult with neighbours about any concerns they might have. The consultation via questionnaire with the neighbours indicated a low level of concern with current practices and importantly, confirmed the reliability of the Ausplume odour modelling that was conducted in 2005.

Further odour modelling has been conducted for each stage of the development by OST as part of this EA study and the report is provided in Appendix C. The modelling has been built on previously measured results for the evaporation pans and assumed odour fluxes for other sources from similar wineries in South Australia where the dominant odours are typically generated by waste water management. The proposed WWTP for McWilliams has considered odour in its design and will consist of a covered dam for raw waste water and a series of aerobic, tank based reactors that produce treated water that can be stored with minimal odour. The odour modelling takes into account the likely staging of the treatment plant, with Option 1 representing the current situation, Option 2 equates to Stage 1 with the evaporation pans holding raw waste for the aerated SBR, and Option 3 equates to Stage 2 of the treatment plant with a covered lagoon replacing the evaporation pans for raw feed. Apart from the waste water treatment plant, other potential sources include: temporary storage of grape skins after processing (marc), the grape receipt area, grape pressing and filtration.

The area surrounding the winery is lightly populated, however there are a number of sensitive receptors identified. These are:

1) The child care centre located approximately 700m to the North of the winery. Based on current NSW guidelines the predicted odour impact at this receptor should be less than 0.8 OU (99%, 1 hour average).
2) A number of isolated houses (typical examples are 200m West and 600m East of the proposed waste water treatment plant. Based on current NSW guidelines the predicted odour impact at this receptor should be less than 2.4 OU (99%, 1 hour average).

The modelling confirmed that the dominant odour was generated by the evaporation pans and that assumed odour fluxes from other sites “will not result in significant errors in prediction of off site odour impacts”. The modelling also confirms that for the current situation, “the predicted odour impact at the identified sensitive receptors is less than the current NSW guideline values except for a single residence approximately 200m to the south west of the evaporation pans.

Once the SBR (Stage 1) is introduced and Option 2 applies, the modelling predicts that the nearest residence is just outside the boundary for a single residence receptor. The installation of a CAL to store untreated wastewater (Stage 2) reduces the odour impact further and all sensitive receptors are well outside the boundary.

Odour modelling was also conducted on the proposed treated water storage dam (Lagoon 7) at the farm 195 site to confirm that the odour impacts are insignificant.

The Odour report concludes that:

> *The following conclusions are consistent with the model predictions:*
>
> 1) *All stages of the construction and development of the proposed waste water treatment plant will comply with the current N.S.W. guidelines for odour impact. Those being;*
>
>   - *0.8 OU for the child care centre 900m north of the winery*
>   - *2.4 OU for the isolated farm houses near the winery*
>
> 2) *Each stage of the proposed waste water treatment plant development should result in a progressive improvement (i.e. decrease in odour impact)*
>
> *A single farm house located approximately 200m to the south west of the evaporation pan has a modelled impact above the current N.S.W. guideline of 2.4 OU for the current waste water treatment regime. No odour complaints have been received from this resident. It is likely that the measured odour flux used in the model is higher than the current actual odour flux because of the influx of clean waste water due to the above average rainfall in the past year.*

Other air emissions such as dust have also been considered under this assessment. As the winery site, including all access roadways are paved, dust during normal operation is not considered to be a significant issue. The full construction will occur over a considerable period, however each stage is likely to require the removal of topsoil and increase the potential for dust to be raised. Each major development will be supported by a Construction and Environmental Management Plan that will outline measures to mitigate the potential for dust and other airborne contaminants.

6.4 Traffic Management

Traffic movements within the locality are anticipated to increase as a result of the proposed development. This increase in traffic movements will occur gradually in conjunction with an increase in winery production and the commencement of packaging operations. The implications of the changes to the traffic movements surrounding the Winery site have been investigated by Varga Traffic Planning. Their report is provided in Appendix D.

Vehicular access to the site is currently provided by three separate driveways:

- a heavy vehicle trucks-only driveway located adjacent to the eastern boundary of the site which is used throughout the year
- a light vehicle only driveway for staff and visitors which is centrally located on the site, and is used throughout the year, and
- a heavy vehicle trucks only “vintage” driveway located adjacent to the western boundary of the site. The driveway is used only during the vintage, and is largely unused at other times of the year.

Off-street car parking is currently provided on the site in a number of informal car parking areas, as well as a formal, line-marked car parking area which has capacity of 55 spaces.

Staff numbers are expected to increase progressively from an existing 81 staff to a maximum of 201 staff. Staff work a variety of shifts such that not all staff will be present on the site simultaneously. The arrival and departure of staff will not coincide with the peak hour traffic volumes recorded on the nearby network as the majority of winery staff will arrive for work before 6am and the afternoon shift change occurs before 4pm.

The road hierarchy allocated to the road network in the vicinity of the site by the Roads and Traffic Authority (RTA) is as follows:

- Kidman Way (MR321) is classified by the RTA as a *State Road* and provides the key north-south road link in the area. It typically comprises 2 traffic lanes (ie.1 lane in each direction), with additional auxiliary turning lanes provided at key intersections, such as the intersection with Jack McWilliam Road.
- Old Willbriggie Road is a local, unclassified road which provides a secondary north-south road link and follows an approximate parallel alignment with Kidman Way.
- Jack McWilliam Road is a local, unclassified road which follows a straight east-west alignment of approximately 1.4km in length with a T-junction at Kidman Way and another T-junction at Old Willbriggie Road.

The volume of traffic using Jack McWilliam Road is very low as the road essentially provides vehicular access to three properties, two owned or controlled by Baiada and McWilliams Winery. Jack McWilliam Road does not perform a “through-traffic” function and therefore does not carry any through-traffic volumes.

Existing Traffic Volumes

A series of detailed traffic surveys were undertaken over several weeks during and after the vintage period in 2007. The typical traffic flows on Kidman Way were in the order of 3,500 vehicles per day (vpd) and 400 to 500 vpd along Jack McWilliam Road, reducing to around 250 vpd after vintage.

A more detailed indication of the traffic volumes in the immediate vicinity was undertaken as part of this assessment on 13 May 2010. The data revealed that the peak hour at the Kidman Way/Jack McWilliam Road intersection occurred between 8:30am – 9:30am in the morning, and between 3:15pm and 4:15pm in the afternoon.

Projected Future Traffic Volumes

Future traffic volumes have been projected based on:

- Existing peak hour traffic volumes,
- Existing and projected future staff numbers
- Projected crush capacities and known truck operating characteristics.
- Proposed bottling operations and associated transport requirements

The traffic implications of the development have been assessed using the SIDRA program as widely used by the RMS and many LGA's. The results of the capacity analysis confirm that each of the intersections and driveways located in the immediate vicinity of the site will continue to operate at current Levels of Service, with only minimal increases in total average vehicle delays.

The conclusion of the report states that:

- *"The additional traffic flows expected to be generated by each stage of the expansion proposal will be relatively modest. The largest increases in traffic flows will occur during shift changes, however it should be noted in this regard that:*
    - *the majority of staff will arrive for work in the morning before 6am such that the peak flows generated by the site will not coincide with the morning peak hour on Kidman Way which occurs 2.5 hours later, between 8:30am-9:30am, and*
    - *the highest traffic flows in the afternoon will occur around the 4pm staff shift change*
- *Under the increased traffic flows expected to be generated by the maximum development potential of 65,000 tonnes, the Kidman Way/Jack McWilliam Road will continue to operate a Level of Service "A", with increases in total average vehicle delays in the order of approximately 2 to 3 seconds per vehicle when compared with the existing performance*

- *Each of the intersections in Jack McWilliam Road will also continue to operate at Level of Service "A" under the projected future traffic demands, with absolutely minimal vehicle delays*
- *An assessment of the AUSTROADS criteria for the provision of auxiliary turning lanes has found that:*
    - *the existing auxiliary left/right turning lanes provided in Kidman Way at the Jack McWilliam Road intersection will satisfactorily accommodate projected future traffic demands, and*
    - *the projected increases in traffic flows do not warrant the provision of any auxiliary turning lanes in Jack McWilliam Road.*

In essence, this assessment has found that the existing traffic flows currently using Jack McWilliam Road are very low, and that the increased traffic flows expected to be generated by the proposals can be comfortably accommodated without the need for any road improvements."

Parking

The off-street parking requirements applicable in Griffiths are specified in the Council's Development Control Plan No. 30: Off-Street Parking (2011). As the Parking Code does not specify a requirement for wineries, a parking requirement of 1 car park per employee yields a requirement of 192 spaces at the winery and 6 spaces at the Cellar door. The report concludes that:

"it is reasonable to conclude that the proposed development will not have any unacceptable parking implications."

6.5 Noise

The noise impacts associated with the development have been investigated by specialist consultants Reverb Acoustics. Their report is provided in Appendix E.

Existing noise levels at the site were monitored at two locations over a two week period from 4th April to 19th April 2009, a period that covered both full level production, and part production in the second week. Background noise levels were assessed to be 35dB(A) during the day and 33dB(A) at night.

Project specific noise levels, determined as the more stringent of the intrusiveness criterion and the amenity / high traffic criterion, are as follows:

- Day **40dB LAeq,15 Minute** 7am to 6pm Mon to Sat or 8am to 6pm Sun and Pub Hol.
- Evening **40dB LAeq,15 Minute** 6pm to 10pm
- Night **38B LAeq,15 Minute** 10pm to 7am Mon to Sat or 10pm to 8am Sun and Pub Hol

Road Traffic Noise

The traffic noise assessment focussed on the additional vehicular movements associated with the new packaging facility. Estimates of truck and smaller vehicles were made for the typical day, peak day and night conditions. The increase in predicted noise levels from this source are estimated to be between 0.7dB(A) and 1.9dB(A). These increases are within the acceptable range of the ECRTN criterion.

Winery site noise

Noise levels from additional equipment associated with the winery expansion have been modelled and compared against the established objectives. Noise control measures such as:

- Acoustically treat any roof ventilation of the facility.
- Enclose refrigeration plant in an acoustically rated enclosure.
- Install acoustic ventilation louvres to plant room walls.
- Provide absorption to underside of dock roof.
- Erect free-standing acoustic barriers adjacent to all WWTW plant and irrigation pumps.

will need to be employed in order to achieve the specified goals.

The cumulative effect of the existing noise levels from the winery operation and the introduction of packaging and WWTP will see noise levels increase from 44dB(A) to 45dB(A).

The noise assessment report concludes:

"A noise impact assessment for expansion of the existing McWilliams Wines Winery at Hanwood, has been completed. The report has shown that the site is suitable for operation of the new Packaging Facility and WWTW, providing our recommendations are implemented. With these or equivalent measures in place, noise from activities associated with the proposal will be either within the criterion or generally below the existing background noise level in the area for the majority of the time.

The OHW recognises the difficulty in achieving Project Specific Noise levels for existing developments and generally allows the progressive reduction of noise levels to a predetermined and agreed noise goal (See Section 10.1 – INP). In saying this, the long term goal should be to obtain compliance with the OHW's specified limits, through a continued and diligent noise reduction program. The OHW suggests that the Project Specific Noise Levels should not be applied as mandatory noise limits, but rather provide the initial target levels and drive the process of assessing all feasible and reasonable noise control measures.

Attended noise monitoring surveys confirm that noise emissions from existing winery operations during vintage are currently between 4-6dB(A) above the criteria at nearest residences. However, practical and effective noise control strategies have been offered to reduce noise emissions to acceptable levels. Our suggested strategies are not necessarily the only options available, but are expected to be the most cost-effective and practical with the information currently to hand. Alternative options can be considered providing they result in the same or lower received noise levels at any nearby residence.

We recommend further noise monitoring programs be conducted in the future. The programs will verify the effectiveness of noise control measures incorporated into operation of the site. In the event that complaints may arise, the program will enable noise generating activities to be identified and subsequent measures to be implemented, where required.

McWilliams acknowledge and accept the recommendations and mitigation strategies outlined in the Reverb report. Noise control measures during specific construction activities will be outlined in the CEMP.

6.6 Visual Impacts

The McWilliams winery is located on the southern side of Jack McWilliam Road adjacent to the Baiada Chicken feed mill site. The winery is set back from the road, and the visual impact is typical of the MIA region. The new packaging facility will also be set back from the road and visual impact will be softened with specific measures during the design phase. The waste water treatment plant will be located behind the winery and is not expected to be visible from Jack McWilliam Road, however the site also borders Ben Martin Road to the south and the waste water treatment plant tanks will be set back some 250m and behind a landscaping mound. The development is therefore not expected to have any detrimental effect on the visual amenity of the area. The following series of photographs show the current site from both Jack McWilliam Road and Ben Martin Road.

Figure 7: Photograph locations

Plate 1: Vintage entrance off Jack McWilliam Road

The vintage entrance is at the western end of the site on Jack McWilliam Road and is used by trucks delivering grapes in vintage.

Plate 2: Main staff entrance off Jack McWilliam Road

The staff entrance is the main vehicle access to the site. The existing barrel store can be seen in the background and an additional barrel store is proposed to be built to the left. The bottling building will be set behind the barrel stores with car parking at the front.

Plate 3: Jack McWilliam Road looking east to the heavy vehicle access

Plate 3 photo is taken from the same location as plate 2 and shows the view to the east along Jack McWilliam Road. The green shed houses irrigation equipment for the vineyard on the northern side of Jack McWilliam Road.

Plate 4: Looking north from Ben Martin Road

Plate 4 shows the view from Ben Martin Road looking across vineyard to the winery. The dominant structures are concrete silos that form part of the Baiada feed mill operation. The waste water treatment plant will be sited in between the winery and this boundary. A landscaping mound will be formed along this boundary to shield any visual impacts.

Plate 5: Ben Martin Road looking north-west

Plate 5 shows the view from the same location as plate 4 only looking towards the nearest neighbour to the west. The neighbour's view towards the winery is dominated by the feed mill silos and shielded by vegetation.

6.7 Heritage and Archaeological

An assessment of the impacts on the indigenous heritage values of the proposal have been conducted by specialist consultants Ozark. Their report is provided in Appendix F.

The assessment incorporated a review of relevant databases as well as a field survey, conducted in consultation with the Griffith Local Area Land Council (LALC) on the 26th May, 2011. The survey area included the winery site as well as the proposed route for the pipeline.

The proposed works are to take place in a completely disturbed environmental context and are relatively distant from apparent water resources. It is therefore anticipated that sites may be infrequent and it is likely that, if present, any Aboriginal objects / archaeological deposits would be in disturbed or secondary contexts.

A total of three (3) Aboriginal sites were recorded, all of which had undergone heavy prior disturbance. Two (2) were isolated finds and one (1) was an open artefact scatter. These sites were assessed as having low scientific significance due to their high levels of prior disturbance, but do have significance to the local Aboriginal community.
Impacts to the recorded sites under the proposal will include:

- Both isolated finds (MW-IF1 and IF2) are located in the heavily ploughed proposed bottling paddock. This entire site will be developed, hence impacting these isolated finds.
- Disturbed artefact scatter MW-OS1 is located along the graded table drain of John Condon Rd easement. This site will be impacted by the proposed water pipeline trench.

Given the significance of and likely impacts to the recorded sites, the recommended management of the Aboriginal heritage resource within the Subject Area is as follows:

- It should be attempted to locate both isolated finds and collect or relocate nearby out of harms way. Management of any collected artefacts will comprise part of further Aboriginal community consultation if this project is approved.
- Artefacts of MW-OS1 should also be collected / relocated prior to trenching and monitoring by the Aboriginal community should occur along a c. 200 m section of the pipeline in the vicinity of MW-OS1 to relocated objects should they be present.

McWilliams acknowledge and accept the recommendations made by Ozark and have included the proposed actions in their statement of commitments.

Ozark noted that the actions could be developed into an Aboriginal Cultural and Heritage Management Plan (ACHMP) for the project, however, following a review of the Ozark report findings, the OEH in a letter dated 19th September 2012, indicated that an ACHMP was not necessary due to the low number and significance of objects found. McWilliams do not propose to develop an ACHMP for the project.

6.8 Flora and Fauna

A review of the impacts the development will have on Flora and Fauna have been investigated by specialist consultants GHD. Their report is provided as Appendix G.

This ecological impact assessment has been prepared as a technical document to support the EA, and addresses the Environmental Assessment Requirements, which state that the EA must satisfy the requirements for flora and fauna impact assessment in accordance with the *Draft Guidelines for Threatened Species Assessment* (DEC/DPI 2005) under s.75f of the EP&A Act. The ecological assessment aims to:

- Identify potential ecological constraints and opportunities, including in particular the presence or likely presence of species, populations and ecological communities and their habitats listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- Identify the potential relevance of any matters of National Environmental Significance (NES) listed under the EPBC Act;
- Identify the potential impacts of the proposal on threatened biota and their habitats and advise on potential development design options and specific mitigation/management actions to avoid or minimise impacts on the biodiversity values;
- Assess the significance of impacts on threatened biota and matters of NES and identify the likely requirement or otherwise for further approvals under the EP&A or EPBC Acts; and
- Recommend mitigation and environmental management measures to avoid, minimise or offset adverse impacts on threatened biota and biodiversity values, as appropriate to facilitate the relevant planning approvals process.

A field survey was carried out on the 3rd and 4th June, 2010, paying particular attention to the area associated with the pipeline route.

Flora

The flora survey listed 69 flora species in the study area. Of these species, 29 were native and 40 were introduced. The majority of the study area occurs in road reserves, drainage reserves and private property, and is heavily disturbed due to it's proximity to agricultural activity and road easements. The study area is surrounded by cleared agricultural land, dominated by irrigated vineyards, orchards and cropping. The proposed area of plant expansion at the Hanwood Winery industrial site is highly disturbed and dominated by introduced annual species such as Caltrop (*Tribulus terrestris*), Small-flowered Mallow (*Malva parviflora*), and Paddy Melon (*Cucumis myriocarpus* subsp. *leptodermis*). Vineyards are also present here, with introduced species such as Small-flowered Mallow, Wireweed (*Polygonum*

viculare), and introduced grasses dominating ground covers between rows. No tree or shrub species exist within the subject site at this location

Along the proposed pipeline alignment, some juvenile Boree trees (less than 50cm in height) exist within the subject site at the western extent of Joncondon Road, and would be removed by the proposed activity. Scattered patches of Boree exist along the majority of Joncondon Road, within three to four metres of the table drain and proposed pipeline. Boree patches along Joncondon Road are typically approximately five metres wide with *Senna* form taxon *'filifolia'* present in the midstorey, and chenopods such as Creeping Saltbush, Climbing Saltbush and Ruby Saltbush dominating the ground layer. These Boree patches are likely to be classified as 'Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions' under the TSC Act.

Ecological Communities

The study area consists primarily of modified road reserve and existing vineyards, and is surrounded by agricultural activities including vineyards, orchards, and cropping. There are very few areas where the pre-existing ecological communities of the locality are still present. Patches of Boree woodland exist along the proposed pipeline route on Joncondon Road, and Murrumbidgee Avenue. These patches typically have an understorey dominated by native shrubs and forbs.

The woodland patch is likely to qualify as the ecological community 'Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South western Slopes bioregions', listed as Endangered under the TSC Act. The ecological community could potentially be impacted by the proposed activity, and mitigation measures will be implemented as recommended to minimise impacts.

Fauna

The fauna survey identified 31 species, including four introduced species. Twenty-nine bird species were identified during targeted bird surveys and by opportunistic observations. Birds that were common in the study area included Magpie Lark (*Grallina cyanoleuca*), Zebra Finch (*Taeniopygia guttata*), and Crested Pigeon (*Ocyphaps lophotes*).

The majority of the study area is cleared agricultural land, and provides minimal fauna habitat. Patches of planted and remnant trees within the study area are likely to provide habitat for a number of bird species. This habitat would not be affected by the proposed activity.
McWilliams acknowledge and accept the recommendations made by GHD and have included the actions in the statement of commitments.

6.9 Energy Consumption & Greenhouse Gases

An estimate of the impact on Greenhouse Gas (GHG) emissions is provided in Appendix H.

GHG emissions are expected to double from 14,117tCO_2e to 27,447tCO_2e as electrical power for increased production capacity and waste water treatment is partially offset by savings in transport related energy.

A key element of the proposal is the relocation of bottling operations that currently occur in Chullora (Sydney) to the winery site in Hanwood. This change provides some significant improvements in the logistics of raw material supplies and distribution of finished products. The savings in transport costs are a key business driver for the project, and underpin per unit savings in greenhouse gas emissions as shown in Table 15 below:

Table 15: GHG per unit of production

	Current	**Proposed**	**% Change**
Total GHG Produced (tCO_2e)	14,117	27,447	+94.4
Total volume Wine Produced (ML)	28.0	74.2	+187.0
GHG/Wine production (tCO_2e/kL wine)	***0.50***	***0.37***	***-26.7***

While the expansion will increase the amount of energy required overall, McWilliams will make every effort to increase the efficiency of the operation. A significant component of the increase in energy, approximately 10% of the purchased power, will be required for waste water treatment. The treatment plant has been designed in the most energy efficient configuration utilising anaerobic treatment combined with high efficiency aeration in the SBR. The CAL will produce biogas under certain conditions that may be captured and converted to energy by burning in a boiler to produce hot water or in a Combined Heat and Power (CHP) unit to produce electricity and heat. The McWilliams treatment plant will be the most energy efficient in the Australian Wine industry.

7 STATEMENT OF ENVIRONMENTAL COMMITMENTS

McWilliams will be required to apply for an EPA Licence to operate the facility as this development will exceed the threshold of 30,000 tonne crush. An Environmental Management Plan for the operation will be developed to meet EPA requirements. Specific commitments against environmental risks are provided below in table 16:

Table 16: Environmental Commitments

Issue	Commitment
General	The following management plans will be developed for the project: • A Construction Environmental Management Plan (CEMP) will be developed for each stage, or each project that forms part of the development, • An operational Environmental Management Plan (EMP) will be developed that incorporates the ongoing monitoring of environmental impacts that are recommended in this assessment • A Traffic Management Plan (TMP) shall be prepared prior to site establishment and construction. The TMP shall incorporate a Transport Code of Conduct, which would outline and manage the transportation routes to the site for heavy vehicles and B-doubles. The TMP would also include: o Heavy vehicle access to the site; o Deliveries and dispatch of products; o Heavy vehicle parking; o Internal speed limits; and o Use of truck turnaround areas.
Air Quality	The proponent shall take all practicable measures to ensure that air emissions during the construction and operation of the project are within relevant air quality and odour criteria and guidelines
Water	McWilliams will take particular care to minimise the water requirements of the operation and reduce waste water loads as far as practicable
Noise	Noise levels of all new equipment will be within guidelines for their specific purpose Noise attenuation of the new packaging facility will need to meet Council and EPA requirements

Waste	Waste disposal methods for solid waste will meet industry standards and environmental requirements as agreed with the EPA A waste water monitoring program will be developed with the EPA to ensure the facility has minimal impact on the environment
Land	Land application of waste water from operations will be monitored in line with EPA requirements
Heritage	The proponent will implement the recommendations of the Ozark report and take due care when excavating near the sites where objects have been found.
Biodiversity	The proponent will implement the mitigation measures as outlined in Table 3 of the GHD report.

8 PROJECT JUSTIFICATION

This Environmental Assessment reviews the risks of the proposed expansion and outlines measures to enable the proactive management of anticipated impacts. The assessments relating to specific impacts, and commitments made by the proponent indicate that the winery expansion will incorporate the necessary management plans to mitigate any significant environmental impacts.

McWilliam's Wines has operated in Australia for well over a hundred years and has recently embarked on a strategy to position themselves for future growth by consolidating their major winery operations at Hanwood, near Griffith in the Riverina. The next phase of the strategy is to:

- Expand the Hanwood Winery capacity from a nominal 34,000 tonnes crush to 65,000 tonnes, over a period of approximately 15 years.
- Establish a Bottling facility at Hanwood, reducing the throughput at the existing leased facility at Chullora in Sydney's west.
- Upgrade the Hanwood site services including the construction of a new Waste Water Treatment Plant that will provide water suitable for irrigation of grapevines.

The proposed staged development has an estimated cost of $53M and will provide benefits for the Riverina including:

- Creation of approximately 120 new jobs both in construction and operational stages
- Potential for 'springboard' effects in stimulating economic activity in related sectors such as transportation, materials manufacturing and housing construction.

The project supports the prominence of the Riverina Region in the context of the Australian wine industry and the global market.

9 DECLARATION

This Environmental Assessment reflects a true and fair review of the proposal that has been described. It addresses to the fullest extent possible, all matters that are likely to affect environmental values as a result of the proposal.

Michael Carson,
Report Author
JJC Operations Pty. Ltd.