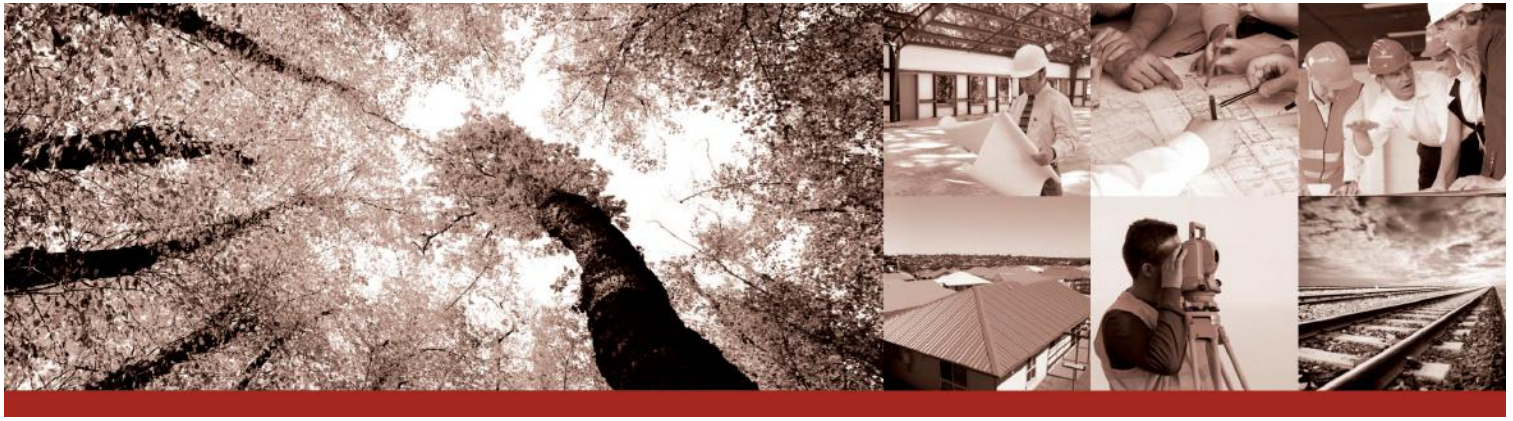




BINDAREE BEEF

PRELIMINARY ENVIRONMENTAL ASSESSMENT

For proposed

RENDERING PLANT & BIO- DIGESTER PLANT

7307 Gwydir Highway, Inverell 2360

Prepared for: Bindaree Beef
PO Box 405
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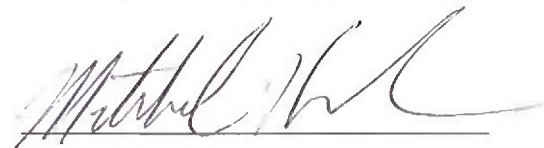
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1.0 Introduction

Bindaree Beef is one of Australia's largest meat processors and a prominent leader in the Australian meat industry.

It is a family owned and operated processing plant at Inverell in northern NSW capable of processing 1,100 cattle per day and employs over 700 people from the surrounding region. This operation is strategically located to ensure that Bindaree Beef can source cattle 12 months of the year.

Figure 1 provides a locality plan of the existing Bindaree Beef abattoir site.

With the introduction from 1 July 2012 of the carbon pricing regime by the Australian Federal Government, Bindaree Beef has become liable for a significant additional annual expense through carbon taxes and increasing electricity costs. As a result, Bindaree Beef management have investigated options of reducing carbon emissions by modifying or replacing their existing plant.

Currently Bindaree Beef annually emits approximately 29,000 tonne of carbon from the burning of coal and the releasing of bio-gas from an uncovered anaerobic lagoon.

In early 2013 Bindaree Beef Pty Ltd lodged an application through Aus-Industry Clean Technology Food and Foundries Investment Program for a new rendering plant and bio-digester plant. The outcome of this application has been successful with the Commonwealth funding near \$23 million as a dollar for dollar grant ratio towards the development.

The proposed project involves the installation of a wastewater treatment system (Bio-digester) and new render plant facility. The bio-digester generates bio-gas from productions, waste product and effluent, utilizing this gas for creating energy. This process eliminates the need for coal and reduces electricity needs. The net result is zero discharge of waste, improved environmental outcomes and a significant reduction in carbon emissions.



2.0 Development Need and Justification

The new plant creates a combination of conservative cost savings and new revenue streams totalling \$4.2 million for the first year of operation. The costing breakdown is detailed in Table 1.

Table 1: Costs Benefits

Categories of cost savings/additional income	Projected operation cost savings \$	Additional income \$	Total benefit \$
Reduction in coal costs	1,072,282		1,072,282
Reduction in electricity costs	325,872		325,827
Reduction in paunch cartage costs	46,669		46,669
Reduction in repairs and maintenance costs	313,220		313,220
Reduction in carbon tax costs	685,501		684,501
Increase in fertilizer revenue		1,752,000	1,752,000
Increased in Large-scale Generation Certificates (LGCs) revenue		44,150	45,150
Total	2,442,544	1,796,150	4,238,694

Other benefits of the project include:-

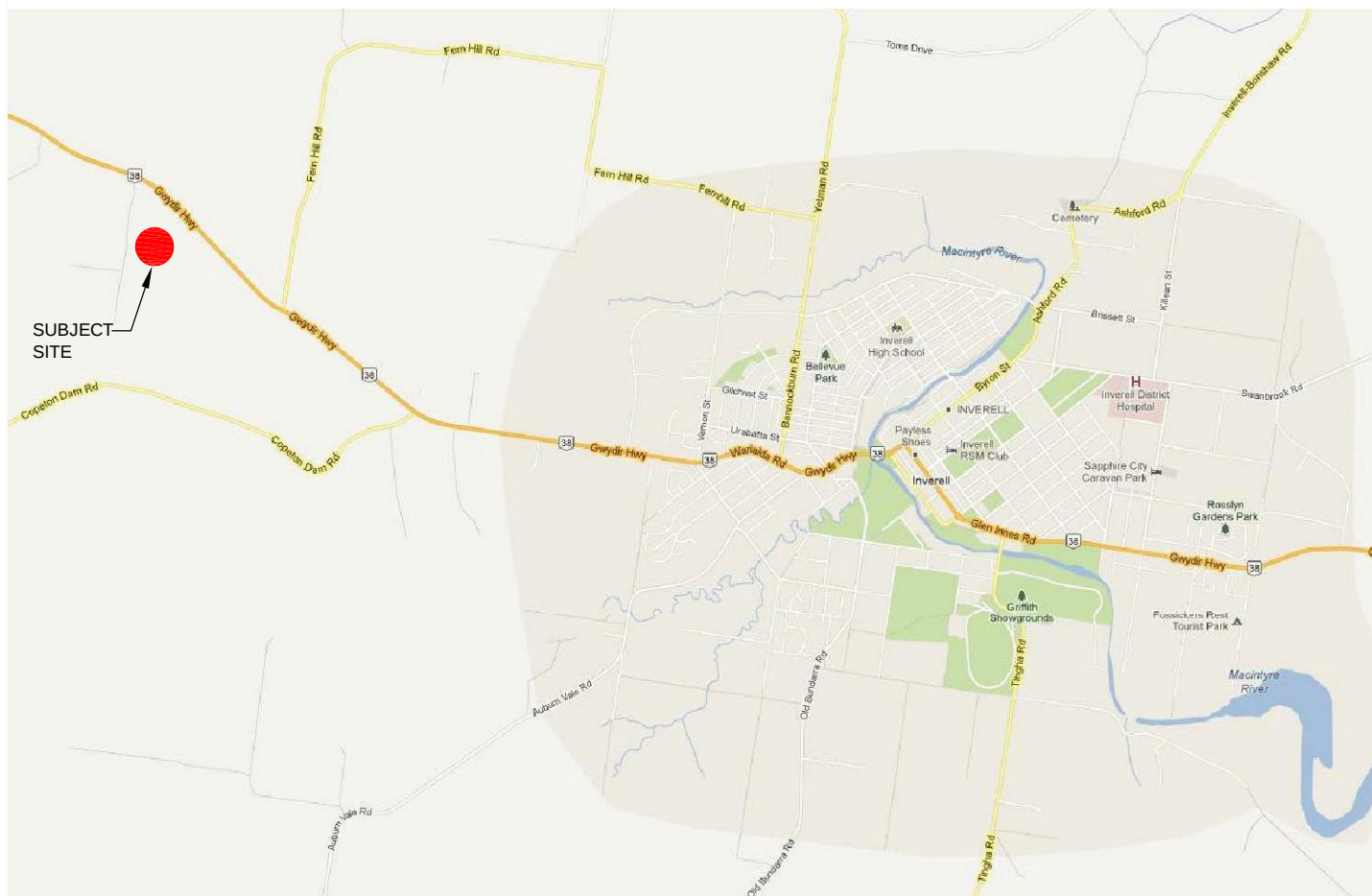
- The improvement in the quality of waste water from Class D to Class A and the utilisation of this water to irrigate crops which will in turn be used as feedstock in the bio-digester;
- The removal of the need to place approximately 4,000 tonnes of paunch material and coal ash as on-site landfill each year;
- The introduction of leading technology to the red meat industry which will increase competitiveness and improve environmental outcomes.



The total project investment required is estimated at \$49 million. This is split between approximately \$35 million for the bio-digester and \$14 million for the new energy efficient render plant and bio-gas fired boiler.

Bindaree Beef have invested over \$1.5 million over the past 18 months in installing and operating a pilot plant which seeks to test the methodology and technology being proposed. The pilot plant results thus far have confirmed and exceed the expected results based on the original concept design.

Mitchel Hanlon Consulting Pty Ltd has been engaged to prepare a Preliminary Environmental Assessment for the proposed new rendering plant and new bio-digester plant at Bindaree Beef's existing abattoir 7307 Gwydir Highway, Inverell and request that Department of Planning and Infrastructure provide the Director General's Requirements (DGRs) prior to the preparation of Environmental Impact Statement (EIS).





3.0 Site Details

3.1 Site Location

Bindaree Beef is located approximately 3 km west of the township of Inverell in northern NSW within the Inverell Shire Council local government area. The area of the abattoir and surrounding holding pens is 143 ha, whilst the adjoining farm “Alsace” is 491 ha which is also owned by Bindaree Beef.

Figure 1 provides a locality plan of the existing Bindaree Beef abattoir site.

The township of Inverell, with a population of 16,000 is located approximately 500 km north-west of Sydney.

Figure 2 provides an aerial locality plan of the existing Bindaree Beef and its landownership.



Table 2 provides the detailed property description of the Bindaree Beef operations.



Table 2: Property Details

Ownership	Lot	DP	Area (approx.)	Infrastructure
Yolarno Pty Ltd	83	753638	120ha	Abattoir, car park, storage ponds, holding paddocks
	1	1028323	17.64ha	Storage shed
	2	1028323	13.29ha	Nil
	1	373572	4.178ha	Residence
	3	826018	22.90ha	Nil
	2	826018	2.015ha	Residence
	155	753638	42.80ha	Nil
	106	753638	16.43ha	Nil
	42	753638	32.39ha	Nil
	359	753287	18.29ha	Nil
	360	753287	19.49ha	Nil
	336	753287	19.65ha	Nil
	335	753287	15.58ha	Nil
	337	753287	15.88ha	Nil
	105	753638	80.98ha	Nil
	22	1097270	73.86ha	Nil
N McDonald	7	238696	89.78ha	Residence
K Newton	2	1094304	14.80ha	Nil
	234	753287	39.11ha	Residence
L Belbeck	404	753287	24.11ha	Residence
668.37ha				





3.2 Site History

The abattoir operation was established on the subject site in 1951, as North West Abattoir, originally for both cattle and sheep. However, sheep have not been processed at the abattoir since 1976.

The existing plant has a long history in its strategic location in the Inverell district. Originally built and operated by the Smorgon Group, it has always been a high volume processing facility.

Bindaree Beef have owned and operated the abattoir at Inverell, since acquisition of the facility in 1995.

Inverell has a favourable strategic position as a livestock and freight hub. There is also a need to create process efficiencies that support future processing of meat packaged for the domestic and international markets.

The facility includes:-

- Unloading yards and holding pens;
- Boning rooms;
- A rendering plant for processing animal by-products into tallow and meat/blood/bone meal;
- Cold storage and freezer areas;
- Slaughter floor;
- Workshops;
- Boiler;
- Car parking; and
- Administration buildings.

Table 3 below provides a summary of recent development applications lodged and there outcomes for the site. None of these applications impact upon the proposed rendering plant and bio-digester plant.



Table 3: Summary of Development Applications for the Bindaree Beef

DA No.	Project	Project description details	Approval date	Approval authority
DA 158/2007	Storage shed	Shed location was modified and new DA issues	2007	Inverell Shire Council
DA 93/2008	Storage shed	Construction of a storage shed	2008	Inverell Shire Council
DA 93/2008-AM2	Cut and fill	Application for cut and fill for site works associated with the building of the storage shed	2008	Inverell Shire Council
DA 86/2009	New industrial development	DA was lodged but did not proceed		

3.3 Surrounding and Adjoining Land Uses

Bindaree Beef is largely surrounded by rural land.

There are a number of smaller rural holdings to the western side of the subject property on McNeils Lane and Wattle Hill Road. These properties are outside the 1.5km buffer on the Inverell LEP 2012. See Section 4.8 of this Report for further details on the 1.5km buffer.

The closest residential property (not owned by Bindaree Beef) from the centre of the abattoir buildings is approximately 550m on the Gwydir Highway.

The Department of Environment and Climate Change has a depot approximately 2.3km to the east of the subject site along Gwydir Highway.

3.4 Existing Operations

Figure 3 below provides an on aerial interpretation of the site operations at the Inverell site.

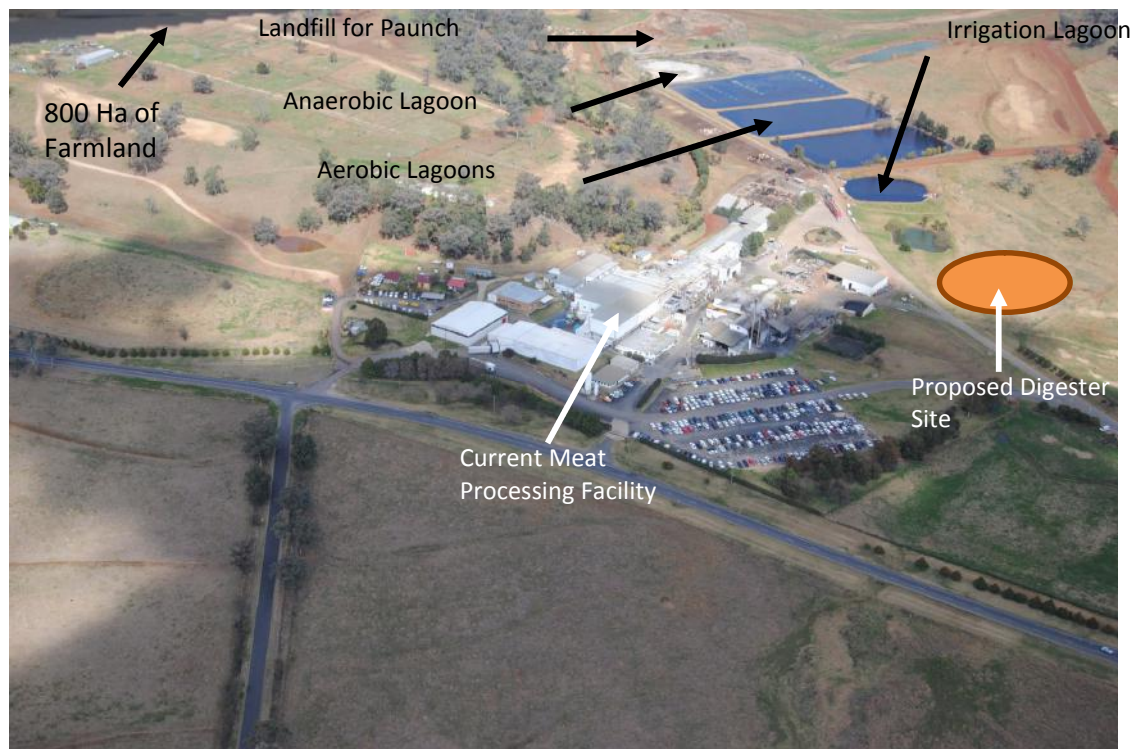


Figure 3: Site photo

The current waste processing process at Bindaree Beef involves:-

- All waste effluent travels through a trommel and flotation tank before being pumped to anaerobic lagoon releasing 11,334 tonnes of CO_2 emissions into the atmosphere in 2011-2012. From the lagoons, waste water is pumped to the farm for irrigation.
- Paunch material is separated at trommel and trucked to the farm as land fill.
- Steam (for render cooking and heating) is produced by two coal-fired boilers (using 7,181 Tonnes of coal per annum, producing 17,145 T CO_2 -e emissions to atmosphere).
- All animal by-products from the processing areas is cooked up in two inefficient 1200 series cookers using steam generated by the coal fired boiler, flowing into four meal presses. From here it is loaded out as meat meal or tallow.



4.0 NSW Statutory Planning Requirements

The applicable planning legislation is detailed in the following sections.

4.1 Project Definition

The existing beef abattoir operation at Bindaree Beef is defined as “*Rural Industry – Livestock Processing Industry*” under the Inverell Local Environmental Plan 2012 (LEP 2012) being defined as:-

Livestock processing industry means a building or place used for the commercial production of products derived from the slaughter of animals (including poultry) or the processing of skins or wool of animals, derived principally from sourcing districts, and includes abattoirs, knackeries, tanneries, wool scours and rendering plants.

The proposed new rendering plant falls within the use definition of *Livestock processing industry*.

The site that Bindaree Beef operates from is zoned RU1 – Primary Production under the LEP 2012. *Rural Industry* is a permitted use with consent within the RU1 zone.

The proposed bio-digester plant is defined as “*Electricity generating works and heat or co-generation*” under the State and Regional Development State Environmental Planning Policy (SEPP).

The proposed bio-digester is considered an ancillary component to the operation of the abattoir.

4.2 Environmental Planning and Assessment Act 1979 (as amended)

While the vast majority of development applications in New South Wales are assessed and determined by local council, there are a small number of projects whose scale, significance or potential impacts mean they are of regional or State, rather than just local, significance.



The State's planning system has, for more than 30 years, allowed for such projects to be dealt with by the NSW Government.

For these projects, the planning system consists of two separate assessment frameworks, State significant development (SSD) and State significant infrastructure (SSI).

The Bindaree Beef Project falls into the use class “*electricity generating works and heat or co-generation*” in Schedule 1 of the State and Regional Development State Environmental Planning Policy (SEPP). It is defined as:-

20 *Electricity generating works and heat or co-generation*

Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, bio-fuel, distillate, waste, hydro, wave, solar or wind power) that:

- (a) has a capital investment value of more than \$30 million, or*
- (b) has a capital investment value of more than \$10 million and is located in an environmentally sensitive area of State significance.*

The Bindaree Beef project does not fall within an environmentally sensitive area of State significance but has a capital investment of \$43 million and therefore falls under section (a) of the electricity generating works and heat or co-generation definition under Schedule 1 of the SEPP.

See section 4.4 for further detailed commentary on SSD and SEPP (State and Regional Development) 2011.

4.3 Environmental Planning Regulation 2000 (as amended)

The Environmental Planning and Assessment Regulation 2000 (as amended) requires that a formal request be lodged with the Director General of the Department of Planning and Infrastructure prior to preparing an Environmental Impact Statement (DGRs).

This Preliminary Environmental Assessment has been prepared to accompany a formal request to the Director General for the requirements to be addressed by the Environmental Impact Statement.



4.4 State Environmental Planning Policy (State and Regional Development) 2011

The aims of State Environmental Planning Policy (State and Regional Development) 2011 (SEPP(SRD)) are as follows:-

- (a) to identify development that is State significant development;
- (b) to identify development that is State significant infrastructure and critical State significant infrastructure;
- (c) to confer functions on joint regional planning panels to determine development applications.

As outlined in section 4.2 of this Report the Bindaree Beef project has been identified as State Significant Development and is therefore subject to and guided by SEPP (SRD).

Figure 4 provides a flow chart outlining the planning process for State Significant Development.

Before preparing an Environmental Impact Statement (EIS), Bindaree Beef must request Director-General's environmental assessment requirements (DGRs) for the proposed development.

Bindaree Beef lodged a preliminary project outline with the DP&I, followed by a meeting with DP&I officers in Sydney in March 2013.

On 27 March 2013, an officer from the DP&I provided preliminary feedback on the information lodged by Bindaree Beef on the project requesting additional information be supplied before the process of preparing DGRs could proceed.

Following further discussions with the DP&I officers, the preliminary project outline was withdrawn at the request of the DP&I on the 21 May 2013.

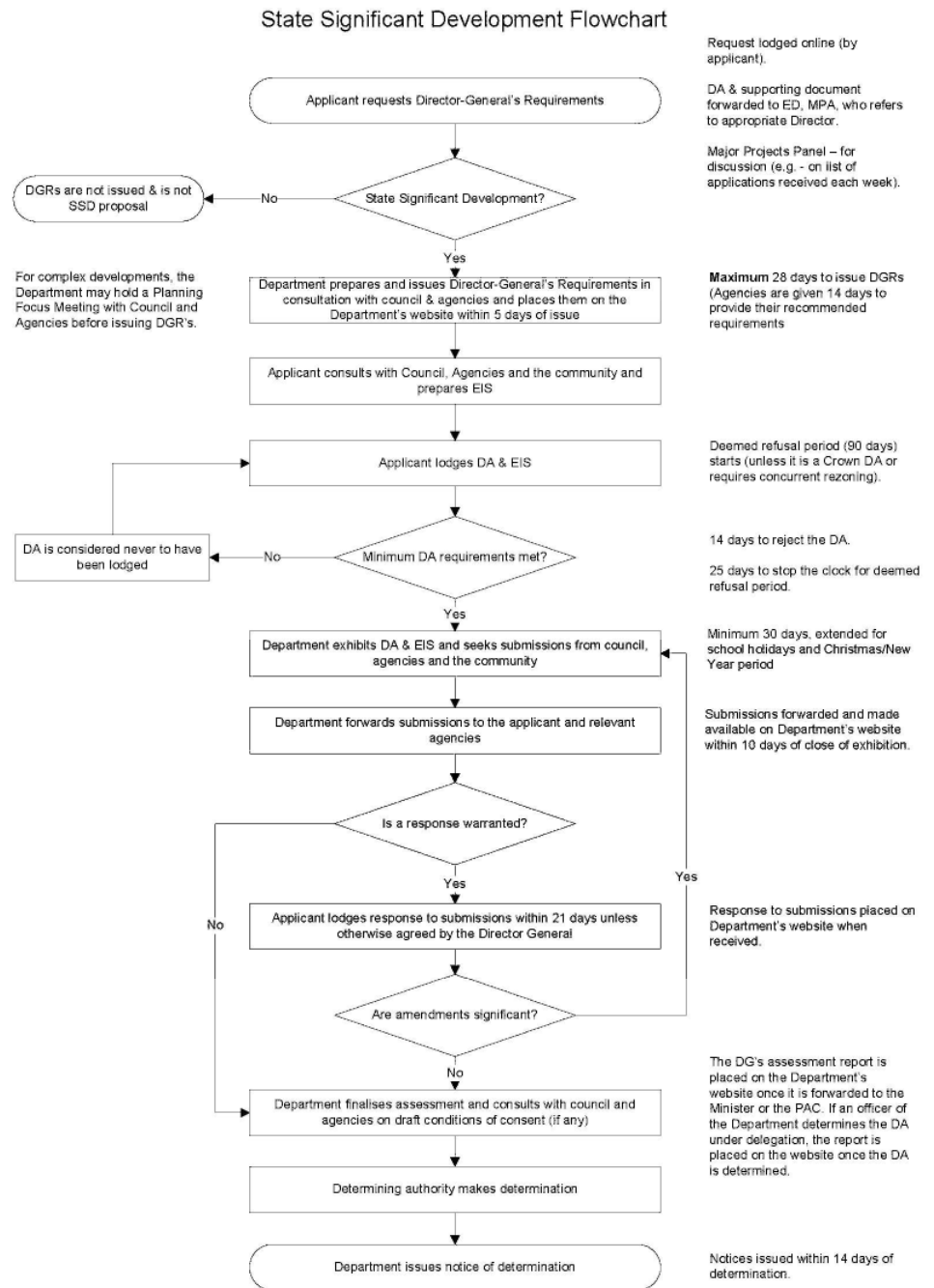


Figure 4: State Significant Development Flow Chart



4.5 Other Relevant State Environmental Protection Policies

There are a number of other State Environmental Policies (SEPPs) that are considered relevant to the project which include:-

- SEPP – Rural Lands 2008;
- SEPP 44 – Koala Habitat Protection;
- SEPP 55 – Remediation of Land;
- SEPP – Infrastructure 2007;
- SEPP 33 – Hazardous and Offensive Development.

4.6 Capital Investment Value

Details of the cost of carrying out the proposed development must be provided at the time of lodgment of the DA. Usually a quantity surveyor's report must be provided to confirm the value of the development where the development is SSD because of its capital investment value.

The estimated value of the project is \$49 million, being \$35 million for the bio-digester plant and \$14 million for the rendering plant.

The costings undertaken for the project are based on quoted prices from key suppliers. The application has also been reviewed by GHD, Meateng, Aus-Industry and the federal Government as part of the Aus-Industry funding application. This information can be provided at the time of lodging the application.

Due to the extensive independent reviews that have been undertaken a quantity survey's report will not be provided.

4.7 Regional Environmental Plans

There are no Regional Environmental Plans applicable to the Site.



4.8 Inverell Local Environmental Plan 2012

The Bindaree Beef operation including an existing abattoir and rendering plant is located on Lot 83 DP 753638, 7307 Gwydir Highway, Inverell (the site).

Under the Inverell Local Environmental Plan 2012 (LEP 2012) the site is zoned RU1 Primary Production. The zone is defined as follows:-

Zone RU1 Primary Production

1 Objectives of zone

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*

2 Permitted without consent

Environmental protection works; Extensive agriculture; Flood mitigation works; Forestry; Home-based child care; Home occupations; Moorings; Roads

3 Permitted with consent

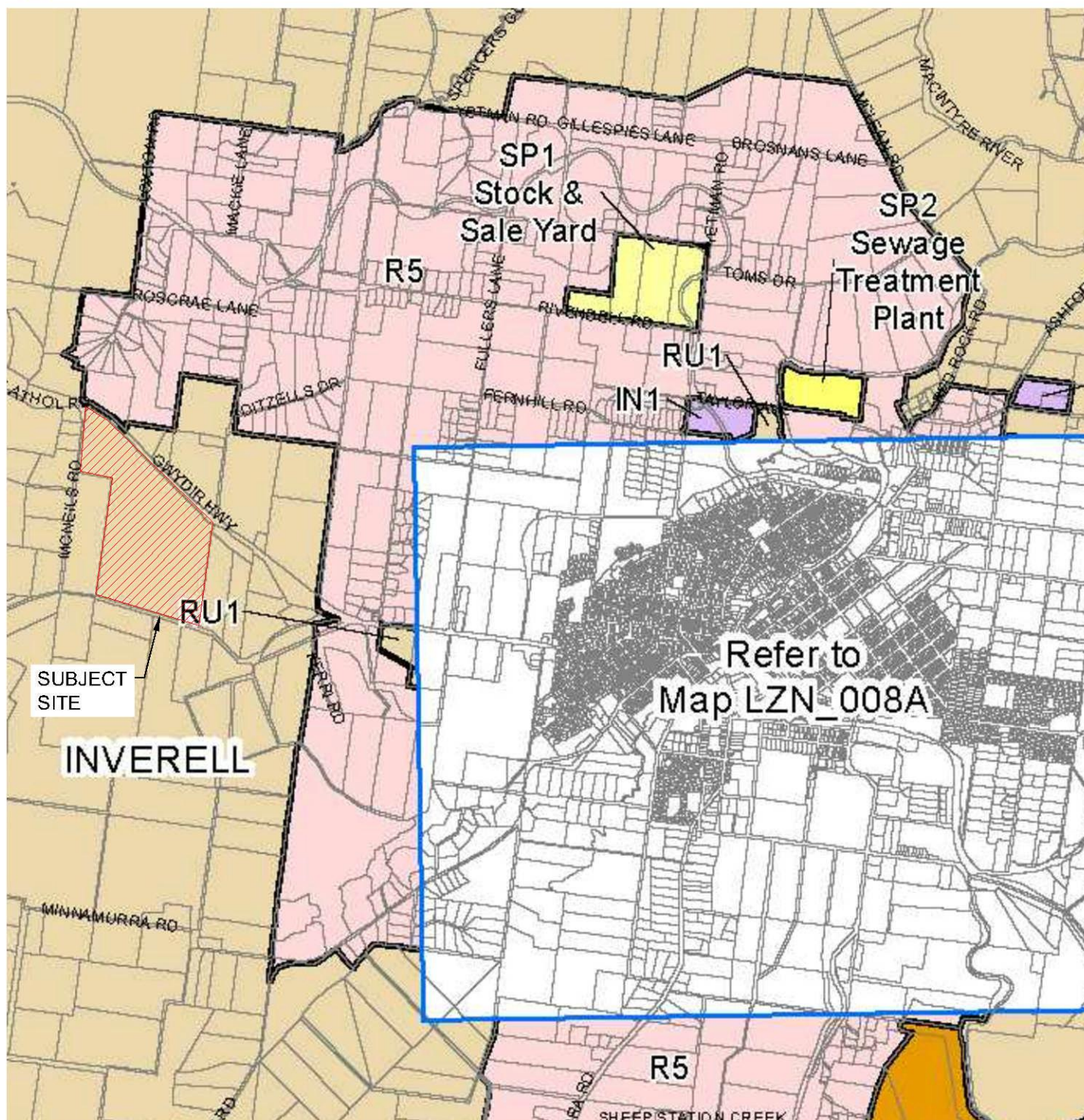
Air transport facilities; Airstrips; Animal boarding or training establishments; Aquaculture; Backpackers' accommodation; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Camping grounds; Caravan parks; Cellar door premises; Cemeteries; Community facilities; Correctional centres; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities; Environmental facilities; Extractive industries; Farm buildings; Farm stay accommodation; Function centres; Helipads; Home businesses; Home industries; Information and education facilities; Intensive livestock agriculture; Intensive plant agriculture; Jetties; Kiosks; Landscaping material supplies; Mooring pens; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Roadside stalls; Rural industries; Rural supplies; Rural workers' dwellings; Signage; Vehicle repair stations; Waste or resource management facilities; Water recreation structures; Wharf or boating facilities

4 Prohibited

Any development not specified in item 2 or 3

Figure 5 shows the LEP 2012 zoning for the site.

B1	Neighbourhood Centre
B2	Local Centre
B5	Business Development
E1	National Parks and Nature Reserves
E3	Environmental Management
E4	Environmental Living
IN1	General Industrial
R1	General Residential
R5	Large Lot Residential
RE1	Public Recreation
PE2	Private Recreation
RU1	Primary Production
RU5	Village
SP1	Special Activities
SP2	Infrastructure





Clause 6.5 Development within a designated buffer area of the LEP 2012 also affects the site. This clause states:-

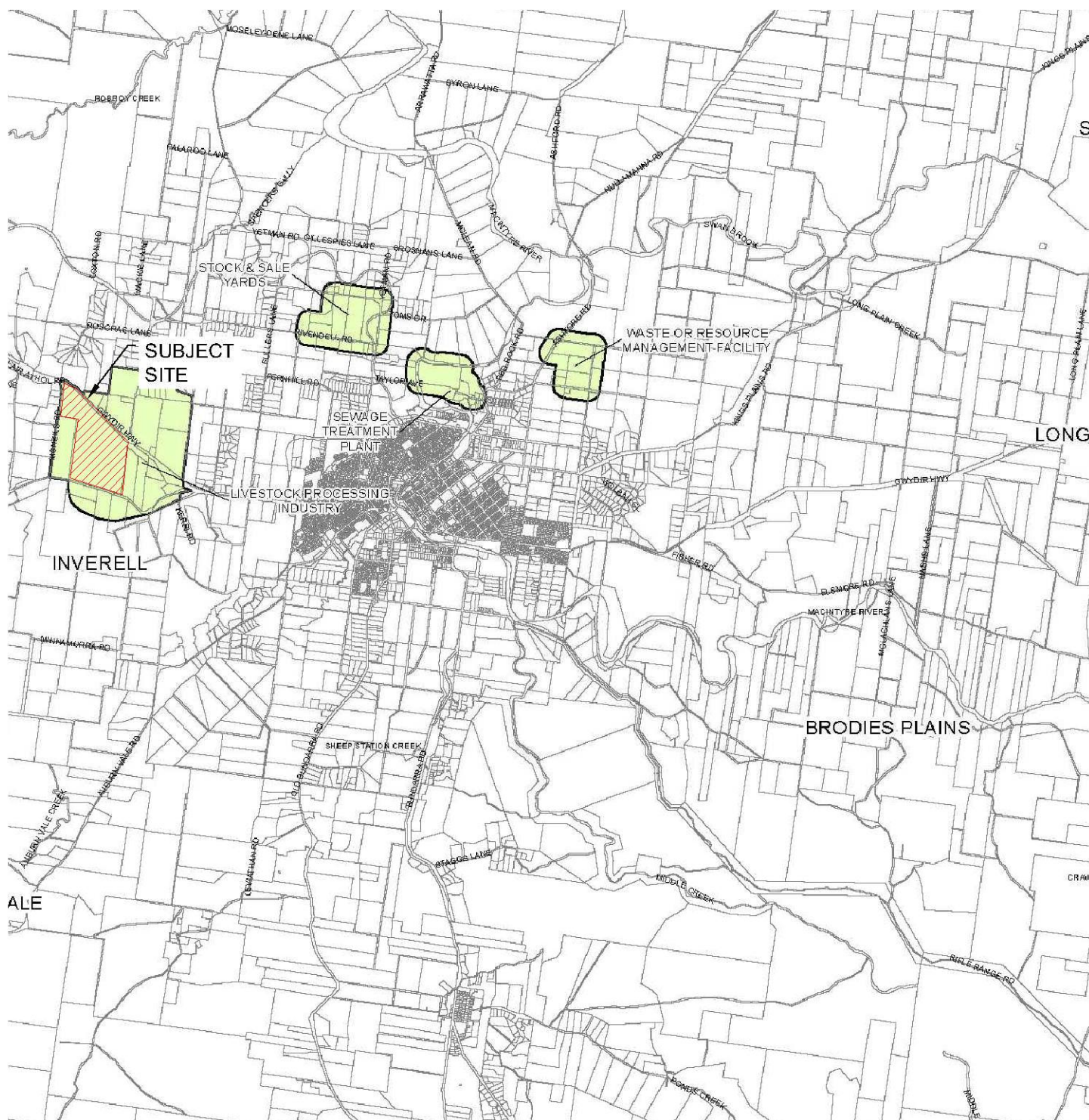
6.5 Development within a designated buffer area

- (1) The objective of this clause is to protect the operational environment of a livestock processing industry, a stock and sale yard, a sewage treatment plant and a waste or resource management facility.*
- (2) This clause applies to the land identified as “Livestock processing industry”, “Stock and sale yards”, “Sewage treatment plant” and “Waste or resource management facility” on the Designated Buffer Map.*
- (3) Before granting development consent for development on land to which this clause applies, the consent authority must consider the following matters:*
 - (a) the impact that any noise and other emissions associated with existing land uses would have on the proposed development,*
 - (b) any proposed measures incorporated into the development that limit the impact of such noise and other emissions associated with the existing land use,*
 - (c) any opportunities to relocate the proposed development outside the land to which this clause applies,*
 - (d) whether the proposed development would adversely affect the operational environment of any existing development on the land to which this clause applies.*

Figure 6 shows the “designated buffer map”.

As the objective of this clause of the LEP 2012 states, it is to protect the operation environment of the existing Bindaree Beef.

The project will not impact upon the buffer, complies with the objective of clause 6.5 and enhances the long term viability of the Bindaree Beef site.





4.9 Inverell Development Control Plans

Development Control Plans (DCPs) do not apply to SSD. This is as a result of DCPs being generally concerned with local or specific issues and do not provide appropriate planning controls for large, complex developments of importance to the State or region. However, a local council can identify controls within a DCP that relate to a proposed SSD DA and request that they be addressed in the EIS.

A review of Inverell's DCPs reveals that it is considered that none of the DCPs are applicable to this project.



5.0 The Development

5.1 Current operations

As briefly described in Section 3.4 of this Report the current operations at Bindaree Beef are outlined in the following flow chart (Figure 7).

Cattle processing flow chart

Bindaree Beef

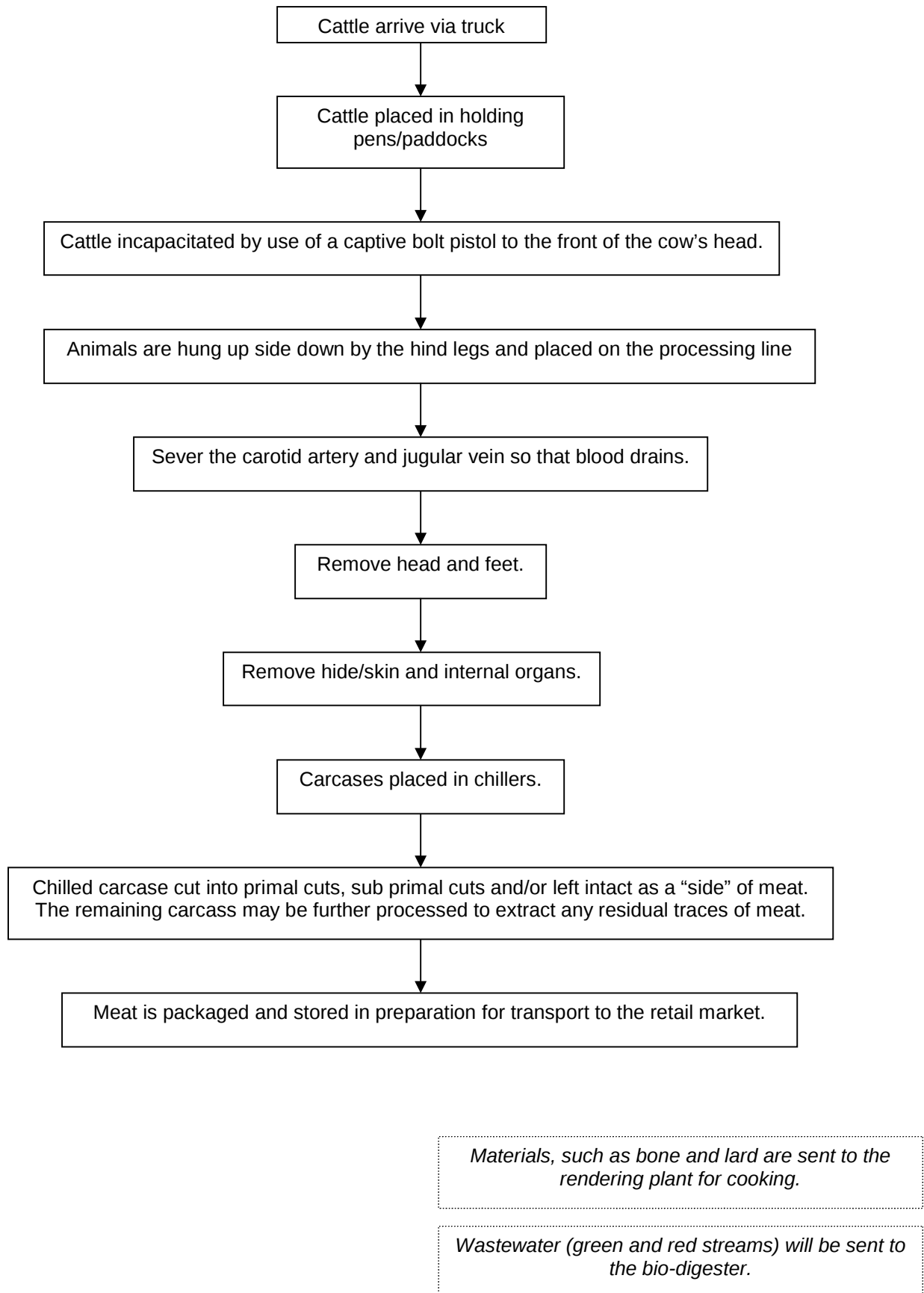


Figure 1: Cattle processing flow chart



5.2 Proposed operations

In its simplest form, the Bindaree Beef project consists of:-

- A new, highly effective waste treatment system that will produce biogas, clean water and liquid fertilizer;
- A biogas utilization system that will generate power and steam for on-site use;
- A new state-of-the-art energy efficient render plant that will use less electricity and steam.

There will be no modifications to how the cattle are processed as outlined in Figure 7, apart from the wastewater (red and green stream waste) being redirected to the bio-digester

In addition to Figure 7, Figure 8 diagrammatically shows the current manufacturing operations at Bindaree Beef. As Figure 8 shows the waste generated from the current processing of cattle at Bindaree Beef includes:-

- Paunch and manure (green waste stream)
- Bone and skin;
- Blood and wash down water (red waste stream)

The Project will have a significant impact on the manufacturing process by transforming what where previously considered waste products into new energy sources. This Project will reduce the taxable carbon footprint (coal and wastewater emissions) by 95% and will reduce the overall emissions by 61%. It will also dramatically reduce the abattoir's operating costs while generating new sources of income.

Figure 10 shows the proposed layout for the new rendering plant and bio-digester plant.

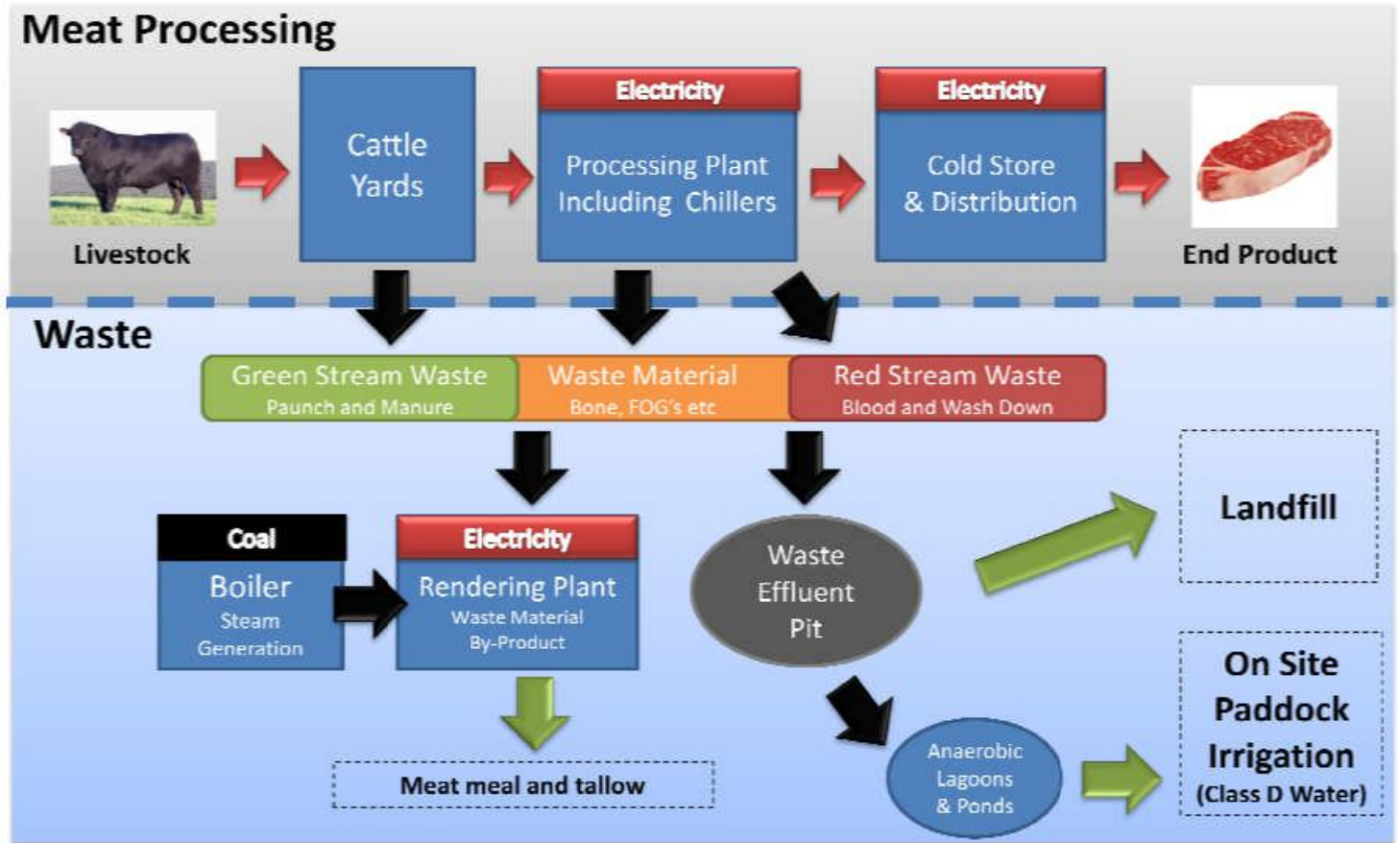


Figure 8: Current Manufacturing Operation



Figure 9 diagrammatically shows the proposed manufacturing operations of Bindaree Beef following the introduction of the bio-digester plant.

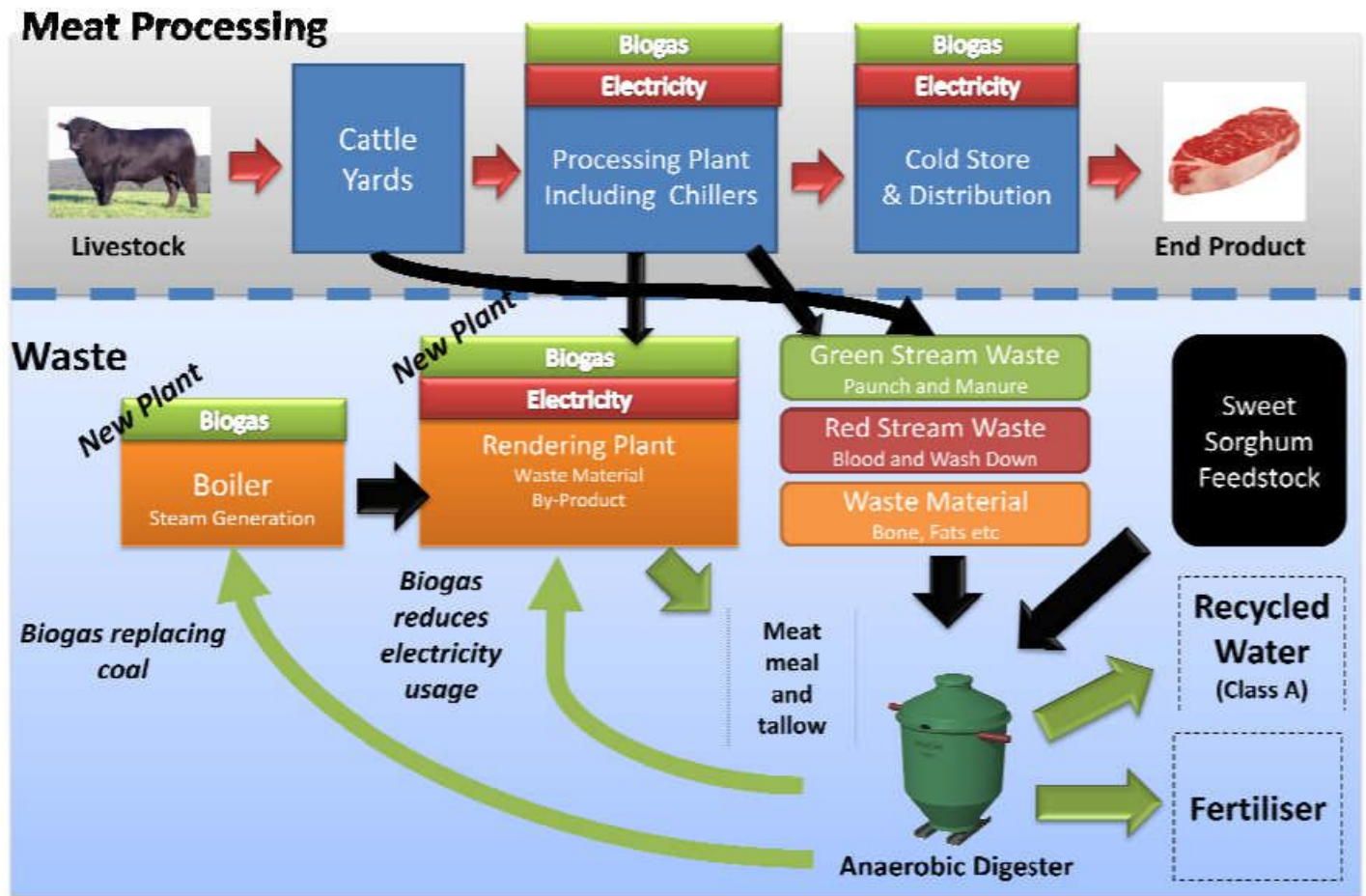
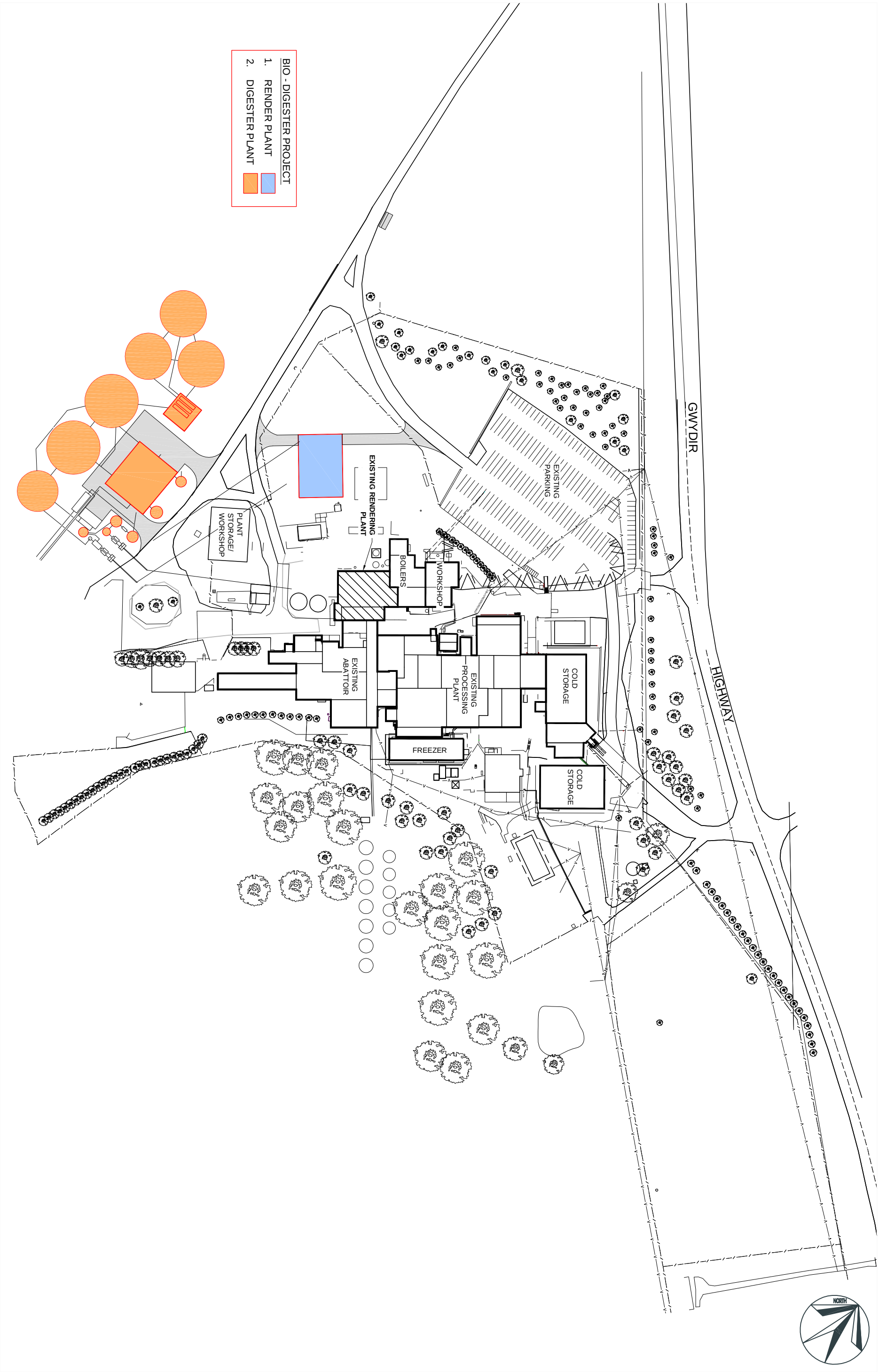


Figure 9: Proposed Manufacturing Operation



Site Plan Bindaree Beef

Inverell

FIGURE 1.1



5.3 Bio-digester Plant

All Bindaree Beef's organic waste matter will be diverted from high-emitting anaerobic lagoons into an on-site state-of-the-art anaerobic Mesophilic Bio-digester. The process will have zero discharge within a "closed loop" system.

The Bio-digester will be installed near the current processing plant. All waste effluent (red stream, green stream, paunch and cattle yards material) will be directed through the digester process. All emissions (methane) will be captured and stored in domes for use.

Methane from the bio-digester will be used to run boilers to create hot water and steam, for use within the meat processing plant. Methane will also be used to generate electricity on-site.

The switch to renewable energy generated by the bio-digester means the abattoir will eliminate 100% of the current 7,200 tonnes of coal needed to fire the render plant boilers.

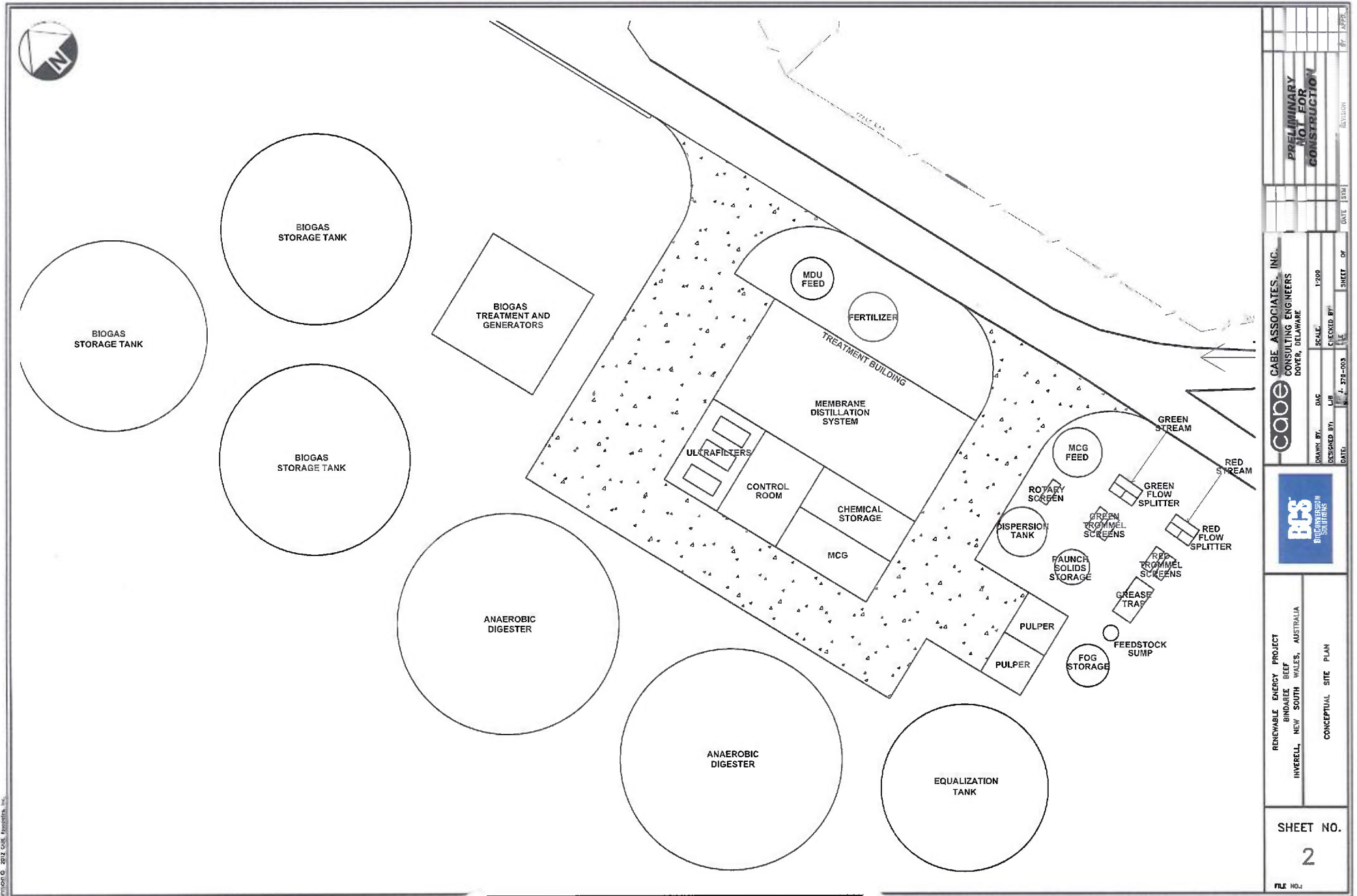
5.4 Methane Gas Storage

The bio-digester plant will have three (3) dome shaped biogas storage tanks (bladders). Figure 11 shows the layout of the bio-digester plant.

The bladders are 24.5m in diameter and 7.5m high. They contain a dual membrane system which uses fans to pressurize the air space between the membranes. This provides a consistent positive pressure to the gas contained within the inner membrane. The inner membrane is then free to inflate and deflate, depending on the amount of gas stored, however the outer membrane remains fully inflated.

At full capacity, each bladder will contain 9,000m³ of methane gas. The bladders will be at full capacity at the beginning of the week and will decrease in volume towards the end of the week then return to full capacity over the weekend.

5. BCS - Proposed Biodigester Site Layout



PRELIMINARY NOT FOR CONSTRUCTION		DATE: 1/20/09 BY: JSP
CABE ASSOCIATES, INC. CONSULTING ENGINEERS DOVER, DELAWARE		SCALE: 1"=200' CHECKED BY: JSP DATE: 1/20/09
BCS BIOCONVERSION SOLUTIONS		SHEET NO. 2 OF 2
RENEWABLE ENERGY PROJECT BINDAREE BEEF INVERELL, NEW SOUTH WALES, AUSTRALIA		CONCEPTUAL SITE PLAN
SHEET NO. 2		FILE NO. 1



5.5 By products

Waste water from the bio-digester will enter a filtration system which will produce a number of by products:-

- Liquid organic fertilizer - approximately 16,000L/day of liquid organic fertiliser will be produced. This by-product of the digester process is homogenized, stabilised and pathogen free.

Bindaree Beef are currently developing a project plan supported by a business case for the liquid fertiliser component of the Project.

- Class A recycled water – which will be used for irrigation of sweet sorghum crops (approximately 261ha) which will in turn be used as feedstock for the bio-digester. Additionally the water can be used for activities such as toilet flushing, wash downs, water of sporting facilities and gardens.

Bindaree Beef farm comprises approximately 634ha. The current operations on the site include irrigation of Class D waste water over 140ha of this land. The Class D waste water is high in soil nutrients which have continued to accumulate over the years.

An additional benefit of the sweet sorghum crops is the crop will assist in addressing the build up of soil nutrients as of a result of waste water irrigation on the site over a number of years. It is intended to grow two crops of sweet sorghum per season.

Any additional Class A will be stored in the existing dams on the Bindaree Beef property.

5.6 Render Plant

A render plant processes inedible cattle by-products from the abattoir and converts this waste material into value-added materials.

The existing render plant is well over 30 years old, is inefficient and requires increased maintenance. The operation has two process lines (cookers) operating at maximum capacity and energy usage levels. Older equipment has inherent emission and mechanical inefficiencies. These inefficiencies can only be overcome with the installation of a state-of-the-art rendering facility adopting the latest technology in energy efficiencies. The proposed process achieves a greater thermal outcome and reduced electrical load with a more effective handling of product from raw material to load out.

It is proposed to replace the existing process with a single line unit with greater thermal and energy efficiency.

The new render plant is designed to eliminate the reliance on coal and



reduce the electricity consumption.

The meat processing machinery, or render plant, will be upgraded to the latest energy efficient technology that makes better use of steam and electricity.

The building will be fully enclosed, well ventilated with point source extraction for odour control.

The rendering building will have three separate process areas:-

- Raw material receival;
- Wet area for cooking and pressing; and
- Dry product and storage areas.

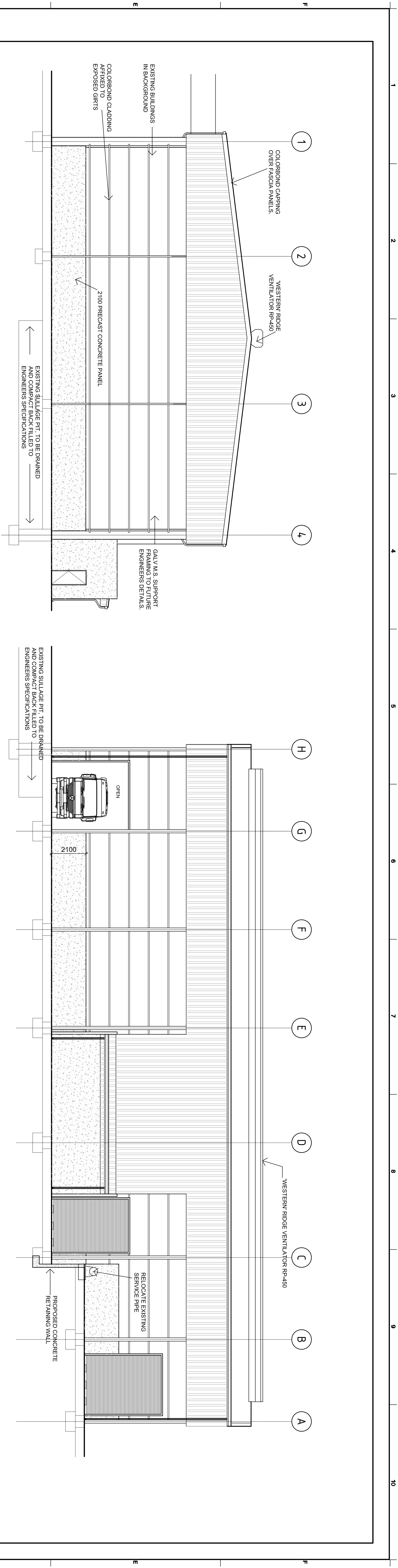
The building footprint will be approximately 41m long x 24m wide x 10m high.

An integral part of the new rendering plant is the use of renewable energy source (methane gas from the bio-digester plant) as a fuel source for the steam boilers.

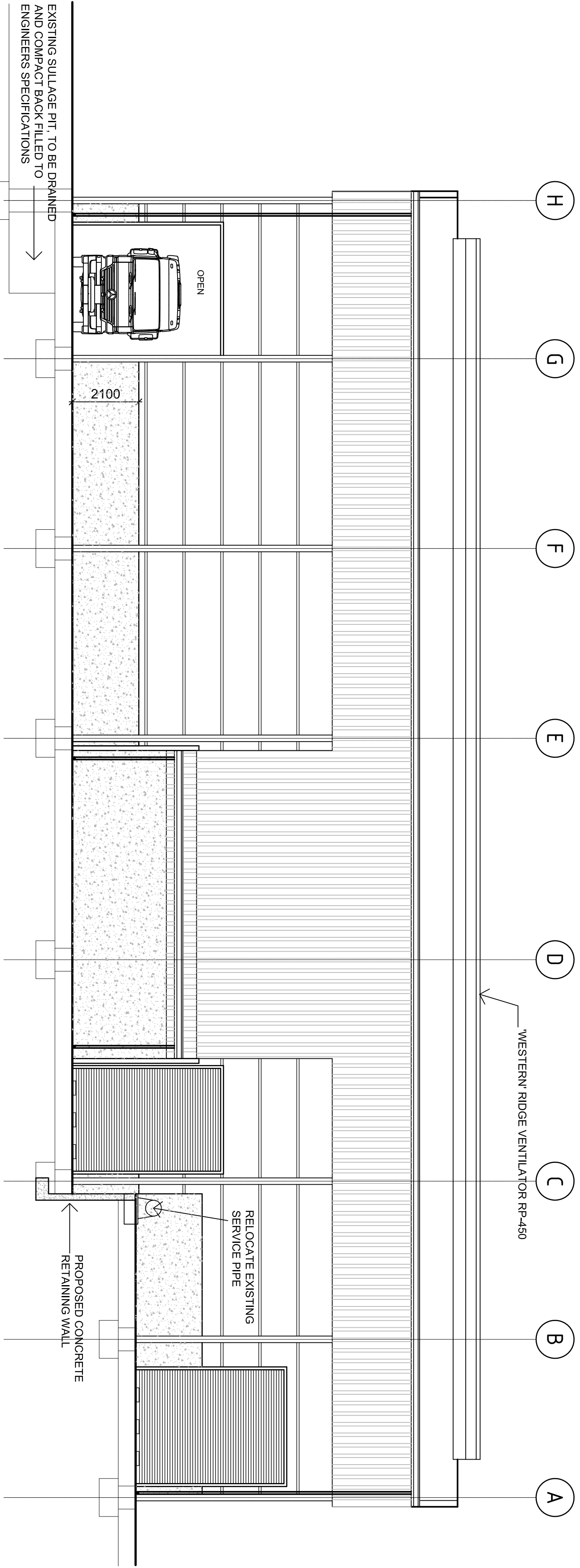
The existing plant has two coal fired boilers for generating steam, primarily for heating the continuous cookers. The proposed render plant has reduced thermal loading and will rely upon steam generated by a single Bio-gas fired boiler.

There will be no operational down time with the commissioning of the new plant as the existing plant will continue to operate.

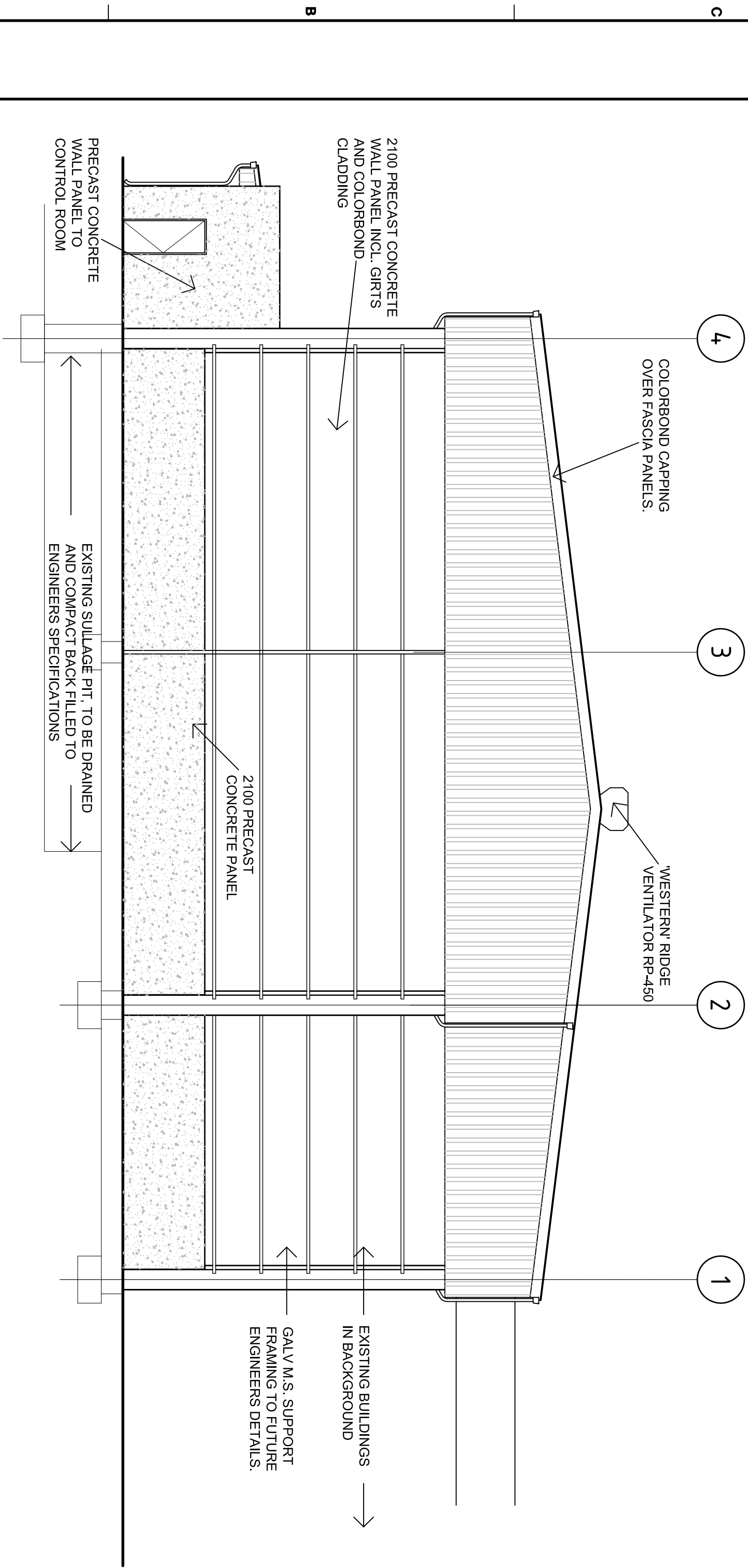
Figure 12 shows preliminary elevations of the new rendering plant.



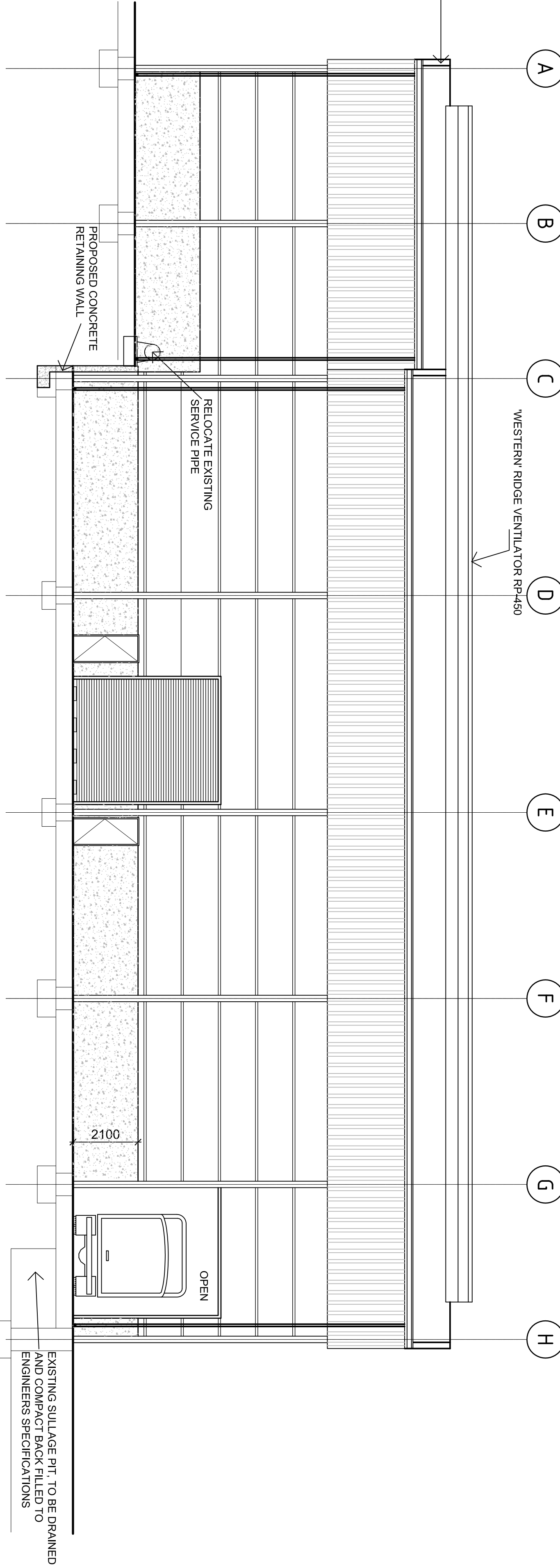
NORTH WEST ELEVATION



SOUTH WEST ELEVATION



NORTH EAST ELEVATION



NORTH WEST ELEVATION

1 RENDER PLANT EXTENSIONS - ELEVATIONS 1:100

DATE	REVISION	ISSUE
28.9.11	ISSUE TO CLIENT	A

1:100	0 100 200	0 100 200	0 100 200	0 100 200	0 100 200	0 100 200	0 100 200	0 100 200	0 100 200
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CLIENT: BINDAREE BEEF PTY LTD	PROJECT: RENDER PLANT EXTENSION	DRAWING: PRELIMINARY ELEVATIONS	MEATENG 312-016/30 P65 A
CONSULTANT: MEATENG	DRAWN: DK	CHECKED: DK	DATE: SEPT 2011

312-016/30	P65	A
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5.7 Construction

There will be a number of stages in the construction for the Project. These are outlined in Table 4.

Table 4: Construction timetable

Stage	Works		Estimated Construction
Stage 1	• Site preparation	Bio-Digester Plant	February – June 2015
	• Site earthworks		
	• Preparation and construction of foundations	Rendering Plant	January – April 2015
Stage 2	• Structural and building works	Bio-Digester Plant	May – November 2015
		Rendering Plant	April – October 2015
Stage 3	• Installation of bio-digester tanks	Bio-Digester Plant	August – November 2015
	• Installation of bio-gas pre-treatment and storage bladders		
	• Installation of green and red stream trommels, pipe work and pumps		
	• Installation of generators and switchgear	Rendering Plant	July – October 2015
	• Installation of boiler		
	• Installation of rendering plant		
Stage 4	• Commission and verification	Bio-Digester Plant	October 2015 – February 2016
		Rendering Plant	October 2015 – February 2016

The Bio-digester uses American technology, some equipment will be purchased off-shore, with the rest being purchased and/or made in Australia.

The rendering equipment will all be purchased from an Australian manufacturer.



5.8 Decommissioning

The existing rendering plant will be decommissioned and anaerobic lagoon reduced in size once the new rendering plant and bio-digester plant are constructed. The details of the decommissioning are outlined in the following sections:-

5.8.1 Rendering Plant

The existing rendering plant will continue to operate whilst the new plant is being constructed and validated for operation. Once fully operational the existing plant will be decommissioned. This will include the removal of the existing DAF.

The plant will be disassembled and removed from the site overtime.

5.8.2 Aerobic and Anaerobic Lagoons

Conventional waste water treatment systems, as adopted at Bindaree Beef, require a series of anaerobic and aerobic lagoons to treat the wastewater prior to reuse for irrigating crops and pasture. Typically an abattoir slaughtering 1000 head of cattle per day will use approximately 2ML of water per day with around 1.5ML of this being directed to the effluent treatment system.

The new bio-digester will convert the organic waste into methane rich biogas that will then be used to generate electricity.

The anaerobic lagoon is presently completely covered with a thick, natural floating crust which minimizes odour emissions. Bindaree Beef proposes to reduce the size of the anaerobic lagoon and clean all sludge out of the aerobic lagoons. The sludge from the aerobic lagoons will be fed to the bio-digester as a food stock. These lagoons will then be used as water storage of the Class A water during wet weather.

Clean out of the three (3) aerobic lagoons will only occur once the new bio-digester is commissioned and operating.

The anaerobic lagoon will be reduced in size and used to maintain a supply of the bio-digester “bugs”.



6.0 Key Environmental Issues

6.1 Noise

There is potential for increased noise as a result of the Project, particularly during construction. This is outlined in the following section. However, there is no expected changes to existing environmental discharges or Environmental Protection License conditions.

6.1.1 Existing Operation

Bindaree Beef is surrounded by rural and rural residential type properties. Background noise levels in the area are affected largely by traffic on the Gwydir Highway

The current noise generated from the site has not caused any recorded complaints with the Environmental Protection Authority (EPA) or Bindaree Beef.

6.1.2 Proposed Operation

There will be potential noise considerations relevant to the project from the construction; traffic and machinery.

In addition to the increased flow of construction traffic to and from the site, construction noise for the Project would generate a temporary increase in noise levels as a result of earthworks associated with the site preparation, concreting works, structure erection and fit out works.

Once constructed the bio-digester plant and rendering plant are unlikely to generate a significant noise impact.

Noise control is not required by the current EPA license for the subject site. The rendering plant will be fully enclosed and therefore it is considered that will be reduction in noise from this section of the plant.

6.2 Dust

There is a potential for dust generation as a result of the Project, particularly during construction. This is outlined in more detail below.



6.2.1 Existing operation

Potential dust generated on the site would largely be generated by vehicles entering and exiting the site, the smoke stack from the coal fired rendering plant, from the stockyards and during very dry times from the holding paddocks.

The existing access road from Gwydir Highway to the site is sealed along with all internal access roads, car parks and loading/unloading areas. Therefore these areas do not generate any dust. This will remain unchanged.

The operation of the stockyards and holding paddocks will remain unchanged as a result of the Project.

As outlined in section 5.6 of this Report, the current rendering plant is coal powered.

6.2.2 Proposed operation

The potential dust generating sources apart from the coal fired rendering plant, at Bindaree Beef will remain unchanged.

With the decommissioning of the coal fired rendering plant the coal dust emitted from the smoke stack will be removed.

Dust control of internal road construction will be addressed with water cart as required.

6.3 Water and Soil

There will be minimal changes to the surface drainage on the site due to the construction of the rendering plant and bio-digester plant. Getechnical testing and a report will be undertaken prior to the detailed design of the Project. It is not expected that there will be any issues that adversely affect the civil construction works.

Two surface water drainage lines traverse the site as shown in Figure 13.

As the site is significantly modified the two drainage lines are undefinable on site

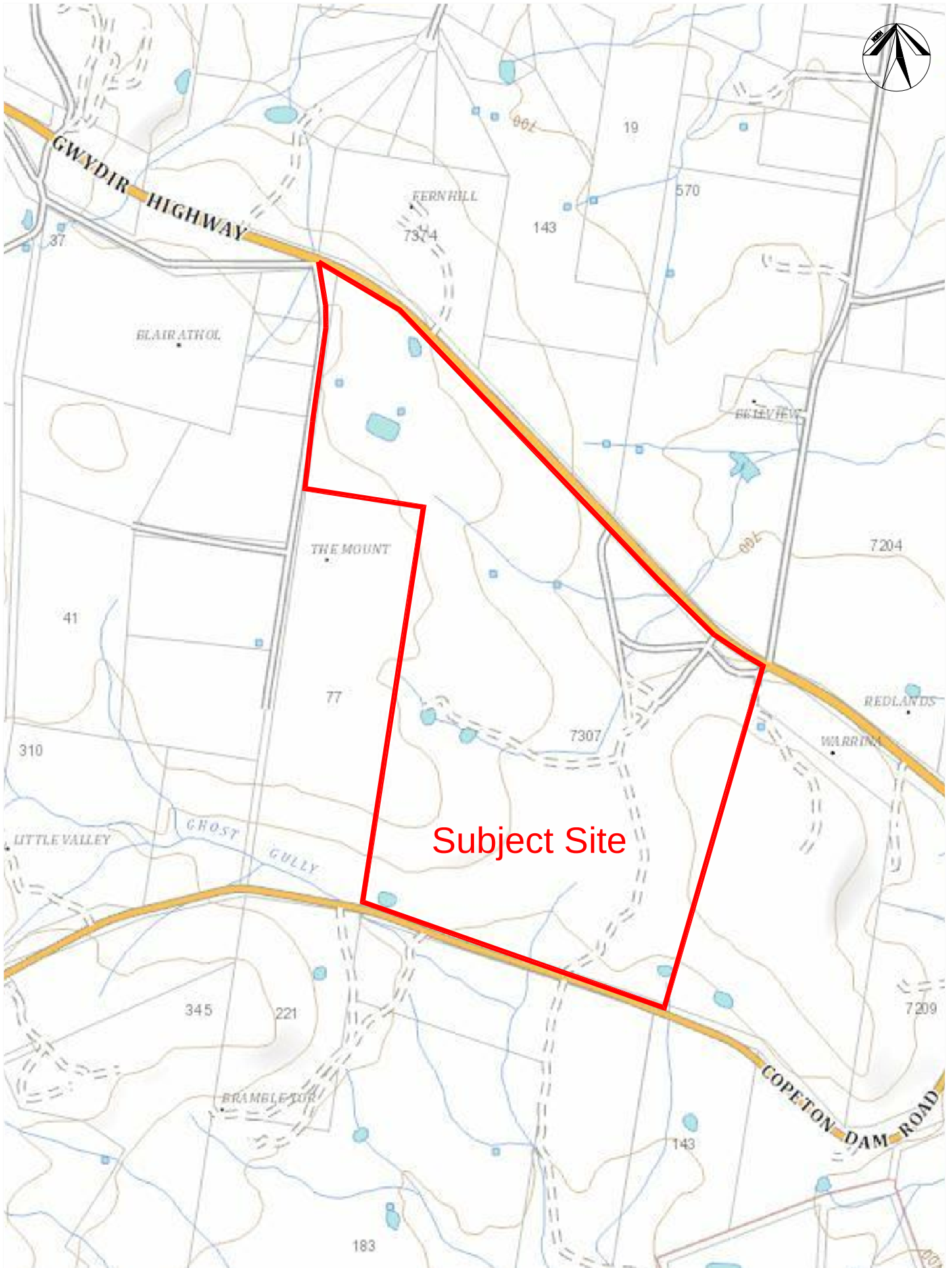
There are three existing dams on the site that capture any surface runoff.

As outlined in Section 5.8.2 of this Report, Class A water will be stored in the current aerobic lagoons.

The Project will have no impact on the current operations of the Bindaree Beef site. The only difference between the existing operations and the



proposed operations is that the class of the waste water from the site will be improved from the current Class D to Class A.





6.4 Odour

In June 2008, Inverell Shire Council commissioned Collie Pty Consultants to undertake a preliminary odour assessment of Bindaree Beef's abattoir operation. The assessment was conducted as an input into the development of an Employment Lands Strategy for the Shire.

6.4.1 Existing Operation

At the time of undertaking the assessment, approximately 4,500 cattle per week, on one shift, five day/week basis. Activities on site which had the potential to cause off-site odour impacts included:-

- Cattle yards;
- Wastewater treatment;
- Rendering plant; and
- Solids handling (paunch).

Preliminary odour modeling, using the Ausplume 6.0 plume dispersion model, and Ausplume meteorological file prepared from 2007 data provided by the Bureau of Meteorology (BOM) from the automatic weather station at Inverell Research Centre (which is located approximately 2.3km east of the abattoir).

The modeling was conducted generally in accordance with the Department of Environment and Conservation (DEC) Approved Methods for the Modeling and Assessment of Air Pollutants in NSW (August 2005).

The modeling results are presented in Figure 14 and Figure 15 as isopleths (contours) of predicted ground level odour concentrations (as 60 minute averaged odour units).

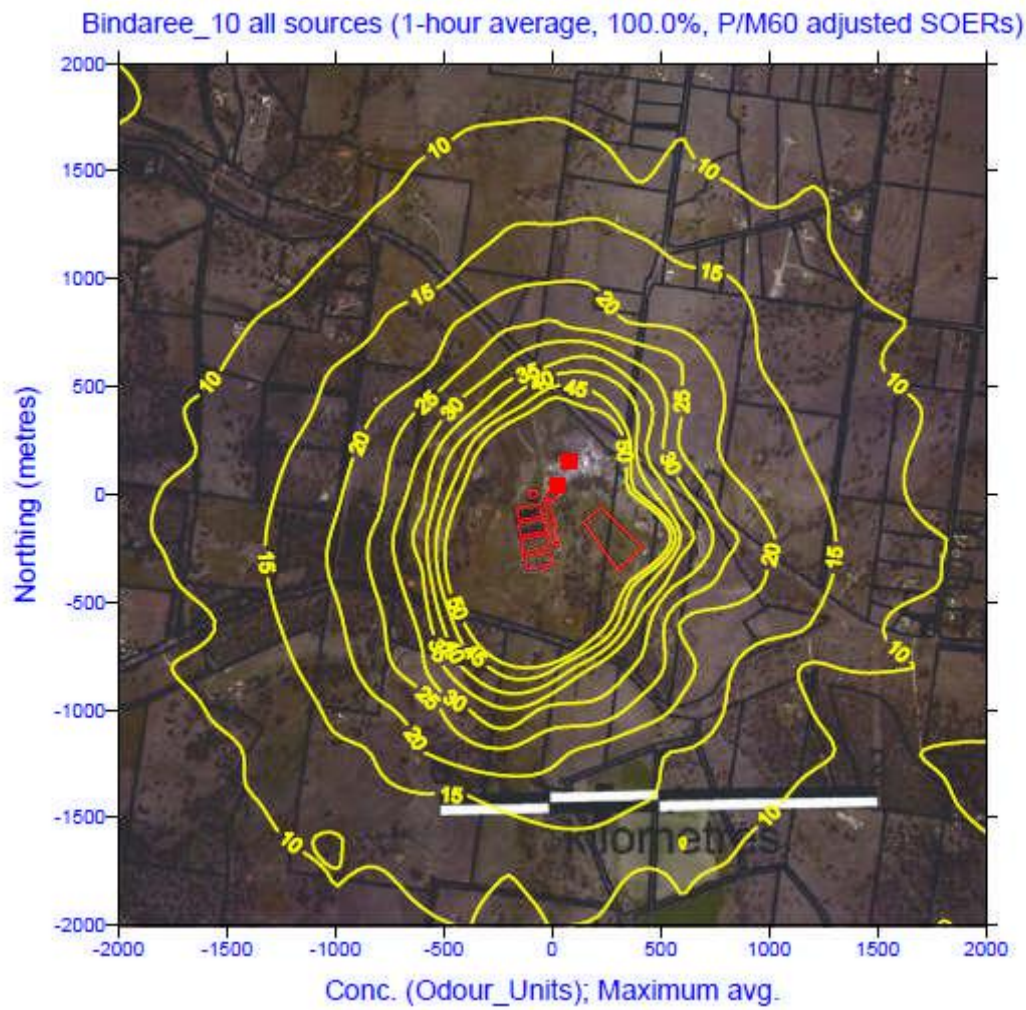


Figure 14: Plot of 100 percentile (maximum) odour predictions

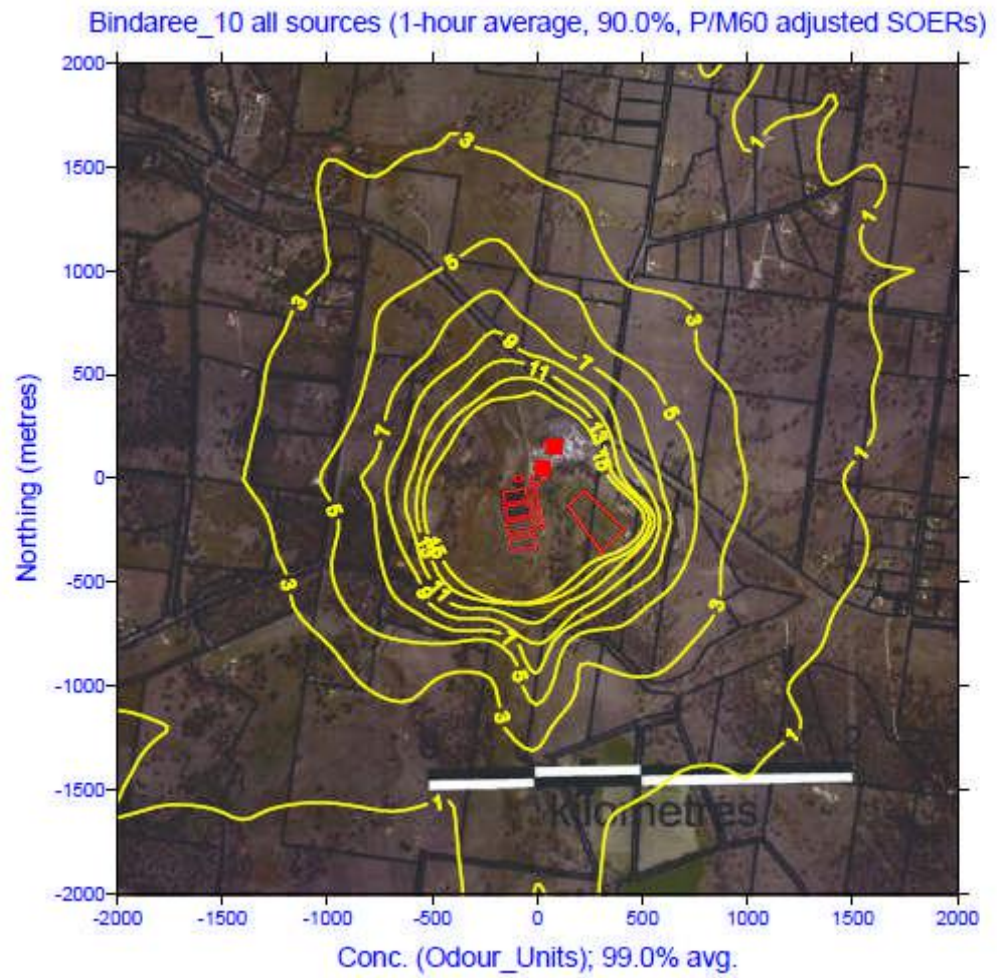


Figure 15: Plot of 99 percentile (maximum) odour predictions



The main conclusions from the preliminary odour assessment are as follows:-

- *The main potential odour sources at Bindaree Beef's abattoir facility are the stock holding yards and pens, the rendering plant, and the wastewater treatment system;*
- *While rendering plant relies on relatively "old" technology (which is still commonly used in Australia) it is well managed and fugitive odours were judged to be very low;*
- *There have been few odour complaints in recent years – more frequently complaints in the past were attributed to process upsets in the blood dryer (which has not been used for a number of years) and mechanical equipment failures;*
- *DEC's recommended minimum buffer distances for abattoirs and rendering plants are 500m and 1000m respectively;*
- *An existing 1.5km radius "Sensitive Development Area" is centered on the abattoir;*
- *The nearest off site dwelling is located on the northern side of Gwydir Highway, approximately 600m from the rendering plant (while the processing areas of the abattoir complex are closer, they do not represent significant odour sources);*
- *Odour modeling (based on meteorological records from the Inverell Research Centre) predicts that the applicable 99 percentile 7 OU contour does not extend beyond a radius of 1,000m (measured from the centre of the paved cattle yards);*
- *However, as there will be a tendency under "worst case" dispersion conditions for odours from the abattoir to be transported along a drainage line which runs in a generally northeasterly direction it would be prudent to maintain the existing 1,500m buffer towards the northeast (while a 1,000m buffer should be adequate for the other sectors);*
- *It is not considered that the (considerable) expense involved in conducting a complete Level 2 odour modeling exercise is warranted in this situation.*

Appendix C Bindaree Beef Abattoir, Inverell Odour Assessment (June 2008 contains a full copy of the Report.



6.4.2 Proposed Operation

A positive outcome from the proposed new rendering plant and bio-digester plant is a significant reduction in the odour emissions from the site.

A desk top re-assessment of odour will be undertaken based on revised odour sources.

6.5 Traffic

There will be a temporary increase in traffic during the construction phase (approximately 9 months) of the Project. The details of the existing and proposed traffic relating to the bio-digester and rendering plant are detailed below.

6.5.1 Existing Operation

Access to the abattoir is gained from Gwydir Highway. This access point will not be altered as part of this Project.

Bindaree Beef keeps a daily record of vehicle movements entering and existing the site.

Current traffic volumes to the site are in the order of 430 vehicles per day consisting of 300 cars and 130 vans/medium trucks/B-double trucks.

The existing and future vehicle movements for the rendering plant may account for approximately 3-5 x 25T B-double trucks and 1-3 x 40T B-double tankers per day.

6.5.2 Proposed Operation

The construction stage of the Project will result in a short term spike in traffic flows of construction machinery, private vehicles and delivery vehicles. It is estimated that this increase will only be a 10% increase above current traffic volumes for the 9 month construction phase of the Project.

Heavy vehicles are likely to make multiple visits to the site. Construction staff are also likely to travel via private vehicle to the site due to limited public transport.

The operation of Bindaree Beef will continue during construction of the Project and therefore construction vehicles will need to be considered together with the existing traffic movements to the Site.



Once completed, it is likely that traffic volumes will return to pre-construction and operation of the new rendering plant and bio-digester plant.

6.6 Hazard Risk

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP) 33 presents a systematic approach to the assessment of development proposals for potentially hazardous and offensive industry or storage.

SEPP 33 requires the preparation of a preliminary hazard analysis (PHA) for potentially hazardous industries.

As outlined in Section 5.4 of this Report it is proposed to have three (3) domes storing methane gas on the site. Each dome has the potential to hold 9,000m³ at full capacity, equaling a total storage capacity of 27,000m³.

At room temperature and standard pressure, methane is a colourless, odorless gas.

As a gas, methane is flammable only over a narrow range of concentrations (5–15%) in air.

Methane is classified as a Class 2.1 chemical under the Australian Dangerous Goods Code.

Table 5: Methane gas properties

Gas	Formula	Molecular weight	Density (kg/m ³)
Methane	CH ₄	16.043	0.668 ₁

Note 1 - Normal Temperature and Pressure (NTP) - is defined as air at 20°C and 1 atm.

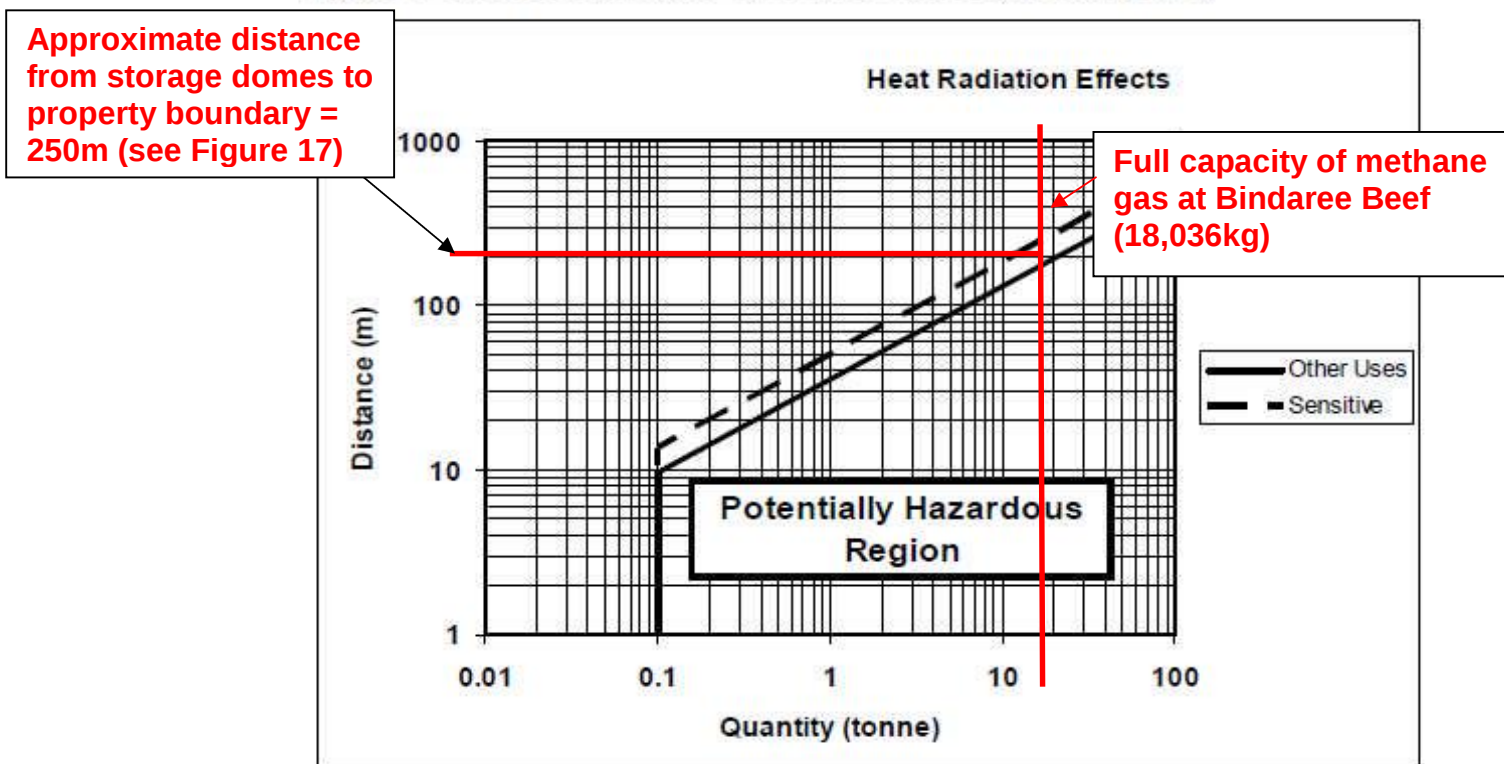
The calculated weight of methane that could potential be stored on site has been determined as follows:-

$$27,000\text{m}^3 \times 0.668 = 18,036 \text{ kg}$$

In accordance with the Department of Planning and Infrastructure – Hazardous and Offensive Development Application Guidelines – Applying SEPP (January 2011), the screening method for Class 2.1 chemicals is contained in Figure 6 of the Guidelines. Figure 6 is shown as Figure 16 below



Figure 6: Class 2.1 Flammable Gases Pressurised (Excluding LPG)



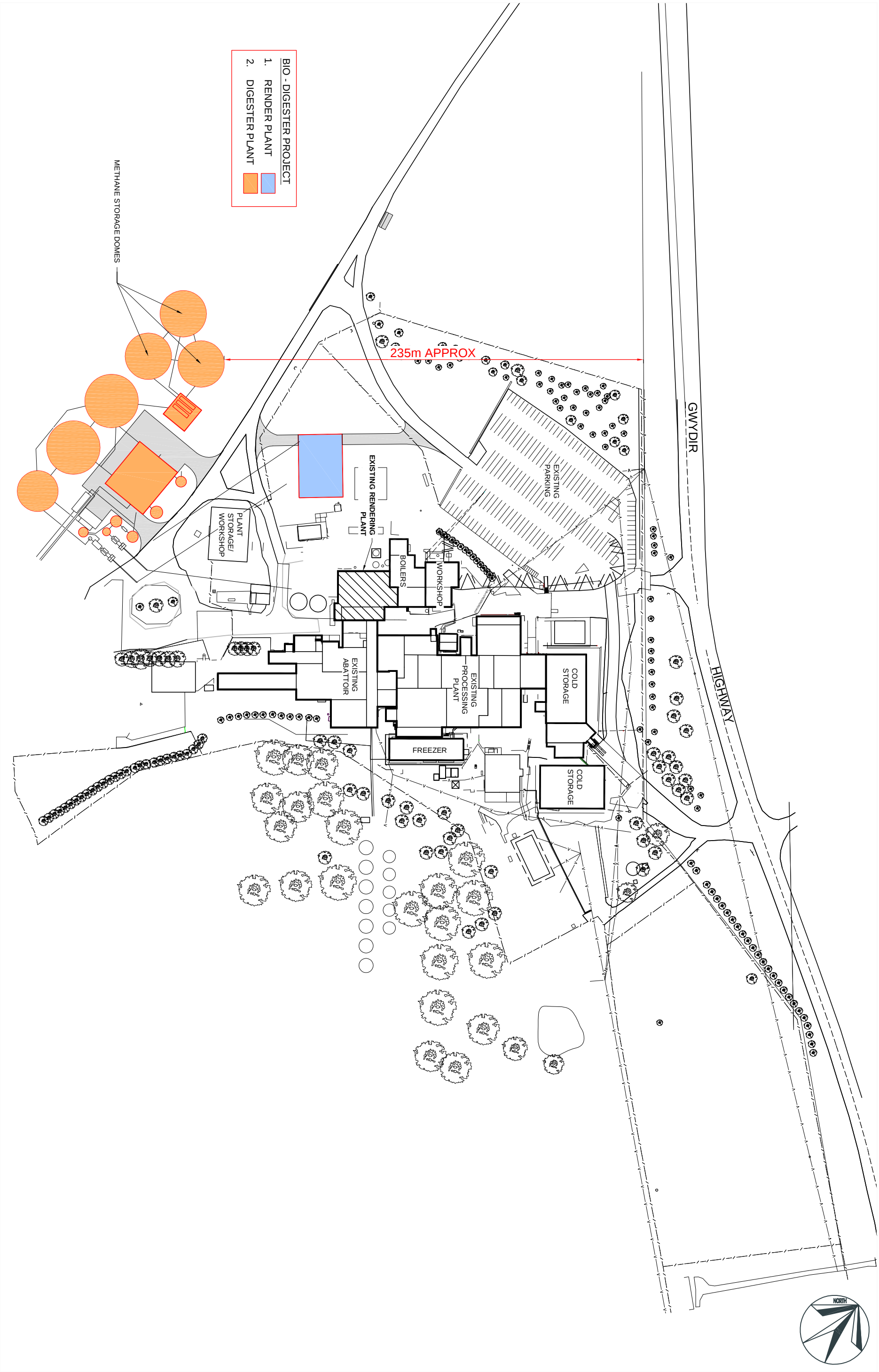
Source:- Department for Planning and Infrastructure – Applying SEPP33 Guidelines

Figure 16: Class 2.1 Flammable Gases Pressurized (Excluding LPG)

The closest site boundary is approximately 235m from the proposed methane storage domes.

Figure 17 showing closest boundary from domes.

Based on the above analysis the storage of 27,000m³ of methane gas in the three (3) proposed domes on site is unlikely to represent a significant risk and therefore, is not potentially hazardous.





6.7 Energy Use

Currently Bindaree Beef annually emits approximately 46,000 tonne of carbon via the burning of coal and the releasing of untreated methane from uncovered lagoons.

As outlined in Section 2.0 of this Report one of the main drivers for the Project is the elimination of burning 7,2000 tonnes of coal and to reduce the electricity consumption from the grid.

Table 6 below summarises the current and post Project energy consumption for Bindaree Beef:-

Table 6: Energy use

	Current	Post Project
Coal	210,436 GJ per year	Nil (replaced by bio-gas)
Electrical	68,477 GJ per year	64,692 GJ per year
Total	278,913 GJ per year	64,692 GJ per year

This equates to a 77% reduction in energy consumption.

6.8 Visual Impact

Visual impact is not considered a significant issue for the Project due to the existing abattoir facility and the topography of the site.

The bio-digester plant is proposed to be located adjacent to the existing hill on the site and will only be visible from Gwydir Highway to passing traffic.

The new rendering plant will not include a large smoke stack like the existing plant.

6.9 Ecology

Due to the following it is considered that there is not a need for any ecological assessment:-

- The site is significantly modified;
- The proposed bio-digester plant and new rendering plant will not involve any clearing of vegetation; and
- The proposed plants being located within the current abattoir footprint.



6.10 Socio-Economic

Bindaree Beef is one of Australia's largest meat processors and a prominent leader in the Australian meat industry.

Bindaree Beef's operation is capable of processing 1,100 cattle per day and currently employs over 700 people from the surrounding region.

Whilst the Project does not proposed to employ any new people, existing staff will be retrained and positions diversified to enable the ongoing operation of the existing and new plant.

The Project as a whole offers greater security to the ongoing operations of Bindaree Beef and therefore its existing employees.

During construction, the Project is likely to generate up to 60 jobs which will contribute directly to the Inverell economy.

The Project will ultimately further secure the Bindaree Beef business model which will provide security and opportunities for the local supply chain including such things as:-

- Trade at local saleyards;
- Providing a market for the region's beef producers;
- Purchasing products such as steel, machinery, welding supplies, commissioning fabrication, and other consumables;
- Hiring equipment.

Successful completion of the Project will also serve as a model that other Australian business could replicate. The Project is site-specific to Bindaree Beef in size and application, but the concept can be altered to suit a variety of commercial purposes.

6.11 Heritage

There are no known Indigenous or Historic Heritage sites in the immediately vicinity of the proposed development.

As the site is significantly modified and the proposed bio-digester plant and new rendering plant will not involve any clearing of vegetation, the plants being located within the current abattoir footprint and there being no impact on heritage it is considered that there is not a need for any heritage assessment.



7.0 Consultation

7.1 Consultation under taken to date

Mitchel Hanlon Consulting undertook preliminary informal community consultation of the adjoining neighbours to the subject site and the Inverell Shire Council on the 6 and 7 June 2013.

18 neighbours have been identified that directly adjoin or are likely to be impacted upon by the existing and future operations of Bindaree Beef on the subject site.

7.1.1 Door Knock

This informal consultation involved “door knocking” on directly adjoining neighbours between the hours of 1:00pm-2:00pm and 3:30pm-5:30pm on Thursday 6 June and between the hours of 8:30am-11:00am on Friday 7 June.

An information folder was left with all property owners that where available at the time of the “door knock”.

Appendix D contains a copy of the information provided. Figure 18 shows the properties that the door knock was undertaken at.

Table 7 outlines the outcomes of the “door knock” sessions.



Table 7: Summary of door knock outcomes

Owners Name	Property Description			Comments/Feedback
	Lot	DP	Road	
Door knock undertaken Thursday 6 June 2013				
Mrs Witherdon	1	617431	7204 Gwydir Highway	- Concerned with current smell; - Happy to hear that the proposal is away from her; - Questioned if the buffer from the abattoir would be removed as a result of the project; - Questioned if the smoke stack would be removed.
JB & PB Frame	334	655012	7186 Gwydir Highway	Not home.
PC & DL Holder	2	1133972	44 Copeton Dam Road	Not home.
BF & AM Bower			7360 Gwydir Highway “Green Oak”	Not home.
JD McRae			7374 Gwydir Highway “Fern Hill”	Not home.
K Kelleher & P Jackwitz	1	380114	37 Blair Athol Road “Blair Athol”	- Concerned with visual impact, scale and amenity; - Potential impact on land value; - Concerned with hazard/risk of methane storage and potential explosion; - Concern with potential volcanic movement/earthquake and how this will be addressed for the storage of methane at the abattoir; - The smell emitted from the current operations at the abattoir affects them about 4 times a year. The smell is “shocking” and requires the house to be closed up;



Property Description

BE Roberts	3	252411	22 McNeils Road	- The smell is much worse and more regular along Copeton Dam Road; - Not home.
"Mountain View"				
D & M Shearer	2	252411	13 Blair Athol Road	Not home.
IW, PA & RP Bender	4	252411	32 McNeils Road	- Was going out; - Left information folder; - Asked that we call next week.
"Kintone"				
Door knock undertaken Friday 7 June 2013				
DM & PA Myhill	156	753638	143 Copeton Dam Road	Not home.
"Poplar Farm"				
Estate Late WA Bailey	1	326632	95 Copeton Dam Road	- Not home. Appeared empty. - Property for sale.
"Poplars"				
PC & DI Holder	2	1133972	44 Copeton Dam Road	- Met Mrs Holder - No real concerns. - House is tucked down below the ridge line so very rarely have any smells from the existing operations. - Would like the buffer lifted/reduced. - Runoff out of Bindaree Beef is an issue but not overly so. - Left information package and will call back. - Call back next week to discuss further.



Property Description

JB & PB Frame	334	655012	7186 Gwydir Highway "Bambil"	• Not home.
EM McNeil	5	252411	42 McNeils Road	• Supports the job creation that Bindaree Beef provides to the Inverell community; • Concerned with hazard/risk of methane storage and potential explosion; • The smell that can be smelt on occasions at the property is sometimes a "chemical burning type smell" and other times a "stockyards smell"; • Happy that there will be no visual impact on her property; • Concerned about airborne infections and viruses from the existing operation.
	138	1091620	77 McNeils Road "Mount View"	• Met landowners. • No issues with the current or proposed operation. • Left information folder.



7.1.2 Phone calls

Subsequent phone calls were made to those properties not visited or where landowners were not home on the 14 June, 24 June and 26 June 2013 with Table 8 providing a summary of these phone calls.

Figure 18 also shows the properties that phone calls were made to.



Table 8: Summary of phone call outcomes

Owners Name	Property Description			Comments/Feedback
	Lot	DP	Road	

Phone call – 14 June 2013 (8am-8:30pm)

PC & DL Holder	2	1133972	44 Copeton Dam Road	• Haven't had a chance to review the information folder. • Please call back Monday.
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DM & PA Myhill	156	753638	143 Copeton Dam Road	• Not home. • Left message.
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"Poplar Farm"

IW, PA & RP Bender	4	252411	32 McNeils Road	• Concerned about any visual impact on their property. • No development at the end of McNeils Road
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"Kintone"

JD McRae	2	536185	7374 Gwydir Highway	• Not home. • Left message.
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"Fern Hill"

BF & AM Bower	5	831439	7360 Gwydir Highway	• Not home. • Left message.
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"Green Oak"

Phone call – 24 June 2013 (12:30-1:30)

BC Muggleton			82 Kerri Road	• Not home. • Left message.
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Property Description

BD Ballie			209 Minnamurra Road	• Wrong number. • Unable to locate correct number
RJ & KA Kennedy			221 Copeton Dam Road	• Not home. • Left message.
BD & DA Lehman	175	753638	183 Copeton Dam Road	• Not home. • Left message.
BE Roberts	3	252411	22 McNeils Road	• Been living in the house for 32 years; • No concerns; • Have the odd smell from the existing operations; • Posted out information flyer and asked that she contact me if she has any questions
KA & JJ Irwin			345 Copeton Dam Road	• Owned the property for 36 years; • Occasional smell from the existing operation, but this is better then it was; • Posted out information flyer and asked that he contact me if he has any questions.
VM & RW Morris			216 Minnamurra Road	• Did not have time to talk. • Posted out information flyer and asked that she contact me if she has any questions.
MW & F Denovan			36 Kerri Road	• Been living in the house for 33 years; • Currently impacted upon by odour from paunch being spread across paddocks; • Will be glad to see this not being undertaken anymore and that the odour impacts will be reduced; • Posted out information flyer and asked that she contact me if she has any questions.
Phone call – 26 June 2013				
K Kennedy			221 Copeton Dam Road	• Kate returned my call; • Currently impacted by odour “at times”, depending on the direction of the wind; • Seem to notice odour more when it is very humid; • Doesn’t have any concerns with the existing operation; • Queried if the buffer would be reduced following the upgrade. Advised that this



Property Description

would be a matter for Council to consider;

- Queried any impacts that irrigation water may have on ground water as they use bore water on their property;
- Posted out information flyer and asked that she contact me if she has any questions.

Phone call – 5 July 2013

B Lehman

183 Copeton
Dam Road

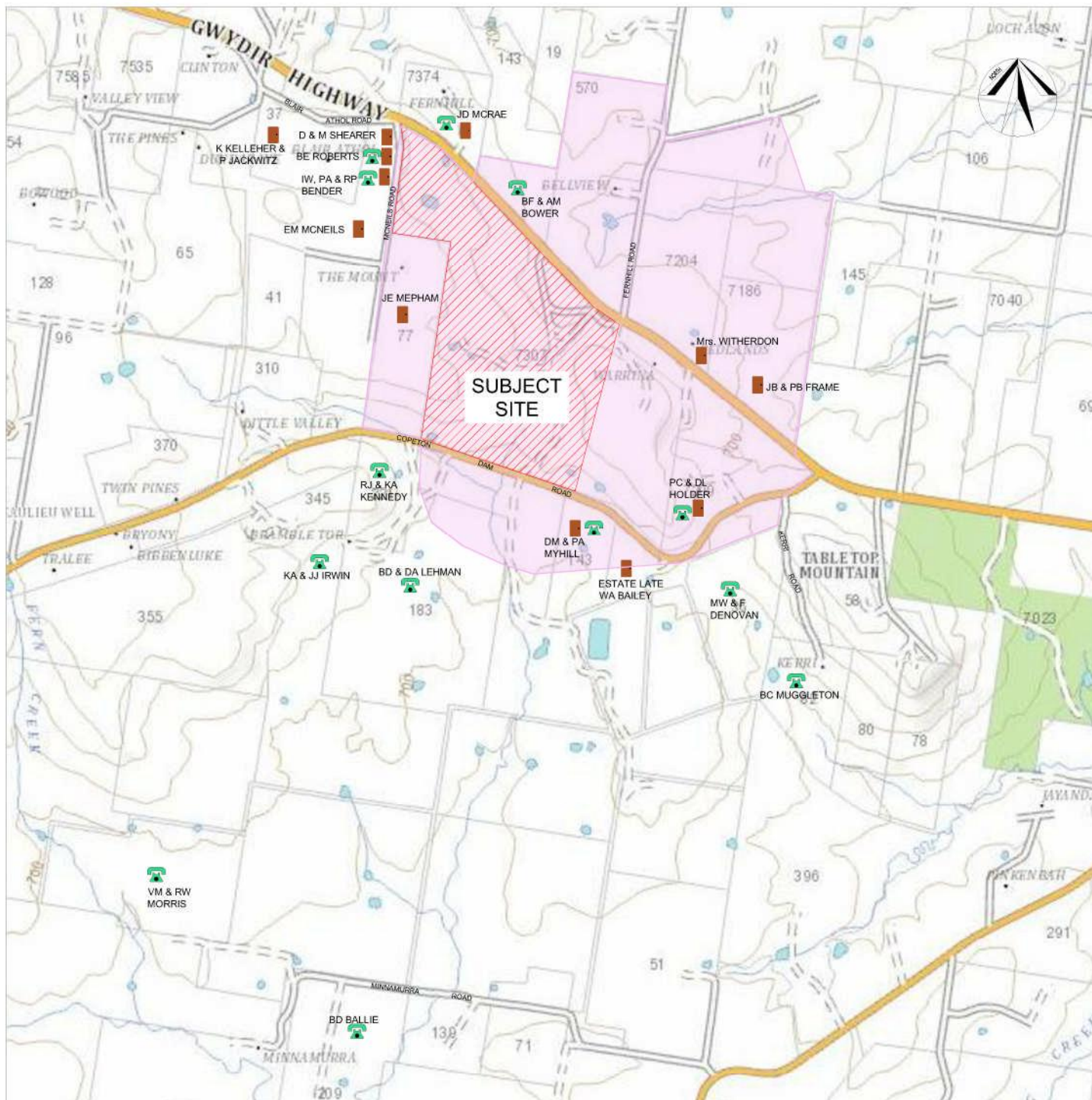
- Returned Ben's call;
- Ben lives next door to the area that Bindaree Beef irrigate waste water onto;
- Ben advised that they occasionally have smells from the abattoir;
- Ben advised that he had seen "muck" coming out the holding lagoons when it had been very wet weather;
- Posted out information flyer and asked that he contact me if he has any questions.

Phone call – 22 July 2013

D Mihell

143 Copeton
Dam Road

- Returned Dorothy's phone call;
- Her neighbour received an information package and was wondering if she could have one to;
- Dorothy advised that they have an occasional smell from the abattoir;
- Generally supports the project and understands the benefits the abattoir brings to the Inverell community;
- Posted out an information flyer and asked that she contact me if she has any further questions.



LEGEND

LIVESTOCK PROCESSING
INDUSTRY BUFFER UNDER
INVERELL LEP 2012

DOOR KNOCK

PHONE CALLS

NOTE: SEE PRELIMINARY ENVIRONMENTAL
ASSESSMENT REPORT FOR DETAILS ON
CONSULTATION

NAME	PROPERTY DESCRIPTION
Mrs. WITHERDON	7204 GWYDIR HIGHWAY
JB & PB FRAME	"BAMBIL" 7186 GWYDIR HIGHWAY
PC & DL HOLDER	44 COPETON DAM ROAD
BF & AM BOWER	"GREEN OAK" 7360 GWYDIR HIGHWAY
JD MCRAE	"FERN HILL" 7374 GWYDIR HIGHWAY
K KELLEHER & P JACKWITZ	"BLAIR ATHOL" 37 BLAIR ATHOL ROAD
BE ROBERTS	"MOUNTAIN VIEW" 22 MCNEILS ROAD
D & M SHEARER	13 BLAIR ATHOL ROAD
IW, PA & RP BENDER	"KINTONE" 32 MCNEILS ROAD
DM & PA MYHILL	"POPLAR FARM" 143 COPETON DAM ROAD
ESTATE LATE WA BAILEY	"POPLARS" 95 COPETON DAM ROAD
EM MCNEIL	42 MCNEILS ROAD
JE MEPHAM	"MOUNT VIEW" 77 MCNEILS ROAD
BC MUGGLETON	82 KERRI ROAD
BD BALLIE	209 MINNAMURRA ROAD
RJ & KA KENNEDY	221 COPETON DAM ROAD
BD & DA LEHMAN	183 COPETON DAM ROAD
KA & JJ IRWIN	345 COPETON DAM ROAD
VM & RW MORRIS	216 MINNAMURRA ROAD
MW & F DENOVAN	36 KERRI ROAD



7.1.3 Meeting with Inverell Shire Council

A meeting was held between Mitchel Hanlon and Jocelyn Ullman of Mitchel Hanlon Consulting and Anthony Alliston, Manager of Planning at Inverell Shire Council on Thursday 6 June 2013.

The following notes are from that meeting:

- The buffer identified under the Inverell LEP is based on an Odour Assessment undertaken by Collie Pty Ltd in 2008.
- The buffer shown in the LEP is a 1.5km diameter from the centre of the abattoir.
- Council recently looked at increasing the buffer to 2km but received considerable objection from potential rural residential land developers in the area.
- Council has never received any complaints (that Anthony was aware) regarding the current operations at the abattoir.
- Immediate neighbours should be consulted regarding the proposed development.
- No need for briefing of Councillors or senior Council staff about the project.
- Inverell Shire Council is currently advertising a new DCP. Whilst the DCP does not generally impact upon State Significant Development, Anthony suggested we consider the draft DCP.

Inverell Shire Council provided a letter of support of the significant impact Bindaree Beef has on the local economy, including sales, staff housing, schooling, medical services and employment. Appendix A contains a copy of this letter.

7.1.4 Meeting with Environmental Protection Agency

A meeting was held between Mitchel Hanlon and Jocelyn Ullman of Mitchel Hanlon Consulting and Michael Lewis, Regional Operations Officer and Robert O'Hern at the Environmental Protection Agency on Monday 17 June 2013.

The following notes are from that meeting:-



- Two complaints have been received in the last two years from neighbours;
- Prior to this, weekly complaints had been received on noise and odour;
- A noticeable reduction in smoke emissions has occurred since David Sneddon started operating the plant;
- The odour emissions coming from the site are considered a “cooking type” odour;
- Questioned if the DAF (“the ark”) and lagoons would be going as part of the proposal;
- Advised that technical guidelines would need to be considered to determine level of odour assessment but it is likely that level 2 would be required. Any new modelling/assessment would have to take into consideration a change in the source points;
- Dust is not considered an issue for the site given that the coal fired rendering plant is going;
- Investigation/advice will be provided on the license requirements for the new bio-digester; and
- Water quality is not considered a significant issue given that the current site is going to be using it.

EPA provided a letter of support encouraging and supporting Bindaree Beef in their efforts to reduce the current environmental impacts through energy efficiency initiatives. Appendix B contains a copy of this letter.

7.1.5 Meeting with the Department of Planning and Infrastructure

A meeting was held between Mitchel Hanlon and Jocelyn Ullman of Mitchel Hanlon Consulting and officers of the Department of Planning and Infrastructure in Sydney on 19 July 2013.

The purpose of this meeting was to provide an outline of the project and seek initial feedback on the requirements for the Preliminary Environmental Assessment. The following notes are from that meeting:-

- It was agreed that the Project fell under the definition of “*electricity generating works and heat or co-generation*” in Schedule 1 of the State and Regional Development State Environmental Planning Policy (SEPP) and is therefore State Significant Development;



- A requirement of the DGRs will be that a Quantity Surveyors Report be prepared and lodged with the Development Application (DA). This will assist with the calculation of the DA fees;
- A Planning Focus Meeting is unlikely to be required given the general support of the Inverell Council, EPA and community of Bindaree Beef and that the proposal involves an upgrade that will have minimal to nil negative environmental impacts;
- An updated odour study will be required; and
- SEPP 33 is to be considered and addressed.

7.2 Proposed Consultation

Bindaree Beef and Mitchel Hanlon Consulting Pty are committed to continuing to engage with the Inverell community and stakeholders on the Project.

Table 9 outlines the consultation proposed to be undertaken.

Table 9: Proposed Consultation

When	How	Who with
August/September – through to receipt of approval	Regulatory Consultation • Invite regulatory authorities to attend a meeting to present the proposal and seek feedback prior to the preparation of the EIS • Continue to keep in regular contact (via meetings, phone calls and email) with Inverell Shire Council throughout the preparation of the EIS to ensure all matters are addressed	Authority Regulatory Authorities
August/September Two Sessions	Community Consultation • Undertake a Community “Drop-In” Information Session for any interested stakeholders, including neighbours, Inverell Businesses and the broader Inverell Community • Advertise the Community “Drop In Information Session through the local	Inverell community



When	How	Who with
	paper	
Ongoing	- The Inverell Shire Council will formally advertise the proposal - Provide updates on the proposal via flyers on the Bindaree Beef web page and Mitchel Hanlon Consulting web page	
August/September – through to receipt of approval	Neighbour Consultation - Continue to keep in contact with neighbours via phone and door knock throughout the preparation of the EIS; - Invite those neighbours who have participated in the door knock or phone calls to a meeting to discuss the proposal and seek feedback formally	Neighbours who have provided feedback during preliminary consultation process

An initial project update flyer was produced by Mitchel Hanlon Consulting at the beginning of the Project. It is anticipated that these flyers will continue to be produced through the lifetime of the project to keep the community and stakeholders up to date. See Appendix D.



8.0 Conclusion

This Preliminary Environmental Assessment (PEA) has been prepared for the proposed replacement of the existing rendering plant and the construction of a new bio-digester plant at Bindaree Beef's existing abattoir at 7307 Gwydir Highway, Inverell.

We request that the Department of Planning and Infrastructure provide the Director General's Requirements (DGRs) prior to the preparation of Environmental Impact Statement.

As outlined in the Report, the Project has a number of significant benefits not only for the current Bindaree Beef operations but also environmental benefits and ensures ongoing stability to the Inverell community through the provision of long term employment.



9.0 References

Australian Dangerous Goods Code 7th Edition

Bindaree Beef Pty Ltd AusIndustry Application 2013

Bindaree Beef Abattoir, Inverell – Odour Assessment (2028) prepared by CCE Consultants

Environmental Protection and Assessment Act 1979 (as amended)

Environmental Planning and Assessment Regulations 2000 (as amended)

Inverell Local Environmental Plan 2012

NSW Department of Planning and Infrastructure Planning Circular PS11-008 *Planning and Assessment Guidelines for Hazardous Industry* (February 2011)

NSW Department of Planning and Infrastructure Planning – Hazardous Industry Planning and Assessment Guidelines - *Guideline Summary* (January 2011)

NSW Department of Planning and Infrastructure Planning – Hazardous Industry Planning and Assessment Guidelines – *Assessment Guidelines Multi-level Risk Assessment* (May 2011)

NSW Department of Planning and Infrastructure Planning – Hazardous Industry Planning Advisory Paper No. 3 - *Risk Assessment* (January 2011)

NSW Department of Planning and Infrastructure Planning – Hazardous Industry Planning Advisory Paper No. 10 – *Land Use Safety Planning* (January 2011)

NSW Department of Planning and Infrastructure Planning – Hazardous Industry Planning and Application Guidelines – *Applying SEPP 33* (January 2011)

NSW Department of Planning and Infrastructure Planning Circular PS11-019 *Assessment of state significant development and infrastructure* (September 2011)

NSW Department of Planning and Infrastructure Planning Circular PS11-022 *Determination of state significant applications* (September 2011)

NSW Department of Planning and Infrastructure Planning Fact Sheet – *State significant assessment system: an overview* (September 2011)

NSW Department of Planning and Infrastructure Fact Sheet – *About the consolidated assessment process for State significant assessment* (December 2011)



NSW Department of Planning and Infrastructure Fact Sheet – *Appeals against the Minister's determination of applications under the Environmental Planning and Assessment Act 1979* (December 2011)

NSW Department of Planning and Infrastructure Planning Fact Sheet – *What is State significant development and how are applications assessed and determined?* (February 2012)

State Environmental Planning Policy (State and Regional Development) 2011

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy 33 – Hazardous and Offensive Development



Appendix A Letter of Support from Inverell Shire Council

INVERELL SHIRE COUNCIL



7 December, 2011

Senator Hon Kim Carr
Minister for Innovation, Industry, Science and Research
Parliament House
CANBERRA ACT 2600

Dear Senator,

Inverell Shire Council is located in Inverell, Northern NSW. With an estimated total Shire population of approximately 16,000 the region is predominately rural production based. Inverell attracts visitors and business interest across a wide area due to the temperate climate, excellent water supply and attractive landscapes. Inverell businesses support many large and smaller townships and communities from as far afield as Moree, Armidale, Tamworth, Tenterfield and Glen Innes.

Inverell has been fortunate in the past to be the base for Bindaree Beef, one (1) of Australia's largest family owned beef processing plants. Bindaree Beef is the largest employer in the region, employing in excess of 600 full time staff. The business is also a major participant in the Council owned Livestock Exchange. While employing 600 plus people, Bindaree Beef delivers consistent long term security to all employees. Bindaree Beef also injects major investment in the local business community, providing opportunity for local businesses to establish, expand and employ.

Council has been involved with Bindaree Beef working toward major new technology and upgrade projects that will assist the business expand and ensure longer term viability. The Council believes that the introduction of processes and systems to minimise environmental impact will have benefits, not only for Bindaree Beef, but the broader community. While the planned new technology will have major positive environmental benefits, the projects also provide the infrastructure to expand the business in turn creating greater employment opportunities.

Inverell Shire Council are very much aware of the significant impact Bindaree Beef has on the local economy, including livestock sales, staff housing, schooling, medical services and employment.

Bindaree Beef has the full support of Inverell Shire Council and we look forward to partnering with Bindaree Beef to ensure the long term sustainability of the business and the region.

Yours faithfully,

PJ HENRY PSM

GENERAL MANAGER

CC. Hon Simon Crean, Minister Regional Australia, Regional Development & Local Govt.

CC. Hon Greg Combet, Minister for Climate Change & Energy Efficiency

Attaining Excellence Together

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THE GENERAL MANAGER
PO Box 138, Inverell NSW 2360
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Appendix B Letter of Support from Environmental Protection Agency



Our reference : LIC08/1830 : DOC12/20540
Contact : Michael Lewis
Date : 22 May 2012

Mr David Richards
Plant Manager
Yolarno Pty Ltd
PO Box 405
INVERELL NSW 2360

Attention: Dave Sneddon

Dear Mr Sneddon

Binadree Beef Abattoir, Environmental Protection Licence (EPL) 809, Proposed Upgrades

The Environment Protection Authority (EPA) has been working with Bindaree Beef (Bindaree) for some time to address environmental concerns in relation to stack emissions from the coal fired boilers and the emission of fugitive cooking odours. Other sources of odours which are also the subject of complaints include odours emitting from the effluent ponds, irrigation of effluent, application and storage of paunch, effluent and manure from stock yards.

The EPA fully encourages and supports Bindaree in its efforts to minimise its current environmental impact through energy efficiency initiatives and reduction in stack emissions, green house gas emissions, odours and irrigation of strong effluent. The proposed upgrades to meet best practice standards are likely to provide significant benefits to Bindaree and the surrounding community.

If you have any further enquiries about this matter please contact Michael Lewis in our Armidale office on 02 6773 7000.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Robert O'Hern'.

ROBERT O'HERN
Head Regional Operations Unit – Armidale
Environment Protection Authority

PO Box 494 Armidale NSW 2350
85 Faulkner St Armidale NSW 2350
Tel: (02) 6773 7000 Fax: (02) 6772 2336
ABN 30 841 387 271
www.environment.nsw.gov.au



Appendix C Bindaree Beef Abattoir, Inverell Odour Assessment (June 2008)

COLLIE PTY LTD

**BINDAREE BEEF ABATTOIR,
INVERELL**

ODOUR ASSESSMENT

June 2008

**CEE Consultants
90 Bridge Road, Richmond 3121**

Disclaimer:

This report has been prepared in accordance with an agreement between *CEE Consultants* (CEE) and the organisation or person to whom it is addressed. The services performed by CEE have been conducted in a manner consistent with the level of quality and skill generally exercised by members of its profession and consulting practices.

This report is prepared solely for the use of the person or organisation to whom it is addressed, and in accordance with the terms of engagement for the commission. Any reliance on this report by third parties shall be at such party's sole risk. The report may not contain sufficient information for the purposes of other parties or for other uses. This report shall only be reproduced in full and shall not be used to support any other objectives than those set out in the report, except where specific written approval has been provided by CEE.

BINDAREE BEEF ABATTOIR ODOUR ASSESSMENT

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This report summarises a preliminary odour assessment of Bindaree Beef’s abattoir operation, which is located on Warialda Road, approximately 5 km west of the Inverell town centre. The assessment was conducted for Collie Pty Ltd, as an input to its development of an Employment Lands Strategy for the Inverell Shire Council.

The assessment was conducted by Dr Terry Bellair of CEE Consultants. It included a meeting with senior personnel at Bindaree Beef and an inspection of its operations, meetings with officers of the Council, and with the Department of Environment and Climate Change (DECC) in Armidale, and preliminary odour modelling based on local meteorological data and specific odour emission rates derived from other broadly comparable sources.

1. NATURE OF ABATTOIR OPERATION

1.1 History of Operation

The abattoir operation was established in a rural area in the 1970s, originally for both cattle and sheep. However, sheep have not been processed there since 1976. The facility includes boning rooms, and a rendering plant for processing animal by-products into tallow and meat/blood/bone meal. It is connected to the Inverell town water supply system, while wastewater is treated on-site in lagoons, and the treated effluent is used for spray-irrigation on Bindaree’s “Alsace” property, located south of the abattoir (on the southern side of Copeton Dam Road Road).

The areas of Bindaree’s land beyond the abattoir complex are used for low-intensity stock holding, grazing and fodder production.

1.2 Current and Proposed Operations

The abattoir currently processes approximately 4,500 cattle per week, on a one-shift, five day/week basis. Bindaree proposes to move to a one-shift, seven day per week operation, which would equate to a maximum potential rate of 7,000 head per week.

Activities conducted on the site which have the potential to generate off-site odours are outlined below.

1.2.1 Cattle Yards

Cattle are unloaded into uncovered, concrete-paved yards, from where they are either transferred to roofed, concrete paved yards prior to slaughter, or to earthen holding yards. The main earthen yards are located to the east of the wastewater lagoons, while the “top yards” (on the hill south of the abattoir) provide for the “overflow” when the primary yards reach capacity.

We noted that the yards were well-managed and were not a major odour source (our inspection was conducted during a dry weather period).

1.2.2 Wastewater Treatment

There are two wastewater streams:

- a “cold” stream, largely comprising washings from the concrete-paved yards and screened wastewater from the paunch handling system, is transferred to a shallow concrete pit where the solids are collected and the supernatant flows over a weir before being pumped to the primary treatment lagoon; and
- solids are removed from the “hot” wastewater stream (derived from the abattoir and rendering plant), by a coarse rotary screen and a save-all, before being pumped to the initial treatment lagoon.

The two screened/settled wastewater streams are currently treated (sequentially) in three lagoons (the fourth lagoon is currently off-line to enable the removal of accumulated sludge). The initial (anaerobic) lagoon is 4 m deep and is covered by a 60-70 mm thick crust, which acts as an effective “biofilter”, thus minimising odour emissions. The second lagoon operates in a facultative mode, and is dosed with a microbial culture to assist in reducing odour emissions. The third lagoon appeared to be operating aerobically. The relatively low odour emissions and the presence of ducks on the second and third lagoons suggest that the organic loading on the lagoons is relatively low.

Effluent from the third lagoon gravitates to the small “pump dam” from where it is transferred to a wet weather storage lagoon on the “Alsace” property, for irrigation of land used for grazing and fodder production.

1.2.3 Rendering Plant

Offal, bone and steam-coagulated blood are processed in two Keith 1200 high-temperature continuous cookers, each having a nominal capacity of 10 t/h. No material from off-site sources is processed (which avoids the potential for increased odour emissions associated with “stale” raw materials). The second cooker was installed by Bindaree to enable raw materials to be processed more quickly, which enables the plant to consistently produce high quality (high value) tallow (FFA <1%) and to complete processing by 8 pm each night (which minimises the potential for off-site odours by largely avoiding emissions during “worst case” dispersion conditions, which occur most commonly during the night and early mornings).

Odours are controlled by condensing cooker vapours and ducting the non-condensable gases, along with foul air collected from point sources such as presses, to a biofilter immediately north of the rendering plant. Emissions from the biofilter were judged to be mild and non-offensive, indicating that the biofilter was operating well and that it would not make any significant contribution to off-site odours.

Despite the fact that the plant relies on relatively “old” technology (which is, however, still commonly used throughout Australia) and is not fully enclosed, fugitive odour emissions were judged to be very low during our inspection (the high standard of cleanliness and clean appearance of the plant would contribute to this observation).

We understand that a number of odour complaints in the past were attributed to:

- occasional high temperature “upsets” in a gas-fired blood dryer (a ring dryer which has not been used for four to five years); and
- interruption of cooling water flow to the condensers (as a result of a pump failure) resulting in venting of odorous vapour from the cookers.

The only visible emission from the rendering plant was (non-odorous) steam rising from the boiler water feed tank.

1.2.4 Solids Handling

The paunch solids are stored on a concrete pad (located immediately to the south of the primary lagoon) which drains to the lagoon.

We understand that some odour complaints resulted in the past from spreading paunch material on the “Alsace” property. However, this material is now removed from the site by a contractor, who transports it to (off-site) farms where it is applied as a soil conditioner.

1.2.5 Other Potentially Relevant Activities

A coal-fired boiler is used to produce steam and hot water for the rendering plant and abattoir. Flue gas is cleaned by passage through a bank of upright cyclones, which remove fly ash before discharging the cleaned flue gas through two stacks.

Skins are collected from the site on a daily basis, which avoids any risk of off-site odours from this source.

2. BUFFERS FOR ABATTOIRS AND RENDERING

DECC's recommended minimum buffer distance between an abattoir and the nearest downwind residence or residential area is 500 m, while this distance is increased to 1,000 m for a rendering plant (assuming effective and reliable odour control equipment is installed and the absence of any unusual local meteorological factors)¹. Our experience with odour assessments of numerous existing abattoirs and rendering plants suggests that these recommended buffers should be adequate for most well-run operations, while facilities equipped with current "best practice" odour controls are able to operate with smaller separation distances, without significantly impacting on local amenity.

The 2004 Inverell Local Environmental Study (LES) and the subsequent 2006 Land Supply and Demand Study defined a 1.5 km radius "Sensitive Development Area" around the abattoir (truncated to the east to a distance of approximately 1,350 m). These studies recommended that Council should not consent to any subdivision which would allow construction of a dwelling within this area.

The nearest off-site dwelling is located on the northern side of Warialda Road, approximately 600 m from the rendering plant (the processing areas of the abattoir complex do not represent significant odour sources).

It should be recognised that the Bindaree facility was established in a rural area in the 1970s, without access to a reticulated sewerage system for wastewater disposal, and that upgrading such facilities to achieve current "best practice" levels of odour control is both complex and expensive.

3. COMPLAINTS

Complaint records can provide useful information about the frequency of occurrence and severity of off-site odours in the vicinity of industrial facilities; however, their usefulness is limited in situation such as this, where there are relatively few sensitive uses (eg dwellings) in the immediate vicinity of the abattoir.

We have reviewed DECC's Incident Report which summarises complaints relating to Bindaree's abattoir operations for the period from September 2001 to April 2008. The report does not identify where the odours were detected, the number of individual complainants, nor whether the abattoir was confirmed as the source in each case. Of a total of 13 odour complaints, the most recent was in March 2006 (the only complaint in that year), while four complaints were lodged in 2005, two in 2004, five in 2003 and one in 2002.

¹ www.environment.nsw.gov.au/mao/abattoirs.htm (February 2008).

4. PRELIMINARY ODOUR MODELLING

We conducted preliminary odour modelling for the Bindaree abattoir, using the Ausplume 6.0 plume dispersion model, and an Ausplume meteorological file prepared from 2007 data provided by the Bureau of Meteorology (BOM) from the automatic weather station at the Inverell Research Centre (which is approximately 2.3 km east of the abattoir).

4.1 Model Inputs

The modelling was conducted generally in accordance with DECC's Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (AMMAAP) which was published in August 2005 by the (then) NSW Department of Environment and Conservation (DEC)² - the qualification being that the modelling undertaken is more detailed than the Level 1 methodology (as a local meteorological file was used, rather than relying on a "synthetic" meteorological file), while falling short of the Level 2 methodology (because site specific emission data are not available, and stability classes in the meteorological file were defined on the basis of BOM data recorded at the Inverell Research Centre). However, we consider that this represents an appropriate modelling methodology for purposes of this assessment, particularly as the on-going level of environmental management at the abattoir will be the main factor which influences the level and frequency of occurrence of off-site odours.

As no odour emission rate data have been determined for the Bindaree facility, we estimated appropriate specific odour emission rates (SOERs) and odour emission rates (OERs) on the basis of odour tests which we have conducted at a (cattle and sheep) abattoir in Victoria and at a number of wastewater treatment plants – reference was also made to available odour emission rate data from a range of comparable sources.

Table 1 lists the 12 area sources which were included in the modelling, along with their coordinates (relative to an arbitrary origin located in the centre of the uncovered concrete-paved cattle yards, estimated SOERs, applicable peak-to-mean ratios (P/M60) – as defined in the AMMAAP, and the adjusted SOERs. The SOERs were set to represent "worst case" emissions under normal operating conditions, where:

- lagoon 4 is operating;
- lagoon 1 is covered by a crust;
- cattle are in the "top yards"; and
- the earthen yards have been wet by rainfall (which increases the yard SOER by a factor of 3.5).

² NSW Department of Environment and Conservation (August 2005). "Approved methods for the modelling and assessment of air pollutants in New South Wales". DEC Publication 2005/361.

Table 1. Characteristics of Area Sources

Source	model ID	x,y co-ordinates ¹	SOER, OUV/m ² .min	P/M60 ratio ²	Adjusted SOER, OUV/m ² .min
paunch	paunch	-30,-355 -30,-350 -25,-350 -25,-355	50	1.9	95
lagoon 1	lag1	-120,-345 -132,-290 -10,-267 0,-325	72	1.9	136
lagoon 2	lag2	-138,-270 -145,-210 -28,-187 -15,-243	48	1.9	91
lagoon 3	lag3	-144,-195 -155,-135 -39,-115 -30,-175	36	1.9	68
lagoon 4	lag4	-155,-122 -160,-65 -55,-47 -45,-102	24	1.9	46
pump dam	pump	-105,-15 -105,15 -70,15 -70,-15	12	1.9	23
earthen yards, wet	earthW	12,-239 -37,-29 -15,-19 32,-232	14	1.9	27
top yards, wet	topW	305,-355 146,-130 225,-60 415,-245	7 ³	1.9	14 ³
paved yards	paved	0,-35 -35,-5 20,55 55,25	78	1.9	148
wastewater tank	tank	45,175 45,179 57,179 57,175	20	1.9	38
wastewater pit	wwpit	30,155 30,161 36,161 36,155	8	1.9	15
hot screen	screen	35,170 35,174 39,174 39,170	500	1.9	950

¹ Origin of coordinates is the centre of the open, concrete-paved cattle yards.

² Peak to mean ratio defined by DES to allow for short-term perception of odours.

³ Odour emissions from top yards estimated at 50% of those from main earthen yards, because of lower occupancy.

The modelling does not take account of elevated odour emissions which may occasionally occur as a result of equipment failure or process upsets (similar to those discussed earlier), or potentially odorous operations such as lagoon de-sludging (which is typically required at intervals of between five and ten years). The likelihood of such short-term situations impacting on an individual receptor are relatively low, and will depend on meteorological conditions at the time (including wind direction). The likelihood of odour impacts associated with such events can be substantially reduced by:

- in the former case, by automatic control/alarm systems, programmed maintenance, and/or provision of stand-by equipment; and
- by conducting lagoon desludging operations when seasonal weather conditions are most conducive to atmospheric dispersion (preferably during Spring).

Table 2 lists the two volume sources which were included in the modelling, along with their coordinates, estimated SOER and OERs, applicable P/M60 ratios, adjusted OERs and the timing of emissions.

Table 2. Characteristics of Volume Sources

Source	Model ID	x,y co-ordinates	Area, m ²	SOER, OUV/m ² .min	OER, OUV/min	P/M60 ratio	Adjusted OER, OUV/min	timing
Rendering fugitives	rend	80,153	NA	NA	200,000	2.3	460,000	1000-2000 hrs
covered pens	pens	25,45	2,000	78	156,000	2.3	358,800	24 h/d

4.2 Odour Modeling Results

The modelling results are presented in Figures 1 and 2 as isopleths (“contours”) of predicted ground level odour concentrations (as 60-minute averaged odour units), overlaid on an aerial photograph showing property boundaries. The model text file is presented as Attachment 1.

Figure 1 presents the 100 percentile (maximum) odour predictions (as specified by the AMMAAP for a Level 1 odour assessment). It should be noted that Level 1 assessments represent a very conservative modelling approach which is intended for use as a screening “screening tool” to determine whether a more detailed assessment is warranted. Therefore, the Level 1 assessment can be expected to overestimate potential odour levels.

The AMMAAP document also defines DECC’s impact assessment criterion for odorous pollutants as 7 odour units (OU) for single rural residences (as compared with a criterion of 2 OU for urban areas and sensitive uses such as schools and hospitals). We consider that the 7 OU criterion is applicable to land uses in the general vicinity of Bindaree’s abattoir.

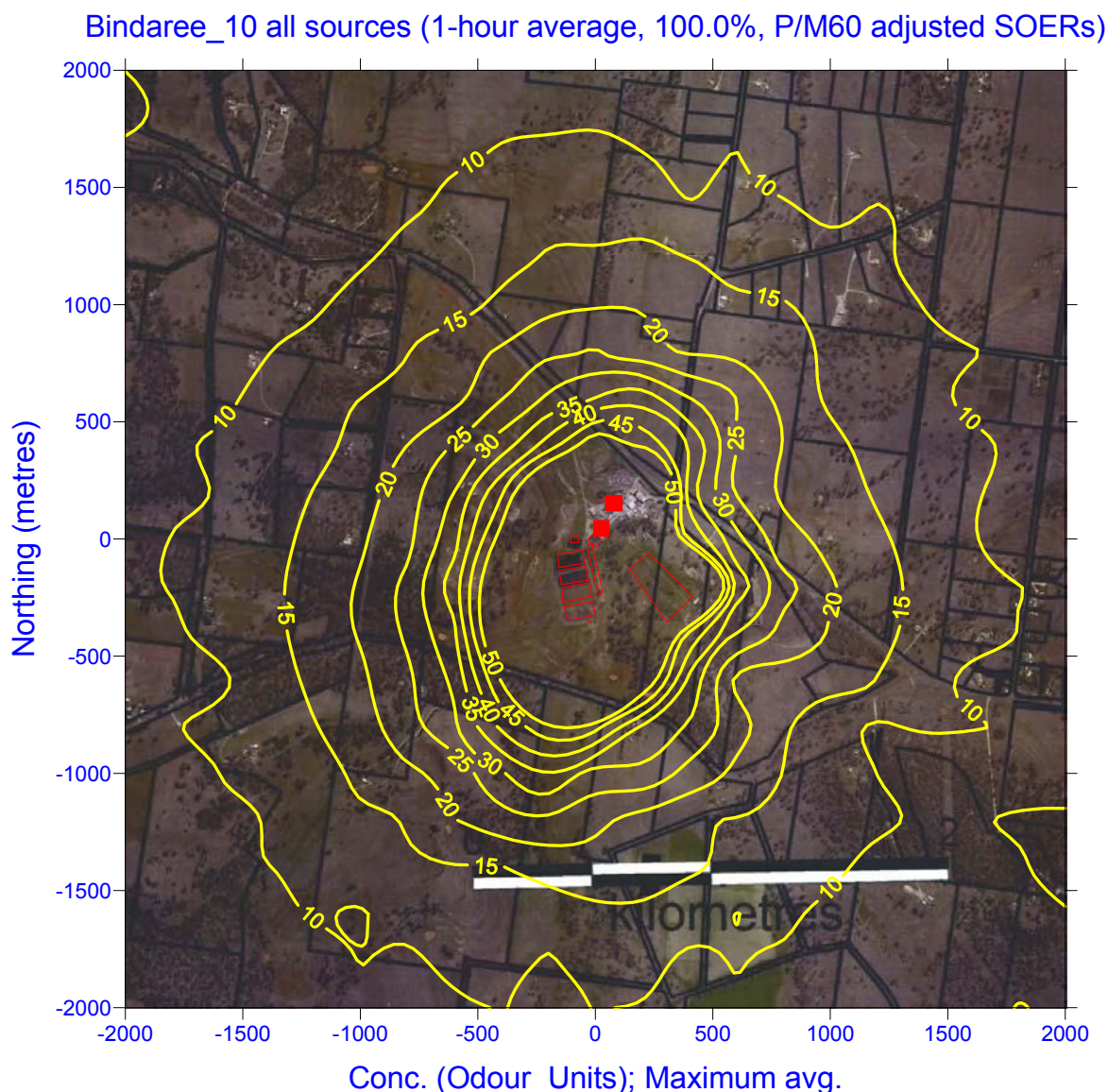


Figure 1. Plot of 100 percentile (maximum) odour predictions

This conservative modelling approach suggests that peak odour concentrations would be between 10 and 15 OU at the boundary of the existing 1,500 m radius “Sensitive Development Area” and that odour complaints would be likely from residents living beyond this zone (which we understand has not been the case, even in the past when substantially higher odour emissions occurred from time to time as a result of process upsets during production of blood meal in the ring dryer).

Therefore, we consider that the 100 percentile (maximum) odour concentrations presented in Fig 1 represent substantial over-predictions of actual odour levels associated with the abattoir operation.

Figure 2 presents the 99 percentile odour plots (as specified by the AMMAAP for Level 2 odour assessments), which provide more realistic odour predictions than the 100 percentile plots (above). The 7 OU isopleth is contained within a radius of 1,000 m (centred on the paved cattle yards).

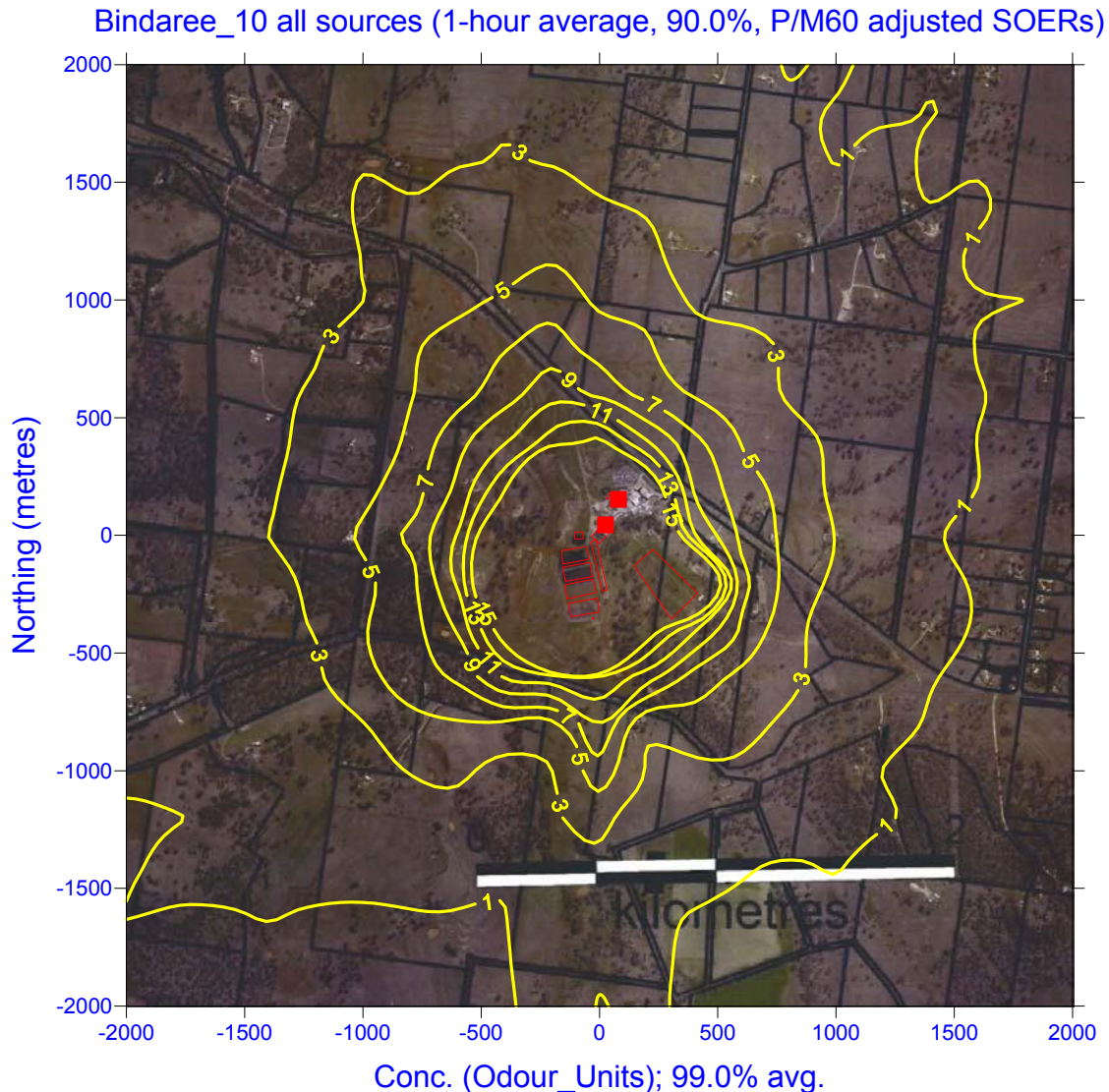


Figure 2 Plot of 99 percentile odour predictions

4.3 Implications of 7-Day/Week Operations

The odour modelling assumes that operations occur on every day of the year. Therefore, Bindaree's proposal to operate on 7 days per week will not result in any increase in the predicted odour levels.

4.4 Local Topographic Considerations

The Ausplume model assumes that odours are transported by wind directly from the source(s) to each nominated receptor within the modelling domain. Therefore, Ausplume is not able to simulate the transport of odours along curved paths, as is likely to occur during “worst case” dispersion conditions when shallow “katabatic” airflows tend to flow down local drainage lines. While longer travel paths will result in extended travel times and somewhat lower odour concentrations (compared with the “straight line” simulation), sensitive receptors located “down valley” from an odour source can be expected to experience a potentially higher frequency of exposure to odours.

Under typical “worst case” dispersion conditions (clear, cold nights which are often associated with shallow nocturnal radiation inversions and katabatic airflows) there will be a tendency for odours from the abattoir to be transported initially to the north and then along a drainage line which runs in a generally northeasterly direction. Therefore, receptors to the northeast will be potentially more exposed to odour emissions from the abattoir, and it would be prudent to maintain the existing 1,500 m buffer towards the northeast .

5. CONCLUSIONS

Our main conclusions are summarised below:

1. The main potential odour sources at Bindaree Beef’s abattoir facility are the stock holding yards and pens, the rendering plant, and the wastewater treatment system.
2. While the rendering plant relies on relatively “old” technology (which is still commonly used in Australia) it is well-managed and fugitive odours were judged to be very low.
3. There have been few odour complaints in recent years – more frequent complaints in the past were attributed to process upsets in the blood dryer (which has not been used for a number of years) and mechanical equipment failures).
4. DECC’s recommended minimum buffer distances for abattoirs and rendering plants are 500 m and 1,000 m, respectively.
5. An existing 1.5 km radius “Sensitive Development Area” is centred on the abattoir (the studies which defined this area recommended that Council should not consent to any subdivision within this area which would allow construction of a dwelling).
6. The nearest off-site dwelling is located on the northern side of Warialda Road, approximately 600 m from the rendering plant (while the processing areas of the abattoir complex are closer, they do not represent significant odour sources).

7. Odour modelling (based on meteorological records from the Inverell Research Centre) predicts that the (applicable) 99 percentile 7 OU contour does not extend beyond a radius of 1,000 m (measured from the centre of the paved cattle yards).
8. However, as there will be a tendency under “worst case” dispersion conditions for odours from the abattoir to be transported along a drainage line which runs in a generally northeasterly direction, it would be prudent to maintain the existing 1,500 m buffer towards the northeast (while a 1,000 m buffer should be adequate for the other sectors).
9. We do not consider that the (considerable) expense involved in conducting a complete Level 2 odour modelling exercise is warranted in this situation.

(Dr) Terry Bellair FEIANZ, FVPELA

ATTACHMENT 1. ODOUR MODEL TEXT FILE

1

Bindaree_10 all sources (1-hour average, P/M60 adjusted SOERs)

Concentration or deposition	Concentration
Emission rate units	OUV/min
Concentration units	Odour_Units
Units conversion factor	1.67E-02
Constant background concentration	0.00E+00
Terrain effects	None
Smooth stability class changes?	No
Other stability class adjustments ("urban modes")	None
Ignore building wake effects?	No
Decay coefficient (unless overridden by met. file)	0.000
Anemometer height	10 m
Roughness height at the wind vane site	0.300 m
Use the convective PDF algorithm?	No

DISPERSION CURVES

Horizontal dispersion curves for sources <100m high	Pasquill-Gifford
Vertical dispersion curves for sources <100m high	Briggs Rural
Horizontal dispersion curves for sources >100m high	Briggs Rural
Vertical dispersion curves for sources >100m high	Briggs Rural
Enhance horizontal plume spreads for buoyancy?	Yes
Enhance vertical plume spreads for buoyancy?	Yes
Adjust horizontal P-G formulae for roughness height?	Yes
Roughness height	0.400m
Adjustment for wind directional shear	None

PLUME RISE OPTIONS

Gradual plume rise?	Yes
Stack-tip downwash included?	Yes
Building downwash algorithm:	PRIME method.
Entrainment coeff. for neutral & stable lapse rates	0.60,0.60
Partial penetration of elevated inversions?	No
Disregard temp. gradients in the hourly met. file?	No

and in the absence of boundary-layer potential temperature gradients given by the hourly met. file, a value from the following table (in K/m) is used:

Wind Speed Category	Stability Class					
	A	B	C	D	E	F
1	0.000	0.000	0.000	0.000	0.020	0.035
2	0.000	0.000	0.000	0.000	0.020	0.035
3	0.000	0.000	0.000	0.000	0.020	0.035
4	0.000	0.000	0.000	0.000	0.020	0.035
5	0.000	0.000	0.000	0.000	0.020	0.035
6	0.000	0.000	0.000	0.000	0.020	0.035

WIND SPEED CATEGORIES

Boundaries between categories (in m/s) are: 1.54, 3.09, 5.14, 8.23, 10.80

WIND PROFILE EXPONENTS: "Irwin Urban" values (unless overridden by met. file)

AVERAGING TIMES

1 hour

BINDAREE BEEF ABATTOIR – ODOUR ASSESSMENT

Bindaree_10 all sources (1-hour average, P/M60 adjusted SOERs)

SOURCE CHARACTERISTICS

INTEGRATED POLYGON AREA SOURCE: PAUNCH

X0 (m)	Y0 (m)	Ground El	No. Vertices	Ver. spread	Height
-30	-355	0m	4	2m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	-30	-355	2	-30	-350
3	-25	-350	4	-25	-355

(Constant) emission rate = 9.50E+01 OUV/min per square metre
No gravitational settling or scavenging.

INTEGRATED POLYGON AREA SOURCE: LAG1

X0 (m)	Y0 (m)	Ground El	No. Vertices	Ver. spread	Height
-120	-345	0m	4	2m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	-120	-345	2	-132	-290
3	-10	-267	4	0	-325

(Constant) emission rate = 1.36E+02 OUV/min per square metre
No gravitational settling or scavenging.

INTEGRATED POLYGON AREA SOURCE: LAG2

X0 (m)	Y0 (m)	Ground El	No. Vertices	Ver. spread	Height
-138	-270	0m	4	2m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	-138	-270	2	-145	-210
3	-28	-187	4	-15	-243

(Constant) emission rate = 9.10E+01 OUV/min per square metre
No gravitational settling or scavenging.

INTEGRATED POLYGON AREA SOURCE: LAG3

X0 (m)	Y0 (m)	Ground El	No. Vertices	Ver. spread	Height
-144	-195	0m	4	2m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	-144	-195	2	-155	-135
3	-39	-115	4	-30	-175

(Constant) emission rate = 6.80E+01 OUV/min per square metre
No gravitational settling or scavenging.

INTEGRATED POLYGON AREA SOURCE: LAG4

X0 (m)	Y0 (m)	Ground El	No. Vertices	Ver. spread	Height
-155	-122	0m	4	2m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	-155	-122	2	-160	-65
3	-55	-47	4	-45	-102

(Constant) emission rate = 4.60E+01 OUV/min per square metre
No gravitational settling or scavenging.

BINDAREE BEEF ABATTOIR – ODOUR ASSESSMENT

INTEGRATED POLYGON AREA SOURCE: EARTH

X0 (m)	Y0 (m)	Ground El	No. Vertices	Ver. spread	Height
12	-239	0m	4	2m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	12	-239	2	-37	-29
3	-15	-19	4	32	-232

(Constant) emission rate = 2.70E+01 OUV/min per square metre
No gravitational settling or scavenging.

INTEGRATED POLYGON AREA SOURCE: TOPW

X0 (m)	Y0 (m)	Ground El	No. Vertices	Ver. spread	Height
305	-355	0m	4	2m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	305	-355	2	146	-130
3	225	-60	4	415	-245

(Constant) emission rate = 1.40E+01 OUV/min per square metre
No gravitational settling or scavenging.

INTEGRATED POLYGON AREA SOURCE: PAVED

X0 (m)	Y0 (m)	Ground El	No. Vertices	Ver. spread	Height
0	-35	0m	4	2m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	0	-35	2	-35	-5
3	20	55	4	55	25

(Constant) emission rate = 1.48E+02 OUV/min per square metre
No gravitational settling or scavenging.

INTEGRATED POLYGON AREA SOURCE: TANK

X0 (m)	Y0 (m)	Ground El	No. Vertices	Ver. spread	Height
45	175	0m	4	2m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	45	175	2	45	179
3	57	179	4	57	175

(Constant) emission rate = 3.80E+01 OUV/min per square metre
No gravitational settling or scavenging.

INTEGRATED POLYGON AREA SOURCE: SCREEN

X0 (m)	Y0 (m)	Ground El	No. Vertices	Ver. spread	Height
35	170	0m	4	4m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	35	170	2	35	174
3	39	174	4	39	170

(Constant) emission rate = 9.50E+02 OUV/min per square metre
No gravitational settling or scavenging.

BINDAREE BEEF ABATTOIR – ODOUR ASSESSMENT

INTEGRATED POLYGON AREA SOURCE: WWPIT

X0(m)	Y0(m)	Ground El	No. Vertices	Ver. spread	Height
30	155	0m	4	2m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	30	155	2	30	161
3	36	161	4	36	155

(Constant) emission rate = 1.50E+01 OUV/min per square metre
No gravitational settling or scavenging.

INTEGRATED POLYGON AREA SOURCE: PUMP

X0(m)	Y0(m)	Ground El	No. Vertices	Ver. spread	Height
-105	-15	0m	4	2m	0m

Integrated Polygon Area Source Vertice Locations (in metres)

No.	X	Y	No.	X	Y
1	-105	-15	2	-105	15
3	-70	15	4	-70	-15

(Constant) emission rate = 2.30E+01 OUV/min per square metre
No gravitational settling or scavenging.

VOLUME SOURCE: REND

X(m)	Y(m)	Ground Elevation	Height	Hor. spread	Vert. spread
80	153	0m	2m	12m	4m

Emission rates by hour of day in OUV/min:

1 0.00E+00	2 0.00E+00	3 0.00E+00	4 0.00E+00
5 0.00E+00	6 0.00E+00	7 0.00E+00	8 0.00E+00
9 0.00E+00	10 4.60E+05	11 4.60E+05	12 4.60E+05
13 4.60E+05	14 4.60E+05	15 4.60E+05	16 4.60E+05
17 4.60E+05	18 4.60E+05	19 4.60E+05	20 4.60E+05
21 0.00E+00	22 0.00E+00	23 0.00E+00	24 0.00E+00

No gravitational settling or scavenging.

VOLUME SOURCE: PENS

X(m)	Y(m)	Ground Elevation	Height	Hor. spread	Vert. spread
25	45	0m	2m	20m	4m

(Constant) emission rate = 3.59E+05 OUV/min
No gravitational settling or scavenging.

1

Bindaree_10 all sources (1-hour average, P/M60 adjusted SOERs)

RECEPTOR LOCATIONS

The Cartesian receptor grid has the following x-values (or eastings):

-2000.m	-1800.m	-1600.m	-1400.m	-1200.m	-1000.m	-800.m
-600.m	-400.m	-200.m	0.m	200.m	400.m	600.m
800.m	1000.m	1200.m	1400.m	1600.m	1800.m	2000.m

and these y-values (or northings):

-2000.m	-1800.m	-1600.m	-1400.m	-1200.m	-1000.m	-800.m
-600.m	-400.m	-200.m	0.m	200.m	400.m	600.m
800.m	1000.m	1200.m	1400.m	1600.m	1800.m	2000.m

METEOROLOGICAL DATA : Inverell Met File 2007 - night stabilities based on wind speed



Appendix D Information Package





BINDAREE BEEF – INVERELL NSW

PROJECT UPDATE – MAY 2013

Mitchel Hanlon Consulting has been appointed by Bindaree Beef to prepare a Preliminary Environmental Assessment (PEA) for lodgment with the Department for Planning and Infrastructure (DP&I) requesting the Director Generals Requirements (DGRs) for a new bi-digester plant and rendering plant at the existing abattoir in Inverell, NSW.

The PEA is the first step in the planning process, which will be followed by lodgment of a Development Application (DA) and Environmental Impact Statement (EIS).

Bindaree Beef is one of Australia's largest meat processors and a prominent leader in the Australian meat industry. It is a family owned and operated processing plant at Inverell in northern NSW capable of processing 1,100 cattle per day and employs over 600 people from the surrounding region.

For further information on this project please contact Mitchel Hanlon Consulting.

Email: office@mitchelhanlon.com.au
Phone: 02 6762 4411
Website: www.mitchelhanlon.com.au

The Proposal

In its simplest form, the Bindaree Beef project consists of:-

- A new, highly effective waste treatment system that will produce biogas, clean water and liquid fertiliser;
- A biogas utilisation system that will generate power and steam for on-site use; and
- A replacement rendering plant that will use less electricity and steam.

The \$43 million Project is the first of its kind for the beef industry in Australia and will reduce the current 28,000 tonne of carbon emitted by Bindaree Beef to zero.

Community Consultation

There will be a number of opportunities where the community can provide input and feedback on the Project. As part of the EIS process, a community 'drop in' session will be available to the Inverell community. This will give the community the opportunity to 'drop-in', have a look at the Project, asks questions and provide feedback. The date, time and location of this 'drop-in' session is yet to be determined. Please keep an eye out in the local paper for these details.

Project Timeframe

The preliminary timeframe is:-

Description	Date
Lodge PEA	Jul 2013
DGRs received	August 2013
Community consultation	End August 2013
Lodge DA & EIS	October 2013
EIS public exhibition	November/December 2013
Determination	February 2014
Construction of plant	July 2014
Plant in operation	March 2015

