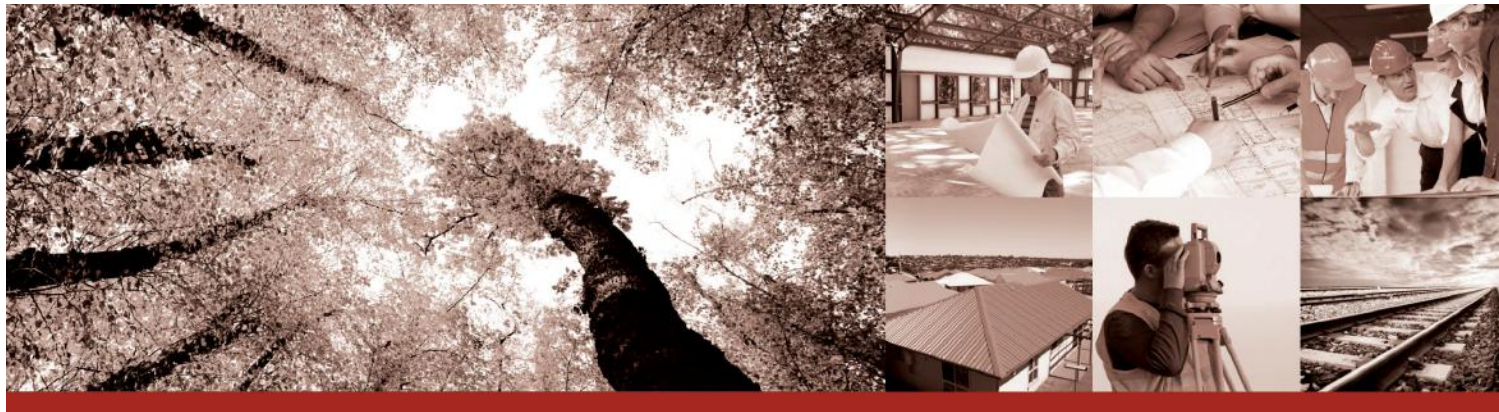




**BINDAREE BEEF**  
— AUSTRALIA —

## SUBMISSIONS REPORT

For proposed

### BIO-DIGESTER PLANT AND RENDERING PLANT

7307 Gwydir Highway  
Inverell NSW 2360

Prepared for: Yolarno Pty Ltd  
PO Box 405  
Inverell, NSW, 2360

Our reference: 13060



## Mitchel Hanlon Consulting Pty Ltd

121 Bridge Street  
PO Box 1568  
TAMWORTH NSW 2340  
Phone: (02) 6762 4411 Fax: (02) 6762 4412  
[office@mitchelhanlon.com.au](mailto:office@mitchelhanlon.com.au)  
[www.mitchelhanlon.com.au](http://www.mitchelhanlon.com.au)



This document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. All figures and plans associated with this document feature approximate areas, locations and dimensions and are subject to development approval, engineering design and final survey. This document is not to be used or copied without the written authorisation of Mitchel Hanlon Consulting Pty Ltd or Bindaree Beef (Yolarno Pty Ltd).

Ref.: 13060



| ISSUE | VERS  | DATE            | AUTHOR   | APPROVED | ISSUED TO                            |
|-------|-------|-----------------|----------|----------|--------------------------------------|
| 01    | Draft | 13 October 2014 | J Ullman | M Hanlon | Department of Planning & Environment |
| 02    | Final | 14 October 2014 | J Ullman | M Hanlon | Department of Planning & Environment |
|       |       |                 |          |          |                                      |
|       |       |                 |          |          |                                      |
|       |       |                 |          |          |                                      |
|       |       |                 |          |          |                                      |
|       |       |                 |          |          |                                      |
|       |       |                 |          |          |                                      |

File path: J:\2013\13060 Bindaree Beef Biodigester Plant & Rendering Plant, Inverell\EIS\Submissions\Lodged submissions\w02\13060 Bindaree Beef - Submissions\_Report\_Final\_V02\_Issued 2014-10-14.doc



## TO WHOM IT MAY CONCERN:

We, the undersigned, hereby certify that we have read this Submissions Report prepared on behalf of Bindaree Beef (Yolarno Pty Ltd) by Mitchel Hanlon Consulting Pty Ltd and I believe the information contained in this document in relation to:-

1. The proposed use of the land is correct;
2. The information supplied by Bindaree Beef (Yolarno Pty Ltd) in regard to the present use of the site is true and correct; and
3. This document represents Bindaree Beef's (Yolarno Pty Ltd) response to the submissions and commitments to the project.

**John Newton**

Director

Signature

14 October 2014

Date

**David Sneddon**

Maintenance & Projects Engineer

Signature

14 October 2014

Date



## Submissions Report

Prepared under the Environmental Planning and Assessment Regulation 2000

### Submissions Report Prepared by

Name Jocelyn Ullman

Qualifications B U R P (UNE),  
Post. Grad. Public Policy (Murdoch)  
MPIA

Address Mitchel Hanlon Consulting Pty Ltd  
PO Box 1568  
Tamworth NSW 2340

### In respect of

Proponents Name Yolarno Pty Ltd

Proponent Address 7307 Gwydir Highway, Inverell NSW 2360

Land on which activity to be carried out: address Lot 83 in DP. 753638

Parish of Auburn Vale County of Hardinge

Proposed development Development of a Bio-digester Wastewater Treatment Plant and Rendering Plant

### Submissions Report

A response and all required supporting documentation have been attached.

### Certificate

I certify that I have prepared the contents of this Report and to the best of my knowledge:

It is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

Signature

Dated: 14 October 2014

Name

Jocelyn Ullman



# Executive Summary

This Submissions Report has been prepared on behalf of Bindaree Beef, being the applicants for the installation of a wastewater treatment system (bio-digester) and new rendering plant facility at their existing abattoir facility in Inverell. The bio-digester generates bio-gas from waste product and effluent, utilising this gas for creating energy. This process eliminates the need for coal and reduces electricity needs.

This application for development consent seeks approval for the construction and operation of:

- An anaerobic digester, utilising abattoir wastewater and waste solid products for generation of bio-gas; and
- A rendering plant for rendering of inedible products for purified fat and protein production.

Director General Requirements (DGRs) were received from the then Department of Planning and Infrastructure (the Department) on 13 September 2013 following the lodgement of a Preliminary Environmental Assessment.

An Environmental Impact Statement (EIS) was subsequently prepared and lodged with the Department on 11 July 2014 and placed on formal public exhibition from 16 July to 18 August 2014.

This Submissions Report has been prepared to outline Bindaree Beef's response to the key issues raised in the public and agency submissions in respect to the EIS. The Report is supported by the following additional Reports:-

1. Revised Air Quality Report (15 September 2014) prepared by ViPAC; and
2. Survey and assessment of the presence and extent of Box Gum Woodland (10 September 2014) prepared by Niche Environment and Heritage.

## The Submissions

A total of three (3) individual submissions were received from the public, being local landowners. NSW Government Agencies were also consulted by the Department during the public exhibition period, with a total of six (6) submissions received from the following organisations:-

- Environmental Protection Authority (EPA);
- Inverell Shire Council;



- Office of Environment and Heritage;
- NSW Department of Primary Industries – Office of Water
- Roads and Maritime Services (RMS); and
- NSW Department of Trade and Investment – Mineral Resources Branch.

It is noted that no submissions of objection were received, however a number of matters were raised.

Matters raised by submitters in respect of the project generally relate to the following areas:

- Air quality – The EPA and a public submitter raised matters regarding the application of the information and modelling used to prepare the Air Quality Assessment;
- Noise impact – The EPA raised matters regarding the application of the NSW Industrial Noise Policy in preparing the Noise Assessment. A nearby landowner also raised concerns with the impact of noise on their property;
- Groundwater management – The Office of Water raised matters regarding groundwater monitoring and future management, riparian management, stormwater management and erosion and sediment control; and
- Site access off Gwydir Highway and large vehicle access – The RMS raised the need for a Works Authorisation Deed to be entered into prior to any works being commenced in relation to the Highway and that vehicles larger than standard B-Double should be prohibited from the site until an appropriate intersection with the Highway is constructed.

The proponent has provided objective comment on the various matters raised and has provided the results of additional assessments that have been undertaken.

The Submissions Report also includes an update on the proposed timeframe for construction.

## Conclusion

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

The need for the development is driven by the increasing pressure on



agricultural businesses to become more efficient and economically viable. Bindaree Beef have identified that their competitive advantage is dependent on becoming innovative and implementing state-of-the-art technologies. The proposed development will increase the efficiencies of the rendering plant and improve the environmental sustainability of the site.

It is concluded that the proposed bio-digester and rendering plant project has significant beneficial impacts on its surround neighbours, Inverell and the broader regional area and it is recommended that approval be granted.



# TABLE OF CONTENTS

|           |                                                                       |    |
|-----------|-----------------------------------------------------------------------|----|
| 1.0       | Introduction .....                                                    | 13 |
| 1.1       | Background.....                                                       | 14 |
| 1.2       | Summary of submissions received .....                                 | 16 |
| 1.3       | Project update .....                                                  | 17 |
| 2.0       | Authority and Agency Submissions .....                                | 18 |
| 2.1       | Introduction.....                                                     | 18 |
| 2.2       | NSW Trade & Investment – Resource & Energy Division .....             | 18 |
| 2.2.1     | Bindaree Beef Response .....                                          | 18 |
| 2.3       | NSW Transport – Roads & Maritime Services.....                        | 18 |
| 2.3.1     | Traffic Impact Statement.....                                         | 18 |
| 2.3.1.1   | Bindaree Beef Response.....                                           | 19 |
| 2.3.2     | Gwydir Highway Intersection .....                                     | 19 |
| 2.3.2.1   | Bindaree Beef Response.....                                           | 19 |
| 2.3.3     | Vehicle Transport Management Plan & Works Authorisation<br>Deed ..... | 20 |
| 2.3.3.1   | Bindaree Beef Response.....                                           | 20 |
| 2.4       | Office of Environment & Heritage.....                                 | 21 |
| 2.4.1     | Aboriginal Cultural Heritage.....                                     | 21 |
| 2.4.1.1   | Bindaree Beef Response.....                                           | 21 |
| 2.4.1.2   | Bindaree Beef Commitment.....                                         | 22 |
| 2.4.2     | Biodiversity .....                                                    | 22 |
| 2.4.2.1   | Bindaree Beef Response.....                                           | 22 |
| 2.4.2.2   | Field Assessment.....                                                 | 23 |
| 2.4.2.2.1 | Field Assessment Methodology.....                                     | 23 |
| 2.4.2.2.2 | Field Assessment Results.....                                         | 23 |
| 2.4.2.3   | Further Response from OEH.....                                        | 24 |
| 2.4.2.4   | Bindaree Beef Response.....                                           | 24 |
| 2.5       | Inverell Shire Council .....                                          | 25 |
| 2.5.1     | Bindaree Beef Response .....                                          | 26 |
| 2.6       | Office of Water .....                                                 | 27 |
| 2.6.1     | Groundwater .....                                                     | 27 |
| 2.6.1.1   | Bindaree Beef Response.....                                           | 28 |
| 2.6.1.2   | Bindaree Beef Commitment.....                                         | 28 |
| 2.6.2     | Riparian Management.....                                              | 29 |
| 2.6.2.1   | Bindaree Beef Response.....                                           | 29 |



|           |                                                          |    |
|-----------|----------------------------------------------------------|----|
| 2.6.2.2   | Bindaree Beef Commitment.....                            | 29 |
| 2.6.3     | Stormwater Management, Erosion and Sediment Control..... | 30 |
| 2.6.3.1   | Bindaree Beef Response.....                              | 30 |
| 2.6.3.2   | Bindaree Beef Commitment.....                            | 31 |
| 2.7       | Environmental Protection Authority Submission.....       | 32 |
| 2.7.1     | Introduction.....                                        | 32 |
| 2.7.2     | Air Quality Assessment.....                              | 33 |
| 2.7.2.1   | Bindaree Beef Response.....                              | 34 |
| 2.7.2.1.1 | Meteorological Data.....                                 | 34 |
| 2.7.2.2   | Volume v's point source.....                             | 35 |
| 2.7.2.3   | Peak to mean ratio.....                                  | 36 |
| 2.7.2.4   | Sensitive Receptors.....                                 | 36 |
| 2.7.2.5   | Proposed boiler and generators.....                      | 36 |
| 2.7.2.6   | Modelling methodology.....                               | 36 |
| 2.7.2.7   | Existing Coal Fired Boiler.....                          | 37 |
| 2.7.2.8   | Bindaree Beef Commitment.....                            | 38 |
| 2.7.3     | Addendum providing Air Quality Consent Conditions .....  | 38 |
| 2.7.3.1   | Bindaree Beef Response.....                              | 39 |
| 2.7.3.2   | Bindaree Beef Commitment.....                            | 39 |
| 2.7.4     | Noise Assessment .....                                   | 41 |
| 2.7.4.1   | Bindaree Beef Response.....                              | 42 |
| 2.7.4.2   | Bindaree Beef Commitment.....                            | 43 |
| 3.0       | Public Submissions.....                                  | 45 |
| 3.1       | Submission of Support – J Irwin.....                     | 45 |
| 3.2       | Submission of Support – G & P Murray.....                | 45 |
| 3.2.1     | Bindaree Beef Response.....                              | 46 |
| 3.3       | Anonymous Submission.....                                | 50 |
| 3.3.1     | Odour Assessment .....                                   | 50 |
| 3.3.1.1   | Bindaree Beef Response.....                              | 50 |
| 3.3.2     | Local Metrological Data .....                            | 51 |
| 3.3.2.1   | Bindaree Beef Response.....                              | 51 |
| 3.3.3     | Coal Fired Boiler .....                                  | 51 |
| 3.3.3.1   | Bindaree Beef Response.....                              | 51 |
| 3.3.4     | Odour Controls .....                                     | 52 |
| 3.3.4.1   | Bindaree Beef Response.....                              | 52 |
| 3.3.5     | Bio-filter Management.....                               | 52 |
| 3.3.5.1   | Bindaree Beef Response.....                              | 53 |
| 3.3.6     | Plant Operation .....                                    | 53 |
| 3.3.6.1   | Bindaree Beef Response.....                              | 53 |



|            |                                                                        |     |
|------------|------------------------------------------------------------------------|-----|
| 4.0        | Consultation.....                                                      | 54  |
| 5.0        | Summary of Commitments .....                                           | 56  |
| 6.0        | Conclusion .....                                                       | 59  |
| 7.0        | References .....                                                       | 61  |
| Appendix A | Letter from Department of Planning & Environment .....                 | A-1 |
| Appendix B | Director General Requirements.....                                     | B-1 |
| Appendix C | Inverell Shire and NSW Government Agencies' Submissions .....          | C-1 |
| Appendix D | Public Submissions.....                                                | D-1 |
| Appendix E | Survey & Assessment of the presence & extent of Box Gum Woodland ..... | E-1 |
| Appendix F | Letter from Bindaree Beef to Office of Water..                         | F-1 |
| Appendix G | Air Quality Assessment.....                                            | G-1 |
| Appendix H | VIPAC Letter.....                                                      | H-1 |
| Appendix I | Boiler Approval .....                                                  | I-1 |
| Appendix J | Air Quality Second Addendum Letter .....                               | J-1 |
| Appendix K | Recommended Noise Conditions.....                                      | K-1 |
| Appendix L | Consultation Flyer.....                                                | L-1 |

## FIGURES

|                            |    |
|----------------------------|----|
| Figure 1: Wind Roses ..... | 35 |
|----------------------------|----|

## TABLES

|                                                        |    |
|--------------------------------------------------------|----|
| Table 1: Submissions Summary .....                     | 16 |
| Table 2: Estimated Post Approval Project Schedule..... | 17 |
| Table 3: Noise monitoring locations .....              | 42 |



|                                                                                                                         |    |
|-------------------------------------------------------------------------------------------------------------------------|----|
| Table 4: Noise Limits .....                                                                                             | 44 |
| Table 5: Noise Comparison – Existing and Future Plant Operations<br>( $L_{Aeq}$ ).....                                  | 47 |
| Table 6: Noise Comparison – Existing and Future Plant Operations<br>( $L_{Amax}$ ) .....                                | 47 |
| Table 7: Comparison of Odour Concentration at Receptors 33 and<br>34 and 7218 Gwydir Highway (Peak Concentrations)..... | 50 |
| Table 8: Bindaree Beef's Commitments .....                                                                              | 56 |



# 1.0 Introduction

This Submissions Report (SR) has been prepared as requested by the Secretary of the NSW Department of Planning and Environment as outlined in the Department's letter dated 27 August 2014 (Appendix A) in accordance with Section 85A(2) Responding to Submissions under the Environmental Planning and Assessment Regulations 2000 (as amended).

This SR provides a brief history of the project to date, provides a project status update and documents Bindaree Beefs response to the issues raised by the NSW Government Agencies and public following the public exhibition of the Environmental Impact Statement (EIS).

This Report is structured as follows:-

- Section 1 – Overview of the project, its background and project status update;
- Section 2 – Summary of matters raised by NSW Government Agencies and Authorities submissions along with Bindaree Beef's response to the raised matters;
- Section 3 – Summary and Bindaree Beef's response to matters raised in public submissions;
- Section 4 – Summary of the public consultation undertaken during the public exhibition period;
- Section 5 – Summary of commitments from Bindaree Beef in response to matters raised in submissions; and
- Section 6 – Conclusion.



## 1.1 Background

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

This Submissions Report (SR) has been prepared on behalf of Bindaree Beef, being the applicants for the installation of a wastewater treatment system (bio-digester) and new rendering plant facility at their existing abattoir facility in Inverell.

The bio-digester generates bio-gas from waste product and effluent, utilising this gas for creating energy. This process eliminates the need for coal and reduces electricity needs.

This application for development consent seeks approval for the construction and operation of:

- An anaerobic digester, utilising abattoir wastewater and waste solid products for generation of bio-gas; and
- A rendering plant for rendering of inedible products for purified fat and protein production.

This SR provides Bindaree Beef's response to submissions received by the Department of Planning and Environment (DP&E) as a result of the exhibition of the application for development consent. It also provides an update on the project status that may be considered by the Determining Authority in reaching its determination on the application.

Director General Requirements (DGRs) were received from the then Department of Planning and Infrastructure on 13 September 2013 following the lodgement of a Preliminary Environmental Assessment. Appendix B contains a copy of the DGRs.

Mitchel Hanlon Consulting on behalf of Bindaree Beef lodged an application for development consent (Ref. SSD-6093) with the Department, on Monday 14 July 2014 under Division 4.1 of Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) for State Significant Development.

The application was placed on public exhibition by the DP&E for a period of 34 days from Wednesday 16 July until Monday 18 August 2014. The application was also referred by the DP&E to relevant NSW Government Agencies that have a role in managing any potential impacts associated with the project.

DP&E placed a notice in the local Inverell Times on Tuesday 15 July 2014 to



advise the public of the exhibition. In addition, the Department notified 46 properties in writing about the proposal.

The Development Application along with the Environmental Impact Statement (EIS) was made available:-

- On the DP&E website <http://www.planning.nsw.gov.au>
- At the DP&E Information Centre, 23-33 Bridge Street, Sydney
- At the Inverell Shire Council Administration Centre, 144 Otho Street, Inverell; and
- At the Nature Conservation Council, Level 2, 5 Wilson Street, Newton.

In addition, Mitchel Hanlon Consulting along with representatives from Bindaree Beef held three (3) public “drop in sessions” on Thursday 31 July, Saturday 2 August and Tuesday 5 August. A separate adjoining landowners meeting was held on Thursday 31 July 2014.

A summary of the general issues raised at the “drop in sessions” and adjoining landowners meeting is contained in Section 4.0 of this Report.

The SR has been prepared following public exhibition of the application and provides comment on the public and NSW Government Agency submissions received by the DP&E during the exhibition period.



## 1.2 Summary of submissions received

A total of nine (9) submissions were received as a result of the public exhibition and referrals to NSW Government Agencies, six (6) being from NSW Government Agencies and the remaining three (3) from local landowners (Appendix C and Appendix D).

DP&E will consider each of the submissions as part of its review of the application along with this SR. DP&E makes available all copies of the submissions on its website and has requested that Bindaree Beef respond to the issues raised in the submissions (see DP&E letter contained in Appendix A).

The source of the submissions is indicated in Table 1.

**Table 1: Submissions Summary**

| Source of submission                                   | Report on Submissions section reference                     |
|--------------------------------------------------------|-------------------------------------------------------------|
| 1. NSW Trade & Investment – Resource & Energy Division | Section <b>Error!</b><br><b>Reference source not found.</b> |
| 2. NSW Transport – Roads & Maritime Services           | Section 2.3                                                 |
| 3. Office of Environment & Heritage                    | Section 2.4                                                 |
| 4. Inverell Shire Council                              | Section 2.5                                                 |
| 5. Office of Water                                     | Section 2.6                                                 |
| 6. Environmental Protection Authority                  | Section 2.7                                                 |
| 7. Public Submission – John Irwin                      | Section 3.1                                                 |
| 8. Public Submission -                                 | Section 3.2                                                 |
| 9. Public Submission - Anonymous                       | Section 3.3                                                 |



## 1.3 Project update

The project is awaiting approval prior to funding being released by AusIndustry. Upon approval the following process and timeframe is estimated in Table 2.

**Table 2: Estimated Post Approval Project Schedule**

| PROJECT COMPONENT                 | ESTIMATED COMPLETION DATE         |
|-----------------------------------|-----------------------------------|
| Engineering Design – Bio-Digester | April 2015                        |
| Engineering Design – Render Plant | June 2015                         |
| Procurement – Bio-Digester        | September 2015 (delivery to site) |
| Procurement – Render Plant        | January 2016 (delivery to site)   |
| Construction – Bio-Digester       | March 2016                        |
| Construction – Render Plant       | May 2016                          |
| Commissioning – Bio-Digester      | September 2016                    |
| Commissioning – Render Plant      | September 2016                    |



## 2.0 Authority and Agency Submissions

### 2.1 Introduction

A total of six (6) submissions were received from Inverell Shire Council and NSW government agencies. The submissions are located in Appendix C.

### 2.2 NSW Trade & Investment – Resource & Energy Division

A submission from the NSW Mineral Resources Branch (MRB) was received on the 18th July 2014. The MRB advised they have no further comments to raise in regard to the planning proposal.

#### 2.2.1 Bindaree Beef Response

Bindaree Beef acknowledges MRB's submission.

### 2.3 NSW Transport – Roads & Maritime Services

A submission from the NSW Transport – Roads and Maritime Services (RMS) was received on 14 August 2014. The RMS reviewed the Environmental Impact Statement (EIS) with regards to the safety and efficiency of the road network, traffic management, the integrity of infrastructure assets and integration of land use and transport.

RMS advised that the Gwydir Highway is a classified (state) road and that Inverell Council is the 'Roads Authority' for this road and all other public roads in the subject area.

A number of comments were raised with respect to site access, particularly for large vehicles, and the right turn intersection treatment into the site from Gwydir Highway. The comments and consent condition requirements are outlined in the following sections.

#### 2.3.1 Traffic Impact Statement



RMS maintains its previous comments in relation to the Traffic Impact Statement (TIS) undertaken by Better Transport Futures.

These comments related to the following:-

- Sidra Analysis;
- On-site car parking; and
- Truck movements.

### 2.3.1.1 Bindaree Beef Response

As stated in Section 5.14.3 of the Environmental Impact Statement (EIS), an addendum was provided by SECA Solutions Pty Ltd (SECA) to the Better Transport Futures Traffic Impact Statement.

Both the Traffic Impact Statement prepared by Better Transport Futures and the addendum report prepared by SECA Solution conclude that traffic and parking arrangements for the proposed development are satisfactory.

All vehicle access to the subject site will continue to occur via the existing access main point from Gwydir Highway which was upgraded in 2008 to include a centre divider to prevent traffic from crossing into opposing lanes when turning.

## 2.3.2 Gwydir Highway Intersection

RMS supports the SECA Solutions addendum to the TIS that recommends a CHR (S) channelized right' turn treatment for vehicles approaching from the west, and an AUL auxiliary left turn treatment for vehicles approaching from the east.

The RMS further notes that the design requirements for the identified intersection treatments would vary where access is required for heavy vehicles longer than a standard B-Double configuration.

It is suggested that the Consent Authority may wish to impose a consent condition to prohibit such vehicles from accessing the site until an appropriate intersection is provided to comply with the relevant Austroads Guidelines, Australian Standards and RMS Supplements.

### 2.3.2.1 Bindaree Beef Response

As stated in Section 5.14.3.1 of the Environmental Impact Statement (EIS), there is no increase in traffic movements from staff or stock deliveries. However there will be an increase in traffic movements as a result of construction activities.



The TIS and supporting Addendum identify that heavy vehicles longer than a standard B-Double configuration will not require access to the site and as a result the need for an upgrade to the intersection is not required.

Furthermore, as the entrance intersection constrains the types of vehicle that can safely negotiate entry into the site, Bindaree Beef concur with the RMS recommendation that a consent condition to prohibit heavy vehicles longer than a standard B-Double configuration from accessing the site until an appropriate intersection is constructed.

### 2.3.3 Vehicle Transport Management Plan & Works Authorisation Deed

The RMS advise that the Consent Authority could request the site operator develop and implement a Vehicle Transport Management Plan for the site, which identifies the largest design vehicle permitted to access the site and how these vehicles manoeuvre on site.

Furthermore, site access, particularly for large vehicles, could be addressed in an Operational Management Plan for the site. Such a document may include a limit to the size of vehicle permitted to enter the site, which will enable a future reconsideration of access conditions should larger vehicles become required in future. Additionally, the document may include a Code of Conduct and induction process aimed at encouraging safe behaviour for staff and contractors accessing the site.

For all works on the Gwydir Highway the developer will be required to enter into a “Works Authorisation Deed” (WAD) with RMS prior to the commence of any on-site construction works associated with the development.

#### 2.3.3.1 Bindaree Beef Response

Bindaree Beef are aware of the requirement for a WAD for any work activity that occurs on Gwydir Highway. As the TIS and Addendum for the proposed development identified the existing Gwydir Highway entrance is adequate for the existing and future traffic movements and types as a result of the proposal, no construction upgrade work is proposed to the Highway and hence, there is no need for a WAD in relation to this proposal.

Bindaree Beef concur with the RMS recommendation that a consent condition for a Vehicle Transport Management Plan/Operation Management Plan for the site be prepared to include such things as a Code of Conduct and induction process aimed at encouraging safe behaviour for staff and contractors accessing the site.



## 2.4 Office of Environment & Heritage

A submission from the NSW Office of Environment and Heritage (OEH) was received on the 15 August 2014. The OEH reviewed the Environmental Impact Statement (EIS) with regards to biodiversity, Aboriginal cultural heritage, OEH estate and flooding, coasts and estuaries.

A number of comments were raised with respect to biodiversity, with some recommendations relating to heritage. The comments and consent condition requirements are outlined in the following sections.

### 2.4.1 Aboriginal Cultural Heritage

Following a review of heritage information contained within the EIS and a site inspection undertaken on 7 August 2014, OEH have determined that the proposed development is not constrained by any Aboriginal Cultural Heritage.

However, OEH made a number of recommendations in relation to ceasing activities if any Aboriginal object/s or item/s of Aboriginal cultural significance are identified during construction.

#### 2.4.1.1 Bindaree Beef Response

As outlined in Section 5.17 of the EIS, a desktop Cultural Heritage Assessment was undertaken for the proposed development area to determine the potential impacts on any Indigenous and European cultural heritage sites or items potentially occurring.

In relation to Aboriginal Cultural Heritage the desktop assessment concluded that the potential for any Aboriginal objects to be in existence is highly unlikely. This is consistent with the submission received from the OEH.

Bindaree Beef acknowledges the importance of protecting Aboriginal cultural heritage is reflected in the provisions of the National Parks and Wildlife Act 1974 and supports the recommendations made by OEH in this regard requiring that development consent is conditional upon the following:-

“If any Aboriginal object(s) or item(s) of Aboriginal cultural significance is identified during the proposed works:

- All activity is to cease at that location;
- A 10m buffer zone is to be demarcated around the location;



- The Office of Environment and Heritage (North East Planning Unit) is to be notified immediately; and
- Works are not to resume within the demarcated buffer zone until such time as authorised in writing by the Department of Planning and Environment.”

### 2.4.1.2 Bindaree Beef Commitment

Bindaree Beef will include these requirements in the project Construction & Environment Management Plan (CEMP) to be produced prior to the commencement of construction on site.

## 2.4.2 Biodiversity

Following a review of biodiversity information contained within the EIS and a site inspection undertaken on 7 August 2014, OEHL raised concerns regarding the Endangered Ecological Community (EEC) White Box Yellow Box Blakely's Red Gum Woodland, as listed under the *Threatened Species Conservation Act 1995*.

OEHL suspected the existence of a degraded remnant of the EEC onsite, and subsequently recommended that:

1. Further investigation is undertaken to determine the presence and extent of Box Gum Woodland EEC on the subject site;
2. An assessment of the extent and significance of the direct and indirect impacts of the proposal in relation to Box Gum Woodland EEC is undertaken; and
3. If it is determined that the proposal is likely to have an adverse effect on this EEC, then appropriate offsets are provided in accordance with those required by the BioBanking Assessment Methodology.

### 2.4.2.1 Bindaree Beef Response

Following receipt of the submission from the OEHL, clarification was sought from OEHL as to the required study area of the investigation. It was detailed by OEHL that the assessment was required to target the EEC within the proposed bio-digester and rendering plant development area, taking into account the potential for indirect impacts on adjacent vegetation.

As outlined in Section 5.18 of the EIS, an assessment of the impacts on flora and fauna at the subject site and adjoining was made. This assessment was based upon a field assessment and literature review which concluded that:-

“No State or Federally listed threatened species were observed within the development area. Subsequently no further assessment is required in regard to vegetation within the immediate development area.”



The EIS also noted that:-

“No State or Federally listed threatened species were observed within the wastewater irrigation area. It is unlikely that the application of wastewater to this vegetation will have any detrimental impacts on the biodiversity of the subject site.”

Despite the conclusions contained within the EIS, OEH requested further investigations be undertaken.

Ecological consultants, Niche Environment and Heritage (Niche) were subsequently engaged to complete this assessment. Details of the assessment undertaken are detailed in the following sections. A copy of the Niche’s assessment is located in Appendix E.

## 2.4.2.2 Field Assessment

The field assessment was undertaken on 2 September 2014. With the aims of:

- Determining the presence and extent of Box Gum Woodland within the study area; and
- Assessing the significance of direct and indirect impacts of the proposal in relation to box gum woodland.

The methodology adopted for the assessment is outlined in the following section.

### 2.4.2.2.1 Field Assessment Methodology

The site assessment consisted of a random meander and BioBanking plots in accordance with the Department of Environment and Climate Change (DECC) guideline *BioBanking Assessment Methodology* and S. Cropper’s *The Management of Endangered Plants*. The field assessment encompassed a study area which was inclusive of the immediate development area of the proposed infrastructure and adjacent vegetated areas to the west.

### 2.4.2.2.2 Field Assessment Results

The data obtained during the site assessment was used to determine the presence of the EEC. Both the commonwealth and state identification and assessment guidelines were utilised to determine Box Gum Woodland presence.

It was determined that the State and Federal listed Box Gum Woodland ecological communities **were not present** within the immediate development area or the adjacent area.



Further to this, Niche determined that the proposed development would not have any direct or indirect impacts on Box Gum Woodland. The full report can be found in Appendix E.

Niche's Report was submitted to the OEH for consideration on the 18 September 2014, with further comments received from OEH on the 25 September 2014. These comments are summarised below.

### 2.4.2.3 Further Response from OEH

On 25th September 2014, OEH issued a formal response to the NSW Department of Planning and Environment regarding the biodiversity assessment undertaken by Niche.

The letter confirms that OEH:-

"that Box Gum Woodland EEC is unlikely to be responsive to assisted natural regeneration due to the high nutrient status of the soil, indicated in part by the site's history and the prevalence of Kikuyu (*Pennisetum clandestinum*). High nutrient levels are not conducive to the regeneration of Box Gum Woodland EEC. Hence, to effectively regenerate the Box Gum Woodland EEC there is a likelihood that soil removal would be required to alter soil regimes and hence there would be a subsequent loss of soil seed bank following the removal of Kikuyu.

In light of the above, OEH considers that Box Gum Woodland EEC is not present within the subject site and that no further assessment is required in relation to the Box Gum Woodland EEC for the subject site."

### 2.4.2.4 Bindaree Beef Response

Bindaree Beef acknowledge the OEH response that Box Gum Woodland EEC is not present within the subject site and that no further assessment is required in relation to the Box Gum Woodland EEC for the subject site.



## 2.5 Inverell Shire Council

A submission from the Inverell Shire Council was received on the 18 August 2014. Council's submission was prepared in the context of the Environmental Impact Statement (EIS), Council's Local Environmental Plan 2012 and Development Control Plan 2013 and inspections of the site, locality roads and infrastructure.

Council advised that it is satisfied that the EIS adequately addresses the matters raised by Council in its submission on the draft EIS and also the matters identified in the Director General's Requirements. In relation to Council's submissions the EIS addressed satisfactorily:-

- Traffic, access and car parking;
- Stormwater and Drainage;
- Visual impacts;
- Odour;
- Noise;
- Landscaping;
- Services;
- Bushfire;
- Contamination and geotechnical matters;
- Fire safety; and
- Construction impacts.

Council acknowledged the specialists assessments and advised that from Council's position these assessments are comprehensive, however Council does not employ specialists in these fields. Council is also satisfied that the referral process will ensure comprehensive assessment of potential impacts.

Council is satisfied that the Department will include conditions that ensure appropriate construction and operational management plans be prepared, approved and implemented for the duration of the project.

The submission concludes by stating that Inverell Shire Council is confident that the Department's assessment and determination will be thorough and that appropriate conditions will be placed on the Project Approval to ensure the likely impacts are adequately mitigated and that corrective action, where necessary can be undertaken.

Council requests the opportunity to view the draft conditions of the Project Approval.



## 2.5.1 Bindaree Beef Response

Bindaree Beef acknowledge Inverell Shire Council's submission and will continue to work collaboratively with Council to facilitate the significant environmental and economic benefits that Bindaree Beef brings to the Inverell region.



## 2.6 Office of Water

A submission from the Department of Primary Industries – NSW Office of Water was received on the 22 August 2014. The NSW Office of Water (NOW) reviewed the Environmental Impact Statement (EIS) with regards to surface water, groundwater and hydro-geology aspects of the project.

A number of comments were raised with respect to groundwater management, riparian area and watercourse management, stormwater management, erosion and sediment control. The comments and consent condition requirements are outlined in the following sections.

### 2.6.1 Groundwater

The NOW raised that the groundwater conditions on the site have not been sufficiently reported to provide an understanding of the groundwater flow and baseline groundwater quality onsite. NOW suggested that there is a possibility that historic wastewater irrigation activities have contributed to potential groundwater contamination. The future management of the digestate from the anaerobic digester should ensure that appropriate controls are in place to minimise groundwater contamination.

A number of consent conditions have been proposed by the NOW for groundwater management and are outlined below:

- 1 The proponent must develop a revised groundwater monitoring network to ensure adequacy of the groundwater monitoring network in consultation with the Office of Water. This should include the adequacy of the spatial distribution of the network and any need to monitor effluent leakage from the existing holding ponds and irrigation storage dams.
- 2 The proponent must register all groundwater bores with the Office of Water and obtain a unique GW bore identifier that is to be used for all reporting.
- 3 The proponent is to develop an early-detection groundwater quality monitoring, trigger levels, reporting and response plan, benchmarked to a suitable definition of baseline conditions. This shall include a groundwater remediation plan and identification of any make good measures if contamination occurs.
- 4 The proponent to report, with any analytical results, the sampling, handling, storage and analytical methods, and other associated quality assurance and control information, including analytical uncertainties.
- 5 The proponent should revise the digestate management plan to include the following:
  - a) Reinstatement of the pilot waste treatment plant to better define the effluent volumes and compositions anticipated for the full-scale proposal.
  - b) An irrigation control system.



- c) Mapping of soil types, nutrient- and metal-retention properties, and deep-drainage potential.
- d) A contamination risk analyses with respect to the aquifer and potential receptors (groundwater users).

### 2.6.1.1 Bindaree Beef Response

A meeting was held with representatives from the NOW, Department of Planning and Infrastructure, Environmental Protection Agency (EPA) and the proponents' project team on the 9 September 2014 via teleconference and face to face meeting. The consent conditions were discussed in detail, and further clarification was sought.

At that meeting Bindaree Beef raised concerns regarding the potential for a regulatory overlap between the Office of Water and the Environmental Protection Authority (EPA). To that end, Bindaree Beef is requesting that NSW Planning, in setting conditions for the project, keep the regulatory oversight confined to the EPA. Bindaree Beef is not attempting to limit the input of the Office of Water through this request.

As outlined in the conclusion of Section 5.12.6 of the EIS, the groundwater monitoring data from the past seven years indicated a good level of groundwater in the existing wastewater irrigation areas. Generally the parameters tested are within the recommended trigger values of the ANZEC (2000) guideline. This indicates that the current effluent and solids utilisation practices on the property are not detrimentally affecting the groundwater resources.

The EIS goes on further to state that better management practices undertaken as per the proposed digestate application will ensure that the current lack of impacts on groundwater is maintained. Effluent and solid utilisation will be managed and nutrient budgeting will ensure over-application of nutrients is minimised.

### 2.6.1.2 Bindaree Beef Commitment

The proponent has accepted the proposed consent conditions and has provided a commitment to reinstate the anaerobic digester pilot plant to assess the nutrient concentration of the digestate. Appendix F contains a copy of the correspondence submitted to the NOW.

The proponent will work collaboratively with the NOW and EPA to determine appropriate monitoring bore locations and will maintain a positive ongoing regulatory relationship with the EPA for future environmental monitoring.

Bindaree Beef requested that the Determining Authority, in setting conditions for the project, keep the regulatory oversight confined to the EPA.



## 2.6.2 Riparian Management

The NOW identified that the development will be located within 40 metres of a watercourse. As the proposed development is State Significant Development, a Controlled Activity Approval under the Water Management Act 2000 is not required. However all works within 40 metres of a watercourse should be constructed in accordance with the Office of Water's Guidelines for Controlled Activities.

The NOW have proposed a consent condition for riparian management as outlined below:

"All works within or adjacent to riparian lands should be consistent with the NSW Office of Water's Guidelines for Controlled Activities."

### 2.6.2.1 Bindaree Beef Response

As outlined in Section 5.11.3 of the EIS, developments classified as State Significant Development are excluded from the requirement to obtain a Controlled Activity Approval.

The predicted impact on the drainage lines will be minimal due to the implementation of sediment and erosion controls during and post construction. Any works that are undertaken within 40 meters of a watercourse will be in accordance with the Office of Water Guidelines for Controlled Activities.

### 2.6.2.2 Bindaree Beef Commitment

The proponent will ensure as part of the consent conditions that all construction works within or adjacent to riparian lands will be consistent with the NSW Office of Water's Guidelines for Controlled Activities. The NOW will be consulted where there are any potential impacts on a watercourse prior to construction works being undertaken.



## 2.6.3 Stormwater Management, Erosion and Sediment Control

The NOW identified that the EIS outlines a number of management options for stormwater on the site including rainwater tanks, swale drains and check dams. It is important that appropriate stormwater management measures are in place to limit any potential impacts on surface water and groundwater sources on and off site.

The EIS also outlines erosion and sediment control measures for the site including a deflection bank to divert clean runoff around the anaerobic digester site. Sediment fencing and grassed swale drains have been proposed to control sediment moving from the anaerobic digester and rendering plant sites both during construction and operation activities. It is important that appropriate measures, including an Erosion and Sedimentation Control Plan are implemented on the site to limit any potential impacts on surface water and groundwater sources.

The NOW has proposed a consent condition for stormwater management, erosion and sediment control as outlined below:

“To aid in the protection of receiving water source quality, all stormwater runoff must be adequately treated at its source and/or diverted through the stormwater treatment process designed for the site, prior to the stormwater being discharged to surface water and groundwater sources.”

### 2.6.3.1 Bindaree Beef Response

As outlined in Section 5.11 of the EIS, CPC Land Development Consultants Pty Ltd prepared a Stormwater Report and associated plans outlining the proposed drainage for the rendering plant and bio-digester plant.

Stormwater from both the rendering plant and bio-digester sites will flow into a rock lined check dam with an outlet to an existing 600mm culvert. From the culvert, site stormwater flows into an existing swale drain and natural drainageline to an existing twin cell box culvert under the Gwydir Highway. The increase in discharge from the proposed development sites will be negligible in terms of the total discharge to the box culvert on the Gwydir Highway.

The EIS goes on to further address erosion and sediment control by outlining the following:-

“Erosion control will be implemented at this site during construction activities to minimise soil erosion and protect surface water quality. Site run off and erosion will be controlled by installing a deflection bank upslope of the construction site and direct clean runoff away from the site. Water will be directed around the site into the existing swale drain and natural drainage line to the existing box culvert at the Gwydir Highway.



Constructed grassed swale drains will be installed to direct surface water flows throughout the site.

Potential impacts on water quality during construction will be minimized by the development and implementation of a Sediment and Erosion Control Plan to be developed as part of the construction phase. Rehabilitation of the exposed surfaces will be implemented to minimize sediment runoff.”

### 2.6.3.2 Bindaree Beef Commitment

The proponent has accepted NOW’s proposed consent conditions for stormwater management. The proponent will ensure all stormwater runoff is adequately treated at its source and/or diverted through the stormwater treatment process designed for the site.

Stormwater will be managed to minimise erosion and control sediment prior to being discharged to surface water and groundwater sources.



## 2.7 Environmental Protection Authority Submission

### 2.7.1 Introduction

A submission from the NSW Environment Protection Authority (EPA) was received on 18 August 2014. The EPA reviewed the Environmental Impact Statement (EIS) and noted that the project will require a variation to the existing environment protection licence under the Protection of the Environment and Operations (POEO) Act 1997. The proponent will need to make a separate application to the EPA to vary this licence if development project approval is granted.

The EPA request an opportunity to comment on the draft project approval once the Department of Planning and Environment has considered its recommendations and prepared draft conditions of consent.

The EPA submission summarises the following as the most significant environmental issues of relevance to the EPA:-

- Air Quality – Inadequacies identified in the draft Air Quality Assessment by EPA have not been adequately addressed by the proponent; and
- Noise – Inadequacies identified in the draft Noise Assessment by EPA have not been adequately addressed by the proponent.

In this regard detailed comments and consent condition requirements are outlined in the following sections.



## 2.7.2 Air Quality Assessment

In its submission dated 18 August 2014, the EPA identified two issues and made recommendations relating to the impact of the development on air quality. These are:

### **Issue 1 Review of the final EIS against the issues identified in the EPA's adequacy review**

- (a) It has not been demonstrated that the meteorological data used in the assessment is site representative.

Recommendation: EPA recommends that the proponent is further requested to demonstrate that the TAPM generated data is site representative and suitable for use in the assessment.

- (b) Emissions from the proposed rendering plant have been modelled as volume rather than point sources.

Recommendation: EPA recommends that the proponent is requested to provide the assumed exhaust parameters for the roof vents. To further demonstrate this issue has been resolved, EPA requests that the proponent provides the CALPUFF input file.

- (c) It is unclear whether the predicted odour impacts have been presented as peak nose response time concentrations rather than one hour averages.

Recommendation: EPA recommends that the proponent is required provide the peak to mean ratios applied in the study and any electronic files to demonstrate they were appropriately applied to the dispersion modelling results.

- (d) Sensitive receptors.

Recommendation: EPA recommends the proponent is requested to update Table 8-1 to include sensitive receptors 43 and 44.

- (e) The combustion emissions data used in the AQIA indicate that the proposed boiler and three generators may not comply with Group 6 requirements of the Protection of the Environment Operations (Clean Air) Regulation 2010.

Recommendation: EPA recommends that the proponent is required to demonstrate that the proposed boiler and three generators will comply with the Group 6 emission standards in Part 5 of the Protection of the Environment Operations (Clean Air) Regulation (2010).

### **Issue 2 Review of the final EIS against the issues identified in the EPA's adequacy review**

- (a) Unclear how TAPM data was used in CALPUFF.



Recommendation: EPA recommends that the proponent is requested to provide additional information regarding the methodology used to incorporate the meteorological data in CALPUFF and a detailed justification for the chosen methodology.

(b) Existing coal fired boiler does not comply with the Clean Air Regulation.

Recommendation: EPA recommends the proponent is requested to provide additional information detailing the approach it proposes to implement to ensure that the coal fired boiler complies with the Protection Operations (Clean Air) Regulation, 2010.

## 2.7.2.1 Bindaree Beef Response

A meeting was held with representatives from the EPA and Department of Planning and Infrastructure, and the proponents' project team on the 28 August 2014 at the Department of Planning and Infrastructure head office in Sydney. The comments from EPA were discussed in detail, and further clarification was sought.

VIPAC provided a revised air quality assessment report and accompanying letter (Appendix G).

Subsequent to this meeting and the feedback received on the initial submission from the EPA dated 18 August 2014. A summary of the VIPAC response is provided in the following sections. A copy of the VIPAC report letter is in Appendix H.

### 2.7.2.1.1 Meteorological Data

(a) It has not been demonstrated that the meteorological data used in the assessment is site representative.

VIPAC used TAPM to generate wind roses at the nearby Bureau of Meteorology (BoM) weather stations (Inverell Research Centre located 2.5km south east of Bindaree Beef and Inverell Raglan Street located 5.5km east of Bindaree Beef) to determine the suitability of the meteorological data.

The 9am wind rose for the research centre for 2002-2006 was compared to the BoM long term wind rose. As shown in Figure 1 the wind directions are very similar, with TAPM slightly overestimating the south westerlies and underestimating the south easterlies. The number of calm winds is representative of BoM station.

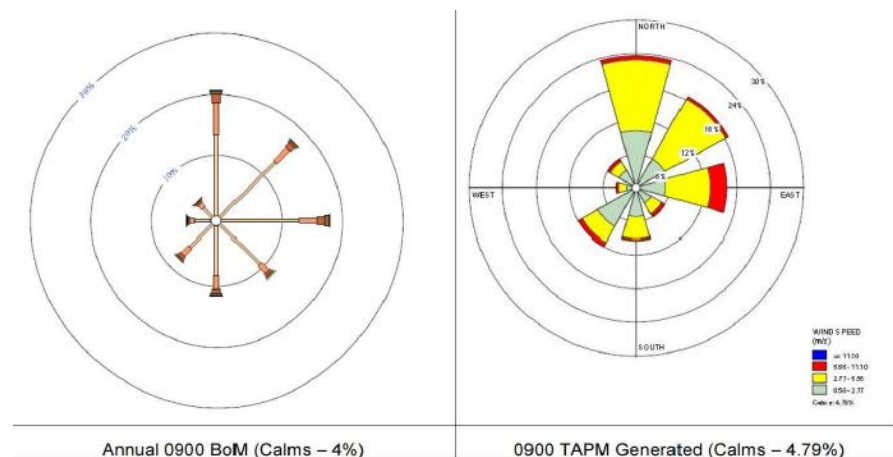


Figure 1: Wind Roses

Furthermore ViPAC undertook a wind rose comparison for each month and the monthly wind roses were comparable in wind speed and direction as well as calm wind frequencies.

As such, the TAPM weather data used in the ViPAC Air Quality Assessment is considered representative of the site.

## 2.7.2.2 Volume v's point source

- (f) Emissions from the proposed rendering plant have been modelled as volume rather than point sources.

At the meeting on the 28 August 2014 it was explained that the rendering plant was modelled as point sources. The rendering building will be completely sealed, with three stacks for fresh air exchanges. These three air exchanges have been modelled as odour emitting point sources with the following parameters of each vent modelled as follows:-

| Parameter     | Value                                                            |
|---------------|------------------------------------------------------------------|
| Height        | 12.5 m                                                           |
| Diameter      | 1.25 m                                                           |
| Temperature   | 303 K                                                            |
| Velocity      | 10 m/s                                                           |
| Emission Rate | 12,973 OU/Sec (failure case)<br>1,300 OU/sec (90% odour capture) |

As outlined in Section 5.4.8 of the Environmental Impact Statement there will



be extraction hoods over odour sources ducted to a common extraction system, which is then pumped through a humidifier and then blown through a grid of perforated pipe into gravel layer at the base of the bio-filter.

As requested by the EPA to further demonstrate that this issue has been resolved ViPAC provided the EPA with the CALPUFF input files on the 18 September 2014.

### 2.7.2.3 Peak to mean ratio

(g) It is unclear whether the predicted odour impacts have been presented as peak nose response time concentrations rather than one hour averages.

As outlined in Section 6.5 of the ViPAC Air Quality Assessment outlines that a peak to mean ratio has been applied.

The peak to mean (P/M) ratio used was 2.3 which is considered appropriate for this project. A ratio of 2.3 represents a variety of sources including wake affected points, volume sources and area sources in the far field situations.

Furthermore, as requested by the EPA to further demonstrate that this issue has been resolved ViPAC provided the EPA with access to the modelling files for the Bindaree Beef Air Quality Assessment on the 18 September 2014.

### 2.7.2.4 Sensitive Receptors

(a) Sensitive receptors.

The EPA requested that Receptors 43 and 44 be included in Table 8-1 of the ViPAC Air Quality Assessment.

Table 8-1 of the ViPAC Air Quality Assessment has been updated to include Receptors 43 and 44.

### 2.7.2.5 Proposed boiler and generators

(a) The combustion emissions data used in the AQIA indicate that the proposed boiler and three generators may not comply with Group 6 requirements of the Protection of the Environment Operations (Clean Air) Regulation 2010.

At the meeting on the 28 August 2014, Bindaree Beef accepted that a condition of consent requiring that the proposed boiler and generators be required to comply with the Group 6 emission standards in Part 5 of the Protection of the Environment Operations (Clean Air) Regulation 2010.

### 2.7.2.6 Modelling methodology

(a) Unclear how TAPM data was used in CALPUFF.

Upon review of ViPAC's final Air Quality Assessment, EPA requested that



additional information be provided regarding the methodology used to incorporate the meteorological data in CALPUFF and a detailed justification for the chosen methodology.

As outlined in Section 4.5 of the ViPAC Air Quality Assessment to generate the broad scale meteorological inputs to run CALPUFF, the Assessment used The Air Pollution Model (TAPM), which is a 3-dimensional prognostic model developed and verified for air pollution studies by the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

The output from TAPM was used to generate the appropriate meteorological data for the CALPUFF modelling system.

The TAPM output was converted to a 3D format suitable for the CALMET processor within the CALPUFF modelling system.

CALPUFF is an advanced non-steady state meteorological and air quality modelling system developed and distributed by Earth Tech, Inc. The model has been adopted by the US Environmental Protection Agency in its 'Guideline on Air Quality Models' as the preferred model for assessing near-field applications as it is the only model capable of simulating adverse meteorological conditions such as inversions or calm conditions. ViPAC advise that CALPUFF is the preferred model for this sort of air quality prediction in NSW.

As outlined in Section 2.7.2.1.1 of this Submissions Report a comparison with the nearest BoM weather station located at Inverell Research Centre and TAPM generated data at the BoM weather station.

As such, the TAPM weather data used along with the CALPUFF modelling in the ViPAC Air Quality Assessment is considered by ViPAC appropriate for the site and project.

## 2.7.2.7 Existing Coal Fired Boiler

(a) Existing coal fired boiler does not comply with the Clean Air Regulation.

As outlined in Section 3.7 of the Environmental Impact Statement (EIS), one of the existing two coal fired boilers within the existing rendering plant will be retained as a standby boiler.

Following the meeting held with representatives from the EPA and Department of Planning and Environment, and the proponents' project team on the 28 August 2014 it was concluded that the existing coal fired boiler to be retained that was approved in 1980 is required to comply with Group 3 standards of the Protection of the Environment Operations (Clean Air) Regulation 2010.

Appendix I contain the approval granted by the State Pollution Control Commission on 2 April 1980 for the coal fired boiler to be retained as a standby boiler for the new rendering plant.



The EPA confirmed via email on the 5 September 2014 that the approvals contained in Appendix I confirm that the coal fired boiler is required to comply with Group 3 standards.

To ensure compliance with the Group 3 standards of the Protection of the Environment Operations (Clean Air) Regulations 2010 Bindaree Beef commit to installing new sluice hoppers to the coal fired boiler to be retained and undertake further stack testing to ensure compliance with the Group 3 standards.

### 2.7.2.8 Bindaree Beef Commitment

The proponent will install new sluice hoppers to the 1980 coal fired boiler that is to be retained and undertake further testing to ensure compliance with the Group 3 standards.

## 2.7.3 Addendum providing Air Quality Consent Conditions

On the 3 October 2014 EPA provided a second addendum to the EPAs submission providing further assessment of the additional information provided by Bindaree Beef and ViPAC (Appendix J). The second addendum also contains recommended air quality consent conditions.

Appendix J contains a copy of the Second Addendum to the EPAs submission on the exhibited Air Quality Assessment.

EPA advise the following additional information into consideration to resolve all outstanding issues within the final Air Quality Impact Assessment:-

- ViPAC, 2014d Bindaree Beef Pty Ltd, Bindaree Beef EIS, Air Quality Assessment, 15 Sept 2014;
- ViPAC 2014e Bindaree Beef EIS, Letter from Ms Michelle Clifton (ViPAC) to Ms Jocelyn Ullman (Mitchel Hanlon Consulting Pty Ltd), 3 Sept 2014;
- CALMET and CALPUFF input files; and
- Mitchel Hanlon 2014, Bindaree Beef – Boiler installation dates and approval, via email from Ms Jocelyn Ullman (Mitchel Hanlon Consulting Pty Ltd), 2 September 2014.

The EPA advises the following:-

EPA has reviewed the additional information and considers that whilst all outstanding issues have not been thoroughly addressed, sufficient information has been provided to enable the recommendations of general terms of approval.

EPA provided an assessment of the additional information against all



outstanding issues.

The proponents' response to this additional assessment is detailed below.

The EPA second addendum goes on to further state:-

The project comprises infrastructure upgrades and control measures to reduce odour emission. The air quality impact assessment indicated that the project should result in reduced odour impacts compared to the existing facility. To date the EPA has received few odour complains in relation to the facility, and these have general been as a result of system failures. The project is predicted to marginally comply with relevant odour assessment criteria.

EPA considers that it may be prudent for the proponent to consider at the outset any additional feasible mitigation measures that could be implements if the facility emits offensive odour after it is operational. Whilst the Air Quality Impact Assessment (AQIA) demonstrates the project will reduce odour impacts, there is some uncertainty surrounding the predicted impacts. To enable the prompt resolution to any odour issues once operations, EPA considers the conditions of approval should include a process to assess the cost-effectiveness of any additional odour mitigation measures.

The installation of an on-site meteorological station is recommend as it would assist with the confirmation of any odour complaints and provide site specific meteorological data for any future dispersion modelling and impact assessments.

The EPA second addendum concludes that if the Department of Planning and Environment support the proposal that the EPA recommends the conditions of consent include the air quality conditions as contained in Appendix J.

### 2.7.3.1 Bindaree Beef Response

The proponent notes the EPA's additional assessment of the information provided in the second addendum and accepts the recommendations made by the EPA to the Department of Planning and Environment.

### 2.7.3.2 Bindaree Beef Commitment

In relation to the EPA's recommended conditions of consent for Air Quality contained in Attachment 2 of the EPA's second addendum the proponent has accepted EPA's proposed consent conditions for:-

- Retained coal fired boiler - the concentration limits are not to exceed the concentration limits specified for Group 3 standards;
- Biogas Boiler Stack – the concentration limits are not to exceed the concentration limits specified for Group 6 standards;
- Biogas Generators – the concentration limits are not to exceed the concentration limits specified for Group 6 standards;



- Monitoring and recording – monitoring and recording of the specified points being the retained coal fired boiler, biogas boiler stack and biogas generators be monitored post commissioning and annually thereafter in accordance with test methods contained in the publication *“Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.”*
- Meteorological station – be installed on site;
- Sulfur dioxide emission limits – be determined six (6) months after commissioning for the retained coal fired boiler, biogas boiler stack and biogas generators. These emission concentrations are to be calculated following an air quality impact assessment study. This study is to be submitted to the EPA's Armidale Office;
- Post commissioning air emissions report – a report to be submitted to the EPA's Armidale Office three (3) months after commission detailing the results of the coal fired boiler, biogas boiler stack and biogas generators source emissions sampling and analysis and compliance with the limits specified in L5.1. Bindaree Beef has confirmed via email with the EPA that the reference to L5.1 should be L1.1. It is requested that this reference be corrected on the conditions of consent
- Biofilter performance and management report – a report to be submitted to the EPA's Armidale Office six (6) months after commissioning of the biofilter presenting the results of odour sampling and analysis, identifying the values of the key biofilter design parameters and identifying monitoring and management measures to ensure continual achievement of the key biofilter design parameters.;
- Odour Impact Assessment and Mitigation Study – if EPA authorised staff are of the opinion and notify Bindaree Beef in writing that the facility is operating in breach of the Protection of the Environment Operations Act 1997, Bindaree Beef will submit an Odour Impact Assessment and Mitigation Report within 3 months of the written notification.



## 2.7.4 Noise Assessment

The EPA's main response is contained in their submission dated 18 August 2014 (Appendix C). A second response dated 2 September 2014 contains the recommended noise conditions (Appendix K).

The submission dated 18 August 2014 identified one issue relating to the impact of the development on noise. EPA advised the following:

### Issue 3 Background noise assessment does not meet the requirements of the NSW Industrial Noise Policy

Section 3.1 of the NSW Industrial Noise Policy (INP) clearly states that the "...background noise levels to be measured are those that are present at the time of the assessment and **without the subject development operating**. Hence for the assessment of modifications to an existing development, **the noise from the existing development should be excluded from the background noise measurements.**"

The EPA response continues with a comment stating the proponent either establishes the Rating Background Level (RBL) for Locations 1 and 3 in the absence of noise from the premises, or alternatively choose to accept a default minimum RBL of 30 dB(A) for all surrounding receivers.

The response continues with the following statement:

Predicted noise impacts for the proposed future operations of the premises (after construction is complete) appear below the default minimum Project Specific Noise Levels (i.e. the default minimum RBL of 30 dBA + 5 dBA = 35 dBA) and sleep disturbance criteria (i.e.  $LA_{1(1 \text{ minute})} = 45 \text{ dBA}$ ). EPA therefore recommends the application of these criteria as noise limits for the proposed future operations of the premises.

The EPA recommends the default minimum Project Specific Noise Levels ( $LA_{eq(15 \text{ minute})}$ ) of 35 dBA and night sleep criteria ( $LA_{1(1 \text{ minute})}$ ) of 45 dBA be applied as the noise limits for all receptor locations for the proposed future operations of the premises.

The EPA also recommends that construction noise impacts are managed in accordance with the EPA's Interim Construction Noise Guideline (ICNG) and that a Construction Noise Management Plan be prepared prior to the commencement of works to ensure compliance with the ICNG.

The EPA's submission concludes that the EPA Noise Assessment Unit is in the process of drafting recommended consent conditions for consideration. The recommended noise conditions were contained in the second response dated 2 September 2014.

The EPA's recommended noise conditions are contained in Appendix K.



### 2.7.4.1 Bindaree Beef Response

A meeting was held with representatives from the EPA and Department of Planning and Infrastructure, and the proponent's project team on the 28 August 2014 at the Department of Planning and Infrastructure head office in Sydney. The comments from EPA were discussed in detail, and further clarification was sought.

ViPAC, in their response on behalf of Bindaree Beef dated 3 September 2014, (contained in Appendix H) state that the proposed EPA Rating Background Level and project criteria levels do not affect the results of the ViPAC Noise and Vibration Assessment.

The proposed 35 dB  $L_{Aeq, 15 \text{ minute}}$  is suitable as the highest predicted noise level during the future scenario is 34 dB(A) during worst-case weather conditions at 7360 Gwydir Highway (identified as Receptor 52 in the ViPAC Assessment).

The proposed 45 dB  $L_{A1, (1 \text{ minute})}$  for the night time hours is suitable as the highest predicted  $L_{Amax}$  during the future scenario is 38 dB(A) during worst-case weather conditions at the same receptor.

Bindaree Beef challenges the number, location and frequency of monitoring requirements recommended by the EPA in its proposed conditions L6.1 and M8.1.

Proposed condition L6.1 identifies seven (7) locations for noise monitoring to be conducted at. No justification has been provided by the EPA on the selection of these locations.

Upon review of these locations in relation to the ViPAC Noise and Vibration Report, it appears that minimal change (for better or worse) in the predicted noise levels will be experienced at all of these identified locations except for 581 Fernhill Road (Identified as Receptor 41 in the ViPAC Assessment and Location 6 in the EPA conditions) which is predicted to have a 7 dB increase in the  $L_{Aeq}$  22:00-07:00 hours.

Bindaree Beef provided the locations identified in Table 3 to be sufficient.

**Table 3: Noise monitoring locations**

| Property identification | ViPAC Receptor ID No. | EPA identified location No. |
|-------------------------|-----------------------|-----------------------------|
| 77 McNeils Road         | Receptor 8            | Location 1                  |
| 7360 Gwydir Highway     | Receptor 42           | Location 5                  |
| 7204 Gwydir Highway     | Receptor 34           | Location 7                  |
| 84 Ditzells Drive       | Receptor 36           | Not identified              |



The locations identified in Table 3 have merit in ongoing noise monitoring due to the following criteria:-

- Affected by east-north-east and north-east dominate winds;
- Proximity to the existing abattoir; and
- Location in relation to the traffic noise influences of the Gwydir Highway

Bindaree Beef requests the inclusion of 84 Ditzells Drive (identified as Receptor ID 36 in the ViPAC Assessment) as a monitoring location due to the owner of this property lodging a submission raising concerns relating to noise as outlined in Section 3.2 of this Submissions Report.

Bindaree Beef questions the recommended condition from the EPA requiring noise monitoring being undertaken once every six (6) months so that it occurs twice in each reporting period and is to include for three (3) consecutive operating days.

Currently Bindaree Beef are not required to undertake any noise monitoring on the site. Given this, the ViPAC Noise and Vibration Assessment Report showing compliance with the EPA Rating Background Noise Levels, the location of the existing abattoir next to the Gwydir Highway it is considered appropriate that Bindaree Beef undertake the following noise monitoring frequency at those locations identified in Table 3.

- Six (6) months after commissioning of the rendering plant;
- Once every 12 months thereafter to correspond with each reporting period for a period of 3 years;
- Occur during each day, evening and night period as defined in the NSW Industrial Noise Policy for a minimum of:
  - o 1.5 hours during the day;
  - o 30 minutes during the evening; and
  - o 1 hour during the night.
- Occur for three (3) consecutive operating days.

Bindaree Beef requests that proposed consent condition R4 be reviewed to reflect the above changes.

## 2.7.4.2 Bindaree Beef Commitment

In relation to the EPA's recommended conditions of consent for Noise contained in the addendum (Appendix H) of the EPA's second addendum dated 2 September 2014 the proponent has accepted EPA's proposed consent conditions for:-



- L3 Hours of operation;
- L6 Noise Limits – Bindaree Beef accepts that noise generated from the premises must not exceed the noise limits in Table 4.

Table 4: Noise Limits

| Noise Limits dB(A) |                |                |              |
|--------------------|----------------|----------------|--------------|
| Day                | Evening        | Night          |              |
| LAeq 15 minute     | LAeq 15 minute | LAeq 15 minute | LA1 1 minute |
| 35                 | 35             | 35             | 45           |

- M7.1 Meteorological Monitoring ;
- The preparation of a Construction Noise Management Plan prior to the commencement of works



## 3.0 Public Submissions

Three (3) submissions were received from the public during the advertising period (Appendix D). These submissions are summarised below including a response from Bindaree Beef.

### 3.1 Submission of Support – J Irwin

A submission of support was received John Irwin on the 18 July 2014 as follows:-

“I strongly support the development proposal by Bindaree Beef which will greatly improve the adverse environmental impacts of smell and effluent disposal which have been issues of varying severity in the past. I am a neighbour of the plant and associated cattle paddocks.”

### 3.2 Submission of Support – G & P Murray

A submission was received from Graem and Patricia Murray on the 17 August 2014 as follows:-

“Whilst we welcome the project to install a new Bio Digester at the Bindaree Beef Abattoir site which will result in the reduction of odour emissions from the plant we do have concerns regarding the projected noise level increases to our property 84 Ditzells Drive, Inverell as highlighted in the NSW Government Major Projects Job ID 6093, Bindaree Beef Abattoir Bio Digester and Rendering Plant.

- Currently we enjoy relative quite in residing at 84 Ditzells Drive, Inverell
- We are invested heavily in our property and would not wish to have our asset compromised by an unacceptable increase in constant noise emissions from the Proposed Bio Digester and Rendering Plant, Bindaree Beef
- Liveability potentially will be reduced if steps are not taken to mitigate increased sound/noise emissions from the Plant upgrade
- It is requested that Bindaree Beef review plans of Rendering plant installation and make necessary changes to reduce constant noise emissions from the new facility, eg:

- o Remodel areas on the North Northeast side of the Rendering Plant and Install large screens or dense tree lines in front of the Rendering Plant to absorb and defuse noise escaping unduly in the direction of 84 Ditzells Drive, Inverell.



- We reserve the right to seek compensation if the new rendering plant impacts negatively on the value of our property and liveability of residing at 84 Ditzells Drive, Inverell.”

### 3.2.1 Bindaree Beef Response

As outlined in Section 5.5 of the Environmental Impact Statement (EIS) comprehensive noise modelling and assessment was undertaken by ViPAC Engineers and Scientists Ltd (ViPAC).

84 Ditzells Drive is identified as Receptor ID 36 in the ViPAC Noise Assessment and is located approximately 1.8km north-east from the proposed new rendering plant building across the Gwydir Highway.

It is noted that representatives from Bindaree Beef and Mitchel Hanlon Consulting met with and discussed the project with Mr Murray at the community “drop-in” session held in Inverell on Saturday 2 August 2014.

Tables 18 and 19 contained within the EIS show comparisons between the existing and future plant operations at the Bindaree Beef site.

Table 5 and Table 6 shows an extraction from Tables 18 and 19 in relation to 84 Ditzells Drive.

As shown in Table 6 the modelled change in noise levels from the existing operations to the future plant operations for 84 Ditzells Drive relate to average noise levels between the hours of 22:00 and 7:00 hours.



Table 5: Noise Comparison – Existing and Future Plant Operations ( $L_{Aeq}$ )

| RECEPTOR ID            | NIGHT TIME CRITERIA | EXISTING PREDICTED NOISE LEVEL (dB)<br>$L_{Aeq,22:00:07:00\text{ hours}}$ |            |            | FUTURE PLANT PREDICTED NOISE LEVEL (dB) $L_{Aeq,22:00:07:00\text{ hours}}$ |            |            | CHANGE IN NOISE LEVEL (dB)<br>$L_{Aeq,22:00:07:00\text{ hours}}$ |            |            |
|------------------------|---------------------|---------------------------------------------------------------------------|------------|------------|----------------------------------------------------------------------------|------------|------------|------------------------------------------------------------------|------------|------------|
|                        | $L_{Aeq}$           | NEUTRAL                                                                   | PREVAILING | WORST CASE | NEUTRAL                                                                    | PREVAILING | WORST CASE | NEUTRAL                                                          | PREVAILING | WORST CASE |
| 36 – 84 Ditzells Drive | 35                  | 11                                                                        | 16         | 17         | 19                                                                         | 25         | 26         | +8                                                               | +9         | +9         |

Table 6: Noise Comparison – Existing and Future Plant Operations ( $L_{Amax}$ )

| RECEPTOR ID            | NIGHT TIME CRITERIA | EXISTING PREDICTED NOISE LEVEL (dB)<br>$L_{Amax,22:00:07:00\text{ hours}}$ |            |            | FUTURE PLANT PREDICTED NOISE LEVEL (dB) $L_{Amax,22:00:07:00\text{ hours}}$ |            |            | CHANGE IN NOISE LEVEL (dB)<br>$L_{Amax,22:00:07:00\text{ hours}}$ |            |            |
|------------------------|---------------------|----------------------------------------------------------------------------|------------|------------|-----------------------------------------------------------------------------|------------|------------|-------------------------------------------------------------------|------------|------------|
|                        | $L_{Aeq}$           | NEUTRAL                                                                    | PREVAILING | WORST CASE | NEUTRAL                                                                     | PREVAILING | WORST CASE | NEUTRAL                                                           | PREVAILING | WORST CASE |
| 36 – 84 Ditzells Drive | 48                  | 22                                                                         | 28         | 28         | 22                                                                          | 28         | 28         | 0                                                                 | 0          | 0          |



In the worst case scenario, the potential change in noise level to 84 Ditzells Drive will be an increase in 9 dB. The nighttime noise level criteria is 35 dB. It is noted that, with the potential increase in 9 dB, the modelled potential worst case scenario average night time noise levels for 84 Ditzells Drive is 26 dB, being below the criteria of 35 dB.

As concluded in Section 5.5.8.4 if the EIS whilst the criteria are met for all scenarios, the difference between the existing and future operations of the plant will become less audible for some sensitive receptors and more audible for other sensitive receptors. This change is due to the noise sources moving away from the main road therefore they are closer to different sensitive receptors.

For most of the sensitive receptors, an increase in noise can be classed as either just perceptible or perceptible increase in noise during prevailing weather conditions. For sensitive receptors along Ditzells Drive, the noise levels will be 7-10 dB(A) higher, which will be noticeable. By contrast sensitive receptors on Copeton Dam Road will have a decrease in noise level of 5-10 dB(A).

Overall, the noise levels from the future plant may increase noise at some receptors, however due to distances involved; this increase is unlikely to be intrusive. The ambient noise environment which includes a range of farming related activities, insects, birdsong or traffic are likely to continue being the dominant noise sources for the majority of the sensitive receptors.

Section 5.5.9 of the EIS outlines the proposed mitigation measures for noise management and includes:-

- Noise be avoided; however if this is not possible,
- The minimisation of noise through either:
  - Re-orientation of an activity or
  - Use of Best Available Technology (BAT); and
- Management of noise.

As outlined under Section 2.7.4 of this Submissions Report, EPA recommends the default minimum PSNL ( $LA_{eq(15 \text{ minute})}$ ) of 35 dBA and night sleep criteria ( $LA_{1(1 \text{ minute})}$ ) of 45 dBA be applied as the noise limits for all receptor locations for the proposed future operations of the premises.

The EPA also recommends that construction noise impacts are managed in accordance with the EPA's *Interim Construction Noise Guideline (ICNG)* and that a Construction Noise Management Plan be prepared prior to the commencement of works to ensure compliance with the ICNG.

The EPA have recommend a number of Conditions of Consent relating to noise and noise management, in particular that noise monitoring be



undertaken at seven (7) identified locations for three operating days every six months in perpetuity.

It is noted that 84 Ditzells Drive is not an identified location for ongoing noise monitoring.

As outlined in Section 2.7.4.1 of this Submissions Report, Bindaree Beef accepts the need for noise monitoring of the site. In this regard, given the submission received from the owners of 84 Ditzells Drive, it is requested the Department include 84 Ditzells Drive as a location for monitoring.



## 3.3 Anonymous Submission

An anonymous submission was received by the Department on 18 August 2014. The submission raised six (6) issues. Each is addressed individually in the following sections.

### 3.3.1 Odour Assessment

The odour assessment excludes one of the closest sensitive receptors

The odour assessment does not include the house at 7218 Gwydir Highway as a sensitive receptor. The house lies approximately 800 metres from the abattoir and therefore it should be included as a sensitive receptor.

#### 3.3.1.1 Bindaree Beef Response

7218 Gwydir Highway is located between receptors 33 and 34.

The values for receptors 33 and 34 as detailed in Table 8.1 of the VIPAC Air Quality Report (Appendix G).

The values for the 99.5<sup>th</sup> percentile for 7218 Gwydir Highway as advised by VIPAC are as follows:

- Current conditions: 5.5 OU
- Future 90% capture: 2.02 OU
- Future Worst case: 0.36 OU

Both sets of data are detailed in Table 7.

**Table 7: Comparison of Odour Concentration at Receptors 33 and 34 and 7218 Gwydir Highway (Peak Concentrations)**

| Receptor             | Current Odour Concentration (OU) |                             | Future Odour (Failure Case) Concentration (OU) |                             | Current Odour (Normal) Concentration (OU) |                             |
|----------------------|----------------------------------|-----------------------------|------------------------------------------------|-----------------------------|-------------------------------------------|-----------------------------|
|                      | 99.5 <sup>th</sup> Percentile    | 99 <sup>th</sup> Percentile | 99.5 <sup>th</sup> Percentile                  | 99 <sup>th</sup> Percentile | 99.5 <sup>th</sup> Percentile             | 99 <sup>th</sup> Percentile |
| 33 – 7186 Gwydir Hwy | 2.02                             | 1.53                        | 1.09                                           | 0.85                        | 0.19                                      | 0.15                        |
| 34 – 7204 Gwydir Hwy | 5.24                             | 3.44                        | 2.06                                           | 1.61                        | 0.36                                      | 0.31                        |
| 7218 Gwydir Hwy      | 5.5                              |                             | 2.02                                           |                             | 0.36                                      |                             |



Criteria is 7 odour units at the 99<sup>th</sup> percentile. The odour results for 7218 Gwydir Highway at the 99.5<sup>th</sup> percentile are similar to receptor 34. It is expected the OU concentrations at 7218 Gwydir Highway for the 99<sup>th</sup> percentile to be similar for receptor 34 and will not exceed the 7 OU criteria.

### 3.3.2 Local Metrological Data

Local meteorological data should be used in the dispersion modelling

Historic and current meteorological data exists for the Inverell region at the Inverell Comparison and Inverell Raglan Street meteorological stations. This includes data on wind speed and direction. Local meteorological data should be used in the assessment to ensure it is accurate and site representative.

Further, the dispersion modelling should only use meteorological data during the sensitive daytime period. Using data outside the sensitive daytime period distorts the accuracy of the dispersion modelling.

#### 3.3.2.1 Bindaree Beef Response

The metrological data used in the assessment has been generated using a software programme which uses BOM weather data. This procedure is recommended by NSW EPA in the documents *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*. The generated weather conditions were compared to the Inverell Research Centre long-term data to show the suitability of the dataset.

### 3.3.3 Coal Fired Boiler

The proposal lacks justification for the retention of the existing coal fired boiler.

The existing coal fired boiler to be retained relies on old technology and is a source of emissions and odours. The proposal does not provide a compelling reason why the old coal fired boiler system should be retained. Should the coal fired boiler be retained it should be used for emergency purposes only and phased out over a reasonable time period.

#### 3.3.3.1 Bindaree Beef Response

As outlined under Section 3.7 of the Environmental Impact Statement (EIS), the existing rendering plant has two coal fired boilers. One will be decommissioned completely. The remaining boiler will remain operational as a standby boiler only as is required to be maintained as per the Protection of the Environments (Clean Air) Regulation 2010. This boiler will have additional sleuthing hoppers attached and will meet the emission criteria for Group 3 equipment in accordance with the EPA recommended conditions



outlined under Section 2.7.2 of this Report.

### 3.3.4 Odour Controls

The proposal lacks consideration of alternative odour controls

The proposal lacks consideration of alternative odour control devices such as incineration and operating the bio-filter in combination with wet scrubbers to minimise odour impacts.

#### 3.3.4.1 Bindaree Beef Response

As outlined under Section 3.5.2 of the EIS the proposed render plant is a new plant design with a fully enclosed building to meet the NSW EPA and Australian Renders Association requirements for rendering. It will incorporate the latest equipment and design layouts to maximise energy efficiency and ease of operation.

The rendering plant odours will be directed to a new bio-filter located to the north of the rendering plant. The bio-filter uses moist organic materials to absorb and biologically degrade odours.

Point source stainless steel ducting will connect to the individual equipment and then a suction fan will pull the odour into the main line. These odours will be pumped to a humidifier then blown through a grid of perforated pipe into a gravel layer at the base of the bio-filter.

It should also be noted that, other existing sources of odour such as the three (3) aerobic ponds and existing paunch and manure stockpiles will also be decommissioned as part of the development. This will further reduce the existing odour impact potentially experienced by surrounding properties.

As proven by the ViPAC Air Quality Report contained in Appendix G will be significantly improved as a result of the proposed new rendering plant and bio-digester plant.

Bindaree Beef considers that the proposed odour controls are appropriate for the project and are satisfactory to EPA requirements.

### 3.3.5 Bio-filter Management

The bio-filter requires careful ongoing management

The effectiveness of a bio-filter to remove odours relies on a number of factors including the media, the air flow rate and moisture content. The bio-filter must therefore be carefully managed to ensure reliable operation. The operator should be required to carefully monitor the performance of the bio-filter's ability to remove odours and make necessary adjustment to continually improve its performance.



Further, all ventilated odours from the rendering plant should be directed to the bio-filter for treatment.

### 3.3.5.1 Bindaree Beef Response

As outlined in Section 3.3.4 of this Submissions Report, the proposed odour controls including the new bio-filter is considered appropriate for the project and satisfactory to the EPA requirements.

It is also noted that the EPA have requested that a biofilter performance and management report be submitted to the EPA's Armidale office six (6) months after the commission of the rendering plant.

## 3.3.6 Plant Operation

The plant should operate under contemporary operating conditions for managing odours

An Odour Management Plan should be implemented for the ongoing operation of the abattoir. This would ensure surrounding residents are not subjected to unacceptable odour impacts or incidents that could be avoided with careful management.

An independent odour audit should also be undertaken for the facility when the odour control devices become operational and annually thereafter. This should identify any unacceptable and/or additional sources of odour and identify measures to minimise unacceptable odour impacts.

Ongoing verification of the predicted odour impacts would also be required to ensure the odour control devices are operating effectively and as predicted.

### 3.3.6.1 Bindaree Beef Response

As outlined under Section 2.7.2 of this Submissions Report, the EPA have recommended a condition of consent requiring that an Odour Impact Assessment and Mitigation Study be submitted to the EPA's Armidale Office if requested in writing by an EPA authorised staff member who forms the opinion that the facility is likely to be in breach of the Protection of the Environment Operations Act 1997.

Recommended EPA condition of consent number U4 outlines the requirements that must be addressed as part of the odour impact assessment and mitigation study.

Bindaree Beef have accepted this recommended condition of consent as outlined in Section 2.7.2.8 of this Submissions Report



## 4.0 Consultation

Bindaree Beef and Mitchel Hanlon Consulting have maintained an active role in consulting with the local community and other stakeholders throughout the project.

As outlined in this Submissions Report, the application was placed on public exhibition by the DP&E for a period of 34 days from Wednesday 16 July 2014 to Monday 18 August 2014.

The application was also referred by the DP&E to relevant NSW Government Agencies that have a role in managing any potential impacts associated with the project.

DP&E placed a notice in the Inverell Times on Tuesday 15 July 2014 to advise the public of the exhibition. In addition, notifications of the public exhibition were made in writing by the DP&E to 46 properties in writing about the proposal.

The Development Application along with the Environmental Impact Statement (EIS) was made available:-

- On the DP&E website <http://www.planning.nsw.gov.au>
- At the DP&E Information Centre, 23-33 Bridge Street, Sydney
- At the Inverell Shire Council Administration Centre, 144 Otho Street, Inverell; and
- At the Nature Conservation Council, Level 2, 5 Wilson Street, Newton.

Mitchel Hanlon Consulting along with representatives from Bindaree Beef also held an additional three (3) public “drop in sessions” on Thursday 31 July, Saturday 2 August and Tuesday 5 August. A separate adjoining landowners meeting was held on Thursday 31 July 2014. An Information Flyer was made available at the “drop in sessions”, on Mitchel Hanlon Consulting website and to the adjoining landowners. Appendix L contains a copy of this Information Flyer.

Whilst the “drop in sessions” had only one and two community members attend the adjoining landowners meeting was well attended with 12 present.

The purpose of the adjoining landowners meeting was to provide this group with an update on the project and respond to any questions the group may have in relation to the project. It is noted that of the landowners who attend only one made a submission of support on the project during the advertising period.

The outcome of the adjoining landowners meet was that generally the group supported the project and appreciate the improved environmental outcomes



that the project brings.

The “drop in sessions” were attended by a total of five (5) community members. The main topics of discussion during the “drop in sessions” related to the environmental improvements that the project will facilitate in relation to noise and air quality. As noted in Section 3.2.1 of this Submissions Report the owner of 84 Ditzells Drive attended the “drop in session” on Saturday 2 August 2014.

Representatives of Bindaree Beef and Mitchel Hanlon Consulting also visited the adjoining landowners along McNeils Road, Copeton Dam Road and Blair Athol Road on Thursday afternoon of the 2 August 2014 to provide a project update and respond to any questions that these neighbours may have. Again the outcome of these visits was that the landowners supported the project and appreciate the improved environmental outcomes that the project brings.

In summary, Bindaree Beef appreciates and acknowledges the community comments made throughout the Development Application process and looks forward to continuing to communicate with its neighbours and the Inverell community into the future.



## 5.0 Summary of Commitments

Table 8 outlines Bindaree Beefs commitments in relation to the matters raised in the NSW Government Agency and public submissions received on the proposed development application for the construction and operation of:

- An anaerobic digester, utilising abattoir wastewater and waste solid products for generation of bio-gas; and
- A rendering plant for rendering of inedible products for purified fat and protein production

Table 8: Bindaree Beefs Commitments

| Subject                           | Matter Raised                                                                                                                                                                                                                          | Bindaree Beef's Commitment                                                                               |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Gwydir Highway Intersection       | Vehicles longer than a standard B-Double configuration are prohibited from entering the site until an appropriate intersection is provided to comply with the relevant Austroads Guidelines, Australian Standards and RMS Supplements. | Bindaree Beef concur                                                                                     |
| Vehicle Transport Management Plan | A Vehicle Transport Management Plan/Operation Management plan for the site be prepared                                                                                                                                                 | Bindaree Beef concur                                                                                     |
| Works Authorisation Deed          | For all works on the Gwydir Highway the developer will be required to enter into a "Works Authorisation Deed" (WAD) with RMS prior to the commence of any on-site construction works associated with the development                   | Bindaree Beef are aware of the requirement for a WAD for any work activity that occurs on Gwydir Highway |



| Subject                                 | Matter Raised                                                                                                                                                                    | Bindaree Beef's Commitment                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protecting Aboriginal cultural heritage | Ceasing activities if any Aboriginal object/s or item/s of Aboriginal cultural significance are identified during construction                                                   | Bindaree Beef will included these requirements in the project Construction & Environment Management Plan (CEMP) to be produced prior to the commencement of construction on site.                                                                                                                                                                                                     |
| Groundwater network and monitoring      | NOW request a review of the groundwater monitoring network and the development of an early detection groundwater quality monitoring, trigger levels, reporting and response plan | Bindaree Beef will work collaboratively with the NOW and EPA to determine appropriate monitoring bore locations and will maintain a positive ongoing regulatory relationship with the EPA for future environmental monitoring.<br><br>Bindaree Beef request that the Determining Authority, in setting conditions for the project, keep the regulatory oversight confined to the EPA. |
| Reinstatement of the anaerobic digester | NOW requests that the anaerobic digester be reinstated                                                                                                                           | Bindaree Beef will reinstate the anaerobic digester pilot plant.                                                                                                                                                                                                                                                                                                                      |
| Revised Digestate Management Plan       | NOW requests that a revised digestate management plan be prepared                                                                                                                | Bindaree Beef will prepare a revised Digestate Management Plan                                                                                                                                                                                                                                                                                                                        |



| Subject               | Matter Raised                                                                                                                                  | Bindaree Beef's Commitment                                                                                                                                                     |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Riparian Management   | All works within 40 metres of a watercourse are to be undertaken in accordance with the Office of Water's Guidelines for Controlled Activities | Bindaree Beef will ensure that construction works within or adjacent to riparian lands will be consistent with the NSW Office of Water's Guidelines for Controlled Activities. |
| Stormwater Management | Appropriate stormwater management measures are to be put into place to limit erosion and sediment control                                      | Bindaree Beef will ensure all stormwater runoff is adequately treated at its source and/or diverted through the stormwater treatment process designed for the site             |
| Air Quality           | Recommended Conditions of Consent contained in Appendix J                                                                                      | Bindaree Beef have outlined its commitments in relation to the EPA Air Quality recommended conditions of consent in Section 2.7.2 of this Submissions Report                   |
| Noise                 | Recommended Conditions of Consent contained in Appendix K                                                                                      | Bindaree Beef have outlined its commitments in relation to the EPA Noise recommended conditions of consent in Section 2.7.4 of this Submissions Report                         |



## 6.0 Conclusion

This Submissions Report outlines Bindaree Beef's response to the issues raised in the submissions lodged with the Department of Planning and Environment by the NSW Government Agencies and public during the public exhibition period.

The report is supported by the following additional Reports:-

1. Revised Air Quality Report prepared by ViPAC; and
2. Survey and assessment of the presence and extent of Box Gum Woodland prepared by Niche Environment and Heritage

The report also provides additional information, by way of updates, clarifications and additional assessment that are considered relevant to the determination of the Development Application.

Overall, it is considered that the new Rendering Plant and bio-digester plant at the existing Bindaree Beef Abattoir at 7307 Gwydir Highway, Inverell will result in a significant number of environmental, community and economic benefits including:-

- A state-of-the-art wastewater treatment plant to effectively utilise wastewater and produce bio-gas;
- Providing a renewable energy source of bio-gas for the bio-digester and rendering plant electricity and steam needs;
- Improve rendering efficiencies on the site by reducing cooking times, improving electrical and steam consumption and removing the use of coal as an energy source;
- Reduction in energy consumption of the site by 79% due to the removal of coal as an energy source and reduced electricity requirements; and
- Reduction of the greenhouse gas emissions from the site due to the elimination of coal burning and decommissioning of the anaerobic and aerobic treatment ponds.

This type of development is a first for the abattoir industry in Australia and will exceed current best practice for abattoir wastewater treatment. The development will enhance the environmental and economic performance of the facility and demonstrate considerable innovation for the abattoir industry.

If the development were not to proceed, Bindaree would continue to operate the abattoir utilising the existing coal fired boiler and also be dependent on the supply of electricity from the power grid.

Bindaree Beef is considered a leader in the area of red meat abattoir



wastewater treatment and is determined to deliver a project that will benefit not only the environment, Inverell Community but also enable Bindaree Beef to grow its business and provide their workforce long term employment opportunities.

The potential direct, indirect and cumulative impacts of the proposed new rendering plant and bio-digester plant have been identified and thoroughly addressed. It is considered that any other potential impacts can be appropriately managed through the proposed management and mitigation measures identified by the NSW Government Agencies.

In conclusion, it is considered that the proposed new rendering plant and bio-digester plant is in the public interest and approval is recommended.



## 7.0 References

Clifton, M, 2014(a), Bindaree Beef EIS Noise Assessment, ViPAC Engineers and Scientists.

Clifton, M, 2014(b), Bindaree Beef – Air Quality Report, ViPAC Engineers and Scientists.

Tierney, D. (2014), Survey and Assessment of the presence and extent of Box Gum Woodland, Niche Environment and Heritage.



# Appendix A Letter from Department of Planning & Environment

27 August 2014



Our ref: 13/06382; SSD-6093

Ms Jocelyn Ullman  
Senior Planner  
Mitchel Hanlon Consulting Pty Ltd  
PO Box 1568  
TAMWORTH NSW 2340

Dear Ms Ullman

**Bindaree Beef Rendering Plant and Bio-digester Plant Project (SSD-6093)  
Response to Submissions**

As you are aware, the development application and accompanying Environmental Impact Statement was formally received by the Department on Monday 14 July 2014 and was placed on public exhibition from Wednesday 16 July 2014 until Monday 18 August 2014.

To date, the Department has received a total of 8 submissions from public authorities and members of the public, which have been progressively forwarded to you both during and following the close of the public exhibition period. A CD-ROM is enclosed containing all of these submissions.

It is understood that the Environment Protection Authority will be providing the Department with an addendum to its submission. A copy of this submission will be forwarded to you as soon as it is received.

The Secretary requires you to provide a written response to the issues raised in these submissions together with any revised management and mitigation measures (if considered to be necessary).

It is requested that you provide your written response to the Department by **Tuesday 16 September 2014**. If you have any queries, please contact Pamela Morales on the above details.

Yours sincerely

Nicholas Hall  
**A/Team Leader - Industry  
Industry Key Sites & Social Projects**



# Appendix B     Director General Requirements

NSW Department of Environment and  
Infrastructure  
13 September 2013



**Planning &  
Infrastructure**

**Major Projects Assessment  
Mining & Industry Projects**  
Contact: Andrew Hartcher  
Phone: (02) 9228 6503  
Fax: (02) 9228 6466  
Email: [andrew.hartcher@planning.nsw.gov.au](mailto:andrew.hartcher@planning.nsw.gov.au)

Our ref: SSD-6093  
Our file: 13/06382

Ms Jocelyn Ullman  
Senior Planner  
Mitchel Hanlon Consulting Pty Ltd  
PO Box 1568  
TAMWORTH NSW 2340

Dear Ms Ullman

**State Significant Development - Director-General's Requirements  
Bindaree Beef Anaerobic Digester and Rendering Plant Project (SSD-6093)**

I have attached a copy of the Director-General's environmental assessment requirements (DGRs) for the preparation of an Environmental Impact Statement for the Bindaree Beef Anaerobic Digester and Rendering Plant Project.

These requirements are based on the information you have provided to date and have been prepared in consultation with the relevant government agencies and Inverell Shire Council. Their comments, which you should address appropriately when preparing the EIS, are also attached (see Attachment 2). Please note that the Department may alter these requirements at any time, and that you must consult further with the Department if you do not lodge a development application and EIS for the development within two years of the date of issue of these DGRs. The Department will review the EIS for the development carefully before putting it on public exhibition, and will require you to submit an amended EIS if it does not adequately address the DGRs.

I wish to emphasise the importance of effective and genuine community consultation and the need for proposals to proactively respond to the community's concerns. Accordingly a comprehensive, detailed and genuine community consultation and engagement process must be undertaken during preparation of the EIS. This process must ensure that the community is both informed of the proposal and is actively engaged in issues of concern to them. Sufficient information must be provided to the community so that it has a good understanding of what is being proposed and of the potential impacts.

Your proposal may require a separate approval under Commonwealth *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act). If an EPBC Act approval is required, I would appreciate it if you would advise the Department accordingly, as the Commonwealth approval process may be integrated into the NSW approval process, and supplementary DGR's may need to be issued.

I would appreciate it if you would contact the Department at least two weeks before you propose to submit the development application and EIS for your development. This will enable the Department to:

- confirm the applicable fee (see Division 1AA, Part 15 of the *Environmental Planning and Assessment Regulation 2000*); and
- determine the number of copies (hard-copy and CD-ROM) of the EIS required for review.

Department of Planning & Infrastructure 23-33 Bridge Street, Sydney NSW 2000 GPO Box 39, Sydney NSW 2001  
Phone 02 9228 6111 Fax 02 9228 6455 Website [planning.nsw.gov.au](http://planning.nsw.gov.au)

If you have any enquiries about these requirements, please contact Andrew Hartcher on the details above.

Yours sincerely,

A handwritten signature in blue ink, appearing to be 'Hm' followed by a long horizontal flourish.

Heather Warton

**Director**

**Industry, Social Projects and Key Sites**

As the Director-General's nominee

13/9/13

# Director-General's Environmental Assessment Requirements

## Section 78A(8A) of the *Environmental Planning and Assessment Act*

### State Significant Development

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Application Number</b>   | SSD-6093                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Development</b>          | The proposal involves the construction and operation of a new wastewater treatment system (anaerobic digester) and rendering plant at Bindaree Beef's existing abattoir site at Inverell.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Location</b>             | 7307 Gwydir Highway Inverell, NSW in the Inverell Shire local government area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Applicant</b>            | Bindaree Beef Pty Ltd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Date of Issue</b>        | September 2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>General Requirements</b> | <p>The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in Clauses 6 and 7 of Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i>.</p> <p>In addition, the EIS must include a:</p> <ul style="list-style-type: none"> <li>• detailed description of the development, including: <ul style="list-style-type: none"> <li>– need for the proposed development;</li> <li>– justification for the proposed development;</li> <li>– likely staging of the development;</li> <li>– likely interactions between the development and existing, approved and proposed operations in the vicinity of the site;</li> <li>– likely interactions between the approval being sought and the existing approvals/consents that apply to site;</li> <li>– plans of any proposed building works;</li> </ul> </li> <li>• consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments;</li> <li>• risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment;</li> <li>• detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes: <ul style="list-style-type: none"> <li>– a description of the existing environment, <u>using sufficient baseline data</u>;</li> <li>– an assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes; and</li> <li>– a description of the measures that would be implemented to avoid, minimise and if necessary, offset the potential impacts of the development, including proposals for adaptive management and/or contingency plans to manage any significant risks to the environment; and</li> </ul> </li> <li>• consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS.</li> </ul> <p>The EIS must also be accompanied by a report from a qualified quantity surveyor providing:</p> |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <ul style="list-style-type: none"> <li>• a detailed calculation of the capital investment value (as defined in clause 3 of the <i>Environmental Planning and Assessment Regulation 2000</i>) of the proposal, including details of all assumptions and components from which the CIV calculation is derived;</li> <li>• a close estimate of the jobs that will be created by the development during the construction and operational phases of the development; and</li> <li>• certification that the information provided is accurate at the date of preparation.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Key Issues</b> | <p>The EIS must address the following specific matters:</p> <ul style="list-style-type: none"> <li>• <b>Strategic Context</b> – including: <ul style="list-style-type: none"> <li>– demonstration that the proposal is consistent with the aims and objectives of all relevant environmental planning instruments including, but not limited to, the <i>Inverell Local Environmental Plan 2012</i>, <i>State Environmental Planning Policy (Infrastructure) 2012</i>, and relevant Development Control Plans (DCPs);</li> <li>– detailed justification for the proposal and suitability of the site to be developed; and</li> <li>– justification for the proposed site layout, considering the environmental constraints of the site.</li> </ul> </li> <li>• <b>Air Quality and Odour</b> – including: <ul style="list-style-type: none"> <li>– a quantitative assessment of the potential air quality impacts (particularly odour and dust) of the development on surrounding receivers, including impacts from construction, operation and transport; and</li> <li>– details of the proposed mitigation, management and monitoring measures.</li> </ul> </li> <li>• <b>Hazards and Risks</b> – including a preliminary risk screening carried out in accordance with <i>State Environmental Planning Policy No. 33 – Hazardous and Offensive Development and Applying SEPP 33</i> (DoP, 2011). Should the preliminary screening indicate that the project is "potentially hazardous," a Preliminary Hazard Analysis (PHA) must be prepared in accordance with <i>Hazardous Industry Planning Advisory Paper No. 6 - Guidelines for Hazard Analysis</i> (DoP, 2011) and <i>Multi-Level Risk Assessment</i> (DoP, 2011).</li> <li>• <b>Soil and Water</b> – including: <ul style="list-style-type: none"> <li>– an assessment of potential soil, surface, flooding and groundwater impacts;</li> <li>– an assessment of the potential for soil contamination (including acid sulphate soils) and any proposed management measures;</li> <li>– details of the proposed erosion and sedimentation controls (during construction);</li> <li>– details of the proposed stormwater management system (during operation);</li> <li>– identification of any licensing requirements or other approvals under the <i>Water Act 1912</i> and/or <i>Water Management Act 2000</i>;</li> <li>– an outline of the proposed water requirements, including a consolidated site water balance, details of sources of water, usage data and efficiency measures;</li> <li>– demonstration that water for the construction and operation of the development can be obtained from an appropriately authorised and reliable supply;</li> <li>– details of the proposed wastewater management system, including measures to monitor soil capacity, manage nutrient</li> </ul> </li> </ul> |

loading, salinity and water balance in soil and irrigated wastewater; and

- details of spill containment and bunding.

- **Traffic** – including:

- details of key transport routes and traffic types and volumes likely to be generated during construction and operation;
- an assessment of predicted impacts on road safety and the capacity of the road network to accommodate the facility including current traffic counts, details of truck routes and modelling of key intersections;
- an assessment of where off site infrastructure works may be required as a result of traffic impacts including detailed plans of any proposed road upgrades;
- access, including detailed consideration of various access options and justification for the proposed location of the main access points; and
- provision of parking in accordance with the relevant guidelines.

- **Noise** – including:

- a quantitative assessment of potential construction, operational and transport noise impacts, including potential impacts on nearby sensitive receivers; and
- details of the proposed noise management and monitoring measures.

- **Waste Management** – including:

- details of the quantities, classification and quality of waste and wastewater to be generated on site;
- details on waste and wastewater storage, handling and disposal including demonstration that the facility has adequate capacity to cater for all wastewater generated by the proposal; and
- details of the measures implemented to reduce and (where possible) to reduce and recycle waste in line with NSW Government waste policy.

- **Greenhouse Gas** – including:

- a quantitative assessment of the potential scope 1 & 2 greenhouse gas emissions of the development, and a qualitative assessment of the potential impacts of these emissions on the environment; and
- a detailed description of the measures that would be implemented on site to ensure that the development is energy efficient.

- **Visual** – including:

- an assessment of the potential visual impacts of the development on the amenity of the surrounding area including consideration of Inverell Shire Council's *Protecting Rural Landscapes* policy; and
- a detailed description of the measures (e.g. landscaping) that would be implemented to minimise the visual impacts of the development.

- **Bushfire Risks** – including consideration of impacts on any bushfire prone land and if necessary, establishment of appropriate asset protection zones.

- **Heritage** – including an Aboriginal cultural heritage assessment.

- **Biodiversity** – including impacts on critical habitats, threatened species, populations, ecological communities, groundwater dependent ecosystems, riparian land and native vegetation.

- **Socio-Economic** – including a comprehensive assessment of the

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           | potential economic and social impacts of the development, demonstrating that it would have a net benefit for the community.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Plans and Documents</b>                | The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the <i>Environmental Planning and Assessment Regulation 2000</i> . These documents should be included as part of the EIS rather than as separate documents.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Consultation</b>                       | <p>During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners.</p> <p>In particular you must consult with:</p> <ul style="list-style-type: none"> <li>• Inverell Shire Council;</li> <li>• Environment Protection Authority;</li> <li>• Roads and Maritime Services; and</li> <li>• Department of Primary Industries.</li> </ul> <p>The EIS must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.</p> |
| <b>Further consultation after 2 years</b> | If you do not lodge an EIS for the development within 2 years of the issue date of these DGRs, you must consult with the Director-General in relation to the requirements for lodgement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>References</b>                         | The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. While not exhaustive, Attachment 1 contains a list of some of the guidelines, policies, and plans that may be relevant to the environmental assessment of this development.                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## **ATTACHMENT 1**

### **Technical and Policy Guidelines**

The following guidelines may assist in the preparation of the Environmental Impact Statement. This list is not exhaustive and not all of these guidelines may be relevant to your proposal.

Many of these documents can be found on the following websites:

<http://www.planning.nsw.gov.au>

<http://www.bookshop.nsw.gov.au>

<http://www.publications.gov.au>

#### **Policies, Guidelines & Plans**

| <b>Aspect</b>          | <b>Policy / Methodology</b>                                                                                                                                                                                                                                                                                                                                                |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Risk Assessment</b> | AS/NZS 4360:2004 Risk Management (Standards Australia)<br>HB 203: 203:2006 Environmental Risk Management – Principles & Process (Standards Australia)                                                                                                                                                                                                                      |
| <b>Air Quality</b>     | Protection of the Environment Operations (Clean Air) Regulation 2002<br>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC)<br>Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DEC)                                                                                                                                  |
| <b>Odour</b>           | Technical Framework: Assessment and Management of Odour from Stationary Sources in NSW (DEC)<br>Technical Notes: Assessment and Management of Odour from Stationary Sources in NSW (DEC)                                                                                                                                                                                   |
| <b>Hazards</b>         | State Environmental Planning Policy No. 33 – Hazardous and Offensive Development<br>Applying SEPP 33 – Hazardous and Offensive Development Application Guidelines (DUAP)<br>Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis (DOP)<br>Hazardous Industry Planning Advisory Paper No. 4 - Risk Criteria for Land Use Safety Planning (DOP) |
| <b>Soil and Water</b>  | Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (ANZECC & NHMRC)<br>National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPC)                                                                                                                                                                   |
| <i>Soil</i>            | Draft Guidelines for the Assessment & Management of Groundwater Contamination (DECC)<br>State Environmental Planning Policy No. 55 – Remediation of Land<br>Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land (DOP)                                                                                                                          |
| <i>Surface Water</i>   | National Water Quality Management Strategy: Water quality management - an outline of the policies (ANZECC/ARMCANZ)<br>National Water Quality Management Strategy: Policies and principles - a reference document (ANZECC/ARMCANZ)                                                                                                                                          |

|                         |                                                                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                         | (ANZECC/ARMCANZ)                                                                                                                    |
|                         | National Water Quality Management Strategy: Australian Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ)               |
|                         | National Water Quality Management Strategy: Australian Guidelines for Water Quality Monitoring and Reporting (ANZECC/ARMCANZ)       |
|                         | Using the ANZECC Guideline and Water Quality Objectives in NSW (DEC)                                                                |
|                         | State Water Management Outcomes Plan                                                                                                |
|                         | NSW Government Water Quality and River Flow Environmental Objectives (DECC)                                                         |
|                         | Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC)                                                     |
|                         | Managing Urban Stormwater: Soils & Construction (Landcom)                                                                           |
|                         | Managing Urban Stormwater: Treatment Techniques (DECC)                                                                              |
|                         | Managing Urban Stormwater: Source Control (DECC)                                                                                    |
|                         | Technical Guidelines: Bunding & Spill Management (DECC)                                                                             |
|                         | Environmental Guidelines: Use of Effluent by Irrigation (DECC)                                                                      |
|                         | Guidelines for Controlled Activities on Waterfront Land (DPI)                                                                       |
|                         | NSW State Rivers and Estuaries Policy (DPI)                                                                                         |
| Groundwater             | National Water Quality Management Strategy Guidelines for Groundwater Protection in Australia (ARMCANZ/ANZECC)                      |
|                         | NSW Aquifer Interference Policy 2012 (DPI)                                                                                          |
|                         | NSW State Groundwater Policy Framework Document (DLWC)                                                                              |
|                         | NSW State Groundwater Quality Protection Policy (DLWC)                                                                              |
|                         | Guidelines for the Assessment and Management of Groundwater Contamination (DECC)                                                    |
| <b>Traffic</b>          |                                                                                                                                     |
|                         | Guide to Traffic Generating Development (RTA)                                                                                       |
|                         | Road Design Guide (RTA)                                                                                                             |
| <b>Noise</b>            |                                                                                                                                     |
|                         | NSW Industrial Noise Policy (DECC)                                                                                                  |
|                         | NSW Road Noise Policy (EPA)                                                                                                         |
|                         | Environmental Noise Control Manual (DECC)                                                                                           |
| <b>Waste Management</b> |                                                                                                                                     |
|                         | Waste Classification Guidelines (DECC)                                                                                              |
|                         | NSW Waste Avoidance and Resource Recovery Strategy 2007 (EPA)                                                                       |
|                         | Environmental Guidelines: Assessment, Classification, and Management of Liquid and Non-Liquid Wastes (EPA)                          |
| <b>Greenhouse Gas</b>   |                                                                                                                                     |
|                         | AGO Factors and Methods Workbook (AGO)                                                                                              |
|                         | Guidelines for Energy Savings Action Plans (DEUS, 2005)                                                                             |
| <b>Visual</b>           |                                                                                                                                     |
|                         | Control of Obtrusive Effects of Outdoor Lighting (Standards Australia, AS 4282)                                                     |
|                         | State Environmental Planning Policy No 64 - Advertising and Signage                                                                 |
| <b>Heritage</b>         |                                                                                                                                     |
| Aboriginal              | Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DEC)                                |
|                         | NSW Heritage Manual (NSW Heritage Office & DUAP)                                                                                    |
| Non- Aboriginal         | The Burra Charter (The Australia ICOMOS charter for places of cultural significance)                                                |
| <b>Biodiversity</b>     |                                                                                                                                     |
|                         | Draft Guidelines for Threatened Species Assessment under Part 3A of the <i>Environmental Planning and Assessment Act 1979</i> (DEC) |

---

DECCW's Threatened Species Assessment Guidelines – Assessment of Significance (2007).

---

Policy & Guidelines - Aquatic Habitat Management and Fish Conservation (NSW Fisheries)

---

NSW State Groundwater Dependent Ecosystem Policy (DPI)

---

NSW Wetlands Policy (OEH)

---

**Bushfire Risks**

---

Planning for Bushfire Protection 2006 (NSW RFS)

---

**ATTACHMENT 2**  
**Agency EIS Requirements**



## Appendix C Inverell Shire and NSW Government Agencies' Submissions

- NSW Trade & Investment, Resources & Energy Division
- NSW Roads & Maritime Services
- NSW Office of Environment & Heritage
- Inverell Shire Council
- NSW Office of Water
- NSW EPA

## Pamela Morales

---

**From:** Shayne Kneen <shayne.kneen@trade.nsw.gov.au>  
**Sent:** Friday, 18 July 2014 3:20 PM  
**To:** Pamela Morales  
**Subject:** Re: Bindaree Beef Rendering Plant and Bio- digester Plant (SSD 6093) - Notice of Exhibition - Inverell LGA - Minerals Response

Dear Ms Morales,

Thank you for the opportunity to comment on the above proposal. This is a response from the NSW Department of Trade and Investment (DTIRIS) – Mineral Resources Branch (MRB).

MRB have no further comments to raise in regard to the planning proposal.

Queries regarding the above information, and on future request for advice in relation to this matter, should be directed to the MRB Land Use team at [landuse.minerals@industry.nsw.gov.au](mailto:landuse.minerals@industry.nsw.gov.au)

Regards

Shayne Kneen | Geoscientist  
NSW Trade and Investment | Resource and Energy Division  
516 High Street | Maitland NSW 2320  
PO Box 344 | Hunter Region Mail Centre NSW 2310  
T: 02 4931 6731 | F: 02 4931 6726 | E: [shayne.kneen@trade.nsw.gov.au](mailto:shayne.kneen@trade.nsw.gov.au)  
W: [www.trade.nsw.gov.au](http://www.trade.nsw.gov.au)



**The new  
state of  
business**

**\$1.3b**   
NSW mining royalties for 2012/13  
helped fund infrastructure and services

Number of NSW households &  
small businesses using solar

**241K+**

---

This message is intended for the addressee named and may contain confidential information. If you are not the intended recipient, please delete it and notify the sender. Views expressed in this message are those of the individual sender, and are not necessarily the views of their organisation.

File No: NTH11/00159; CR2014/002228  
Your Ref: 13/06382

Manager Industry  
Development Assessment Systems & Approvals  
NSW Planning & Infrastructure  
GPO Box 39  
SYDNEY NSW 2001

Attn: Mr Andrew Hartcher – Environmental Planner

Dear Mr Hartcher,

**Review of Draft Environmental Impact Statement – Bindaree Beef Anaerobic Digester & Rendering Plant Project (SSD 6093)**

I refer to your letter of 2 May 2014 regarding the abovementioned Environmental Impact Statement (EIS) forwarded to Roads and Maritime Services for consideration and apologise for the delay in providing a response to this matter.

**Roles & Responsibilities**

The key interests for Roads and Maritime are the safety and efficiency of the road network, traffic management, the integrity of infrastructure assets and the integration of land use and transport.

The Gwydir Highway (HW12) is a classified (state) road. Inverell Shire Council is the 'Roads Authority' for this road and all other public roads in the subject area.

In accordance with Clause 101 of the *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP) the Consent Authority is to have consideration for the safety, efficiency and ongoing operation of the classified road as the development has frontage to a classified road.

**Roads and Maritime Response**

Roads and Maritime has undertaken a review of the referred information and provides the following comments to assist the Department in its consideration of the proposed development;

1. Roads and Maritime maintains its previous comments in relation to the Traffic Impact Statement (TIS) undertaken by Better Transport Futures.
2. The addendum to the TIS undertaken by SECA Solutions has recognised that the existing auxiliary right (AUR) turn treatment at the intersection of the access road with the Gwydir Highway does not comply with the current Austroads Guidelines and RMS Supplements. Roads and Maritime supports the addendum's recommendation to provide a CHR(S) channelised right' turn treatment for vehicles approaching from the west, and an AUL auxiliary left turn treatment for vehicles approaching from the east.

3. It should be noted that the design requirements for the identified intersection treatments would vary where access is required for heavy vehicles longer than a standard B-Double configuration. The TIS and supporting Addendum have identified that such vehicles will not require access to the site. It is suggested that the Consent Authority may wish to impose a consent condition to prohibit such vehicles from accessing the site until an appropriate intersection treatment is provided to comply with the relevant Austroads Guidelines, Australian Standards and RMS Supplements.
4. The Consent Authority could request the site operator to develop and implement a Vehicle Transport Management Plan for the site, which identifies the largest design vehicle permitted to access the site and how these vehicles manoeuvre on site.

For all works on the Gwydir Highway the developer will be required to enter into a 'Works Authorisation Deed' (WAD) with Roads and Maritime prior to the commencement of any on-site construction works associated with the development. A Pre-Qualified Contractor will be required to complete all road works under the WAD to practical completion, as determined by Roads and Maritime, prior to the issue of any Occupation Certificate for the development. The developer will be responsible for all the costs associated with the works and the administration of the WAD.

Further information on undertaking Private Developments adjacent to classified roads can be accessed at:

[http://www.rms.nsw.gov.au/roadprojects/community\\_environment/private\\_developments.html](http://www.rms.nsw.gov.au/roadprojects/community_environment/private_developments.html)

It is recommended that developers familiarise themselves with the requirements of the WAD process and contact our office to obtain further advice where necessary.

#### **Advice to the Consent Authority**

If you have any further enquiries regarding the above comments please do not hesitate to contact Matt Adams on 6640 1362 or email [development.northern@rms.nsw.gov.au](mailto:development.northern@rms.nsw.gov.au).

Yours sincerely



Monica Sirol  
Network & Safety Manager, Northern Region

4 July 2014



**Office of  
Environment  
& Heritage**

Your reference: SSD 6093 13/06382  
Our reference: DOC14/131154  
Contact: Marcy Mills (02) 6659 8233

Mr Nicholas Hall  
A/Team Leader – Industry  
Industry, Key Sites and Social Projects  
Department of Planning and Environment  
GPO Box 39  
Sydney NSW 2001

Attention: Ms Pamela Morales

Dear Mr Hall

**Re: Bindaree Beef Rendering Plant and Bio-digester Plant (SSD- 6093)**

Thank you for your letter of 15 July 2014 requesting comments from the NSW Office of Environment and Heritage (OEH) on a development application for the Bindaree Beef Rendering Plant and Bio-digester plant for Lot 83 DP 753638, Gwydir Highway, Inverell in accordance with Division 4.1 State Significant Development of the *Environmental Planning and Assessment Act 1979*. I appreciate the opportunity to provide input.

OEH understands that the subject land has been used for the purposes of an abattoir since 1951 and that the development application seeks approval for the construction and operation of an anaerobic digester for generation of bio-gas and a rendering plant for inedible products, to complement the existing abattoir facility.

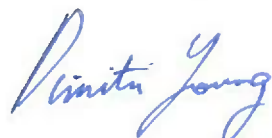
OEH has reviewed the development application and environmental impact statement (EIS) from Bindaree Beef Pty Ltd and has undertaken an inspection of the subject site on 7 August 2014. Detailed OEH comments are provided in Attachment 1 to this letter relating to the statutory responsibilities of OEH, which include Aboriginal cultural heritage, historic heritage, biodiversity values including threatened flora and fauna, OEH estate and potential impacts on flooding, coasts and estuaries.

On the basis of this review, OEH recommends that an ecological assessment is undertaken to determine the presence and extent of White Box Yellow Box Blakely's Red Gum Woodland (Box Gum Woodland) endangered ecological community (EEC) on the subject site, followed by an assessment of the extent and significance of direct and indirect impacts of the proposal in relation to the EEC. If impacts cannot be avoided then offsets should be provided in accordance with those required by the BioBanking Assessment Methodology.

OEH also recommends that the issue of any development consent for the proposal is conditional to ensure that any Aboriginal object(s) or item(s) of Aboriginal cultural significance identified during construction works are managed appropriately.

If you require further information or clarification, or should Council be in possession of information that suggests that OEH's statutory interests may be affected, please contact Conservation Planning Officer, Ms Marcy Mills, on 6659 8233, or via email at [marcelle.mills@environment.nsw.gov.au](mailto:marcelle.mills@environment.nsw.gov.au). Please note that Marcy works Thursdays and Fridays only.

Yours sincerely

 15 August 2014

**DIMITRI YOUNG**  
Senior Team Leader Planning, North East Region  
Regional Operations

## **Attachment 1 – Detailed OEH Comments - Bindaree Beef Rendering Plant and Bio-digester Plant (SSD- 6093)**

### **Aboriginal Cultural Heritage**

An important component of the environmental assessment process undertaken in support of development proposals is the consideration of potential impacts to Aboriginal cultural heritage values. The importance of protecting Aboriginal cultural heritage is reflected in the provisions of the *National Parks and Wildlife Act 1974* (NPW Act).

As part of any development proposal, it is critical that tangible and intangible Aboriginal cultural heritage values are fully assessed and considered. OEH's preference is to avoid impacting Aboriginal cultural heritage values and to ensure that appropriate long term protection mechanisms are in place in perpetuity.

Following a site inspection undertaken by OEH on 7 August 2014 and a review of the Aboriginal cultural heritage information contained within the EIS supporting the application, it has been determined that no Aboriginal cultural heritage constraints exist at the proposed location of works.

OEH does, however, recommend that the issue of any development consent for the proposal is conditional upon the following:

*"If any Aboriginal object(s) or item(s) of Aboriginal cultural significance is identified during the proposed works:*

- *all activity is to cease at that location;*
- *a 10m buffer zone is to be demarcated around the location;*
- *the Office of Environment and Heritage (North East Planning Unit) is to be notified immediately; and*
- *works are not to resume within the demarcated buffer zone until such time as authorised in writing by the Department of Planning and Environment."*

### **Biodiversity**

*White Box Yellow Box Blakely's Red Gum Woodland*

OEH has reviewed the EIS and supplementary information prepared by Michael Hanlon Consulting Pty Ltd (July 2014).

The EIS indicates that a flora and fauna assessment has been undertaken within the immediate development area and wastewater irrigation area, however the results of such assessment are not provided within the EIS or included as an appendices.

Following a site inspection undertaken by OEH on 7 August 2014 it has been determined that a degraded remnant of *White Box Yellow Box Blakely's Red Gum Woodland* is likely to exist on the subject site, which is listed as an endangered ecological community (EEC) under the *Threatened Species Conservation Act 1995*.

Whilst the subject site is highly disturbed, the Final Determination of the NSW Scientific Committee for this EEC explicitly recognises that some remnants are degraded. As such, further investigation is required to determine the presence and extent of this ECC on the subject site.

In this regard, an assessment of the extent and significance of direct and indirect impacts of the proposal should be undertaken for the Box Gum Woodland EEC likely to occur on the subject site based on the presence of suitable habitat.

In light of the above, OEH recommends that:

- further investigation is undertaken to determine the presence and extent of Box Gum Woodland EEC on the subject site; and
- an assessment of the extent and significance of direct and indirect impacts of the proposal in relation to Box Gum Woodland EEC is undertaken; and
- if it is determined that the proposal is likely to have an adverse effect on this EEC, then appropriate offsets are provided in accordance with those required by the BioBanking Assessment Methodology.

Your attention is also drawn to the Australian Government's *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. If the proposal affects any matters of national environmental significance or other matters requiring consideration under this legislation then approval may be required from the Department of Environment. White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is listed as a threatened ecological community under the EPBC Act.

### **OEH Estate**

The subject site is not in proximity to OEH estate, therefore the proposed development is unlikely to result in any impacts on OEH estate.

### **Flooding, Coasts and Estuaries**

OEH data indicates that the subject site is not impacted by flood hazard.

### **Recommendation**

On this basis, OEH recommends that further investigation is undertaken to determine the presence and extent of Box Gum Woodland EEC on the subject site including an assessment of the extent and significance of direct and indirect impacts of the proposal in relation to Box Gum Woodland EEC. If impacts cannot be avoided then offsets should be provided in accordance with those required by the BioBanking Assessment Methodology.

OEH also recommends that the issue of any development consent for the proposal is conditional to ensure that any Aboriginal object(s) or item(s) of Aboriginal cultural significance identified during construction works are managed appropriately.



## ÖZET

Özet, tezin ana konusunu ve amaçlarını özetleyen bölümdür. Tezin amacı, konunun incelenmesi ve sonuçların sunulmasıdır.

Tezin amacı, konunun incelenmesi ve sonuçların sunulmasıdır. Tezin amacı, konunun incelenmesi ve sonuçların sunulmasıdır.

## 1. GİRİŞ

1.1. Giriş bölümü, tezin konusunu ve amaçlarını tanımlar. Giriş bölümü, tezin konusunu ve amaçlarını tanımlar.

## 2. YÖNTEM

2.1. Yöntem bölümü, tezin nasıl yapıldığını açıklar. Yöntem bölümü, tezin nasıl yapıldığını açıklar. Yöntem bölümü, tezin nasıl yapıldığını açıklar.

2.2. Yöntem bölümü, tezin nasıl yapıldığını açıklar. Yöntem bölümü, tezin nasıl yapıldığını açıklar. Yöntem bölümü, tezin nasıl yapıldığını açıklar.

2.3. Yöntem bölümü, tezin nasıl yapıldığını açıklar. Yöntem bölümü, tezin nasıl yapıldığını açıklar. Yöntem bölümü, tezin nasıl yapıldığını açıklar.

## 3. SONUÇ VE TARTIŞMA

3.1. Sonuç ve tartışma bölümü, tezin sonuçlarını ve tartışmalarını sunar. Sonuç ve tartışma bölümü, tezin sonuçlarını ve tartışmalarını sunar.

## 4. SONUÇ

4.1. Sonuç bölümü, tezin sonuçlarını özetler. Sonuç bölümü, tezin sonuçlarını özetler. Sonuç bölümü, tezin sonuçlarını özetler.

4.2. Sonuç bölümü, tezin sonuçlarını özetler. Sonuç bölümü, tezin sonuçlarını özetler. Sonuç bölümü, tezin sonuçlarını özetler.

## 5. KAYNAKLAR

5.1. Kaynaklar bölümü, tezin kullandığı kaynakları listeler. Kaynaklar bölümü, tezin kullandığı kaynakları listeler. Kaynaklar bölümü, tezin kullandığı kaynakları listeler.

1. Name  
2. Address  
3. City  
4. State

5. Zip  
6. Telephone

7. E-mail  
8. Date  
9. Signature  
10. Title

11. Organization  
12. Address  
13. City  
14. State

15. Zip  
16. Telephone  
17. E-mail  
18. Date

19. Signature  
20. Title

21. Organization  
22. Address  
23. City  
24. State

25. Zip  
26. Telephone  
27. E-mail  
28. Date

29. Signature  
30. Title

31. Organization  
32. Address  
33. City  
34. State

35. Zip  
36. Telephone  
37. E-mail  
38. Date

39. Signature  
40. Title

41. Organization  
42. Address  
43. City  
44. State

45. Zip  
46. Telephone  
47. E-mail  
48. Date

49. Signature  
50. Title

51. Organization  
52. Address  
53. City  
54. State

## Pamela Morales

---

**From:** Wayne Jones <wayne.jones@dpi.nsw.gov.au>  
**Sent:** Friday, 22 August 2014 10:32 AM  
**To:** Pamela Morales  
**Subject:** Bindaree Beef Rendering and Bio Digester Plant (SSD\_6093) EIS

Hi Pamela

Please see following draft DPI comment on the above project. The Office of Water is the only relevant agency of DPI in this matter. Formal response should follow shortly.

Regards  
Wayne

Wayne Jones | Land Use Planning Coordinating Officer  
Department of Primary Industries  
Level 48, MLC Centre, 19 Martin Place Sydney NSW 2000  
T:02 9338 6708 | E: [wayne.jones@dpi.nsw.gov.au](mailto:wayne.jones@dpi.nsw.gov.au)

OUT14/27572

Ms Pamela Morales  
Industry, Key Sites and Social Projects  
NSW Department of Planning and Environment  
GPO Box 39  
SYDNEY NSW 2001

[Pamela.Morales@planning.nsw.gov.au](mailto:Pamela.Morales@planning.nsw.gov.au)

Dear Ms Morales,

**Bindaree Beef Rendering and Bio Digester Plant (SSD\_6093)  
Response to exhibition of Environmental Impact Statement**

I refer to your email dated 15 July 2014 requesting advice from the Department of Primary Industries (DPI) in respect to the above matter.

Comment by NSW Office of Water

The NSW Office of Water (Office of Water) has reviewed the Environmental Impact Statement (EIS) for the Bindaree Beef Rendering Plant and Bio-digester. The Office of Water's comments are outlined below, with detailed groundwater comments outlined in Attachment A. The office of Water's recommended conditions of approval are outlined in Attachment B, should the project be approved.

**Groundwater Management**

The groundwater conditions on the site have not been sufficiently reported to provide an understanding of the groundwater flow and baseline groundwater quality on site. Groundwater quality data presented indicates that on site effluent irrigation has recharged the underlying basalt aquifer resulting in groundwater contamination.

Given contamination has occurred, most likely from past effluent management practices, future management of waste water on site should ensure appropriate controls are in place.

These would include a revised groundwater monitoring strategy with management triggers and reporting standards. The strategy should include a review of the spatial distribution of the bores with regard to potential contamination sources as well as other users of the resource.

The potential future risks to groundwater from the proposed on site effluent management cannot be ascertained as the effluent volumes and composition is uncertain. As recommended in Appendix O, an effluent or Digestate Management Plan should be prepared that enables digestate to be managed to suit soil conditions, weather events and crop requirements.

Detailed groundwater comments are found in Attachment A.

### **Recommendations**

1. Review and revise the groundwater monitoring network to:
  - ensure adequacy of the groundwater monitoring network. This should include the adequacy of the spatial distribution of the network and any need to monitor effluent leakage from the existing holding ponds and irrigation storage dams.
  - ensure all bores are registered with the Office of Water and provided with a unique GW bore identifier that is to be used for all reporting.
2. Develop an early-detection groundwater quality monitoring, trigger levels, reporting and response plan, benchmarked to a suitable definition of baseline conditions, including a groundwater remediation plan and identification of any make good measures if contamination occurs.
3. Report, with any analytical results, the sampling, handling, storage and analytical methods, and other associated quality assurance and control information, including analytical uncertainties.
4. Consistent with the recommendations of Appendix O which deals with waste water use, a revised digestate management plan should include:
  - Reinstatement of the pilot waste treatment plant to better define the effluent volumes and compositions anticipated for the full-scale proposal.
  - An irrigation control system.
  - Mapping of soil types, nutrient and metal-retention properties, and deep-drainage potential.
  - A contamination risk analyses with respect to the aquifer and potential receptors (groundwater users).

### **Riparian Management**

The EIS outlines the development will be located within 40 metres of a watercourse. As the proposed development is State Significant Development a Controlled Activity Approval under the *Water Management Act 2000* is not required, however all works within 40 metres of a watercourse should be constructed in accordance with the Office of Water's Guidelines for Controlled Activities.

### **Stormwater Management**

The EIS outlines a number of management measures for stormwater on the site including rainwater tanks, swale drains and dams. It is important appropriate stormwater management measures are in place to limit any potential impacts on surface water and groundwater sources in the locality.

### **Erosion and Sediment Control**

The EIS outlines erosion and sediment control measures for the site including a deflection bank to divert clean runoff away from the site, sediment fencing and grassed swale drains. It is important that appropriate measures, including an Erosion and Sedimentation Control Plan are implemented on the site to limit any potential impacts on surface water and groundwater sources.

For further information please contact Christie Jackson, Water Regulation Officer, (Tamworth office) on (02) 6701 9652 or at [christie.jackson@water.nsw.gov.au](mailto:christie.jackson@water.nsw.gov.au).

## **Attachment A**

### **Bindaree Beef Rendering and Bio Digester Plant (SSD\_6093) Response to exhibition of EIS Additional comments by NSW Office of Water**

### Detailed Groundwater Comments

The site is underlain by the Inverell Basalt groundwater source, which is managed according to the Water Sharing Plan for the NSW Murray-Darling Basin Fractured Rock Groundwater Sources.

The potential impacts of on-site wastewater-stream product discharge on groundwater are reviewed herein in accordance with the requirements of the *Water Management Act 2000*, associated NSW Aquifer Interference Policy 2012, and relevant Water Sharing Plan.

The main groundwater issues associated with the proposed development are outlined as follows:

1. The coverage of the present groundwater monitoring network is incomplete.
2. The details and adequacy of the present and proposed monitoring program are unclear.
3. The sampling, handling, storage and analytical methods, and associated quality assurance and control information, have not been given.
4. Baseline groundwater levels, flow, qualities (physical and chemical parameters), beneficial-use category, water-quality objectives have not been established and presented.
5. Not all groundwater monitoring bores have been registered with the NSW Office of Water or had their relevant details presented.
6. Relevant baseline soil conditions have not been presented.
7. Maps of soil distribution, nutrient and metal retention and fixation capacity, and risk of deep drainage have not been presented.
8. Field measurements of soil hydraulic parameters, such as infiltration, water characteristic or deep drainage, have not been undertaken.
9. The potential impacts of historic irrigation, rainfall, and other land management activities, on groundwater levels have not been considered.
10. The field-measurable and dissolved-ion water quality parameter values and quality assurance measures have not been verified and presented.
11. Groundwater baseline concentrations of, and locally relevant protection criteria (e.g. trend detection measures and trigger values) for, species of dissolved nitrogen, phosphorous and other aqueous constituents have not been defined.
12. The potential for effluent leakage from the existing holding ponds and irrigation storage dam has not been monitored.
13. Risk analysis is hindered by the uncertainty in effluent volumes and specific compositions.
14. Groundwater level trends and implications for the risk of contamination have not been addressed.
15. The present groundwater monitoring program is inadequate.
16. A risk analysis for groundwater contamination has not been explicitly presented.
17. As stated above, data on the specific composition of the effluent is unavailable to inform any detailed irrigation management requirements and the potential risk of contamination.
18. Bindaree Beef has not presented a 'Digestate Management Plan' or Monitoring Program.
19. An irrigation control system has not been presented.
20. The 100m irrigation exclusion buffer may inhibit the early detection of groundwater contamination. Groundwater monitoring must be carried out at the irrigation area, within the buffer zone, and surrounding area outside the Bindaree property.
21. A nutrient budgeting and monitoring program has not been explicitly detailed.

22. As detailed above, several limitations to the existing and proposed groundwater monitoring program have been identified.

23. No groundwater remedial plan or make good measures have been proposed should groundwater contamination be detected.

### **Water Requirements & Licensing**

All water currently used by Bindaree Beef is sourced from the Inverell Council reticulated water supply. No increase in water usage is required for the proposed development. No groundwater or surface water use is required for this proposal; groundwater will not be used for construction or operational activities, or dust suppression.

Bindaree Beef has no irrigation bore licences; but has groundwater Basic Rights licences for stock and domestic use (lic. 90WA823239 – Bore No: GW964949, and 90WA823242 – Bore No: GW964950).

### **Baseline Conditions**

An explicit description of baseline conditions of, and beneficial-use category and water-quality objectives for, the site has not been presented.

The supplied groundwater level and quality data from each bore are incomplete. Two of the monitoring bores have been described as enclosed and, thus, have not provided groundwater level data.

The impacts of historic climate and land management on groundwater levels and quality have not been discussed (e.g. by hydrograph analysis and deconvolution).

The present distribution of monitoring bores, particularly in the McIntyre River Catchment, does not enable a basic groundwater flow direction to be determined.

Details of the groundwater monitoring program are unclear. The sampling, handling, storage and analytical methods, and associated quality assurance and control information, have not been given.

The nature and representativeness of sampling sites is unclear. Not all groundwater monitoring bores, depicted in Fig's. 39 (see a copy of Fig. 39, at the end of this review) and 40, have been listed as existing groundwater monitoring bores in Tables 28 and 29.

The three site monitoring bores in the southern portion of the Copeton Dam Catchment, namely Oat Paddock Bore, 3 Dams Bore GW24, and Gully Windmill Bore GW25 (e.g. Fig. 40, p. 205), are not registered in NOW's Groundwater Database System or listed in Table 28. Thus, their construction details and hence suitability to monitor groundwater impacts is unknown.

Myhill's Bore - EPA Monitoring Point 27, shown in Fig. 39, but not tabulated, coincides spatially with well GW051234, which has been completed as a concrete cylinder with a diameter of 2.4 m and without any additional record of construction details and water-bearing zones. Representative groundwater quality data may be difficult to obtain from such a well. The location of JR's Bore - EPA Monitoring Point 26, shown in Fig. 39, does not exactly match the co-ordinates recorded in the NSW Groundwater Database System.

The description of soil baseline conditions is incomplete and unclear. No soil-type map or soil profile descriptions relating to the soil pits, whose locations are shown on Fig. 38, are provided. The northern portion of the irrigation site is not represented by a soil test pit, and the representativeness of the existing soil test pits for the soils across the irrigation site is not indicated.

Additional soil sampling between the test pits has not been undertaken. Selected properties of two different soil types across the irrigation area are summarised as a single soil type in Table 25. These properties include saturated hydraulic conductivity and available water holding capacity, both of which were not measured but, instead, adopted from a publication on soil analysis, for which no reference is given. Other potentially relevant soil hydraulic properties, required to characterise the role of preferred water flow paths and determine the soil moisture characteristic curve, were not measured.

The very low pH of the topsoils indicates that they have already been impacted by previous irrigation management. The soil's capacity to adsorb phosphorous and, consequently, prevent its loss via deep drainage into the underlying groundwater, has not been measured. The effective cation exchange capacity (CEC) of the 0-40 cm portion of soil profiles was measured to be in the range 14.8-76.3 cmol(+)/kg (Table 3, Appendix P), which is, moderate to very high. However, these results ignore profile differentiation, which may restrict the highest CEC primarily to the topsoil, and cation exchange may be limited to infiltration of the topsoil and the faces of subsoil cracks.

### **Impacts on Groundwater Levels**

Deep drainage and groundwater recharge may be possible in the irrigation area especially where vertic soil, the dominant soil type of the area, is described as self-mulching and ranging from as little as 0.4 m in thickness. The full impacts of existing or, potentially, future site operations on the underlying groundwater are unclear. However, contamination from historic irrigation is evident from the available groundwater quality data and the limited numerical groundwater modelling suggests that additional recharge may occur.

## **Impacts on Groundwater Quality**

The potential for groundwater to be impacted by irrigation is indicated by the groundwater quality data, sampled at five monitoring sites between 2008 and 2013 and presented in Tables 30 to 34 (Section 5.12.3).

Dissolved nitrogen concentrations are typically several times above the expected natural background level in Myhill's Bore - EPA Monitoring Point 27 and especially JKN's Bore - EPA Monitoring Point 28. These sites are located in the upper reaches of a surface subcatchment where soils are likely to be relatively shallow.

Occasional peaks in dissolved nitrogen concentration also occurred in 3 Dams Bore - EPA Monitoring Point 24, JR's Bore - EPA Monitoring Point 26 and, as ammonia along with high phosphorous concentration, in Gully Bore - EPA Monitoring Point 25. This data indicates that previous effluent irrigation on site has recharged the underlying basalt aquifer.

The pH tabulated for groundwater from JR's Bore EPA Monitoring Point 26 is typically extremely high for natural groundwater. Whilst such high pH values are possible they are likely to have been caused by CO<sub>2</sub> degassing during sampling, storage and handling prior to the pH measurement. The accuracy of these pH values is unknown as the sampling and analytical methodologies, many other constituent concentrations/values, and related quality assurance measures have not been presented. High groundwater pH, if real, has a strong control on the fate of nutrients and other groundwater constituents and can lead to aquifer clogging via mineralisation.

No monitoring has been undertaken and presented to demonstrate the integrity of the existing effluent holding ponds and irrigation storage dam.

## **Effluent Management**

Risks to the soils, surface water, groundwater, aquifer, and potential receptors are uncertain because the effluent (digestate) volumes and compositions are uncertain; and compositions of effluent from the pilot plant have not been presented. It is acknowledged that all of these details may not become available until full production is underway.

Crop irrigation requirements, and surface runoff and subsurface drainage control, will be managed according to accurate details of effluent volumes and compositions, and water and nutrient balance calculations (Appendix O). However, according to Appendix O (p. 2, para. 6 & 7) further analysis is required to characterise the digestate, and balance calculations are yet to be finalised. Potential risks to aquifer interference and water receptors cannot be determined until these aspects are clarified.

Utilitas (Appendix O) recommends that the pilot plant be reinstated to better ascertain the anticipated effluent volumes and compositions. NSW Office of Water supports this recommendation.

## **Impacts on Nearby Users**

Areas at risk of groundwater recharge and contamination, the receptors at greatest risk of contamination, and the adequacy of the current groundwater bore field to monitor these potential impacts have not been presented and discussed. Groundwater level temporal trends, aerially contoured groundwater elevation (AHD) data, inferred groundwater flow, and consequent hazards and potential risks to receptors, have not been explicitly presented and discussed.

A basic groundwater rights domestic bore, GW901075, is located within the area of Bindaree Beef ownership and down-gradient from the effluent irrigation areas of the McIntyre River Catchment. This bore has not reportedly been monitored and is in a prime location to detect groundwater contamination derived from the irrigation areas; although it is not screened in the shallowest of the water-bearing zones through which the lateral flow of contaminants offsite could occur.

All bores listed in Tables 28 and 29 (Section 5.12.2, pp. 211-212) are within the Bindaree Beef meat processing and effluent irrigation areas only (land ownership shown on Fig. 2). The water quality of a domestic and stock bore (GW969520) to the south west and, potentially, several bores immediately to the east of the irrigation site may be at risk if groundwater contamination occurs on site. These bores need to be monitored for water quality.

## **Impacts on Groundwater Dependent Ecosystems and Culturally Significant Sites**

No high priority groundwater dependent ecosystems or culturally significant sites are known to exist in the proposed activity areas or within sufficient proximity to enable their potential exposure to any groundwater-related hazards associated with the proposal.

## **Hydraulic and Nutrient Balance Model**

FSA Consulting (Appendix P) applied the Model for Effluent Disposal Using Land Irrigation (MEDLI), a modelling tool jointly developed by the CRC for Waste Management and Pollution Control, and the Queensland Departments of Natural Resources and Primary Industries, to predict the fate of water, nitrogen, phosphorous, and total dissolved solids following land irrigation with effluent. The MEDLI modelling results have not been presented with any estimate of uncertainty; quantified uncertainty is necessary to determine whether the modelling is fit-for-purpose.

The MEDLI model comprises a set of modules, some employing empirical relationships, and each of which has its own set of assumptions and limitations. With the limited availability of locally measured input data, the following model parameters were assumed:

- 1) the default Black Vertosol soil characteristics in MEDLI, assuming low permeability, and ignoring shallow soil profiles and the existing Ferrosols;
- 2) the default Black Vertosol phosphorous sorption capacity in MEDLI; the site's soils were not analysed for this parameter;
- 3) a theoretical irrigation schedule;
- 4) future climatic information based on historic data;
- 5) an estimated annual volume of generated effluent; and,
- 6) calibration to have nitrogen, phosphorous and salinity (total dissolved solids) concentrations in the irrigated effluent at the maximum concentrations allowable for low strength effluent according to DEC (2004); the local relevance of which has not been ascertained.

Appendix P does not state whether MEDLI has adopted the soil-crack (preferred water flow path) infiltration algorithm from the PERFECT modelling code.

FSA Consulting (Appendix P, p. 16) infers that the MEDLI modelling results are subjective due to the assumptions made for the lack of appropriate data in parameterising the model. FSA Consulting states that "Monitoring is the only way to ensure that the performance predicted by the modelling is achieved", highlighting the requirement for and dependence on stringent digestate and groundwater monitoring programs and an irrigation control system.

For the irrigation scenario modelled using MEDLI, the results suggest that deep drainage would double compared to the modelled dryland scenario.

### **Mitigation**

Potential effluent impacts on the irrigated soils include excesses of nutrients, salinity and sodicity; these hazards can, in turn, result in impacts on surface water and groundwater quality and aquifer integrity. Bindaree Beef proposed to mitigate these impacts via digestate irrigation management, but acknowledges that "management practices will be refined once specific information has been obtained relating to the properties of the resulting digestate solution" (Section 5.8.5, p. 190).

To define the optimal control over the dispersal and use of the digestate, Utilitas (Appendix O) recommends that Bindaree Beef prepare:

- 1) an effluent or Digestate Management Plan; and, as part of that plan,
- 2) a Digestate Monitoring Program to tailor digestate management to suit soil conditions, weather events and crop requirements.

An irrigation control system, including soil-water monitoring and soil and plant-tissue chemical analyses, has not been defined.

Mitigation measures proposed to prevent the recharge of digestate matter into the groundwater system include (Section 5.12.5, p. 220):

- 1) 100 m irrigation exclusion buffer around existing bores;
- 2) ongoing nutrient budgeting to prevent excessive effluent application to the site; and,
- 3) continued monitoring of onsite groundwater.

**End Attachment A**

## **Attachment B**

### **Bindaree Beef Rendering and Bio Digester Plant (SSD\_6093) Response to exhibition of EIS NSW Office of Water Recommended Conditions of Approval**

- 
- The proponent must develop a revised groundwater monitoring network to ensure adequacy of the groundwater monitoring network in consultation with the Office of Water. This should include the

adequacy of the spatial distribution of the network and any need to monitor effluent leakage from the existing holding ponds and irrigation storage dams.

- The proponent must register all groundwater bores with the Office of Water and obtain a unique GW bore identifier that is to be used for all reporting.
- The proponent is to develop an early-detection groundwater quality monitoring, trigger levels, reporting and response plan, benchmarked to a suitable definition of baseline conditions. This shall include a groundwater remediation plan and identification of any make good measures if contamination occurs.
- The proponent to report, with any analytical results, the sampling, handling, storage and analytical methods, and other associated quality assurance and control information, including analytical uncertainties.
- The proponent should revise the digestate management plan to include the following:
  - (i) Reinstatement of the pilot waste treatment plant to better define the effluent volumes and compositions anticipated for the full-scale proposal.
  - (ii) An irrigation control system.
  - (iii) Mapping of soil types, nutrient- and metal-retention properties, and deep-drainage potential.
  - (iv) A contamination risk analyses with respect to the aquifer and potential receptors (groundwater users).
- To aid in the protection of receiving water source quality, all stormwater runoff must be adequately treated at its source and/ or diverted through the stormwater treatment process designed for the site, prior to the stormwater being discharged to surface water and groundwater sources.
- All works within or adjacent to riparian lands should be consistent with the NSW Office of Water's Guidelines for Controlled Activities.

**End Attachment B**

Regards  
Wayne

Wayne Jones | Land Use Planning Coordinating Officer  
Department of Primary Industries  
Level 48, MLC Centre, 19 Martin Place Sydney NSW 2000  
T:02 9338 6708 | E: [wayne.jones@dpi.nsw.gov.au](mailto:wayne.jones@dpi.nsw.gov.au)

---

This message is intended for the addressee named and may contain confidential information. If you are not the intended recipient, please delete it and notify the sender. Views expressed in this message are those of the individual sender, and are not necessarily the views of their organisation.



Our reference: : DOC14/130714-02  
Contact: : Mr Lindsay Fulloon – 02 6773 7000 – [armidale@epa.nsw.gov.au](mailto:armidale@epa.nsw.gov.au)  
Date : 18 August 2014

Mr Nicholas Hall  
A/Team Leader – Industry  
Industry, Key sites and Social Projects  
NSW Department of Planning and Environment  
GPO Box 39  
SYDNEY NSW 2001

Attn: Ms Pamela Morales

Dear Mr Hall

#### **SSD-6093 – Bindaree Beef Rendering and Bio-digester Plants - Public Exhibition**

The NSW Environment Protection Authority (EPA) refers to the Notice of Exhibition it has received from you in relation to the above matter dated 15 July 2014.

Further to this notification, the EPA has reviewed the Development Application (DA) and Environmental Impact Statement (EIS) that were made available for download and viewing on the Department of Planning and Environment's website. **Attachment 1** provides detailed comments and recommendations on the proposal.

It is noted that some of the key issues raised in the EPA's submission (22 May 2014) on the adequacy of the draft EIS for public exhibition have not been addressed by the proponent. Despite this, the revised Environmental Assessment has been allowed to progress to public exhibition and the EPA now finds itself in a position where it must raise many of the same issues.

It is noted that the project will require a variation to the existing environment protection licence under the Protection of the Environment and Operations (POEO) Act 1997. The proponent will need to make a separate application to the EPA to vary this licence if development project approval is granted.

Where relevant, the EPA would also appreciate receiving a copy of the submissions received by the Department of Planning and Environment (or a report summarising these submissions) in response to the exhibition of the Environmental Assessment as this will assist the EPA in regulating the site in future.

The EPA would also like to request an opportunity to comment on the draft project approval once the Department of Planning and Environment (DoP&E) has considered its recommendations and prepared draft conditions of consent.

In summary, from the information presented in the EA, the EPA is of the opinion that the most significant environmental issues are:

- **Air Quality** – Inadequacies identified in the draft Air Quality Assessment by EPA have not been adequately addressed by the proponent; and

Email: [armidale@epa.nsw.gov.au](mailto:armidale@epa.nsw.gov.au)  
PO Box 494 Armidale NSW 2350  
85 Faulkner Street, Armidale NSW 2350  
Tel: (02) 6773 7000 Fax: (02) 6772 2336  
ABN 30 841 387 271  
[www.epa.nsw.gov.au](http://www.epa.nsw.gov.au)

- **Noise** – Inadequacies identified in the draft Noise Assessment by EPA have not been adequately addressed by the proponent.

Please contact Mr Lindsay Fulloon on (02) 6773 7000 or by email to [armidale@epa.nsw.gov.au](mailto:armidale@epa.nsw.gov.au) if you wish to discuss this matter.

Yours sincerely



**SIMON SMITH**  
**Manager Armidale Region**  
**Environment Protection Authority**

## **ATTACHMENT 1 – KEY ISSUES IDENTIFIED IN EPA REVIEW OF PUBLICLY EXHIBITED EIS FOR SSD-6093 – BINDAREE BEEF RENDERING AND BIO-DIGESTER PLANTS**

### **A. AIR QUALITY ASSESSMENT (AQA)**

#### ***ISSUE 1 – REVIEW OF FINAL EIS AGAINST THE ISSUES IDENTIFIED IN THE EPA'S ADEQUACY REVIEW***

##### ***a) It has not been demonstrated that the meteorological data used in the assessment is site representative***

Following its review of the draft EIS, EPA requested that the TAPM generated meteorological data used in the dispersion modelling be validated against observational data to demonstrate it is site representative. VIPAC's responses to the EPA's adequacy comments have not demonstrated that the data used in the assessment is site representative. Reference is made to the long distances from Inverell (greater than 100km) where wind roses are available at Bureau of Meteorology (BoM) sites (Moree, Tenterfield and Tamworth). Due to these long distances, these BoM stations are not considered to be representative of the site and as such a validation study has not been undertaken.

EPA has undertaken a preliminary review of the climatic data available on the BoM website. It appears there are some windroses and other data available for two stations located in Inverell. These windroses show that the TAPM generated meteorological data may underestimate the percentage of calm conditions occurring at the site.

Recommendation: EPA recommends that the proponent is further requested to demonstrate that the TAPM generated data is site representative and suitable for use in the assessment.

##### ***b) Emissions from the proposed rendering plant have been modelled as volume rather than point sources***

EPA's review of the draft EIS identified that the rendering building appeared to have been modelled as a volume source when there will be point sources of odour from the new rendering building (odorous emissions will be captured by a forced ventilation system and exhausted through roof vents - Figure D-2, Appendix D). VIPAC's response to EPA's adequacy comments confirm that the rendering plant was modelled as three point sources to replicate three vents in the roof of the building. No information is provided regarding the assumed exit velocity or temperature of the roof vents.

Recommendation: EPA recommends that the proponent is requested to provide the assumed exhaust parameters for the roof vents. To further demonstrate this issue has been resolved, EPA requests that the proponent provides the CALPUFF input file.

##### ***c) It is unclear whether predicted odour impacts have been presented as peak nose response time concentrations rather than one hour averages***

EPA's adequacy comments requested that predicted odour impacts be presented as peak (one second average) concentrations rather than one hour averaged. It was noted that no reference has been made as to whether the appropriate peak to mean ratios have been applied to ensure that odour impacts are presented as peak nose response time concentrations. Further, in Figure 8-2 in the final VIPAC AQA dated 11 June 2014 the odour contours for existing operations are reported as one hour average concentrations whereas proposed operations are reported as one second odour concentrations. This issue was also identified by EPA in its submission on the draft EIS and has not been addressed by VIPAC.

VIPAC's response to EPA's adequacy comments dated 11 June 2014 states that peak to mean ratios are mentioned in Section 3.2 of the report and that all odour concentrations are a peak nose response, not one hour. The results section in VIPAC's final AQA has been updated to refer to 'peak odour contours'.

VIPAC's response to EPA's adequacy comments and the minor amendments in the final AQA do not adequately address this issue. EPA remains unclear as to whether or not peak to mean ratios were appropriately applied in the dispersion modelling.

**Recommendation:** EPA recommends that the proponent is required provide the peak to mean ratios applied in the study and any electronic files to demonstrate they were appropriately applied to the dispersion modelling results.

**d) Sensitive receptors**

In its adequacy comments, the EPA requested the predicted odour impacts at nearest sensitive receptors be provided in tabular form. Table 8-1 in VIPAC final AQA includes the predicted odour concentration at each of the nearest sensitive receptors. However, receptors 43 and 44 appear to have been excluded from Table 8-1.

**Recommendation:** EPA recommends the proponent is requested to update Table 8-1 to include sensitive receptors 43 and 44.

**e) The combustion emissions data used in the AQIA indicate that the proposed boiler and three generators may not comply with Group 6 requirements of the Protection of the Environment Operations (Clean Air) Regulation 2010**

Following its adequacy review the EPA requested that the proponent demonstrate that the proposed boiler and generators can comply with the requirements for Group 6 plant and equipment in the *Protection of the Environment Operations (Clean Air) Regulation (2010)*. Preliminary calculations undertaken by ATASU (reproduced again below) indicate that the boiler may not comply with Group 6 requirements for NO<sub>x</sub> and Carbon Monoxide (CO) emissions and that the generators may not comply with the requirements for CO emissions.

**Recommendation:** EPA recommends that the proponent is required to demonstrate that the proposed boiler and three generators will comply with the Group 6 emission standards in Part 5 of the *Protection of the Environment Operations (Clean Air) Regulation (2010)*.

**CALCULATIONS TO DETERMINE COMPLIANCE WITH GROUP 6 REQUIREMENTS OF THE PROTECTION OF THE ENVIRONMENT OPERATIONS (CLEAN AIR) REGULATION 2010**

**Table 1- Stack parameters**

| Equipment | Stack height (m) | Diameter (m) | Velocity (m/s) | Temperature (degrees C) | Volumetric flowrate (m <sup>3</sup> /s)* |
|-----------|------------------|--------------|----------------|-------------------------|------------------------------------------|
| Boiler    | 11.2             | 0.6          | 11.5           | 250                     | 3.25                                     |
| Generator | 6                | 0.35         | 24             | 400                     | 2.31                                     |

\* Volumetric flowrate  
= velocity x area  
= velocity x  $\pi r^2$

**Table 2- Emission rate (g/s) data used in modelling**

| Pollutant        | Boiler  | Generator |
|------------------|---------|-----------|
| CO               | 2.329   | 0.97      |
| NO <sub>x</sub>  | 4.606   | 1.918     |
| PM <sub>10</sub> | 0.00385 | 0.0016    |

**Table 3- Emission rate concentrations (mg/m3) and Group 6 CAR requirements for the boiler**

| Pollutant        | Boiler | Group 6 CAR requirement for boilers operating on gas |
|------------------|--------|------------------------------------------------------|
| CO               | 717    | 125                                                  |
| NO <sub>x</sub>  | 1417   | 350                                                  |
| PM <sub>10</sub> | 1.2    | 50 (Solid Particles)                                 |

Emission rate (g/s) = emission concentration (g/m<sup>3</sup>) x volumetric flowrate (m<sup>3</sup>/s)

Emission concentration (mg/m<sup>3</sup>) = Emission rate (g/s) / volumetric flowrate (m<sup>3</sup>/s) x 1000

**Table 4- Emission rate concentrations (mg/m3) and Group 6 CAR requirements for the generators**

| Pollutant        | Per generator | Group 6 CAR requirements for stationary reciprocating internal combustion engines |
|------------------|---------------|-----------------------------------------------------------------------------------|
| CO               | 140           | 125                                                                               |
| NO <sub>x</sub>  | 277           | 450                                                                               |
| PM <sub>10</sub> | 0.23          | 50 (Solid Particles)                                                              |

Emission rate (g/s) = emission concentration (g/m<sup>3</sup>) x volumetric flowrate (m<sup>3</sup>/s)

Emission concentration (mg/m<sup>3</sup>) = (Emission rate (g/s) / volumetric flowrate (m<sup>3</sup>/s) x 1000) / 3

Note: As emission rate data used in the assessment was based on combined power rather than per generating unit, the number of units has not yet been confirmed. As the assessment indicates three units are likely EPA has undertaken calculations assuming three units emitting at the same rate (ie dividing the total combined power rate by three)

## **ISSUE 2 – ADDITIONAL ISSUES IDENTIFIED IN EPA'S REVIEW OF THE FINAL AQA BY VIPAC**

### **a) Unclear how TAPM data was used in CALPUFF**

VIPAC's final AQA does not specify the methodology used to incorporate the TAPM generated meteorological data in CALPUFF. It would appear that CALPUFF has been run with 'single station meteorology.' That is a uniform field of meteorological variables is assumed for all grid points in the modelling domain. There is no spatial variation in the meteorological data as may occur due to changes in land use type, terrain channelled flow and mesoscale features such as a land-sea breeze circulation and convective complexes.

It should be noted that the guidance document '*Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW, Australia*' (<http://www.epa.nsw.gov.au/resources/air/CALPUFFModelGuidance.pdf>) only recommends CALPUFF is run 'with single station meteorology' when spatial variability of the meteorological fields (e.g. uniform terrain and land use) may not be significant. Otherwise, it is recommended to run CALPUFF with a full 3-Dimensional meteorological field. VIPAC have failed to justify their use of 'single station meteorology' and this approach may not be appropriate given the undulating nature of the terrain at the site.

**Recommendation:** EPA recommends that the proponent is requested to provide additional information regarding the methodology used to incorporate the meteorological data in CALPUFF and a detailed justification for the chosen methodology.

### **b) Existing Coal Fired Boiler does not comply with the Clean Air Regulation**

The existing coal fired boiler will be used as a back-up boiler during servicing of the gas boiler. The stack testing by Airlabs Environmental, 2014 shows that the boiler does not comply with the Group 1 solid particle emission standard of 400mg/m<sup>3</sup> in the Protection of the Environment Operations (Clean Air) Regulation, 2010. The existing coal fired boiler must comply with the relevant emission standards in the Clean Air Regulation despite only operating for a few days a year.

**Recommendation:** EPA recommends the proponent is requested to provide information detailing the approach it proposes to implement to ensure that the coal fired boiler complies with the Protection of the Environment Operations (Clean Air) Regulation, 2010.

## **B. NOISE ASSESSMENT (NA)**

### ***ISSUE 3 – BACKGROUND NOISE ASSESSMENT DOES NOT MEET THE REQUIREMENTS OF THE NSW INDUSTRIAL NOISE POLICY***

Section 3.1 of the NSW Industrial Noise Policy (INP) clearly states that the “...background noise levels to be measured are those that are present at the time of the assessment and **without the subject development operating**. Hence for the assessment of modifications to an existing development, **the noise from the existing development should be excluded from the background noise measurements.**”

Following its review of the draft EIS, EPA recommended that the proponent either establish the Rating Background Level (RBL) for Locations 1 and 3 in the absence of noise from the premises, or alternatively choose to accept a default minimum RBL of 30 dBA for all surrounding receivers. VIPAC's responses to the EPA's adequacy comments have not addressed this issue and the noise assessment criteria they have therefore used are not considered valid. The EPA considers that the background noise levels, particularly at night time, would typically be lower than those presented in the EIS for isolated rural residences in a rural area.

Predicted noise impacts for the proposed future operations of the premises (after construction is complete) appear below the default minimum Project Specific Noise Levels (i.e. the default minimum RBL of 30 dBA + 5 dBA = 35 dBA) and night sleep disturbance criteria (i.e. LA1 <sub>(1 minute)</sub> = 45 dBA). EPA therefore recommends the application of these criteria as noise limits for the proposed future operations of the premises.

**Recommendation:** The EPA recommends that the default minimum PSNL (LAeq <sub>(15 minute)</sub>) of 35 dBA and night sleep disturbance criteria (LA1 <sub>(1 minute)</sub>) of 45 dBA are applied as the noise limits for all receptor locations for the proposed future operations at the premises. Construction noise impacts should be managed in accordance with the EPA's Interim Construction Noise Guideline (ICNG) available at: <http://www.epa.nsw.gov.au/resources/noise/09265cng.pdf>. The preparation of Construction Noise Management Plan is recommended before construction works commence at the site to ensure compliance with the ICNG.

**Recommended consent conditions relating to noise:** The EPA Noise Assessment Unit is in the process of drafting recommended consent conditions for consideration in the process of determining this project. As soon as these are finalised, EPA will forward these as a separate addendum to this advice.



## Appendix D   Public Submissions

- J Irwin
- G & P Murray
- Anonymous

## Pamela Morales

---

**From:** David Mooney  
**Sent:** Friday, 18 July 2014 9:31 AM  
**To:** Pamela Morales  
**Subject:** FW: Submission Details for John Irwin (support)

fyi

**David Mooney** | Senior Planner  
Industry, Key Sites & Social Projects | Department of Planning and Environment  
23-33 Bridge Street SYDNEY 2000 | GPO Box 39 SYDNEY 2001  
t: 02 9228 2040 | e: [david.mooney@planning.nsw.gov.au](mailto:david.mooney@planning.nsw.gov.au)

---

**From:** John Irwin [<mailto:boydirwin@bigpond.com>]  
**Sent:** Friday, 18 July 2014 7:56 AM  
**To:** David Mooney  
**Subject:** Submission Details for John Irwin (support)

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation: no

Name: John Irwin  
Email: [boydirwin@bigpond.com](mailto:boydirwin@bigpond.com)

Address:  
Valley View

Inverell, NSW  
2360

Content:  
I strongly support the development proposal by Bindaree Beef which will greatly improve the adverse environmental impacts of smell and effluent disposal which have been issues of varying severity in the past. I am a neighbor of the plant and associated cattle paddocks.

IP Address: - 101.171.42.150  
Submission: Online Submission from John Irwin (support)  
[https://majorprojects.affinitylive.com/?action=view\\_activity&id=103867](https://majorprojects.affinitylive.com/?action=view_activity&id=103867)

Submission for Job: #6093 Rendering Plant and Bio-digester Plant  
[https://majorprojects.affinitylive.com/?action=view\\_job&id=6093](https://majorprojects.affinitylive.com/?action=view_job&id=6093)

Site: #2850 Bindaree Beef Abattoir  
[https://majorprojects.affinitylive.com/?action=view\\_site&id=2850](https://majorprojects.affinitylive.com/?action=view_site&id=2850)

**John Irwin**

E : [boydirwin@bigpond.com](mailto:boydirwin@bigpond.com)

## Pamela Morales

---

**From:** David Mooney  
**Sent:** Monday, 18 August 2014 9:54 AM  
**To:** Pamela Morales  
**Subject:** FW: Submission Details for Graem Murray (support)  
**Attachments:** Binderee Beef Bio Digester & Redering Plant Submission.pdf

FYI

**David Mooney** | A/Team Leader

Industry, Key Sites & Social Projects | Department of Planning and Environment  
23-33 Bridge Street SYDNEY 2000 | GPO Box 39 SYDNEY 2001  
t: 02 9228 2040 | e: [david.mooney@planning.nsw.gov.au](mailto:david.mooney@planning.nsw.gov.au)

---

**From:** Graem Murray [<mailto:gtkca1@bigpond.com>]  
**Sent:** Sunday, 17 August 2014 8:37 PM  
**To:** David Mooney  
**Subject:** Submission Details for Graem Murray (support)

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation: no

Name: Graem Murray  
Email: [gtkca1@bigpond.com](mailto:gtkca1@bigpond.com)

Address:  
84 Ditzells Drive

Inverell, NSW  
2360

Content:  
Binderee Beef Bio Digester and Rendering Plant Submission re: Noise impacts relative to 84 Ditzells Drive, Inverell

Graem & Patrica Murray 17/08/2014  
84 Ditzells Drive  
Inverell 2360  
NSW

Whilst we welcome the project to install a new Bio Digester at the Binderee Beef Abattoir site which will result in the reduction of odour emissions from the plant we do have concerns regarding the projected noise level increases to our property 84 Ditzells Drive, Inverell as highlighted in NSW Government Major Projects Job ID 6093, Binderee Beef Abattoir Bio Digester and Rendering Plant.

\* Currently we enjoy relative quite in residing at 84 Ditzells Drive, Inverell

\* We are invested heavily in our property and would not wish to have our asset compromised by an unacceptable increase in constant noise emissions from the Proposed Bio Digester and Rendering Plant, Binderee Beef  
o Liveability potentially will be reduced if steps are not taken to mitigate increased sound/noise emissions from the Plant upgrade

\* It is requested that Binderee Beef review plans of Rendering plant installation and make necessary changes to reduce constant noise emissions from the new facility, eg;

o Remodel areas on the North North-east side of the Rendering Plant and Install large screens or dense tree lines in front of the Rendering Plant to absorb and defuse noise escaping unduly in the direction of 84 Ditzells Drive Inverell.

\* We reserve the right to seek compensation if the new rendering plant impacts negatively on the value of our property and liveability of residing at 84 Ditzells Drive, Inverell.

IP Address: cpe-121-218-45-222.inse4.ken.bigpond.net.au - 121.218.45.222  
Submission: Online Submission from Graem Murray (support)

[https://majorprojects.affinitylive.com/?action=view\\_activity&id=107083](https://majorprojects.affinitylive.com/?action=view_activity&id=107083)

Submission for Job: #6093 Rendering Plant and Bio-digester Plant  
[https://majorprojects.affinitylive.com/?action=view\\_job&id=6093](https://majorprojects.affinitylive.com/?action=view_job&id=6093)

Site: #2850 Bindaree Beef Abattoir  
[https://majorprojects.affinitylive.com/?action=view\\_site&id=2850](https://majorprojects.affinitylive.com/?action=view_site&id=2850)

**Graem Murray**

E : [gtkca1@bigpond.com](mailto:gtkca1@bigpond.com)

## **Bindaree Beef Biodigester and Rendering Plant – SSD 6093**

After reviewing the EIS and supporting documentation, I would like make the following comments on the proposal:

### ***1) The odour assessment excludes one of the closest sensitive receptors***

The odour assessment does not include the house at 7218 Gwydir Highway as a sensitive receptor. The house lies approximately 800m from the abattoir and therefore it should be included as a sensitive receptor.

### ***2) Local meteorological data should be used in the dispersion modelling***

Historic and current meteorological data exists for the Inverell region at the Inverell Comparison and Inverell Raglan Street meteorological stations. This includes data on wind speed and direction. Local meteorological data should be used in the assessment to ensure it is accurate and site representative.

Further, the dispersion modelling should only use meteorological data during the sensitive day time period. Using data outside the sensitive daytime period distorts the accuracy of the dispersion modelling.

### ***3) The proposal lacks justification for the retention of the existing coal fired boiler***

The existing coal fired boiler to be retained relies on old technology and is a source of emissions and odours. The proposal does not provide a compelling reason why the old coal fired boiler system should be retained. Should the coal fired boiler be retained it should be used for emergency purposes only and phased out over a reasonable time period.

### ***4) The proposal lacks consideration of alternative odour controls***

The proposal lacks consideration of alternative odour control devices such as incineration and operating the biofilter in combination with wet scrubbers to minimise odour impacts.

### ***5) The biofilter requires careful ongoing management***

The effectiveness of a biofilter to remove odours relies on a number of factors including the media, the air flow rate and moisture content. The biofilter must therefore be carefully managed to ensure reliable operation. The operator should be required to carefully monitor the performance of the biofilter's ability to remove odours and make necessary adjustment to continually improve its performance.

Further, all ventilated odours from the rendering plant should be directed to the biofilter for treatment.

### ***6) The plant should operate under contemporary operating conditions for managing odours***

An Odour Management Plan should be implemented for the ongoing operation of the abattoir. This would ensure surrounding residents are not subjected to unacceptable odour impacts or incidents that could be avoided with careful management.

An independent odour audit should also be undertaken for the facility when the odour control devices become operational and annually thereafter. This should identify any unacceptable and/or additional sources of odour and identify measures to minimise unacceptable odour impacts.

Ongoing verification of the predicted odour impacts would also be required to ensure the odour control devices are operating effectively and as predicted.



# Appendix E      Survey & Assessment of the presence & extent of Box Gum Woodland

David Tierney  
Niche Environment & Heritage  
10 September 2014



## Survey of proposed beef rendering plant and bio-digester Bindaree Beef

### Survey and assessment of the presence and extent of Box Gum Woodland

Prepared for Mitchel Hanlon Consulting Pty Ltd

8 September 2014

## Document control

Project no.: 2246

Project client: Mitchel Hanlon Consulting Pty Ltd

Project office: Central Coast

Document description: Vegetation survey and assessment

Project Director: Rhidian Harrington

Project Manager: David Tierney

Authors: David Tierney

Internal review: Frank Lemckert

Document status: Draft

Document address:

Local Government Area: Inverell

| Author        | Revision number | Internal review | Date issued | Signature                                                                            |
|---------------|-----------------|-----------------|-------------|--------------------------------------------------------------------------------------|
| David Tierney | D1              | Frank Lemckert  | 08/09/2014  |  |
| David Tierney | D3              | Mark Aitkens    | 10/09/2014  |  |
|               |                 |                 |             |                                                                                      |
|               |                 |                 |             |                                                                                      |

## Niche Environment and Heritage

A specialist environmental and heritage consultancy.

### Head Office

Niche Environment and Heritage  
PO Box W36  
Parramatta NSW 2150  
Email: [info@niche-eh.com](mailto:info@niche-eh.com)  
All mail correspondence should be through our Head Office.

### Sydney

0488 224 888

### Central Coast

0488 224 999

### Illawarra

0488 224 777

### Armidale

0488 224 094

### Newcastle

0488 224 160

### Mudgee

0488 224 025

### Port Macquarie

0488 774 081

### Brisbane

0488 224 036

### Cairns

0488 284 743

© Niche Environment and Heritage, 2014

Copyright protects this publication. Except for purposes permitted by the Australian *Copyright Act 1968*, reproduction, adaptation, electronic storage, and communication to the public is prohibited without prior written permission.

Enquiries should be addressed to Niche Environment and Heritage, PO Box W36, Parramatta NSW 2150, Australia, email: [info@niche-eh.com](mailto:info@niche-eh.com).

Any third party material, including images, contained in this publication remains the property of the specified copyright owner unless otherwise indicated, and is used subject to their licensing conditions.

Cover photograph: View of the Study Area showing the single native tree present

## Table of Contents

---

|                                                                                                       |           |
|-------------------------------------------------------------------------------------------------------|-----------|
| <b>1. Executive summary.....</b>                                                                      | <b>1</b>  |
| <b>2. Glossary and abbreviations .....</b>                                                            | <b>1</b>  |
| <b>3. Introduction .....</b>                                                                          | <b>2</b>  |
| 3.1 Background.....                                                                                   | 2         |
| 3.2 The Subject Site and Study Area.....                                                              | 2         |
| 3.3 Purpose and objectives .....                                                                      | 2         |
| 3.4 Box Gum Woodland - Context.....                                                                   | 2         |
| <b>4. Methodology.....</b>                                                                            | <b>5</b>  |
| 4.1 Field Survey.....                                                                                 | 5         |
| 4.2 Assessment for the presence of Box Gum Woodland .....                                             | 5         |
| 4.3 Direct and indirect impact assessment .....                                                       | 6         |
| <b>5. Results .....</b>                                                                               | <b>7</b>  |
| 5.4 Survey results .....                                                                              | 7         |
| 5.5 Assessment for presence of Box Gum Woodland .....                                                 | 7         |
| 5.6 Assessment of direct and indirect impacts.....                                                    | 8         |
| <b>6. Conclusion.....</b>                                                                             | <b>12</b> |
| <b>References.....</b>                                                                                | <b>13</b> |
| <b>Annex 1 Characteristic plant species of Box Gum Woodland listed in the NSW Determination .....</b> | <b>14</b> |

## List of Plates

|                                                                                |    |
|--------------------------------------------------------------------------------|----|
| Plate 1. Habitat present in the Subject Site.....                              | 4  |
| Plate 2: Condition of the vegetation within the adjacent upslope remnant ..... | 11 |

## 1. Executive summary

---

Mitchel Hanlon Consulting Pty Ltd has prepared an Environmental Impact Statement (EIS) for Bindaree Beef Pty Ltd of a proposed Beef Rendering Plant and Bio-digester plant for Lot 83 DP 753638, Gwydir Highway Inverell. This EIS was submitted for comment to the NSW Office of Environment and Heritage (OEH) in accordance with Division 4.1 State Significant Development of the Environmental Planning and Assessment Act 1979. OEH provided a response (dated 15/8/14) to this submission. This response included a request for further investigations “to determine the presence and extent of Box Gum Woodland EEC on the subject site”. It was also requested that “an assessment of the extent and significance of direct and indirect impacts of the proposal in relation to Box Gum Woodland EEC” be undertaken. Niche Environment and Heritage was engaged by Mitchel Hanlon Pty Ltd to address these specific points and this report has been prepared in response to this request.

The Subject Site is an area of approximately 2.2 hectares and was surveyed on 2<sup>nd</sup> September 2014. The survey consisted of a random meander within the Subject Site and adjacent remnant Study Area comprising 12.1 hectares of land. Native species observed (particularly remnant trees) were recorded as part of this meander. Secondly, two BioBank plots were undertaken (one within the Subject Site and one within the Study Area). Identification Guidelines for Box Gum Woodland (NPWS 2002 and DEH 2006) were used to determine if Box Gum Woodland is present within the Subject Site and Study Area.

Both the Subject Site and Study Area contains very few native plant species and is dominated by introduced pasture and weed species (15 recorded). Remnant trees within the Study Area were observed, some of which are characteristic of Box Gum Woodland. The shrub and ground layer of this adjacent area was either absent or in poor condition and also dominated by plant species that are exotic (pasture and weed species). It was concluded that the Subject Site and Study Area may have previously supported Box Gum Woodland prior to the Bindaree Beef operations. However, the survey results now indicate that the current usage has been for a prolonged period (of several decades) resulting in a significant alteration to flow and nutrient levels appears to have occurred over this period.

Only one native species was observed to have recently recruited within the Subject Site. Both the Subject Site and Study Area no longer native vegetation cover and is unlikely to have retained a native seed bank capable of regenerating to such a condition. Natural regeneration of the Study Area to Box Gum Woodland is highly unlikely. It was concluded that Box Gum Woodland does not currently exist within the Subject Site or Study Area. A 7-Part test determined that the proposed development would not result in a significant impact (direct or indirect) on Box Gum Woodland.

## 2. Glossary and abbreviations

---

Update the following list to reflect the terms used in this report.

|                                                     |                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Box Gum Woodland</b>                             | The name collectively given to the Endangered Ecological Community White Box – Yellow Box – Blakely's Red Gum Woodland (under the TSC Act) and the Critically Endangered Ecological Community White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (under the EPBC Act) |
| <b>Flora and fauna of conservation significance</b> | Threatened species or populations listed on the schedules of the TSC Act and/or listed as matters of National Environmental Significance (NES) under the EPBC Act                                                                                                                                      |
| <b>Local population</b>                             | The population of a particular threatened species that occurs in the locality                                                                                                                                                                                                                          |
| <b>Locality</b>                                     | The area within 10 km of the Study Area                                                                                                                                                                                                                                                                |
| <b>Local occurrence</b>                             | Refers to the distribution of an ecological community within the study area and continuous with it                                                                                                                                                                                                     |
| <b>Matters of NES</b>                               | Matters of national environmental significance                                                                                                                                                                                                                                                         |
| <b>OEH</b>                                          | Office of Environment and Heritage                                                                                                                                                                                                                                                                     |
| <b>TEC</b>                                          | Threatened ecological community as listed on the TSC Act and or EPBC Act. Collective term to describe vulnerable, endangered and critically endangered ecological communities                                                                                                                          |
| <b>Threatened biodiversity</b>                      | Threatened species, populations and ecological communities as listed on the TSC and or EPBC Acts                                                                                                                                                                                                       |
| <b>TSC Act</b>                                      | <i>NSW Threatened Species Conservation Act 1995</i>                                                                                                                                                                                                                                                    |
| <b>EPBC Act</b>                                     | <i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>                                                                                                                                                                                                                      |
| <b>EP&amp;A Act</b>                                 | <i>NSW Environmental Planning and Assessment Act 1979</i>                                                                                                                                                                                                                                              |
| <b>Subject Site</b>                                 | The area in which all direct impacts from the Project are experienced.                                                                                                                                                                                                                                 |
| <b>Study Area</b>                                   | The area in which all direct and indirect impacts from the Project are experienced                                                                                                                                                                                                                     |

## 3. Introduction

---

### 3.1 Background

Mitchel Hanlon Consulting Pty Ltd (Mitchel Hanlon Consulting) prepared an Environmental Impact Statement (EIS) for Bindaree Beef Pty Ltd to assess a proposed Beef Rendering and Bio-digester plant (Mitchel Hanlon 2014) located on Lot 83 DP 753638, Gwydir Highway, Inverell, New South Wales (Figure 1). This EIS was prepared in accordance with Division 4.1 State Significant Development of the *Environmental Planning and Assessment Act 1979* and was submitted to the NSW Office of Environment and Heritage (OEH) for comment.

OEH provided a response to this submission (dated 15/8/14) requesting for further information “to determine the presence and extent of Box Gum Woodland EEC on the subject site”. It was also requested that “an assessment of the extent and significance of direct and indirect impacts of the proposal in relation to Box Gum Woodland EEC” be undertaken. Niche Environment and Heritage (Niche) was engaged by Mitchel Hanlon Consulting to address these specific points and this report has been prepared in response to this request.

### 3.2 The Subject Site and Study Area

The Subject Site, comprising 2.2 hectares of land as shown in Figure 2, represents the area in which the Project’s direct impacts are expected. This is adjacent to the existing Bindaree Beef Pty Ltd buildings and yards (see Plate 1a). The existing yards and paddocks to the west (upslope) of the Subject Site constitutes the Study Area (12.1 hectares); an area where indirect impacts may occur. This area retains remnant paddock trees under which grazing has occurred for many decades (see Plate 1b).

### 3.3 Purpose and objectives

The purpose of this report is to provide a response to OEH’s request for further information in respect of Box Gum Woodland. Specifically, an investigation and assessment was undertaken as follows:

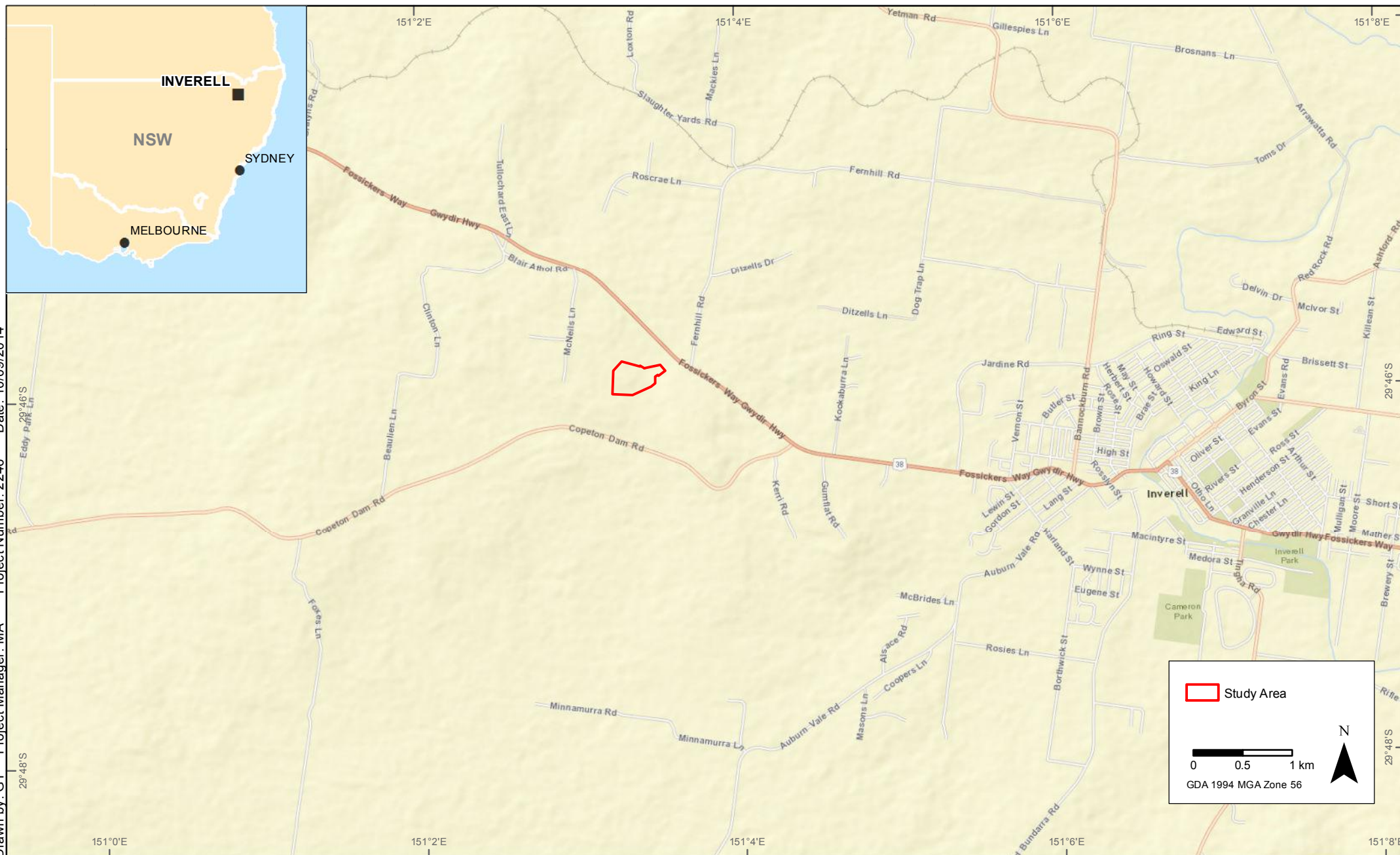
- To determine the presence and extent of Box Gum Woodland within the study area.
- To assess the significance of direct and indirect impacts of the proposal (as outlined in Mitchel Hanlon Consulting 2014) in relation to Box Gum Woodland.

This report details this work.

### 3.4 Box Gum Woodland - Context

Box-Gum Woodland is the name collectively given to the Endangered Ecological Community (EEC) White Box – Yellow Box – Blakely’s Red Gum Woodland (as listed under the *Threatened Species Conservation Act 1995* (TSC Act)) and the Critically Endangered Ecological Community (CEEC) White Box-Yellow Box-Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (as listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)).

Box-Gum Woodland is characterised by the presence or prior occurrence of *Eucalyptus albens* (White Box), *Eucalyptus melliodora* (Yellow Box) or *Eucalyptus blakelyi* (Blakely’s Red Gum). The understorey in intact sites is characterised by native grasses and a high diversity of herbs; the most commonly encountered include *Themeda australis* (Kangaroo Grass), *Poa sieberiana* (Poa Tussock), *Austrodanthonia* spp. (wallaby grasses), *Austrostipa* spp. (spear-grasses), *Chrysocephalum apiculatum* (Common Everlasting), *Goodenia*



Project Location  
Bindaree Beef Bio Digester Project

**FIGURE 1**



Subject Site and Study Area  
Bindaree Beef Bio Digester Project

**FIGURE 2**

*pinnatifida* (Scrambled Eggs), *Hypericum gramineum* (Small St John's Wort), *Vittadinia muelleri* (Narrow-leafed New Holland Daisy ) and *Wahlenbergia* spp. (blue-bells). Shrubs are generally sparse or absent, though they may be locally common. However, the remnants of this community also span a large area and the exact species composition therefore can vary widely from site to site (see [www.environment.nsw.gov.au/determinations/BoxgumWoodlandEndComListing.htm](http://www.environment.nsw.gov.au/determinations/BoxgumWoodlandEndComListing.htm)).



a) The layout of the BioBank plot within the Subject Site (see Methodology) which included the single native tree present (foreground) with the existing buildings and exotic trees (background).



b) View upslope from the boundary of the Subject Site into the adjacent Study Area.

**Plate 1. Habitat present in the Subject Site**

## 4. Methodology

---

### 4.1 Field Survey

Both the Subject Site and Study Area were surveyed on the 2<sup>nd</sup> September 2014. Weather conditions were generally fine (recorded maximum 17.2°C, minimum 7.7°C at Inverell Research Centre) with a small amount of rainfall during the day. Survey within the Subject Site and Study Area consisted of a random meander (Cropper 1993) and BioBanking plots (DECC 2008). Native species were observed and recorded as part of the meander, with this method important for the detection of threatened species (if present). Secondly, two BioBank plots were undertaken (one within the Subject Site and one within the Study Area) to generate data examining the species present (native and exotic), vegetation structure including regeneration, per cent cover of exotic plants and habitat (i.e. condition).

### 4.2 Assessment for the presence of Box Gum Woodland

The data from the field survey (above) was used in an assessment for the presence and extent of Box Gum Woodland within the Subject Site and Study Area. This assessment utilized identification and assessment guidelines for Box Gum Woodland provided for both the State (NPWS 2002) and Commonwealth (DEH 2006) final determinations for the listed Box Gum Woodland ecological community. Dual assessments were undertaken as the description for Box Gum Woodland are not identical in these determinations.

#### 4.2.1 State assessment

In accordance with NPWS (2002), the following key was used to determine if Box Gum Woodland occurred within the Study Area.

##### **Key for identifying Box Gum Woodland (NPWS 2002)**

**1** The site is in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands or NSW South Western Slopes Bioregions: **go to 2**

**1\*** The site is outside the above bioregions: **the site is not Box-Gum Woodland**

**2** There are no native species in the understorey, and the site is unlikely to respond to assisted natural regeneration: **the site is not Box-Gum Woodland**

**2\*** The understorey is otherwise: **go to 3**

**3** The site has trees: **go to 4**

**3\*** The site is treeless, but is likely to have supported White Box, Yellow Box or Blakely's Red Gum prior to clearing: **go to 5**

**4** White Box, Yellow Box or Blakely's Red Gum, or a combination of these species, are or were present: **go to 5**

**4\*** White Box, Yellow Box or Blakely's Red Gum have never been present: **the site is not Box-Gum Woodland**

**5** The site is predominantly grassy: **the site is Box-Gum Woodland**

**5\* The understorey of the site is dominated by shrubs excluding pioneer species: *the site is not Box-Gum Woodland***

#### **4.2.2 Commonwealth assessment**

In accordance with DEH (2006) the following questions were answered to determine if Box Gum Woodland occurred within the Study Area.

##### ***Questions to be answered for identifying if Box Gum Woodland (DEH 2006)***

- 1. An intact tree layer and a predominately native ground layer present?*
  - 2. An intact native ground layer with a high diversity of native plant species but no remaining tree layer?*
- Yes to either of these questions indicates that Box Gum Woodland may occur on site and triggered answers to the following additional questions.*
- 3. Is or was previously, at least one of the most common overstorey species White Box, Yellow Box or Blakely's Red Gum (or Western Grey Box or Coastal Grey Box in the Nandewar Bioregion)?*
  - 4. Does the 'patch' have a predominately native understorey?*
  - 5. Is the patch 0.1 ha or greater in size?*
  - 6. Are there 12 or more native understorey species present (excluding grasses)?*
  - 7. Does the study area contain at least one important species?*
  - 8. Is shrub cover less than 30% across the entire remnant?*

#### **4.3 Direct and indirect impact assessment**

If present, an impact assessment for Box Gum Woodland, inclusive of direct and indirect impact considerations, was determined using a 7-Part Test as per the New South Wales Threatened species assessment guidelines, The Assessment of Significance (DECCW 2007).

## 5. Results

### 5.4 Survey results

#### 5.4.1 Subject Site

The BioBank plot within the Subject Site, as shown in Figure 3, contained 15 plant species of which only two (*Eucalyptus albens* and *Cotula australis*) were native. The random meander (see Figure 3) detected the presence of two native species within the Subject Site (*Eucalyptus albens* and *Cotula australis*). Hence only one of the 96 species listed by the NSW Final Determination as characteristic of Box Gum Woodland was found within the Subject Site (see Annex 1). The Subject Site was dominated by a mix of exotic species that included introduced pasture grasses and weeds (e.g. *Lamium amplexicaule*, *Taraxacum officinale*, *Capsella bursa-pastoris*, *Poa annua*, *Trifolium repens*, *Urtica urens*, *Salix babylonica*) and some plantings (e.g. *Photinia* sp.).

#### 5.4.2 Study Area

Vegetation cover located outside the Subject Site but within the Study Area also had few retained native species but a number of native tree species were persisting (*Angophora floribunda*, *Eucalyptus albens*, *Eucalyptus laevopinea*, *Eucalyptus melliodora* and *Brachychiton populneus*). Yellow Box (*Eucalyptus melliodora*) is characteristic of Box Gum Woodland (Annex 1) and *Angophora floribunda* and *Brachychiton populneus* also occur within this EEC although these are not regarded as diagnostic. The ground layer within Box Gum Woodland in good condition is dominated by a diversity of native grass species, however the groundcover within the residual parts of the Study Area is, in contrast, mostly exotic grass and weed species.

The BioBank plot located within the Study Area contained 16 plant species, including four native species. Native over-storey, mid-storey and ground cover (grass, shrub and other) was recorded as absent by the step point transect undertaken for the BioBank plot (but the assessment for trees across the complete 20x50m area recorded one tree with a crown diameter of 7m and no hollows). A native over-storey cover of 35% was recorded with no native mid-storey cover and no native ground cover. The over-storey consisted of 25 trees with an average crown diameter of 4-5m and no hollows. Logs were recorded (19m) in this plot.

### 5.5 Assessment for presence of Box Gum Woodland

The assessment key and questions were answered as shown below.

#### 5.5.3 State assessment

##### Key for identifying Box Gum Woodland (NPWS 2002)

**1** The site is in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands or NSW South Western Slopes Bioregions: **go to 2 YES**

**1\*** The site is outside the above bioregions: **the site is not Box-Gum Woodland**

**2** There are no native species in the understorey, and the site is unlikely to respond to assisted natural regeneration: **the site is not Box-Gum Woodland YES is the most correct answer to this question (but a precautionary approach was applied and others questions answered anyway)**

**2\*** The understorey is otherwise: **go to 3**



Survey Effort  
Bindaree Beef Bio Digester Project

**FIGURE 3**

**3** The site has trees: **go to 4** **No only a single native tree**

**3\*** The site is treeless, but is likely to have supported White Box, Yellow Box or Blakely's Red Gum prior to clearing: **go to 5**

**4** White Box, Yellow Box or Blakely's Red Gum, or a combination of these species, are or were present: **One remnant White Box tree present**

**4\*** White Box, Yellow Box or Blakely's Red Gum have never been present: **the site is not Box-Gum Woodland**

**5** The site is predominantly grassy: **the site is Box-Gum Woodland** **No native grass species were found on site**

**5\*** The understorey of the site is dominated by shrubs excluding pioneer species: **the site is not Box-Gum Woodland**

#### 5.5.4 Commonwealth assessment

**Questions to be answered for identifying Box Gum Woodland (DEH 2006)**

1. An intact tree layer and a predominately native ground layer present? **No**
2. An intact native ground layer with a high diversity of native plant species but no remaining tree layer? **No**

Yes to either of these questions indicates that Box Gum Woodland may occur on site and triggered answers to the following additional questions. **The following questions do not apply (No to both questions 1 and 2 above)**

3. Is or was previously, at least one of the most common overstorey species White Box, Yellow Box or Blakely's Red Gum (or Western Grey Box or Coastal Grey Box in the Nandewar Bioregion)?
4. Does the 'patch' have a predominately native understorey?
5. Is the patch 0.1 ha or greater in size?
6. Are there 12 or more native understorey species present (excluding grasses)?
7. Does the study area contain at least one important species?
8. Is shrub cover less than 30% across the entire remnant?

#### 5.6 Assessment of direct and indirect impacts

No Box Gum Woodland was determined to occur within the Subject Site and Study Area. The Study Area was also assessed as containing no native vegetation as only low numbers of two native plant species were detected. Therefore no reduction in patch size of any native vegetation from the proposal will occur. The observed vegetation downslope of the Subject Site also did not consist of native vegetation and no alterations to the hydrology of the Study Area are predicted (Mitchel Hanlon 2014). *Cotula australis* was the only native species observed to have recently recruited in the Study Area and no other evidence of recruitment of native plant species and no seed from other native plant species were observed within the Study Area. The potential for natural regeneration of native vegetation within the Subject Site and Study Area was considered low.

Dispersal of weeds from the Subject Site could occur into the adjacent remnant native vegetation, however, the proposal is likely to remove the current weed infestation. Although, such impacts are not likely to have any impact on Box Gum Woodland.

#### **The 7-Part test - Box Gum Woodland**

**(A) In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.**

N/A – Box Gum woodland is an Endangered Ecological community not a threatened species.

**(B) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.**

N/A – Box Gum woodland is an Endangered Ecological community not an endangered population.

**(C) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:**

**(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**

No direct loss of Box gum Woodland will occur as the community does not exist within the Study Area.

**(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.**

No modification of Box Gum Woodland will occur within the Subject Site or Study Area as it does not exist within this area. The Subject Site connects to remnant vegetation that is in low condition dominated by exotic plant cover with only the canopy substantially present. It is unlikely that any significant adverse modification of Box Gum Woodland in the local area will occur as a result of the proposal.

**(D) In relation to the habitat of a threatened species, population or ecological community:**

**(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and**

**(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and**

**(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.**

(i) Box Gum Woodland may have once have existed within the Subject Site and Study Area, but is not currently present. Both the Subject Site and Study Area is highly modified, including decades of nutrient enrichment, altered hydrological patterns and now dominated by exotic species. Recent recruitment of only one native species (*Urtica incisa*) was observed to potentially have occurred in the field survey. The habitat is highly modified, not characteristic of Box Gum Woodland and unsuitable for restoration to Box Gum Woodland without major intervention.

(ii) The proposal will not alter the size or connectivity of any habitat as impacts on the non-native vegetation cover of the Subject Site and Study Area will not result in any adjustment to local native vegetation cover or associated habitat .

(iii) The Subject Site and Study Area is highly modified habitat and of low importance.

**(E) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).**

No critical habitat for Box Gum Woodland has been declared.

**(F) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.**

The National Recovery Plan for Box gum Woodland (DECCW 2010) includes five broad strategies (Improve Baseline Information, Increase Protection of Box Gum Woodland, Improve Community Engagement, Continue Ecosystem Function and Management Research and Improve Compliance and Regulatory Activities). The proposal is consistent with the objectives of this plan in that the proposal has been subject to Regulation via this current assessment.

**(G) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.**

The proposed action is not a defined Key Threatening Process (the vegetation within the Study Area is not native) or likely to exacerbate the impact of any Key Threatening Process on site.

### **Summary of the test**

The proposal will not significantly impact upon Box Gum Woodland.



**Plate 2: Condition of the vegetation within the adjacent upslope remnant**

## 6. Conclusion

---

Box Gum Woodland may have once existed within the Subject Site and Study Area, however, is now no longer present (i.e. highly modified, dominated by exotic species and restoration of this community is not possible without significant sustained human intervention involving reintroduction of characteristic plant species diversity). An investigation and assessment of the Subject Site and Study Area was undertaken to assess the presence and extent of Box Gum Woodland and the significance of direct and indirect impacts of the proposal in relation to Box Gum Woodland. The conclusions of this report are as follows.

- No Box Gum Woodland occurs within the Subject Site or Study Area.
- There will be no significant impacts (either direct or indirect) from the proposal in relation to Box Gum Woodland.

## References

---

- Cropper S (1993) *The Management of Endangered Plants*. CSIRO Publishing, East Melbourne.
- DECC (2008) *BioBanking Assessment Methodology*. NSW Department of Environment and Climate Change, Sydney, NSW.
- DECC (2007) *Threatened species assessment guidelines, The assessment of significance (2007)*. NSW Department of Environment, Climate Change (NSW DECC), South Sydney
- DECCW (2010) *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland National Recovery Plan*, NSW Department of Environment, Climate Change and Water (NSW DECCW)
- DEH (2006) *EPBC Act policy statement 3.5 - White box - yellow box - Blakely's red gum grassy woodlands and derived native grasslands*, Department of the Environment and Heritage, Canberra, Act. Available from <http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=43>
- Mitchel Hanlon Consulting (2014) *Environmental Impact statement for proposed bio-digester plant and rendering plant, volume 1*. Mitchel Hanlon, Tamworth, NSW.
- NPWS (2002) *Identification Guidelines for Endangered Ecological Communities: White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland)*, NSW NPWS, Northern Directorate. Available at <http://www.environment.nsw.gov.au/resources/nature/box-gumIdGuidelines.pdf>
- NPWS (2003) *The Bioregions of New South Wales: their biodiversity, conservation and history*. NSW National Parks and Wildlife Service, Hurstville

## Annex 1 Characteristic plant species of Box Gum Woodland listed in the NSW Determination

| Species name                        | Presence within the Study Area |
|-------------------------------------|--------------------------------|
| <i>Acacia buxifolia</i>             | Absent                         |
| <i>Acacia implexa</i>               | Absent                         |
| <i>Acacia paradoxa</i>              | Absent                         |
| <i>Allocasuarina verticillata</i>   | Absent                         |
| <i>Alectryon oleifolius</i>         | Absent                         |
| <i>Aristida behriana</i>            | Absent                         |
| <i>Aristida ramosa</i>              | Absent                         |
| <i>Asperula conferta</i>            | Absent                         |
| <i>Atalaya hemiglauca</i>           | Absent                         |
| <i>Austrodanthonia auriculata</i>   | Absent                         |
| <i>Austrodanthonia bipartita</i>    | Absent                         |
| <i>Austrodanthonia racemosa</i>     | Absent                         |
| <i>Austrodanthonia richardsonii</i> | Absent                         |
| <i>Austrostipa aristiglumis</i>     | Absent                         |

|                               |        |
|-------------------------------|--------|
| <i>Austrostipa blackii</i>    | Absent |
| <i>Austrostipa nodosa</i>     | Absent |
| <i>Austrostipa scabra</i>     | Absent |
| <i>Bothriochla macra</i>      | Absent |
| <i>Brachychiton populneus</i> | Absent |
| <i>Brachyloma daphnoides</i>  | Absent |
| <i>Bracteantha viscosa</i>    | Absent |
| <i>Brunoniella australis</i>  | Absent |
| <i>Bulbine bulbosa</i>        | Absent |
| <i>Bursaria spinosa</i>       | Absent |
| <i>Callitris endlicheri</i>   | Absent |
| <i>Callitris glaucophylla</i> | Absent |
| <i>Capparis mitchellii</i>    | Absent |
| <i>Cassinia longifolia</i>    | Absent |
| <i>Cassinia quinquefaria</i>  | Absent |
| <i>Cheilanthes sieberi</i>    | Absent |
| <i>Chloris truncata</i>       | Absent |

|                                  |         |
|----------------------------------|---------|
| <i>Chloris ventricosa</i>        | Absent  |
| <i>Chrysocephalum apiculatum</i> | Absent  |
| <i>Cymbopogon refractus</i>      | Absent  |
| <i>Dianella longifolia</i>       | Absent  |
| <i>Dianella revoluta</i>         | Absent  |
| <i>Dichanthium sericeum</i>      | Absent  |
| <i>Dichelachne micrantha</i>     | Absent  |
| <i>Dichelacne sciurea</i>        | Absent  |
| <i>Diuris dendrobioides</i>      | Absent  |
| <i>Dodonaea viscosa</i>          | Absent  |
| <i>Echinopogon caespitosus</i>   | Absent  |
| <i>Ehretia membranifolia</i>     | Absent  |
| <i>Elymus scaber</i>             | Absent  |
| <i>Eremophila mitchellii</i>     | Absent  |
| <i>Eucalyptus blakelyi</i>       | Absent  |
| <i>Eucalyptus albens</i>         | Present |
| <i>Eucalyptus bridgesiana</i>    | Absent  |

|                                 |        |
|---------------------------------|--------|
| <i>Eucalyptus conica</i>        | Absent |
| <i>Eucalyptus goniocalyx</i>    | Absent |
| <i>Eucalyptus melliodora</i>    | Absent |
| <i>Eucalyptus microcarpa</i>    | Absent |
| <i>Eucalyptus nortonii</i>      | Absent |
| <i>Eulalia aurea</i>            | Absent |
| <i>Exocarpos cupressiformis</i> | Absent |
| <i>Geijera parviflora</i>       | Absent |
| <i>Geranium solanderi</i>       | Absent |
| <i>Glycine clandestina</i>      | Absent |
| <i>Glycine tabacina</i>         | Absent |
| <i>Glycine tomentella</i>       | Absent |
| <i>Gonocarpus elatus</i>        | Absent |
| <i>Goodenia pinnatifida</i>     | Absent |
| <i>Hibbertia linearis</i>       | Absent |
| <i>Hibbertia obtusifolia</i>    | Absent |
| <i>Hypericum gramineum</i>      | Absent |

|                                  |        |
|----------------------------------|--------|
| <i>Jacksonia scoparia</i>        | Absent |
| <i>Jasminum lineare</i>          | Absent |
| <i>Jasminum suavisissimum</i>    | Absent |
| <i>Leptorhynchus squamatus</i>   | Absent |
| <i>Lissanthe strigosa</i>        | Absent |
| <i>Lomandra filiformis</i>       | Absent |
| <i>Melichrus urceolatus</i>      | Absent |
| <i>Microseris lanceolata</i>     | Absent |
| <i>Notelaea microcarpa</i>       | Absent |
| <i>Olearia elliptica</i>         | Absent |
| <i>Olearia viscidula</i>         | Absent |
| <i>Oxalis perennans</i>          | Absent |
| <i>Pandorea pandorana</i>        | Absent |
| <i>Panicum queenslandicum</i>    | Absent |
| <i>Parsonsia eucalyptophylla</i> | Absent |
| <i>Pimelea curviflora</i>        | Absent |
| <i>Plantago debilis</i>          | Absent |

|                                 |        |
|---------------------------------|--------|
| <i>Plantago gaudichaudii</i>    | Absent |
| <i>Poa labillardieri</i>        | Absent |
| <i>Poa sieberiana</i>           | Absent |
| <i>Rostellularia adscendens</i> | Absent |
| <i>Rumex brownii</i>            | Absent |
| <i>Sida corrugata</i>           | Absent |
| <i>Sorghum leiocladum</i>       | Absent |
| <i>Stackhousia monogyna</i>     | Absent |
| <i>Stackhousia viminea</i>      | Absent |
| <i>Swainsona galegifolia</i>    | Absent |
| <i>Templetonia stenophylla</i>  | Absent |
| <i>Themeda australis</i>        | Absent |
| <i>Wahlenbergia communis</i>    | Absent |

---

## **Niche Environment and Heritage**

A specialist environmental and heritage consultancy.

### **Head Office**

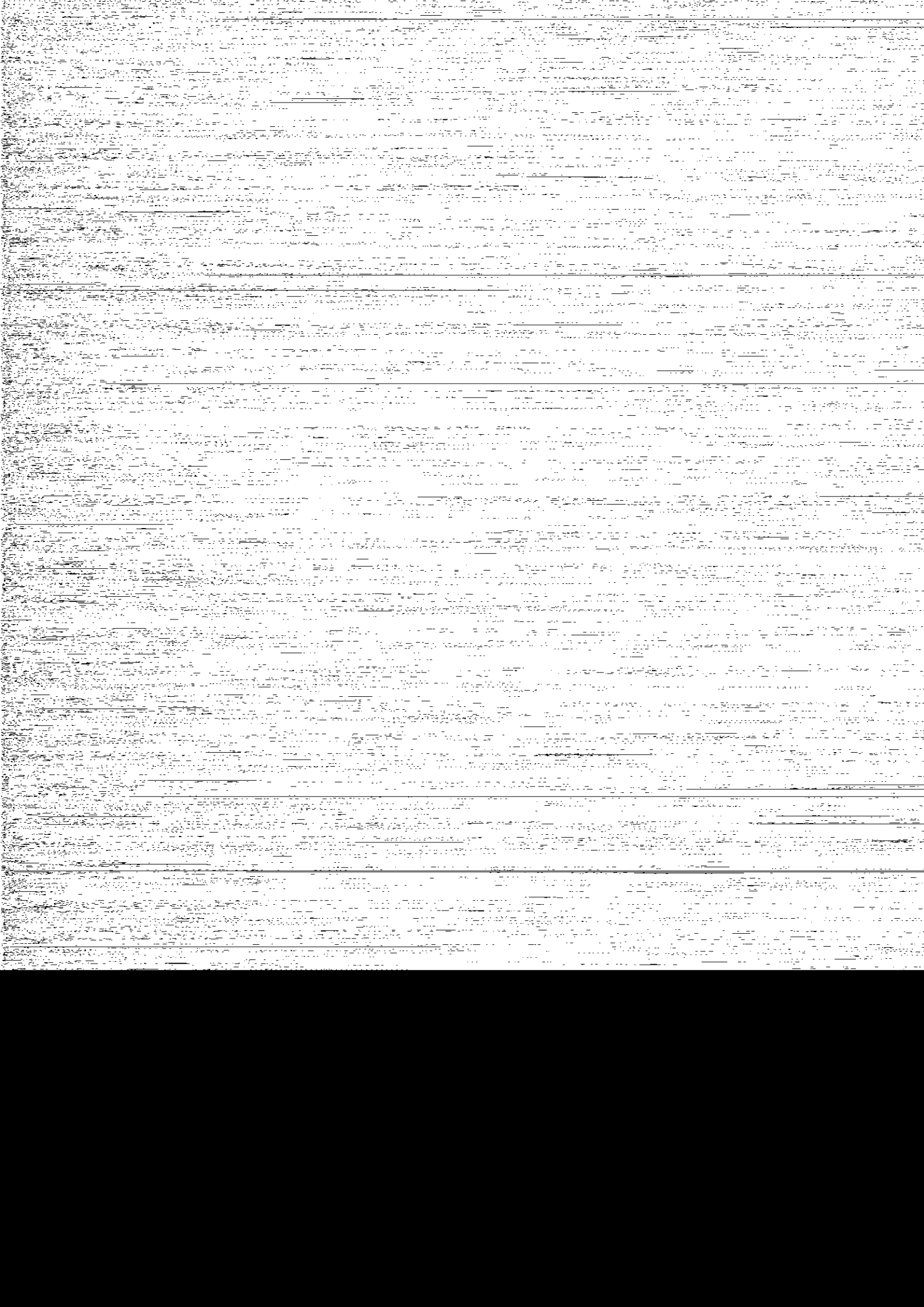
Niche Environment and Heritage  
PO Box W36 Parramatta NSW 2150  
Email: [info@niche-eh.com](mailto:info@niche-eh.com)

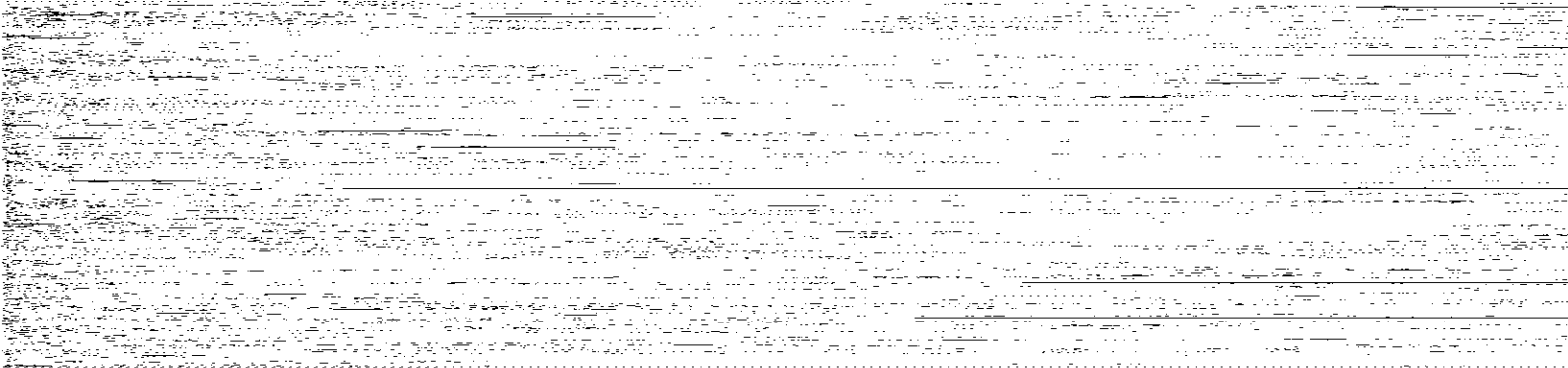
All mail correspondence should be through our Head Office



# Appendix F Letter from Bindaree Beef to Office of Water

Bindaree Beef  
13 October 2014







# Appendix G   Air Quality Assessment

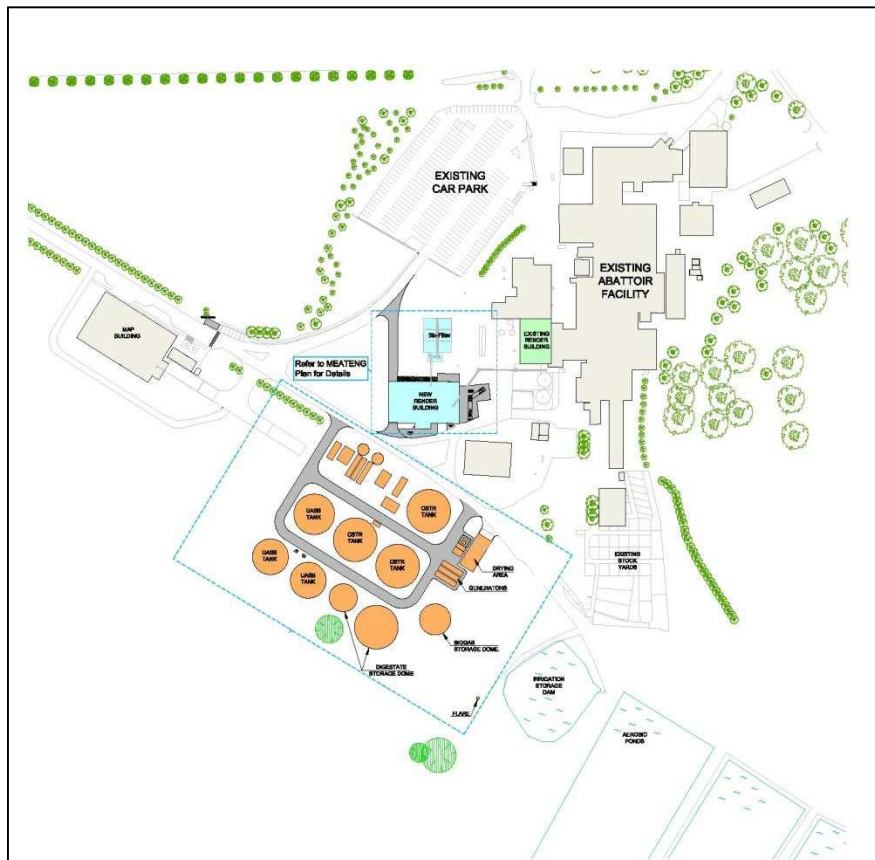
Michelle Clifton  
ViPAC Engineers and Scientists  
15 September 2014

## Vipac Engineers & Scientists

### Bindaree Beef Pty Ltd

### Bindaree Beef EIS

### Air Quality Assessment



70Q-13-0318-TRP-515776-8

15 Sept 2014



| Report Title: Air Quality Assessment<br>Job Title: Bindaree Beef EIS                                                                                                            |                     |                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>DOCUMENT NO:</b> 70Q-13-0318-TRP-515776-8                                                                                                                                    |                     | <b>REPORT CODE:</b> TRP                                                                                                            |
| <b>PREPARED FOR:</b><br><b>Bindaree Beef Pty Ltd</b><br>c/- Mitchel Hanlon Consulting Pty Ltd<br>121 Bridge St (P O Box 1568)<br>Tamworth NSW 2340                              |                     | <b>PREPARED BY:</b><br>Vipac Engineers & Scientists Ltd.<br>Level 2, 146 Leichhardt Street,<br>Spring Hill, QLD 4000,<br>Australia |
| <b>CONTACT:</b> Tim McLean<br><b>Tel:</b> +61 2 6762 4411<br><b>Fax:</b> +61 2 6762 4412                                                                                        |                     | <b>Tel:</b> +61 7 3377 0400<br><b>Fax:</b> +61 7 3377 0499                                                                         |
| <b>PREPARED BY:</b><br>Author:  Date: 15 Sept 2014<br>Michelle Clifton<br>Consulting Scientist |                     |                                                                                                                                    |
| <b>REVIEWED BY:</b><br>Reviewer:  Date: 15 Sept 2014<br>Darren Van Twest<br>Director          |                     |                                                                                                                                    |
| <b>AUTHORISED BY:</b><br> Date: 15 Sept 2014<br>Michelle Clifton<br>QA Representative        |                     |                                                                                                                                    |
| <b>REVISION HISTORY</b>                                                                                                                                                         |                     |                                                                                                                                    |
| Revision No.                                                                                                                                                                    | Date Issued         | Reason/Comments                                                                                                                    |
| 0                                                                                                                                                                               | 20 Dec 2013         | Draft Issue                                                                                                                        |
| 1                                                                                                                                                                               | 17 Jan 2014         | Client Comments                                                                                                                    |
| 2                                                                                                                                                                               | 7 Feb 2014          | Client Comments                                                                                                                    |
| 3                                                                                                                                                                               | 14 Feb 2014         | Minor Edit                                                                                                                         |
| 4                                                                                                                                                                               | 10 Mar 2014         | New Design                                                                                                                         |
| 5                                                                                                                                                                               | 21 Mar 2014         | Final Report                                                                                                                       |
| 6                                                                                                                                                                               | 11 June 2014        | EPA Comments                                                                                                                       |
| 7                                                                                                                                                                               | 3 Sept 2014         | Remodelling Odour                                                                                                                  |
| 8                                                                                                                                                                               | 15 Sept 2014        | Final Issue – Figure change                                                                                                        |
| <b>DISTRIBUTION</b>                                                                                                                                                             |                     |                                                                                                                                    |
| <b>Copy No. 2</b>                                                                                                                                                               | <b>Location</b>     |                                                                                                                                    |
| 1                                                                                                                                                                               | Project             |                                                                                                                                    |
| 2                                                                                                                                                                               | Client (PDF Format) | Uncontrolled Copy                                                                                                                  |

NOTE: This is a controlled document within the document control system. If revised, it must be marked SUPERSEDED and returned to the Vipac QA Representative. This document contains commercial, conceptual and engineering information that is proprietary to Vipac Engineers & Scientists Ltd. We specifically state that inclusion of this information does not grant the Client any license to use the information without Vipac's written permission. We further require that the information not be divulged to a third party without our written consent.

15 Sept 2014

## EXECUTIVE SUMMARY

Vipac Engineers & Scientists Ltd (Vipac) was commissioned by Mitchel Hanlon Consulting Pty Ltd (MHC) to prepare an air quality impact assessment for the proposed bio-digestion and new rendering plant at Bindaree Beef, Inverell, NSW.

This revised report addresses the comments received from the NSW EPA dated 18<sup>th</sup> August 2014 and the outcomes of the meeting in Sydney on 29<sup>th</sup> August 2014. This report demonstrates the suitability of the meteorological dataset used in the air dispersion model and the revised odour results using a 3D metrological dataset which represents the changes in the local topography. The outcomes of the meeting with the NSW EPA and the revised odour modelling do not change the overall conclusion of this assessment.

The purpose of this report is to evaluate the potential air quality impacts, including odour, generated from various activities associated with the bio-digestion and rendering plant and to provide recommendations to mitigate and minimise any potential impacts that might have an effect on the surrounding community.

Bindaree Beef is one of Australia's largest meat processors and a prominent leader in the Australian meat industry. Located west of Inverell in northern NSW, the plant is capable of processing 1,100 cattle per day.

A plant upgrade is proposed to improve efficiency by generating biogas from various waste streams in the plant to generate steam and electricity to offset reliance on grid electricity. The upgrade will result in significant improvements in terms of emissions due to the following changes:

- The removal of the open lagoon wastewater treatment system which is a significant source of odour;
- The installation of a new rendering building that will be under negative pressure to prevent fugitive odours being released at ground level; and
- The use of a biogas boiler instead of a coal fired boiler that will have significantly lower emissions.

Currently the main sources of emissions are the coal fired boiler, anaerobic and aerobic lagoons, fugitive releases from the rendering building, bio-filter and holding pens. The proposed upgrade of the plant will result in the removal of many of these odourous sources including the anaerobic and aerobic wastewater treatment lagoons, and the coal fired boiler wastewater treatment. Odour measurements were conducted at the existing facility and used in conjunction with design data for the new plant to make an assessment of future air quality impacts.

These changes will result in a 30% reduction in odour emissions and associated impacts. This Level 3 Odour Assessment has clearly shown that at all receptors, the impacts are all well within compliance of the NSW odour objectives.

In terms of other pollutants, this assessment has clearly shown that at all receptors, the impacts are all well within compliance of the pollutant criteria outlined in the NSW objectives. The main emissions for these pollutants are from biogas combustion and these emissions are emitted from roof mounted ventilations fans resulting in significant dilution. This assessment has also shown that the impacts are all well within compliance of the toxic pollutant NSW objectives. In addition it has also been shown that air quality impacts will be significantly reduced from the current situation.

As such, the proposed changes to the Bindaree Beef site at Inverell are expected to result in a positive air quality impact at all surrounding sensitive receptors.

## TABLE OF CONTENTS

|          |                                                  |           |
|----------|--------------------------------------------------|-----------|
| <b>1</b> | <b>INTRODUCTION .....</b>                        | <b>6</b>  |
| <b>2</b> | <b>PROJECT DESCRIPTION .....</b>                 | <b>6</b>  |
| 2.1      | Overview .....                                   | 6         |
| 2.2      | Site Location .....                              | 7         |
| 2.3      | Sensitive Receptors .....                        | 7         |
| 2.4      | Topography .....                                 | 10        |
| 2.5      | Existing Operations .....                        | 10        |
| 2.6      | Proposed operations .....                        | 10        |
| 2.6.1    | Bio-digester Plant .....                         | 11        |
| 2.6.2    | Biogas Storage .....                             | 11        |
| 2.6.3    | By-Products .....                                | 12        |
| 2.6.4    | Rendering Plant .....                            | 12        |
| 2.6.5    | Product Dewatering/Drying .....                  | 13        |
| <b>3</b> | <b>REGULATORY FRAMEWORK .....</b>                | <b>14</b> |
| 3.1      | Odour .....                                      | 14        |
| 3.2      | Levels of Assessment .....                       | 15        |
| 3.3      | Relevant Criteria Pollutants .....               | 15        |
| 3.4      | Inverell Studies and Designated Buffer .....     | 16        |
| <b>4</b> | <b>METHODOLOGY .....</b>                         | <b>17</b> |
| 4.1      | Elements of the Study .....                      | 17        |
| 4.2      | Odour Sources at Existing Facility .....         | 17        |
| 4.2.1    | Sample Collection .....                          | 17        |
| 4.2.2    | Sample Analysis .....                            | 18        |
| 4.2.3    | Calculation of Area Source Emission Rate .....   | 19        |
| 4.3      | Monitoring Results .....                         | 19        |
| 4.4      | Assigning Background Concentrations .....        | 20        |
| 4.5      | Modelling Software .....                         | 21        |
| 4.5.1    | TAPM .....                                       | 21        |
| 4.5.2    | CALPUFF .....                                    | 21        |
| <b>5</b> | <b>METEOROLOGY .....</b>                         | <b>22</b> |
| <b>6</b> | <b>ODOUR EMISSIONS .....</b>                     | <b>24</b> |
| 6.1      | Sources of Odour for the Current Operation ..... | 24        |
| 6.2      | Sources of Odour for the Future Operation .....  | 24        |
| 6.3      | Basis of Odour Emission Rates .....              | 25        |
| 6.3.1    | Irrigation Area .....                            | 25        |

|                    |                                                                 |           |
|--------------------|-----------------------------------------------------------------|-----------|
| 6.3.2              | Ponds .....                                                     | 25        |
| 6.3.3              | Bio filter .....                                                | 26        |
| 6.3.4              | Rendering Building.....                                         | 26        |
| 6.3.5              | Holding Pens.....                                               | 26        |
| 6.3.6              | Drying Shed and Day Storage .....                               | 26        |
| 6.3.7              | Flaring .....                                                   | 26        |
| 6.3.8              | Dissolved Air Floatation .....                                  | 27        |
| 6.3.9              | Trommels .....                                                  | 27        |
| 6.4                | Summary of Odour Emission Rates .....                           | 27        |
| 6.5                | Peak to Mean Ratios.....                                        | 28        |
| <b>7</b>           | <b>FUEL COMBUSTION EMISSIONS.....</b>                           | <b>29</b> |
| 7.1                | Outlet Parameters.....                                          | 29        |
| 7.2                | Emission Rates .....                                            | 29        |
| <b>8</b>           | <b>RESULTS .....</b>                                            | <b>31</b> |
| 8.1                | Odour Impacts .....                                             | 31        |
| 8.1.1              | Current Operations .....                                        | 31        |
| 8.1.2              | Future Operations – 90% Odour Capture (Normal Conditions) ..... | 31        |
| 8.1.3              | Future Operations – Failure Case .....                          | 32        |
| 8.2                | Dust Impacts from Future Operations.....                        | 35        |
| 8.3                | Combustion Emissions Impact .....                               | 35        |
| <b>9</b>           | <b>MITIGATION MEASURES .....</b>                                | <b>38</b> |
| <b>10</b>          | <b>CUMULATIVE IMPACTS .....</b>                                 | <b>38</b> |
| <b>11</b>          | <b>CONCLUSION.....</b>                                          | <b>39</b> |
| <b>12</b>          | <b>REFERENCES .....</b>                                         | <b>39</b> |
| <b>APPENDIX A:</b> | <b>GLOSSARY.....</b>                                            | <b>41</b> |
| <b>APPENDIX B:</b> | <b>COMPARISON OF TAPM WIND ROSES AND BOM STATIONS.....</b>      | <b>42</b> |
| <b>APPENDIX C:</b> | <b>TAPM GENERATED WIND ROSES.....</b>                           | <b>43</b> |
| <b>APPENDIX D:</b> | <b>OLFACTOMETER CALIBRATION DETAILS .....</b>                   | <b>48</b> |
| <b>APPENDIX E:</b> | <b>SOURCE LOCATIONS .....</b>                                   | <b>49</b> |

## 1 INTRODUCTION

Vipac Engineers & Scientists Ltd (Vipac) was commissioned by Mitchel Hanlon Consulting Pty Ltd (MHC) to prepare an air quality impact assessment for the proposed bio-digestion and new rendering plant at Bindaree Beef, Inverell, NSW.

The purpose of this report is to evaluate the potential air quality impacts, including odour, generated from various activities associated with the bio-digestion and new rendering plant and to provide recommendations to mitigate and minimise any potential impacts that might have an effect on the surrounding community.

This assessment is a Level 3 Odour Impact Assessment as defined in the Technical Framework set down by the New South Wales Government in DEC (2006). This method uses a comprehensive and site-specific level of dispersion modelling.

## 2 PROJECT DESCRIPTION

### 2.1 Overview

Bindaree Beef is one of Australia's largest meat processors and a prominent leader in the Australian meat industry. Located west of Inverell in northern NSW, the plant is capable of processing 1,100 cattle per day.

Currently Bindaree Beef annually emits approximately 29,000 tonnes of carbon dioxide equivalent (CO<sub>2</sub>-e) direct emissions from the burning of coal and the releasing of bio-gas from an uncovered anaerobic lagoon. 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. As a result, Bindaree Beef has sought funding for a new rendering plant and bio-digester plant.

The bio-digester will generate bio-gas from waste product and effluent, utilising this gas for creating energy. This process will eliminate the need for coal and reduces reliance on the electricity grid. The net result is zero discharge of waste, improved environmental outcomes and a significant reduction in odour and carbon emissions.

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 existing 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 House;
- Car parking; and
- Administration buildings.

## 2.2 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 2-1 provides a locality plan of the existing Bindaree Beef abattoir site.

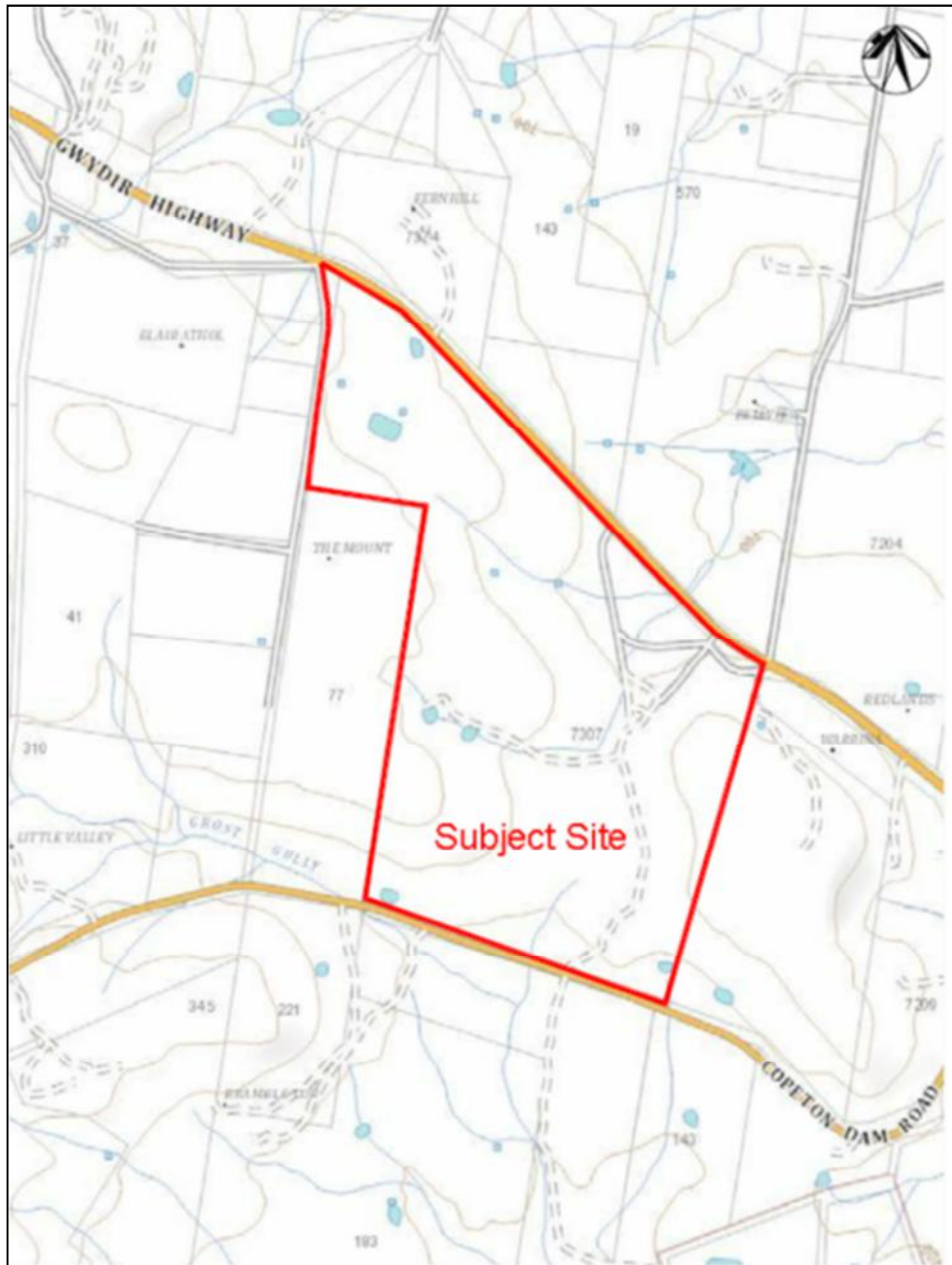


Figure 2-1: Site Location

## 2.3 Sensitive Receptors

Bindaree Beef is largely surrounded by rural land, with a number of smaller rural holdings to the western side of the subject property on McNeils Lane and Wattle Hill Road. The Department of Environment and Climate Change has a depot approximately 2.3 km to the east of the subject site along Gwydir Highway. The sensitive receptors within the vicinity of Bindaree Beef are shown in Table 2-1 and Figure 2-2. Most of the sensitive receptors are residential dwellings.

Table 2-1: Sensitive Receptors

| Receptor ID     | Address                           | Eastern (m) | Northing (m) |
|-----------------|-----------------------------------|-------------|--------------|
| 1               | 13 Blair Athol Road, Inverell     | 311270      | 6706638      |
| 2               | 37 Blair Athol Road, Inverell     | 311040      | 6706528      |
| 3               | 32 McNeils Road, Inverell         | 311284      | 6706407      |
| 4               | 42 McNeils Road, Inverell         | 311310      | 6706272      |
| 5               | 42 Wattle Hill Road, Inverell     | 310822      | 6706313      |
| 6               | 41 Wattle Hill Road, Inverell     | 310888      | 6706051      |
| 7               | 11 Wattle Hill Road, Inverell     | 311230      | 6705958      |
| 8               | 77 McNeils Road, Inverell         | 311461      | 6705981      |
| 9               | 118 McNeils Road, Inverell        | 311229      | 6705537      |
| 10              | 345 Copeton Dam Road, Inverell    | 310829      | 6704599      |
| 11              | 221 Copeton Dam Road, Inverell    | 311196      | 6704598      |
| 12              | 183 Copeton Dam Road, Inverell    | 311314      | 6704528      |
| 13              | 216 Minnamurra Road, Auburn Vale  | 310853      | 6702332      |
| 14              | 226 Minnamurra Road, Auburn Vale  | 310794      | 6701946      |
| 15              | 209 Minnamurra Road, Auburn Vale  | 311134      | 6701697      |
| 16              | 98 Minnamurra Road, Auburn Vale   | 312298      | 6702236      |
| 17              | 71 Minnamurra Road, Auburn Vale   | 312319      | 6701987      |
| 18              | 67 Minnamurra Road, Auburn Vale   | 312460      | 6701956      |
| 19              | 54 Minnamurra Road, Auburn Vale   | 312619      | 6702038      |
| 20              | 55 Minnamurra Road, Auburn Vale   | 312654      | 6701920      |
| 21              | 31 Minnamurra Road, Auburn Vale   | 312915      | 6701842      |
| 22 <sub>A</sub> | 51 Penola Lane, Auburn Vale       | 313089      | 6702409      |
| 23              | 24 Penola Lane, Auburn Vale       | 313160      | 6702190      |
| 24              | 448 Auburn Vale Road, Auburn Vale | 313370      | 6702040      |
| 25              | 391 Auburn Vale Road, Inverell    | 313962      | 6702024      |
| 26              | 390 Auburn Vale Road, Auburn Vale | 313898      | 6702217      |
| 27 <sub>A</sub> | 396 Auburn Vale Road, Auburn Vale | 313531      | 6702753      |
| 28              | 60 Kerri Road, Inverell           | 313505      | 6704318      |
| 29              | 36 Kerri Road, Inverell           | 313332      | 6704562      |
| 30              | 95 Copeton Dam Road, Inverell     | 312791      | 6704488      |
| 31              | 143 Copeton Dam Road, Inverell    | 312441      | 6704749      |
| 32              | 7209 Gwydir Highway, Inverell     | 312908      | 6704981      |
| 33              | 7186 Gwydir Highway, Inverell     | 313253      | 6705503      |
| 34              | 7204 Gwydir Highway, Inverell     | 312981      | 6705554      |
| 35              | 44 Copeton Dam Road, Inverell     | 312932      | 6705242      |
| 36              | 84 Ditzells Drive, Inverell       | 313655      | 6706809      |
| 37              | 76 Ditzells Drive, Inverell       | 313560      | 6706761      |
| 38              | 64 Ditzells Drive, Inverell       | 313472      | 6706706      |
| 39              | 60 Ditzells Drive, Inverell       | 313434      | 6706533      |
| 40              | 35 Ditzells Drive, Inverell       | 313104      | 6706828      |
| 41              | 581 Fernhill Road, Inverell       | 312795      | 6706550      |
| 42              | 7360 Gwydir Highway, Inverell     | 311909      | 6706487      |
| 43              | 7374 Gwydir Highway, Inverell     | 311642      | 6706867      |
| 44              | 22 McNeils Road, Inverell         | 311344      | 6706525      |

A: Owned by Bindaree Beef and not requiring evaluation

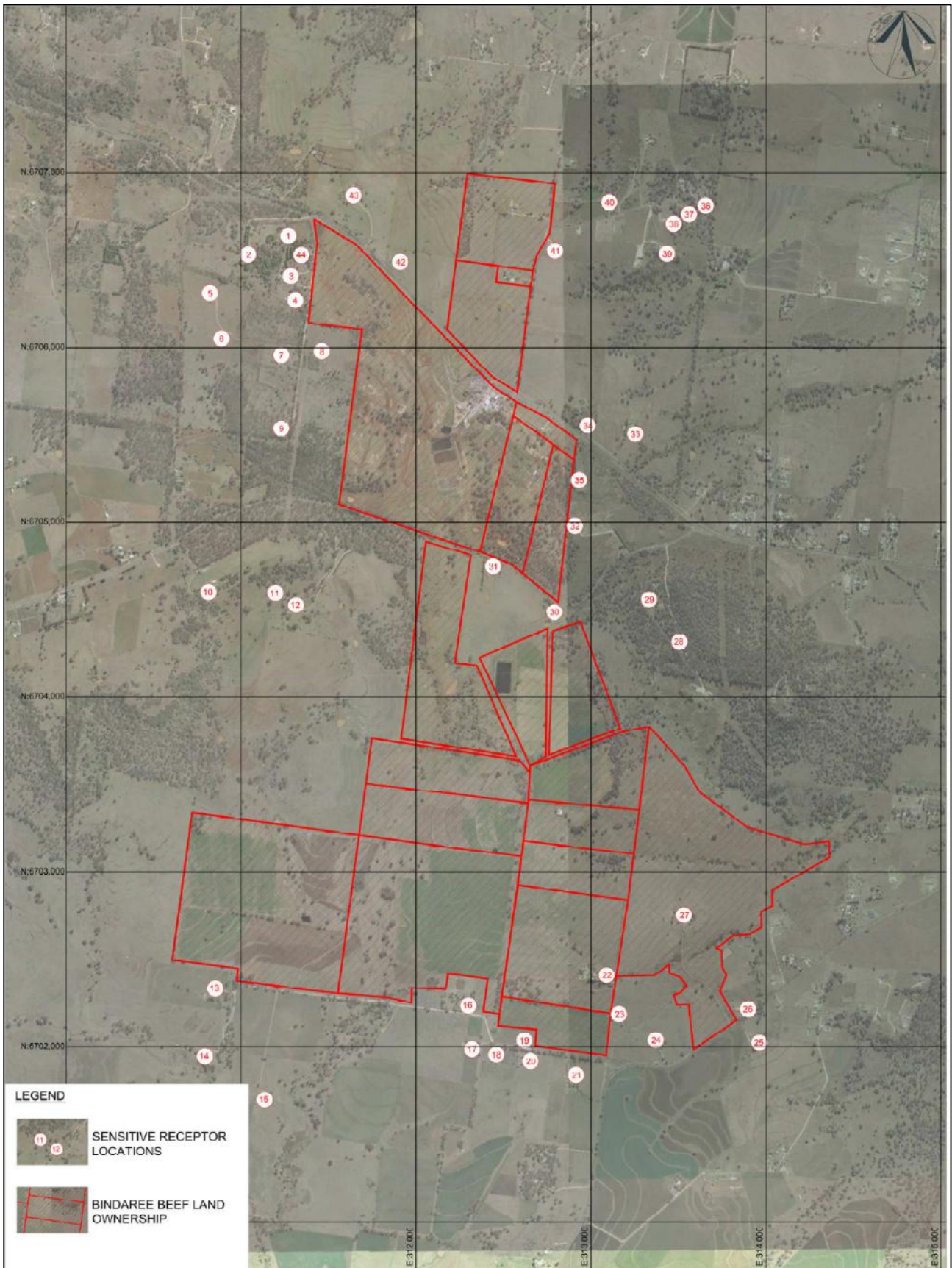


Figure 2-2: Sensitive Receptor Map [MHC]

15 Sept 2014

## 2.4 Topography

The topography can significantly alter how air emissions disperse and in which direction they travel. This is particularly the case for air flows during the night. During the night when wind speeds are low, air tends to drain toward low lying areas. The surrounding terrain is gently undulating pasture land. The land is higher than the site to the west and east, and lower to the north and south. As a result impacts are expected to extend further to the north and south during the night in calm conditions.

## 2.5 Existing Operations

The current operational process at Bindaree Beef involves the following:

- Waste effluent travels through a trommel and floatation tank before entering an anaerobic lagoon;
- 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; and
- Animal by-products from the processing areas are cooked up in two cookers using steam generated by the coal fired boiler, flowing into four meal presses. The cooked product is drained, pressed and separated into Meat Meal and Tallow.

## 2.6 Proposed operations

In its simplest form, the Bindaree Beef project will comprise:

- New, highly effective waste treatment system that will produce biogas, low strength effluent and solid fertiliser products;
- Biogas utilisation system that will generate power and steam for onsite use; and
- New state-of-the-art energy efficient rendering plant that will use less electricity and steam.

There will be no modifications to how the cattle are processed, apart from the wastewater (red and green stream waste) being redirected to the bio-digester. The waste streams are:

- Paunch and manure (green waste stream);
- Inedible material; and
- Blood and wash down water (red waste stream).

The Project will have a significant impact on the manufacturing process by transforming what were previously considered waste products into new energy sources. This Project will reduce the 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 2-3 shows the waste generated from the proposed manufacturing operations at Bindaree Beef.

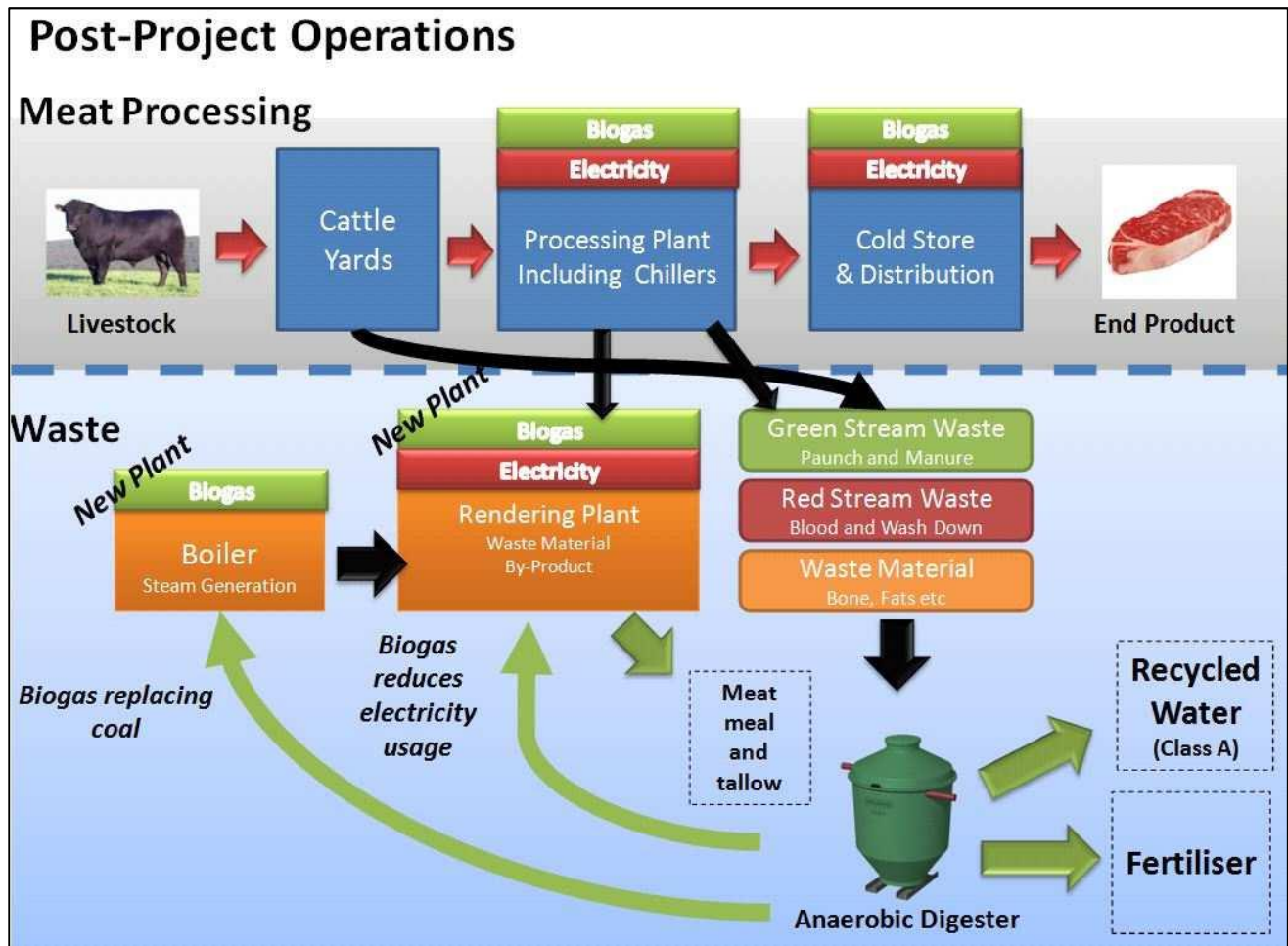


Figure 2-3: Waste Streams from the Proposed Operations

Figure 2-4 shows the proposed layout for the new rendering plant and bio-digester plant, displayed in orange.

### 2.6.1 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 rendering plant. All waste effluent (red stream, green stream, paunch and cattle yards material) will be directed through the digester process. All emissions (biogas) will be captured and stored in domes for use. Biogas from the bio-digester will be used to run boilers to create hot water and steam for use within the rendering plant. Biogas will also be used to generate electricity to power the bio-digester and supplement power to the existing abattoir plant. 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 rendering plant boilers.

### 2.6.2 Biogas Storage

The bio-digester plant will store gas in a standalone biogas storage holder. The storage holder comprises an outer membrane designed to provide protection against external climatic loads and an inner membrane separated by a pressurised air space between them. The inner membrane is free to inflate and deflate, depending on the amount of gas stored, however the outer membrane at all times remains fully inflated. The pressurised airspace between the membranes allows the gas stored in the tank to vary while providing a consistent positive pressure on the stored gas.

The full storage capacity will be approximately 9,000 m<sup>3</sup> of Biogas with a methane content of approximately 65%-70%. The storage will generally 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, due to the normal processing cycle.

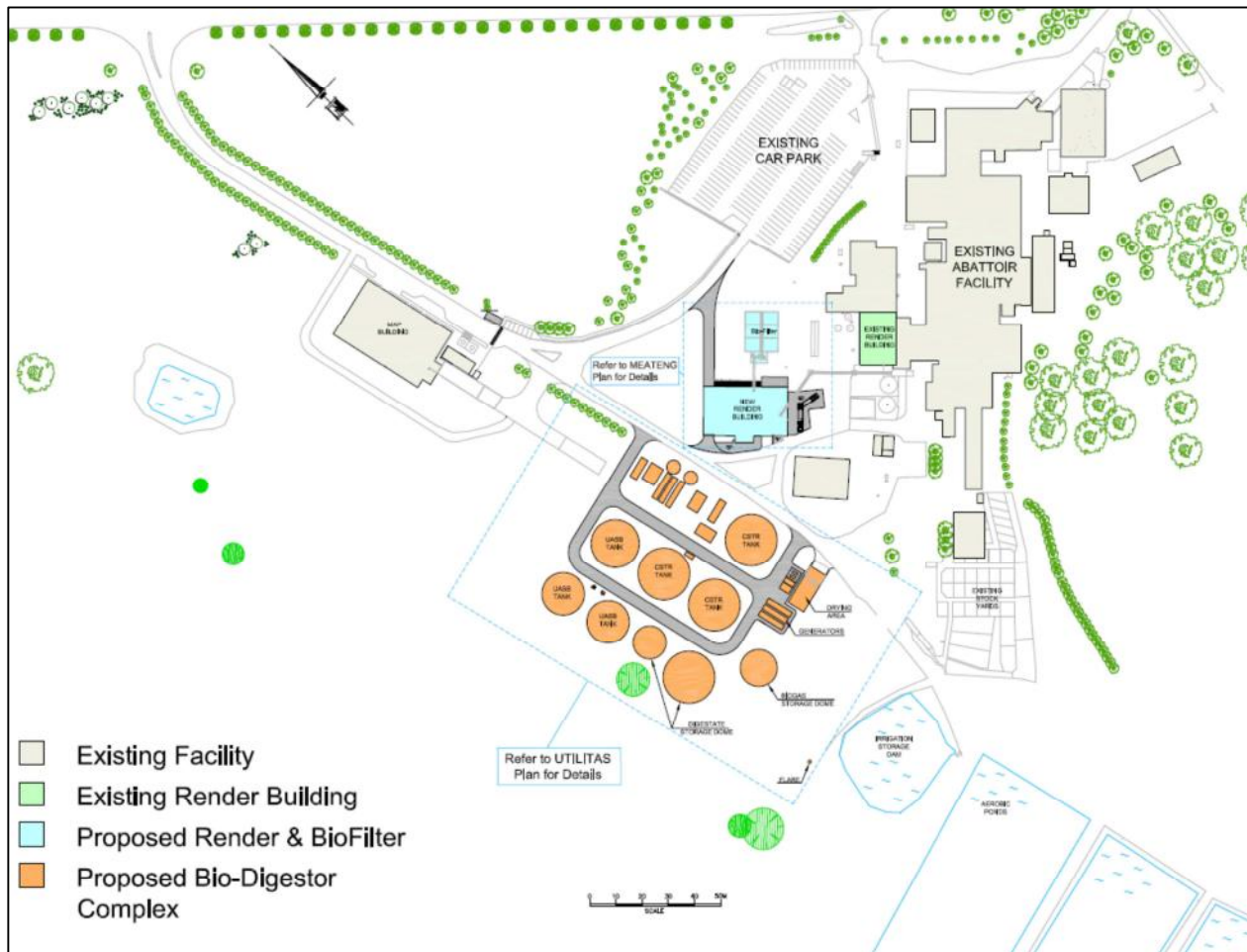


Figure 2-4: Site Layout [MEATENG Drawing Number P115 dated Feb 2014]

### 2.6.3 By-Products

The digestate output from the plant is a rich source of plant nutrition. During anaerobic digestion all of the nitrogen, phosphate and potash from the feedstock are retained in the digestate making it a useful organic fertiliser. The major volume of digestate, in liquid form, will be used on-farm under an appropriate crop management plan. A smaller portion of the digestate will be dewatered and/or dried using the plant's residual heat. When the digestate is dewatered or dried, the resulting product can be used as an organic fertiliser on crop pastures, either on the adjacent farm or taken off-site.

### 2.6.4 Rendering Plant

A rendering plant processes inedible cattle by-products from the abattoir and converts this waste material into tallow and meat meal products. The rendering plant will be upgraded to the latest energy efficient technology that will make efficient 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 receipt;
- Wet area for cooking and pressing; and

15 Sept 2014

- Dry product and storage areas.

An integral part of the new rendering plant is the use of renewable energy source (biogas 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 rendering plant has reduced thermal loading and will rely upon steam generated by a single biogas fired boiler. There will be no operational down time with the commissioning of the new plant as the existing plant will continue to operate in the interim.

The existing rendering plant will be decommissioned upon full operation of the biogas fired boilers, however one coal fired boiler will be retained for back up purposes and for use during maintenance of the gas powered boilers as required.

#### **2.6.5 Product Dewatering/Drying**

The dewatered digestate (solid fertiliser) will either be dumped directly into a trailer, small tip truck or stockpiled awaiting pickup. It is anticipated that the process will produce around 10m<sup>3</sup> per day (7.5 tonne) of product. A small holding bay for day storage of product will be provided under cover at the end of the drying area.



*Figure 2-5: Example Storage Bay [Meateng Feb 2014]*

### 3 REGULATORY FRAMEWORK

The overall management of air quality impacts in New South Wales is set down in the NSW EPA (1997) *Protection of the Environment Operations Act (PEOA)*. In order to achieve the objectives of the Act a number of other documents prescribe technical methods and assessment criteria. These documents have been utilised for this assessment and include:

- DEC (2006) *Technical framework - Assessment and management of odour from stationary sources in NSW*. Department of Environment and Conservation;
- NSW EPA (2005) *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*. New South Wales Government Gazette; and
- NSW EPA (2006) *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW*. New South Wales Government Gazette.

#### 3.1 Odour

The sense of smell is a subjective human response to the presence of a chemical compound or “odour” in air. The sensitivity to a particular odour can vary from one individual to another by up to two orders of magnitude. Differences in sensitivity to an odour are due to a variety of factors, including age, health, prior exposure to the odour and natural variation within the population. The factors that are recognised as influencing whether an odour will result in a complaint or not depend on a number of factors referred to as the FIDOL factors.

- Frequency - how often the odour is detected;
- Intensity - how strong the odour is;
- Duration - how long the odour persists for;
- Offensiveness - how the odour smells; and
- Location - where the odour occurs.

Dynamic olfactometry involves taking samples of air that contain an odourant and presenting the odour to a panel. An odour panel is chosen to best represent the ‘typical’ population by screening them using their sensitivity to a reference gas as a selection criterion. The odour is diluted with “clean” air until 50% of the panel can detect the presence of the odour. This concentration is the threshold concentration and is deemed to be 1 odour unit (OU). The number of dilutions required to achieve this level determines the odour concentration of the original sample. The method for performing these measurements is documented in the Australian/New Zealand Standard 4323.3:2001 ‘*Stationary Source Emissions – Part 3: Determination of Odour Concentration by Dynamic Olfactometry*’ and is referred to as accepted method OM-7 in DEC (2005).

Olfactometry, in conjunction with dispersion modelling, has been shown to be the best available method of predicting odour nuisance on a community over long periods. The modelling accounts for the dispersion of pollutants through treating different sources in different ways and examples of the three types of sources used in the modelling are as follows:

- Area (diffuse) source (e.g. ponds);
- Volume source for fugitive releases (e.g. buildings); and
- Point source for stack releases (e.g. boilers and generators).

Section 129 of the PEOA states:

- (1) *The occupier of any premises at which scheduled activities are carried out under the authority conferred by a licence must not cause or permit the emission of any offensive odour from the premises to which the licence applies.*

Currently, the plant complies with this requirement and to ensure that the plant complies in future the case, approved methods have been used to assess future impacts.

### 3.2 Levels of Assessment

The current New South Wales (NSW) odour policy presented in the regulatory document *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*, August 2005 (DEC, 2005). A subsequently released "Technical Notes" document (DEC, 2006) provides additional guidelines for the assessment. This assessment has followed these approved methods and has been undertaken in accordance with a Level 3 Assessment.

The various levels of assessment are as follows:

- Level 1 - Apply basic calculations of required buffers for certain industries (not available for rendering plant);
- Level 2 - Impact assessments are conducted using 'synthetic' worst-case meteorological data; and
- Level 3 - Impact assessments are conducted using at least one year of site-specific meteorological data.

These approved assessment levels provide a method of determining an odour impact criterion based upon the number of people likely to be impacted by an operation, ranging from 2 OU/m<sup>3</sup> to 7 OU/m<sup>3</sup>. These approved methods have been implemented by the NSW government to protect amenity due to odour emissions from industry. As this area is rural with isolated farmhouses the criteria of 7 OU/m<sup>3</sup> applies. As per DEC (2005), the evaluation of odour impacts requires the estimation of peak ground level concentrations having a time scale of one second. Dispersion modelling predictions are usually valid for averaging periods of one hour and longer. Hence, for the prediction of peak concentrations, a peak to mean (P/M) ratio is incorporated that facilitate the determination of peak concentrations from one-hour averaged mean concentrations. As such the assessment criterion is the nose response time average (i.e. on a one second average) at a 99<sup>th</sup> percentile of 7 OU/m<sup>3</sup>.

### 3.3 Relevant Criteria Pollutants

The NSW Government sets maximum ambient standards as detailed in NSW EPA (2005) and Table 3-1.

Table 3-1: Relevant Assessment for Criteria Pollutants

| Pollutant                                                                                   | Averaging Period | Concentration (µg/m <sup>3</sup> ) | Source            |
|---------------------------------------------------------------------------------------------|------------------|------------------------------------|-------------------|
| Sulphur Dioxide (SO <sub>2</sub> )                                                          | 10 minutes       | 712                                | NSW EPA           |
|                                                                                             | 1 hour           | 570                                | NSW EPA           |
|                                                                                             | 24 hours         | 228                                | NSW EPA           |
|                                                                                             | Annual           | 60                                 | NSW EPA           |
| Nitrogen Dioxide (NO <sub>2</sub> )                                                         | 1 hour           | 246                                | NSW EPA           |
|                                                                                             | Annual           | 62                                 | NSW EPA           |
| Particulate Matter less than 10 microns in diameter (PM <sub>10</sub> )                     | 24 hours         | 50                                 | NSW EPA           |
|                                                                                             | Annual           | 30                                 | NSW EPA           |
| <sup>a</sup> Fine Particulate Matter less than 2.5 microns in diameter (PM <sub>2.5</sub> ) | 24 hours         | 25                                 | NEPM <sub>a</sub> |
| Total Suspended Particulate (TSP)                                                           | Annual           | 90                                 | NSW EPA           |
| Carbon Monoxide (CO)                                                                        | 15 minutes       | 100,000                            | NSW EPA           |
|                                                                                             | 1 hour           | 30,000                             | NSW EPA           |
|                                                                                             | 8 hours          | 10,000                             | NSW EPA           |
| PAH (benzopyrene-equivalent)                                                                | 1 hour           | 0.4                                | NSW EPA           |
| Formaldehyde                                                                                | 1 hour           | 20                                 | NSW EPA           |
| Acrolein                                                                                    | 1 hour           | 0.42                               | NSW EPA           |
| Acetone                                                                                     | 1 hour           | 22,000                             | NSW EPA           |
| 1,3-butadiene                                                                               | 1 hour           | 4                                  | NSW EPA           |

a. Advisory Standard

### 3.4 Inverell Studies and Designated Buffer

Inverell Council have a buffer around the plant as identified in the Inverell LEP (LEP 2008) and is based on an Odour Assessment undertaken by Collie Pty Ltd in 2008 detailed in CEE Consultants (2008). This assessment used estimates based on odour tests which were conducted at a (cattle and sheep) abattoir in Victoria and at a number of wastewater treatment plants. The resultant buffer shown in the LEP is a 1.5 km in diameter from the centre of the abattoir.

Under the Inverell Local Environmental Plan 2012 (LEP 2012) the site is zoned with a designated buffer area. This buffer is primarily 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 facilities in Inverell. Any development application within this buffer has to take impacts of the development into consideration. In particular, whether any development would be adversely impacted by the existing uses, thereby affecting their operational environment. Figure 3-1 shows the “designated buffer map”.

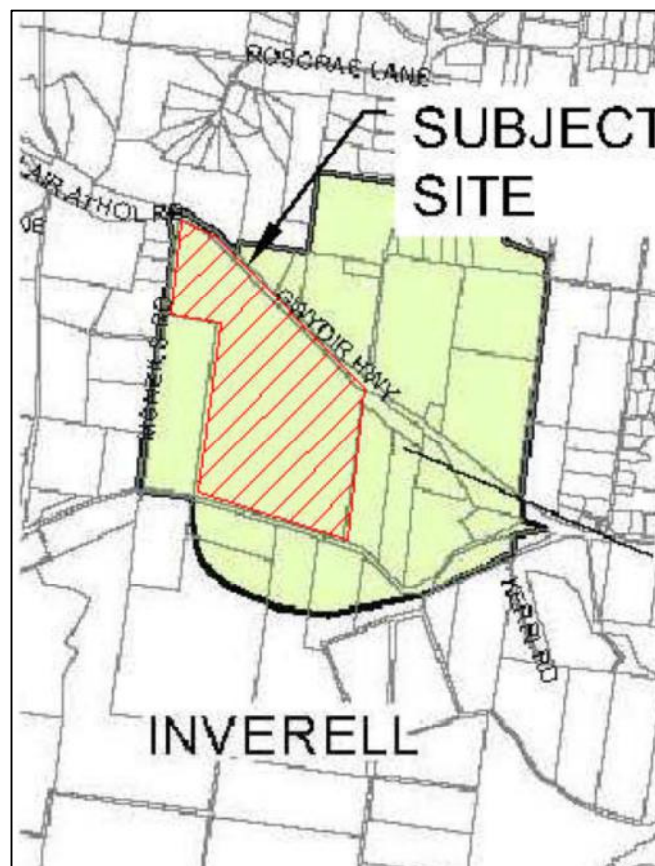


Figure 3-1: Buffer around the Site [Inverell LEP, 2012]

## 4 METHODOLOGY

### 4.1 Elements of the Study

This section outlines the general methodologies for the fieldwork, odour monitoring data analysis and air quality predictions used for this assessment. The flow diagram shows the main stages and inputs required to carry out this assessment.

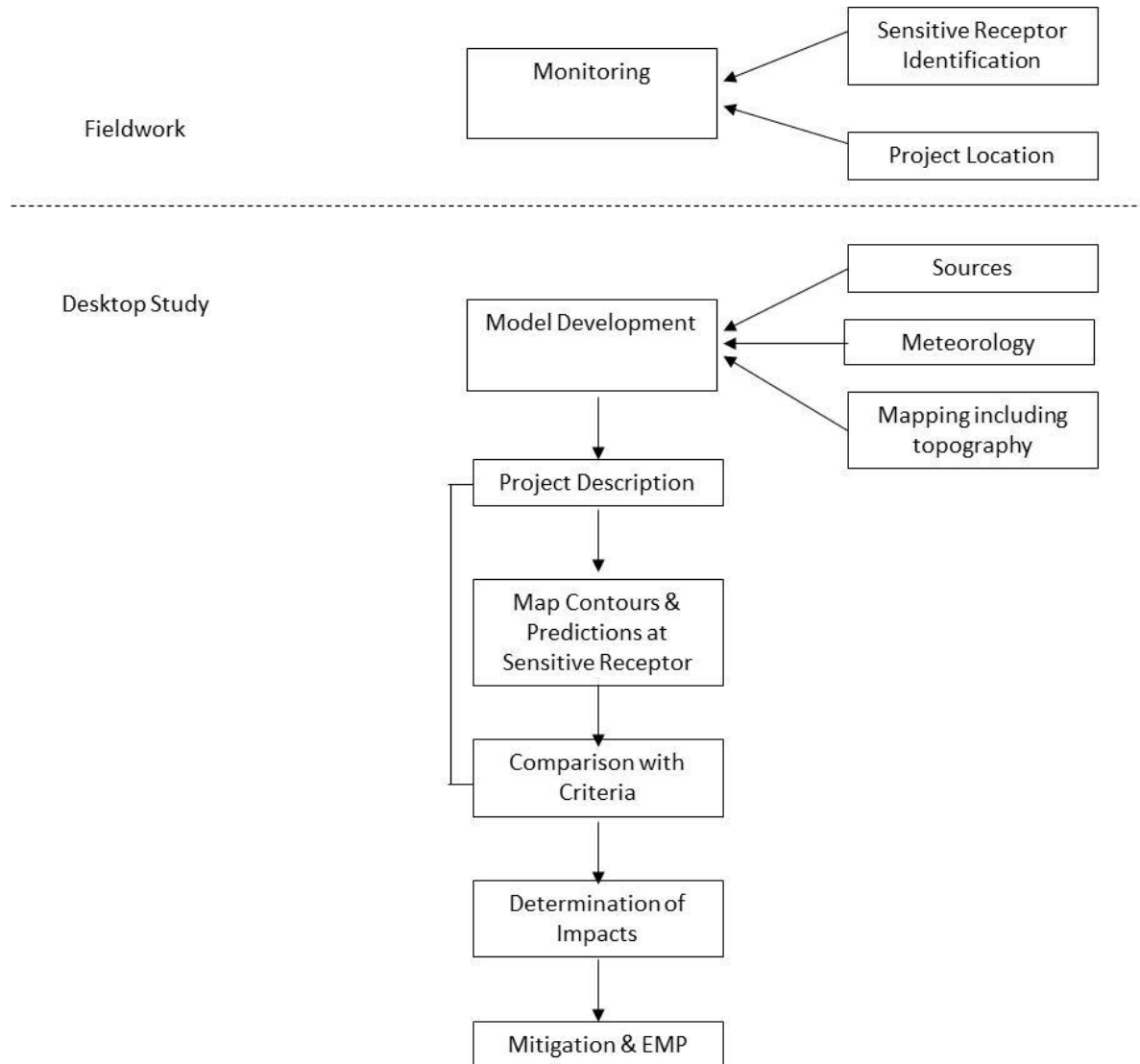


Figure 4-1: Main Stages and Inputs Required for Air Quality Assessment

### 4.2 Odour Sources at Existing Facility

A selection of existing odour sources and their location, as modelled are shown in Figure D-1 of Appendix C.

#### 4.2.1 Sample Collection

Odour samples were collected using the 'lung-in-the-box' technique in accordance with the Australian/New Zealand Standard 4323.3:2001 'Stationary Source Emissions – Part 3: Determination of Odour Concentration by Dynamic Olfactometry'. The sample was drawn through a Teflon tube that fed into a Nalophan sample bag.

Area samples were first isolated using a 'Five Senses' ACSCENT emissions isolation flux hood in accordance with the Australian/New Zealand Standard 4323.4:2009 'Area Source Sampling – Flux Chamber Technique'.

The flux hood comprises a stainless steel constructed isolation flux chamber with a surface area of 0.13 m<sup>2</sup>. The flux hood has a stainless skirt which ensures that the surface area enclosed by the hood is isolated.

The flux hood was operated using the standard operating parameters as specified in AS/NZS 4323.4:2009 for a USEPA Chamber. These parameters were as follows:

- Sweep Air Flow = 5 litres per minute;
- Sweep Air Velocity = 5.1 m/s; and
- Sample Flow Rate = 2.5 litres per minute (max).

Figure 4-2 shows the equipment on site sampling the bio-filter and feed air.



Figure 4-2: Sampling the Bio-filter Surface and Feed Air [Vipac 2013]

#### 4.2.2 Sample Analysis

Airlabs Environmental Pty Ltd (Airlabs) was commissioned to analyse odour samples. The program incorporated both area (flux hood) and volume (point) source sampling. All samples were collected by Vipac on 10<sup>th</sup> October 2013 and analysed by Airlabs on 11<sup>th</sup> October 2013.

Airlabs Environmental is ISO 17025 (NATA) accredited. This accreditation requires strict adherence to and continuous improvement of their processes and test work.

Odour samples were analysed in accordance with the Australian/New Zealand Standard 4323.3 'Stationary Source Emissions – Part 3: Determination of Odour Concentration by Dynamic Olfactometry'.

Odour concentrations were determined using a dynamic olfactometer operating in the forced choice mode with a step factor of 1.5. The odour panellists were all familiar with the procedure and specially selected in accordance with the Australian Standard criteria. The total number of dilutions of the sample at which 50 percent of all responses of the panellists confirmed odour detection is reported as the panel threshold, and is expressed in odour units per wet cubic metre of air at a temperature of 0°C and a pressure of 101.3 kPa.

Two ports were available to each panel member; one presenting the odourous gas and one presenting a neutral reference gas (carbon-scrubbed air). Each sample was analysed three times. Individual threshold estimates for each panel member were determined and the corresponding odour concentrations were calculated, with the average response of the second and third analyses reported.

As stipulated in AS/NZS 4323.3:2001, all analysis was completed within 30 hours of sample collection. The precision of results obtained by these techniques, lie statistically within the 95% confidence interval.

### 4.2.3 Calculation of Area Source Emission Rate

AS/NZS 4323.4:2009 provides the following procedure for calculating the area source emission rate from the measured concentrations:

The area source zone flux emission rate ( $F_i$ ) is calculated from:

$$F_i = C_i Q / A_c$$

where

$$F_i = \text{zone atmospheric contaminant flux emission rate } \{ \text{g/m}^2.\text{s} \text{ or } \text{ou.m}^3/\text{m}^2.\text{s} \text{ (at } 0^\circ\text{C and } 101.3 \text{ kPa)} \}$$

$$C_i = \text{zone chamber atmospheric contaminant concentration } \{ \text{g/m}^3 \text{ (at } 0^\circ\text{C and } 101.3 \text{ kPa) or ou} \}$$

$$Q = \text{chamber flow rate } \{ \text{m}^3/\text{s} \text{ (at } 0^\circ\text{C and } 101.3 \text{ kPa)} \} \{ \text{dry basis or wet basis (odour measurement)} \}$$

$$A_c = \text{area enclosed by chamber (m}^2\text{)}$$

The total area source emission rate ( $E$ ) is calculated from:

$$E = \sum F_i A_i$$

where

$$E = \text{area source emission rate (g/s or ou.m}^3/\text{s)}$$

$$F_i = \text{zone flux emission rate (i = 1, 2, ..., n)}$$

$$A_i = \text{zone area (m}^2\text{)}.$$

Equation 1: Calculating the Area Source Emission Rate [AS/NZS 4323.4: 2009]

### 4.3 Monitoring Results

A total of six samples were taken on site on the 10<sup>th</sup> October 2013. These were on the freshly irrigated area where wastewater is disposed of. Duplicate samples were taken on the bio-filter surface and one on the feed air to the bio-filter. An ambient sample was taken in the rendering building. The timings of the sampling and analysis are given in Table 4-1 and the olfactometer calibration information is detailed in Appendix C.

Table 4-1: Odour Sampling and Analysis Times

| Sample No. | Odour Source        | Sample Type | Date of Sampling | Time of Sampling (Start) | Date of Analysis | Time of Analysis (Start) |
|------------|---------------------|-------------|------------------|--------------------------|------------------|--------------------------|
| 1          | Irrigation Area     | Area        | 10/10/13         | 10:40                    | 11/10/13         | 13:09                    |
| 2          | Bio-filter          | Area        | 10/10/13         | 11:10                    | 11/10/13         | 13:27                    |
| 3          | Bio-filter          | Area        | 10/10/13         | 11:00                    | 11/10/13         | 13:44                    |
| 4          | Rendering Building  | Volume      | 10/10/13         | 11:35                    | 11/10/13         | 14:05                    |
| 5          | Rendering Building  | Volume      | 10/10/13         | 11:41                    | 11/10/13         | 14:40                    |
| 6          | Bio-filter Feed Air | Volume      | 10/10/13         | 12:05                    | 11/10/13         | 14:56                    |

As expected, the measured concentration and flux rates were low compared to most rendering plants, which process freshly killed animals from the abattoir. The difference of the concentration at the bio-filter and the feed air shows that the efficiency of the bio-filter is 85% odour removal. The odour sampling analysis results are shown in Table 4-2.

Table 4-2: Odour Sampling Results

| Sample No. | Odour Source        | Sample Type | Flux Temp (K) | Odour Concentration (OU) | Odour Flux Emission Rate (ou.m <sup>3</sup> /m <sup>2</sup> .s) |
|------------|---------------------|-------------|---------------|--------------------------|-----------------------------------------------------------------|
| 1          | Irrigation Area     | Area        | 302           | 615                      | 0.356                                                           |
| 2          | Bio-filter          | Area        | 290           | 1,876                    | 1.13                                                            |
| 3          | Bio-filter          | Area        | 290           | 1,695                    | 1.02                                                            |
| 4          | Rendering Building  | Volume      | N/A           | 4,914                    | N/A                                                             |
| 5          | Rendering Building  | Volume      | N/A           | 4,012                    | N/A                                                             |
| 6          | Bio-filter Feed Air | Volume      | N/A           | 11,631                   | N/A                                                             |

#### 4.4 Assigning Background Concentrations

Dust monitoring data for remote Australian areas is not commonly available. The nearest NSW EPA monitoring site is located in Tamworth. This monitoring location is expected to have higher concentrations due to a larger population density and other influences such as motor vehicle emissions. The PM<sub>10</sub> percentile concentrations in 2013 were 15.2 µg/m<sup>3</sup> and 19.1 µg/m<sup>3</sup> at the 50<sup>th</sup> and 70<sup>th</sup> percentile levels.

Additionally, a review of similar studies in rural areas has been conducted. The Environmental Impact Statement for the RioTinto Clermont mine (greenfield site at the time of monitoring), utilised 24-hour monitoring of Total Suspended Particulate (TSP) in 1990 and dust deposition monitoring carried out in 2003-2004. This monitoring study found that typical TSP concentrations in a rural area were 40 µg/m<sup>3</sup>.

The NSW Minerals Council (2000) 'Particulate Matter & Mining' provides a method to estimate PM<sub>10</sub> background level from TSP data using a ratio of 0.39. This methodology has been applied in order to derive a PM<sub>10</sub> concentration of 17 µg/m<sup>3</sup>.

When compared to the 24-hour averaged PM<sub>10</sub> monitored concentrations, as discussed above, the derived PM<sub>10</sub> concentration is similar to the measured percentile concentrations at Tamworth. In order to ensure a conservative assessment the derived concentration of 19 µg/m<sup>3</sup> has been assigned as the background concentration and is considered appropriate.

Assigning a higher background concentration makes the assessment conservative as the incremental project contribution has to be lower in order to comply with the criteria. A summary of the assigned background concentrations used in this study are given in Table 4-3. These background concentrations have been used to add to the predicted incremental impact from the operation to derive total pollutant concentrations.

Table 4-3: Assigned Background Concentrations used for this Assessment

| Pollutant                                  | Criteria             | Averaging Time | Basis (90 <sup>th</sup> percentile) |
|--------------------------------------------|----------------------|----------------|-------------------------------------|
| Total Suspended (Coarse) Particulate (TSP) | 40 µg/m <sup>3</sup> | 24 - hour      | Literature review                   |
| Particulate (PM <sub>10</sub> )            | 19 µg/m <sup>3</sup> | 24-hour        | EPA Data & Literature review        |
| Fine Particulate (PM <sub>2.5</sub> )      | 9 µg/m <sup>3</sup>  | 24-hour        | Scaled from PM <sub>10</sub>        |
| Sulphur Dioxide                            | Negligible           | 1-hour         | No nearby sources                   |
| Nitrogen Dioxide                           | 30 µg/m <sup>3</sup> | 1-hour         | Typical rural background            |
| Carbon Monoxide                            | Negligible           | 1-hour         | No nearby sources                   |

## 4.5 Modelling Software

### 4.5.1 TAPM

To generate the broad scale meteorological inputs to run CALPUFF, this study has used The Air Pollution Model (TAPM), which is a 3-dimensional prognostic model developed and verified for air pollution studies by the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

The CSIRO has carried out extensive validation of TAPM against monitoring from a range of extensive monitoring networks across Australia. It has been found that TAPM performed well across Australia as the predictions have matched monitoring data well. The output from TAPM was used to generate the appropriate meteorological data for the CALPUFF modelling system.

The default TAPM databases for terrain, land use and meteorology were used in the model for 2002-2006. TAPM centre co-ordinates are:

- Latitude: 29° 45.5 min;
- Longitude: 151° 3.5 min.

The grid spacing for the run is 30 km, 10 km, 3 km, 1 km and 300 m with 20 vertical levels and 25x25 horizontal grid points. The TAPM output was converted to a 3D format suitable for the CALMET processor within the CALPUFF modelling system. CALMET was run as No-Obs simulation with the 3D wind field from TAPM as the input. A meteorological grid of size 5.8 km by 7 km was used with a grid spacing of 100 m. The terrain data had a resolution of 3 arc-seconds (approximately 90m). Most CALPUFF options remained at their default recommended values.

A comparison with the nearest BOM weather station located at Inverell Research Centre and TAPM generated data at the BOM weather station is shown in Appendix B.

The 9 am wind rose for the research centre for 2002-2006 was compared to the BoM long-term wind rose. The comparison determined that the wind directions are very similar, with TAPM slightly overestimating the south westerlies and underestimating the south easterlies. The number of calm winds is representative of BoM station.

### 4.5.2 CALPUFF

A 3-dimensional dispersion wind field model, CALPUFF, has been used to simulate the impacts from the Bindaree Beef site. CALPUFF is an advanced non-steady-state meteorological and air quality modelling system developed and distributed by Earth Tech, Inc. The model has been adopted by the U.S. Environmental Protection Agency (U.S. EPA) in its '*Guideline on Air Quality Models*' as the preferred model for assessing near-field applications as it is the only model capable of simulating adverse meteorological conditions such as inversions or calm conditions. CALPUFF is the preferred model for this sort of air quality prediction in NSW.

The modelling accounts for the dispersion of pollutants through treating different sources in different ways and examples of the three types of sources used in the modelling are as follows:

- Area (diffuse) source (e.g. ponds);
- Volume source for fugitive releases (e.g. buildings); and
- Point source for stack releases (e.g. boilers and generators).

## 5 METEOROLOGY

The site specific meteorology will affect pollutant transport and dispersion. Pollutants are carried downwind of the source; therefore impacts will occur when the wind blows from a source-to-receptor. Wind roses are a means of presenting a summary of wind speed and directional data for a particular time and location. Wind roses were generated for the five years from 2002 to 2006 using meteorological data generated by TAPM. This method of generating meteorology means that near-field katabatic drainage flows at night can be incorporated in the dispersion modelling.

As discussed in Section 4.5.1, the TAPM data was compared with the nearest BOM weather station located at Inverell Research Centre and is presented in Appendix B.

Figure 5-1 shows the site specific wind rose for 2002-2006. The east north easterly and north easterly dominant wind directions are clearly visible in the five year wind rose. The most common wind speed at Bindaree Beef is 5-8 m/s. The seasonal wind roses are presented in Appendix B.

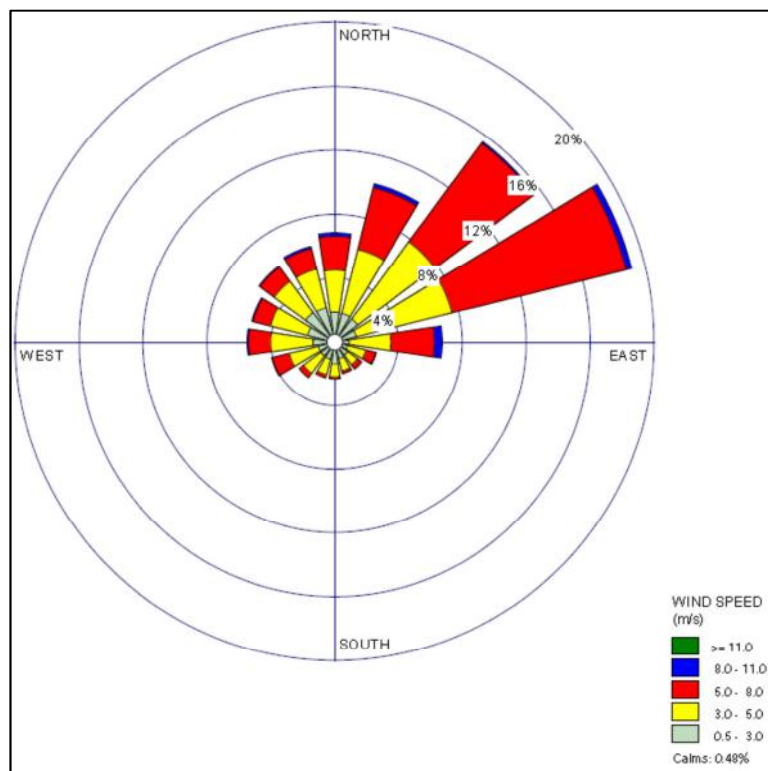
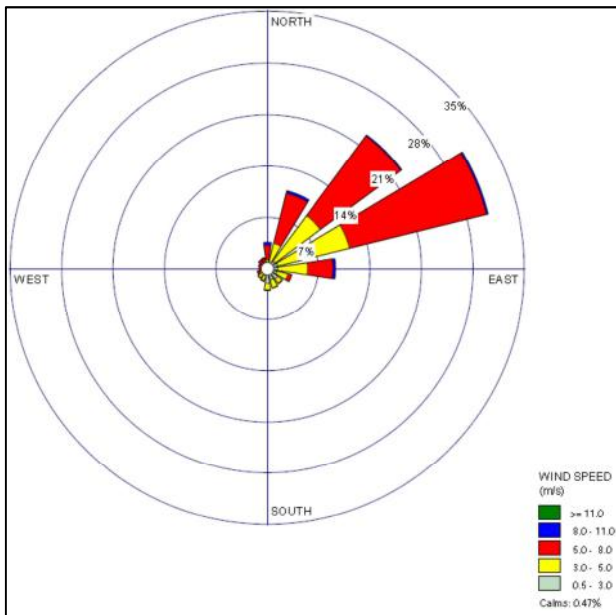
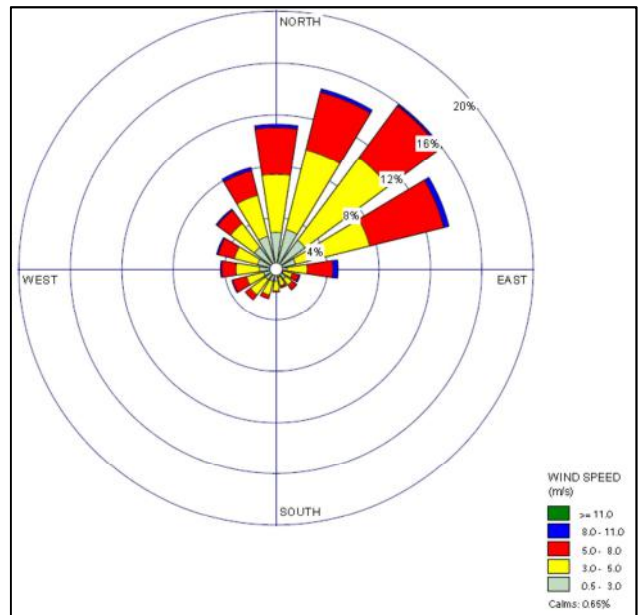


Figure 5-1: Site Specific Annual Wind Rose 2002-2006 [TAPM]

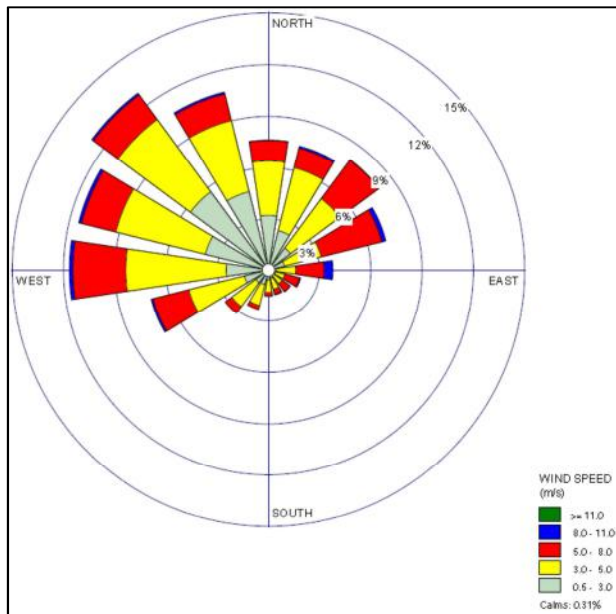
The diurnal wind roses in Figure 5-2 show the north-easterly winds are common throughout the day, except in the afternoon when westerly to north-westerly winds are more common.



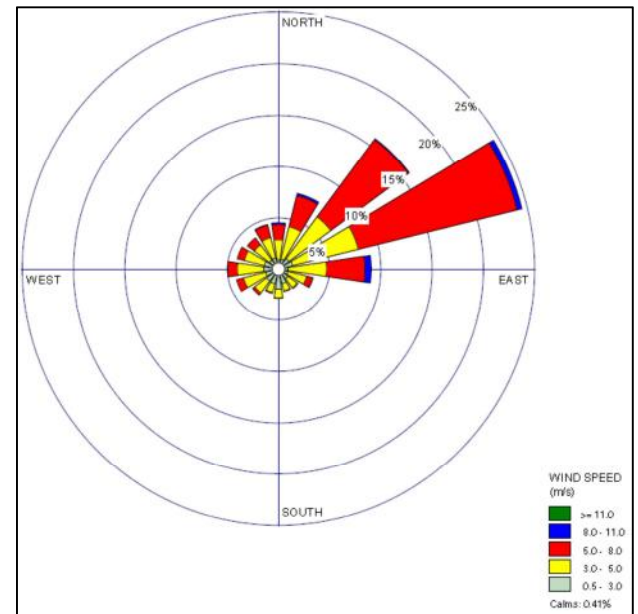
Midnight to 6 AM (Calm – 0.47%)



6 AM to 12 PM (Calm – 0.65%)



12 PM to 6 PM (Calm – 0.31%)



6 PM to Midnight (Calm – 0.41%)

Figure 5-2: Site Specific Diurnal Wind Roses 2002-2006 [TAPM]

## 6 ODOUR EMISSIONS

The anaerobic digestion of manure followed by the combustion of biogas, provides a number of direct benefits including reduced greenhouse and volatile organic compound (VOC) emissions and odour control. One potentially negative environmental impact of anaerobic digesters that combust the biogas is the creation of nitrogen oxides, which are regulated air pollutants and an ozone precursor. Nitrogen oxides are created by combustion of fuel with air. Combustion of biogas will emit nitrogen oxides, however, this will not result in a net increase as the site will be using this as fuel instead of the coal boiler currently using 7,000 tonnes of coal per annum.

Volatile Organic Compounds (VOCs) are an intermediate product generated by methanogenic bacteria during the transformation of manure into biogas. The volume of VOCs generated is related to the total volume of biogas produced, however, the more effective the methanogenic decomposition, the lower the VOCs as a percentage of the biogas.

VOCs are also produced by the anaerobic decomposition of manure. A well designed and managed anaerobic digester may reduce VOCs by more efficient transformation into methane. Additionally, a fraction of the remaining VOCs in the biogas should be eliminated through the combustion of the biogas.

### 6.1 Sources of Odour for the Current Operation

Based on the site inspection, experience at similar facilities and detailed plans for the proposed changes the significant odour sources were identified for the current and future operation. The significant air emission sources that are at the existing facility are as follows:

- Anaerobic and secondary pond (no appreciable odour was observed from the subsequent ponds);
- Irrigation area;
- Holding pens;
- Bio-filter;
- Rendering building (process emissions to bio-filter and fugitive building emissions released from doors and leakages in walls).

The attributes for each of the current odour sources are shown in Table 6-1. The location of these sources is shown in Appendix C.

Table 6-1: Current Odour Sources and their Emission Attributes

| Source                   | Timing                                            | Intensity | Character     |
|--------------------------|---------------------------------------------------|-----------|---------------|
| Rendering Building Vents | During operating hours                            | High      | Cooking odour |
| Bio-filter               | During operating Hours                            | Moderate  | Musty odour   |
| Ponds                    | All of the time                                   | High      | Rancid        |
| Holding Pens             | All of the time                                   | Low       | Manure        |
| Irrigation Area          | When irrigating - depending on water availability | Low       | Musty odour   |

### 6.2 Sources of Odour for the Future Operation

The significant air emission sources that will be at the upgraded facility are as follows:

- Irrigation area;
- Bio-filter;
- Dried product (fibre);
- Trommels (green and red waste streams);

- Dissolved Air Floatation Tanks (DAF);
- Holding pens; and
- Rendering building (process emissions to bio-filter and fugitive building emissions captured and exhausted from roof vents).

The attributes for each of the current odour sources are shown in Table 6-2. The location of these sources is shown in Appendix C

Table 6-2: Future Odour Sources and their Emission Attributes

| Source                               | Timing                                            | Intensity | Character     |
|--------------------------------------|---------------------------------------------------|-----------|---------------|
| Rendering Building Vents             | During operating hours                            | Moderate  | Cooking odour |
| Bio-filter                           | During operating Hours                            | Moderate  | Musty odour   |
| Holding Pens                         | Continuous (24 hours, seven days per week)        | Low       | Manure        |
| Dried Product (fibre) in day storage | Continuous (24 hours, seven days per week)        | Low       | Compost       |
| Irrigation Area                      | When irrigating - depending on water availability | Low       | Musty odour   |
| Trommels – Green Waste Stream        | Continuous (24 hours, seven days per week)        | Low       | Manure        |
| Trommels – Red Waste Stream          | Continuous (24 hours, seven days per week)        | Low       | Blood         |
| DAF Tanks                            | Continuous (24 hours, seven days per week)        | Low       | Sewer         |

### 6.3 Basis of Odour Emission Rates

Most of the emission rates were obtained through onsite measurements at the existing facility. A summary of the data and assumptions used for each source are contained in this Section.

#### 6.3.1 Irrigation Area

Measurements were taken on site of a recently irrigated area and extrapolated to the area under active irrigation (the area derived from the radius of the boom spray) and located near the closest location of the closest sensitive receptor. The modelling assumes that irrigation is occurring 24 hours a day, seven days a week which is conservative.

#### 6.3.2 Ponds

As pond emission rates vary considerably both temporally and spatially, a literature search was undertaken to determine typical emission rates from a range of facilities for different seasons.

Little data is available on emissions from anaerobic ponds at rendering plants; however there are extensive databases on emissions from Municipal Wastewater Treatment Plants (WWTP). The Sydney Water Database contains over 1000 odour measurements from WWTPs. McDonald et al (no date) reports an emission flux range for anaerobic ponds of 0.55 to 2.55 OU/m<sup>2</sup>/s. Holmes Air Science (2000) reports an emission rate from an anaerobic pond at a dairy operation of 0.38 OU/m<sup>2</sup>/s. The Odour Unit (2005) reports emission rates from a dairy/feedlot operation anaerobic pond with a crust of 1.35 OU/m<sup>2</sup>/s. Additionally, a German study details a database of 650 emission rates from WWTP's and reports an average emission rate from anaerobic systems of 0.43 OU/m<sup>2</sup>/s with a range of 0.14 OU/m<sup>2</sup>/s to 1.19 OU/m<sup>2</sup>/s (Frechen 2002).

To allocate an emission rate to the anaerobic pond, the average of these three Australian studies at 1.10 OU/m<sup>2</sup>/s has been used. Typically, a secondary pond will have the emission rates half the rate of an anaerobic pond, which has been assigned an emission rate of 0.55 OU/m<sup>2</sup>/s. Of note is that the ponds are not part of the new operation and the emissions rates were only derived to model the current case to show the significant advantages of the new improved plant and processes compared to the current operation.

15 Sept 2014

### 6.3.3 Bio filter

Onsite duplicate odour flux measurements were conducted on the existing bio-filter. The average emission rate of these duplicates was applied to both the existing and the proposed bio-filter based on surface areas. Concentration measurements were also taken above the existing bio-filter and the feed air to the bio-filter. This was used to assess the removal efficiency of the existing bio-filter, and was found to be 85% effective. This efficiency rate is within the range of quoted bio-filter efficiencies of 75–99%. It should be noted that the filter media at the time of sampling appeared to be in need of imminent replacement due to age, as such the new bio-filter will be expected to have better performance than used in this assessment.

### 6.3.4 Rendering Building

Ambient concentrations were measured in the existing naturally ventilated rendering building. It has been assumed that the ventilation allows ten building changes an hour. Currently, there are no extraction fans over the machines; therefore odour is allowed to escape the rendering building.

The proposed rendering building will be under negative pressure; there will be three roof mounted extraction fans to provide building ventilation at 10 changes per hour. There will be fume extraction hoods located above each odour point within the rendering plant. These extraction hoods are ducted to a common extraction system and large fan that blows the fumes through the bio-filter bed.

Despite the installation of the extraction hoods, a conservative assumption is made that the amount of odour escaping from the extraction hood systems will be less than 10%; these fugitive emissions have been modelled as though they are exhausted through fresh air roof vents. Table 6-3 shows the parameters were modelled for each of the rendering building vents.

Table 6-3: Rendering Plant Point Source Emissions [MeatEng, 2014]

| Parameter     | Value                            |
|---------------|----------------------------------|
| Height        | 12.5 m                           |
| Diameter      | 1.25 m                           |
| Temperature   | 303 K                            |
| Velocity      | 10 m/s                           |
| Emission Rate | 12,973 OU/sec (failure case)     |
|               | 1,300 OU/sec (90% odour capture) |

### 6.3.5 Holding Pens

Hudson et al (2008) performed a review of typical emission rates of feedlot pads and found that average emissions flux rates for dry and wet pads were 0.63 and 0.95 OU/m<sup>2</sup>/s respectively. To be conservative 0.95 OU/m<sup>2</sup>/s has been used for the holding pen emissions.

### 6.3.6 Drying Shed and Day Storage

The dewatering/drying area will be covered by a shed with side sheeting, with partially open side walls providing good cross ventilation. A drying belt process may result in some residual odour emissions which will be extracted, scrubbed or passed through a bio-filter as needed to avoid odour nuisance issues. This, however, may not be required as the digestion process significantly reduces the concentration of volatile organic compounds that cause offensive odours.

Little data is available for the emissions of digestate; however field and laboratory studies undertaken by Crolla et al (2011) has determined that the average odour flux for digestate is 0.44 OU/m<sup>2</sup>/sec. Additional data for aged digestate is also detailed as 0.19 OU/m<sup>2</sup>/sec. For the purposes of this study, the conservative emission rate of 0.44 OU/m<sup>2</sup>/sec will be applied to the digestate drying shed and storage area.

### 6.3.7 Flaring

Flaring of the biogas will only occur during the start-up of the plant and in emergencies. As methane is odourless, flaring has not been considered in this assessment.

### 6.3.8 Dissolved Air Floatation

There are several other odour sources that will emit odour; these include the Dissolved Air Floatation (DAF) tank and DAF reception tank. Research has indicated that an open DAF tank has an odour emission rate of 1.68 OU/m<sup>2</sup>/sec (Bord na Mona, 2004).

### 6.3.9 Trommels

The trommels for the green and red waste streams will be open. Due to limited information the emission rate for the DAF tank has been applied to the red waste stream whilst the green waste stream has an emission rate of 1.62 OU/m<sup>2</sup>/sec.

## 6.4 Summary of Odour Emission Rates

The derived emissions from the monitoring data and literature research are shown in Table 6-4 and Table 6-5.

Table 6-4: Derived Odour Emission Rates – Current Operations

|                    | Working Areas          |                          | Odours             |                                  |                        |                     |
|--------------------|------------------------|--------------------------|--------------------|----------------------------------|------------------------|---------------------|
|                    | Area (m <sup>2</sup> ) | Volume (m <sup>3</sup> ) | Concentration (OU) | Unit Rate (OU/m <sup>2</sup> /s) | Total Emissions (OU/s) | Basis of Emissions  |
| Irrigation Area    | 3,850                  |                          |                    | 0.356                            | 1,370                  | Onsite Measurements |
| Anaerobic Pond     | 8,400                  |                          |                    | 1.10                             | 9,240                  | Literature Review   |
| Secondary Pond     | 8,400                  |                          |                    | 0.55                             | 4,620                  | Literature          |
| Bio-filter         | 480                    |                          |                    | 1.075                            | 520                    | Onsite Measurements |
| Rendering Building |                        | 3,650                    | 4,463              |                                  | 45,299                 | Onsite Measurements |
| Holding Pens       | 6,000                  |                          |                    | 0.95                             | 5,700                  | Literature Review   |
| Total Emissions    |                        |                          |                    |                                  | 66,752                 |                     |

Table 6-5: Derived Odour Emission Rates – Future Operations

|                        | Working Areas          |                          | Odours             |                                  |                        |                     |
|------------------------|------------------------|--------------------------|--------------------|----------------------------------|------------------------|---------------------|
|                        | Area (m <sup>2</sup> ) | Volume (m <sup>3</sup> ) | Concentration (OU) | Unit Rate (OU/m <sup>2</sup> /s) | Total Emissions (OU/s) | Basis of Emissions  |
| Irrigation Area        | 3,850                  |                          |                    | 0.356                            | 1,370                  | Onsite Measurements |
| Bio-filter             | 360                    |                          |                    | 1.075                            | 390                    | Onsite Measurements |
| Rotary Screen          | 144                    |                          |                    | 1.1                              | 158                    | Literature Review   |
| Sanitary Plant         | 48                     |                          |                    | 1.1                              | 53                     | Literature Review   |
| Rendering Building     |                        | 6,280                    | 2,232              |                                  | 38,920                 | Onsite Measurements |
| Holding Pens           | 6,000                  |                          |                    | 0.95                             | 5,700                  | Literature Review   |
| Dried Product          | 100                    |                          |                    | 0.44                             | 44                     | Literature Review   |
| Drying Area            | 100                    |                          |                    | 0.44                             | 44                     | Literature Review   |
| Trommel – Green Stream | 45                     |                          |                    | 1.62                             | 73                     | Literature Review   |
| Trommel – Red Stream   | 45                     |                          |                    | 1.68                             | 76                     | Literature Review   |
| DAF Tank               | 48                     |                          |                    | 1.68                             | 81                     | Literature Review   |
| DAF Reception Tank     | 75                     |                          |                    | 1.68                             | 126                    | Literature Review   |
| Total                  |                        |                          |                    |                                  | 46,991                 |                     |

In both the current and future scenario, the greatest odour source is the rendering plant. The new rendering plant alone will reduce odour emissions by 15% for the failure case emissions. Overall, the future scenario will emit 30% less odour than the current situation due to the removal of the anaerobic ponds.

## 6.5 Peak to Mean Ratios

In order to obtain the one second average concentration a peak to mean ratio has been applied. The odour sources for this assessment are classed as far-field. The applicable ratios for each source type are presented in Table 6-6.

Table 6-6: Peak to Mean Ratios [DEC, 2005]

| Source Type         | Pasquill-Gifford Stability Class | Far-field Ratio (P/M60) |
|---------------------|----------------------------------|-------------------------|
| Area                | A, B, C, D                       | 2.3                     |
|                     | E, F                             | 1.9                     |
| Wake Affected point | A-F                              | 2.3                     |
| Volume              | A-F                              | 2.3                     |

All odour sources in this assessment have a P/M ratio of 2.3 for most stability classes, with the exception of an area source during stable weather conditions, when the ratio is 1.9. A ratio of 2.3 has been applied in post analysis to provide the one second concentration.

## 7 FUEL COMBUSTION EMISSIONS

In order to demonstrate compliance with the ambient air quality standards as detailed in NSW EPA (2005) and Table 3-1, modelling of the biogas and generators has been undertaken.

### 7.1 Outlet Parameters

Stack parameters for the boiler and the generators were provided by MeatEng in February 2014. The information is given in Table 7-1 and the locations can be seen in Figure 7-1.

Table 7-1: Physical Stack Characteristics as Modelled [MeatEng Feb 2014]

| Parameter | Stack Height (m) | Stack Diameter (m) | Exit Velocity (m/s) | Temperature (°C) |
|-----------|------------------|--------------------|---------------------|------------------|
| Boiler    | 11.2             | 0.6                | 11.5                | 250              |
| Generator | 6                | 0.35               | 24                  | 400              |

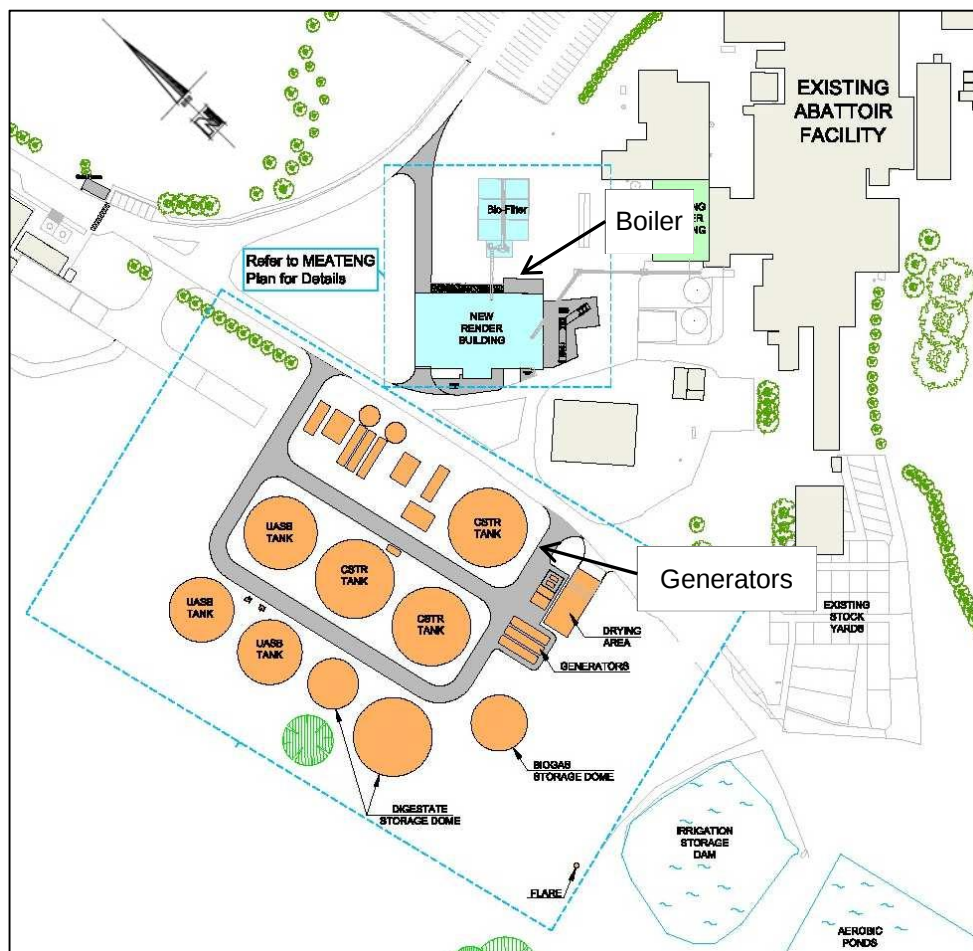


Figure 7-1: Location of Boiler and Generators [MeatEng Feb 2014]

### 7.2 Emission Rates

The onsite generated biogas will be used to power a boiler to generate steam and three generators. The new boiler will be powered by the onsite biogas and have a thermal output of 7.25 MW and a proposed thermal efficiency of 85%. Based on this the boiler will consume 8.53 MJ/s of fuel energy.

There will be two or three generators with a combined electrical output of 1350 kW and a nominal electrical efficiency of 38%. Based on the anticipated fuel use and published emission rates, emissions were calculated. As the number of units is yet to be confirmed, but the combined output has been determined, the emissions rates for the generators as shown in Table 7-2 are the combined 1350 kW power rather than per unit.

Fuel usage rates were calculated based on required energy output and estimates of boiler and generator efficiencies. For the boiler emissions for the criteria and toxic pollutants were calculated using emissions rates as detailed in Kristensen et al (2010) and Neilson et al (2010). These papers give emission rates based on 500 measurements taken on a variety of biogas fuelled boilers and engines. The calculated emission rates are detailed in Table 7-2.

Table 7-2: Fuel Combustion Pollutant Emissions (g/s)

| Pollutant                                   | Boiler   | Generators |
|---------------------------------------------|----------|------------|
| Sulphur Dioxide - SO <sub>x</sub>           | 0.162    | 0.068      |
| Carbon Monoxide - CO                        | 2.329    | 0.970      |
| Oxides of Nitrogen - NO <sub>x</sub>        | 4.606    | 1.918      |
| Particulate Matter - PM <sub>10</sub>       | 0.00385  | 0.0016     |
| Fine Particulate Matter - PM <sub>2.5</sub> | 0.00176  | 0.0007     |
| Formaldehyde                                | 0.0742   | 0.031      |
| Acrolein                                    | 0.00009  | 0.000036   |
| Acetone                                     | 0.00017  | 0.000071   |
| 1,3 Butadiene                               | 0.00017  | 0.000071   |
| Poly Aromatic Hydrocarbons - PAH            | 2.56E-08 | 1.07E-08   |

The equipment proposed has not been confirmed at present. Whilst the emissions used exceeded the requirements of the *Protection of the Environment Operations (Clean Air) Regulation (2010)*. These emission rates will provide conservative results which indicate that the concentrations comply at the sensitive receptors. The emissions from the boiler and generator are to be dealt with through conditions and monitoring post installation. As such, the predicted concentrations are considered to be higher than expected.

## 8 RESULTS

The emissions from the plant can be broadly categorised as odour emissions and emissions from fuel combustion. The latter has to be assessed for both criteria pollutants such as nitrogen dioxide, and toxic pollutants such as acrolein in accordance with NSW EPA criteria. Criteria pollutants occur as a direct result of any fuel combustion and the toxic pollutant emissions arise from trace contaminants in the fuel.

Minimal vehicle movements on-site combined with mainly sealed roads, ensures minimal dust from vehicle movements, as such on site vehicle movements have not been modelled. Dust emissions (in the form of PM<sub>10</sub> and PM<sub>2.5</sub>) from the holding pens have been modelled.

To be conservative it has been assumed that all sources are operating 24 hours a day, seven days a week. These emissions were simulated for every hour for five years. The modelling is considered conservative as it assumes all odour sources are additive. Due to the different composition of odour coming from the different sources this is conservative. For example, it is likely that emissions from the holding pens and cooking odours from the rendering plant would have a significantly different composition and therefore not be additive.

### 8.1 Odour Impacts

#### 8.1.1 Current Operations

Odour impacts were assessed for the current operation to outline background emissions to compare with the reduced impacts with the proposed development. The odour impacts of the current operation were also assessed to validate the derived odour emission rates. As discussed in Section 3.2 the odour concentrations are peak ground level concentrations having a time scale of one second.

Anecdotal evidence is that the facility generally does not cause nuisance under normal operating conditions. The few recent complaints have generally been when there have been system failures. This would suggest that the facility operates within compliance of the odour objectives, but not by a large margin. As shown in Figure 8-1, the modelling results reflect this and show that several receptors are above 7 OU. This would indicate that complaints may be expected under normal operations, but a small upset to the plant may result in some nuisance.

The 99.5<sup>th</sup> percentile results indicate that the 7 OU contour extends to a maximum of 1300 m north and west of the site, 600 m south and 700 m east of the site. This correlates well with the study conducted by CEE Consultants (2008) for Inverell Council, which found the 7 OU (99<sup>th</sup> percentile) odour contour extended out to 1000 m, which is not unexpected as they presented similar emission rates as those derived in this study based on onsite measurements. Odour nuisance is thought not to occur, for all but the most sensitive members of the community, until 10 OU is exceeded. Additionally, the highest impacts will most likely occur during relatively still conditions in winter when the surrounding community is asleep with windows closed.

#### 8.1.2 Future Operations – 90% Odour Capture (Normal Conditions)

As discussed in Section 6.3.4, the proposed rendering building will be under negative pressure with three roof mounted extraction fans to provide building ventilation. There will be fume extraction hoods located above each odour point within the rendering plant. These extraction hoods are ducted to a common extraction system and large fan that blows the fumes through the bio-filter bed.

Despite the installation of the extraction hoods, a conservative assumption that the amount of odour escaping from the extraction hood systems will be less than 10%; these fugitive emissions have been modelled as though they are exhausted through fresh air roof vents. As shown in Figure 8-2, for odour the future impacts assuming an odour capture rate of 90% are significantly improved over the current impacts. No sensitive receptor has an odour level above 2.45 OU (99<sup>th</sup> percentile), with the most affected residence is 143 Copeton Dam Road. As such no nuisance is expected from the proposed plant and in fact represents a significant improvement over the current situation. The overall odour emissions will be reduced by 30%, particularly for fugitive odours released from the rendering building. At present, fugitive odours leak from the open building.

15 Sept 2014

The low levels of odour indicate that most people are unlikely to perceive the odour and even more unlikely that they would judge the odour to be annoying. Even members of the community with a high sensitivity to odour, have a low probability of finding the odour offensive. Higher levels will mainly occur during cold and relatively still winter nights in the early morning (e.g. 03:00-07:00 hours), when most people are asleep with windows closed. During the day the atmosphere is unstable which is conducive to significant mixing of the odours in the air resulting in rapid dilutions before it would reach residential dwellings.

### 8.1.3 Future Operations – Failure Case

A failure case has been modelled which assumes the extraction fans within the proposed rendering plant have failed and all the odour is emitted from the three roof mounted vents. This scenario is unlikely to occur, however it provides the worst-case assessment for odour nuisance.

It can be seen from Figure 8-3 that the 99.5<sup>th</sup> percentile odour concentration contours are significantly reduced in size compared to the current situation. When comparing the current odour concentrations at 99<sup>th</sup> percentile to the future failure scenario, there is a reduction of up to 83% at 7186 and 7204 Gwydir Highway.

Whilst a failure scenario is unlikely to occur, the results in Table 8-1 demonstrate that the odour concentrations will not be a nuisance at the 99<sup>th</sup> percentile, with the highest predicted concentration of 5.49 OU at 77 McNeils Road.

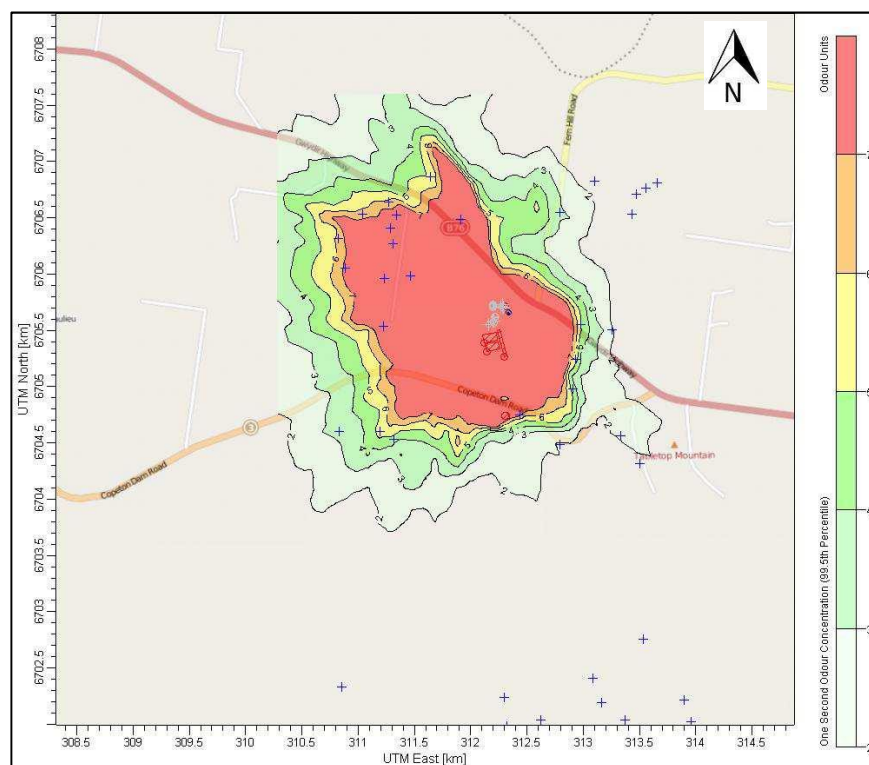


Figure 8-1: One Second Odour Contours (99.5<sup>th</sup> Percentile) for the Current Operations [Criteria 7 OU (99<sup>th</sup> Percentile)]

Table 8-1 shows the predicted odour concentrations for the current operations, future operations as a failure case and normal operations. The odour criteria is determined to the 7 OU at 99<sup>th</sup> percentile, however the contours in Figure 8-1, Figure 8-2 and Figure 8-3 are presented as the 99.5<sup>th</sup> percentile. As such Table 8-1 presents both percentiles for cross referencing.

It can be seen from Table 8-1 that the current operation exceeds the odour criteria (99<sup>th</sup> percentile) at three locations; 42 McNeils Rd, 11 Wattle Hill Rd and 77 McNeils Rd, with the highest concentration of 11.27 OU at 77 McNeils Rd. With the proposed rendering plant, the predicted odour concentrations will be reduced by up to 68% for the failure case and up to 92% reduction for the future under normal operations for 42 McNeils Road.

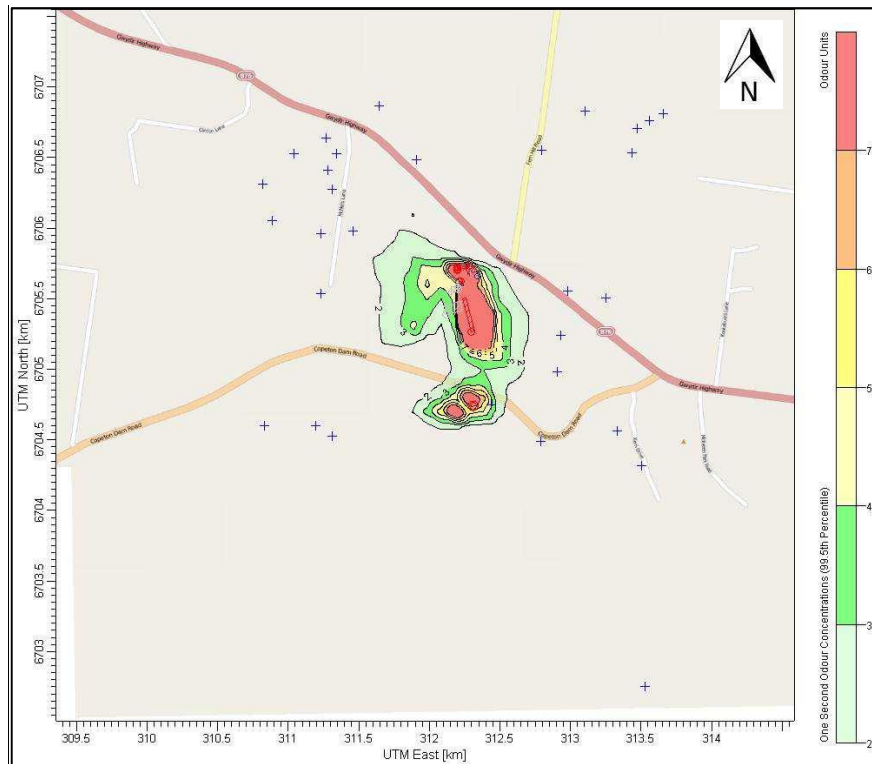


Figure 8-2: One Second Odour Contours (99.5<sup>th</sup> Percentile) for Future Operation – 90% Odour Recovery in Rendering Building [Criteria 7 OU (99<sup>th</sup> Percentile)]

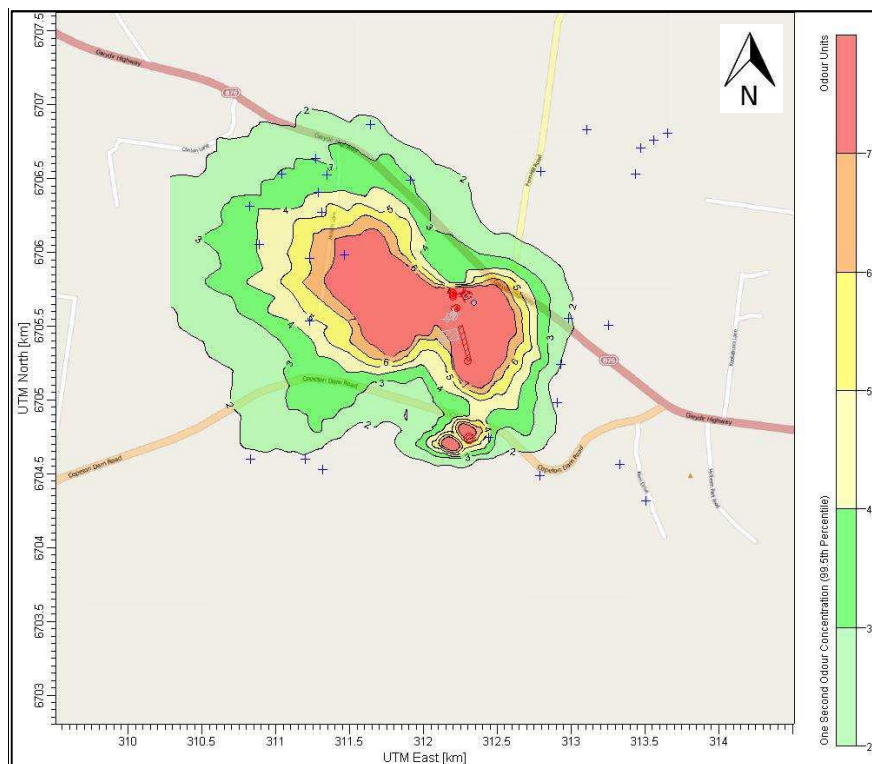


Figure 8-3: One Second Odour Contours (99.5<sup>th</sup> Percentile) for Future Operation – Worst Case [Criteria 7 OU (99<sup>th</sup> Percentile)]

Table 8-1 Comparison of Odour Concentration at Receptors (Peak Concentrations)

| Receptor                | Current Odour Concentration (OU) |                             | Future Odour (Failure Case) Concentration (OU) |                             | Future Odour (Normal) Concentration (OU) |                             |
|-------------------------|----------------------------------|-----------------------------|------------------------------------------------|-----------------------------|------------------------------------------|-----------------------------|
|                         | 99.5 <sup>th</sup> Percentile    | 99 <sup>th</sup> Percentile | 99.5 <sup>th</sup> Percentile                  | 99 <sup>th</sup> Percentile | 99.5 <sup>th</sup> Percentile            | 99 <sup>th</sup> Percentile |
| 1 - 13 Blair Athol Rd   | 6.03                             | 3.40                        | 2.75                                           | 1.68                        | 0.72                                     | 0.45                        |
| 2 - 37 Blair Athol Rd   | 6.73                             | 3.48                        | 3.25                                           | 1.97                        | 0.73                                     | 0.47                        |
| 3 - 32 McNeils Rd       | <b>9.59</b>                      | 4.61                        | 3.94                                           | 2.43                        | 0.88                                     | 0.58                        |
| 4 - 42 McNeils Rd       | <b>14.05</b>                     | <b>9.47</b>                 | 5.21                                           | 3.04                        | 1.05                                     | 0.74                        |
| 5 - 42 Wattle Hill Rd   | 6.39                             | 4.12                        | 3.77                                           | 2.54                        | 0.67                                     | 0.45                        |
| 6 - 41 Wattle Hill Rd   | 7.34                             | 4.18                        | 4.29                                           | 2.55                        | 0.86                                     | 0.62                        |
| 7 - 11 Wattle Hill Rd   | <b>12.64</b>                     | <b>8.16</b>                 | 5.89                                           | 4.39                        | 1.19                                     | 0.89                        |
| 8 - 77 McNeils Rd       | <b>18.35</b>                     | <b>11.27</b>                | <b>7.39</b>                                    | 5.49                        | 1.38                                     | 1.13                        |
| 9 - 118 McNeils Rd      | 8.57                             | 5.31                        | 4.53                                           | 3.06                        | 1.10                                     | 0.88                        |
| 10 - 345 Copeton Dam Rd | 3.17                             | 2.21                        | 1.90                                           | 1.17                        | 0.42                                     | 0.30                        |
| 11 - 221 Copeton Dam Rd | 5.43                             | 3.34                        | 1.70                                           | 1.17                        | 0.60                                     | 0.47                        |
| 12 - 183 Copeton Dam Rd | 4.37                             | 2.63                        | 1.22                                           | 0.87                        | 0.61                                     | 0.46                        |
| 13 - 216 Minnamurra Rd  | 0.58                             | 0.41                        | 0.25                                           | 0.18                        | 0.08                                     | 0.06                        |
| 14 - 226 Minnamurra Rd  | 0.54                             | 0.34                        | 0.23                                           | 0.16                        | 0.08                                     | 0.06                        |
| 15 - 209 Minnamurra Rd  | 0.31                             | 0.21                        | 0.14                                           | 0.11                        | 0.05                                     | 0.04                        |
| 16 - 98 Minnamurra Rd   | 0.50                             | 0.31                        | 0.26                                           | 0.16                        | 0.09                                     | 0.05                        |
| 17 - 71 Minnamurra Rd   | 0.49                             | 0.28                        | 0.25                                           | 0.14                        | 0.09                                     | 0.05                        |
| 18 - 67 Minnamurra Rd   | 0.45                             | 0.25                        | 0.22                                           | 0.14                        | 0.08                                     | 0.04                        |
| 19 - 54 Minnamurra Rd   | 0.48                             | 0.26                        | 0.23                                           | 0.14                        | 0.08                                     | 0.05                        |
| 20 - 55 Minnamurra Rd   | 0.41                             | 0.24                        | 0.21                                           | 0.13                        | 0.07                                     | 0.04                        |
| 21 - 31 Minnamurra Rd   | 0.39                             | 0.23                        | 0.19                                           | 0.11                        | 0.07                                     | 0.04                        |
| 22 - 51 Penola Lane     | 0.39                             | 0.24                        | 0.19                                           | 0.12                        | 0.06                                     | 0.04                        |
| 23 - 24 Penola Lane     | 0.37                             | 0.24                        | 0.17                                           | 0.11                        | 0.07                                     | 0.04                        |
| 24 - 448 Auburn Vale Rd | 0.34                             | 0.22                        | 0.20                                           | 0.10                        | 0.07                                     | 0.04                        |
| 25 - 391 Auburn Vale Rd | 0.34                             | 0.17                        | 0.16                                           | 0.09                        | 0.06                                     | 0.03                        |
| 26 - 390 Auburn Vale Rd | 0.35                             | 0.19                        | 0.16                                           | 0.10                        | 0.06                                     | 0.03                        |
| 27 - 396 Auburn Vale Rd | 0.36                             | 0.21                        | 0.20                                           | 0.11                        | 0.05                                     | 0.04                        |
| 28 - 60 Kerri Rd        | 1.61                             | 0.90                        | 0.75                                           | 0.45                        | 0.29                                     | 0.16                        |
| 29 - 36 Kerri Rd        | 2.13                             | 1.13                        | 0.90                                           | 0.56                        | 0.32                                     | 0.22                        |
| 30 - 95 Copeton Dam Rd  | 1.98                             | 1.25                        | 1.02                                           | 0.71                        | 0.51                                     | 0.33                        |
| 31 - 143 Copeton Dam Rd | 6.05                             | 4.66                        | 4.22                                           | 3.03                        | 3.71                                     | 2.45                        |
| 32 - 7209 Gwydir H/way  | 4.93                             | 2.72                        | 1.60                                           | 1.17                        | 0.59                                     | 0.43                        |
| 33 - 7186 Gwydir H/way  | 2.02                             | 1.53                        | 1.09                                           | 0.85                        | 0.19                                     | 0.15                        |
| 34 - 7204 Gwydir H/way  | 5.24                             | 3.44                        | 2.06                                           | 1.61                        | 0.36                                     | 0.31                        |
| 35 - 44 Copeton Dam Rd  | 5.43                             | 3.36                        | 1.92                                           | 1.38                        | 0.50                                     | 0.41                        |
| 36 - 84 Ditzells Drive  | 0.92                             | 0.56                        | 0.44                                           | 0.30                        | 0.09                                     | 0.07                        |
| 37 - 76 Ditzells Drive  | 1.15                             | 0.72                        | 0.55                                           | 0.35                        | 0.11                                     | 0.09                        |
| 38 - 64 Ditzells Drive  | 1.21                             | 0.71                        | 0.56                                           | 0.37                        | 0.11                                     | 0.10                        |
| 39 - 60 Ditzells Drive  | 1.12                             | 0.74                        | 0.59                                           | 0.42                        | 0.11                                     | 0.09                        |
| 40 - 35 Ditzells Drive  | 1.79                             | 1.07                        | 0.80                                           | 0.59                        | 0.16                                     | 0.13                        |
| 41 - 581 Fernhill Rd    | 2.97                             | 2.05                        | 1.28                                           | 0.85                        | 0.26                                     | 0.22                        |
| 42 - 7360 Gwydir H/way  | <b>10.92</b>                     | 5.17                        | 3.07                                           | 1.99                        | 0.92                                     | 0.59                        |
| 43 - 7374 Gwydir H/way  | 5.46                             | 3.06                        | 2.23                                           | 1.28                        | 0.67                                     | 0.42                        |
| 44 - 22 McNeils Road    | <b>7.47</b>                      | 4.19                        | 3.64                                           | 2.20                        | 0.88                                     | 0.54                        |

## 8.2 Dust Impacts from Future Operations

The impacts of PM<sub>10</sub> are primarily from the holding pen area and to a lesser extent the boiler emissions. It can be seen from Figure 8-4 and Table 8-2 that the PM<sub>10</sub> concentrations at sensitive receptors are well within the relevant criteria and are dominated by background levels. It can therefore be concluded that the impacts at all sensitive receptors will be negligible.

The highest predicted levels, including background concentrations at any boundary of the site are to the east where the maximum concentration is 20 µg/m<sup>3</sup>, which complies with the 50 µg/m<sup>3</sup> criterion.

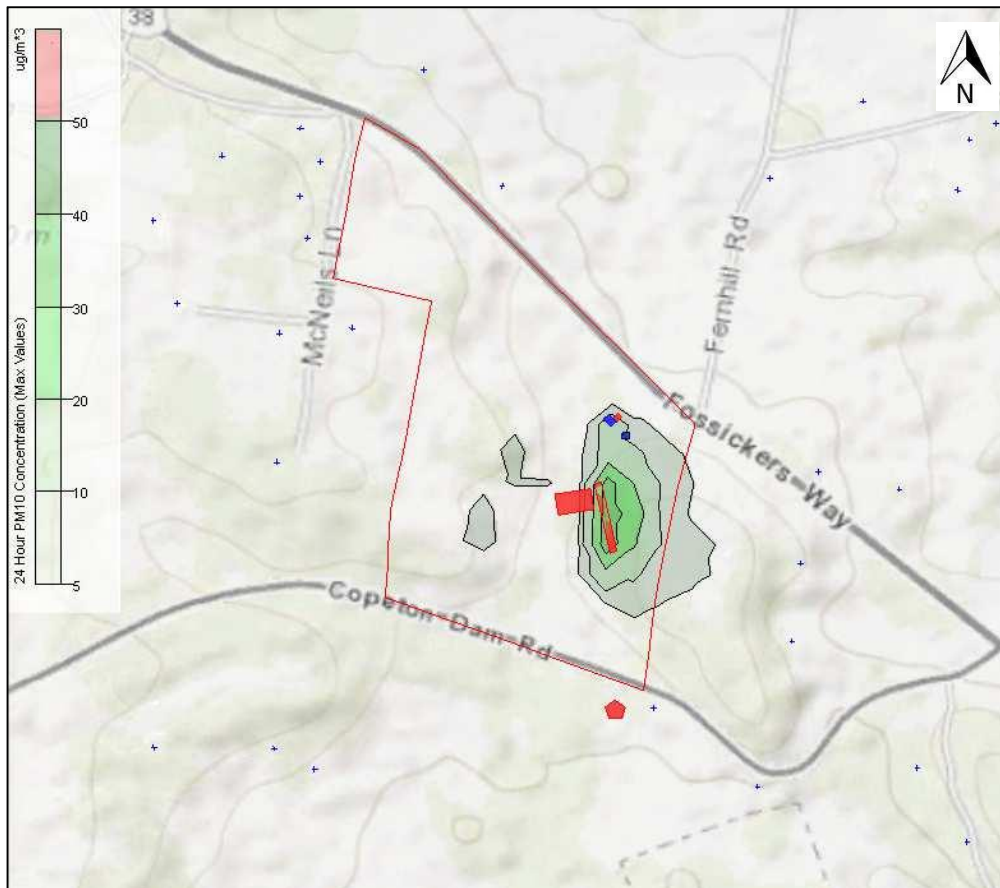


Figure 8-4: PM<sub>10</sub> Contours for Future Operation Excluding Background Concentration [Criteria 50 µg/m<sup>3</sup>]

## 8.3 Combustion Emissions Impact

Predictions for each criteria pollutant and toxic pollutant (for the appropriate averaging period) at every receptor in the area were made for the future operation. These pollutant emissions are primarily from fuel combustion in the biogas boiler and generators.

Compliance with criteria for these sources is achieved through proper design of the stacks from the boiler and generators. The stacks have been purposefully designed such that the pollutant release point is at an adequate height to ensure emissions disperse and dilute sufficiently before they reach ground level.

As shown in Table 8-2, the impacts at all receptors are all well within compliance of the criteria as outlined in NSW EPA (2005) and Table 3-1 and in all cases the concentrations are a minimum of half of the relevant criteria. In addition at all receptors as shown in Table 8-3, the impacts are all well within compliance of the pollutant criteria as outlined in NSW EPA (2005) and Table 3-1. The main emissions for these are from trace contaminants in the biogas and its subsequent combustion.

Table 8-2 Maximum Criteria Pollutant Concentrations (including Background Concentrations) at Receptors (in  $\mu\text{g}/\text{m}^3$ )

| Receptor                   | SO <sub>2</sub><br>24 hour | SO <sub>2</sub><br>1 hour | PM <sub>10</sub><br>24 hour | PM <sub>2.5</sub><br>24 hour | NO <sub>2</sub><br>1 hour | NO <sub>2</sub><br>Annual | CO<br>1 hour |
|----------------------------|----------------------------|---------------------------|-----------------------------|------------------------------|---------------------------|---------------------------|--------------|
| 1 - 13 Blair Athol Rd      | 6                          | 34                        | 20                          | 9                            | 83                        | 2                         | 1278         |
| 2 - 37 Blair Athol Rd      | 9                          | 51                        | 20                          | 9                            | 133                       | 2                         | 1274         |
| 3 - 32 McNeils Rd          | 7                          | 41                        | 20                          | 9                            | 105                       | 2                         | 1462         |
| 4 - 42 McNeils Rd          | 11                         | 58                        | 20                          | 10                           | 153                       | 3                         | 1402         |
| 5 - 42 Wattle Hill Rd      | 5                          | 38                        | 20                          | 9                            | 97                        | 2                         | 1248         |
| 6 - 41 Wattle Hill Rd      | 5                          | 42                        | 20                          | 9                            | 106                       | 2                         | 1323         |
| 7 - 11 Wattle Hill Rd      | 6                          | 54                        | 20                          | 10                           | 141                       | 4                         | 1591         |
| 8 - 77 McNeils Rd          | 6                          | 49                        | 20                          | 10                           | 126                       | 4                         | 1660         |
| 9 - 118 McNeils Rd         | 7                          | 51                        | 20                          | 10                           | 133                       | 8                         | 1423         |
| 10 - 345 Copeton Dam Rd    | 5                          | 43                        | 20                          | 9                            | 110                       | 5                         | 1531         |
| 11 - 221 Copeton Dam Rd    | 5                          | 28                        | 20                          | 9                            | 69                        | 5                         | 1323         |
| 12 - 183 Copeton Dam Rd    | 4                          | 24                        | 20                          | 9                            | 56                        | 4                         | 1215         |
| 13 - 216 Minnamurra Rd     | 3                          | 16                        | 19                          | 9                            | 34                        | 1                         | 1034         |
| 14 - 226 Minnamurra Rd     | 3                          | 16                        | 19                          | 9                            | 34                        | 0                         | 1031         |
| 15 - 209 Minnamurra Rd     | 3                          | 16                        | 19                          | 9                            | 33                        | 0                         | 1019         |
| 16 - 98 Minnamurra Rd      | 3                          | 17                        | 19                          | 9                            | 35                        | 0                         | 1039         |
| 17 - 71 Minnamurra Rd      | 3                          | 17                        | 19                          | 9                            | 35                        | 0                         | 1035         |
| 18 - 67 Minnamurra Rd      | 3                          | 16                        | 19                          | 9                            | 34                        | 0                         | 1030         |
| 19 - 54 Minnamurra Rd      | 3                          | 16                        | 19                          | 9                            | 33                        | 0                         | 1024         |
| 20 - 55 Minnamurra Rd      | 3                          | 16                        | 19                          | 9                            | 33                        | 0                         | 1022         |
| 21 - 31 Minnamurra Rd      | 3                          | 16                        | 19                          | 9                            | 33                        | 0                         | 1025         |
| 22 - 51 Penola Lane        | 3                          | 16                        | 19                          | 9                            | 34                        | 0                         | 1037         |
| 23 - 24 Penola Lane        | 3                          | 16                        | 19                          | 9                            | 34                        | 0                         | 1030         |
| 24 - 448 Auburn Vale Rd    | 3                          | 16                        | 19                          | 9                            | 33                        | 0                         | 1023         |
| 25 - 391 Auburn Vale Rd    | 3                          | 16                        | 19                          | 9                            | 33                        | 0                         | 1025         |
| 26 - 390 Auburn Vale Rd    | 3                          | 16                        | 19                          | 9                            | 33                        | 0                         | 1115         |
| 27 - 396 Auburn Vale Rd    | 3                          | 17                        | 19                          | 9                            | 35                        | 0                         | 1129         |
| 28 - 60 Kerri Rd           | 4                          | 20                        | 19                          | 9                            | 43                        | 1                         | 1105         |
| 29 - 36 Kerri Rd           | 4                          | 20                        | 19                          | 9                            | 45                        | 2                         | 1167         |
| 30 - 95 Copeton Dam Rd     | 4                          | 20                        | 19                          | 9                            | 43                        | 2                         | 1157         |
| 31 - 143 Copeton Dam Rd    | 4                          | 22                        | 20                          | 9                            | 50                        | 3                         | 1088         |
| 32 - 7209 Gwydir H/way     | 4                          | 22                        | 20                          | 10                           | 50                        | 3                         | 1114         |
| 33 - 7186 Gwydir H/way     | 4                          | 20                        | 19                          | 9                            | 44                        | 2                         | 1135         |
| 34 - 7204 Gwydir H/way     | 5                          | 21                        | 20                          | 9                            | 46                        | 4                         | 1032         |
| 35 - 44 Copeton Dam Rd     | 6                          | 22                        | 20                          | 9                            | 51                        | 4                         | 1040         |
| 36 - 84 Ditzells Drive     | 3                          | 18                        | 19                          | 9                            | 39                        | 0                         | 1045         |
| 37 - 76 Ditzells Drive     | 3                          | 18                        | 19                          | 9                            | 39                        | 0                         | 1054         |
| 38 - 64 Ditzells Drive     | 3                          | 18                        | 19                          | 9                            | 39                        | 0                         | 1094         |
| 39 - 60 Ditzells Drive     | 3                          | 18                        | 19                          | 9                            | 38                        | 1                         | 1142         |
| 40 - 35 Ditzells Drive     | 4                          | 20                        | 19                          | 9                            | 43                        | 1                         | 1208         |
| 41 - 581 Fernhill Rd       | 4                          | 20                        | 19                          | 9                            | 45                        | 1                         | 1139         |
| 42 - 7360 Gwydir H/way     | 5                          | 25                        | 20                          | 10                           | 58                        | 2                         | 1318         |
| 43 - 7374 Gwydir H/way     | 4                          | 22                        | 20                          | 10                           | 49                        | 1                         | 1097         |
| 44 - 22 McNeils Road       | 6                          | 39                        | 20                          | 9                            | 99                        | 2                         | 1352         |
| <b>Maximum</b>             | <b>11</b>                  | <b>58</b>                 | <b>20</b>                   | <b>10</b>                    | <b>153</b>                | <b>8</b>                  | <b>1660</b>  |
| <b>Assessment Criteria</b> | <b>228</b>                 | <b>570</b>                | <b>50</b>                   | <b>25</b>                    | <b>246</b>                | <b>62</b>                 | <b>30000</b> |
| <b>Compliance</b>          | ✓                          | ✓                         | ✓                           | ✓                            | ✓                         | ✓                         | ✓            |

Note: PM<sub>10</sub> and PM<sub>2.5</sub> concentration includes emissions from the holding pens. NO<sub>2</sub> Annual does not include background concentrations

Table 8-3 Maximum Toxic Pollutant Concentrations at Receptors (in  $\mu\text{g}/\text{m}^3$ )

| Receptor                   | Acrolein<br>1 hour | Acetone<br>1 hour | 1,3-Butadiene<br>1 hour | PAH<br>1 hour  |
|----------------------------|--------------------|-------------------|-------------------------|----------------|
| 1 - 13 Blair Athol Rd      | 0.010              | 0.020             | 0.020                   | 3.0E-06        |
| 2 - 37 Blair Athol Rd      | 0.019              | 0.038             | 0.038                   | 5.7E-06        |
| 3 - 32 McNeils Rd          | 0.014              | 0.028             | 0.028                   | 4.2E-06        |
| 4 - 42 McNeils Rd          | 0.023              | 0.046             | 0.046                   | 6.8E-06        |
| 5 - 42 Wattle Hill Rd      | 0.012              | 0.025             | 0.025                   | 3.7E-06        |
| 6 - 41 Wattle Hill Rd      | 0.014              | 0.028             | 0.028                   | 4.2E-06        |
| 7 - 11 Wattle Hill Rd      | 0.020              | 0.041             | 0.041                   | 6.1E-06        |
| 8 - 77 McNeils Rd          | 0.018              | 0.035             | 0.035                   | 5.3E-06        |
| 9 - 118 McNeils Rd         | 0.019              | 0.038             | 0.038                   | 5.7E-06        |
| 10 - 345 Copeton Dam Rd    | 0.015              | 0.030             | 0.030                   | 4.5E-06        |
| 11 - 221 Copeton Dam Rd    | 0.007              | 0.014             | 0.014                   | 2.1E-06        |
| 12 - 183 Copeton Dam Rd    | 0.005              | 0.010             | 0.010                   | 1.5E-06        |
| 13 - 216 Minnamurra Rd     | 0.001              | 0.002             | 0.002                   | 2.4E-07        |
| 14 - 226 Minnamurra Rd     | 0.001              | 0.001             | 0.001                   | 2.0E-07        |
| 15 - 209 Minnamurra Rd     | 0.001              | 0.001             | 0.001                   | 1.7E-07        |
| 16 - 98 Minnamurra Rd      | 0.001              | 0.002             | 0.002                   | 2.9E-07        |
| 17 - 71 Minnamurra Rd      | 0.001              | 0.002             | 0.002                   | 2.6E-07        |
| 18 - 67 Minnamurra Rd      | 0.001              | 0.002             | 0.002                   | 2.3E-07        |
| 19 - 54 Minnamurra Rd      | 0.001              | 0.001             | 0.001                   | 1.7E-07        |
| 20 - 55 Minnamurra Rd      | 0.001              | 0.001             | 0.001                   | 1.6E-07        |
| 21 - 31 Minnamurra Rd      | 0.001              | 0.001             | 0.001                   | 1.7E-07        |
| 22 - 51 Penola Lane        | 0.001              | 0.002             | 0.002                   | 2.3E-07        |
| 23 - 24 Penola Lane        | 0.001              | 0.001             | 0.001                   | 2.2E-07        |
| 24 - 448 Auburn Vale Rd    | 0.001              | 0.001             | 0.001                   | 1.7E-07        |
| 25 - 391 Auburn Vale Rd    | 0.001              | 0.001             | 0.001                   | 1.8E-07        |
| 26 - 390 Auburn Vale Rd    | 0.001              | 0.001             | 0.001                   | 1.9E-07        |
| 27 - 396 Auburn Vale Rd    | 0.001              | 0.002             | 0.002                   | 2.6E-07        |
| 28 - 60 Kerri Rd           | 0.002              | 0.005             | 0.005                   | 7.3E-07        |
| 29 - 36 Kerri Rd           | 0.003              | 0.006             | 0.006                   | 8.5E-07        |
| 30 - 95 Copeton Dam Rd     | 0.002              | 0.005             | 0.005                   | 7.2E-07        |
| 31 - 143 Copeton Dam Rd    | 0.004              | 0.007             | 0.007                   | 1.1E-06        |
| 32 - 7209 Gwydir H/way     | 0.004              | 0.007             | 0.007                   | 1.1E-06        |
| 33 - 7186 Gwydir H/way     | 0.003              | 0.005             | 0.005                   | 7.5E-07        |
| 34 - 7204 Gwydir H/way     | 0.003              | 0.006             | 0.006                   | 8.9E-07        |
| 35 - 44 Copeton Dam Rd     | 0.004              | 0.008             | 0.008                   | 1.2E-06        |
| 36 - 84 Ditzells Drive     | 0.002              | 0.003             | 0.003                   | 4.8E-07        |
| 37 - 76 Ditzells Drive     | 0.002              | 0.003             | 0.003                   | 5.0E-07        |
| 38 - 64 Ditzells Drive     | 0.002              | 0.003             | 0.003                   | 5.0E-07        |
| 39 - 60 Ditzells Drive     | 0.001              | 0.003             | 0.003                   | 4.2E-07        |
| 40 - 35 Ditzells Drive     | 0.002              | 0.005             | 0.005                   | 7.3E-07        |
| 41 - 581 Fernhill Rd       | 0.003              | 0.006             | 0.006                   | 8.5E-07        |
| 42 - 7360 Gwydir H/way     | 0.005              | 0.010             | 0.010                   | 1.5E-06        |
| 43 - 7374 Gwydir H/way     | 0.004              | 0.007             | 0.007                   | 1.1E-06        |
| 44 - 22 McNeils Road       | 0.013              | 0.026             | 0.026                   | 3.9E-06        |
| <b>Maximum</b>             | <b>0.023</b>       | <b>0.046</b>      | <b>0.046</b>            | <b>6.8E-06</b> |
| <b>Assessment Criteria</b> | <b>0.42</b>        | <b>22,000</b>     | <b>4</b>                | <b>0.4</b>     |
| <b>Compliance</b>          | ✓                  | ✓                 | ✓                       | ✓              |

## 9 MITIGATION MEASURES

The following measures will be implemented by Bindaree Beef to ensure the ongoing maintenance of acceptable odour and air quality impacts:

- Ensure the retention of the Inverell Council LEP separation buffer that protects the site from changes in land use around the site;
- Decommission the wastewater lagoons as soon as practical;
- Where practical, plant trees on the site boundary to foster an 'out of sight – out of mind' philosophy for surrounding residents;
- Implement a complaints hotline and make residents aware of it;
- Establish a complaints register containing as a minimum the following elements:
  - o Complainant name and address;
  - o Time and date of complaint;
  - o Duration of event;
  - o Name of person taking the call;
  - o Description of the complaint nature (e.g., cooking odours);
- Perform daily inspections of the site to ensure no waste material is left outside the buildings; and
- Establish a maintenance protocol to ensure the bio-filter is running properly. For example, this will contain measures such as methods to ensure the moisture content of the filter media is at its optimum.

## 10 CUMULATIVE IMPACTS

There are no other significant air emission sources in the immediate area except passing vehicle traffic on the highway which are only minor and related to and miscellaneous agricultural activities. Apart from some odour impacts from the current facility, the existing air quality at the project location is considered to be good. This assessment has incorporated conservative background concentrations in the modelling to account for other emission sources.

Additionally, normal natural and agricultural sources are accounted for through the selection of conservative background concentrations. There may be localised natural and agricultural sources that, for short periods of time, contribute to impacts such as increased dust generation and emissions from agricultural cropping or high wind speeds over cleared land.

This assessment has found that for the proposed facility, with the appropriate controls in place, there are no predicted exceedances of the relevant criteria and the modelling has been conservative.

This proposal will reduce impacts in the area, particularly for odour, due to:

- Removal of the open lagoon wastewater treatment system which is a significant source of odour;
- Installation of a new rendering building that will be under negative pressure to prevent fugitive odours being released at ground level; and
- Use of a biogas boiler instead of a coal fired boiler that will have significantly lower emissions.

With consideration of all sources in the area, compliance for all relevant criteria is achieved through the adoption of a combination of good design and engineering controls.

## 11 CONCLUSION

Currently the main sources of emissions are the coal fired boiler, anaerobic and aerobic lagoons, fugitive releases from the rendering building, bio-filter and holding pens. The proposed upgrade of the plant will result in the removal of many of these odourous sources including the anaerobic and aerobic wastewater treatment lagoons, and the coal fired boiler. These changes will result in a 30% reduction in odour emissions and associated impacts. This Level 3 Odour Assessment has clearly shown that at all receptors, the impacts are all well within compliance of the NSW odour objectives.

The assessment has also shown that for all criteria pollutant NSW objectives, compliance is achieved at all receptors. The main emissions for these are from biogas combustion and these emissions are emitted from elevated stacks resulting in significant dilution. The biogas boiler will replace the less efficient coal boiler and is a renewable fuel. This assessment has also shown that the impacts are all well within compliance of the toxic pollutant NSW objectives. In addition it has also been shown that air quality impacts will be significantly reduced from the current situation.

Overall, this assessment has shown that the proposed development will have a positive impact on the air quality of the surrounding sensitive receptors. In terms of air quality the proposed plant is suitable for development.

## 12 REFERENCES

- Australian Standard AS 4323.3 (2001). *Stationary Source Emissions – Part 3: Determination of odour concentration by dynamic olfactometry*. NSW Government Gazette.
- Australian Standard AS 4323.4 (2009) *Stationary Source Emissions: Area Source Sampling – Flux Chamber Technique* (2028) prepared by
- Bord na Mona (2004). Glanbia Meats Environmental Impact Section. Report number ECS0390/R3.
- CCE Consultants (2008). *Bindaree Beef Abattoir, Inverell – Odour Assessment*. Inverell Council
- Crolla, A et al. (2011). *Environmental Impacts from Land Application of Digestate*. Ontario Rural Wastewater Centre
- DEC (2006) *Technical framework - Assessment and management of odour from stationary sources in NSW*. Department of Environment and Conservation. NSW Government Gazette
- Frechen, F-B (2002) *Odour Abatement Strategies at Wastewater and Waste Facilities in Germany*, Clean Air and Environmental Quality, Volume 36, No. 3, August 2002, pp 34-37.
- Holmes Air Science. (2000). *Odour Impact Assessment*. Holmes Air Science.
- Hudson, Neale A. and Ayoko, Godwin A. and Dunlop, Mark and Duperouzel, David and Burrell, D. and Bell, K. and Gallagher, Erin and Nicholas, P. and Heinrich, N. (2008) *Comparison of odour emission rates measured from various sources using two sampling devices*. *Bioresource Technology*. Elsevier.
- Kristensen, G. and Jensen, Jan K. (2010) *Emission Factors for Gas Fired CHP Units < 25MW*. Danish PSO Project Report (Public Service Obligation) LEP (2008) Local Environmental Plan - Inverell. <http://www.inverell.nsw.gov.au>
- McDonald et al. (no date). *Development of a Wastewater Treatment Plant Odour Emissions Database and its Application for Process Improvements*. Sydney Water. CH2M Hill.
- Nielsen, M., Nielson, O. & Thomsen, M. (2010) *Emissions from decentralised CHP Plants*. Environmental Project No. 07/1882. National Environmental Research Institute, Aarhus University, Denmark
- NSW EPA (1997) *Protection of the Environment Operations Act*. New South Wales Government Gazette.
- NSW EPA (2005) *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*. New South Wales Government Gazette



NSWEPA (2006) *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW*. New South Wales Government Gazette.

The Odour Unit. (2005). *Odour Impact Assessment and Control Study*. The Odour Unit; Sydney.

USEPA (2005) *NPRI Toolbox - AP-42 US EPA Clean Air Criteria emission factors Database*.  
[http://www.ec.gc.ca/pdb/npri/documents/2004ToolBox/toolBox\\_e.cfm](http://www.ec.gc.ca/pdb/npri/documents/2004ToolBox/toolBox_e.cfm)

## Appendix A: GLOSSARY

**Area Source:** A surface-emitting source, which can be solid or liquid.

**Fugitive Releases:** Unintentional emissions from e.g. flanges, valves, doors, windows – that is, points which are not designated or intended as release points.

**Dilution Factor:** The dilution factor is the ratio between flow or volume after dilution and the flow or volume of the odourous gas.

**Emission Factor:** The emission per unit product.

**Hedonic Tone:** A judgement of the relative pleasantness or unpleasantness of an odour made by assessors in an odour panel.

**Odorant Flow Rate:** The odorant flow rate is the quantity of odourous substances passing through a defined area at each time unit.

**Odour Assessment Criteria:** Odour assessment criteria for complex mixtures of odours specified in OU (odour units) as a nose-response-time average.

**Odour Concentration:** The amount of odour present in cubic metre of sample gas at standard conditions.

**Odour Detection:** To become aware of the sensation resulting from adequate stimulation of the olfactory system.

**Odour Unit (OU):** Concentration of odorous mixtures in odour units. The number of odour units is the concentration of a sample divided by the odour threshold or the number of dilutions required for the sample to reach the threshold. This threshold is the numerical value equivalent to when 50% of a testing panel correctly detect an odour.

**Olfactometer:** Apparatus in which a sample of odorous gas is diluted with neutral gas in a defined way and presented to an odour panel under reproducible conditions.

**Olfactometry:** Measurement of the response of assessors to olfactory stimuli.

**Odour Panel:** Assessors who are qualified to judge samples of odorous gas using olfactometry.

**OU/m<sup>3</sup>:** Odour units per cubic metre.

**Peak-to-Mean Ratio:** A conversion factor that adjusts mean dispersion-model predictions to the peak concentrations perceived by the human nose.

**Point Source:** An intentional point of release such as a vent or chimney, where it may be possible to obtain a sample in order to quantify the concentration and determine the mass release rate.

**Sample:** The odorous gas sample which is assumed to be representative of the gas mass or gas flow under investigation, and which is examined to determine the odour concentrations, to characterise the odour or to identify constituent compounds.

**Sensitive receptor:** People who are exposed to odour released from a given source, or have the potential to be exposed.

**Stack:** A vertical pipe used to exhaust pollutants from a process.

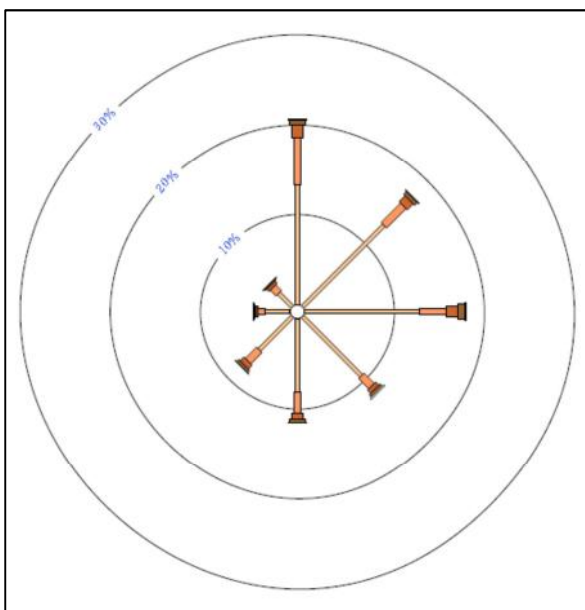
**Volatile organic compound (VOC):** Organic substance that will readily evaporate and transfer from a liquid into a gas phase.

## Appendix B: COMPARISON OF TAPM WIND ROSES AND BOM STATIONS

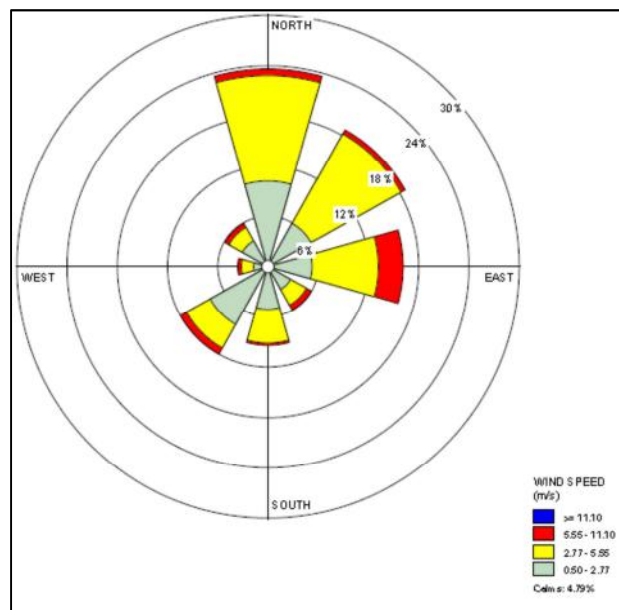
Vipac are currently using TAPM to generate wind roses at the nearby BOM weather stations (Inverell Research Centre (056018) located 2.5 km south east of Bindaree Beef and Inverell Raglan St (56242) located 5.5 km east of Bindaree Beef) to determine the suitability of the meteorological data.

The wind speed of the BoM wind roses are in km/h whereas the TAPM generated wind rose is in m/s. It should be noted that the scale of the TAPM wind rose has been adjusted to be representative of the BoM scale, allowing easier comparison.

A review of the BoM met stations wind roses and the generated data has been undertaken. The 9 am wind rose for the research centre for 2002-2006 was compared to the BoM long-term wind rose. It can be seen that the wind directions are very similar, with TAPM slightly overestimating the south westerlies and underestimating the south easterlies. The number of calm winds is representative of BoM station.



Annual BoM Wind Rose at 0900 (Calms – 4%)

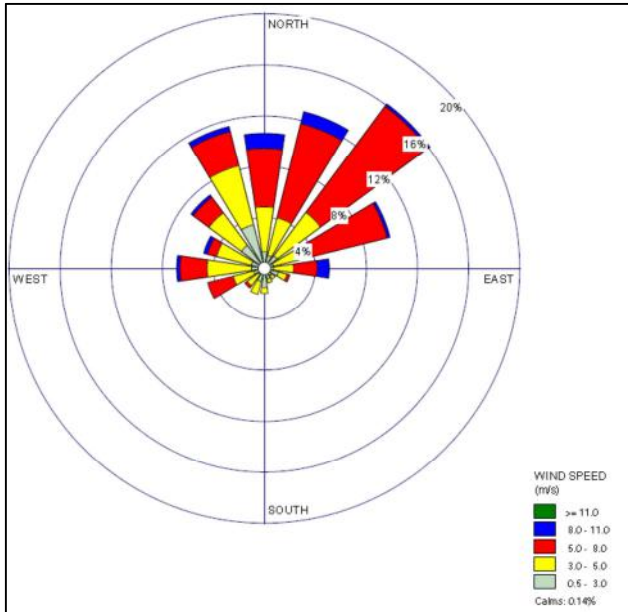


Annual TAPM Wind Rose at 0900 (Calms – 4.79%)

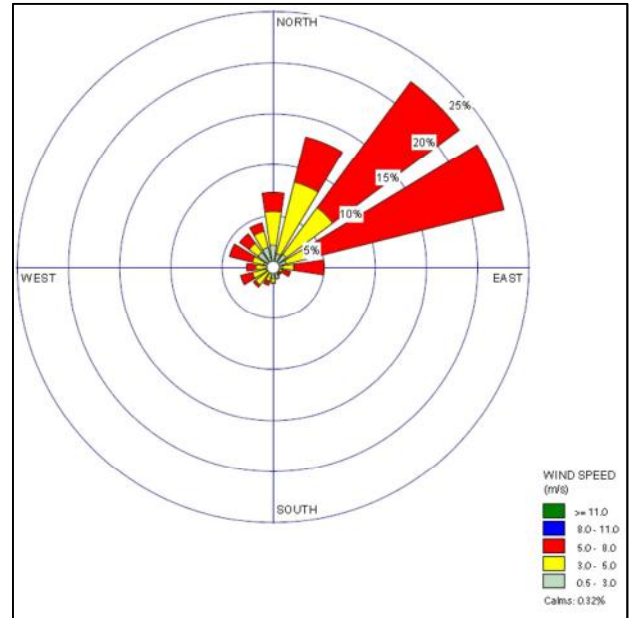
A wind rose comparison for each month was undertaken and the monthly wind roses were comparable in wind speed and direction as well as calm wind frequencies. As such, the TAPM weather data used in this assessment is considered representative of the site.

## Appendix C: TAPM GENERATED WIND ROSES

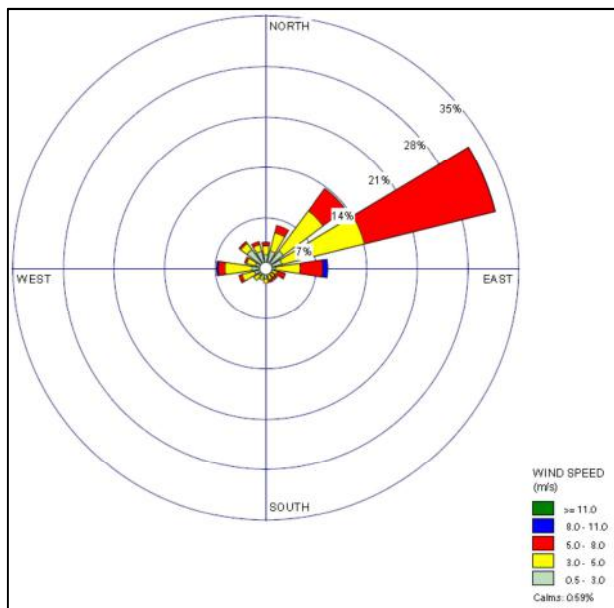
2002



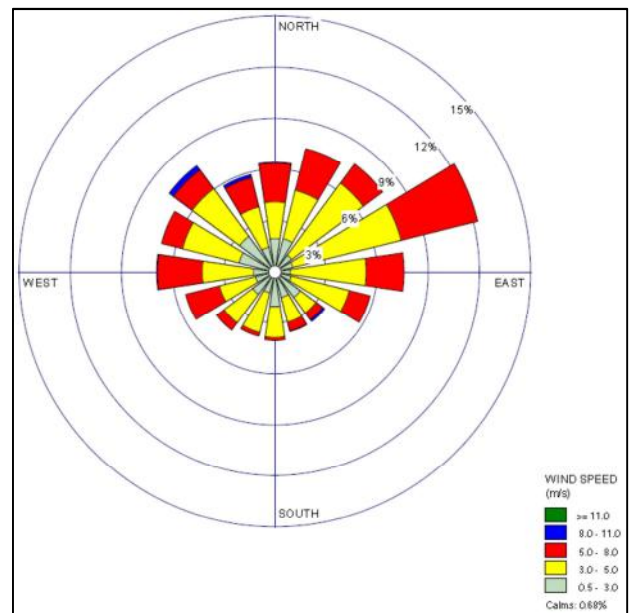
Spring – Season (Calm – 0.14%)



Summer – Season (Calm – 0.32%)

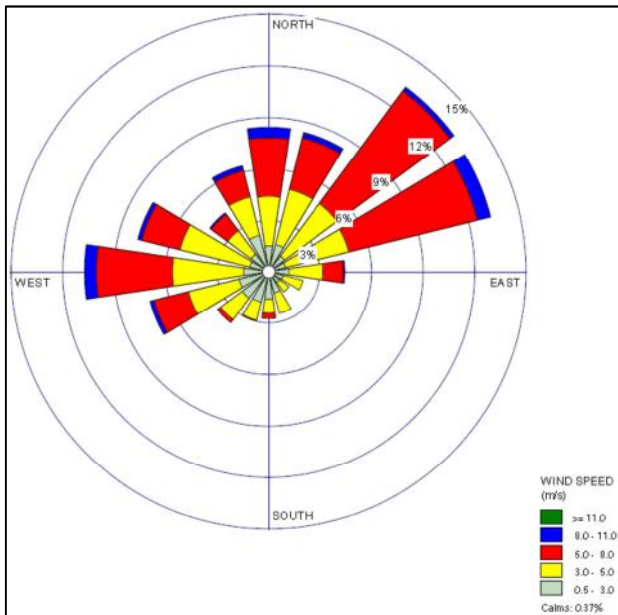


Autumn – Season (Calm – 0.59%)

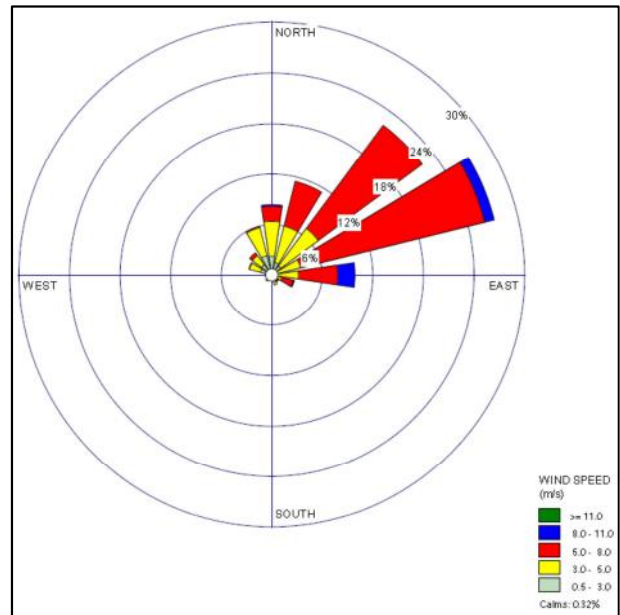


Winter – Season (Calm – 0.68%)

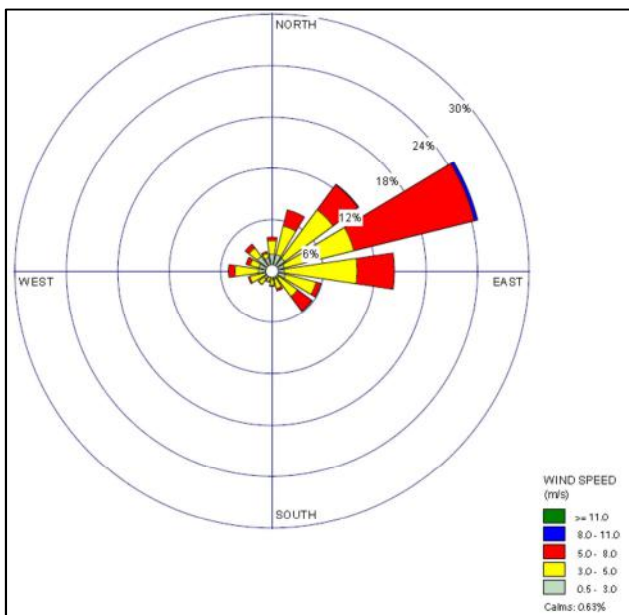
2003



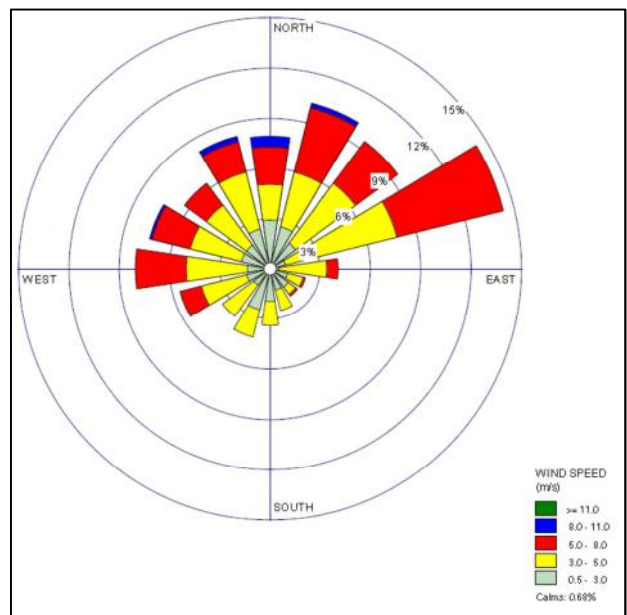
Spring – Season (Calm – 0.37%)



Summer – Season (Calm – 0.32%)



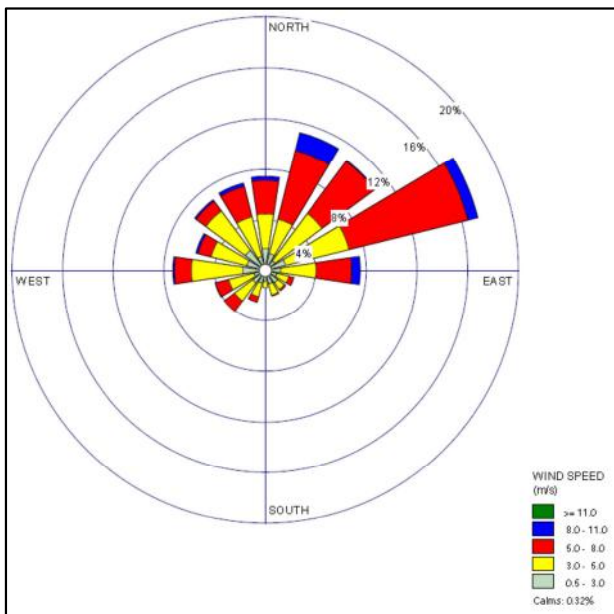
Autumn – Season (Calm – 0.63%)



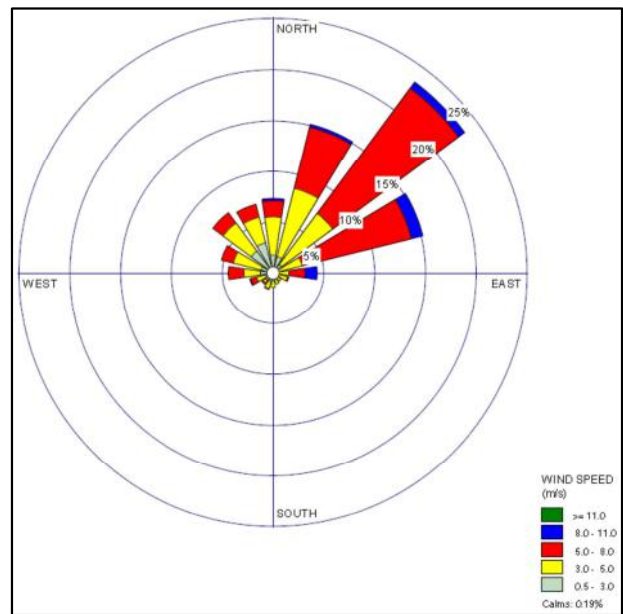
Winter – Season (Calm – 0.68%)

15 Sept 2014

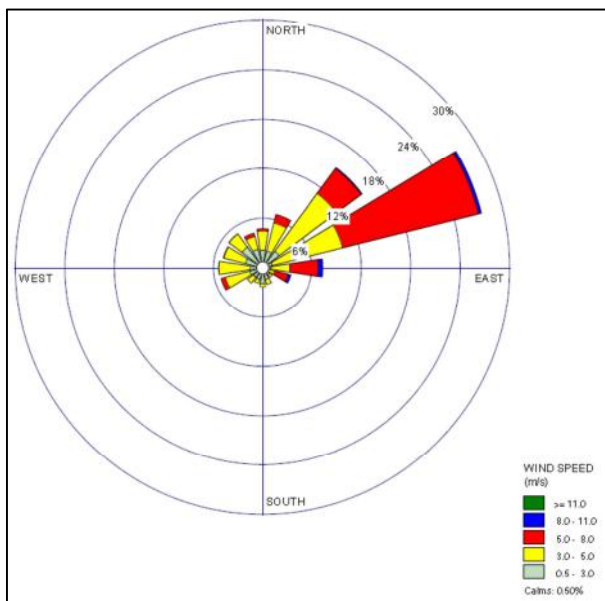
2004



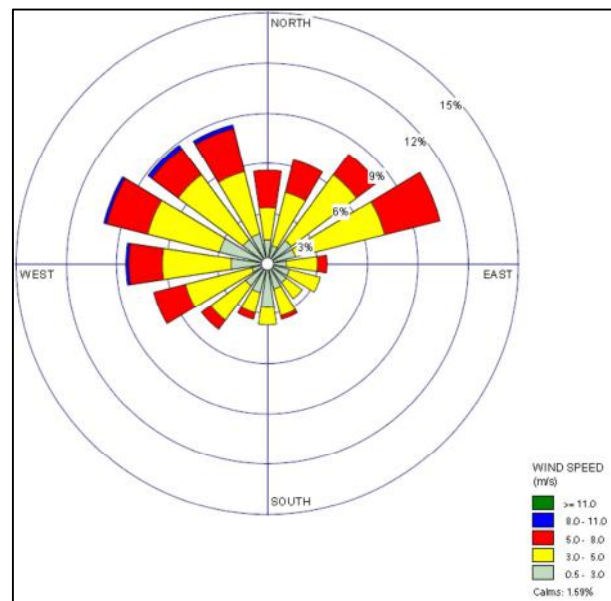
Spring – Season (Calm – 0.32%)



Summer – Season (Calm – 0.19%)



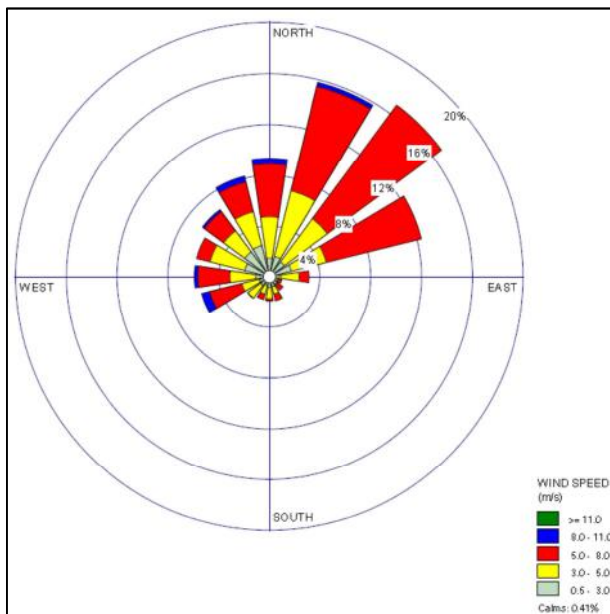
Autumn – Season (Calm – 0.5%)



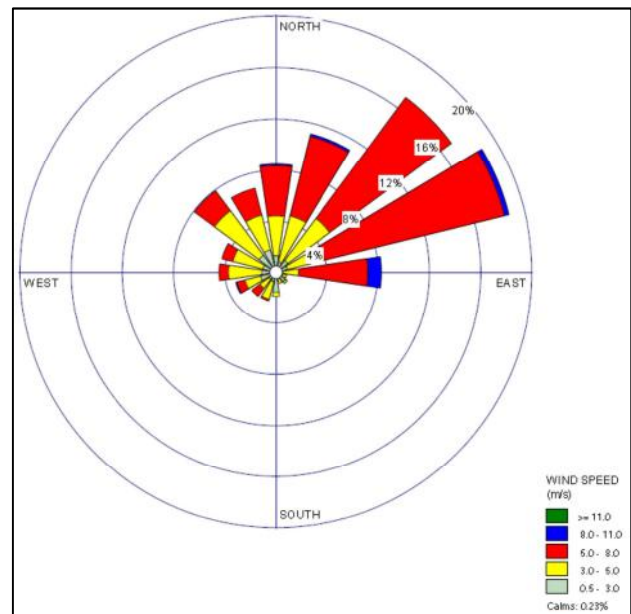
Winter – Season (Calm – 1.69%)

15 Sept 2014

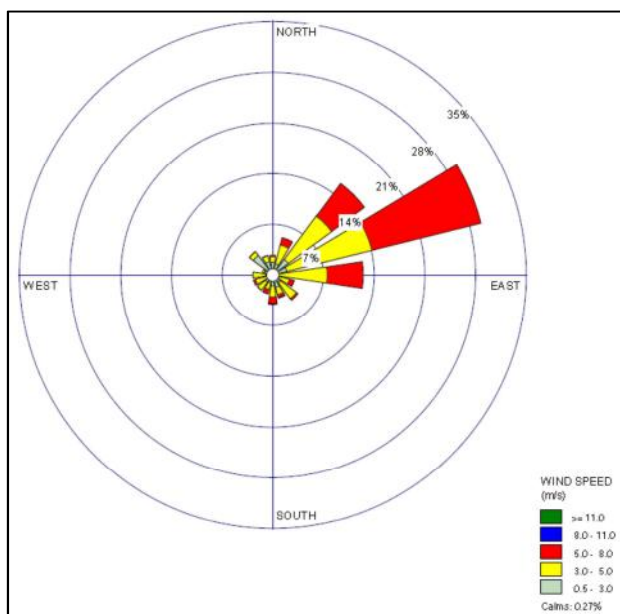
2005



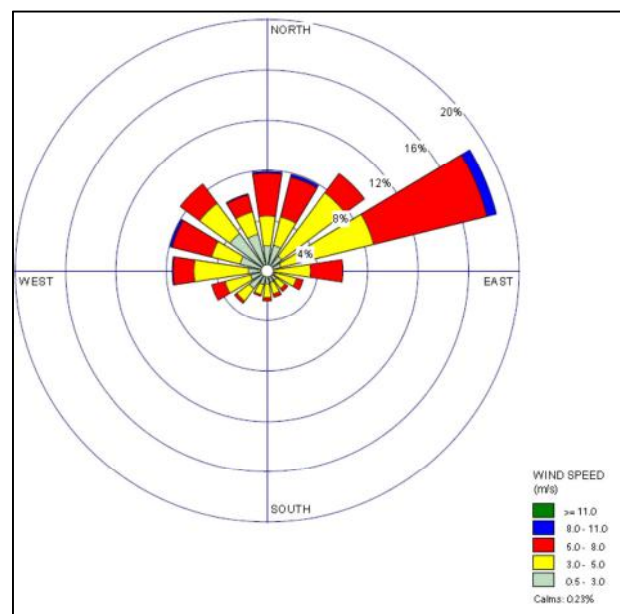
Spring – Season (Calm – 0.43%)



Summer – Season (Calm – 0.23%)



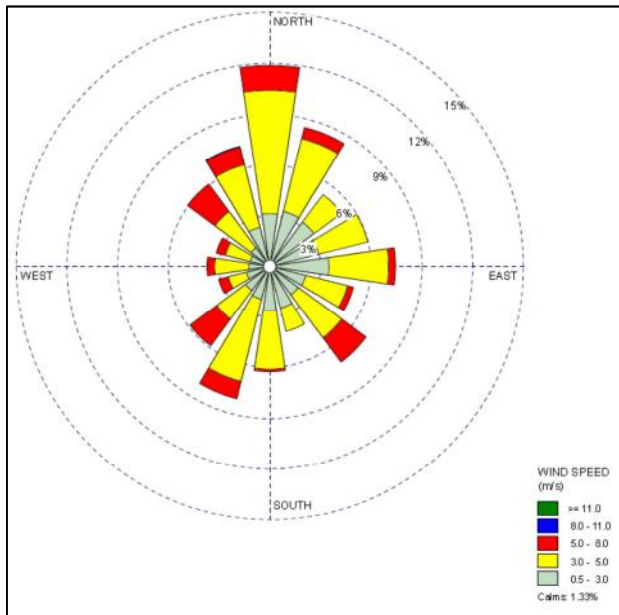
Autumn – Season (Calm – 0.27%)



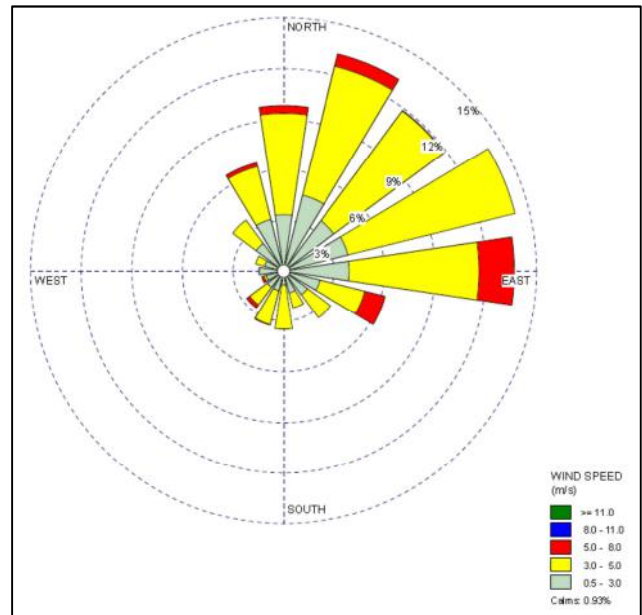
Winter – Season (Calm – 0.23%)

15 Sept 2014

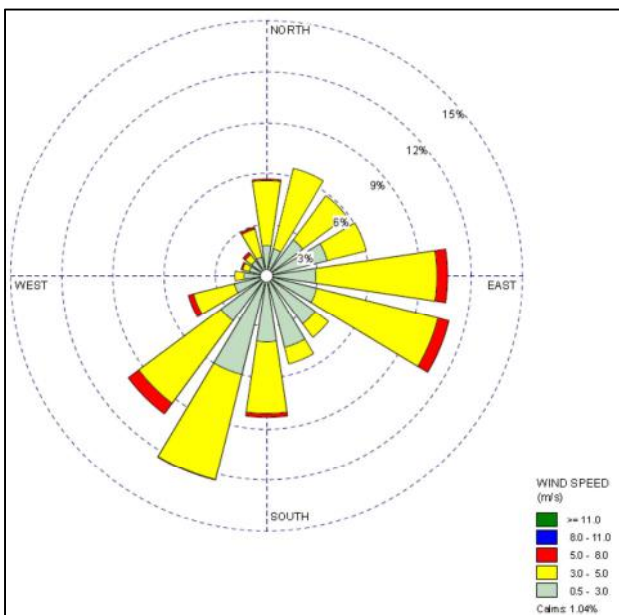
2006



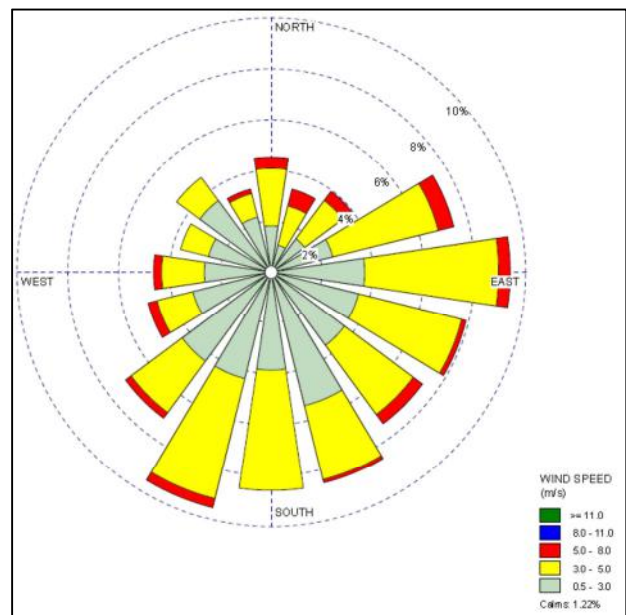
Spring – Season (Calm – 1.33%)



Summer – Season (Calm – 0.93%)



Autumn – Season (Calm – 1%)



Winter – Season (Calm – 1.2%)

15 Sept 2014

**Appendix D: OLFACTOMETER CALIBRATION DETAILS**

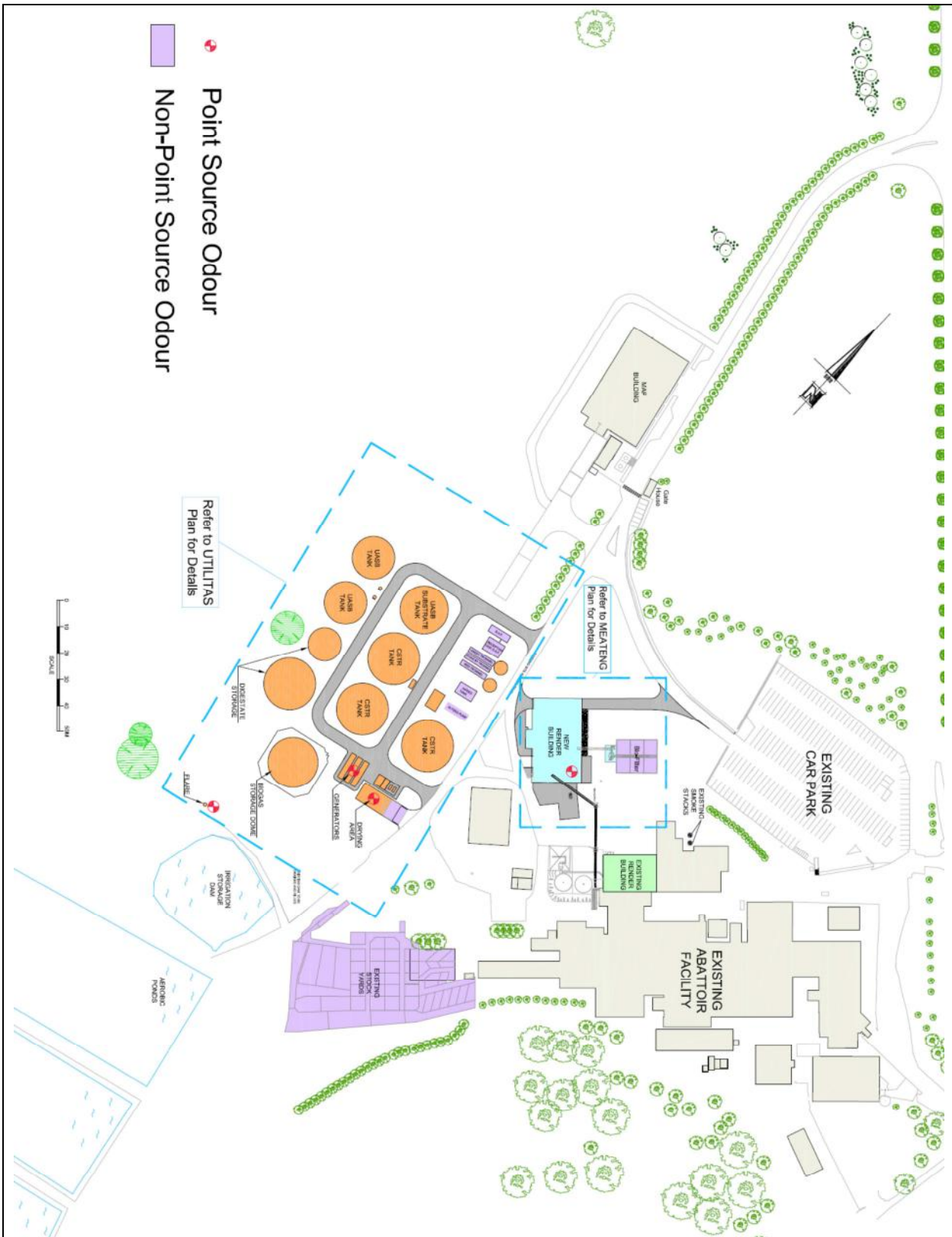
|                                        |                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------|
| <b>Dilution Equipment</b>              | OdourLab Version 1                                                                |
| <b>Olfactometer Calibration Status</b> | Last accuracy calibration: 25/4/2013<br>Last repeatability calibration: 20/6/2013 |
| <b>Location</b>                        | Airlabs Environmental Pty Ltd<br>149 Bryants Road<br>Loganholme QLD 4129          |
| <b>Calibration Gas</b>                 | 34.93% carbon monoxide (BOC Gases)                                                |
| <b>Calibration Equipment</b>           | Horiba PG250 with Non-Dispersive Infrared CO Analyser                             |
| <b>Reference Odourant</b>              | 43.5 ppm n-butanol (BOC Gases)                                                    |

## Appendix E: SOURCE LOCATIONS



Figure D-1: Source Locations for Modelling of Current Configuration

Figure D-2: Source Locations for Modelling of Future Configuration [Meateng Feb]





## Appendix H    VIPAC Letter

Michelle Clifton  
ViPAC Engineers and Scientists  
3 September 2014



**Vipac Engineers & Scientists Ltd.**

Level 2, 146 Leichhardt Street, Spring Hill, QLD 4000, Australia

PO Box 47, Spring Hill, Qld, 4000 Australia

t. +61 7 3377 0400 | f. +61 7 3377 0499 | e. [brsbane@vipac.com.au](mailto:brsbane@vipac.com.au)

w. [www.vipac.com.au](http://www.vipac.com.au) | A.B.N. 33 005 453 627 | A.C.N. 005 453 627

Bindaree Beef

3 Sept 2014

c/- Mitchel Hanlon Consulting Pty Ltd

Ref: 70Q-13-0318-GCO-517011-1

121 Bridge St (P O Box 1568) Tamworth NSW  
2340

**Attention: Jocelyn Ullman**

Bindaree Beef Environmental Impact Statement

Dear Jocelyn,

Vipac Engineers & Scientists prepared the Noise & Vibration and Air Quality technical reports for the new Bindaree Beef rendering plant.

Vipac has reviewed the comments received from the NSW EPA dated 18<sup>th</sup> August 2014 and the outcomes of the meeting in Sydney on 29<sup>th</sup> August 2014. This correspondence details our response to each comment.

If you have any queries, please do not hesitate to contact Vipac on (07) 3377 0400 or [michellec@vipac.com.au](mailto:michellec@vipac.com.au).

Yours sincerely,

**Vipac Engineers & Scientists Ltd**

Michelle Clifton

**Consulting Scientist**

3 Sept 2014

70Q-13-0318-GCO-517011-1

Page 1 of 4

*Commercial-In-Confidence*

## 1 AIR QUALITY COMMENTS

Vipac will issue a revised report addressing the EPA comments.

*Issue 1 – It has not been demonstrated that the TAPM generated meteorological data used in the assessment is site representative.*

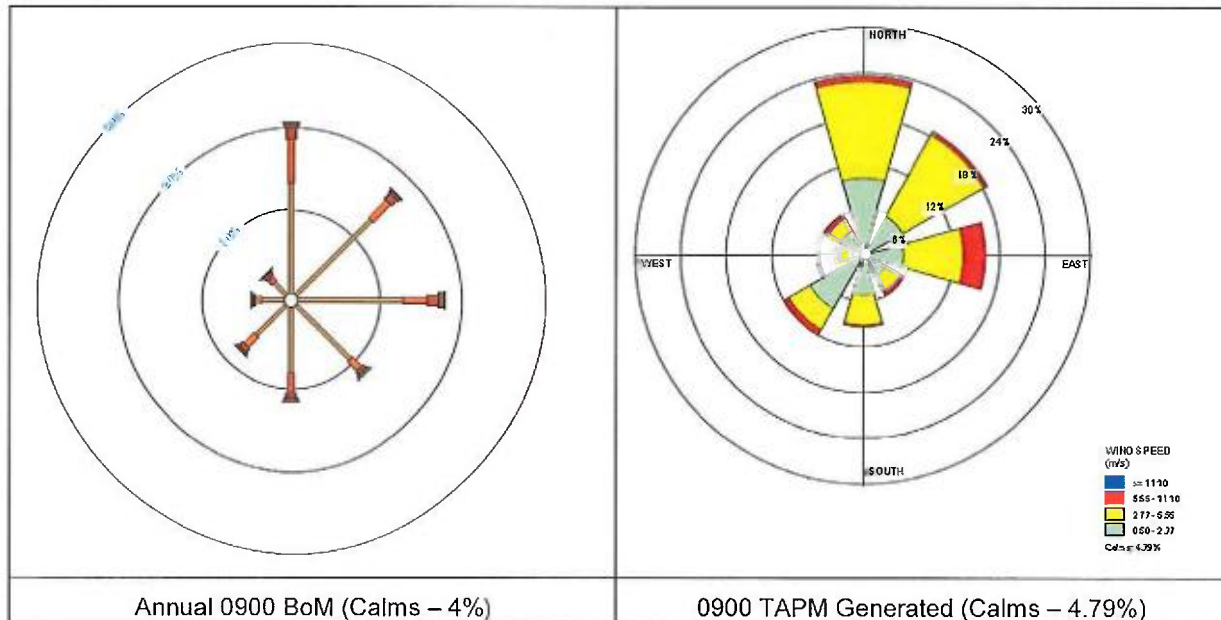
Vipac are currently using TAPM to generate wind roses at the nearby BOM weather stations (Inverell Research Centre (056018) located 2.5 km south east of Bindaree Beef and Inverell Raglan St (56242) located 5.5 km east of Bindaree Beef) to determine the suitability of the meteorological data. A review of the BoM met stations wind roses and the generated data has been undertaken:

TAPM centre co-ordinates are:

- Latitude: 29° 45.5 min;
- Longitude: 151° 3.5 min.

The TAPM grid spacing for the run is 30 km, 10 km, 3 km 1 km and 300 m with 20 vertical levels and 25x25 horizontal grid points.

The 9 am wind rose for the research centre for 2002-2006 was compared to the BoM long-term wind rose. It can be seen that the wind directions are very similar, with TAPM slightly overestimating the south westerlies and underestimating the south easterlies. The number of calm winds is representative of BoM station.



We believe this demonstrates that the TAPM generated meteorological data is site representative. This issue is addressed in Appendix B of the revised air quality report 70Q-13-0318-TRP-515776-7.

*Issue 2 – Emissions from the proposed rendering plant have been modelled as volume rather than point emissions.*

The proposed rendering plant was actually modelled as point sources as explained in the meeting on the 29<sup>th</sup> August 2014. The rendering building will be completely sealed, with three stacks for fresh air exchanges. These three air exchanges have been modelled as odour emitting point sources. The point source parameters for the rendering plant will be provided in the revised report. The parameters of each vent modelled are as follows:

| Parameter     | Value                            |
|---------------|----------------------------------|
| Height        | 12.5 m                           |
| Diameter      | 1.25 m                           |
| Temperature   | 303 K                            |
| Velocity      | 10 m/s                           |
| Emission Rate | 12,973 OU/sec (failure case)     |
|               | 1,300 OU/sec (90% odour capture) |

Inside the new rendering building, there will be extraction hoods over odour sources ducted to a common extraction system and large fan that blows the fumes through the bio-filter bed. Currently, there are no extraction fans over the machines; therefore odour is allowed to escape the rendering building.

It should be noted that the rendering plant has been modelled as a 'failure case', assuming the extraction equipment breaks down, i.e. similar to the current situation. Whilst the manufacturers state that the majority of the odour emissions will be captured and sent through the bio-filter, a worst case scenario has been adopted. It is our view that the combination of the extraction fans and bio-filter will reduce the modelled odour emission rate significantly which, in practice, will cause odour to be significantly less than presented.

Vipac's assessment has considered this possibility and the rendering plant has been modelled as though all rendering plant odour emissions are vented from three point sources.

This issue is clarified in Section 6.3.4 of the revised air quality report 70Q-13-0318-TRP-515776-7.

*Issue 3 – It is unclear whether predicted odour impacts have been presented as peak nose response time concentrations rather than one hour.*

Vipac have presented the peak nose response concentrations. The peak to mean (P/M) ratio used was 2.3 which is suitable for the project and will be presented in the revised report. A ratio of 2.3 represents a variety of sources including wake affected points, volume sources and area sources in the near field and far field situations. This will be clarified in the revised report.

This issue is clarified in Section 6.5 of the revised air quality report 70Q-13-0318-TRP-515776-7.

*Issue 4 – Two sensitive receptors are missing from the results Table.*

Sensitive receptors 43 and 44 have been included in the results tables in the revised air quality report 70Q-13-0318-TRP-515776-7.



*Issue 5 – Combustion data does not comply with the Protection of the Environment Operations (Clean Air) Regulation 2010*

This issue was discussed at the meeting on 29<sup>th</sup> August 2014 at 23 Bridge Street, Sydney. The outcome was to condition the pollution licence for the proposed boilers and generators.

The non-compliance is mentioned in Section 7.2 of the revised air quality report 70Q-13-0318-TRP-515776-7.

*Issue 6 – Unclear how TAPM was used in CALPUFF model*

The TAPM generated metrological data was modelled as station observations using surface and upper air data files for the site.

A 3D TAPM file (for 2002) was generated and implemented into CALMET to complete the odour modelling. The parameters of TAPM are presented in Section 4.5 of the revised air quality report 70Q-13-0318-TRP-515776-7.

## **2 NOISE ASSESSMENT COMMENTS**

*Issue 1 – Proposed Limits*

This issue was discussed at the meeting on 29<sup>th</sup> August 2014 at 23 Bridge Street, Sydney.

The proposed Rated Background Level (RBL) and project criteria levels do not affect the results of the assessment and licencing conditions will reflect the proposed criteria.



# Appendix I      Boiler Approval

Approval from NSW State Pollution Control  
Commission  
2 April 1980















# Appendix J      Air Quality Second Addendum Letter

NSW EPA  
3 October 2014





## **ATTACHMENT 1 –**

### **ASSESSMENT OF ADDITIONAL INFORMATION AGAINST OUTSTANDING ISSUES WITH THE FINAL AIR QUALITY IMPACT ASSESSMENT**

#### **1. It has not been demonstrated that the meteorological data used in the assessment is site representative**

EPA requested that the TAPM generated meteorological data used in the dispersion modelling be validated against observational data to demonstrate it is site representative. VIPAC (2014b) and Vipac (2014c) did not demonstrate that the data used in the assessment is site representative and suitable for use in the assessment.

The Bureau of Meteorology (BoM) operates a meteorological station at the Inverell Research Centre. The climatic data available for the station includes annual 9am windroses. Vipac (2014d) presents a comparison of the TAPM generated 9am annual windrose for the Inverell Research Centre and the BoM station windrose. It is demonstrated that the TAPM generated wind data is broadly comparable to the Inverell Research Centre BoM data.

***EPA considers the proponent has adequately addressed this outstanding issue.***

#### **2. Emissions from the proposed rendering plant have been modelled as volume rather than point sources**

During the review of the draft AQIA (Vipac, 2014a) EPA identified that the rendering building appeared to be modelled as a volume source when there will be point sources of odour from the new rendering building (odorous emissions will be captured by a forced ventilation system and exhausted through roof vents). VIPAC (2014b) and VIPAC (2014c) confirmed that the rendering plant was modelled as three point sources to replicate three vents in the roof of the building. No information was provided regarding the assumed exit velocity or temperature of the roof vents.

Table 6-3 in Vipac (2014d) provides the parameters that were modelled for each of the rendering building roof vents. The CALPUFF input file was also provided which confirms the roof vents were modelled as point sources. The CALPUFF input file, however, shows the actual roof vent exit velocity modelled was 13.75m/s and not 10m/s as stated in Table 6-3 of Vipac (2014e). This discrepancy in roof vent exit velocity is unlikely to have a significant impact on the results of the air quality impact assessment.

The odour emission rates assumed for the rendering building are also provided in Table 6-3 in Vipac (2014d) and these are consistent with the odour emission rates in the CALPUFF input file. EPA has reviewed the odour emission rates and it appears there has been a significant reduction in the assumed odour emissions compared to the final air quality impact assessment (Vipac, 2014b). EPA considers the scenario 'future operations – failure case' in Vipac (2014d) is a conservative assessment of normal operations and not failure of the fume extraction hoods:

- The final air quality impact assessment (Vipac, 2014b) assumed fugitive odour emissions in the rendering building would be 50% of the existing building. That is, the new fume extraction hoods located above the sources in the rendering building would capture 50% of emissions. The revised air quality impact assessment (Vipac, 2014d) has then applied a further 90% reduction for the normal operating scenario which results in the assumption that the new fume extraction hoods would capture 95% of fugitive emissions. The 'future operations - failure case' in the revised air quality impact assessment does not represent failure as the odour emissions were calculated assuming 50% capture of fugitive emissions.

***EPA considers it would be prudent to base any decision making on the results of the 'future operations- failure case' scenario in Vipac (2014e) which assumes a 50% capture efficiency of the new fume extraction hoods instead of the 'future operations - normal conditions' scenario which assumes a 95% capture efficiency of the new fume extraction hoods.***

Vipac (2014d) predicts the project will reduce odour impacts compared to the existing operation of the facility. The maximum 99<sup>th</sup> percentile odour concentration predicted at a residence for the 'future-operations- failure case' is 5.49 OU compared to the existing scenario of 11.27 OU.

Vipac (2014d) considers the relevant odour criteria for the project is 7 OU and therefore the 'future-operations- failure case' scenario complies at all surrounding sensitive receptors. EPA considers that an odour criterion of 5 OU or 6 OU may be more relevant given there are clusters of residents in close proximity to the facility. The 'future-operations- failure case' scenario can be considered to marginally comply with an odour criterion of 5 OU.

Whilst it is recognised the project will result in a reduction in odour impacts and should marginally comply with relevant odour assessment criteria, there is some uncertainty around the predicted odour impact of the project. EPA considers it may be prudent for the proponent to consider at the outset any additional feasible mitigation measures that could be implemented if the facility emits offensive odour after it is operational. To enable the prompt resolution of any odour issues once operational, EPA considers the conditions of approval should include the process to assess the cost-effectiveness of any additional odour mitigation measures

***EPA recommends the conditions of approval include an odour mitigation study to identify, if necessary, any additional feasible odour mitigation measures.***

**3. It is unclear whether predicted odour impacts have been presented as peak nose response time concentrations rather than one hour averages**

EPA requested clarification on whether peak to mean ratios were applied in the study. Vipac (2014d) confirms a peak to mean ratio of 2.3 has been applied to the dispersion modelling predictions.

***The proponent has adequately addressed this outstanding issue.***

**4. Sensitive receptors**

Table 8-1 in VIPAC (2014b) includes the predicted odour concentration at each of the nearest sensitive receptors. Receptors 43 and 44 were excluded from Table 8-1 and EPA requested Table 8-1 be updated to include sensitive receptors 43 and 44. Table 8-1 in Vipac (2014d) includes sensitive receptors 43 and 44.

***The proponent has adequately addressed this outstanding issue.***

**5. The combustion emissions data used in the AQIA indicate that the proposed boiler and three generators may not comply with Group 6 requirements of the Protection of the Environment Operations (Clean Air) Regulation 2010**

EPA requested that the proponent demonstrate that the proposed boiler and generators can comply with the requirements for Group 6 plant and equipment in the *Protection of the Environment Operations (Clean Air) Regulation (2010)*. Preliminary calculations undertaken by EPA indicated that the boiler may not comply with Group 6 requirements for NO<sub>x</sub> and Carbon Monoxide (CO) emissions and that the generators may not comply with the requirements for CO emissions.

Section 7.2 of Vipac (2014d) confirms the estimated emissions from the boilers and three generators exceed the Group 6 requirements of the *Protection of the Environment Operations (Clean Air) Regulation (2010)*. The proponent is unable to confirm the expected performance of the boiler and generators until they are acquired. The air quality impact assessment for the combustion plant predicts compliance with the EPA's impact assessment criteria when the boilers and generators are exceeding the Group 6 emission standards.

As stated in Vipac (2014e), it was agreed at a meeting on 29<sup>th</sup> August 2014 that conditions of approval will be drafted to address this issue. These conditions will include emission concentration limits equivalent to the Group 6 standards of concentrations in the *Protection of the Environment Operations (Clean Air) Regulation (2010)* and post commissioning and annual emissions monitoring.

***EPA recommends the conditions of approval include emission concentration limits for the boilers and generators equivalent to the Group 6 standards of concentrations in the Protection of the Environment Operations (Clean Air) Regulation (2010) and post commissioning and annual emissions monitoring. The recommended conditions of approval in Attachment 2 include such conditions.***

## **6. Unclear how TAPM data was used in CALPUFF**

VIPAC (2014b) did not specify the methodology used to incorporate the TAPM generated meteorological data in CALPUFF. It appeared that CALPUFF was run with 'single station meteorology.' That is a uniform field of meteorological variables is assumed for all grid points in the modelling domain. There is no spatial variation in the meteorological data as may occur due to changes in land use type, terrain channelled flow and mesoscale features such as a land-sea breeze circulation.

EPA recommended the proponent is requested to provide additional information regarding the methodology used to incorporate the meteorological data in CALPUFF and a detailed justification for the chosen methodology. The guidance document '*Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW, Australia*' (<http://www.epa.nsw.gov.au/resources/air/CALPUFFModelGuidance.pdf>) only recommends CALPUFF is run 'with single station meteorology' when spatial variability of the meteorological fields (e.g. uniform terrain and land use) may not be significant. Otherwise, it is recommended to run CALPUFF with a full 3-Dimensional meteorological field.

Vipac (2014d) presents a revised air quality impact assessment using CALPUFF with a full 3-Dimensional meteorological field. CALMET was used to generate the 3-Dimensional meteorological field. CALMET was run in 'No-obs' mode using the gridded numerical output from TAPM as the input. The 'No-obs' mode is the most simple approach to running CALMET and requires minimal decision making by the user.

Vipac (2014d) has modified the assessment methodology through the use of CALPUFF with a full 3-Dimensional meteorological field compared to the approach presented in VIPAC (2014b), the final air quality impact assessment, where CALPUFF was run with single TAPM generated station meteorology. Whilst an evaluation of the site representativeness of the TAPM generated meteorological data was required to support the modelling in Vipac (2014b), the modified assessment methodology in Vipac (2014d) should be supported by further evaluation of the meteorological data used in CALPUFF. That is, as CALMET is now used in Vipac (2014d) to generate the meteorological data for use in CALPUFF, the CALMET generated meteorological data should now be evaluated to ensure it adequately captures the meteorological conditions at the site.

Vipac (2014d) does not present an evaluation of the CALMET generated meteorological data. This can be crucial when CALMET requires significant decision making by the user regarding the values of model parameters. Given the TAPM generated data was shown to be generally site representative and that CALMET was run in 'No-obs' mode which requires minimal decision making by the user, EPA considers that an evaluation of the CALMET generated meteorological data would have been ideal but not critical to the preparation of recommended consent conditions.

***EPA recommends that the consent conditions require the installation of an on-site meteorological station to assist with the confirmation of any odour complaints and provide site specific meteorological data for any future dispersion modelling studies.***

## **7. Existing Coal Fired Boiler does not comply with the Clean Air Regulation**

An existing coal fired boiler will be used as a back-up boiler during servicing of the gas boiler. Airlabs Environmental, 2014 shows the boiler does not comply with the Group 1 solid particle emission standard of 400mg/m<sup>3</sup> in the Protection of the Environment Operations (Clean Air) Regulation, 2010. The existing coal fired boiler must comply with the relevant emission standards in the Clean Air Regulation despite only operating for a few days a year.

Mitchel Hanlon (2014) confirms the boiler must meet the Group 3 emission standards in the *Protection of the Environment Operations (Clean Air) Regulation, 2010*. The proponent is currently undertaking works to ensure the boiler meets the Group 3 emission standards. It was agreed at the meeting on the 29 August 2014 that the approval would include conditions to confirm the boiler meets the relevant Group 3 emission standards.

***EPA recommends the approval includes the emission concentration limits and monitoring requirements for the coal fired boiler as provided in Attachment 2.***

**ATTACHMENT 2 –**  
**AIR QUALITY – RECOMMENDED CONDITIONS OF CONSENT**

**DISCHARGES TO AIR AND WATER AND APPLICATIONS TO LAND**

**P1 Location of monitoring/discharge points and areas**

P1.1 The following points referred to in the table below are identified for the purposes of monitoring and/or setting of limits for the emission of pollutants to the air from the point.

| <b>Air</b>                    |                                 |                                |                                                                                                          |
|-------------------------------|---------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>EPA Identification no.</b> | <b>Type of Monitoring Point</b> | <b>Type of Discharge Point</b> | <b>Description of Location</b>                                                                           |
| 31                            | Air emissions monitoring        | Discharge to Air               | Biogas Boiler Stack<br><description of location with reference to map>                                   |
| 32                            | Air emissions monitoring        | Discharge to Air               | Biogas Reciprocating Internal Combustion Engine Stack<br><description of location with reference to map> |
| 33                            | Meteorological monitoring       |                                | <description of location with reference to map>                                                          |

**LIMIT CONDITIONS**

**L1 Concentration limits**

L1.1 For each monitoring/discharge point or utilisation area specified in the table below (by a point number), the concentration of a pollutant must not exceed the concentration limits specified for that pollutant in the table.

**Air**  
**POINT 3 (or 4) – Existing point on current EPA licence (Retained back-up coal fired boiler)**

| <b>Pollutant</b>                                                                                | <b>Units of measure</b> | <b>100 percentile limit</b> | <b>Reference Conditions</b>              | <b>Averaging Period</b>                                                                                |
|-------------------------------------------------------------------------------------------------|-------------------------|-----------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Solid Particles (Total)                                                                         | mg/m <sup>3</sup>       | 250                         | Dry, 273K, 101.3kPa, 12% CO <sub>2</sub> | 1 hour, or the minimum sampling period specified in the relevant test method, whichever is the greater |
| Nitrogen dioxide (NO <sub>2</sub> ) or Nitric Oxide (NO) or both, as NO <sub>2</sub> equivalent | mg/m <sup>3</sup>       | 2500                        | Dry, 273K, 101.3kPa                      | 1 hour block                                                                                           |
| Sulfur dioxide                                                                                  | mg/m <sup>3</sup>       | TBD                         | Dry, 273K, 101.3kPa                      | 1 hour block                                                                                           |
| Type 1 substances (in aggregate)                                                                | mg/m <sup>3</sup>       | 20                          | Dry, 273K, 101.3kPa                      | 1 hour, or the minimum sampling period specified in the relevant test method, whichever is the greater |

**POINT 31**

| Pollutant                                                                                       | Units of measure  | 100 percentile limit | Reference Conditions                   | Averaging Period                                                                                       |
|-------------------------------------------------------------------------------------------------|-------------------|----------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------|
| Solid Particles (Total)                                                                         | mg/m <sup>3</sup> | 50                   | Dry, 273K, 101.3kPa, 3% O <sub>2</sub> | 1 hour, or the minimum sampling period specified in the relevant test method, whichever is the greater |
| Nitrogen dioxide (NO <sub>2</sub> ) or Nitric Oxide (NO) or both, as NO <sub>2</sub> equivalent | mg/m <sup>3</sup> | 350                  | Dry, 273K, 101.3kPa, 3% O <sub>2</sub> | 1 hour block                                                                                           |
| Sulfur dioxide (SO <sub>2</sub> )                                                               | mg/m <sup>3</sup> | TBD                  | Dry, 273K, 101.3kPa, 3% O <sub>2</sub> | 1 hour block                                                                                           |
| Volatile Organic Compounds (VOCs), as n-propane                                                 | mg/m <sup>3</sup> | 40                   | Dry, 273K, 101.3kPa, 3% O <sub>2</sub> | 1 hour rolling                                                                                         |
| Carbon Monoxide                                                                                 | mg/m <sup>3</sup> | 125                  | Dry, 273K, 101.3kPa, 3% O <sub>2</sub> | 1 hour rolling                                                                                         |

**POINT 32**

| Pollutant                                                                                       | Units of measure  | 100 percentile limit | Reference Conditions                   | Averaging Period                                                                                       |
|-------------------------------------------------------------------------------------------------|-------------------|----------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------|
| Solid Particles (Total)                                                                         | mg/m <sup>3</sup> | 50                   | Dry, 273K, 101.3kPa, 3% O <sub>2</sub> | 1 hour, or the minimum sampling period specified in the relevant test method, whichever is the greater |
| Nitrogen dioxide (NO <sub>2</sub> ) or Nitric Oxide (NO) or both, as NO <sub>2</sub> equivalent | mg/m <sup>3</sup> | 450                  | Dry, 273K, 101.3kPa, 3% O <sub>2</sub> | 1 hour block                                                                                           |
| Sulfur dioxide (SO <sub>2</sub> )                                                               | mg/m <sup>3</sup> | TBD                  | Dry, 273K, 101.3kPa, 3% O <sub>2</sub> | 1 hour block                                                                                           |
| Volatile Organic Compounds (VOCs), as n-propane                                                 | mg/m <sup>3</sup> | 40                   | Dry, 273K, 101.3kPa, 3% O <sub>2</sub> | 1 hour rolling                                                                                         |
| Carbon Monoxide                                                                                 | mg/m <sup>3</sup> | 125                  | Dry, 273K, 101.3kPa, 3% O <sub>2</sub> | 1 hour rolling                                                                                         |

TBD – To be determined in accordance with Condition UA

**L2 Biogas Boiler Exhaust Stack**

- L2.1 The Biogas Boiler Exhaust Stack (Discharge Point 31) must have the following parameters: minimum exit velocity of 11 metres per second; minimum stack height of 11 metres and maximum stack diameter of 0.6 metres.

**L3 Biogas Reciprocating Internal Combustion Engine Exhaust Stack**

- L3.1 The Biogas Reciprocating Internal Combustion Engine Exhaust Stack (Discharge Point 32) must have the following parameters: minimum exit velocity of 24 metres per second; minimum stack height of 6 metres and maximum stack diameter of 0.35 metres.

**5 Monitoring and Recording Conditions****M2 Requirement to monitor concentration of pollutants discharged**

- M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

**POINT 3 or 4 – Existing point on current EPA licence (Retained back-up coal fired boiler)**

| Pollutant                                                                                       | Units of measure  | Frequency           | Sampling Method        |
|-------------------------------------------------------------------------------------------------|-------------------|---------------------|------------------------|
| Solid Particles (Total)                                                                         | mg/m <sup>3</sup> | Special Frequency 1 | TM-15                  |
| Nitrogen dioxide (NO <sub>2</sub> ) or Nitric Oxide (NO) or both, as NO <sub>2</sub> equivalent | mg/m <sup>3</sup> | Special Frequency 1 | TM-11                  |
| Sulfur dioxide                                                                                  | mg/m <sup>3</sup> | Special Frequency 1 | TM-4                   |
| Type 1 substances (in aggregate)                                                                | mg/m <sup>3</sup> | Special Frequency 1 | TM-12, TM-13 and TM-14 |
| Velocity                                                                                        | m/s               | Special Frequency 1 | TM-2                   |
| Volumetric flow rate                                                                            | m <sup>3</sup> /s | Special Frequency 1 | TM-2                   |
| Temperature                                                                                     | °C                | Special Frequency 1 | TM-2                   |
| Moisture                                                                                        | %                 | Special Frequency 1 | TM-22                  |
| Dry gas density                                                                                 | Kg/m <sup>3</sup> | Special Frequency 1 | TM-23                  |
| Molecular weight of stack gases                                                                 | g/g.mol           | Special Frequency 1 | TM-23                  |
| Carbon dioxide                                                                                  | %                 | Special Frequency 1 | TM-24                  |
| Selection of sampling positions                                                                 | -                 | -                   | TM-1                   |

**POINT 31 and 32**

| Pollutant                                                                                       | Units of measure  | Frequency           | Sampling Method |
|-------------------------------------------------------------------------------------------------|-------------------|---------------------|-----------------|
| Solid Particles (Total)                                                                         | mg/m <sup>3</sup> | Special Frequency 1 | TM-15           |
| Nitrogen dioxide (NO <sub>2</sub> ) or Nitric Oxide (NO) or both, as NO <sub>2</sub> equivalent | mg/m <sup>3</sup> | Special Frequency 1 | TM-11           |
| Sulfur dioxide (SO <sub>2</sub> )                                                               | mg/m <sup>3</sup> | Special Frequency 1 | TM-4            |
| Volatile Organic Compounds (VOCs), as n-propane                                                 | mg/m <sup>3</sup> | Special Frequency 1 | TM-34           |
| Carbon Monoxide                                                                                 | mg/m <sup>3</sup> | Special Frequency 1 | TM-32           |
| Velocity                                                                                        | m/s               | Special Frequency 1 | TM-2            |
| Volumetric flow rate                                                                            | m <sup>3</sup> /s | Special Frequency 1 | TM-2            |
| Temperature                                                                                     | °C                | Special Frequency 1 | TM-2            |
| Moisture                                                                                        | %                 | Special Frequency 1 | TM-22           |
| Dry gas density                                                                                 | Kg/m <sup>3</sup> | Special Frequency 1 | TM-23           |
| Molecular weight of stack gases                                                                 | g/g.mol           | Special Frequency 1 | TM-23           |
| Carbon dioxide                                                                                  | %                 | Special Frequency 1 | TM-24           |
| Selection of sampling positions                                                                 | -                 | -                   | TM-1            |

Special Frequency 1 in the above tables means post commissioning and annually thereafter.

**M3 Testing methods - concentration limits**

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:

- any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
- if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
- if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The Clean Air (Plant & Equipment) Regulation 1997 requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

### M3. Requirement to monitor meteorological parameters

**M3.1** For each monitoring point specified in the table below, the applicant must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The applicant must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns.

#### POINT 33

| Parameter                  | Units of measure | Frequency  | Averaging Period | Sampling Method |
|----------------------------|------------------|------------|------------------|-----------------|
| Rainfall                   | mm               | Continuous | 1 hour           | AM-4            |
| Wind speed @ 10 metres     | m/s              | Continuous | 15 minute        | AM-2 & AM-4     |
| Wind direction @ 10 metres | °                | Continuous | 15 minute        | AM-2 & AM-4     |
| Temperature @ 2 metres     | °C               | Continuous | 15 minute        | AM-4            |
| Temperature @ 10 metres    | °C               | Continuous | 15 minute        | AM-4            |
| Sigma theta @ 10 metres    | °                | Continuous | 15 minute        | AM-2 & AM-4     |
| Solar radiation            | W/m2             | Continuous | 15 minute        | AM-4            |
| Additional requirements    |                  |            |                  |                 |
| - Siting                   |                  |            |                  | AM-1 & AM-4     |
| - Measurement              |                  |            |                  | AM-2 & AM-4     |

### Pollution Studies and Reduction Programs

#### U1 Sulfur dioxide emission concentration limits

- U1.1 By <insert date 6 months after commissioning>, the licensee must develop sulfur dioxide (SO<sub>2</sub>) emission concentration limits for discharge points 3(or 4), 31 and 32.
- U1.2 The SO<sub>2</sub> emission concentration limits must be calculated from an air quality impact assessment study prepared in accordance with the following documents:
- (a) EPA, 2001, Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW.
  - (b) NSW EPA, 1999, Approved Methods for the Sampling and Analysis of Air Pollutants in NSW, July 2001.
- U1.3 The Licensee must submit a report on the findings of the air quality impact assessment study and the SO<sub>2</sub> concentration limits to the EPA's Armidale Office addressed to the Manager Armidale Region.

#### U2 Post Commissioning Air Emissions Report

- U2.1 By <insert date 3 months after commissioning> the licensee must submit a written report to the EPA's Armidale Office addressed to the Manager Armidale Region, detailing the results of post commissioning source emissions sampling and analysis for Points 3(or 4), 31 and 32 undertaken in accordance with the requirements specified in condition M2.1. The report must assess compliance with the limit conditions specified in condition L5.1.

#### U3 Biofilter Performance and Management Report

- U3.1 By <insert date 6 months after commissioning> the licensee must submit a Rendering Plant Biofilter Performance and Management Report to the EPA's Armidale Office addressed to the Manager Armidale Region. The report must:

- a) Present the results of odour sampling and analysis for the rendering plant biofilter to determine the odour control efficiency of the biofilter;
- b) Identify the values of the key biofilter design parameters to ensure the biofilter continually achieves the odour control efficiency in a) above; and
- c) Identify monitoring and management measures to ensure continual achievement of the key biofilter design parameters.

#### **U4 Odour Impact Assessment and Mitigation Study**

U4.1 If EPA authorised staff form the opinion that the facility is likely to be operating in breach of Section 129 of the *Protection of the Environment Operations Act, 1997* and notify the proponent in writing that it must complete the works required by this conditions, the proponent must submit an Odour Impact Assessment and Mitigation Report to the EPA's Armidale Office addressed to the Manager Armidale Region within 3 months of the date of the EPA's written notification.

U4.2 The odour impact assessment and mitigation report must be carried out strictly in accordance with the methodologies set out in the following documents:

- (a) EPA, 2001, Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW;
- (b) NSW EPA, 1999, Approved Methods for the Sampling and Analysis of Air Pollutants in NSW, July 2001;
- (c) DEC, 2006 Technical Framework, Assessment and management of odour from stationary sources in NSW, November 2006; and
- (d) DEC, 2006 Technical Notes, Assessment and management of odour from stationary sources in NSW, November 2006.

U4.3 The odour impact assessment study must address the following:

- (a) A summary of any odour complaints received and actions taken to reduce odour emissions where complaints are verified;
- (b) An odour audit to identify all significant sources of odour at the premises. As part of the odour audit, all significant odour sources that have been identified must be sampled for odour and their emissions concentrations/rates determined strictly in accordance with the methods detailed in U4.2(b), (c) and (d);
- (c) A dispersion modelling study to predict ground-level concentrations of odour. This must be conducted strictly in accordance with the methods detailed in UD.2 (a) and using the data collected in U4.3 (b);
- (d) The results of the odour impact assessment must be compared against the appropriate odour performance criterion detailed in U4.2 (a).

U4.4 The odour mitigation study must address the following:

- (a) A technical review of all practicable odour mitigation options must be carried out and the potential reduction in odour impacts associated with each odour mitigation option must be quantitatively evaluated. This is to include a benchmark of the design and management practices at the premises against industry best practice for minimising odour emissions;
- (b) A cost/benefit analysis of a range of odour mitigation options must be carried out;
- (c) Using the results of U4.3, U4.4 (a) and (b), emission concentration limits (point sources only) and management practices (point and diffuse sources) must be identified for the most cost-effective odour mitigation options; and
- (d) A timetable for the implementation of the most cost-effective odour mitigation options.

U4.5 The Licensee must submit the findings of U4.3 and U4.4 to the EPA in a formal report that has been prepared strictly in accordance with the requirements detailed in U4.2 (a).



# Appendix K    Recommended Noise Conditions

NSW EPA  
2 September 2014

**ADDENDUM – EPA’s Recommended Noise Conditions for the Bindaree Beef  
Proposed Bio-Digester Plant and Rendering Plant (SSD 6093)**

**Limit Conditions**

**L3 Hours of operation**

**L3.1 Standard construction hours**

Unless otherwise specified by any other condition of this licence, all construction activities are:

- a) restricted to between the hours of 7:00am and 6:00pm Monday to Friday;
- b) restricted to between the hours of 8:00am and 1:00pm Saturday; and
- c) not to be undertaken on Sundays or Public Holidays.

**L3.2 Exemptions to standard construction hours**

The three categories of works that may be undertaken outside the standard hours of operation permitted by Condition L3.1 are:

- a) the delivery of oversized plant or structures that police or other authorised authorities determine require special arrangements to transport along public roads;
- b) emergency work to avoid the loss of lives or property, or to prevent environmental harm;
- c) works that are not more than 5 dB(A) over the rating background level at the nearest noise sensitive receiver as assessed by acoustic investigation.

The licensee must notify the EPA within 24 hours of undertaking any works referred to in Condition L3.2 as well as providing the EPA with a copy of the results of any acoustic investigation made in relation to Condition L3.2 c) within 24 hours.

**L3.3 Works approved outside of standard construction hours are permitted provided it is agreed through negotiations between the licensee and all noise sensitive receivers likely to be affected or as otherwise agreed by the EPA. Any agreement(s) between the licensee and the residents must be recorded in writing and a copy of the agreement(s) kept on the premises by the licensee for the duration of the licence.**

If approval from the EPA is sought for works outside of standard construction hours, the licensee must submit to the EPA in writing:

- a) a description of consultation with all noise sensitive receivers likely to be affected;
- b) a description of the works to be undertaken outside of standard construction hours;
- c) a description of the planned timeframes for the works;
- d) justification as to why the works must be undertaken outside of standard construction hours; and

e) the mitigation measures that will be applied to the works, having regard to the "Interim Construction Noise Guideline, DECC July 2009".

## L6 Noise Limits

**L6.1** Noise generated at the premises must not exceed the noise limits in the table below. The locations referred to in the table below are defined within Appendix H of the document titled "*Bindaree Beef Australia Environmental Impact Statement for the proposed Bio-Digester Plant and Rendering Plant, 7307 Gwydir Highway, Inverell*".

|            |                                                                                                                                                                                                                                                      | NOISE LIMITS dB(A)           |                              |                              |                            |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|----------------------------|
| Locality   | Location                                                                                                                                                                                                                                             | Day                          | Evening                      | Night                        |                            |
|            |                                                                                                                                                                                                                                                      | L <sub>Aeq</sub> (15 minute) | L <sub>Aeq</sub> (15 minute) | L <sub>Aeq</sub> (15 minute) | L <sub>A1</sub> (1 minute) |
| Location 1 | The residence on the property located at 77 McNeils Road, Inverell, Lot 138 DP1091620 marked as Receptor 8 on Figure 2-2 in the document titled " <i>Bindaree Beef EIS – Noise Assessment</i> " dated 11 June 2014 by Vipac Engineers and Scientists | 35                           | 35                           | 35                           | 45                         |
| Location 2 | The residence on the property located at 42 McNeils Road, Inverell, Lot 5 DP252411 marked as Receptor 4 on Figure 2-2 in the document titled " <i>Bindaree Beef EIS – Noise Assessment</i> " dated 11 June 2014 by Vipac Engineers and Scientists    | 35                           | 35                           | 35                           | 45                         |
| Location 3 | The residence on the property located at 32 McNeils Road, Inverell, Lot 4 DP252411 marked as Receptor 3 on Figure 2-2 in the document titled " <i>Bindaree Beef EIS – Noise Assessment</i> " dated 11 June 2014 by Vipac Engineers and Scientists    | 35                           | 35                           | 35                           | 45                         |

|            |                                                                                                                                                                                                                                                        |    |    |    |    |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|
| Location 4 | The residence on the property located at 22 McNeils Road, Inverell, Lot 3 DP252411 marked as Receptor 44 on Figure 2-2 in the document titled " <i>Bindaree Beef EIS – Noise Assessment</i> " dated 11 June 2014 by Vipac Engineers and Scientists     | 35 | 35 | 35 | 45 |
| Location 5 | The residence on the property located at 7360 Gwydir Highway, Inverell, Lot 5 DP831434 marked as Receptor 42 on Figure 2-2 in the document titled " <i>Bindaree Beef EIS – Noise Assessment</i> " dated 11 June 2014 by Vipac Engineers and Scientists | 35 | 35 | 35 | 45 |
| Location 6 | The residence on the property located at 581 Fernhill Road, Inverell, Lot 1 DP1086623 marked as Receptor 41 on Figure 2-2 in the document titled " <i>Bindaree Beef EIS – Noise Assessment</i> " dated 11 June 2014 by Vipac Engineers and Scientists  | 35 | 35 | 35 | 45 |
| Location 7 | The residence on the property located at 7204 Gwydir Highway, Inverell, Lot 1 DP617431 marked as Receptor 34 on Figure 2-2 in the document titled " <i>Bindaree Beef EIS – Noise Assessment</i> " dated 11 June 2014 by Vipac Engineers and Scientists | 35 | 35 | 35 | 45 |
|            | Any other affected residence not owned by the licensee or its related companies                                                                                                                                                                        | 35 | 35 | 35 | 45 |

**L6.2** For the purpose of condition L6.1;

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays.

- Evening is defined as the period 6pm to 10pm.
- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and Public Holidays.

**L6.3** The noise limits set out in condition L6.1 apply under all meteorological conditions except for the following:

- a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or
- b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
- c) Stability category G temperature inversion conditions.

**L6.4** For the purposes of condition L6.3:

- a) Data recorded by the meteorological station identified as EPA Identification Point W1 must be used to determine meteorological conditions ; and
- b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

**L6.5** To determine compliance:

- a) with the  $L_{eq(15 \text{ minute})}$  noise limits in condition L6.1, the noise measurement equipment must be located:
  - approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
  - within 30 metres of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable
  - within approximately 50 metres of the boundary of a National Park or a Nature Reserve.
- b) with the  $L_{A1(1 \text{ minute})}$  noise limits in condition L6.1, the noise measurement equipment must be located within 1 metre of a dwelling façade.
- c) with the noise limits in condition L6.1, the noise measurement equipment must be located:
  - at the most affected point at a location where there is no dwelling at the location; or
  - at the most affected point within an area at a location prescribed by conditions L6.5(a) or L6.5(b).

**L6.6** A non-compliance of condition L6.1 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- at a location other than an area prescribed by conditions L6.5(a) and L6.5(b); and/or
- at a point other than the most affected point at a location.

**L6.7** For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

### **Monitoring Conditions**

**M7.1** The meteorological weather station must be maintained so as to be capable of continuously monitoring the parameters specified in condition M7.2.

**M7.2** For each monitoring point specified in the table below the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The licensee must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns.

#### **Point W1**

| Parameter         | Units of Measure | Frequency  | Averaging Period | Sampling Method |
|-------------------|------------------|------------|------------------|-----------------|
| Air temperature   | °C               | Continuous | 1 hour           | AM-4            |
| Wind direction    | °                | Continuous | 15 minute        | AM-2 & AM-4     |
| Wind speed        | m/s              | Continuous | 15 minute        | AM-2 & AM-4     |
| Sigma theta       | °                | Continuous | 15 minute        | AM-2 & AM-4     |
| Rainfall          | mm               | Continuous | 15 minute        | AM-4            |
| Relative humidity | %                | Continuous | 1 hour           | AM-4            |

### **M8 Requirement to Monitor Noise**

**M8.1** To assess compliance with Condition L6.1, attended noise monitoring must be undertaken in accordance with Conditions L6.5 and:

- at locations 1 to 7 listed in Condition L6.1;
- occur once every six months so it occurs twice in each reporting period;
- occur during each day, evening and night period as defined in the NSW Industrial Noise Policy for a minimum of:
  - 1.5 hours during the day;
  - 30 minutes during the evening; and
  - 1 hour during the night.
- occur for three consecutive operating days.

### **Reporting Conditions**

#### **R4 Noise Monitoring Report**

A noise compliance assessment report must be submitted to the EPA within 30 days of the completion of the six-monthly monitoring. The assessment must be prepared by a suitably qualified and experienced acoustical consultant and include:

- a) an assessment of compliance with noise limits presented in Condition L6.1; and
- b) an outline of any management actions taken within the monitoring period to address any exceedences of the limits contained in Condition L6.1.

#### **Additions to Definition of Terms of the licence**

- NSW Industrial Noise Policy - the document entitled "New South Wales Industrial Noise Policy published by the Environment Protection Authority in January 2000."
- Noise - sound pressure levels' for the purposes of conditions L6.1 to L6.7.



# Appendix L      Consultation Flyer

Mitchel Hanlon Consulting

### **Community Update Sessions**

A number of community update sessions will be held to allow community members to gain further information on the project and to meet the project team.

**Location:**

**Inverell RSM Club, 68-76 Evans Street, Inverell.**

**Dates:**

**Thursday 31st July – 7pm to 8.30pm**

**Saturday 2nd August – 11am to 2pm**

**Tuesday 5th August – 6pm to 7.30pm**

### **How to Make a Submission**

The community's input into the planning process is welcome. To make an online submission please refer to the Department of Planning and Environment website:

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=6093](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6093)

**Submissions close on the 18<sup>th</sup> August 2014.**

### **Project Contact Details**

For more information relating to this project please contact:

Jocelyn Ullman

Senior Planner

Bindaree Beef Planning Project Team

Mitchel Hanlon Consulting

Phone: 6762 4411

Email: [jullman@mitchelhanlon.com.au](mailto:jullman@mitchelhanlon.com.au)





# Project Update for Bindaree Beef EIS

July 2014

**Mitchel Hanlon Consulting** has been appointed by Bindaree Beef to prepare an Environmental Impact Statement (EIS) for a new Bio-digester and Rendering Plant at the existing abattoir in Inverell, NSW. The EIS has been prepared and lodged with the NSW Department of Planning and Environment.

The EIS is now on exhibition until the 18<sup>th</sup> August 2014 and can be viewed online via the NSW Department of Planning and Environment website ([www.planning.nsw.gov.au](http://www.planning.nsw.gov.au)) or in person at Inverell Shire Council Chambers, Otho Street, Inverell.

## THE PROPOSAL

The Bindaree Beef project consists of -

- A new, highly effective wastewater treatment system that will produce biogas, clean water and highly concentrated liquid waste water;
- A biogas conversion system that will generate electricity and steam for onsite use; and
- A replacement rendering plant that will eliminate the use of coal-fired boilers, and increase production efficiencies.

The \$43 million project is the first of its kind for the meat processing industry in Australia and will improve the economic and environmental performance of Bindaree Beef.

## ENVIRONMENTAL ASSESSMENT

The EIS outlines a full description of the potential environmental impacts from the development. It has proposed mitigation measures to minimise impacts such as visual amenity, odour and water issues. The environmental benefits of the development and the sustainability of the site have been assessed in the EIS.

The environmental assessment has identified that odour and dust from the site will be reduced with the replacement of coal-fired boilers with a gas-fired boiler. The environmental benefits from the installation of a Bio-Digester and new Rendering Plant are significant.

## ECONOMIC BENEFITS

The proposed bio-digester will afford Bindaree Beef an estimated bottom line saving of \$42 million dollars in annual production costs with an estimated \$1.65 million being spent directly within the Inverell LGA during the construction phase which is planned to commence in January 2015.

The proposed development will enable Bindaree Beef to grow its business and provide their workforce long term employment opportunities.

