

Statement of Environmental Effects

Effluent System Upgrade (ESU)

Cargill Beef Australia

**Bomen Beef Processing Facility
Wagga Wagga**

February 2010



Table of Contents

Table of Contents	ii
1. Introduction	1
2. Background and Context	2
2.1 Site location and Description	2
2.2 Site History	3
3. Statutory Planning Requirements	3
3.1 Definition of the Proposed Project	3
3.2 Environmental Planning and Assessment Act 1979	4
3.2.1 <i>Development with or without consent under the EPA Act</i>	4
3.2.2 <i>Designated Development</i>	4
3.2.3 <i>Section 91 – Integrated development</i>	4
3.3 State Environmental Planning Policies	5
3.3.1 <i>State Environmental Planning Policy 33 – Hazardous and Offensive Development</i>	5
3.3.2 <i>State Environmental Planning Policy (Major Projects) 2005</i>	5
3.3.3 <i>State Environmental Planning Policy (Infrastructure) 2007</i>	5
3.4 Regional Environmental Plans	6
3.5 Existing Zoning	6
3.5.1 <i>Wagga Wagga Local Environmental Plan 1985</i>	6
3.5.2 <i>Wagga Wagga Development Control Plan (Urban Living Area) 2005</i>	7
3.6 Consultation	8
4. Existing Ponds and Operations	9
5. The Proposed Development	13
5.1 Purpose of the proposed upgrade	13
5.2 Proposed upgrade	14
5.3 Capacity of the treatment ponds	16
5.4 Captured gas	17
6. Statement of Environmental Effects	18
6.1 Permissibility and Objectives	18
6.1.1 <i>Wagga Wagga Local Environmental Plan 1985</i>	18
6.1.2 <i>Wagga Wagga Development Control Plan 2005</i>	18
6.1.3 <i>Business Operation</i>	18
6.1.4 <i>Character of the Locality</i>	18
6.2 Hazardous and Offensive Development	19
6.3 Natural Hazards	20
6.3.1 <i>Bushfire Prone Land</i>	20
6.4 Flooding	Error! Bookmark not defined.
6.5 Odour Assessment	21
6.6 Waste Assessment	24
6.7 Soil and Water Assessment	27

6.8	Greenhouse Gas Emissions Assessment	28
6.9	Power generator options	Error! Bookmark not defined.
6.10	Cogeneration options	Error! Bookmark not defined.
6.11	Access and Egress	29
6.12	Fire and Safety	29
6.13	Heritage	30
6.14	Visual Assessment	30
6.15	Ponds	30
6.16	Flare	30
6.17	Services and Infrastructure	31
6.18	Summary	32
7.	Justifications for the Modification	33

List of Figures

Figure 1.	Location plan	2
Figure 2.	1985 LEP Zoning on the Cargill Bomen Site	6
Figure 3.	Sub Zoning within the Wagga 1985 LEP	7
Figure 4.	Simplified Model of the Existing Wastewater System	11
Figure 5.	Proposed upgrades	15
Figure 6.	Simplified Model of the ESU Proposed Wastewater System	16
Figure 7.	Bushfire prone land	20
Figure 8.	Proposed locations of the flare and CAL on a 10 metres contour map	31

List of Appendices

Appendix A -	ESU Conceptual Design by Dr Mike Johns
---------------------	---

Glossary

CBA	Cargill Beef Australia
DAF	Dissolved Air Flotation Unit
DECCW	Department of Environment, Climate Change and Water NSW (formerly the Environment Protection Authority - EPA)
DoP	Department of Planning
EIS	Environmental Impact Statement
EPL	Environment Protection Licence
ESU	Effluent System Upgrade
LTWP	Liquid Trade Waste Policy
SEE	Statement of Environmental Effects
WWCC	Wagga Wagga City Council

1. Introduction

This application is to request the NSW Department of Planning (DoP) to consider and approve the proposed modification of the Development Application (DA No. 220-07-2002-i) for the Cargill Beef Australia Effluent System Upgrade (ESU) on Lot 2 DP 700113. The proposed works include:

- A new covered anaerobic system will be constructed to replace existing Anaerobic Ponds 1 and 2. As a result:
 - Existing Pond 1 will be decommissioned and remediated; and,
 - Existing Pond 2 will be decommissioned and remediated;
- The new covered anaerobic system will consist of two covered anaerobic lagoons operating in parallel and will replace Ponds 1 and 2;
- A flare and gas monitoring device will be installed in close proximity to the covered anaerobic ponds in order to flare the captured biogas and ensure odour destruction;
- Existing anaerobic pond 3 will be reconfigured into a Biological Nutrient Removal (BNR) system, specifically, an advanced activated sludge (BIOLAC) system;
- Waste activated sludge from the BNR system will be dewatered;
- Existing Ponds 4a and 4b (aerobic) will remain as final holding ponds. They will receive treated effluent from the BNR system and provide equalisation to ensure discharge to WWCC sewer is of a constant and uniform flow rate; and
- No changes to the source of the wastewater are proposed.

The existing ponds are located in the Bomen Beef Processing Facility, which is owned by Cargill Beef Australia (CBA). A Development Application (DA No. 220-07-2002-i) was lodged with the DoP in 2002 for the expansion of the facility and was approved by the Minister on 27 February 2003. Two subsequent modifications were lodged with the DoP in 2003 and 2004 and a third was lodged in 2008. All three modifications were approved by the Minister.

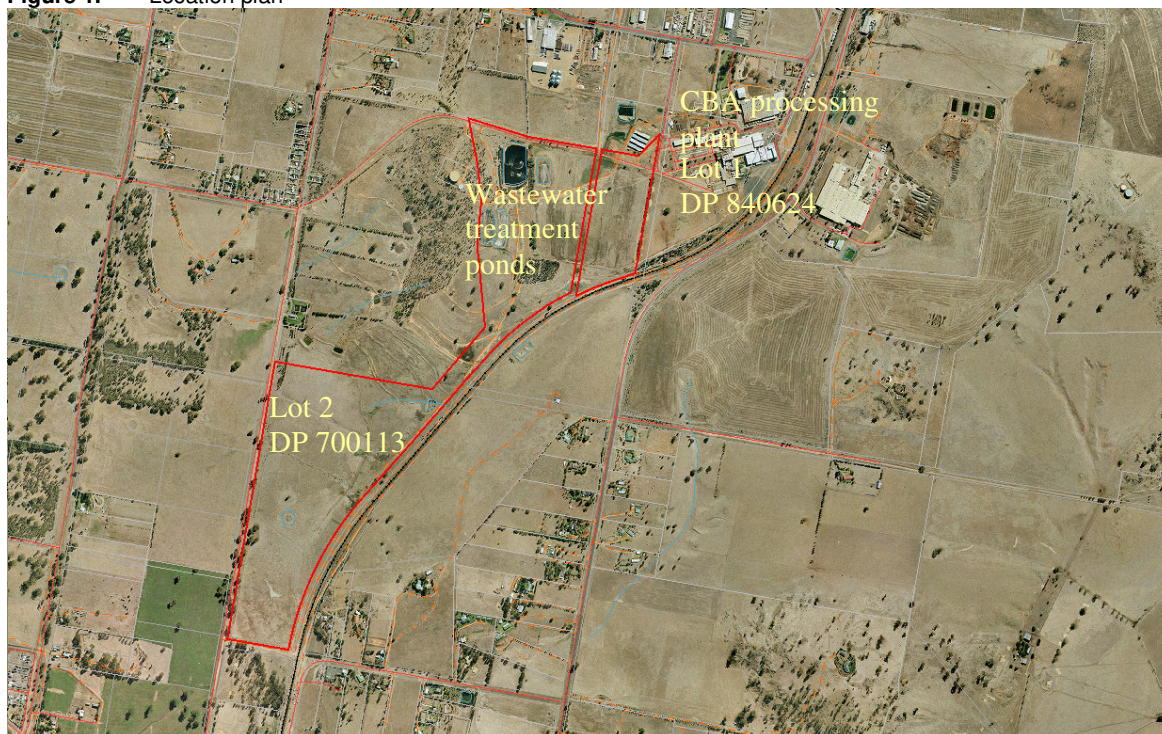
The current proposal will be the fourth modification and is considered to have the following merits:

- Increased efficiency and performance of the wastewater treatment system to meet the limits specified in the WWCC Liquid Trade Waste Policy;
- Significantly reduced odour emissions from the anaerobic ponds;
- Significantly reduced greenhouse gas (carbon) emissions from the anaerobic pond system via capturing and flaring off methane-rich biogas; and,
- Improved management of biological sludge created during treatment of the facility effluent.

2. Background and Context

2.1 Site location and Description

Figure 1. Location plan



The Cargill Beef Processing Facility is part of Bomen Business Park in an industrial precinct. The precinct is home to general and potentially hazardous and offensive industries, including; a waste oil refinery, Bulk Fuel depot, livestock selling centre and the existing Cargill Beef Processing Facility.

The Beef processing Facility's site boundary is irregular in shape. It is primarily accessed via Dampier Street with emergency and heavy vehicle access via the truck entrance off Bomen Road. The site consists of six allotments which are:

- Lot 1 DP 840624 – the eastern part of the site, which houses the Beef Processing Facility plant building;
- Lots 1, 2 and 4 DP 700113 – the western part of the site, which includes the wastewater treatment ponds;
- Lot 6 DP 614169; and,
- Lot 11 DP 814225.

The existing wastewater treatment ponds are also located in Lot 2 DP 700113 and are situated between Cooramin Street (to the north) and the railway line (to the south). A WWCC water reservoir is located on the top of a hill to the west of the ponds.

Lot 2 DP 700113 is an "8" shaped allotment, which the northern and southern parts are joined by a narrow neck along the railway line. The allotment has an area of approximately 64 hectares and accessed primarily via Lot 1 DP 840624.

2.2 Site History

The existing waste water treatment ponds are located in Lot 2 DP 700113 Bomen. CBA purchased the Beef Processing Facility, which was originally established in the late 1940s, in 1991. CBA retained and maintained the existing ponds when the Beef Processing Facility was purchased.

Development Application (DA No. 220-07-2002-i) was lodged with the then Department of Urban Affairs and Planning (now DoP) in 2002 for the expansion of the facility. The proposal was classified as State Significant, Designated and Integrated Development under the Environmental Planning and Assessment Act 1979 (EPA Act) and was approved by the Minister on 27 February 2003.

An Environmental Impact Statement, prepared by HLA Enviroscience Pty Ltd (HLA) accompanied the Application. In the EIS, CBA proposed to “intensify existing production at the Bomen Beef Processing Facility to 14,000 of cattle per week, or 2,000 head per day over a seven day working week.”¹ The \$30 Million expansion to support the intensification included:

- an increase in load out facility;
- an increase in chiller capacity;
- an increase in freezer capacity;
- an increase in wastewater treatment capacity;
- improvements in odour controls at the plant; and
- an increase in product cold storage.

Three subsequent modifications were lodged with the DoP and approved by the Minister.

- MOD-61-1-2003-i sought to alter the proposed layout of the Beef Processing Facility expansion and to amend Conditions 1.2 and 1.3 of the Consent relating to the scope of development. The modification was approved on 3 November 2003.²
- MOD-4-1-2004-i sought to modify Condition 5.23 of the Consent relating to soil contamination and remediation. The modification was approved on 31 March 2004.³
- DA No. 220-07-2002-i – Mod 3 sought to vary the conditions of consent to construct and operate a new covered waste water treatment pond 2B and associated flare system. The modification was approved on 29 June 2009.

The revised and expanded scope of the ESU requires that a further section 96 (1a) modification be lodged to accommodate further inclusions within the ESU as described below.

3. Statutory Planning Requirements

3.1 Definition of the Proposed Project

The existing Beef Processing Facility is defined as a ‘rural industry’ under the provisions of Clause 4 of the Environmental Planning and Assessment Model Provisions 1980 (Model Provisions) being a development which involves the “*handling, treating, processing or packing of primary products and includes the servicing in a workshop of plant or equipment used for rural purposes in the locality.*”

The proposed alterations and additions to the existing wastewater treatment system is an ancillary component to the operation of the Beef Processing Facility.

¹ HLA-Enviroscience (2002) EIS for Bomen Abattoir Expansion Proposal, Executive Summary, p 1.

² HLA-Enviroscience (2003) SEE for Modification to the Bomen Abattoir Expansion Proposal.

³ HLA-Enviroscience (2004) SEE for Modification to the Bomen Abattoir Expansion Proposal.

3.2 Environmental Planning and Assessment Act 1979

3.2.1 Development with or without consent under the EPA Act

Planning and development in NSW is carried out under the legislative structure of the *Environmental Planning and Assessment Act 1979* (EPA Act). The EPA Act provides two separate and distinct methods of assessment under Parts 4 and 5 of the EPA Act.

- Part 4 is concerned with development assessment, according to the Act and the environmental planning instruments and Regulations made under the Act;
- Part 5 is concerned with assessing the environmental impacts of an "activity". Activities typically comprise public infrastructure, such as railways, utilities and roads. The Development consent requirements of environmental planning instruments do not usually apply to 'activities'. However, each activity does require an assessment of the impacts of that activity upon the environment.

The original development proposal was assessed under Part 4 of the EPA Act. Therefore this modification will also be assessed under Part 4 of the EPA Act.

3.2.2 Designated Development

The original DA is classified as a 'designated development' pursuant to Category 22 under Schedule 3 of the *Environmental Planning and Assessment Regulation 2000* (EPA Regulation). Therefore this modification is subject to the provisions of Part 2 of Schedule 3 of the EPA Regulation.

An email received from DoP's Chris Ritchie required that a Statement of Environmental Effects (SEE) must accompany the application as it is a modification (Section 96 (1A)) of an existing instrument. Requirements of the SEE were detailed further in an email received from DoP on 5 January 2010. Thus an Environmental Impact Statement (EIS) is not required for this modification.

3.2.3 Section 91 – Integrated development

Integrated development is a development that requires development consent and one or more approvals or licences under other statutes as detailed in Section 91 of EPA Act. The original development proposal and its subsequent modification were deemed as integrated developments under the EPA Act.

Amendments to the existing Environmental Protection Licence in relation to the ESU have already been made. In the licence variation issued to Cargill on 10 August 2009 a conceptual design for the ESU, designed to treat the effluent at a production level of 2000 head/day; was required to be submitted to DECCW by the 19th August 2009.

In October 2009, CBA reviewed future planned operations of the Wagga Wagga facility. It was decided that the facility will not operate at the previously approved production level of 2000 head of cattle per day, 7 days per week. Alternatively, the maximum future production rate of the facility will be 1600 head of cattle per day over a 7 day week. The ESU has therefore been redesigned to cater to the effluent generated at this production rate.

Accordingly, the modification application requests that the approved production rate for the Wagga Wagga facility, be reduced to 1600 head of cattle per day, over 7 days in accordance with the capacity of the ESU.

3.3 State Environmental Planning Policies

3.3.1 State Environmental Planning Policy 33 – Hazardous and Offensive Development

State Environmental Planning Policy 33 – Hazardous and Offensive Development (SEPP 33) defines 'hazardous industry', 'hazardous storage establishment', 'offensive industry' and 'offensive storage establishment' for all NSW planning instruments, existing and future. The definitions enable decisions to approve or refuse a development to be based on the merit of proposal.

SEPP 33 also requires specified matters to be considered for proposals that are 'potentially hazardous' or 'potentially offensive' as defined in the policy pursuant to Clause 12 of the SEPP. For example, any application to carry out a potentially hazardous or potentially offensive development is to be advertised for public comment, and applications to carry out potentially hazardous development must be supported by a preliminary hazard analysis (PHA).

Under SEPP 33, the proposal was considered against the determinants of 'potentially offensive'. The proposal is covered under EPL 2262 and is therefore not considered potentially offensive under SEPP 33. SEPP 33 does not change the role of councils as consent authorities, land zoning, or the designated development provisions of the EPA Act. A PHA has not been submitted with this SEE.

3.3.2 State Environmental Planning Policy (Major Projects) 2005

State Environmental Planning Policy (Major Projects) 2005 (Major Projects SEPP), which replaces State Environmental Planning Policy (State Significant Development) 2005 (SSD SEPP), defines certain developments that are classed as 'major projects' under Part 3A of the EPA Act and determined by the Minister for Planning. The Major Projects SEPP also lists State significant sites.

The proposed alterations and additions outlined within the ESU do not satisfy any description listed under the schedules in the Major Project SEPP. However, the original development application was classified as a 'State Significant Development' under the SSD SEPP. The DoP (and not WWCC) is therefore the consent authority for this development proposal.

This development proposal is the fourth modification of the approved State Significant Development.

3.3.3 State Environmental Planning Policy (Infrastructure) 2007

Clause 104 of State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP), which replaces State Environmental Planning Policy 11 – Traffic Generating Development, ensures that the traffic management authority is given the opportunity to make a representation on certain 'traffic generating' development before a consent authority can make a determination on the proposal. The Infrastructure SEPP establishes the RTA as the sole traffic management authority to be consulted when a development is listed in Schedule 3.

The modification proposal does not involve alteration to the floor area of the Beef Processing Facility processing plant or number of employees and visitor approved by the original DA and subsequent modification. The proposed upgrade within the Beef Processing Facility does not satisfy the criteria listed within the Infrastructure SEPP, thus the provisions of this SEPP do not apply to the proposed development.

3.4 Regional Environmental Plans

There are no Regional Environmental Plans applicable to the site.

3.5 Existing Zoning

3.5.1 Wagga Wagga Local Environmental Plan 1985

Figure 2. 1985 LEP Zoning on the Cargill Bomen Site



The site is situated on land that is subject to the provisions of the Wagga Wagga Local Environmental Plan 1985 (the Wagga LEP). The Wagga LEP has adopted the Environmental Planning and Assessment Model Provisions 1980 (Model Provisions) with the exceptions of the definition of map in clause 4 (1), and clauses 15 and 36.

It is worth noting that as at January 2010, the 2010 Wagga Wagga Local Environmental Plan is under development and currently in draft format. The public exhibition period has been completed and at January 2010, consideration of submissions had also been completed. The planning panel anticipate being in Wagga Wagga early in February 2010 for final determination before making a recommendation to the NSW government. The anticipated adoption date for the 2010 LEP is April 2010.

Wagga Wagga City Council (WWCC) is the consent authority to administer the Wagga LEP. However, since the development proposal is a modification of a Major Project, development under the Major Project SEPP; the DoP is the consent authority for the ESU.

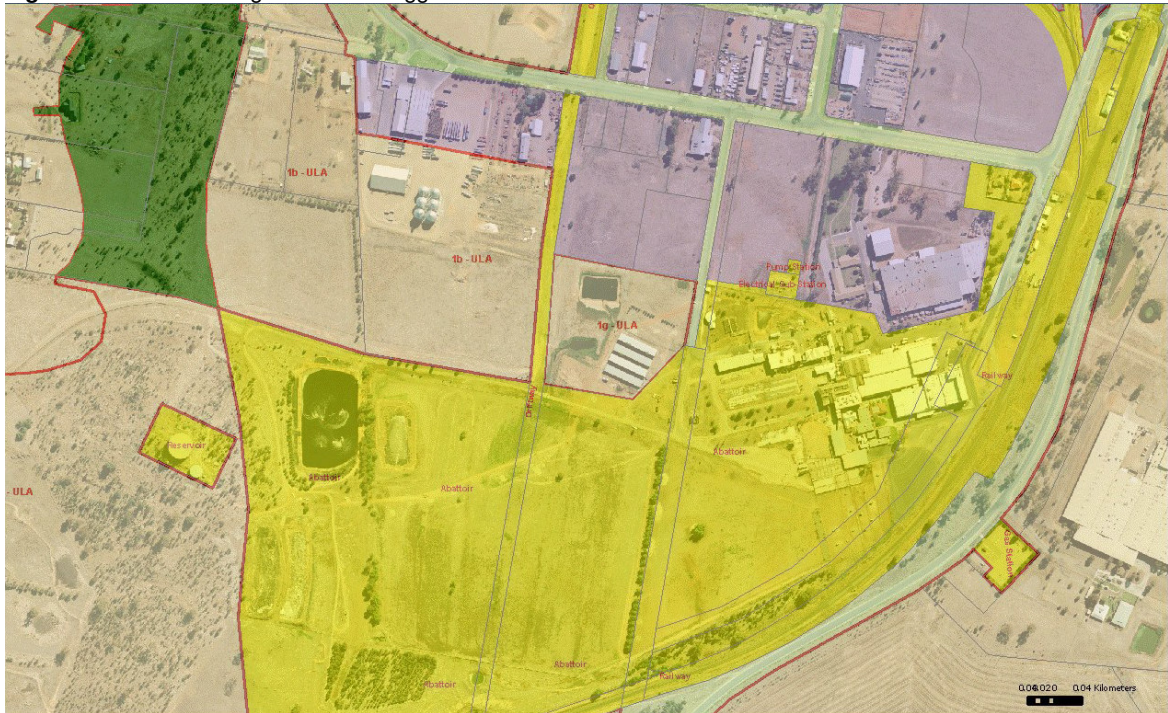
WWCC has been consulted in the preparation of this development proposal.

The subject site is zoned 5 *Special Uses* for the purposes of a Beef Processing Facility under the provisions of the Wagga LEP. The objectives for the Special Uses Zone are:

- in the case of land shown unhatched on the map, are now owned or used for public or community purposes, and
- in the case of land shown hatched on the map, will be acquired by a public authority for the particular public or community purpose shown on the map.

3.5.2 Wagga Wagga Development Control Plan (Urban Living Area) 2005

Figure 3. Sub Zoning within the Wagga 1985 LEP



The site is sub-zoned 5(a) Special Uses (Urban Living Area) under the provisions of the Wagga Wagga Development Control Plan 2005 (the Wagga DCP). The specific objectives for the Special Uses Zone are:

- To define areas used for purposes of education, public buildings, public utility undertakings, depots, church activities, cemeteries, private and public institutions and railways.
- To encourage Government agencies and institutions to embody and reflect the aims of the plan in all their development and redevelopment projects.
- To encourage the coordination of Government agencies and institutions to take into consideration the impact their activity will have on the environment.

The purpose of Special Uses Zone is to reserve or maintain land for the specific purposes shown on the Plan. The specified purpose of the land shown on the Plan is for 'Beef Processing Facility'.

3.6 Consultation

Site meetings were held on the CBA site with the NSW DECCW on 17 June 2009 and with both the NSW DECCW and DoP on 2 July 2009. A number of key issues including: the revised and expanded ESU scope, odour, wastewater quality, site environmental management and the future co-gen facility were discussed in the meetings.

Subsequent to the discussions with DECCW and DoP, a conceptual design for the ESU, prepared by *Johns Environmental* was submitted on the 19 August 2009, detailing the overall system process flow and design specifications to cater to the effluent generated at a production level of 2000 head of cattle per day over 7 days per week.

Aforementioned in section 3.2.3, the future production rate of the Cargill Wagga facility has been reduced to 1600 head of cattle per day over a 7 day week. As such, the ESU has been reviewed to cater to this requirement. This was discussed with DECCW at a meeting on 10 November 2009. DECCW representatives advised that when the section 96 (1A) modification is lodged for the ESU, the approved production rate for the facility is required to be amended to the capacity of the waste water treatment system.

Relevant service providers have been consulted during the design process of the wastewater treatment ponds.

4. Existing Ponds and Operations

Under the current operation, wastewater streams from the beef processing facility are treated using primary treatment processes to reduce concentrations of organic material, oil and greases, paunch material and gross and suspended solids prior to subsequent biological treatment through the four existing ponds. The overall process is illustrated in Figure 4 with definition of red and green streams.

4.1 Green Streams

Green waste streams enter the first of the save-all pits from where a solid removal screw removes large solid particles. The green stream is then taken through a fan press to remove solids over 0.75 mm diameter.

The screened green stream joins the pre-treated yard stream in the save-all pits.

4.2 Yard streams

The yard stream is a dedicated line purely containing cattle wash down water from the stockyards. It is screened using a second screw auger (as per the green stream waste water), after which it is combined with the Green stream waste water.

4.3 Red Streams

Red streams flow from the facility and are combined in an in-ground pit and screened using a dedicated Contrashear rotary screen to remove gross solids. The screened flow is directed through a Dissolved Air Flotation unit (*Red DAF*) to reduce oil & grease and TSS levels further. The removed fat is recovered for processing in the render plant. The treated red effluent flows by gravity to be combined with the pre-treated green stream in the save-all pits.

4.4 Combined Yard & Green Streams

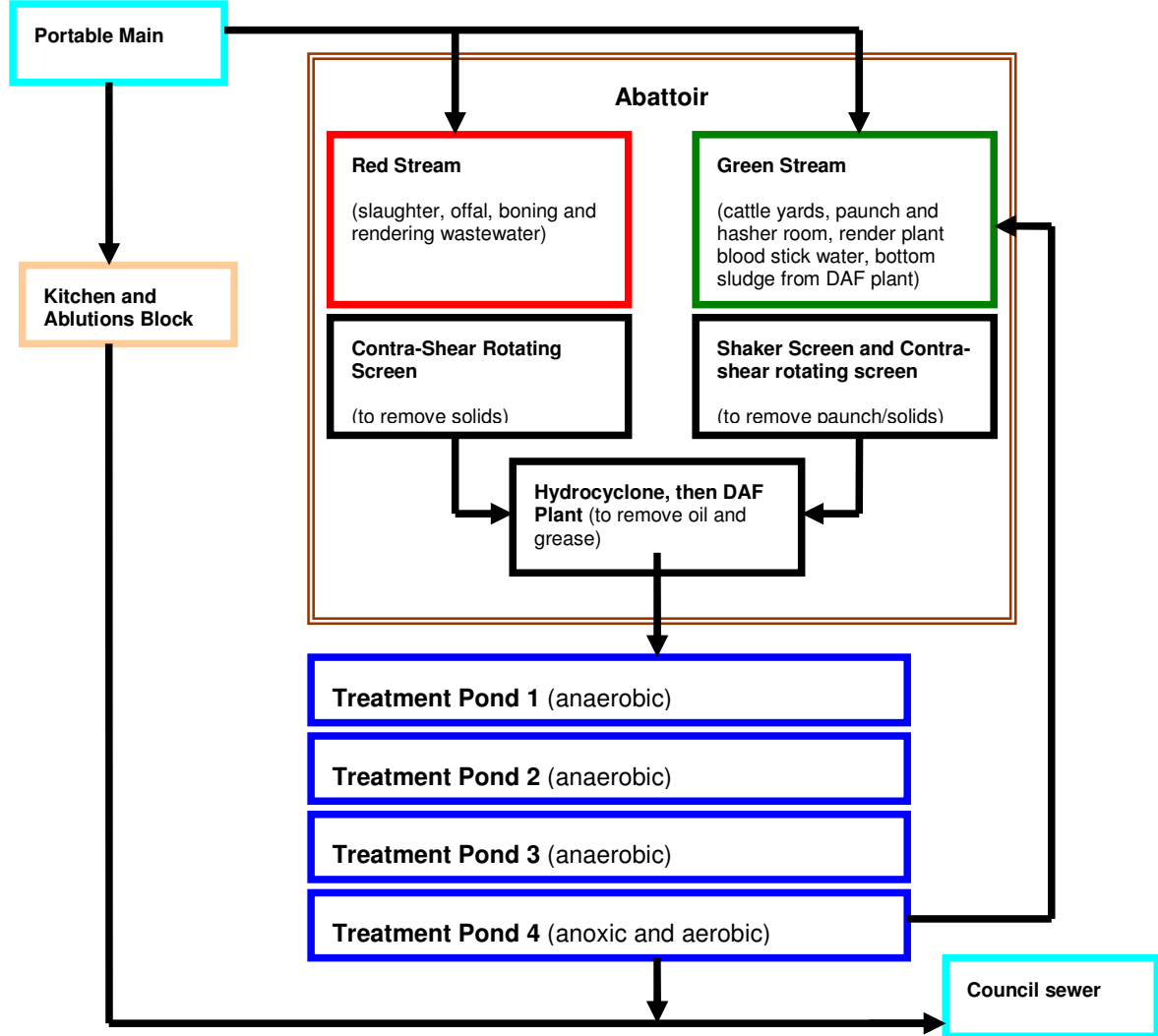
The combined yard and green streams are pumped through to the degritting hydrocyclone where further solids removal and some amount of paunch are taken out. The removed solids are intermittently discharged to a skip and composted. The treated stream returns to the saveall pits.

4.5 Combined Red, Yard and Green streams

The combined green, red and yard effluent flows through to the Syskill DAF where final air flotation treatment takes place before the effluent is pumped to the anaerobic ponds. The float from the Syskill DAF not utilised in the rendering plant is pressed after flocculation and the dewatered float sent to composting.

4.6 Biological Pond Treatment

The effluent is treated by passing through a series of 4 ponds (see Figure below). Ponds 1, 2 and 3 are anaerobic ponds with naturally formed crusts. The final pond, Pond 4 is divided into two parts; an initial anaerobic zone and a subsequent zone equipped with surface aeration.

Figure 4. Simplified Model of the Existing Wastewater System

The role of the three anaerobic ponds is to reduce the organic load. The biogas generated by the anaerobic process (methane-rich) is released into the atmosphere through the naturally formed crust which floats on top of the pond. The Beef Processing Facility has in the past, received complaints regarding odour emission from the anaerobic ponds, primarily due to the presence of reduced sulphides within the gas released from the anaerobic ponds. One of the primary objectives of the ESU (specifically, the covered anaerobic system and flare) is to address this issue.

Pond 4 seeks to oxygenate the anaerobic-treated effluent and achieve further reductions in organic levels (BOD_5) prior to discharge to the WWCC sewer. This results in generation of excess biological sludge,

which settles in the pond and is managed using a sludge-rat, which pumps the sludge to specially designed drying beds. Pond 4 achieves little if any nutrient reduction.

Some of the treated water is recycled from Pond 4 back to the facility for use in stock washing. The majority of the treated wastewater is disposed via trade waste as per the original development proposal and environmental protection license.

5. The Proposed Development

5.1 Purpose of the proposed upgrade

The ESU specifically focuses on upgrading the biological treatment system.

5.1.1 Anaerobic Pond Upgrade

The existing anaerobic ponds 1 and 2 will be decommissioned and replaced with two new covered anaerobic ponds each of 29 ML working capacity, operating in parallel. The existing ponds have struggled to treat the organic load, especially during winter, which has put stress on Pond 4 and led to poor quality discharge to sewer on occasion. The anaerobic system upgrade will achieve:

- Substantially reduced odour emissions associated with the anaerobic treatment process. The methane-rich biogas will be captured within the synthetic HDPE covers and flared-off on site using an enclosed flaring system. Reduced sulphide compounds and other odorous gases will be destroyed by the flaring process. The flare will include a gas monitoring device and will be set up and operated to meet Group 6 emission limits under the *Protection of the Environment (Clean Air) Regulation 2002*.
- Significantly reduced greenhouse gas (carbon) emissions by incineration of the methane.
- Superior biological treatment of the effluent prior to its discharge to the downstream BNR process. This will permit more consistent operation of the BNR system and improved final discharge quality.

5.1.2 New Biological Nutrient Removal (BNR) System

The final treatment within the ESU is a Biological Nutrient Removal (BNR) system, utilizing a BIOLAC activated sludge process. This is specified to ensure compliance with the nutrient acceptance limits outlined in the WWCC Liquid Trade Waste Policy. The activated system will be installed in a refurbished and synthetically lined pond 3, with a 1.5 mm HDPE liner. This system is an advanced aeration technique which enables nitrification and denitrification processes by providing anoxic and aerobic zones to provide conditions suitable for biological nutrient removal processes. The system is capable of vastly improved performance compared to the existing Pond 4 and will provide a final discharge of more consistent quality in accordance with the Trade Waste Acceptance Limits. The quantity of biological sludge generated in the process is reduced by the long sludge age of the process. Excess biological sludge removed from the BNR will be sent to a dewatering plant which will produce final sludge at approx. 10 - 15% dry solids.

The new BNR system seeks to:

- Provide an improved final effluent quality consistent with the limits specified in the WWCC Liquid Trade Waste Policy (specifically for BOD, nitrogen and phosphorus);
- Provide improved management of biological sludge created during treatment of the effluent.
- Ensure a negligible odour footprint.

5.2 Proposed upgrade

The ESU will increase the performance of the waste water treatment system and capture any gaseous emissions from the anaerobic ponds. CBA are proposing the following alterations and additions:

- A new covered anaerobic system (consisting of 2 HDPE-covered and lined anaerobic ponds operating in parallel) will be constructed to replace Ponds 1 and 2. As a result Ponds 1 and 2 will be decommissioned. The covered anaerobic system will be situated to the east of Pond 2.
- Pond 1 and 2 will be taken off line and allowed to settle and dry out as a part of the decommissioning strategy.
- A biogas collection system equipped with an enclosed gas flare will be constructed in close proximity to burn off biogas captured from the covered anaerobic system.
- Pond 3 (anaerobic) will be decommissioned and refurbished as a BNR extended aeration system. Sludge from Anaerobic Pond 3 will be utilized to seed (inoculate) the new covered anaerobic ponds. Any remaining sludge will be transferred to pond 1 and 2 and allowed to dry out.
- A dewatering system comprising of a belt filter press will be installed to process the waste activated sludge from the BNR system.
- Pond 4 (aerobic) will remain as an equalization pond, in order to equalize and distribute flows to achieve a uniform and constant discharge to WWCC sewer.
- No changes to the source of the wastewater are proposed.

Figure 5. Proposed site layout of treatment upgrades

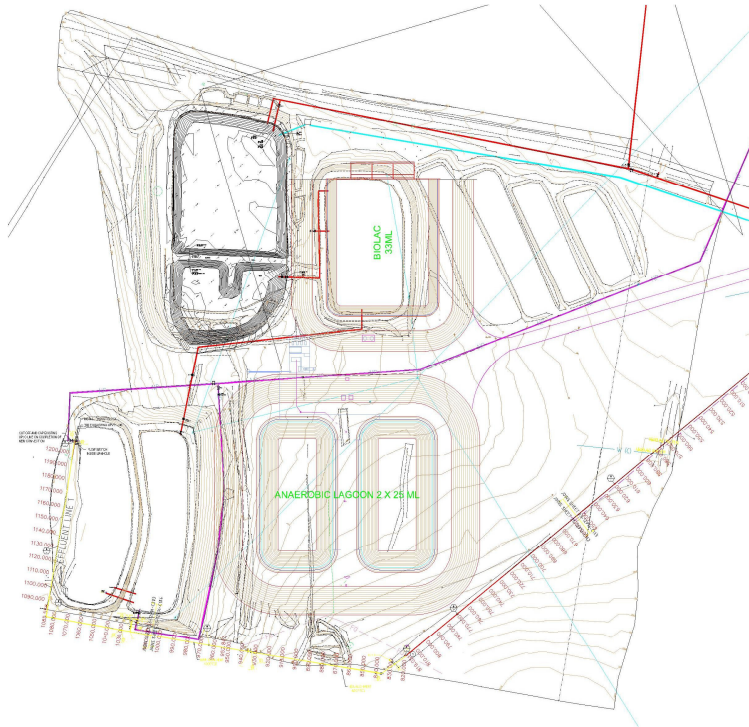
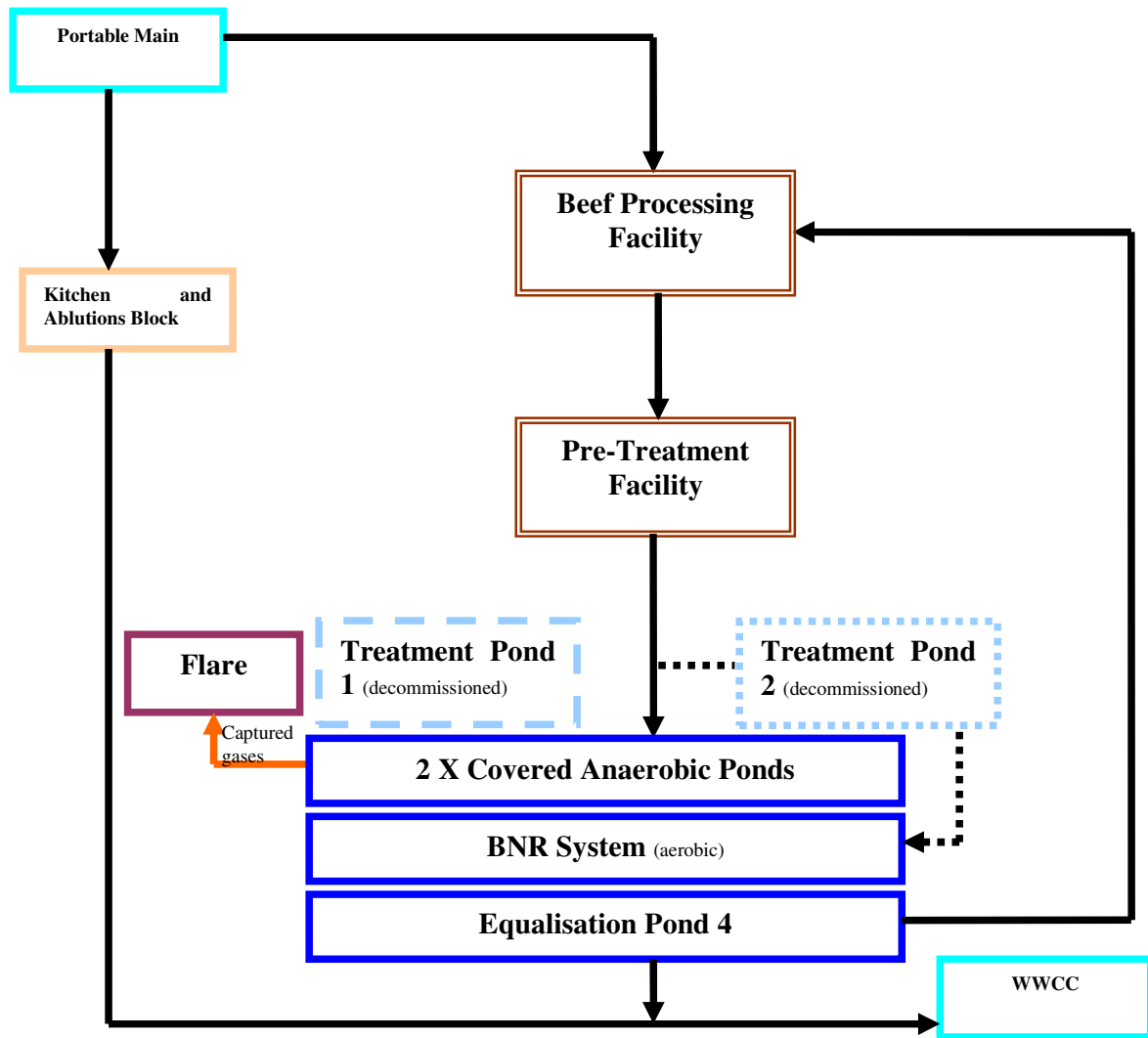


Figure 6. Simplified Model of the ESU Proposed Wastewater System



5.3 Capacity of the treatment ponds

The Beef Processing Facility currently has approval under the current consent for processing up to 2,000 head of cattle per day, 7 working days per week (this would likely be completed over two 8-hour shifts). The design capacity of the treatment ponds and detail regarding design flows was submitted to NSW DoP, DECCW and WWCC on 19 August 2009. A copy of this correspondence is attached in appendix A.

5.4 Captured gas

There will be a change to the maximum approved kill-rate of 2000 head per day proposed by the original EIS and approved by the NSW DoP in DA 220-07-2002. As the ESU is being designed to cater to a capacity of 1600 head of cattle per day, this SEE seeks to modify the approved kill rate to this level.

The covered anaerobic system is designed to contain a maximum of 42,000 cubic metres of gas per day. The captured gas is withdrawn from under the HDPE cover through the gas main to the flare, via a biogas extraction system. It is not intended to store the biogas in the process.

The auto-ignition temperature for methane will be at a minimum of 760 degrees centigrade. The pressure of the gas built up within the covered ponds will not exceed 30 kilopascals (a safety valve is designed to be released when the internal pressure reaches 30 kilopascals); however the pressure under the cover is expected to be minimal.

Gas from an external source may be used to pilot the combustion flame.

6. Statement of Environmental Effects

6.1 Permissibility and Objectives

6.1.1 Wagga Wagga Local Environmental Plan 1985

The subject site is zoned as Zone 5A (Special Uses) under the provisions of the Wagga LEP. Under this zone, developments that are described by “particular purpose indicated by black lettering on the map” are permissible without development consent. “Beef Processing Facility” is indicated as the particular purpose on the Wagga LEP Map.

The ESU is part of the Beef Processing Facility operation, therefore the proposed upgrade is considered part of the “particular purpose” identified on the LEP map and therefore permissible.

6.1.2 Wagga Wagga Development Control Plan 2005

The subject site is sub-zoned 5A (Special Uses) under the provisions of the Wagga DCP. The site is defined by the DCP for the purpose of a “Beef Processing Facility”. The ESU is a permissible development because the waste water treatment system is an ancillary activity to the Beef Processing Facility, which the particular land use is shown on the Wagga DCP Map.

6.1.3 Business Operation

The development approval for the Beef Processing Facility expansion in 2002 (DA 220-07-2002), approved the Beef Processing Facility to process up to 2,000 head of cattle per day, 7 days per week. Despite the existing approval to operate at this production level, the plant will not operate at a production level in excess of 1600 head/ day in the medium term. Therefore, as mentioned, this development application seeks approval to reduce the approved production rate to 1600 head of cattle over day over a 7 day week.

The ESU will increase the performance of the effluent treatment system to meet the acceptance limits specified in the WWCC LTWP. It is also the first stage of a future onsite co-generation facility. Therefore; the ESU will not result in:

- Any increase of the approved kill rate, and
- Any changes to the existing Beef Processing Facility operation.

6.1.4 Character of the Locality

The Beef Processing Facility is located within the Bomen Business Park. The business park is a major regional industrial estate, home to some major industries including; *HJ Heinz*, *Southern Oil Refinery* and a *Caltex* Depot. The character of the surroundings is generally industrial developments with some heavy and offensive industry.

The proposed upgrade of the existing effluent treatment ponds will have minimal impacts on the character of the locality.

6.2 Hazardous and Offensive Development

The effluent generated from the processing plant is subject to primary treatment at the Beef Processing Facility, with subsequent biological secondary treatment, currently consisting of anaerobic Ponds 1, 2, and 3. Tertiary treatment occurs in aerobic pond 4 located approximately 700m west of the processing plant. The biogas generated from the effluent in the anaerobic treatment ponds contains a significant quantity of methane gas, which is currently released into the atmosphere. The biogas can potentially have an offensive odour impacting on the nearby residential and industrial neighbours.

No toxic gases were identified with the potential to cause injury or fatality at the residential or industrial areas. The quantities, volumes and method of storage for the chemicals which will be associated with upgrade are detailed in the table below.

Table 1. Chemicals to be (potentially) used and stored within the ESU

Chemical Name	Maximum Volume Stored (Litres)	Chemical use/type	Storage details
Magnesium Hydroxide	20 000	Increase Alkalinity	Suitably bunded Storage tank
Alum	20 000	Phosphorus Dosing	Suitably bunded Storage tank

6.3 Natural Hazards

6.3.1 Bushfire Prone Land

Figure 7. Bushfire prone land



The wastewater treatment ponds are outside of the designated bushfire prone land (see figure above). However the facility is close to the bushfire prone land and the fact that it captures and burns off combustible gases should be considered. Refer to the relevant section for details regarding fire and safety management.

6.4 Hydrology

6.4.1 Flooding

The proposed site for the upgrade is elevated and according to WWCC's information, the site is not flood affected.

6.4.2 Stormwater

The new anaerobic ponds and BNR system will be constructed to avoid run-on of stormwater from surrounding land on to the covers, or into the BNR basins. This will be achieved by:

- Constructing the new ponds with elevated walls to divert stormwater away from the pond and basin contents.

Stormwater falling on to the HDPE covers fitted to the two anaerobic ponds will be directed to specific locations on the cover from where it can be pumped off on to surrounding country to prevent damage to the covers.

6.5 Odour

A primary driver for the ESU is the reduction of the site odour footprint from the wastewater treatment system. Current potential sources of odour from the biological wastewater treatment system include:

- Fugitive emissions from the 3 naturally crusted anaerobic ponds;
- Fugitive emissions from Pond 4 when under load from the anaerobic ponds.

The proposed ESU will largely eradicate these sources of odour.

6.5.1 Potential Odour Sources from the Upgraded Treatment System

The potential odour sources from the ESU can be listed as:

- The biogas handling system for the two covered anaerobic ponds;
- Fugitive odours from the decommissioning of the existing Anaerobic Ponds 1 and 2;
- Waste activated sludge management system for the new BNR system;
- Sludge removal from the new anaerobic ponds.

In addition, there is a risk of odour emissions during the reconstruction of Anaerobic Pond 3 into the new BNR plant.

The following sections outline how these risks are mitigated.

6.5.2 Biogas Handling

The biogas collection system ensures a negligible risk of odour emissions from the anaerobic treatment ponds. The collection system includes 2 covered anaerobic ponds, which will utilise a HDPE cover to mitigate against any risk of rupture.

- The 2 anaerobic lagoons will be lined using a 1.5 mm thick HDPE liner and covered using a 2.5 mm thick HDPE cover.
- The liner and cover will be secured together using anchor trenching around the perimeter of the anaerobic ponds.
- The Biogas will be extracted using 2 biogas blowers and then transferred to the flaring system.
- Manual emergency relief valve will be provided to allow for venting of the Methane (Biogas) in an emergency.
- All biogas generated will be extracted through the blowers and completely combusted in the enclosed flare thus preventing any gas escaping into the atmosphere and hence mitigating any potential odours.

- A thermo couple will be installed on the stack to monitor the flue gas temperature ensuring destruction rate above 98% is achieved.
- A flow meter will also be installed to measure the amount of biogas generated and flared off which will be connected back to the SCADA system for monitoring purposes.
- A pressure relief valve will also be installed to prevent excessive gas build in the system.

A scrubber is not proposed to be installed on the flare, due to the other controls as described above, the presence of a gas monitoring system, and the industry practice for flare operation.

The gas monitoring system will include an online monitoring system capable of monitoring sulphides.

6.5.3 Decommissioning Anaerobic Ponds 1 & 2

Anaerobic Ponds 1 and 2 are presently completely covered with a thick, natural floating crust which minimises fugitive odour emissions. Cargill propose to decommission these ponds due to their irregular shape, old age and the prohibitive costs associated with rehabilitating them for ongoing use.

Decommissioning of the two ponds will only occur once the new anaerobic ponds have been inoculated, and performance has stabilised to a consistent level. At this time, primary treated wastewater will be directed into the new anaerobic ponds, and discharge into Anaerobic Ponds 1 and 2 will cease.

Since the land occupied by these ponds will not be needed for the ESU, it is proposed to allow the two ponds to digest the existing contents with the thick crust cover retained. This has been found to minimise odour emissions. After a period of 6 – 12 months without wastewater feed, the ponds will have stabilised their contents and the risk of odour will be negligible, even if the crust begins to disappear.

It is proposed to leave the ponds in this state for the foreseeable future.

6.5.4 Waste Activated Sludge Management

The new BNR system will operate with an active sludge management program by which excess biological sludge (WAS) will be wasted from the BNR system on a regular basis, and unless required, treatment with chemicals to facilitate flocculation will not occur. The WAS dewatering system will comprise of a belt filter press, material handling (conveyors) and temporary sludge storage bin.

Due to the long sludge retention time in the BNR system the WAS is stabilized and therefore would have a minimal odour impact. This will minimise the accumulation of large amounts of sludge in Pond 4, which would require more complex management.

The dewatered sludge containing approximately 10 – 15% total solids will be spadeable in nature and will be sent for composting on a regular basis.

Processing of the WAS will occur as it is generated to minimise the risk of the WAS becoming anaerobic and generating odours.

6.5.5 Sludge Removal from New Anaerobic Ponds

The new covered anaerobic ponds will be equipped with a facility to remove accumulated sludge from the base of the ponds. Sludge removal is expected to occur once to twice a year. Sludge removed from anaerobic ponds has been anaerobically digested and once free liquid has been removed it typically has little if any offensive odour and readily dewateres in the same manner as anaerobically digested sewage bio-solids.

However, during the sludge removal process, the accompanying liquid has the potential to produce odours.

It is proposed to preferentially conduct sludge removal from the ponds during the dry summer period when the weather is conducive to rapid sludge drying. The sludge will be drawn out from the bottom of the anaerobic ponds and dried out using the existing drying beds.

Once the anaerobic sludge has dried sufficiently, it will be sent to a licensed composting facility. Typically the sludge is rich in nutrients and has negligible heavy metals and pesticides due to the absence of these contaminants (particularly pesticides) in the raw wastewater from the beef processing facility⁴.

6.5.6 Reconstruction of Anaerobic Pond 3

Potential odour impacts associated with the reconstruction of anaerobic pond 3 to the BNR will be managed through the commissioning strategy for the upgrade. This will be completed in the following order:

- Construction of 2 new anaerobic ponds, complete with cover, flare and gas monitoring system;
- Diversion of the current waste water flow from Pond 1, 2 through 3 and 4 as follows: to the covered anaerobic ponds in parallel, then through the BNR system and to Pond 4 as the penultimate pond;
- After the Covered Anaerobic System is commissioned:
 - Pond 1 is discontinued;
 - Pond 2 is discontinued;
 - Pond 3 is refurbished as the BNR system; and
 - Pond 4 is maintained for equalisation and distribution of discharge to WWCC sewer.

⁴ MLA (2002). *Assessment of contaminants in waste solids from meat processing wastewater streams*. Report PRENV.023a prepared by GHD Pty Ltd. North Sydney.

The contents of the existing pond 3 will be transferred to the new anaerobic ponds which will manage the liquid from pond 3. This will also assist to inoculate the new anaerobic ponds. Once the new anaerobic ponds have reached a stable operating condition, the flow will pass from the new ponds directly into pond 4, allowing pond 3 to dry out, and final solids be removed for the reconstruction to the BNR. Any excess sludge or crust will be transferred to ponds 1 and 2 and allowed to dry out as a part of the decommissioning strategy.

Some odour may be generated as the final solids are removed from this pond, however this process will be confined to as short a period as is practicable during construction. This will be confined to occur under suitable weather conditions where possible. Excess solids not transferred into the new anaerobic ponds will be placed into the decommissioned ponds 1 and 2.

6.5.7 Odour Impact and Control Report

Included within Cargill's EPL Effluent Management PRP conditions is the requirement to undertake an Odour Impact Assessment and Control Report by April 2011. This date aligns with the commissioning date of the BNR, the final stage within the ESU. The Odour Impact Assessment is required to;

- identify all emission sources of odour, and
- benchmark each odour emitting activity against international technology and good management practices to determine compliance with the relevant criteria.

The Odour Impact Assessment is additionally to be undertaken in accordance with the relevant DECCW guidelines.

6.6 Waste Assessment

Waste to be accepted into the treatment system consists of the Red, Green and Cattle Yard waste streams generated from normal Beef Processing Facility operation.

Currently, there are three anaerobic Ponds (numbers 1, 2 and 3) in series followed by an aerobic Pond (number 4), with effluent from the last pond typically discharged to sewer (trade waste) or recycle for cattle wash. CBA are authorised to irrigate under the site EPL but this option is not currently exercised. Wastewater from the meat processing operations are categorised and initially treated separately as:

- The stream from the Beef Processing Facility kill floor/boning room, hide wash sheds and rendering plant makes up the red stream;
- The green stream from the green offal and paunch removal; and,
- The cattle yard stream is comprised of recycled and fresh water from the cattle yards.

The existing red, green, and cattle yard streams are as follows:

The red stream carries material from the raw material bin, kill floor, boning room and wash down to a Contrashair rotating screen separator. The liquid flow is then passed to a new red stream DAF from where third grade tallow is recovered. The treated effluent from the red DAF is then pumped to the final save-all pit, where it is mixed with the green and yard streams, prior to being pumped to the anaerobic treatment system.

The Green stream is the flow from: the hasher room, green offal room, intestine room and paunch removal. It is pumped through a screw auger (for coarse solids removal) and a paunch removal fan press with a 0.75 mm aperture to remove paunch solids. Thereafter, it is combined with the yard stream prior to being screened through the Hydrocyclone.

The yard stream is a dedicated line purely containing cattle wash down water from the stockyards. It is screened using a second screw auger (as per the green stream waste water), after which it is combined with the Green stream waste water.

The combined green and yard stream water is then passed through a Hydrocyclone to remove all fine grit and sand materials from where it is pumped to the combined green/yard stream DAF unit. Here, floating solids are removed from the waste water and pumped to the tallow capture system. The water is then pumped to the final save-all pit to be mixed with the red stream and transfer to the anaerobic treatment system.

Removed solids from the pre-treatment consist of;

- Settled sludge from the Red stream DAF is dewatered using the Hydrocyclone;
- Solids from the green and yard stream augers are combined for disposal;
- Pressed paunch from the fan press is disposed via skip bins.

Approximately 1 – 2 ML/day of the treated waste water is recycled from pond 4 to the stockyard tank. The remainder is directed (under a Trade Waste Agreement) to the Bomen Industrial Sewerage Treatment Facility (BISTF).

Periodic removal of sludge (anticipated to occur once to twice a year) from the anaerobic system will be undertaken and dewatered on site prior to offsite disposal as compost.

Several times per week, sludge will be removed from extended aeration System, dewatered on site prior to offsite disposal as compost.

Some sludge is recovered from the aerobic pond (pond 4), which goes to drying beds on-site before being disposed offsite as compost. There is potential to process this sludge through the dewatering system on site.

The covered anaerobic system design considerations were summarised in the ESU Conceptual Design submitted to DoP, WWCC and DECCW on 19 August 2009. These considerations are included again in the tables below. It must be noted that organic matter designated as “oil & grease” discharged for secondary treatment is free from aromatic compounds.

Table 2. Design Water and Wastewater Flows

Input	Units	Current 1200 hd/day	Future (1600 hd/day)
Average potable Water Flow	ML/day	2.4	3.4
Wastewater (over a 10 hr day)	ML/day	2.16	3
90% of potable water flow			
Recycle Flow	ML/day	1.9	2.2
Total wastewater flow (weekday)	ML/day	4.06	5.2
Weekend wastewater flows	ML/d	0.5 -2	0.5-2
Peak daily flow	ML/d	4.7	6
Discharge flow rate to ponds (to be constant for 7 day period)	ML/day	3.6	4.5
Average flow COD load @ 12,000 mg/L	t/day	44	55
Peak flow COD load @ 12,000 mg/L	t/day	58	75
Peak COD load @ 15,000 mg/L	t/day	72	92

The adopted basis of design for the covered anaerobic system includes the following criteria:

- 12,000 mg/L COD;
- 3.6 ML/d average flow, 4.7 ML/d peak day (current); and
- 4.5 ML/d average flow, 6.0 ML/d peak day (future).

This represents a loading of 44,000 and 55,000 kg COD/day for current and future scenarios.

Based on:

- 0.55 kg m³/kg COD destroyed; and
- 85 % COD destruction.

Then gas expected to be produced = 20,000 – 33,000 m³/d. (current).

For the future load, this is equivalent to some 34,000- 42,000 m³/d.

The effluent pipeline that transfers the waste water from the save-all pre-treatment to the pond system was replaced and commissioned in June 2009. Pressure, temperature and flows sensors will be installed on this pipe to ensure that the transfer of effluent is systemically controlled.

6.7 Solid Wastes Assessment

In addition to the solid wastes already generated during the pre-treatment processing of wastewater at the Beef Processing facility, a number of new solid wastes will be generated as a result of the ESU. These wastes and the estimated weekly quantity is summarised in the table below.

Table 3. Solid wastes generated by the ESU

Solid waste	Quantity (wet tonne/week)	Frequency of production	Disposal
Dewatered waste biological solids from BNR System	70	7 days/week	Composting
Digested anaerobic pond sludge	unknown	1/year	Dried & composted

As described in the relevant sections, these materials are relatively clean, organic materials which are suitable for composting.

6.8 Soil and Water Assessment

Cargill monitors soil and ground water on an annual basis in accordance with requirements of EPL 2262 and DA 220-07-2002. This monitoring is aimed at detecting any leaks from the secondary treatment ponds and/or impacts from effluent irrigation which can potentially occur on site.

Decommissioning of Ponds 1 and 2 will leave them empty and intact, with no damage to the inner sealing layer. The discharge pipe will remain connected such that rain water can be directed from pond 1 to Pond 2.

Tender specifications clearly determine construction contractor's responsibilities during construction and rehabilitation of the site. Provision will be made for storm water catchment and erosion prevention. The anaerobic pond cover will be equipped with pumps and pipes to remove rainwater from its surface and discharge to a suitable downstream catchment area. The BNR will be uncovered but will not be affected by run-off/run-on water as it will not have a 'catchment area'.

The ESU design provides for water level fluctuation such that the inflow, (for example 5 days per week), is discharged at a constant and uniform discharge rate over 7 days to WWCC sewer. The treatment design is to meet the trade waste requirements. As part of Cargill's environmental management and monitoring system, effluent samples are analysed on a weekly basis and data kept on record. Each week, samples are taken at the outflow of; the pre-treatment, pond 1, pond 2, pond 3 and pond 4.

It is worth noting that the new effluent transfer pipe is to be equipped with flow meters such that the plant SCADA system will stop pumps automatically if a leak occurs, thus minimizing spillage to the on-site catchment ponds.

Table 4. Meeting of Design requirements

General requirement	Proposed design
Safe design, construction, operation and materials of construction	Constructed embankments with 1.5:1 internal batter slope and 2:1 external batter slope
Meet Wagga Wagga City Council Trade Waste acceptance limits	With new Covered Anaerobic Lagoons, Biological Nutrient Removal System, and Equalisation Pond 4.
No pollution of surface or groundwater	New ponds will achieve 98% inner clay compaction in addition to being synthetically lined
Final treated water to be suitable for recycle to wash (soak) cattle and wash yards (nominally C class quality)	Utilization of water from equalization Pond 4
Odour minimisation to be achieved by complete combustion of biogas and sludge management.	Enclosed flaring system and sludge dewatering system
Pond depth to allow for surge, and provision of balanced flow to sewer (even out over 7 days) by freeboard in CAL, automatic valving and storage in ponds 3 and 4	Pond has high freeboard to allow for storage of wastewater and gas
Automated for 24/7 control	PLC control of system, Manual valves for feeding alternative ponds
Maximise biogas production by having a mixed pond, sludge recycle and relatively long HRT.	Liquid from the sludge dewatering system will be introduced to CAL
Good quality flare with H ₂ S scrubber or similar device before or after the flare	Scrubber proposed for electricity generation, not flaring system
Measures to be put in place to prevent uncontrolled discharges.	High freeboard
Minimum of 3 m road around pond for access	In design
Gas to be stored under cover, which means that a flexible cover and O ₂ and CH ₄ monitoring will be required.	Cover flexible to store gas
The proposed orientation of the new anaerobic pond is adjacent to Pond 2 and near Pond 3, orientated with its long axis along the general contour lines in the area.	

6.9 Greenhouse Gas Emissions Assessment

Cargill anticipates utilising the biogas in the near future. The ESU is being completed according to Cargill's internal Project Delivery Process (PDP) and is separate to the cogeneration project which would commence following the completion of the ESU.

It is worth noting that in November 2008 DECC announced \$2.9m funding to Cargill for the biogas cogeneration project. Commissioning of the various stages of the ESU is planned to occur in accordance with the following milestone timelines;

1. Complete orders for all long lead time equipment required:- 1 December 2009
2. Commissioning of the upgraded Primary Treatment Systems:- 1 June 2010
3. Commissioning of the new covered anaerobic system:- 15 December 2010
4. Commissioning of the biological nutrient removal (BNR) system:- 30 April 2011

Following the commissioning of the ESU as is detailed above, the cogeneration project can commence. Cogeneration will involve the use of the captured biogas to power an internal combustion engine. This engine will drive a generator set delivering electricity for use on-site, thereby off-setting Cargill's grid demand.

6.10 Access and Egress

The ESU will not result in any increase in the amount of traffic accessing the Beef Processing Facility plant and there are no proposed changes to existing access and vehicular movements on the site.

During construction, there may be increased vehicles accessing areas of the site but this increase is expected to be negligible compared to the current traffic associated with the operation of the Beef Processing Facility.

6.11 Fire and Safety

The NSW Rural Fire Services (RFS) conducted a site visit on 14 November 2008. Drawings detailing the previously proposed design and site lay-out were presented to the RFS. The proposed plans were forwarded by the RFS to the Team Leader Specials of the Sydney Fire Services (SFS). The SFS mentioned no absolute restriction applicable in this instance.

Condition 7.2(a) of DA 220-07-2002 requires that a Fire Safety Study be prepared in accordance with the DoP's *Hazardous Industry Planning Advisory Paper No. 2 'Fire Safety Study Guidelines'* which must also be submitted to and approved by the NSW Fire Brigade. This is required prior to commencement of construction of the covered anaerobic system.

CBA will install fire protection equipment, measures and procedures as may be required by the Fire Safety Study. Provision is made within the ESU for this regard.

The WWCC has a large reservoir (>1 ML) next to the proposed site from which four pipe lines serve the Cargill Beef site. The reservoir is constructed on the ground level which is 12 to 15m elevated above the proposed new pond location. The reservoir top water level is elevated by more than 20 metres above the proposed pond location, allowing for gravity water supply if for example fire hydrants are to be installed. The pipe route is within 200m from the proposed new pond location. If so required, a new trench route can be placed within open space between existing ponds and around the proposed new pond.

6.12 Heritage

The subject site is not listed as an *Item of Environmental Heritage* and there are no known significant heritage values associated with the site. The site is not located in a Conservation Area designated by the Wagga DCP.

6.13 Visual Assessment

The site is part of the Bomen Business Park which is an industrial estate that houses industry including the stockyards, a refinery and manufacturing plants. Therefore, the ESU will have minimal visual impacts to its surroundings.

The flare used will be fully enclosed so as not to impact on the visual amenity of the surrounding areas. The flare will be approximately 7 -8 m high with an external diameter of approximately 2 – 2.5 m.

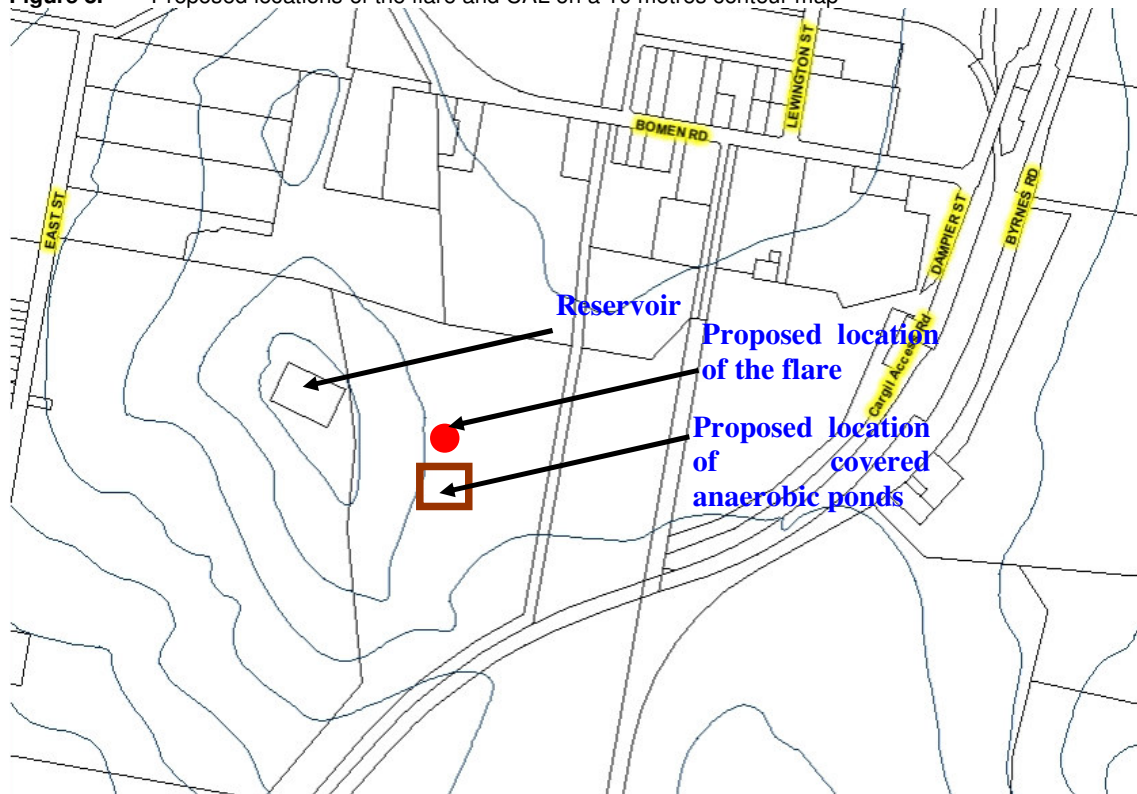
6.14 Ponds

The cover of the anaerobic system is expected to inflate to a metre above the embankment of the pond. The cover pond is not highly visible and it is expected to have similar impacts as a large rural dam.

The BNR system will be located adjacent to the covered anaerobic pond. It will be an in ground system without a cover and hence will likely have a similar visual footprint.

6.15 Flare

The proposed Flare will be 7 – 8 metres in height. The figure below shows that the flare should not be intruded over the ridgeline. Given the angle of incidence and vegetation over the hill, the visual impacts on the residences of Cartwrights Hill and people travelling on the Olympic Highway are expected to be minimal.

Figure 8. Proposed locations of the flare and CAL on a 10 metres contour map

6.16 Services and Infrastructure

The ESU (excluding the pre-treatment) will require the following to operate:

Table 5. Utilities and services

Utilities	Demand	Delivery
Electricity	1000-1500KVA/ 3-phase	Primary Line and Transformer upgrade required
LPG Gas	14 day (minimum) storage	Specified as part of new works
Water	For pump priming and fire fighting	Available from Council reservoir via existing metered pipe line and connection point close to pond 2b location.
Sewerage	Required for Amenities	
Compressed air		Specified to be part of contractor's responsibility to supply as part of new plant and equipment.
Plant control system		The new control system is specified to wireless transfer data and alarm conditions to the main SCADA-system on the site.

6.17 Summary

Overall, it is considered that the ESU of CBA's wastewater treatment system is expected to have minimal environmental impacts on both the natural and built environments and negligible social and economic impacts to the surrounding areas. The ESU will allow the effluent generated by the facility to meet the general acceptance limits specified in the WWCC LTWP, whilst also reducing greenhouse gas emissions from the site and providing a significant reduction in the potential for odour generation from waste water sources.

The development proposal is to upgrade the existing wastewater treatment system and it is permissible under the provisions of both Wagga LEP and Wagga DCP, therefore it is considered that the site is suitable for the proposed development.

7. Justifications for the Modification

The proposed upgrades have a number of attributes which support the case for the ESU at Cargill's Beef Processing Facility. The following merits are considered to be outcomes of the ESU:

- ▶ Increased performance of the Beef Processing Facility's wastewater treatment system to meet the WWCC Liquid Trade Waste Policy general acceptance limits;
- ▶ Control emissions of greenhouse gases via capturing and flaring off gas (predominately methane) in the proposed covered anaerobic ponds;
- ▶ Significantly reduced odour emissions from the existing anaerobic treatment ponds;
- ▶ Improve the productivity and viability of the Beef Processing Facility; and
- ▶ Establish the infrastructure for a future on-site co-generation facility.

Please direct any enquiries relating to this Statement of Environmental Effects, to:

Anil Vargis
Project Engineer

Charles Hollingworth
Environmental Supervisor

Cargill Beef Australia
PO Box 166
Wagga Wagga NSW 2650
(02) 6938 3000

Appendix A – ESU Conceptual Design – prepared by Dr
Mike Johns