Environmental Management Plan
Batchelor Abattoir
### DOCUMENT CONTROL RECORD

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APPENDIX C ODOUR MANAGEMENT PROCEDURE
APPENDIX D WASTE MANAGEMENT PLAN
APPENDIX E EMERGENCY RESPONSE PLAN

Acknowledgements

Central Agri Group acknowledge UNO Management Services, The Odour Unit and EcOz Environmental Consultants for their contribution to the content of this EMP.
1 INTRODUCTION

Rum Jungle Meat Exports Pty. Ltd., a subsidiary of Central Agri Group (CAG), will operate the Batchelor Abattoir facility, located on a ~828 ha property near the town of Batchelor, approximately 98 km south of Darwin, Northern Territory. The abattoir is an Export Registered Establishment under the Export Control Act 1982 (Commonwealth) and holds a Domestic Abattoir Licence under the Meat Industries Act 1996 (Northern Territory). The facility will slaughter cattle, buffalo and donkey to produce meat primarily for export to markets in Asia and abattoir wastes will be rendered to produce saleable tallow and meal products. This Environment Management Plan (EMP) provides details of how CAG will manage its activities and operational processes at the Bachelor Abattoir to provide for protection of the surrounding environment.

1.1 Environmental Policy

CAG’s Environmental Policy states a commitment to minimising impacts to the environment, ongoing improvement and working closely with relevant regulators and other stakeholders. A copy of our Environmental Policy is provided at Figure 1.

1.2 Legal and Other Requirements

The primary environmental approval applicable to operation of the Batchelor Abattoir is an Environment Protection Licence (EPL) issued under the Waste Management Pollution Control Act. An EPL is required for storing, treating and disposing of ‘Animal effluents and residues’, which are a listed waste as defined in Schedule 2 of the Act. This EMP has been developed as a supporting document to our EPL application and will be updated/revised over time provide a framework for managing environmental compliance as site operations evolve. A Legal and other Obligations Register will be established and maintained once the EPL is in place to allow for tracking of compliance.

1.3 Objectives

The over-arching objectives of this EMP are to:

- Minimise impacts to the environment, our neighbours and the community.
- Minimise resource use and reduce waste through innovative work practices and recycling.
- Prevent pollution arising from the storage, handling, treatment and disposal of wastes.
- Promote environmental awareness to our staff and customers.
- Ensure compliance with all legal and other requirements.

1.4 Roles and responsibilities

Key organisational roles and responsibilities for the implementation of this EMP are outlined below.

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibilities</th>
</tr>
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<tbody>
<tr>
<td>Directors</td>
<td>Provide leadership and promote a culture of environmental stewardship to support delivery of the CAG Environmental Policy. Provide adequate resources for environmental management and compliance. Ensure operations do not result in environmental harm.</td>
</tr>
<tr>
<td>Role</td>
<td>Responsibilities</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Managers/Supervisors      | Ensure compliance with the EMP for area of responsibility.  
                            | Identify emerging environmental issues.  
                            | Respond to and report environmental incidents in a timely manner.  
                            | Undertake inspections and maintain records.  
                            | Enact environmental improvements.                                                                                                                  |
| Environment Representative| Development and review of environmental policies, processes, and guidelines for their implementation.  
                            | Identification and review of environmental aspects, impacts and risks associated with the abattoir operations.  
                            | Maintenance of a Legal and Other Obligations register.  
                            | Environmental inductions and training.  
                            | Internal environmental performance monitoring  
                            | Preparation of improvement plans.  
                            | Compliance monitoring and reporting.  
                            | Management of complaints.  
                            | Review and update of the EMP.  
                            | Liaising with legislative authorities, other government departments and unions for environmental related matters. |
| Team Members and Subcontractors | Attending environmental inductions and training.  
                            | Operate in accordance with approved work practices and procedures.  
                            | Respond to and report environmental incidents.                                                                                                  |

### 1.5 Induction and training

CAG will ensure that all employees receive environmental awareness inductions and training specific to their job role. An induction register will be maintained.
Environmental Policy

Policy Statement
As part of our commitment to achieving acceptable environmental practices in the workplace, we recognise our moral and legal obligations to ensure that as far as is reasonably practicable, our activities minimise impacts to the environment.

Aims and Objectives
We are committed to ongoing environmental improvements and will achieve this by working closely with relevant regulators and other stakeholders, to not only meet our environmental licence requirements, but also;

- minimise environmental impacts by regularly monitoring, reviewing and implementing improvements to our systems and procedures,
- reduce waste through innovative work practices and recycling procedures,
- increase the use of environmentally acceptable consumables, materials, equipment and procedures
- promote environmental awareness among our staff and customers.

Responsibilities
We recognise that the overall responsibility for acceptable environmental practice rests with management, who are accountable for the implementation of this policy. These responsibilities include;

- ensuring that the conditions of our environmental licence are adhered to,
- establishing measurable objectives and targets to ensure continued improvements in minimising waste and environmental impacts,
- encouraging consultation and cooperation between management, staff and stakeholders on matters which affect the environment, and
- providing adequate resources to meet these environmental commitments

Peter Polavinka

General Manager

Figure 1. Central Agri Group Environmental Policy
2 LOCATION AND ENVIRONMENT

This section provides an overview of the environment within and surrounding the Batchelor Abattoir property. The information is summarised largely from the desktop review prepared by Uno Management Services (2019), with some supplementary information provided by EcOz Environmental Consultants.

2.1 Owner and operator details

The Batchelor Abattoir is located in the central western part of Lot 2894 Hundred of Goyder, owned by Tadmansori Holdings (Australia) Pty. Ltd. Central Agri Group, is an Australia meat processing company part owned by Tadmansori Holdings (Australia) Pty. Ltd. The Batchelor Abattoir will be operated by Central Agri Group subsidiary, Rum Jungle Meat Exports Pty. Ltd.

2.2 Property details

The location of the property and abattoir facility are shown in Figure 3 and details are provided below.

Latitude: 13° 03’ 07.67” S
Longitude: 130° 59’ 55.53” E
Parcel details: Lot 2894 Hundred of Goyder
Address: 165 Meneling Road, Batchelor NT 0845
Land tenure: Freehold
Zoning: Unzoned

2.3 Land use history

The abattoir facility was built in the 1960’s and has been operated intermittently by different owners for the past 60 years. The facility was last operational in 2012. Commencing in 2018, Central Agri Group has invested in facility upgrades, with plans to reopen in late 2019.

The remaining land area of Lot 2894 is used for grazing cattle and growing feed crops, with at least 50% of the property cleared for this purpose. The paddocks in central and southern parts of the property were laser levelled in 2017 and a successful sorghum feed crop was grown. A cattle export yard located 1.2 km south-east of the abattoir facility is not currently in use.

2.4 Surrounding land use and neighbours

The surrounding land use is primarily rural living and small-scale agriculture. Rum Jungle Lake is located within 200 m of the western property boundary. The Batchelor township sewage ponds are located within 200 m of the eastern property boundary, upstream of the abattoir facility. The ponds may overflow into the Meneling Creek, which flows through Lot 2894, just west of the abattoir facility.

A small portion of the northern property boundary is shared with Lot 2819 Hundred of Goyder, a smaller (21ha) privately owned property with permanent buildings located close to the shared boundary. The neighbouring property to the north-west (Lot 2830 Hundred of Goyder) is a 375 ha parcel owned by Coomalie Community Government Council with no permanent infrastructure. Immediately to the west is an undeveloped patch of land associated with Crown Lease Section 2915 Finniss Valley (7,420ha). To the south and northeast is undeveloped Aboriginal Land owned by the Finniss River Aboriginal Land trust.

The nearest residences to the abattoir facility are located:

- 2 km north-west on Lot 2966
2.3 km west on Lot 2115.

The closest residences on the western outskirts of the Batchelor Township are located 2.5 km east of the abattoir. The locations are shown in Figure 3.

2.5 Land and soils

Land type mapping for the property is presented in Figure 2. Land and soil details are summarised below.

Landunit mapping (1:25,000) scale (Wood and Day, 1976) covers approximately half of the property, including part of the proposed irrigation area to the south of the abattoir. The existing cleared paddocks around the abattoir (north and south) are mapped as landunit 3b, which comprises loamy red earths of variable depth with slopes to 4%. Land type/capability mapping available for the Coomalie Shire (Hill and Wait, 2009) maps this area as gently undulating plains (moderately to well drained). The area is described by (Wood and Day, 1976) as being suitable for intensive agricultural development due to the presence of deep soils, which appear physically suited to agriculture; however, it is noted that clearing will increase erosion potential due to slopes up to 4% and will warrant protection by soil conservation measures.

The land types in the central part of the property are bounded to the south and north by gently undulating plains (moderately to well drained) and large areas of rugged terrain with slopes >9%. The upper reaches of Meneling Creek in the southeast of the property are mapped as drainage depressions (poorly to very poorly-drained). As the creek flows west towards the abattoir site it transitions to a more defined stream channel/riparian zone. Drainage depressions associated with separate catchments also occur along the northern property boundary and south-eastern boundary of the property.

2.6 Surface water

The entire property lies within the Finniss River catchment, spanning three separate sub-catchments associated with Meneling Creek in the central part of the property and minor unnamed watercourses in the north-east and south-west corners. The majority of the property, including the abattoir and proposed irrigation area drains towards Meneling Creek, which flows only during the wet season. Meneling Creek discharges into the Finniss River approximately 3.8 km downstream of the abattoir.

The Batchelor sewage ponds are located in the Meneling Creek catchment, immediately upstream of the property boundary. Rum Jungle Lake is also located in the Meneling Creek catchment, immediately downstream of the abattoir. Water quality in Meneling Creek may be influenced by these landuses and also existing agriculture landuse that occurs on the property. Baseline surface water monitoring will be undertaken over the 2019/2020 wet season (refer Section 7).

2.7 Groundwater

Groundwater is typically encountered in low permeability, carbonate fractured bedrock aquifers of the Burrell Creek Formation, with typical bore yields varying from 0.5 L/s to more than 5 L/s. There are 10 registered bores on the property, with reported water levels ranging between 3-14 m below ground level. The abattoir bore RN007771 drill log indicates the bore was completed in September 1971 and had a water level of 6.1m. Baseline groundwater monitoring will be undertaken at onsite bores prior to irrigation of wastewater and as part of the ongoing monitoring program once irrigation commences (refer Section 7).
Figure 2. Land types that occur on Lot 2894 Hundred of Goyder
2.8 Flora and fauna

The central portion of Lot 2894, where the abattoir facility and future irrigation area are located, have been previously cleared and used for agricultural activities since the 1960’s. These areas provide limited habitat value for flora and fauna. The undulating and rugged terrain in the north-east and south-west parts of the property support the following vegetation types as described by Wood and Day (1976):

- *Eucalyptus miniata* and *Eucalyptus tetrodonta* low woodland/low open forest with *Corymbia bleeseri*, *Corymbia polycarpa*, *Erythrophleum chlorostachys*; with *Heteropogon contortus*, *Chrysopogon latifolius*, *C. fallax* and *Sorghum plumosum* grasses.

- *Eucalyptus tetrodonta*, *Corymbia bleeseri*, *Eucalyptus miniata* and *Erythrophleum* low open forest/open forest; dominant grasses include *Chrysopogon latifolius*, *Panicum sp.*, *Annual sorghum* and *Eriachne sp.*

- Variable; *Eucalyptus miniata* and *Eucalyptus tetrodonta* low woodland to open forest with *Corymbia bleeseri*, *Erythrophleum chlorostachys* and *Corymbia confertiflora*; dominant grasses include *Chrysopogon latifolius*, *Chrysopogon fallax*, *annual Sorghum sp.*

These vegetation types are common in the region and are likely to provide habitat for a range of woodland species.

The riparian zone vegetation associated with Meneling Creek is likely to provide a refuge habitat for a range of species. This vegetation type is classified as a sensitive vegetation type under the *NT Land Clearing Guidelines* and will be buffered by at least 100 m from any clearing/cropping/irrigation activities. The riparian zone will not be directly impacted by abattoir operations; however, there is potential for water quality impacts associated with irrigation or overflow of wastewater ponds. Water quality monitoring (refer Section 7) will be undertaken to detect impacts and allow for contingency actions to be undertaken to protect habitat values.

2.9 Weeds

The Weed Records database in NRMaps holds over 200 weed records for the property. Over 50% of these are for Gamba Grass, which is widespread across the Bachelor area. Table 2 lists the weed species recorded on the property in the Weed Records database in NRMaps. The records have not been verified; however, the large number of weed records is consistent with the long-history of agricultural landuse, which is also the case for many properties in the Batchelor area.

Weed control measures will be required to comply with the *Weed Management Act*, in particular for the future cropping and irrigation activities, and in the areas around the holding yards. As the occupier of the land, CAG is required to control weeds in accordance with the Statutory Weed Management Plans that are in place for the Class A weeds.

**Table 2. Weed records on Lot 2894 Hundred of Goyder**

<table>
<thead>
<tr>
<th>Weed Species</th>
<th>No. records</th>
<th>Classification under Weed Management Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bellyache Bush - <em>Jatropha gossypifolia</em></td>
<td>1</td>
<td>A (Eradicate)</td>
</tr>
<tr>
<td>Calopo - <em>Calopogonium mucunoides</em></td>
<td>1</td>
<td>Not declared</td>
</tr>
<tr>
<td>Centro - <em>Centrosema molle</em></td>
<td>1</td>
<td>Not declared</td>
</tr>
<tr>
<td>Gambia pea - <em>Crotalaria goreensis</em></td>
<td>2</td>
<td>Not declared</td>
</tr>
<tr>
<td>Gamba grass - <em>Andropogon gayanus</em></td>
<td>139</td>
<td>A/B zoned (Eradicate/control)</td>
</tr>
<tr>
<td>Grader grass - <em>Themeda quadrivalvis</em></td>
<td>1</td>
<td>B (Control)</td>
</tr>
<tr>
<td>Hyptis - <em>Hyptis suaveolens</em></td>
<td>2</td>
<td>B (Control)</td>
</tr>
</tbody>
</table>
### Weed Species

<table>
<thead>
<tr>
<th>Weed Species</th>
<th>No. records</th>
<th>Classification under Weed Management Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lantana - <em>Lantana camara</em></td>
<td>1</td>
<td>B (Control)</td>
</tr>
<tr>
<td>Mimosa - <em>Mimosa pigra</em></td>
<td>36</td>
<td>A/B zoned (Eradicate/control)</td>
</tr>
<tr>
<td>Mission grass - <em>Cenchrus polystachios</em></td>
<td>1</td>
<td>B (Control)</td>
</tr>
<tr>
<td>Olive Hymenachne - <em>Hymenachne amplexicaulis</em></td>
<td>2</td>
<td>B (Control)</td>
</tr>
<tr>
<td>Prickly acacia - <em>Vachellia nilotica</em></td>
<td>1</td>
<td>A (Eradicate)</td>
</tr>
<tr>
<td>Rats tail grass – American - <em>Sporobolus jacquemontii</em></td>
<td>4</td>
<td>Not declared</td>
</tr>
<tr>
<td>Senna - Candle bush - <em>Senna alata</em></td>
<td>6</td>
<td>B (Control)</td>
</tr>
<tr>
<td>Sicklepod - <em>Senna obtusifolia</em></td>
<td>5</td>
<td>B (Control)</td>
</tr>
<tr>
<td>Sesame - <em>Sesamum orientale</em></td>
<td>1</td>
<td>Not declared</td>
</tr>
<tr>
<td>Flannel weed - <em>Sida cordifolia</em></td>
<td>3</td>
<td>B (Control)</td>
</tr>
<tr>
<td>Spiny head Sida – <em>Sida acuta</em></td>
<td>4</td>
<td>B (Control)</td>
</tr>
<tr>
<td>Snake weed - <em>Stachytarpheta cayennensis</em></td>
<td>3</td>
<td>B (Control)</td>
</tr>
<tr>
<td>Snake weed - <em>Stachytarpheta jamaicensis</em></td>
<td>3</td>
<td>B (Control)</td>
</tr>
<tr>
<td>Para grass - <em>Urochloa mutica</em></td>
<td>1</td>
<td>Not declared</td>
</tr>
<tr>
<td><em>Macroptilium atropurpureum</em></td>
<td>1</td>
<td>Not declared</td>
</tr>
</tbody>
</table>

### 2.10 Historic and archaeological heritage

The NT Heritage Branch was contacted to request information in relation to historic heritage and/or Indigenous archaeological sites that occur within or near to the Batchelor Abattoir site. There are no sites listed on the NT Heritage Register or in the archaeological sites database on the property. There are historical heritage features recorded within the property, namely:

- Castlemaine Hill - Remains of bases to wartime water tanks and station. Location not verified.
- Meneling Abattoir site.

The Meneling abattoir site is now the Batchelor Abattoir. The site was noted as having historical heritage value due to it being operational since the 1960’s. Castlemaine Hill is outside of the abattoir site boundaries on areas of the property that will not be used as part of the operations, and so are not at risk of disturbance. A declared heritage site, Flynn’s Farm, is located on Lot 2819, which adjoins the northern boundary of property. This site is off the abattoir property and not at risk of disturbance.

The indicative location of these sites is shown on Figure 3.

### 2.11 Aboriginal Sacred Sites

A search of the Aboriginal Sacred Sites register indicates there is one recorded site located on Meneling Creek immediately downstream of the property boundary (ref 5071-73). There is also a location on Meneling Creek within the property that is noted as being a place of cultural value to Aboriginal people, but is not a recorded or registered site (ref 5071-72). There is a registered sacred site near the Rum Jungle Lake to the north of the property (ref 5017-15). These sites are in areas that will not be directly affected by the abattoir operations; however, it is noted that sites 5071-73 is located close to the wastewater ponds and 5071-72 is located close to the proposed future irrigation area. Where there is potential for abattoir operations to impact on Aboriginal Sacred Sites an Authority Certificate will be applied for.
Figure 3. Location map
3 DETAILED ACTIVITY DESCRIPTION

This section provides a detailed description of the Batchelor Abattoir facilities, operations, production processes and details of the listed wastes that will be stored and treated on site.

3.1 Overview

The Batchelor Abattoir facility will slaughter and process up to 160 head/day when operating at full capacity. Hours of operation will vary depending on demand, but will generally be 7am to 4 pm five days/week, between the months of March and December. During the wet season, when demand for processing is low due to poor mustering access, the facility will shut down. The abattoir will process up to approximately 30,000 hear per year of predominately cattle and a small number of donkeys and buffaloes.

Livestock will be delivered to the abattoir by road trains. On average, one truck per day will deliver up to 160 head using Stuart Highway, Batchelor Road and Meneling Road route. Animals will be off-loaded into the stockyards and transferred to the covered holding yards prior to processing. The yards have capacity to hold 320 head onsite at any given time.

Meat and offal products will be produced for export. Hides will be exported as is (i.e. without brining). The facility has a low temperature rendering plant that will process heads, horns, hoofs, bone, fat and blood to produce tallow and meat meal products. An average of seven truck/tankers per week will transport meat, hides, tallow and meal from the site to Darwin for export.

Wastewater generated by the operation will be subject to primary treatment to remove solids, oil and grease prior to entering wastewater treatment ponds for biological treatment to a standard suitable for reuse as washdown water and/or irrigation to land for crop growing. Solid wastes will include manure, paunch and sludge, which will be removed off-site for composting or disposal. Onsite reuse/disposal of wastes may be considered in the future subject to further assessment of the feasibility, sustainability and cost-benefit compared to engaging contractors for offsite disposal.

The facility was dry commissioned in 2019 and a trial operation period is scheduled October to December 2019 subject to approval. The facility will operate at 50% capacity in month one, moving to 100% capacity in the following months. All wastewater produced during the trial operation period will be contained within the wastewater ponds with sufficient freeboard remaining in December to ensure the ponds do not overtop in an above average wet season. Full operations, including irrigation of wastewater to produce a feed crop, are planned to commence in March 2020.

3.2 Site design and layout

The site incorporates the facilities described below and shown on the site plan (Figure 4).

- Covered stockyards with capacity to hold 320 head, and uncovered yards for contingency
- Truck wash-down bay
- Slaughter floor with boning and slicing areas
- Three carcass-chilling rooms, three blast freezers and two blast chillers.
- Main effluent pit (5,000L capacity) where red and green waste streams mix
- Contrashear (0.25mm screen size) for red waste stream solids separation and fan press for green waste stream solids separation
- Bunded waste storage area for solid waste bins (paunch/wet manure) and dry sweep manure stockpiles
- Low temperature rendering plant with 10 m high dryer stack

Batchelor Abattoir - Environmental Management Plan
- Wastewater treatment ponds (x3) with approximate 19 ML storage capacity
- Septic system with covered absorption trenches for domestic sewage disposal
- Open unlined stormwater drainage network
- Staff amenities, workshop and maintenance buildings.
- Reticulated mains power connection from Batchelor, 20,000 L LPG tank for rendering plant and bore water supply.
- Cropping paddocks for effluent reuse.

Water requirements have been estimated at 1 ML per week, based on requiring 994 kL for all activities associated with livestock watering, wash-down and processing 160 head of cattle/day, and 6 kL for servicing amenities for 40 staff during shifts and accommodation for 10 people on site. Water will be supplied from an existing onsite bore (RN7771) which is reticulated throughout the facility from a 350 kL tank.

Based on experience operating other abattoirs, CAG have installed facilities and adopted certain operating procedures that will contribute to minimising the environmental risk associated with abattoir emissions and discharges. These are listed below:

- CAG have installed a raw material chiller (60 m²) to take 2 days/50 t worth of renderable material to minimise spoilage and ensure only fresh material is being rendered.
- The hours of operation of the rendering plant will be spread over a 10-hour day, which will lower the hourly throughput and therefore the Odour Units generated per hour from the rendering vapour.
- The FAN press separator installed by CAG is the best in class for green stream solids removal.
- The 0.25mm screen size contrashear installed by CAG will provide for greater solids removal than the 0.5mm screen size used in most abattoirs.
- Paunch and manure removal will be scheduled weekly to minimise volumes of materials stockpiled and associated odour issues.
- Blood from the slaughter floor collection drain is continually pumped and cooked as opposed to holding and batch cooking (as cooking fresh reduces the odour generated)
- The size of the anaerobic pond allows for greater than average retention time (34 days as opposed to minimum requirement of 16 days).
- The larger anaerobic pond will allow for optimum working conditions relating to temperature equalisation of effluent entering the pond.
- The abattoir will shut-down over the peak wet season months of late December, January and February, when high temperatures and rainfall typically increase odour risks.

The sections below provide further details of aspects of the abattoir facilities and operations associated with storage and treatment of listed wastes (animal effluent and residues) and/or with potential to produce discharges or emissions that could cause environmental harm. A schematic of the site operational flows is provide at Figure 5.
Figure 4. Site Plan
Mechanical Aeration

Contrashear

0.25 mm screen size

DeWatering

Fan Press

Dry sweep yard

Manure Storage

Solid waste Bins

Slaughter Floor

Red Offal Room

Green Offal Room

Boning Room

Chillers

Rendering

Chillers

Bunded area for solid waste from primary separation prior to render or off site disposal

Total area 100 m²

Future composting on approved area

Future Composting area

Future Storage Dam

Future Irrigation Area

- Dewatered Paunch to Rendering or Off Site disposal
- Leachate contained within bunded area

Off Site Solid Waste Disposal by licenced contractor

Anaerobic Pond 1

6726 m³ / 200kl
HRT= 34 Days

Anaerobic Pond 2

3564 m³ / 200kl
HRT= 18 Days

Anaerobic Pond 3

3185 m³ / 200kl
HRT= 18 Days

Waste water Schematic v 3.2

Any De Slugging of ponds will be dewatered through a Fan Press and sludge decanter and removed offsite

Prepared by: Central Agri Group 2019

Recycle Water

250kl

Re use water for yard wash

Main Effluent Pit 5000 lt

Blood

Water Meter

Water

Meter

Water

Meter

Water

350kl

Main Water Tank

Future composting on approved area

Bunded area for solid waste from primary separation prior to render or off site disposal

Total area 100 m²

Future Irrigation Area

Prepared by: Central Agri Group 2019

Figure 5 - Operations Schematic
3.3 Operations details

The sections below provide detail in relation to aspects of the site operations that use resources, produce wastes or emissions/discharges with potential to cause environmental harm if not properly managed.

3.4 Holding yards

Livestock received at the site are transferred to the covered holding yards. The yards have concrete floors with internal drainage that directs wash-down water to the main effluent pit, prior to passing through the 0.25mm screen size contrashear for solids removal. Bulk manure removed from the yards by daily dry sweeping is stockpiled in the adjacent solid waste storage area (refer section 3.9).

3.5 Truck wash-bay

The truck wash bay located adjacent to the unloading ramp is used to wash-down trucks after they have unloaded. The bay has a concrete floor and bunding. Drainage from the wash bay flows to the main effluent pit, which is pumped through the 0.25mm screen size contrashear for primary solids removal. The wastewater flows through the main effluent line to the save-all.

3.6 Abattoir operations

The processing area of the abattoir is comprised of the slaughter floor, boning room, offal rooms and chillers. Each room is thoroughly cleaned as part of routine daily operations and has grated internal drains for initial coarse solids removal from wastewater. Drainage pipes below the processing area direct wastewater to the primary treatment systems (refer section 3.7).

The slaughter floor has a dedicated blood collection drain that separates blood from the waste stream, which is then pumped to the rendering plant via overhead pipes. The green offal room has a dedicated paunch collection drain that directs paunch to the fan press for dewatering. Wash-down wastewater from the slaughter floor flows to the main effluent pit, whereas wash-down wastewater from the boning room, chillers, red and green offal rooms and rendering plant flows directly to the save-all.

Coarse solid waste from the processing area is collected in storage bins located under cover outside the slaughter floor. Full bins are taken directly to the rendering plant, which is less than 100 m away, or to the raw material chiller if the rendering plant does not have capacity to process immediately. This procedure ensures that only fresh material is rendered and minimises odour emissions.

Dewatered paunch from the fan press and solid screenings from the contrashear fall directly into solid waste bins, which are stored in the bunded solid waste storage area (refer section 3.9), prior to removal off-site for disposal.

3.7 Rendering plant

Blood and solid wastes from the abattoir operations are sent to the rendering plant for conversion to tallow and meal products. The rendering process involves the direct injection of steam to separate the fat (or tallow) from the protein. The protein component is dried (in a dryer) to produce meal.

The rendering process will produce stickwater and washdown water, which will combine with the abattoir wastewater stream in the save-all for primary removal of solids and fats. The solids and fats from the save-all are reprocessed through the rendering plant. Vapour emissions will be release from the rendering and drying processes via a 10 m high stack at the rendering plant.

The dryer stack is one of the main sources of potential odour emissions. Emissions modelling results are discussed in section 3.13 of this EMP.
3.8 Primary treatment systems

The upstream, or primary, treatment processes used in the meat processing industry seek to reduce suspended solids, oil and grease to maximise the effectiveness of downstream biological treatment processes that occur in wastewater ponds. The Batchelor Abattoir has the following primary treatment technologies in place:

3.8.1 Contrashear (0.25mm screen)

Green stream wastewater from the cattle yards (wet manure) combines with red stream wastewater from the slaughter floor in the main effluent pit, from which it passes through a contrashear (0.25mm screen size) to remove residual fine solids >0.25mm. The solids fall into a bin underneath the contrashear, which is moved onto the adjacent concrete bunded storage pad when full. The leachate leaving the contrashear flows by gravity to the save-all, which is located at the rear of the rendering plant.

3.8.2 Dewatering FAN press

Wet paunch is pumped from the tripe room to the dewatering FAN press. The solids fall into a bin underneath the fan press, which is moved onto the adjacent bunded storage pad when full. The solid waste will either be removed off-site by a licenced contractor or rendered on site. The leachate generated from dewatering flows to the main discharge line to the save-all for additional solid separation, and is then pumped to effluent treatment ponds.

3.8.3 Save-all (grease trap)

The save-all is a triple interceptor grease trap that ultimately receives all wastewater prior to discharge to the treatment ponds. The purpose is to provide sufficient time in a still environment with no stirring, no aeration, and no inlet jets, to allow fats to separate from the water and float to the top, and for heavier solids to sink to the tank base. Surface scrapers operate to remove the floating fat, which is drained into a skip for reprocessing through the rendering plant. The save-all incorporates a solids basket for removal of solids, which are also reprocessed through the rendering plant.

3.9 Solid waste storage area

The solid waste storage area is located adjacent to the holding yards. The storage area is approximately 100m$^2$ with a concrete floor and bunding. The bunded area encompasses the main effluent pit, contrashear, FAN press, storage area for solid waste bins (containing wet manure and paunch manure) and dry manure stockpiles. Drainage from the storage area flows to the main effluent pit, which is pumped through the contrashear for primary solids removal (refer section 3.8.1). The solid waste storage area is source of potential odour emissions, which will be managed by a frequent waste removal schedule as detailed in the Waste Management Plan.

3.10 Effluent treatment, reuse and disposal

Wastewater is generated from cleaning activities in the slaughter and processing rooms, and to a lesser extent from truck wash down and wash out of the holding pens. Wastewater generated by the rendering plant is associated with evaporation during the cooking process (stick water) and cleaning activities. All wastewater mixes at the save-all for removal of solids, oils and grease (refer section 3.8), and from there the effluent is pumped to the anaerobic pond (Pond 1).
3.10.1 Effluent volumes and characteristics

The volume of wastewater generated from the abattoir and rendering is closely linked to the number of head killed and therefore varies from day to day. Wastewater generation per head is approximately 1.17 kilolitres/head. Therefore, at maximum processing rate of 160 head/day, 5 days a week, the volume of wastewater generated is approximately 1 ML per week. Flow meters installed at four locations around the facility (as shown in Figure 5) will be used to monitor water volumes and maximise water use efficiency.

On the basis of publicly available information in relation to abattoir effluent quality and CAG’s experience commissioning and operating the Trafalgar abattoir (refer Table 3), the inflow to the ponds is likely to be classified as High strength based on the NSW Environmental Guideline - Use of Effluent by Irrigation (DEC, 2004) (refer Table 4). During the commissioning phase of the Batchelor Abattoir, BOD concentration of the incoming effluent is expected to be higher than normal at approximately 4,000 mg/L. This is because heavy solids loads are required for the anaerobic pond seeding process to generate a healthy crust. The BOD concentration of the incoming effluent will be less during normal operations – refer abattoir wastewater characteristics in Table 3.

### Table 3. Biological Oxygen Demand concentrations in abattoir wastewater

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Typical abattoir raw wastewater (Johns 1993)</th>
<th>Churchill Beef Abattoir (from MLA 2012)</th>
<th>Trafalgar plant (CAG testing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD (5-day)</td>
<td>1,600 – 3,000 mg/L</td>
<td>3,300-5,000 mg/L</td>
<td>1,200 mg/L</td>
</tr>
</tbody>
</table>

### Table 4. Classification of effluent for environmental management (from DEC, 2004)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Strength (average concentration mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Total Nitrogen</td>
<td>&lt;50</td>
</tr>
<tr>
<td>Total Phosphorus</td>
<td>&lt;10</td>
</tr>
<tr>
<td>BOD</td>
<td>&lt;40</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>&lt;600</td>
</tr>
<tr>
<td>Fat, oil and grease</td>
<td>-</td>
</tr>
</tbody>
</table>

Anaerobic ponds are widely used in the meat industry as the first stage of secondary treatment of high strength abattoir wastewater and are an efficient means whereby the biochemical oxygen demand (BOD) and chemical oxygen demand (COD) are reduced by around 90% (Meat and Livestock Australia, 2012). The design removal for aerated aerobic ponds will vary from pond to pond due to unique aspects of each facility, but typical design BOD removals are in the range of 50 – 70% of incoming BOD concentration (AMPC, 2017). As the Batchelor ponds are not purpose built (i.e. they were already in existence), the design is not based on the expected effluent inflow quality or a target removal capacity.

To provide an indication of the BOD removals that could be achieved by the Batchelor ponds, the indicative BOD design removals for anaerobic and aerobic ponds; 90% and 50% respectively, can be used. Assuming an inflow effluent BOD concentration of 1,200 mg/L, Table 5 documents an indicative BOD removal capacity of the wastewater ponds. If the final pond (Pond 3) is unable to reduce the BOD concentration to < 30 mg/L, which is the criteria suitable for irrigation of non-food crops, then additional primary treatment or additional aeration may be required. CAG’s target is to achieve an effluent quality classified as medium strength based on the DEC (2004) guidelines.
Table 5. Indicative BOD removal capacity of wastewater treatment ponds at Batchelor Abattoir

<table>
<thead>
<tr>
<th>Label</th>
<th>Dimensions (m)</th>
<th>Operating Depth</th>
<th>Batter slope</th>
<th>Volume (m³)</th>
<th>Retention time</th>
<th>BOD5 mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pond 1 - IN</td>
<td>77 x 39</td>
<td>5</td>
<td>45</td>
<td>6,726</td>
<td>34</td>
<td>1,200</td>
</tr>
<tr>
<td>Pond 1 - OUT</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>120</td>
</tr>
<tr>
<td>Pond 2 - OUT</td>
<td>36 x 36</td>
<td>5</td>
<td>45</td>
<td>3,564</td>
<td>18</td>
<td>60</td>
</tr>
<tr>
<td>Pond 3 - OUT</td>
<td>35 x 35</td>
<td>5</td>
<td>45</td>
<td>3,185</td>
<td>16</td>
<td>Target &lt;30</td>
</tr>
</tbody>
</table>

Abattoir effluent quality is variable between facilities and over-time within a facility as it is dependent on a range of factors, including the type of animals processed at the facility, curfewing of livestock (to limit manure volume in the stomach), processing numbers, type of rendering and efficacy of the primary/secondary treatment processes. For this reason, treatment systems and processes require modification over time in response to actual effluent characteristics. The Batchelor Abattoir effluent characteristics will be characterised during the 6-8 week commissioning period, during which time effluent quality will be monitored on a weekly basis to characterise concentrations of key parameters (refer Monitoring Plan in Section 7 of this EMP). Once the range of operating parameters have been determined, the capacity of the existing treatment ponds to reduce contaminant loads to levels suitable for reuse and irrigation will be assessed.

Irrigation will not occur until effluent has been adequately characterised, acceptable water quality criteria for irrigation/reuse established, the efficacy of the treatment system demonstrated, and an approved irrigation management plan is in place (refer Section 3.10.5). If operations were to commence in October 2019, the ponds have sufficient capacity to store wastewater plus rainfall associated with an above-average (90th percentile) wet season, without the requirement to irrigate until March 2020 (refer Section 3.10.3).

3.10.2 Wastewater treatment ponds

CAG have refurbished the ponds that existed at the Batchelor Abattoir site prior to their ownership, installing new geofabric liners, piping and pumps. The ponds have been filled with water over the 2019 dry season to protect the liners and assess seepage. There are three wastewater ponds; one anaerobic and two aerobic ponds, with a total storage capacity of 19.1ML (7m depth, plus 0.9m of freeboard). Pond cross-sections and dimensions are provided in Figure 6 below.

The pond design parameters were dictated by the existing arrangements, but broadly comply with the recommended design parameters for abattoir anaerobic ponds in Australia (Meat and Livestock Australia, 2010) (refer Table 6).

Table 6. C Batchelor abattoir anaerobic pond design and recommended design parameters

<table>
<thead>
<tr>
<th>Recommended design parameters (from Meat and Livestock Australia, 2010)</th>
<th>Batchelor abattoir ponds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loading rate of 500 to 800g BOD/m³/day</td>
<td>Pond 1 capacity 6,726 m³: Effluent inflow 200,000 l/day containing 4,000 mg/L BOD; BOD load is 800,000 g Loading rate = 800,000/6,726 = 119 BOD/m³/day</td>
</tr>
<tr>
<td>Hydraulic retention time of 20 to 40 days</td>
<td>Retention time in Pond 1 is 34 days</td>
</tr>
<tr>
<td>Depth of 3 to 5 metres</td>
<td>Operating depth of 5m</td>
</tr>
<tr>
<td>Length to breadth ratio of 3:1</td>
<td>2:1</td>
</tr>
<tr>
<td>Minimum freeboard of 0.5 metres</td>
<td>2.9 m freeboard at proposed 5 m operating depth, 0.9 m freeboard at maximum operating depth</td>
</tr>
<tr>
<td>Internal slope of 2 to 3:1 depending on the soil</td>
<td>1:1</td>
</tr>
</tbody>
</table>

1 CAG proposes to operate the ponds at 5 m depth; however, the constructed depth used in the water balance is 7 m, plus 0.9 m freeboard.
Figure 6. Wastewater treatment pond cross-sections
**Pond 1 – Volume 9.55 ML – Naturally crusted anaerobic lagoon**

Wastewater will enter pond 1, which will operate as an anaerobic treatment lagoon. The main purpose of this pond is to reduce the level of organic contaminants such as BOD5 (BOD over five days), COD and, to a lesser extent, oil and grease. Crust formation will be promoted to over time form a floating crust consisting of a mixture of paunch material and tallow. This crust plays an important role in that it insulates the pond, helps minimise odour emissions, and minimises oxygen entry into the pond through the water surface.

**Pond 2 – Volume 5.06 ML – Aerated aerobic lagoon**

Pond 2 will operate as a mechanically aerated aerobic lagoon. The main purpose of the aerobic treatment ponds (both 2 and 3) is to reduce BOD concentrations to levels suitable for reuse or irrigation to land without odour, and to ensure that there is a reasonable level of dissolved oxygen (DO) in the treated water.

**Pond 3 – Volume 4.52 ML – Aerobic lagoon**

The final pond in the treatment system (pond 3) will also be operated as an aerobic lagoon. This pond will provide for final polishing of the wastewater prior to pumping to the recycled water tank for reuse or irrigation.

**3.10.3 Wet weather storage**

For medium strength effluent, DEC (2004) states the effluent storage capacity should be sufficient to limit discharges to 25 percent of years. The Batchelor Abattoir wastewater ponds have sufficient capacity to contain the forecast wastewater volumes from the 6-8 week commissioning phase plus an above-average (90th percentile) wet season rainfall. Water mass balance calculations for an average and above average wet season are shown in Figure 7.

The calculations indicate that if the abattoir is commissioned in October to December 2019, the incident rainfall will mix with the wastewater over the wet season and will be contained. Depending on the amount of rainfall received, the treated/diluted effluent may need to be irrigated to lower the pond levels prior to recommencing operations in March. CAG plan to undertake soil/land suitability assessments and have an approved irrigation management plan in place by March 2020 to allow for irrigation to occur then if it is required.

The key potential environmental risk associated with commencing operations in October without capacity to irrigate the wastewater, is that the ponds fill to capacity and overflow. This could occur if the pond volume calculations provided by the engineers are incorrect, or if there is extreme rainfall not accounted for by the 90th percentile rainfall data used in the water balance. In the event of an overflow, the wastewater that is released will be 1:1 wastewater:rainfall. Volumes would be small and would be released to Meneling Creek during peak flows. Even if this event were to occur, it is unlikely to result in a significant measurable impact to downstream water quality.

During normal operations from March 2020, treated wastewater will be reused for stockyard washdown and/or irrigated over the dry season. Pond levels will be lowered by December each year, allowing for containment of wastewater and rainfall over the wet season.
### SCENARIO 1 - AVERAGE WET SEASON - 50th percentile rainfall and evaporation

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<tr>
<th>Month</th>
<th>Op days</th>
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<th>No. head/mth</th>
<th>Monthly Rainfall Average (mm)</th>
<th>Monthly Evap Average (mm)</th>
<th>Wastewater In (m³)</th>
<th>Rainfall In (m³)</th>
<th>Total In (m³)</th>
<th>Evap Out (m³)</th>
<th>Δ Vol (m³)</th>
<th>Cum. Vol (ML)</th>
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### SCENARIO 2 - ABOVE AVERAGE WET SEASON - 90th percentile rainfall, 10th percentile evaporation

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<thead>
<tr>
<th>Month</th>
<th>Op days</th>
<th>No. head/day</th>
<th>No. head/mth</th>
<th>Monthly Rainfall (90th percentile) (mm)</th>
<th>Monthly Evap (90th percentile) (mm)</th>
<th>Wastewater In (m³)</th>
<th>Rainfall In (m³)</th>
<th>Total In (m³)</th>
<th>Evap Out (m³)</th>
<th>Δ Vol (m³)</th>
<th>Cum. Vol (ML)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2000</td>
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<td>1167</td>
<td>-934</td>
<td>13.44944643</td>
</tr>
</tbody>
</table>

Assumptions supplied by Central Agri Group

- Storage volume - 19.1ML
- Pond - 1.9.55ML, Pond 2 - 4.52ML, Pond 1 - 5.06ML
- Pond surface area - 5560.25m2
- Ponds empty on commencement
- No seepage - ponds are lined
- Operations 5 days/week Nov 1 to Dec 15
- Month 1 - 50% capacity, Month 2 onwards 100% but variable - total 30,000yr
- Facility is unlikely to operate at maximum capacity - wastewater volumes are conservative
- ops recommence March
- Average rainfall
- Reuse for washdown but not dust suppression
- No reuse during ops trial or first two months after start-up

**Figure 7. Water balance in for wastewater ponds over 2019/2020 wet season**
3.10.4 Recycled water tank

Treated wastewater from Pond 3 is pumped to the recycled water tank located near the holding yards. From this tank, the water will either be used to washdown the yards or irrigated.

3.10.5 Land irrigation

The proposed location of the future irrigation area is shown in Figure 3. The home paddocks immediately to the south of the abattoir facilities were laser levelled two years ago and a successful sorghum feed crop was grown on the site. The land area available for irrigation in this paddock is 30 ha, allowing for a separation distance of 250 m between the irrigation area and watercourses.

A land capability assessment will be undertaken in the coming months to identify suitable irrigation areas and an irrigation management plan will be prepared. The irrigation management plan will be informed by effluent characterisation and assessment of the wastewater treatment system performance during the commissioning phase. The combination of large land areas available for irrigation and requirement to irrigate during the dry season only, will minimise the risk to downstream water quality from the irrigation areas.

3.10.6 Sludge management

De-sludging of ponds is expected to be required once every 2-3 years. When required, a contractor will be engaged to pump the sludge from the ponds. The sludge will be dewatered through a mobile fan press and sludge decanter. De-sludging would take place early during the dry season, which will allow for drying of the material on a drying pad established in the open paddock immediately to the north of the ponds.

There are two options available for disposing of the dried sludge; removal off-site by a licenced contractor or land application to pastures on the property. Land application of dried sludge is routinely adopted at abattoirs subject to assessment of land capability and development of a management plan that ensures appropriate application rates and monitoring. CAG’s long-term plan is to demonstrate that sludge can be sustainably disposed of on-site, either by land application or composting. However, until this work has been completed and we have a licence in place that allows for land application/composting, any sludge removed from the ponds will be taken off-site by a licenced waste contractor.

3.11 Domestic sewage

The capacity and suitability of the onsite wastewater management system has been assessed by a hydraulic consultant. The system summarised here is based on the septic system report prepared by HDS Engineers.

Domestic wastewater flow from the kitchen, toilet blocks and house discharges into four 3,000 litre septic tanks of fibreglass construction and one 5,000 litre septic tanks of concrete construction. The septic tanks were installed more than 10 years ago. The top of each tank is located at least 100mm above surrounding surface level and thus prevents stormwater inflow into the tanks during wet season.

The overflow from each septic tank discharges into effluent disposal trenches. The size of the each on-site disposal system is 2.5m x 50m length = 125m², which exceeds the required minimum area calculated in accordance with the NT Code of Practice for Onsite Wastewater Management. The septic systems and drains are located less than 100 m from the on-site water supply bore, which does not comply with the Code.

The septic system report indicates the septic system has adequate capacity to service 40 or more staff. The following recommendations will be implemented by CAG:

- Pump out all septic tanks on-site and demonstrate via photographic evidence that no cracks / leaks are detected within the septic tanks.
- Should the septic tanks be leaking, remediation works to be performed such as installation of new lining or application of 2-pack epoxy.
- On-site wastewater disposal system to be relocated 100 m away from the domestic water bore. The location will be selected by undertaking a land capability assessment in accordance with the Department of Health guidelines.
- The new location of on-site wastewater disposal will be outside of the low topographical location to prevent flooding during wet seasons and the lengths of the disposal beds will not exceed 20 m.
- The beds to be built in accordance with NT Code for On-site Wastewater Management.

3.12 Fuel and hazardous materials

As the abattoir operates on mains power, there is no requirement to store fuel on site. There are fuel tanks located on the property at the currently disused feedlot; however, these are not part of the abattoir operations. Light vehicles will be fuelled and serviced off-site. Cleaning products and any other hazardous materials will be stored in the storage area located within the abattoir building.

3.13 Odour emissions

The NT Guideline Recommended Land-use Separation Distances October (2017) recommends a 1,000 m separation distance for abattoirs with rendering and wastewater ponds. The nearest receptor to the Batchelor Abattoir rendering plant and wastewater ponds are rural residences located 1.8 km to the north-north-west and 2 km to the west. The nearest residences in the Batchelor township are located 2.5 km to the east of the facility. The location of irrigation areas for treated wastewater are yet to be confirmed by land capability assessment; however, the size of the property allows for the whole of the property to be available for irrigation without encroaching on the 1,000 m buffer around residences of neighbouring properties and the residences on the western edge of Batchelor township.

Odour modelling prepared by The Odour Unit (2019) modelled emissions associated with the two primary sources – the anaerobic treatment pond and rendering plant dryer stack. Other sources of odour emissions at the facility include the holding yards, solid waste storage area, main effluent pit, raw material bins (for waste storage prior to rendering) and the save-all. The odour modelling indicates that odour emissions from the primary sources are not expected to exceed the impact assessment criteria of 3 odour units at Batchelor township and 7 odour units at the nearest neighbouring residences. The odour modelling report and map showing odour contours is provided at Appendix A.

Experience with other abattoirs around Australia indicates that odour can be a significant issue. Whilst the location of the Batchelor Abattoir minimises the potential for odour emissions to impact amenity, the facilities design and operational procedures incorporates the following measures designed to minimise problematic odour emissions:

- CAG have installed a raw material chiller (60 m2) to take 2 days/50 t worth of renderable material to minimise spoilage and ensure only fresh material is being rendered.
- The hours of operation of the rendering plant will be spread over a 10-hour day, which will lower the hourly throughput and therefore the Odour Units generated per hour from the rendering vapour (see Appendix B Mass Balance calculation sheet).
- The FAN press separator installed by CAG is the best in class for green stream solids removal.
- The 0.25mm screen size contrashear installed by CAG will provide for greater solids removal than the 0.5mm screen size used in most abattoirs.
- Blood from the slaughter floor collection drain is continually pumped and cooked as opposed to holding and batch cooking (as cooking fresh reduces the odour generated).
- The size of the anaerobic pond allows for greater than average retention time (34 days as opposed to minimum requirement of 16 days).
- The larger anaerobic pond will allow for optimum working conditions relating to temperature equalisation, of effluent entering the pond.
- The abattoir will shut-down over the peak wet season months of late December, January and February, when high temperatures and rainfall typically increase odour risks.

The above, combined with a regular waste removal schedule, is expected to ensure that odour emissions are minimised as far as practicable. In the event that odour complaints are received during operations, CAG will undertake monitoring and implement corrective actions as described in the Odour Management Procedure (see Appendix C).

3.14 Noise emissions

Noise Rating Baseline Levels for assessment of noise are prescribed in Table 3-4 of the *Northern Territory Environment Protection Authority (NT EPA) Northern Territory Noise Management Framework Guideline*. Adopting the minimum RBL’s from the Guidelines results in project intrusiveness noise levels of 40dB(A) (day) and 35bB(A) (evening and night). The calculated project-specific noise amenity levels (based on the maximum assigned levels for rural residential receptors) are 45dB(A) (day), 40dB(A) (evening) and 35dB(A) (night). Therefore, the project specific assigned noise level used for the purpose of assessing potential noise impacts is 40dB (day) and 35bB (evening and night).

The abattoir plant equipment is all located inside buildings and is compliant with *National Code of Practice: Managing Noise and Preventing Hearing Loss at Work*, which requires all plant and equipment to operate at less than 65dB. Whilst the buildings will provide for attenuation of noise, 65dB can be adopted as a conservative indication of the noise levels at the source.

The Inverse Square Law can be used to give an indication of sound attenuation over the distance between the source and the nearest sensitive receptor, which is a rural residential property located 1.8 km away. The law indicates that for every doubling of the distance from the sound source in a free field situation, the sound intensity will diminish by 6 decibels. This means, a sound level of 65 dB emitted at the abattoir would be attenuated to less than the project specific assigned noise level (35 dB evening and night) at a distance of 32 m from the noise source. The level would be less than 5 dB at the property boundary and inaudible at the nearest receptor, which is located over 1.8 km away.

The above calculation provides an indication of the level of risk, noting that actual sound intensity will be affected by factors such as topography and weather conditions. The location of the abattoir in a rural area away from receptors, results in an inherently low risk of noise impacts. In the event that noise complaints were received during operations, CAG will investigate using short-term field measurements in accordance with the guidelines.
4 CONCEPTUAL SITE MODEL

To inform identification of environmental aspects and impacts, and assessment of risks associated with the Batchelor Abattoir operations, a preliminary conceptual site model (CSM) has been developed. The purpose of the CSM is to identify key sources and characteristics of emissions/discharges, pathways for release to the environment, mechanisms for transport and potential receptors. The CSM is documented in table format below (Table 7).

<table>
<thead>
<tr>
<th>Source</th>
<th>Pathway/Exposure Route</th>
<th>Receptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odour emissions from solid waste storage areas, rendering plant and anaerobic ponds</td>
<td>Release to air. Odours may be offensive and impact amenity when inhaled.</td>
<td>Nearest neighbours 1.8-2 km and Batchelor township 2.5km. Odour modelling indicates these receptors are unlikely to be affected.</td>
</tr>
<tr>
<td>Leachate/contaminated runoff from yards, operating areas and solid waste storage areas. Potential contaminants of concern are nutrients, BOD, oils and grease and <em>E. coli</em>.</td>
<td>Release to surface soils. Contaminants transported in stormwater runoff during first-flush. Seepage to groundwater. Water level recorded in September 6mbgl; likely to be shallower in wet season.</td>
<td>Stormwater drainage discharge to Meneling Creek. Finniss River located 2.5 km downstream. Areas downstream of abattoir site may be used for recreational activities and livestock/crop watering; however, this would be limited to dry season only. Groundwater bore used to supply abattoir potable water. Other bores on property are used for cattle watering. Nearest off-property bore is over 2.5 km away and therefore unlikely to be impacted.</td>
</tr>
<tr>
<td>Effluent storage and treatment in wastewater treatment ponds. Potential contaminants of concern are nutrients, BOD, oils and grease and <em>E. coli</em>.</td>
<td>Ponds overflow and discharge effluent to surface waters. Seepage through pond base and walls to groundwater. Ponds have geofabric liner.</td>
<td>Meneling Creek located 200 m from pond overflow. Groundwater bores on property (refer above).</td>
</tr>
<tr>
<td>Effluent reuse and/or application in irrigation areas. Potential contaminants of concern are nutrients, BOD, oils and grease and <em>E. coli</em>.</td>
<td>Water reused in holding yard washdown is captured in the internal drainage system which flows to the main effluent pit for treatment with no release to the environment. Run-off from irrigation areas transported by overland flows. Irrigation in dry season only and at maximum rate of 5mm/ha/day will limit overland flow.</td>
<td>Meneling Creek will receive overland flows from irrigation area during the wet season. Finniss River located 2.5 km downstream. Groundwater bores on property (refer above).</td>
</tr>
<tr>
<td>Noise emissions from cattle unloading and holding, abattoir operations. Will occur during the daytime only – no night operations.</td>
<td>Release to air. Excess noise, especially when audible at night, could impact rural amenity.</td>
<td>Nearest neighbours 1.8-2 km and Batchelor township 2.5km. At these distances abattoir noise is not expected to be audible.</td>
</tr>
</tbody>
</table>
5 ENVIRONMENTAL RISK ASSESSMENT

The Batchelor Abattoir Environmental Risk Register (Table 12) identifies the environmental aspects and impacts associated with the operational activities. The principles of qualitative risk management described in AS/NZS 31000:2009 Risk Management – Principles and Guidelines have been adopted to assess the risk of environmental harm associated with the abattoir operations. The risk assessment framework is shown in the tables below.

Table 8. Likelihood categories

<table>
<thead>
<tr>
<th>Categories</th>
<th>Score</th>
<th>Likelihood Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>A</td>
<td>Highly unlikely; will only occur in exception circumstances</td>
</tr>
<tr>
<td>Unlikely</td>
<td>B</td>
<td>Could occur at some time, but unlikely</td>
</tr>
<tr>
<td>Moderate</td>
<td>C</td>
<td>Might occur at some stage; has previously occurred</td>
</tr>
<tr>
<td>Likely</td>
<td>D</td>
<td>Known to occur or will probably occur; has occurred several times</td>
</tr>
<tr>
<td>Almost certain</td>
<td>E</td>
<td>Common or repeating occurrence; is expected to occur in most circumstances</td>
</tr>
</tbody>
</table>

Table 9. Consequence categories

<table>
<thead>
<tr>
<th>Categories</th>
<th>Score</th>
<th>Consequence Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insignificant</td>
<td>1</td>
<td>No/low measureable impact on the environment, heritage or amenity</td>
</tr>
<tr>
<td>Minor</td>
<td>2</td>
<td>Localised temporary environment or heritage impact, or reduced amenity affecting less than 5 residences</td>
</tr>
<tr>
<td>Moderate</td>
<td>3</td>
<td>Localised medium to long term environmental impact, damage to unlisted heritage or cultural sites, loss of amenity affecting more than 5 residences</td>
</tr>
<tr>
<td>Major</td>
<td>4</td>
<td>Severe environmental damage, damage of listed heritage or cultural sites or sustained loss of amenity affecting broader community</td>
</tr>
<tr>
<td>Catastrophic</td>
<td>5</td>
<td>Environmental disaster, destruction of listed heritage or cultural sites or permanent loss of amenity affecting broader community</td>
</tr>
</tbody>
</table>

Table 10. Risk matrix

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Low (1)</td>
<td>Low (3)</td>
<td>Low (6)</td>
<td>Moderate (10)</td>
<td>High (15)</td>
</tr>
<tr>
<td>B</td>
<td>Low (2)</td>
<td>Low (5)</td>
<td>Moderate (9)</td>
<td>High (14)</td>
<td>High (19)</td>
</tr>
<tr>
<td>C</td>
<td>Low (4)</td>
<td>Moderate (8)</td>
<td>High (13)</td>
<td>High (18)</td>
<td>Extreme (22)</td>
</tr>
<tr>
<td>D</td>
<td>Low (7)</td>
<td>Moderate (12)</td>
<td>High (17)</td>
<td>Extreme (21)</td>
<td>Extreme (24)</td>
</tr>
<tr>
<td>E</td>
<td>Moderate (11)</td>
<td>High (16)</td>
<td>High (20)</td>
<td>Extreme (23)</td>
<td>Extreme (25)</td>
</tr>
</tbody>
</table>

Table 11. Risk level and target action matrix used to evaluate risks

<table>
<thead>
<tr>
<th>Risk level</th>
<th>Target action</th>
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</thead>
<tbody>
<tr>
<td>Very High</td>
<td>Risk is unacceptable. Specific action plans required to reduce risk to an acceptable level. Director/CEO level management attention required.</td>
</tr>
<tr>
<td>High</td>
<td>Risk is generally unacceptable without action. Specific action plans required to reduce risk to 'as low as reasonably practicable' (ALARP). Senior management attention required.</td>
</tr>
<tr>
<td>Medium</td>
<td>Risk is generally acceptable. Proactive action is required to reduce risk to ALARP. Requires routine monitoring and adaptive management in accordance with Environmental Management Plan (EMP). Line management attention is required.</td>
</tr>
<tr>
<td>Low</td>
<td>Risk is acceptable. Management by routine policies and procedures.</td>
</tr>
</tbody>
</table>
### Table 12. Batchelor Abattoir Environmental Risk Register

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Potential Impact/ Hazard</th>
<th>Contextual information</th>
<th>Inherent Risk</th>
<th>Management/Mitigation Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road-use and transport</td>
<td>Dust emissions from vehicles and trucks travelling on dirt access road.</td>
<td>Average 12 truck trips per week, plus light vehicle traffic. No sensitive receptors near route.</td>
<td>1 D 7 LOW</td>
<td>Speed limits on entry to site. Dust suppression by water cart if nuisance dust emissions impacting abattoir operations.</td>
<td>1 C 4 LOW</td>
</tr>
<tr>
<td>Road-use and transport</td>
<td>Nuisance noise impacts on residences in Batchelor along access route</td>
<td>Average 12 truck trips per week, plus light vehicle traffic. Day time only.</td>
<td>1 B 2 LOW</td>
<td>None required. Act on complaints.</td>
<td>1 B 2 LOW</td>
</tr>
<tr>
<td>Cattle unloading and abattoir operations</td>
<td>Noise nuisance impacts on neighbours</td>
<td>Nearest neighbour 1.8km away. Mains power – no diesel generators on site. Noise emissions from plant to comply with work health and safety limits.</td>
<td>1 B 2 LOW</td>
<td>None required. Noise emissions managed to comply with work health and safety requirements. Act on complaints.</td>
<td>1 B 2 LOW</td>
</tr>
<tr>
<td>Truck wash-down</td>
<td>Truck wash-bay releases contaminants or weed seeds to the environment</td>
<td>Designated wash bay - concrete lined and bunded Drainage to the main effluent pit for treatment through the contrashear for primary solids removal (manure and weed seeds). Wastewater treated through wastewater treatment system.</td>
<td>2 C 8 MOD</td>
<td>Trucks to wash-down only in wash-bay. Ensure all wash water and waste is contained within the bay. Solid waste from contrashear stored in bins on bunded solid waste storage area for off-site disposal by licenced contractor.</td>
<td>1 C 4 LOW</td>
</tr>
<tr>
<td>Water use</td>
<td>Over-extraction of groundwater</td>
<td>On-site bore pumps 5L/s Estimated weekly consumption 1ML No GDE’s identified</td>
<td>2 B 5 LOW</td>
<td>Raw water demand will be reduced by reusing treated wastewater to wash the holding yards and in truck wash down. A water meter will be installed on the main water tank. Water use will be monitored and reviewed weekly during commissioning and periodically during operations. Benchmarking against industry standards. See below for water efficiency measures.</td>
<td>2 A 3 LOW</td>
</tr>
<tr>
<td>Stormwater management</td>
<td>Discharge of contaminated stormwater to surface watercourses</td>
<td>Shut-down between December and March each year to avoid peak rainfall period. Holding yards are covered, with internal drainage to the main effluent pit. Rainfall directly onto the solid waste storage area is captured within the bund and drains to the main effluent pit. Stormwater that falls onto the remainder of the site will come into contact with building roofs and exposed soil surfaces. Sediment is main contaminant of concern. Open unlined drains divert stormwater flows around the wastewater treatment ponds and discharge to Meneling creek.</td>
<td>2 D 12 MOD</td>
<td>Solid wastes stored in bunded waste storage area only. All wastes removed from site prior to wet season shut down. Solid waste spills or accidental release of wastewater due to spills/leaks in pipework, cleaned up immediately. Erosion and sediment controls maintained in open unlined drains. Water quality monitoring to detect impacts and corrective action taken.</td>
<td>2 C 8 MOD</td>
</tr>
<tr>
<td>Waste management</td>
<td>Inappropriate handling and disposal of solid wastes creates potential for odour and release of contaminated leachate to the environment.</td>
<td>Solid waste will comprise dry manure, wet manure/paunch manure and raw waste material from slaughter floor. Sludge waste from clean out of anaerobic ponds will be produced every 2-3 years. Primary treatment system comprises a FAN press to dewater paunch waste and a contrashear to screen holding yard wash-down. Solid green waste storage area (for temporary storage of dry manure, dewatered paunch and manure cake) is bunded and drains to the main effluent pit. Slaughter and processing wastes are stored in raw waste bins undercover outside the buildings, which are taken to the rendering plant for processing when full. All wastes to be removed from site prior to wet season shutdown.</td>
<td>2 D 12 MOD</td>
<td>Refer Waste Management Plan for details of waste volumes and management. Key measures include: All solid green wastes are dewatered and stored in bins in bunded solid waste storage area. Dewatered green waste removed from site weekly by contractor for composting or disposal at Shoal Bat landfill. Manure dry cleaned from holding yards daily and stockpiled in bunded solid waste storage area. Manure will be added to the stockpile in thin even layers. The stockpile will be compacted between each placement. Stockpiles will be shaped to shed rain (during the months of Oct-Dec). Dry manure removed from site weekly by contractor for use as soil ameliorant. Potential for disposal onsite subject to approval. Raw waste bins are stored undercover and removed to rendering plant when full, to ensure only fresh product is rendered. Contingency cold storage available to keep waste products fresh in the event of a rendering plant breakdown. Sludge removed from anaerobic ponds (every 2-3 years) will be dewatered and disposed offsite by a licenced contractor. Inspection of storage areas and corrective action taken. Water quality monitoring to detect impacts and corrective action taken.</td>
<td>2 C 8 MOD</td>
</tr>
<tr>
<td>Aspect</td>
<td>Potential Impact/ Hazard</td>
<td>Contextual information</td>
<td>Inherent Risk</td>
<td>Management/Mitigation Measures</td>
<td>Residual Risk</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Waste management</td>
<td>Excess water use increases wastewater volumes requiring treatment and reduces efficacy of treatment.</td>
<td>Estimated weekly consumption 1ML consumption likely to be variable, especially during commissioning. Work practices critical to efficient water use.</td>
<td>3 C 13</td>
<td>Staff inductions and training in efficient water use practices. Water use will be metered at the raw water tank. Water use efficiency will be reviewed during commissioning and monthly during routine operations to identify areas for improvement.</td>
<td>2 C 8</td>
</tr>
<tr>
<td>Waste management</td>
<td>Domestic wastewater septic system leaks contaminants to surface water and/or groundwater</td>
<td>Septic system installed over 10 years ago assessed as having sufficient capacity to service 40 staff on site at any time. Effluent disposal beds are located within 100m of water bore, which is inconsistent with Department of Health Guidelines. Nutrients and E. coli are key contaminants of concern.</td>
<td>3 B 9</td>
<td>Should the septic tanks be leaking, remediation works to be performed such as installation of new lining or application of 2-pack epoxy. On-site wastewater disposal system to be relocated 100 m away from the domestic water bore. The location will be selected by undertaking a Land Capability Assessment in accordance with the Department of Health guidelines. The new location of on-site wastewater disposal will be outside of the low topographical location to prevent flooding during wet seasons and the lengths of the disposal beds will not exceed 20 m. The beds to be built in accordance with NT Code for On-site Wastewater Management.</td>
<td>1 A 1</td>
</tr>
<tr>
<td>Rendering</td>
<td>Rendering operations produce odour emissions that impact amenity on neighbouring properties or in Batchelor.</td>
<td>Only fresh material will be rendered. Cold storage capacity for two days of processing waste in case of rendering breakdown. Dryer emissions release from 10m high stack. Odour modelling using conservative odour emissions rates, indicates odour will not exceed impact assessment criteria of 3 odour units at Batchelor and 7 odour units at neighbours.</td>
<td>2 C 8</td>
<td>Routine weekly odour monitoring at site boundaries and in response to complaints in accordance with Odour Monitoring Procedure. Implement contingency measures depending on identified odour source.</td>
<td>2 B 5</td>
</tr>
<tr>
<td>By-product storage</td>
<td>Storage of tallow, meal and hides produces odour or spills/leaks that contaminate stormwater.</td>
<td>Hides will be stored in cold room and sold as is (i.e. no salting). Tallow stored in tanks. Meal stored in bags in undercover storage area.</td>
<td>1 C 4</td>
<td>Inductions and training for staff cover good housekeeping in storage areas. Storage areas monitored daily for leaks and spills. Spills cleaned up immediately and contaminated soils/wastes removed by licenced contractor. Products removed from site weekly.</td>
<td>1 B 2</td>
</tr>
<tr>
<td>Abattoir wastewater treatment</td>
<td>Anaerobic ponds produce odour emissions that impact amenity on neighbouring properties or in Batchelor.</td>
<td>Ponds located 1.8km from nearest neighbour. Odour modelling using conservative odour emissions rates, indicates odour will not exceed impact assessment criteria of 3 odour units at Batchelor and 7 odour units at neighbours. Anaerobic pond will be commissioned to form a naturally crusted surface. Estimated time for crust formation is 40 days. Increased risk of odour emissions until crust forms and/or if crust breakdown occurs during operations.</td>
<td>3 C 13</td>
<td>Experienced operators to oversee pond commissioning. Ponds inspected daily to monitor crust formation and contingency action taken if required. Communicate with neighbours prior to commissioning to advise of complaint reporting process. Routine weekly odour monitoring at site boundaries and in response to complaints in accordance with Odour Monitoring Procedure. Implement contingency measures depending on identified odour source.</td>
<td>3 B 9</td>
</tr>
<tr>
<td>Abattoir wastewater treatment</td>
<td>Wastewater treatment ponds overflow and discharge contaminated water to surface watercourses</td>
<td>Overflow could occur if pond levels are not sufficiently lowered prior to the wet season to provide adequate wet season storage. Overflow would only occur from Pond 3, which is the final pond in the treatment process and therefore is expected to contain low strength effluent. Overflow would only occur as a result of extreme wet season rainfall, in which case it is unlikely to cause significant environmental harm due to high level of dilution that would have occurred prior to release.</td>
<td>2 B 9</td>
<td>Pond operating levels to be maintained prior to wet season shutdown to allow for storage of above-average wet season rainfall. Pond levels and water quality to be monitored during the wet season. Establish criteria and procedures for contingency irrigation to land or release to water to lower pond water levels and prevent overtopping during an extreme wet season.</td>
<td>2 A 3</td>
</tr>
<tr>
<td>Abattoir wastewater treatment</td>
<td>Wastewater quality criteria for reuse and/or irrigation to land not achieved resulting in discharge of poor quality water.</td>
<td>Site-specific effluent characterisation required during commissioning. Wastewater ponds have capacity to store wastewater produced during commissioning with sufficient freeboard to contain an above-average (90th percentile) wet season rainfall. Primary treatment systems in place for solids and oil/grease removal. Efficacy to be assessed by effluent monitoring during commissioning. Anaerobic ponds commonly used for abattoir wastewater treatment as can handle variations in water volumes and contaminant load. Anaerobic pond at Batchelor Abattoir has 34-day retention time, which is at the upper limit of the 20-40 days recommended by Meat and Livestock Australia, 2010). Water reuse for stockyard wash-down is contained in bunded area and flows to main effluent pit for treatment through wastewater treatment system.</td>
<td>3 C 13</td>
<td>Wastewater pond commissioning and operation in accordance with AMPC (2017) Wastewater Management in the Australian Red Meat Processing Industry. Minimise contaminant load in wastewaters by diverting blood to rendering plant and use of effective primary treatment processes to remove solids and oil/grease. Wastewater produced during plant commissioning to be contained in ponds without release to the environment until effluent has been adequately characterised and an approved irrigation management plan is place. Effluent characterisation during commissioning will be used to predict final effluent quality and inform improvements to treatment system (if required). Refer Monitoring Plan (Section 7).</td>
<td>3 B 9</td>
</tr>
<tr>
<td>Aspect</td>
<td>Potential Impact/Hazard</td>
<td>Contextual Information</td>
<td>Inherent Risk</td>
<td>Management/Mitigation Measures</td>
<td>Residual Risk</td>
</tr>
<tr>
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</tr>
<tr>
<td>Abattoir wastewater treatment</td>
<td>Seepage from wastewater ponds contaminates groundwater.</td>
<td>Ponds have new geofabric liners installed in 2018. Groundwater is used as potable water supply for abattoir. Wastewater ponds are over 200 m down gradient of the bore. Groundwater may discharge to Meneling Creek. Small volumes of seepage through soil profile unlikely to result in high contaminant concentrations in groundwater.</td>
<td>2 B LOW</td>
<td>Pond maintenance regime to include assessment of liners. Monitoring of water quality in groundwater bores and Meneling Creek in accordance with Monitoring Plan.</td>
<td>2 A LOW</td>
</tr>
<tr>
<td>Wastewater reuse/disposal</td>
<td>Land/soils do not provide enough area for hydraulic and nutrient balance to be maintained.</td>
<td>Proposed irrigation area is 30 ha allowing for buffers around watercourses. Land unit mapping indicates soils are suitable for intensive agricultural activities. A successful feed crop was grown and harvested on the site in 2018. To be confirmed through soil/land capability assessment. Subject to soil suitability the available land area is more than enough area to irrigate all wastewater at a maximum rate of 5 mm/ha/day by December each year. Wet weather storage capacity and facility shutdown from December to March, means irrigation not required at peak of season.</td>
<td>3 C 13 HIGH</td>
<td>Land/soils capability assessment to confirm area available for irrigation. Prepare Irrigation Management Plan and submit for approval by NT EPA prior to March 2020.</td>
<td>3 B 9 MOD</td>
</tr>
<tr>
<td>Wastewater reuse/disposal</td>
<td>Run-off/seepage from land application areas contaminates surface water or groundwater.</td>
<td>Wet weather storage capacity and facility shutdown from December to March, means irrigation not required at peak of season. Application at maximum rate of 5 mm/ha/day over sufficient land area to comply with nutrient loading criteria is unlikely to result in seepage to groundwater.</td>
<td>3 B 9 MOD</td>
<td>Prepare Irrigation Management Plan and submit for approval by NT EPA prior to March 2020. Plan to prescribe application rates and measures to ensure nutrient load criteria are not exceeded.</td>
<td>3 A 6 LOW</td>
</tr>
<tr>
<td>Wastewater reuse/disposal</td>
<td>Harvesting of feed crop exposes ground surface and increases erosion potential.</td>
<td>Proposed irrigation area on land with slopes to 4%.</td>
<td>3 C 13 HIGH</td>
<td>Irrigation Management Plan to include erosion risk assessment and erosion/sediment control requirements. Cropping contractor to implement controls.</td>
<td>2 C 9 MOD</td>
</tr>
<tr>
<td>Emergency response</td>
<td>Mass disposal of carcasses on-site due to disease pollutes surface water or groundwater.</td>
<td>Small numbers of mortalities will be disposed of by rendering. Disposal of large numbers of animal carcasses on site would only be required in the event that the on-site vet identifies a disease that requires containment. Disposal of diseased carcasses will be in accordance with the AUSVETPLAN Operation Manual Disposal (National Biosecurity Committee, 2015). The Batchelor Abattoir has capacity to hold 320 head. Allowing for burial of this number of carcasses piled one deep (to minimise depth and potential impacts to groundwater), allowing 1.5 m/ha in accordance with AUSVETPLAN and covered by at least 2 m of soil, the land area required for the disposal site would be approximately 640 sq m.</td>
<td>3 C 13 HIGH</td>
<td>Two sites suitable for carcass mass disposal of 320 head of livestock have been selected according to criteria in AUSVETPLAN. Emergency Response Plan identifies disposal locations and carcass mass disposal requirements.</td>
<td>2 B 5 MOD</td>
</tr>
<tr>
<td>General land use and management</td>
<td>Spread of weeds on farm and off farm.</td>
<td>Weeds prevalent across the site. Gamma Grass in proposed future irrigation area. Weed control measures will be required to comply with the Weed Management Act, in particular for the future cropping and irrigation activities, and specifically for Class A weeds. Statutory Weed Management Plans for Gamma grass and Mimosa to be compiled with. Feed crops grown on land irrigation area to be harvested and sold off site. Obligation to control weeds under Weed Management Act.</td>
<td>3 D 17 HIGH</td>
<td>Weed Management Plan to be developed prior to commencement of operations in March 2020. Plan to focus only on abattoir site and future irrigation area. Plan to include weed hygiene, weed control and measures to ensure declared weeds are not spread i.e. in harvested crops, on machinery leaving the site. Compliance with the Statutory Weed Management Plans that are in place for the Class A weeds present on the property.</td>
<td>3 B 9 MOD</td>
</tr>
<tr>
<td>General land use and management</td>
<td>Damage or destruction of Aboriginal Sacred Sites protected under the Aboriginal Sacred Sites Act</td>
<td>Recorded site located on Meneling Creek immediately downstream of the property boundary (ref 5071-73). A location on Meneling Creek within the property that is noted as being a place of cultural value to Aboriginal people, but is not a recorded or registered site (ref 5071-72). There is a registered sacred site near the Rum Jungle Lake to the north of the property (ref 5017-15). These sites are in areas that will not be directly affected by the abattoir operations; however, it is noted that sites 5071-73 is located close to the wastewater ponds and 5071-72 is located close to the proposed future irrigation area.</td>
<td>2 B 5 LOW</td>
<td>Obtain Authority Certificate prior to undertaking any significant ground disturbance outside of the existing facility grounds, or where there is potential for abattoir operations to impact on Aboriginal Sacred Sites.</td>
<td>2 A 3 LOW</td>
</tr>
<tr>
<td>General land use and management</td>
<td>Damage or destruction of heritage sites protected under the Heritage Act</td>
<td>There are no listed heritage sites or archaeological sites known to occur on the property. Abattoir and future irrigation area are previously cleared/disturbed.</td>
<td>1 A 1 LOW</td>
<td>Nil required. NT Heritage Branch have confirmed nil recorded heritage values on the property.</td>
<td>1 A 1 LOW</td>
</tr>
</tbody>
</table>
6 ENVIRONMENTAL MANAGEMENT PROGRAM

The environmental management program that will be implemented at the Batchelor Abattoir is summarised in Table 13. For those aspects that pose a high risk of producing discharges/emissions that could cause environmental harm, more detailed action plans are required to inform risk mitigation and monitoring. These plans and their status are listed below:

- Waste Management Plan – Refer Appendix D
- Emergency Response Plan – Refer Appendix E.
- Irrigation Management Plan (to be developed prior to irrigation of wastewater).
- Weed Management Plan (to be developed prior to undertaking cropping activities).

Aspects with a low to moderate risk will be managed and monitored in accordance with the routine procedures documented in Table 13.
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Objective / outcome</th>
<th>Management action</th>
<th>Targets / performance indicators</th>
<th>Monitoring</th>
<th>Corrective actions and contingencies</th>
<th>Reporting &amp; record-keeping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust emissions</td>
<td>Dust emissions are minimised to maintain staff amenity</td>
<td>Speed limits on site access roads.</td>
<td>No nuisance dust around abattoir operations area</td>
<td>Visual observations</td>
<td>Dust suppression by water cart</td>
<td>Inspection checklists Incident register</td>
</tr>
<tr>
<td>Noise emissions</td>
<td>Noise emissions are minimised to maintain amenity at neighbouring residences</td>
<td>Noise emissions managed to comply with work health and safety requirements. Record and act on complaints.</td>
<td>No nuisance noise emissions across property boundaries</td>
<td>On complaint, observe noise levels around site to identify noise source</td>
<td>Reduce noise emissions from source</td>
<td>Complaints register</td>
</tr>
<tr>
<td>Groundwater extraction occurs at sustainable levels</td>
<td>None</td>
<td>No drawdown of groundwater levels</td>
<td>Water level monitoring in extraction bore</td>
<td>Implement efficiency measures Increase use of recycled water</td>
<td></td>
<td>Water monitoring database</td>
</tr>
<tr>
<td>Water use</td>
<td>Water is used efficiently</td>
<td>Staff inductions and training to promote water use efficiency. Implement water efficiency measures in slaughter and processing areas Reusing treated wastewater to wash the holding yards.</td>
<td>Water-use aligns with industry benchmarks (refer Table 9-1 Waste Management Plan). % recycled water used for holding yard and truck wash-down</td>
<td>Water use from main water tank monitored and reviewed weekly during commissioning and monthly during operations.</td>
<td>Staff training and awareness Review water efficiency measures Increase use of recycled water</td>
<td>Water meter readings database</td>
</tr>
<tr>
<td>Wastewater treatment</td>
<td>Abattoir effluent is treated to a standard that is suitable for reuse or irrigation</td>
<td>Refer Waste Management Plan for wastewater treatment details. Wastewater pond commissioning and operation in accordance with AMPC (2017) Manual and Minimise contaminant load in wastewaters by diverting blood and use</td>
<td>Waste-water loads align with industry benchmarks (refer Table 9-1 of Waste Management Plan) Wastewater monitored at least weekly during commissioning and monthly during operations, with results recorded in database</td>
<td>Wastewater sampling (refer Monitoring Plan Section 7.3.5)</td>
<td>Improve primary treatment processes and work practices. Trouble-shoot pond performance issues</td>
<td>Wastewater monitoring database</td>
</tr>
<tr>
<td>Aspect</td>
<td>Objective / outcome</td>
<td>Management action</td>
<td>Targets / performance indicators</td>
<td>Monitoring</td>
<td>Corrective actions and contingencies</td>
<td>Reporting &amp; record-keeping</td>
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</tr>
<tr>
<td>Waste Management</td>
<td>Wastes are stored and handled in a manner that minimises emissions and discharges</td>
<td>Refer Waste Management Plan for controls. Staff inductions and training to cover good waste management</td>
<td>No discharge of leachate from waste storage areas. No odour complaints</td>
<td>Visual inspections of storage areas. Odour observations at property boundary</td>
<td>Clean-up spills/leaks immediately. Remove/relocate incorrectly stored wastes.</td>
<td>Inspection checklists Odour observation forms Complaints register</td>
</tr>
<tr>
<td></td>
<td>Rendering plant operated in a manner that minimises odour emissions</td>
<td>practices and spill response. Spills/leaks addressed immediately. Refer Emergency Response Plan. Tallow</td>
<td></td>
<td>weekly and in response to complaints. Refer Odour Monitoring Procedure (Appendix C)</td>
<td>Transfer raw waste to cold storage if rendering plant at capacity. Schedule</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>and meal products stored in tanks and bags undercover. Hides stored in dedicated cold store. Products</td>
<td></td>
<td></td>
<td>waste removal if storage areas near capacity and/or wastes putrefied. Staff</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>removed from site weekly.</td>
<td></td>
<td>review and training.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water quality – surface</td>
<td>Water quality in Meneling Creek is maintained for downstream uses</td>
<td>Refer Waste Management Plan. Pond operating levels to be maintained prior to wet season shutdown to allow for</td>
<td>No uncontrolled discharge of leachates or wastewater to the environment. No exceedance of water</td>
<td>Inspect erosion and sediment controls in September prior to first rains, then</td>
<td>Maintain erosion and sediment controls, or install additional controls. Advise NT EPA</td>
<td>Inspection checklists Water monitoring database Incident register Non-conformance</td>
</tr>
<tr>
<td>water</td>
<td></td>
<td>storage of above-</td>
<td>quality objectives</td>
<td>weekly and after rain events. Advise NT EPA of eminent contingency release from ponds</td>
<td></td>
<td>reports</td>
</tr>
<tr>
<td>Aspect</td>
<td>Objective / outcome</td>
<td>Management action</td>
<td>Targets / performance indicators</td>
<td>Monitoring</td>
<td>Corrective actions and contingencies</td>
<td>Reporting &amp; record-keeping</td>
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<tr>
<td></td>
<td></td>
<td>average wet season rainfall. Pond levels and water quality to be monitored during the wet season. Establish criteria and procedures for contingency irrigation to land or release of water to lower pond water levels and prevent overtopping during an extreme wet season. Trucks to wash-down only in wash-bay. Erosion and sediment controls maintained. Domestic wastewater system to comply with NT Code for On-site Wastewater Management.</td>
<td>at monitoring sites and bores. Erosion and sediment controls in place and effective.</td>
<td>Inspect truck wash bay area for uncontrolled discharges. Water quality monitoring (refer Monitoring Plan in Section 7.3.3) to detect impacts and corrective action taken.</td>
<td>and monitor downstream water quality during release.</td>
<td>Annual monitoring reports</td>
</tr>
<tr>
<td>Water quality - groundwater</td>
<td>Groundwater quality is maintained for use as abattoir potable water supply</td>
<td>Pond maintenance regime to include assessment of liners. Approved Irrigation Management Plan in place.</td>
<td>No exceedance of water quality objectives at monitoring sites and bores.</td>
<td>Monitoring of water quality in groundwater bores (refer Monitoring Plan in Section 7.3.4).</td>
<td>Fix liner</td>
<td>Inspection checklists Water monitoring database Incident register Non-conformance reports Annual monitoring reports</td>
</tr>
<tr>
<td>Wastewater reuse/disposal</td>
<td>Operate a sustainable system of effluent reuse and disposal</td>
<td>Approved Irrigation Management Plan in place.</td>
<td>Soils in irrigation area maintained. No exceedance of water quality objectives at monitoring sites and bores.</td>
<td>To be specified in Irrigation Management Plan when developed</td>
<td>Irrigate over larger area Rest and rotate irrigation areas</td>
<td>To be specified in Irrigation Management Plan when developed</td>
</tr>
<tr>
<td>Aspect</td>
<td>Objective / outcome</td>
<td>Management action</td>
<td>Targets / performance indicators</td>
<td>Monitoring</td>
<td>Corrective actions and contingencies</td>
<td>Reporting &amp; record-keeping</td>
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</tr>
<tr>
<td>Amenity - odour</td>
<td>Odour emissions are minimised to maintain amenity at neighbouring residences</td>
<td>Solid waste storage areas operated and maintained in accordance with Waste Management Plan. Experienced operators to oversee anaerobic pond commissioning. Ponds inspected daily to monitor crust formation and contingency action taken if required. Communicate with neighbours prior to commissioning to advice of complaint reporting process. Implement contingency measures depending on identified odour source.</td>
<td>No offensive odour complaints received from neighbours or community</td>
<td>Routine weekly odour monitoring at site boundaries and in response to complaints in accordance with Odour Monitoring Procedure. Refer Odour Monitoring Procedure (Appendix C)</td>
<td>Improve primary treatment processes and work practices. Trouble-shoot pond performance issues Clean-up spills/leaks immediately. Remove/relocate incorrectly stored wastes. Transfer raw waste to cold storage if rendering plant at capacity Schedule waste removal if storage areas near capacity and/or wastes putrefied. Staff review and training.</td>
<td>Incident and complaints register Odour observation forms Non-compliance and corrective action reports</td>
</tr>
<tr>
<td>Weeds</td>
<td>Prevent the land becoming infested with a declared weed. Prevent declared weeds spreading to other land. Follow statutory weed management plans.</td>
<td>Develop and implement a weed management plan that includes weed hygiene, weed control and measures to ensure declared weeds are not spread i.e. in harvested crops, on machinery leaving the site.</td>
<td>No increase in weed infestations. Machinery that will move off established roads tracks (i.e. those used in cropping and firebreak maintenance) inspected and declared weed free prior to entry/exit from property. No movement of weed material off-site.</td>
<td>Monthly inspection for weeds in high-risk areas.</td>
<td>Implement weed control as required</td>
<td>Weed Management Plan Weed control records</td>
</tr>
<tr>
<td>Aspect</td>
<td>Objective / outcome</td>
<td>Management action</td>
<td>Targets / performance indicators</td>
<td>Monitoring</td>
<td>Corrective actions and contingencies</td>
<td>Reporting &amp; record-keeping</td>
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</tr>
<tr>
<td><strong>Emergency Response</strong></td>
<td>Respond to emergencies to protect life, property and the environment</td>
<td>Refer Emergency Response Plan (Appendix E)</td>
<td>No release of pollutants to the environment</td>
<td>Water quality monitoring (refer Monitoring Plan in Section 7.3.3) to detect impacts and corrective action taken.</td>
<td>Review emergency response training and available equipment</td>
<td>Incident register</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Staff training in emergency response. Spill clean-up training and materials kept on site. Emergency Response Plan identifies suitable carcass disposal sites and carcass mass disposal requirements.</td>
<td>No exceedance of water quality objectives at monitoring sites and bores.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heritage</strong></td>
<td>Conserve heritage and cultural values</td>
<td>Obtain Authority Certificate prior to undertaking any significant ground disturbance outside of the existing facility grounds, or where there is potential for abattoir operations to impact on Aboriginal Sacred Sites. Report suspected heritage finds to NT Heritage Branch for assessment.</td>
<td>No impact to heritage sites or cultural values</td>
<td>Visual monitoring of any identified sites</td>
<td>Fence/flag sites as no-go areas</td>
<td>Authority Certificates Incident Register</td>
</tr>
</tbody>
</table>
7 MONITORING & COMPLIANCE

7.1 Inspections

Inspections of the operating areas will occur as per the schedule detailed in Table 14. This table does not include water monitoring, which is detailed in the relevant sections below. Inspections and management of the irrigation area will be addressed in the future Irrigation Management Plan.

**Table 14. Environmental monitoring schedule**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Activities</th>
</tr>
</thead>
</table>
| Daily     | • Check animal holding yards and pens to ensure they are clean (assess for odour and visual amenity)  
            • Check all work areas, storage areas and tanks, equipment and pumps to ensure they are in good working condition with no leaks or spills. |
| Weekly    | • Visual inspection of erosion and sediment controls, effluent pond walls and overflow points during the wet season  
            • Visual inspections of hazardous substances storage areas, bunds and containment structures.  
            • Visual inspections of waste storage areas and containers and arrange waste removal where required.  
            • Inspection of wastewater ponds to assess odour and any issues with pest/vermin or wildlife.  
            • Review of areas ponding water or with the potential to pond water to prevent odour emissions and biting insects breeding.  
            • Odour assessment around site boundaries. |
| Monthly   | • Review of water use, effluent volumes and pond levels.  
            • Inspection of wastewater pond crust, inlets and outlets. |
| Quarterly | • Review of signage, spill response and firefighting equipment to ensure correct placement and in good working order.  
            • Weed inspections to identify weed spread or new outbreaks. |

7.2 Non-conformances, incidents and complaints

Non-conformances with the EMP and/or EPL conditions will be recorded in a non-conformance register. The register will record details of the non-conformance, corrective action, due date and responsibility.

An Incidents and Complaints Register will be established and maintained. The following will be recorded in the register:

- Spills, leaks and unauthorised discharges of wastewater or hazardous substances.
- Inappropriate storage of wastes.
- Odour, noise or other amenity complaints received from neighbours or the community.

Reporting of non-conformances, incidents and complaints to the NT EPA will occur in accordance with the EPL conditions. This EMP will be updated to include specific requirements once the EPL is issued.

7.3 Water monitoring

7.3.1 Monitoring Locations

Surface water monitoring (grab sampling) is to be undertaken at three locations around the site. These monitoring locations have been chosen to provide a spatial representation of the site that will facilitate the early
detection of any potential impacts of operational activities on downstream surface water quality, and
differentiation of impacts caused by site operations and other land uses or natural occurrences. Baseline
monitoring is to occur at all three locations; however, ongoing monitoring at WW3 will only occur when the
irrigation area is in use.

Groundwater monitoring is undertaken on the site bore that supplies water to the abattoir (GW1) as well as an
additional bore in the proposed irrigation area (GW2). This monitoring is used to inform assessment of any
potable water quality as well as any potential contamination when compared against baseline conditions.
Monitoring on GW2 will only occur when irrigation area is in use.

Wastewater monitoring will be undertaken initially at three locations within the effluent treatment ponds to
assess the effectiveness of the anaerobic and aerobic treatment processes. The monitoring points will
represent effluent inflows (WW1), post anaerobic treatment (first stage) (WW2) and post first aerobic treatment
(second stage) (WW3). Monitoring will also be conducted on the treated wastewater directed to the recycled
water tank for site reuse or irrigation to determine final effluent quality (WW4). Following baseline monitoring,
when the treatment pond processes are better understood, ongoing monitoring of wastewater will be
conducted at WW1 and WW4 only.

Monitoring locations are shown on Figure 8.
Figure 8. Proposed effluent and water quality monitoring sites
7.3.2 Baseline monitoring

Baseline monitoring is to be undertaken at all monitoring locations to provide a basis for site specific trigger levels for all ongoing monitoring. Monitoring parameters and frequencies during baseline monitoring are included in the relevant sections below. For surface water and groundwater, baseline monitoring is to occur over the 2019/2020 wet season when the receiving environment is in flow and to ensure the potential for site runoff is captured. Baseline monitoring of the wastewater will be undertaken during the first 6-8 weeks of commissioning to capture adequate data on the site effluent quality and current treatment processes.

7.3.3 Surface water monitoring

Surface water monitoring parameters and frequency of sampling is detailed in Table 15. The monitoring parameters are based on typical contaminants of concern from abattoir operations.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sampling frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Field parameters</strong></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>Monthly (when flowing)</td>
</tr>
<tr>
<td>Temperature (°C)</td>
<td>3 times during the wet season (start, during, end)</td>
</tr>
<tr>
<td>EC (μs/cm)</td>
<td></td>
</tr>
<tr>
<td>DO (% and mg/L)</td>
<td></td>
</tr>
<tr>
<td>Total dissolved solids – TDS (mg/L)</td>
<td></td>
</tr>
<tr>
<td><strong>Laboratory parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Total suspended solids – TSS (mg/L)</td>
<td>Monthly (when flowing)</td>
</tr>
<tr>
<td>Total P (mg/L)</td>
<td>3 times during the wet season (start, during, end)</td>
</tr>
<tr>
<td>Total N, NOx, NH3 (mg/L)</td>
<td></td>
</tr>
<tr>
<td>BOD (mg/L)</td>
<td></td>
</tr>
<tr>
<td><em>E. coli, Enterococci</em> (CFU/100mL)</td>
<td></td>
</tr>
<tr>
<td>Cations and anions (mg/L)</td>
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</tr>
<tr>
<td>(Ca, Mg, Na, K, Cl, F, SO4)</td>
<td></td>
</tr>
<tr>
<td>Alkalinity (mg/L)</td>
<td></td>
</tr>
<tr>
<td>Oil and grease (mg/L)</td>
<td></td>
</tr>
<tr>
<td>Dissolved metals (mg/L)</td>
<td></td>
</tr>
<tr>
<td>(As, Cd, Cr, Cu, Ni, Pb, Zn)</td>
<td></td>
</tr>
</tbody>
</table>

7.3.4 Groundwater monitoring

Monitoring parameters and frequency of sampling is detailed in Table 16. The monitoring parameters are based on typical contaminants of concern from abattoir operations.

Groundwater usage will be recorded monthly from meter reads. Groundwater depth data is collected as part of the standard monitoring procedure. This data can also be used to assess seasonal changes in groundwater levels.
Table 16. Groundwater monitoring parameters and sampling frequency

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sampling frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td><strong>Field parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Usage – meter reads (kL)</td>
<td></td>
</tr>
<tr>
<td>Standing water level (mbgl)</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td></td>
</tr>
<tr>
<td>Oxidative-reductive potential – ORP (mV)</td>
<td>Monthly</td>
</tr>
<tr>
<td>EC (μs/cm)</td>
<td></td>
</tr>
<tr>
<td>DO (% and mg/L)</td>
<td></td>
</tr>
<tr>
<td>Total dissolved solids – TDS (mg/L)</td>
<td></td>
</tr>
<tr>
<td><strong>Laboratory Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Total P (mg/L)</td>
<td></td>
</tr>
<tr>
<td>Total N, NOx, NH₃ (mg/L)</td>
<td></td>
</tr>
<tr>
<td><em>E.coli, Enterococci</em> (CFU/100mL)</td>
<td></td>
</tr>
<tr>
<td>Cations &amp; anions (mg/L) (Ca, Mg, Na, K, Cl, F, SO₄)</td>
<td></td>
</tr>
<tr>
<td>Alkalinity (mg/L)</td>
<td></td>
</tr>
</tbody>
</table>

7.3.5 Wastewater monitoring

Monitoring parameters and frequency of sampling for wastewater is detailed in Table 17. The monitoring parameters are based on typical contaminants of concern from abattoir operations.

Table 17. Wastewater monitoring parameters and sampling frequency

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sampling frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td><strong>Field parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Influent flow rate</td>
<td>Daily</td>
</tr>
<tr>
<td>pH</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>Weekly</td>
</tr>
<tr>
<td>(WW1, WW2, WW3, WW4)</td>
<td>WW1, WW4</td>
</tr>
<tr>
<td>EC (μs/cm)</td>
<td></td>
</tr>
<tr>
<td>Total dissolved solids – TDS (mg/L)</td>
<td></td>
</tr>
<tr>
<td><strong>Laboratory Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Total P (mg/L)</td>
<td></td>
</tr>
<tr>
<td>Total N, NOx, NH₃ (mg/L)</td>
<td></td>
</tr>
<tr>
<td>BOD (mg/L)</td>
<td></td>
</tr>
<tr>
<td><em>E.coli, Enterococci</em> (CFU/100mL)</td>
<td></td>
</tr>
<tr>
<td>Total suspended solids – TSS (mg/L)</td>
<td></td>
</tr>
<tr>
<td>Oil and grease (mg/L)</td>
<td></td>
</tr>
<tr>
<td>Alkalinity (mg/L)</td>
<td></td>
</tr>
<tr>
<td>COD (mg/L)</td>
<td></td>
</tr>
<tr>
<td>Volatile fatty acids – VFA (mg/L of acetic acid)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Monthly</td>
</tr>
<tr>
<td>(WW1, WW2, WW3, WW4)</td>
<td>WW1, WW4</td>
</tr>
</tbody>
</table>
7.4 Irrigation monitoring

Additional monitoring, such as soil sampling and visual inspections of the irrigation area, will be included in the Irrigation Management Plan (IMP) to be developed prior to irrigation activities occurring. This monitoring plan will be updated where relevant to include any requirements outlined in the IMP.

7.5 Sampling procedures and QAQC

7.5.1 Sampling procedures

All water sampling will be undertaken in accordance with the below listed accepted standards and guidelines for monitoring of water quality:

- Australian/New Zealand Standard on Water Quality Sampling - Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples (AS/NZS 5667.1:1998)

7.5.2 Quality control and assurance

Quality control/quality assurance (QA/QC) samples comprising field duplicates are collected for one in every ten water samples (applies to both groundwater and surface water sampling). Laboratory results for duplicates are reviewed when they are received and prior to entering data into the Surface and Groundwater Monitoring Databases. Any anomalous results are investigated in consultation with the laboratory, and rectified where possible.

Water quality meters used for field measurements of in-situ surface water and groundwater physical parameters are calibrated in accordance with Operating Manuals prior to each sampling day and calibration results are recorded in a log book.

All laboratory samples are analysed by a NATA-accredited laboratory, which incorporate laboratory duplicates, blanks and spikes to assess data accuracy.
7.6 Site-specific water quality criteria

In the absence of water quality guidelines that are specific to the region, site specific water quality assessment criteria (trigger values) will be developed from baseline conditions. Trigger values for surface and groundwater are to be determined in accordance with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000a), based on reference data collected within and adjacent to the site catchment prior to the commencement of operations. The ANZECC guidelines advocate that for physical and chemical (non-toxicant) parameters, the median quality values of fresh and marine waters should be lower than the 80th percentile (i.e. concentration/value that 80% of all values are numerically less than or equal to) of concentration values of a suitable reference site. The 80th percentile values can be continuously updated as more monitoring data is collected from reference/baseline sites.

7.7 Record keeping and reporting

The following registers, records and reports will be used to provide evidence of compliance with the requirements of this EMP and the EPL:

- Induction and Training Register
- Water monitoring databases (groundwater and surface water)
- Register of water-use, raw effluent volumes, treated effluent volumes and discharges
- Waste Register including details of waste types, volumes and disposal location
- Waste disposal records
- Incidents and Complaints Register
- Non-conformance and correct action reports required under EPL
- Annual returns required under EPL
- Environmental Improvement Plans required under EPL.

All routine monitoring data is to be recorded in a dedicated water quality database. As data is entered, a review against the relevant trigger values is to be undertaken to determine any exceedances. Water quality monitoring data will also be assessed for any long term emerging trends.

Any exceedances of trigger values will be reported to the NT EPA under the conditions of the EPL. An annual monitoring report will also be prepared for the NT EPA compiling all monitoring data, highlighting any trends and providing an assessment of environmental impact from the abattoir operations.

7.8 Management review

Batchelor Abattoir management team will review EMP compliance annually as part of preparing the EPL Annual Return. Environmental improvements will be identified and incorporated into the EMP for implementation over the next year. Third-party external audits will be undertaken in compliance with EPL conditions.
8 REFERENCES


APPENDIX A ODOUR MODELLING
## Odour Sample Measurement Results

Panel Roster Number: SYD20160205_013

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<tr>
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<th>Sampling Date &amp; Time</th>
<th>Analysis Date &amp; Time</th>
<th>Panel Size</th>
<th>Valid ITEs</th>
<th>Nominal Sample Dilution</th>
<th>Actual Sample Dilution (Adjusted for Temperature)</th>
<th>Sample Odour Concentration (as received, in the bag) (ou)</th>
<th>Sample Odour Concentration (Final, allowing for dilution) (ou)</th>
<th>Specific Odour Emission Rate (ou.m³/m²/s)</th>
</tr>
</thead>
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<td>05/02/2016 1028hrs</td>
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<td>10</td>
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</tr>
<tr>
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Note: The following are not covered by the NATA Accreditation issued to The Odour Unit Pty Ltd:

1. The collection of Isolation Flux Hood (IFH) samples and the calculation of the Specific Odour Emission Rate (SOER).
2. Final results that have been modified by the dilution factors where parties other than The Odour Unit Pty Ltd. have performed the dilution of samples.
## Odour Sample Measurement Results

Panel Roster Number: SYD20170630_048

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<th>Valid ITEs</th>
<th>Nominal Sample Dilution</th>
<th>Actual Sample Dilution (Adjusted for Temperature)</th>
<th>Sample Odour Concentration (as received, in the bag) (ou)</th>
<th>Sample Odour Concentration (Final, allowing for dilution) (ou)</th>
<th>Specific Odour Emission Rate (ou.m(^3)/m(^2)/s)</th>
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</thead>
<tbody>
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<td>29.06.2017 1015 hrs</td>
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<td>8</td>
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<td>8</td>
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<td>91</td>
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</tr>
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<td>Biofilter #2 - Cell 2</td>
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<td>29.06.2017 1102 hrs</td>
<td>30.06.2017 1307 hrs</td>
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<td>8</td>
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</tr>
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<td>29.06.2017 1152 hrs</td>
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<td>3,450</td>
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</table>

Note: The following are not covered by the NATA Accreditation issued to The Odour Unit Pty Ltd:

1. The collection of Isolation Flux Hood (IFH) samples and the calculation of the Specific Odour Emission Rate (SOER).
2. Final results that have been modified by the dilution factors where parties other than The Odour Unit Pty Ltd. have performed the dilution of samples.
## Odour Sample Measurement Results

**Panel Roster Number:** SYD20180725_050

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<th>Analysis Date &amp; Time</th>
<th>Panel Size</th>
<th>Valid ITEs</th>
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<th>Actual Sample Dilution (Adjusted for Temperature)</th>
<th>Sample Odour Concentration (as received, in the bag) (ou)</th>
<th>Sample Odour Concentration (Final, allowing for dilution) (ou)</th>
<th>Specific Emission Rate (ou.m²/m²/s)</th>
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<tbody>
<tr>
<td>Biofilter #2 - Cell 1</td>
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<td>8</td>
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<td>SC18319</td>
<td>24.07.2018 0920 hrs</td>
<td>25.07.2018 1145 hrs</td>
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<td>8</td>
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</tr>
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<td>Biofilter #1 - Cell 5</td>
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<tr>
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**Note:** Where parties other than The Odour Unit perform the dilution of samples, the result that has been modified by the dilution factor is not covered by The Odour Unit’s NATA accreditation.
## Odour Sample Measurement Results

**Panel Roster Number: SYD20190627_049**

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<th>Panel Size</th>
<th>Valid ITEs</th>
<th>Nominal Sample Dilution</th>
<th>Actual Sample Dilution (Adjusted for Temperature)</th>
<th>Sample Odour Concentration (as received, in the bag) (ou)</th>
<th>Sample Odour Concentration (Final, allowing for dilution) (ou)</th>
<th>Specific Odour Rate (ou.m(^3)/m(^2)/s)</th>
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</thead>
<tbody>
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<td>SC19354</td>
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<td>Biofilter #2 - Cell 2</td>
<td>SC19355</td>
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<tr>
<td>Process Line - Humidifier Inlet</td>
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</table>
BATCHelor ABATTOIR ODour DISPERSION MODELLING RESULTS
APPENDIX C ODOUR MANAGEMENT PROCEDURE
CENTRAL AGRI GROUP

ODOUR MANAGEMENT PROCEDURES

Batchelor, NT

Version 0

August 2019
THE ODOUR UNIT PTY LTD

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ACN 091 165 061

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Project Number: N2264L.01

<table>
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</thead>
<tbody>
<tr>
<td>Report Prepared By: T. Schulz &amp; M. Assal</td>
</tr>
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</table>

| Report Title: Central Agri Group – Odour Management Procedures |
1 KEY STAFF AND RESPONSIBILITIES

This section summarises the key staff and responsibilities for ensuring that Odour Management Procedures (OMP) are valid, up to date and achieve the desired result. The key staff responsible for the OMP at the Batchelor Meat Processing Plant (the Plant) include:

- Plant Manager; and
- Environmental Officer.

1.1 PLANT MANAGER

The Plant Manager responsibilities are as follows:

- Overall responsibility for the management of operational activities for the Plant, including the oversight of the odour management and control systems;
- Oversees management of the Plant ensuring that all activities and operations are conducted in compliance with management plans and operating systems including supervision of those relating to environmental management (including odour);
- Is advised of any relevant odour complaints; and
- Implementation of the OMP on a day-to-day basis for the Plant.

1.2 ENVIRONMENTAL OFFICER

The Environmental Officer’s responsibilities are as follows:

- Overall responsibility for administrative controls and environmental management systems for the Plant;
- Ensuring that the process parameters are being correctly undertaken and maintained; and
- Responsible for the maintenance of the monitoring records.
2 INCIDENT & COMPLAINTS MANAGEMENT

2.1 ODOUR COMPLAINTS/INCIDENT HANDLING

The Plant has two key reporting forms for the management of incident and complaints, as follows, respectively:

1. An environmental incident report (refer to Form 2.1); and

2. An environmental complaint form (refer to Form 2.2).

This information is stored in a consolidated excel register on the Plant’s environment management system and managed by the Environmental Officer.
<table>
<thead>
<tr>
<th>ENVIRONMENTAL INCIDENT REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCIDENT LOCATION:</td>
</tr>
<tr>
<td>NATURE OF OCCURRENCE:</td>
</tr>
<tr>
<td>- Spill</td>
</tr>
<tr>
<td>- Leak</td>
</tr>
<tr>
<td>- Unsightly / offensive accumulation of waste, litter etc.</td>
</tr>
<tr>
<td>- Other (describe):</td>
</tr>
</tbody>
</table>

| FURTHER DETAILS:             |
| Origin of Incident:          |
| From (date/time):            |
| To (date/time):              |

| DESCRIPTION OF INCIDENT      |
| RESULTING IMPACT: (what Environmental Harm was caused or threatened?) |
| EXTENT OF IMPACT: (areas affected) |
| PROBABLE CAUSE: (what caused the incident?) |
| CORRECTIVE ACTION TAKEN: (immediate actions, date/time etc) |
| PREVENTATIVE ACTION TO BE TAKEN: (to prevent occurrence/eliminate root cause of the incident) |
| MAINTENANCE SERVICE REQUEST NUMBER: |
| ANY COMMUNITY/MEDIA ATTENTION: (give a brief description) |

| INCIDENT REPORTED TO EPA: YES NO |
| Date: | Time: | EPA Officer: |

| OTHER COMMENTS/ATTACHMENTS: |

| REPORT COMPLETED BY: | SIGNED: | DATE: |
| ENVIRONMENTAL MANAGER: | SIGNED: | DATE: |
| PLANT MANAGER: | SIGNED: | DATE: |

Form 2.1 – Environmental Incident Report
<table>
<thead>
<tr>
<th>ENVIRONMENTAL COMPLAINT FORM</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE &amp; TIME COMPLAINT REPORTED:</td>
</tr>
<tr>
<td>DETAIL OF COMPLAINT:</td>
</tr>
<tr>
<td>(if Odour, please describe)</td>
</tr>
<tr>
<td>NAME &amp; ADDRESS OF COMPLAINANT:</td>
</tr>
<tr>
<td>(if permitted)</td>
</tr>
<tr>
<td>DATE &amp; TIME OF EVENTS GIVING RISE TO COMPLAINT:</td>
</tr>
<tr>
<td>AT THE TIME OF THE EVENT AN ESTIMATE OF:</td>
</tr>
<tr>
<td>TEMPERATURE:</td>
</tr>
<tr>
<td>WIND SPEED:</td>
</tr>
<tr>
<td>WIND DIRECTION:</td>
</tr>
<tr>
<td>RAINFALL:</td>
</tr>
<tr>
<td>LIKELY CAUSE OF EVENTS GIVING RISE TO COMPLAINT:</td>
</tr>
<tr>
<td>ACTION TAKEN IN RESPONSE TO THE COMPLAINT, AND TO PREVENT A REOCURRENCE OF THE EVENTS GIVING RISE TO THE COMPLAINT:</td>
</tr>
<tr>
<td>SERVICE REQUEST NUMBER:</td>
</tr>
<tr>
<td>REPORTED TO:</td>
</tr>
</tbody>
</table>
2.2 Odour Incident, Management and Monitoring

2.2.1 Field Ambient Odour Assessment Surveys

In response to an odour complaint, the undertaking of Field Ambient Odour Assessment Surveys (FAOA) by suitable personnel from the Plant can be undertaken to allow for real-time monitoring of ambient odour levels, especially during atypical process conditions and can be undertaken in the form of regular patrols both on-site and off-site (if necessary, especially at known problematically areas or sensitive receptors). The FAOA surveys could also be a response protocol to an odour complaint received from the Plant Manager or Environmental Officer of the Plant (provided the odour complaint has been logged the same day and within a reasonable timeframe since the odour episode).

The FAOA surveys are intended to be used as a complaints response and management tool, designed to record the Plant personnel’s determinations of the presence or absence of ambient odours at both on-site and off-site locations (in the instance that a positive detection beyond the Plant boundary is recorded), the perceived strength/intensity of any odour found to be present, the duration of the odour event, any definable odour character, and information of prevailing wind conditions. The results are to be recorded in a FAOA log sheet template (see Form 2.3). If there is odour present, then an entry should be completed. If there is a prevailing wind from the direction of the Plant, and there is no positive detection observed, then an entry should still be made. These NIL entries can provide as much valuable data to the responsible Plant personnel as ‘FAOA positive’ form log sheet entries.

The key FAOA parameters that are to be recorded in the form log sheet are as follows:

- Date and time;
- Location;
- Intensity, according to the 7-point odour intensity scale (see Table 2.1); and
- Meteorological conditions including weather conditions, wind direction, and wind speed.

Form 2.3 should be printed or electronically stored and template kept in a separate and accessible file at the Plant’s Main Office. All filled forms should also be kept in a separate file or attached to the corresponding logged complaint in the Environmental Complaints Register (as outlined Section 2). Section 2.2.1.1 & Section 2.2.1.2 outline
and describe the odour intensity scale and odour descriptors, respectively, available to the responsible Plant personnel for the assessment of odour during a FAOA survey.

2.2.1.1 Odour intensity scale

The odour strength for use in the FAOA is quantified according to the German VDI 3940 odour intensity scale. The category scale for judging odour intensity in the field is a quantitative seven-point reference scale where the responsible Plant personnel assign one of the attributes in the Table 2.1 to the assessor’s odour impression. As a reference point, an odour is clearly recognised (category of intensity 3) when an odour descriptor can be clearly distinct.

<table>
<thead>
<tr>
<th>Odour Strength</th>
<th>Intensity Rank</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not detectable</td>
<td>0</td>
<td>No odour detected</td>
</tr>
<tr>
<td>Very Weak</td>
<td>1</td>
<td>Odour recognised and where possible assigned to the odour source</td>
</tr>
<tr>
<td>Weak</td>
<td>2</td>
<td>Odour is weak but not yet distinct</td>
</tr>
<tr>
<td>Distinct</td>
<td>3</td>
<td>Odour is clearly distinct</td>
</tr>
<tr>
<td>Strong</td>
<td>4</td>
<td>Strong odour detectable</td>
</tr>
<tr>
<td>Very Strong</td>
<td>5</td>
<td>Very strong odour detectable</td>
</tr>
<tr>
<td>Extremely Strong</td>
<td>6</td>
<td>Extremely strong odour detectable</td>
</tr>
</tbody>
</table>

2.2.1.2 Odour character

Any potential odour sources have their origins from the process operations occurring at the Plant. Based on typical abattoir/rendering process operations, the key odour descriptors have been developed as shown in Table 2.2. The odour descriptors are specific to the Plant and its operations. This enables the responsible personnel to readily identify the likely source of a positive odour entry during the daily FAOA survey.

<table>
<thead>
<tr>
<th>Character ID</th>
<th>Odour description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>meaty, putrid, pungent</td>
</tr>
<tr>
<td>B</td>
<td>faecal, dirty, septic</td>
</tr>
<tr>
<td>C</td>
<td>rotten egg, sewage</td>
</tr>
<tr>
<td>D</td>
<td>manure</td>
</tr>
<tr>
<td>E</td>
<td>other (describe)</td>
</tr>
</tbody>
</table>
### Field Ambient Odour Assessment Form Logsheet

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Observation</td>
<td></td>
</tr>
<tr>
<td>Time of Observation</td>
<td></td>
</tr>
<tr>
<td>Measurement Location ID or location of odour</td>
<td></td>
</tr>
<tr>
<td>Weather conditions (sunny, dry, rain, fog, etc)</td>
<td></td>
</tr>
<tr>
<td>Temperature (hot, very warm, warm, mild, cold or degrees if known)</td>
<td></td>
</tr>
<tr>
<td>Wind strength (calm, light, steady, strong, gusting)</td>
<td></td>
</tr>
<tr>
<td>Wind direction (e.g. from NE)</td>
<td></td>
</tr>
<tr>
<td>What does it smell like? (Please circle response)</td>
<td>meaty, putrid, pungent, faecal, dirty, septic, rotten egg, sewage, manure, other</td>
</tr>
<tr>
<td>How unpleasant is it?</td>
<td></td>
</tr>
<tr>
<td>Was the character or strength of this smell offensive?</td>
<td></td>
</tr>
<tr>
<td>Intensity – How strong was it? (Please circle) Refer to odour intensity scale for meaning (see below)</td>
<td>0</td>
</tr>
<tr>
<td>How long did the smell last?</td>
<td></td>
</tr>
<tr>
<td>Was it constant or intermittent?</td>
<td></td>
</tr>
<tr>
<td>Any other comments</td>
<td></td>
</tr>
</tbody>
</table>
2.2.2 Odour Communication and Response Strategy

2.2.2.1 Odour diaries
Odour diaries can assist complainants in providing details of their perception of the suspected nuisance odours and any effects that the odour has on their behaviour. They are best used for persistent and recurring odour incidents. Details are recorded using a standard diary record sheet on a daily or weekly basis and particularly whenever an odour episode occurs. Simple local wind or weather condition records can also help identify or confirm the source of alleged nuisance odours. The odour descriptors and intensity chart should be provided to concerned neighbouring receptors as shown in Table 2.1 & Table 2.2.

The odour diaries are a valuable communication tool between the community, EPA NT and the Plant, as it provides feedback on what the complainant is experiencing in real-time during an odour episode, especially in the event where they do not have the opportunity to lodge a complaint in real-time. Such observations are not limited to odour but can also include issues that may arise from the Plant.

2.2.3 Meteorological Station
The BoM meteorological station at the Batchelor Airport can referenced as a source of relevant weather data.
1. WASTE MANAGEMENT AIMS

Central Agri Group Batchelor will endeavour to adopt the principles of ecological sustainable development by making the most efficient use of resources and minimising wastes. Central Agri Group Batchelor will also aim to provide facilities and procedures to ensure that wastes generated at the site do not result in actual or potential environmental harm or environmental nuisance being caused. To achieve this, Central Agri Group Batchelor will:

- adopt the principles of Cleaner Production by having in place appropriate technologies and procedures for (i) waste minimisation, (ii) re-use and recycling, (iii) treatment and (iv.) disposal;
- adopt best practice techniques for waste storage, handling, treatment and disposal;
- promote awareness of waste management issues amongst staff;
- check compliance with specified management practices and licence conditions through a monitoring, auditing and review programme; and
- identify responsibilities and provide budget allocations and procedures to enable the implementation of this waste management plan.

2. PURPOSE OF THIS PLAN

The purpose of this Waste Management Plan (WMP) is to:

- identify and record all waste streams and by-products associated with the abattoir;
- record approximate quantities of wastes and by-products generated under current operating conditions;
- define the appropriate management practices for the handling, storage and disposal arrangements for all waste streams and by-products;
- determine the company’s performance when judged against current environmental legislation and licence conditions; and
- determine areas in which waste minimisation is feasible.

3. REFERENCES

In developing this WMP, reference has been made to the following:


4. RESPONSIBILITY

*Environment Officer* is responsible for ensuring that the information contained in this plan is accurate and up to date. The details of stormwater catchment areas and management practices described in this WMP are to be reviewed and updated annually as part of the annual Site based management plan audit and as agreed in the licence conditions.

*Maintenance Manager* is responsible for ensuring that the stormwater management practices described in this plan are effectively implemented.
5. BY-PRODUCT INVENTORY

The following is an inventory of by-products generated at the Central Agri Group Batchelor Abattoir Complex. These materials have been termed by-products because they are either rendered on site into tallow, meat meal, blood meal or passed on other manufactures for further processing. This inventory is to be updated as part of the annual environmental audit to reflect current conditions.

<table>
<thead>
<tr>
<th>By-products</th>
<th>Source</th>
<th>Storage / Treatment Requirements</th>
<th>Disposal Requirements</th>
<th>Average weekly quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rendering material</td>
<td>Carcass dressing Kill floor</td>
<td>Conveyed directly by enclosed chute and screw conveyor to bin positioned outside slaughter floor area.</td>
<td>Transported to Rendering plant on site on an hourly basis rendering into meat meal and tallow.</td>
<td>145 tonne</td>
</tr>
<tr>
<td>(hoofs, heads, bone horn &amp; fat)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wash down solids</td>
<td>Slaughter-floor Boning room</td>
<td>Screened from wastewater in contra-shear Screened from wastewater &amp; collected in Save all</td>
<td>As above</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Face pieces</td>
<td>Slaughter floor</td>
<td>Collected in 1 tonne plastic bins and stored in refrigerated hide chiller.</td>
<td>Refrigerated until loadout</td>
<td>2.7 tonne</td>
</tr>
<tr>
<td>Hides</td>
<td>Hide removal area</td>
<td>Collected in 1 tonne plastic bins and stored in a refrigerated hide chiller.</td>
<td>Refrigerated until loadout</td>
<td>18.5 tonne</td>
</tr>
<tr>
<td>Blood</td>
<td>Slaughter floor</td>
<td>Conveyed by pipe to rendering plant raw material cooker</td>
<td>Pumped to rendering plant via a pipe system to be rendered into blood meal</td>
<td>22 k/litres</td>
</tr>
</tbody>
</table>
6. WASTE INVENTORY

The following tables are an inventory of solid and liquid wastes generated at the Central Agri Group Batchelor Abattoir Complex. These materials are classified as wastes because they currently have no monetary value and are disposed. This inventory is to be updated as part of the annual environmental audit to reflect current conditions.

<table>
<thead>
<tr>
<th>Solid Wastes</th>
<th>Source</th>
<th>Minimisation Strategy</th>
<th>Storage /Treatment Requirements</th>
<th>Disposal Requirements</th>
<th>Average quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paunch Manure</td>
<td>Green offal room</td>
<td>Dewatering via FAN press</td>
<td>De-watered through FAN press and collected in bins</td>
<td>Taken to bunded pad before being rendered daily or taken offsite by licenced contractor weekly</td>
<td>25 tonne / weekly</td>
</tr>
<tr>
<td>Manure waste</td>
<td>Stock yards</td>
<td>N/A</td>
<td>Manure will be piled in rows on concrete bunded pad</td>
<td>Taken to bunded pad before being taken offsite by licenced contractor weekly</td>
<td>5 tonne / weekly</td>
</tr>
<tr>
<td>Manure waste from yard wash</td>
<td>Stock yards</td>
<td>All yard manure is dry swept and collected by bobcat</td>
<td>A minimum amount of manure will be left in yard wash which is screened via contra sheer</td>
<td>Taken to bunded pad before being rendered daily or taken offsite by licenced contractor weekly</td>
<td>20 tonne / month</td>
</tr>
<tr>
<td>Pond sludge</td>
<td>Anaerobic pond</td>
<td>Good solid screening and dosing of micro-organisms to reduce sludge build-up</td>
<td>Dewatered in a decanter when required approx. every 2 years</td>
<td>Taken to bunded pad before being taken offsite by licenced contractor approx. every 2 years</td>
<td></td>
</tr>
<tr>
<td>Mortalities</td>
<td>Cattle receival area</td>
<td>Ensure cattle are watered, not unnecessarily stressed and kept cool</td>
<td>Disposed at rendering plant.</td>
<td></td>
<td>1 / month</td>
</tr>
<tr>
<td>Liquid Wastes</td>
<td>Source</td>
<td>Minimisation Strategy</td>
<td>Storage/Treatment Requirements</td>
<td>Disposal Requirements</td>
<td>Average Quantity</td>
</tr>
<tr>
<td>--------------</td>
<td>--------</td>
<td>-----------------------</td>
<td>--------------------------------</td>
<td>-----------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Abattoir process wastewaters</td>
<td>Yard wash waters from cleaning of holding pens</td>
<td>Treated through contra-shear (primary treatment) and save-all, (secondary treatment) then directed to effluent treatment ponds</td>
<td>effluent treatment pond</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning in slaughter, evisceration &amp; boning areas</td>
<td>Dry clean-up of most solids prior to wet cleaning, fixed grates on slaughter floor</td>
<td>As above</td>
<td>As above</td>
<td></td>
<td>1000 ML/week</td>
</tr>
<tr>
<td>Edible offal washing</td>
<td>“Water saver” spray nozzles and pressure control</td>
<td>As above</td>
<td>As above</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carcass washing</td>
<td>Carcases not washed on site</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defrost water from refrigeration evaporators</td>
<td>Close circuit recirculated tank</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling water bleed Evaporative condensers in refrigeration system.</td>
<td></td>
<td>Drains away via in-ground drain to effluent treatment pond</td>
<td>As above</td>
<td></td>
<td>Not Measured</td>
</tr>
<tr>
<td>Domestic sewage</td>
<td>Abattoir</td>
<td>N/A</td>
<td>Septic treatment system</td>
<td>Collected by licenced contractor, as needed</td>
<td>Not Measured</td>
</tr>
</tbody>
</table>
7. MANAGEMENT PRACTICES FOR WASTES AND BY-PRODUCTS

This section describes the proposed practices for the management of wastes and by-products, including handling, storage, treatment and disposal.

7.1 By-products

By-products generated from slaughtering and carcass dressing will be passed on to other manufacturers for further value adding into products for sale, as follows:

- Cattle heads, horns, hoofs, bone, body fat and blood will be collected for rendering into meat meal and tallow.
- Face pieces and hides will be sold as chilled or frozen for further processing.

The central collection and storage point for all by-products is the ‘outside area’ located directly adjacent to the slaughter floor. All materials will be conveyed by gravity through enclosed chutes into storage bins. Raw waste bins are stored undercover and removed to rendering plant when full, to ensure only fresh product is rendered (refer to Attachment A for more details on the Rendering Plant).

By-products will be putrescible and must not be stored on-site for long periods of time to avoid odour generation. All putrescible materials will be collected and transferred to the rendering plant, and in some cases twice per day. Hides will be kept refrigerated during storage to reduce spoilage. In case of breakdowns or larger volumes of condemned materials, a raw material holding chiller is available to take 2 days of raw material.

7.2 Solid manure wastes

Manure wastes are collected from the holding yards and pens and from the paunch of the animals after slaughter.

The holding yards are dry cleaned of manure daily using a bobcat. Manure will be stockpiled according to the following principles:

- Manure will be added to the stockpile in thin even layers.
- The stockpile will be compacted between each placement.
- Stockpiles will be shaped to shed rain (during the months of Oct-Dec).
- Once collected into a stockpile, the manure will be removed off site for composting by a licenced contractor.

Paunch manure and manure from the holding pens will be collected in a wet form and de-watered before being transported and removed off site. The process for collection and dewatering will be as follows. Wet paunch manure from the tripe room will be pumped into a De-Watering FAN Press and manure washed from the holding pens feeds by gravity to a 5000 lt effluent pit and then pumped over a 0.25 mm Contra-Shear Screen which will de-water the manure. (refer to Attachment for more details on the contra-shear and FAN Press) The manure cake will fall into a bin and be taken to the bunded drying area. The wastewater generated from dewatering flows to the main discharge line to the Save-All for additional solid separation and then pumped to effluent treatment ponds.

Paunch manure and wet manure will be removed off site weekly.

7.3 Sludges

Treatment of the process wastewaters in the effluent treatment ponds generates a sludge which settles to the bottom of the ponds, principally the anaerobic pond. Ponds will be de-slugged once the
sludge takes up one third of the total volume (or half depth) of the pond, to maintain the hydraulic capacity of the pond. Desludging is typically required after some years of receiving screened effluent. Sludge levels in the anaerobic pond are checked annually as part of the annual audit.

If required, desludging will be undertaken using a floating (suction cutter) dredge which will loosen and extract the sludge from underneath the water. The dredged sludge will be pumped to the drying pad and allowed to dry. The dried sludge will be removed by a licenced contractor. Sufficient sludge will be retained in the pond after desludging to enable the pond’s activity to be rapidly regained upon recommissioning.

7.4 Mortalities
Livestock mortalities as part of routine abattoir operations are minimised as far as practicable by implementing good animal welfare practices during unloading and in the holding yards. About a dozen or so cattle mortalities occur every year, usually as a result of old age or stress and carcasses are disposed either by rendering or collected by a licenced waste contractor for off-site disposal.

Disposal of large numbers of animal carcasses on site would only be required in the event that the on-site vet identifies a disease that must be contained and the containment strategy prohibits rendering or off-site disposal. These options may also be suitable for disease-affected animals; however, the decision is made by the on-site vet on a case-by-case basis in accordance with the guidance documented in the AUSVETPLAN Operation Manual Disposal (National Biosecurity Committee, 2015).

Mass disposal in burial pits on site is addressed in the Emergency Response Plan.

7.5 Wastewaters
Wastewaters are generated from the following sources and flow via in-ground pipe work to the effluent treatment ponds located west of the abattoir:

- abattoir processes;
- rendering processes; and
- septic systems.

Wastewaters from the abattoir make up the majority of the wastewaters, (<1%) are generated from the other minor sources, such as the septic systems.

At current processing rates (160 head / day, five days a week) the total quantity of wastewater entering the treatment ponds from all site activities is 0.9 ML per week, based on 10% system losses to evaporation during the process.

7.5.1 Abattoir wastewaters
Wastewaters from the abattoir are generated from cleaning activities in the slaughter, evisceration and boning rooms and edible offal, and to a lesser extent truck wash down and wash out of the holding pens.

Waste water generated by the rendering plant is made via evaporation of the cooking process (stick water) and cleaning this water will be directed into the main effluent treatment system.

Wastewaters from the slaughter, evisceration and boning rooms and from carcass and offal washing pass through a contra-shear rotary screen to remove solid material and then drains directly by gravity through an in-ground closed conduit to the save-all, then effluent treatment ponds. The solid screenings are transported in bins to the rendering plant.

Blood is excluded from the wastewater stream as far as possible by allowing the carcasses to drain into the bunded blood collection area.
Wastewaters containing manure (from holding pen wash downs and from the paunch washing) are directed to a dedicated De watering FAN Press separator located in the treatment area adjacent to the holding pens. The screened wastewater drains via the main effluent line to the effluent treatment ponds.

7.5.2 Other wastewaters
Other minor source of wastewaters generated at the site are the bleed from the water-cooled evaporative condensers.

The cooling water condenser discharges a bleed of water to maintain the correct concentration of additives in the cooling waters. The bleed water contains biocide and anti-corrosive additives. The volume generated is very small, discharging at less than 0.5 litre/sec when discharging. The water drains to the main in-ground stormwater line which disperses water to the holding paddock.

7.5.3 Domestic Sewage
Domestic sewage from staff amenities at the abattoir are stored in a septic systems and collected by licenced contractor when required.

8 EFFLUENT TREATMENT
This section describes the proposed practices for the management of effluent, including treatment, storage, and disposal.

8.1 Effluent characteristics
On the basis of publicly available information in relation to abattoir effluent quality and CAG’s experience commissioning and operating the Trafalgar abattoir (refer Table 8-1), the inflow to the ponds is likely to be classified as High strength based on the NSW Environmental Guideline - Use of Effluent by Irrigation (DEC, 2004) (refer Table 8-2). During the commissioning phase of the Batchelor Abattoir, BOD concentration of the incoming effluent is expected to be higher than normal at approximately 4,000 mg/l. This is because heavy solids loads are required for the anaerobic pond seeding process to generate a healthy crust. The BOD concentration of the incoming effluent will be less during normal operations – refer abattoir wastewater characteristics in Table 8-1.

Table 8-1. Biological Oxygen Demand concentrations in abattoir wastewater

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Typical abattoir raw wastewater (Johns (1993))</th>
<th>Churchill Beef Abattoir (from MLA, 2012)</th>
<th>Trafalgar plant (CAG testing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD (5-day)</td>
<td>1,600 – 3,000 mg/L</td>
<td>3,300-5,000 mg/L</td>
<td>1,200 mg/L</td>
</tr>
</tbody>
</table>

Table 8-2. Classification of effluent for environmental management (from DEC, 2004)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Strength (average concentration mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Total Nitrogen</td>
<td>&lt;50</td>
</tr>
<tr>
<td>Total Phosphorus</td>
<td>&lt;10</td>
</tr>
<tr>
<td>BOD</td>
<td>&lt;40</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>&lt;600</td>
</tr>
<tr>
<td>Fat, oil and grease</td>
<td>-</td>
</tr>
</tbody>
</table>
8.1 Treatment ponds
There are three wastewater ponds; one anaerobic and two aerobic ponds, with a total storage capacity of 19.1ML (7m depth, plus 0.9m of freeboard). Effluent pond water flow is shown in Figure 8-2.

Pond 1 – Volume 9.55 ML – Naturally crusted anaerobic lagoon
Wastewater will enter pond 1, which will operate as an anaerobic treatment lagoon. The main purpose of this pond is to reduce the level of organic contaminants such as Biological Oxygen Demand over five days (BOD5), Chemical Oxygen Demand (COD) and to a lesser extent oil and grease. Crust formation will be promoted to over time form a floating crust consisting of a mixture of paunch material and tallow. This crust plays an important role in that it insulates the pond, helps minimise odour emissions, and minimises oxygen entry into the pond through the pond surface.

Pond 2 – Volume 5.06 ML – Aerated aerobic lagoon
Pond 2 will operate as a mechanically aerated aerobic lagoon. The main purpose of the aerobic treatment ponds (both 2 and 3) is to reduce BOD concentrations to levels suitable for reuse or irrigation to land without odour and to ensure that there is a reasonable level of dissolved oxygen (DO) in the treated water.

Pond 3 – Volume 4.52 ML – Aerobic lagoon
The final pond in the treatment system (pond 3) will also be operated as an aerobic lagoon. This pond will provide for final polishing of the wastewater prior to pumping to the recycled water tank for reuse or irrigation.

8.1 Commissioning
The commissioning process will be overseen by personnel with experience in pond commissioning and trouble-shooting. The process will involve adding above normal solids, including paunch and manure content, for the purpose of seeding. This will be combined with stickwater from the rendering process with the addition of straw to create a medium that will form a crust on the surface of the pond. This formation of a natural crust will take approximately 40 days.

Important factors for successful start-up are:
- Avoiding organic shock loads from events such as blood or tallow spills reaching the pond
- Extra monitoring of anaerobic pond effluent during start-up to provide good feedback
- Attempting to increase pond temperatures as quickly as possible to get into the optimal range for operation (usually 28 – 35°C).
- Ensuring as much paunch and intestine effluent as possible is fed to the pond (preferably minus the suspended solids) since these streams contain many of the bacteria needed for successful operation.

The wastewater monitoring program that will be adopted during commissioning is documented in the EMP Monitoring Plan.

8.1 Recommended operating range
Table 8-3 Recommended operating ranges for anaerobic ponds (from AMPC, 2017)
8.2 Treatment Efficiency

Anaerobic ponds are widely used in the meat industry as the first stage of secondary treatment of high strength abattoir wastewater and are an efficient means whereby the biochemical oxygen demand (BOD) and COD (chemical oxygen demand) are reduced by around 90% (Meat and Livestock Australia, 2012). The design removal for aerated aerobic ponds will vary from pond to pond due to unique aspects of each facility, but typical design BOD removals are in the range of 50 – 70% of incoming BOD concentration (AMPC, 2017). As the Batchelor ponds are not purpose built i.e. they were already in existence, the design is not based on the expected effluent inflow quality or a target removal capacity.

To provide an indication of the BOD removals that could be achieved by the Batchelor ponds, the indicative BOD design removals for anaerobic and aerobic ponds; 90% and 50% respectively, can be used. Assuming an inflow effluent BOD concentration of 1,200 mg/L, and indicative Table 8-3 documents an indicative BOD removal capacity of the wastewater ponds. If the final pond (Pond 3) is unable to reduce the BOD concentration to 30 mg/L, which is the criteria suitable for irrigation of non-food crops, then additional primary treatment or additional aeration may be required. CAG’s target is to achieve an effluent quality classified as medium strength based on the DEC (2004) guidelines.

Table 8-4. Indicative BOD removal capacity of wastewater treatment ponds at Batchelor Abattoir

<table>
<thead>
<tr>
<th>Label</th>
<th>Dimensions (m)</th>
<th>Operating Depth¹</th>
<th>Batter slope</th>
<th>Volume (m³)</th>
<th>Retention time</th>
<th>BOD5 mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pond 1 - IN</td>
<td>77 x 39</td>
<td>5</td>
<td>45</td>
<td>6,726</td>
<td>34</td>
<td>1,200</td>
</tr>
<tr>
<td>Pond 1 - OUT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>120</td>
</tr>
<tr>
<td>Pond 2 - OUT</td>
<td>36 x 36</td>
<td>5</td>
<td>45</td>
<td>3,564</td>
<td>18</td>
<td>60</td>
</tr>
<tr>
<td>Pond 3 - OUT</td>
<td>35 x 35</td>
<td>5</td>
<td>45</td>
<td>3,185</td>
<td>16</td>
<td>Target &lt;30</td>
</tr>
</tbody>
</table>

Abattoir effluent quality is variable between facilities and over-time within a facility as it is dependent on a range of factors, including the type of animals processed at the facility, curfewing of livestock (to limit manure volume in the stomach), processing numbers, type of rendering and efficacy of the primary/secondary treatment processes. For this reason, treatment systems and processes require modification over time in response to actual effluent characteristics. The Batchelor Abattoir effluent characteristics will be characterised during the 6-8 week commissioning period, during which time effluent quality will be monitored on a weekly basis to characterise concentrations of key parameters (refer Monitoring Plan in EMP). Once the range of operating parameters have been determined, the capacity of the existing treatment ponds to reduce contaminant loads to levels suitable for reuse and irrigation will be assessed.

Irrigation will not occur until effluent has been adequately characterised, acceptable water quality criteria for irrigation/reuse established and the efficacy of the treatment system demonstrated and an approved irrigation management plan is in place. If operations were to commence in October 2019, the ponds have sufficient capacity to store wastewater plus rainfall associated with an above-average (90th percentile) wet season, without the requirement to irrigate until March 2020.

¹ CAG proposes to operate the ponds at 5 m depth; however, the constructed depth used in the water balance is 7 m, plus 0.9 m freeboard.
8.3 Wet Weather Storage

For medium strength effluent, DEC (2004) states the effluent storage capacity should be sufficient to limit discharges to 25 percent of years. The Batchelor Abattoir wastewater ponds have sufficient capacity to contain the forecast wastewater volumes from the 6-8 week commissioning phase plus an above-average (90th percentile) wet season rainfall. Water mass balance calculations for an average and above average wet season are shown in Figure 8-1.

The calculations indicate that if the abattoir is commissioned in October to December 2019, the incident rainfall will mix with the wastewater over the wet season and will be contained. Depending on the amount of rainfall received, the treated/diluted effluent may need to be irrigated to lower the pond levels prior to recommencing operations in March. CAG plan to undertake soil/land suitability assessments and have an approved irrigation management plan in place by March 2020 to allow for irrigation to occur then if it is required.

During normal operations from March 2020, treated wastewater will be reused for stockyard washdown and/or irrigated over the dry season. Pond levels will be lowered by December each year, allowing for containment of wastewater and rainfall over the wet season.

8.4 Operational monitoring and maintenance

The following aspects of the pond will be checked weekly

- Water level and freeboard
- Inlet – check for blockages and clear
- Outlet – check for blockages and clear
- Pond crust – check to see that the crust has not disappeared on any part of the pond, or has not changed. A good method is to take a photo of the crust from a given point once a month and check the latest image against older ones. If the crust is disappearing, odour emissions may become an issue with neighbours.
- Aerated ponds – ensure the aerators are functioning properly
- Aerated ponds - ensure that there is no crust or substantial foam on the pond. This is a bad sign for aerobic ponds.
- Pond walls – check for erosion or damage by vegetation roots etc.
Figure 8-1. Water balance in for wastewater ponds over 2019/2020 wet season
Rainfall and evaporation data generated from SILO database

### SCENARIO 1 - AVERAGE WET SEASON - 50th percentile rainfall and evaporation

<table>
<thead>
<tr>
<th>Month</th>
<th>Op days</th>
<th>No. head</th>
<th>No. head/day</th>
<th>Monthly Rainfall Average (mm)</th>
<th>Monthly Evap Average (mm)</th>
<th>Wastewater In (m³)</th>
<th>Rainfall In (m³)</th>
<th>Total In (m³)</th>
<th>Evap Out (m³)</th>
<th>Δ Vol Cum. Vol (ML)</th>
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</thead>
<tbody>
<tr>
<td>October</td>
<td>25</td>
<td>80</td>
<td>2000</td>
<td>54.7</td>
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<td>November</td>
<td>25</td>
<td>80</td>
<td>2000</td>
<td>141.6</td>
<td>206.00</td>
<td>2340</td>
<td>787</td>
<td>917</td>
<td>1146</td>
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<td>December</td>
<td>15</td>
<td>160</td>
<td>2400</td>
<td>219.3</td>
<td>186.93</td>
<td>2808</td>
<td>1219</td>
<td>1405</td>
<td>1039</td>
<td>2088</td>
</tr>
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<td>0</td>
<td>0</td>
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<td>167.53</td>
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<td>1732</td>
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### SCENARIO 2 - ABOVE AVERAGE WET SEASON - 90th percentile rainfall, 10th percentile evaporation

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<th>Month</th>
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<th>No. head</th>
<th>No. head/day</th>
<th>Monthly Rainfall Average (90th percentile) (mm)</th>
<th>Monthly Evap Average (10th percentile) (mm)</th>
<th>Wastewater In (m³)</th>
<th>Rainfall In (m³)</th>
<th>Total In (m³)</th>
<th>Evap Out (m³)</th>
<th>Δ Vol Cum. Vol (ML)</th>
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<tbody>
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<td>94</td>
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<td>-995</td>
</tr>
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<td>200.8</td>
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<td>232</td>
<td>1167</td>
<td>-934</td>
<td>13.44944643</td>
</tr>
</tbody>
</table>

**Assumptions supplied by Central Agri Group**

- **Storage volume - 19.1ML**
- **Pond 1 - 9.55ML, Pond 2 - 4.52ML, Pond 1 - 5.06ML**
- **Pond surface area - 5560.25m²**
- **Ponds empty on commencement**
- **No seepage - ponds are lined**
- **Operations 5 days/week Nov 1 to Dec 15**
- **Month 1 - 50% capacity, Month 2 onwards 100% but variable - total 30,000/yr**
- **Facility is unlikely to operate at maximum capacity - wastewater volumes are conservative**
- **Ops recommence March**
- **Average rainfall**
- **Reuse for washdown but not dust suppression**
- **No reuse during ops trial or first two months after start-up**
Figure 8.2 – Effluent Treatment Pond Water Flow
9 WASTE MINIMISATION

Waste minimisation initiatives at the site will focused on the following areas, which represent the most significant sources of waste from the process.

a) Maximising the utilisation of animal products either as saleable products or as by-products that receive further value adding in another process, to eliminate the need to dispose of animal wastes to landfill.

b) Minimising water use and wastewater generation. There is no town water supply to the site, and the site must be self-sufficient. This in itself is a driver for minimising water use and maximising opportunities for wastewater reuse.

9.1 Waste Minimisation Practices

The following measures will be taken to minimise waste generation:

- Development of additional products and by-products. A processing room has been established to process tripe and bibles into saleable products.
- Dry cleaning is undertaken prior to wet cleaning in all areas where practical.
- All process wastewaters will be screened through contra-shear screens to reduce the load of suspended solids discharged to the effluent treatment ponds.
- ‘Water saver’ spray nozzles will be used in all areas where water is used for cleaning.
- Manure wastes will be collected separately and dewatering with FAN Press to minimise solids entering the pond system.
- Treated effluent will be evaporated and re-used for stockyards washing.
- Investigations will be made into potentially using the wastes water for the purpose of dust suppressing the roads around the abattoir.

9.2 Proposed Waste Minimisation Practices

The following have been identified as areas for further waste minimisation:

- Provision of de-stressing facilities to decrease the number of cattle mortalities.
- Collection of the bleed water from the water cooled evaporative condensers for reuse in non-critical cleaning processes and or toilet flushing.

9.3 Comparison with Benchmarks

The Meat Research Corporation (MRC) has recently established environmental benchmarks for the red meat processing industry. Benchmarks for water usage, wastewater generation, wastewater loads and solid waste to landfill are included, and these provide useful indicators for the effectiveness of waste minimisation efforts at the Batchelor abattoir.

Table 9.1 describes the benchmarks that have been established for these aspects as well as a comparison with the proposed rates of generation at the Batchelor abattoir. The benchmark figures are reported as units per tonne of Hot Standard Carcass Weight (HSCW) which is the standard unit of production used in the industry.
### Table 9.1 Comparison of waste generation rates with MRC Environmental Benchmarks

<table>
<thead>
<tr>
<th>Aspect</th>
<th>MRC Benchmark</th>
<th>Proposed figures for Batchelor Abattoir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water usage</td>
<td>12 kL/tHSCW</td>
<td>8 kL/t HSCW</td>
</tr>
<tr>
<td>Wastewater generation</td>
<td>8 kL/tHSCW</td>
<td>6.3 kL/t HSCW</td>
</tr>
<tr>
<td>Wastewater loads</td>
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<td></td>
</tr>
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<td>Phosphorous</td>
<td>0.3 kg/tHSCW</td>
<td>0.1 kg/t HSCW</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>1.5 kg/tHSCW</td>
<td>1.2 kg/t HSCW</td>
</tr>
<tr>
<td>BOD</td>
<td>15 kg/tHSCW</td>
<td>12 kg/t HSCW</td>
</tr>
</tbody>
</table>

### 10 PERFORMANCE REVIEW

Review of waste management practices at the site is to be undertaken through:

- Monthly monitoring to be performed by the site’s Environment Officer.
- Annual audits.
- Annual management reviews.
ATTACHMENT A – LOW TEMPERATURE RENDERING PLANT DETAILS
Rendering

1997
Rendering refers to the processes that are used to separate water, fat and protein components including blood, bone and meat materials into commercial by-products (meat meal, tallow and dried blood). The basic purpose of rendering is to produce stable products of commercial value which are free from disease-bearing organisms. The raw material used is often unsuitable or unfit for human consumption. Two basic processes are involved in rendering: separation of fat and drying of the blood, bone and meat materials.

Rendering Systems
Rendering processes can be broadly classified into wet and dry systems. Table 1 shows some typical wet and dry rendering processes.

<table>
<thead>
<tr>
<th>Rendering Type</th>
<th>Mode of Operation</th>
<th>Temperature Range (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry</td>
<td>Batch</td>
<td>105-130</td>
</tr>
<tr>
<td></td>
<td>Continuous</td>
<td>105-140</td>
</tr>
<tr>
<td>Wet</td>
<td>Batch/Semi-continuous</td>
<td>90-140</td>
</tr>
<tr>
<td></td>
<td>Continuous low temperature</td>
<td>60-95</td>
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</table>

Wet Rendering
Wet rendering systems involve direct steam injection into the vessel. Batch and continuous versions are possible. In older systems, pre-ground raw material is cooked in a closed tank. Fat floats to the top and is drawn off and removed, and polished in disk centrifuges to produce tallow. The water phase is drained off, and the solid material is removed and dried to produce dried meat meal. Newer systems are semicontinuous, and involve cooking the raw material in a conventional dry rendering cooker, sometimes under pressure for a short time. The pressurisation helps to ensure sterilisation of the product. The cooked material is then passed through elecators to separate the solid and liquid phases. The meal is dried in continuous dryers and the fat is separated from the liquid phase in disk centrifuges. Less energy is used than in conventional wet or dry rendering systems, and high quality fat and low-fat meal are produced.

**Figure 1(a)** Wet rendering system (Swan, 1992)

Figure 1(b) shows a typical wet rendering cooker system, and Figure 1(b) shows a semicontinuous wet rendering system.

**Dry Rendering**
Both batch and continuous processes also exist for dry rendering. The raw material is heated in a steam-jacketed vessel until most of the water has evaporated. The evaporated water is condensed to recover heat, and the remaining solid material is pressed (a continuous operation) or centrifuged (a batch operation) to separate the fat from the protein and other solid materials. The polished fat from dry rendering systems is generally of poorer quality and the meat and bone meal have a higher fat content than those from wet rendering or low-temperature rendering systems. Figure 2 shows a typical dry rendering system.
Continuous dry rendering has most of the advantages of batch systems, although pressurisation is not possible.

Low-temperature Rendering

Low-temperature rendering processes are a newer technology, developed in the late 1970s to overcome some of the problems with dry rendering such as lower tallow-quality. Heat treatment is minimised and material separation is carried out at low-temperatures (~70°C to 100°C). As with other wet rendering systems, product drying is required, which consumes energy, although energy requirements for LTR systems are usually about half of those of dry rendering systems in terms of steam consumption (Fernando, 1982). This proportion is lowered if the water is removed prior to drying. Furthermore, as a consequence of the low-heat treatment, a high-fat quality is

Disadvantages of wet rendering processes are the high-volume and concentration level of wastewater generated. Larger wastewater treatment systems are required to cope with the extra wastewater volume and nutrient loads.

Figure 3: MIRINZ low-temperature rendering system (Swan, 1992)
SBMP – SITE BASED MANAGEMENT PLAN

WASTE MANAGEMENT PLAN

Inspection Service (AQIS) can certify that importing country requirements have been met (MRC/AMT, 1997).

For example, the European Union countries require all meat meal made from mammalian animals be exposed to a heat treatment of 135°C at 3-bar pressure for 20 minutes and have a particle size of less than 50 mm. Non-mammalian materials must be processed using heat treatments that eliminate Clastozum perfringens. Most batch rendering systems treat the material at temperatures above 130°C for at least 20 minutes to comply with these requirements.

Summary of Key Points to Improve Energy Efficiency in Rendering Plants

1. Reduce particle size to improve heat transfer.
2. Minimise the amount of water in raw materials for dry rendering.
3. Remove and minimise excess water prior to drying (for wet rendering and for low-temperature rendering systems).
4. Continuous processes are better than batch to provide a smoother energy demand profile.
5. Rendering and hot water generation are the predominant heat energy users of meat plants. Overall plant heat energy usage can be reduced substantially by maximising heat recovery and reducing point-of-use consumption.


Additional Information

More detailed information on this subject is provided in the following:


Additional Information

Additional help and advice are available from Food Science Australia, Meat Industry Services Section:

<table>
<thead>
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Processing and Product Innovation

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References

SBMP – SITE BASED MANAGEMENT PLAN

WASTE MANAGEMENT PLAN

The most common method used in fat separation is heat, which ruptures the fat cells and liquifies the fat for further processing and purification. Enzymic and solvent extraction can also be used; however, further processing is required to remove the chemicals.

**Blood Processing**

Blood is collected from the slaughter floor and is processed to produce dried blood meal.

Three methods can be used in blood processing:

1. Apply indirect heat to the whole blood to remove most of the water in an analogous way to batch dry rendering. This method is very energy inefficient and is not widely used in modern plants.

2. Coagulate the blood by direct steam injection at an optimal coagulating temperature of 80°C. Separation of the solid coagulated blood from the water and plasma is then performed with a decanter. The final step in blood processing involves drying of the product. Several methods are available for drying blood. These include batch dryers, rotary gas-fired dryers and ring dryers. This method is more energy efficient than the first method because about half of the water is removed mechanically before drying.

3. Pass whole blood through an ultrafilter to concentrate it, and then dry the concentrate in a spouted bed dryer (Pham, 1983). This method is energy efficient and produces better quality blood, although higher operating costs are apparent with expensive filter media replacement and high operating pressures requiring special pumping equipment.

The dried blood meal product is a cheap source of animal feed supplement, with a high protein content and a moisture content of 9-10%.

**Energy Use**

The energy used by rendering systems depends on the type and mode of the rendering plant. As previously discussed, conventional batch wet rendering systems require the most energy input, followed by dry rendering, semicontinuous wet rendering and finally, low-temperature rendering processes which require the least amount of energy input.

The main options available for reducing the energy requirements in rendering plants include:

- **Upgrade to a lower energy plant.** This is both costly and time consuming, but a definite option for plants intending to upgrade; and

- **Recover energy from the cookers for heating water or pre-heating raw material before it enters the cookers.** This method can be applied for all rendering systems, and is especially useful in wet rendering systems where considerable amounts of steam are generated both from the injected steam and water evaporated from the raw material.

Other issues to consider include:

- **Continuous systems have smoother energy demands which reduce energy consumption and costs.** Boilers can be run at close to peak efficiency and not part-loaded.

- **Batch systems have a time-variable energy load demand.** This results in difficulty with boiler loads (also variable). Cookers and dryers need to be managed to give a profile as smooth as possible.

**Product Sterilisation to Comply with Input Requirements**

Although Australian meat and bone meal exports are not subject to any conditions or restrictions under the Export Control Act, some importing countries have specific requirements. The Australian Quarantine
ATTACHMENT B – CONTRA-SHEAR DETAILS
The original Milliscreeen is a self-cleaning, internally fed rotary fine screen was developed by Contra Shear—now Johnson Screens B Company. The screen drum, constructed of Vee Wire®, (Perforated Plate and Mesh are also available), ensures a better solids capture rate compared to conventional screens.

Influent is delivered to the Milliscreeen through a pump or by gravity. A weir tank inside the screen drum receives the flow and presents a transversal surface to the screen surface, where solid separation occurs.

Fundamental to the separation process is the “Contra Shear” action which is produced by the direction of the rotating the screen drum in the opposite direction rotation relative to the direction of the influent flow. A series of internal and external separators with moveable screeners ensure that the screen surface is maintained clean and free of solids build-up. The separated solids are progressively moved by a water plate towards the discharge end.

There is a wide range of Milliscreeen models capable of handling flow rates from 2.6 gpm/m² (0.04/36 m²) to 14.76 gpm/m² (1.8/36 m²) through a single unit. Screen sizes from 0.31 in./0.5 mm to 0.04 in./0.1 mm on the Vee Wire models and 0.04 in./1.0 mm upwards on the perforated plate and mesh models.

**Milliscreeen P** (Perforated Plate)

The Milliscreeen P has all the features of the standard Milliscreeen except that the screening medium is perforated plate.

The Milliscreeen P was developed as a pre-membrane screen for the removal of hair and other stringy fine matter from the influent.
EMERGENCY RESPONSE PLAN

ISSUE: 01    DATE: 30.09.19
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1. INTRODUCTION

FIRST AID

The names of first aiders and their qualifications will be included in the Training Register. The First Aid station is located in the Main Office.

All first aid facilities will be clearly identified with appropriate signage that is clearly visible in the workplace. Injury and illness procedures include:

- All accidents and equipment damage must be reported immediately to a supervisor.
- All persons requiring first-aid treatment are to contact the First Aider who will provide treatment and enter details of the injury in the First Aid Register.
- All injuries, no matter how minor, must be reported.
- All persons must be aware of the location of first aid kits and facilities, and the identity of first aid attendants.

First aid kits will be regularly inspected by the WHS Officer and replenished and restocked as necessary.

FIRE AND EMERGENCY PROCEDURES

Emergency control

The members of the workforce who have been appointed as Wardens for the Site are responsible for the evacuation of the occupants in the event of an emergency. The warden on duty at the time the alarm is activated is the designated Chief Warden who is responsible for overall control in the event of an emergency.

The person in control must have a clear understanding of the Fire and Emergency Procedures so that they can instruct those Employees in the location of evacuation procedures, location of Fire extinguishers and evacuation points and assembly area.

ABBREVIATIONS

CAG Central Agri Group
ECO Emergency Control Organisation

DEFINITIONS

Dangerous Goods: Substances that may be corrosive, flammable, explosive, spontaneously combustible, toxic, oxidizing or water reactive. If not controlled they can cause immediate injury, death and/or damage.

Emergency Controller(s): The emergency controller is responsible for any incident from the time it occurs until the senior officer in charge of the emergency services arrives and assumes control of the situation. Control of the situation will be given back to the emergency controller only by the authority of the senior officer in charge of emergency services.
Emergency Response: Actions taken by personnel outside of the immediate work area to address an environmental incident.

Emergency: A non-routine incident or activity that could have serious effects on the environment, property or the health or safety of employees, contract employees, customers or the community. It may be caused on the site or by an external factor (e.g. weather) and may also occur as a knock on effect from an off-site occurrence which has impacts within the facility boundaries.

Site Emergency: An emergency where the impacts are expected to spread to all parts of the facility but not off-site. Emergency services should be required.

Hazardous Substance: Substances that may have the potential to harm human health. These substances may be solids, liquids or gases (they may be pure substances or mixtures). When used, opened, consumed or spilt, these substances can generate vapours, fumes, dusts and mists.

Immediate notification: with reference to incidents threatening or causing material or environmental harm, immediate notification (without delay) must occur. Notification must include all agencies below (in listed order):

- **NT EPA:** Pollution hotline 1800 064 567, and local office (09) 8924 4218
- **NT Dept of Health:** Darwin 08 8999 2400
- **NT Worksafe:** 1800 019 115
- **NT Fire and Emergency Services:** 000 or 131 444


Safety Data Sheets (SDS): A document that is supplied by the manufacturer and/or supplier of substances that describes the chemical composition and provides vital information on how persons should use these substances safely and in accordance with their designated use. All chemicals held on site must have an SDS.

Notifiable Disease: A disease that must be immediately reported to agricultural authorities.

Time Weighted Average: TWA is the exposure level, of the average airborne concentration that a person can safely work in, over an eight-hour working day, for a five-day week over an entire working life.
2. IMPLEMENTATION OF EMERGENCY RESPONSE PLAN

The implementation of an Emergency Response Plan helps to ensure the effective utilisation of life safety features on site to protect people from fire, bomb threats and other emergency situations and for preventing and mitigating the occupational health and safety impacts, property damage and environmental impacts that may be associated with them.

The following instructions are meant to provide a basis for handling various types of site emergencies. They should not be regarded as rigid procedures to be followed but rather as flexible guidelines to be adopted to cope with any unanticipated situation.

SCOPE

This plan and procedure applies to all employees, visitors and contractors within the boundaries of the CAG processing facility. This document is designed to inform everyone involved as to the procedures to undertake in the event of an emergency.

AIMS AND OBJECTIVES

The plan has been prepared to provide a system and resources to deal with emergency situations to protect people, property and the environment. The objectives of the plan are to:

- Maintain a high level of preparedness;
- Respond quickly and efficiently to limit the impacts of an emergency;
- Manage an emergency until the emergency services arrive and take control;
- Support emergency services with information, knowledge, skills and equipment;
- Protect emergency responders, personnel and the community from harm;
- Ensure correct regulatory notifications are satisfactorily completed in the event of potential or actual environmental harm.
3. SITE SPECIFIC INFORMATION

3.1 Summary of site operations and hazards

CAG is a beef and buffalo processing plant producing box ready beef and buffalo products, edible and inedible offal, rendered by-products and hides. The site utilises a number of chemical products and generates products which can potentially act as pollutants. Specific details on hazards to human health and the environment associated with particular emergency conditions is included in sections below.

3.2 Warning systems and alarms – Fire

Any fire alarm must be raised manually. [FIRE FIRE FIRE]

On discovery of a fire or smoke, the Chief Warden must ensure that the Fire Services are contacted by dialling “000” to confirm the emergency or “112”.

Alarms

An alarm may be raised by the following:

- Verbal warning by someone in the building [FIRE FIRE FIRE]
- A bell which can be rung by hand.

Designated assembly areas

- Muster Point 1 – in front of abattoir, beside stockyards
- Muster Point 2 – at the back of abattoir, beside maintenance workshop

3.3 Hazardous materials – manufactured, stored or used on site

The chemical register includes details of dangerous goods stored, or used in quantities, which could conceivably be a subject of concern in an emergency and which may have the potential to act as a pollutant under certain circumstances. Electronic copies of the chemical register are stored in the CAG company server. In the event of a power or computer system failure, chemical information can be found in the MSDS folder kept at the chemical store.

3.4 Fire system

The fire system present onsite incorporates:

- 1 water storage tank (300KL);
- 1 bore with fittings to fill water trucks;
- Portable fire extinguishers, located around the site.

3.5 Spill containment equipment

All chemicals stored on site are kept in bunded areas or stored on transportable bunded pallets. This includes all cleaning chemicals, oils, fuels and water treatment products. A bunded concrete pad has been installed on site to capture and prevent the escape of any effluent spills. In the
event of an effluent overflow, all liquid will be captured on the pad and pumped back to the waste water treatment plant.

3.6 Emergency response equipment

The following emergency response equipment is kept on site to protect human health and to limit any potential environmental impacts which may arise from an incident:

- Breathing apparatus and respirators
- Ammonia and gas detection kit
- Spill kits (chemical and other liquid spills)
- Fire extinguishers (inspected and maintained by Defend Fire)
- Fire reels (inspected and maintained by Defend Fire)

A register of all equipment on site is maintained.

TYPES OF EMERGENCIES

A site emergency situation may arise as a result of any of the following:

- Fire or explosion on site;
- Bomb threat or discovery of an explosive device;
- Civil disobedience;
- Site damage caused by natural events such as storms, cyclones or an earthquake;
- Chemical or wastewater spills;
- Cyclone or severe weather;
- Medical emergencies;
- Impact by falling object; or
- Major gas leak.
4. EMERGENCY CONTROL ORGANISATION (ECO)

The Emergency Control Organisation (ECO) is a structured organisation of workers within the building consisting of: Chief Warden; Wardens (persons who have been trained as Fire Wardens); and Deputised Wardens (or visitors to the site who are called upon to provide assistance during an emergency).

4.1 ECO Responsibilities

Their responsibilities are to:

- Provide information and to assist the Chief Fire Warden, Fire Services, Police and other authorities in their investigation of the emergency if necessary;
- Oversee the orderly evacuation of all occupants in the building during an emergency situation, and operate firefighting equipment installed on site, if trained, in its correct usage and if safe to do so.

4.2 Membership

Any volunteers forming part of the Emergency Control Organisation and who have received the required training as specified by AS 3745-2010 are expected to behave in a competent and responsible manner. It should be clearly understood that the primary duty of the Chief Warden, Wardens and volunteer Wardens is NOT TO combat emergencies, but to ensure as far as practical and to the best of their ability, the safety of the site occupants and their orderly evacuation from the danger zone is appropriate.

4.3 Chief Warden / Emergency Controller

During an emergency situation, the person in this position is required to respond immediately to the alarm being raised and to lead and direct the Wardens and to bring the Emergency Control Organisation into operation. The Chief Warden is to assume control of the occupants of the building from the time an alarm is raised until the arrival of the emergency services or until the situation has been declared safe.

4.4 Wardens

The persons in this position will assume the duties and responsibilities as assigned by the Chief Warden on duty. The Wardens will assist the Chief Warden in completion of the after-event report.

Fire Wardens should:

- Follow the instructions and training given to them;
- Note emergency exits and alternate escape routes as noted on area map;
- Be aware of all blind passages, toilets, storerooms etc. in which people could be located;
- Nominate assistants (deputise Wardens) for special duties, e.g. assisting persons with disabilities;
- Check to ensure exit doors are closed properly;
- Direct employees and visitors to the designated Muster Point; and
Advise the Chief Fire Warden of completed evacuation and any issues which arose from evacuation.
5. ROLES AND RESPONSIBILITIES

5.1 Internal roles, responsibilities, functions and needs

Specific responsibilities in relation to responding to accidents and emergency situations and for preventing and mitigating the impacts are discussed below.

5.2 Emergency Controller or their Deputy

- Activate the use of this plan and take control of the emergency until the arrival of the emergency services and then assist the Emergency Services until the emergency is terminated.
- Mobilise the Plant Emergency Response Team to combat the emergency situation if required.
- Coordinate the incident from the Main Office (if safe to do so) as the incident command centre, including any responses required to a pollution or other incident.
- Ensure that any incident or situation threatening or causing material environmental harm is reported following the procedures for immediate notification and is responsible for liaising with the relevant authorities during the course of any incidents which occur.
- Ensure that nearby owners and occupiers of premises are immediately notified for any incident which has the potential to impact on nearby owners and occupiers of premises.
- Coordinate any communications required to update nearby owners and occupiers of premises of actions taken to combat any pollution that may have occurred.
- Arrange for specialist advice and assistance from company resources to assist the Emergency Services.
- Keep management informed of situation.
- Retain ultimate responsibility for the emergency response, but may delegate tasks
- Notify the emergency services if required;
- Coordinate health and safety functions such as roll call and search and rescue; and,
- Terminate the emergency.

The Deputy Emergency Controller is the understudy of the Emergency Controller and carries out these duties in the Emergency Controller’s absence and assists the Emergency Controller during incident. If either of the above positions are off site, the Plant Manager will stand in.

Needs for the Emergency controller:

- 2-way radio;
- Mobile phone;
- Copy of the plan; and,
- Training in immediate notification procedures, identification of environmental impacts and site environmental licence/permit conditions.
5.3 Communications person

The communications person maintains a written log of events during an emergency situation (e.g. evacuation times, arrival of emergency services). This person is the WHS Officer. The communications person needs to maintain close contact with the Emergency Controller.

Needs for the Communication Person:

- 2-way radio;
- Mobile phone;
- Copy of the plan; and,
- Copy of the emergency evacuation handbook
- Training in immediate notification procedures, identification of environmental impacts and site environmental licence/permit conditions.

5.4 Plant Emergency Response Team (control)

The site emergency response team is drawn from site personnel and include department Supervisors. The role of the site emergency response team is to take immediate action to minimise the effect of the emergency on life and property, prior to the arrival of the Emergency Services.

- Take charge of the incident under the direction of the Emergency Controller or Deputy Emergency Controller and provide feedback to the Emergency controller on any anticipated pollution or offsite impacts from the incident.
- Operation of first attack firefighting equipment if trained to do so.
- Shutdown of plant and equipment in close proximity to the incident.
- Supervisors will ensure that employees under their direction leave their work area in an orderly manner.
- Control the evacuation of employees to their designated Evacuation Areas.
- Provide assistance to injured or handicapped persons. Where Wardens are available, delegate this duty to the Warden.
- Ensure management is kept informed of the progress of the emergency.
- Supervisors will conduct a ‘role call’ of their employees to ensure all employees are accounted for.
- Report outcome of evacuation role call to the Command Centre
- In the event of any unaccounted employee/s or contractors, the Supervisor will notify the Emergency Controller as soon as practicable and wait further direction.
- Be familiar with plant layout, shut down procedures, exit routes and location of firefighting equipment, including breathing apparatus.
- Meeting and guiding the Emergency Services to the location of the incident.
- Provide assistance to the Emergency Services if requested.
- Upon the ‘all-clear’ signal being sounded, ensure the orderly return of employees back to work.
- Carry out salvage operations after the incident to prevent secondary damage.

Needs of the plant emergency response team:
• Understand evacuation areas for individual areas within the plant;
• 2-way radio and mobile phone communication;
• Knowledge of the plan and layout of the facility;
• Basic firefighting training;
• First Aid training;
• Chemical spill training, including response and clean up procedures
• General Environmental Awareness training, reporting of pollution incidents’.

5.5 Wardens

Wardens will be appointed to carry out the emergency evacuation procedures, generally, as directed by the Emergency Controller. Wardens shall:

• On becoming aware of an emergency, notify the Emergency Controller or Deputy Emergency Controller, including notification of any potential or actual circumstances which could cause environmental harm following the procedure for immediate notification.
• Assist with the evacuation of occupants from the immediate danger area.
• Guide occupants to the assembly area.
• Assist mobility impaired persons from the building.
• In a fire, operate fire extinguishers, if safe to do so.
• Carry out a search of the building to ensure nobody has been overlooked when ordered to evacuate.
• During a bomb threat, carry out a search for suspicious articles, as instructed by the Emergency Controller and/or External Emergency Services.

Needs of the wardens:

• Understand evacuation areas for individual areas within the plant;
• 2-way radio and mobile phone communication;
• Knowledge of the plan and layout of the facility;
• Basic firefighting training;
• Training in the implementation of this emergency management plan and familiarisation with the warnings, actions and responses needed to any incident to limit the risk or harm to human health or the environment.

5.6 First Aid / Medical Centre

• Direct treatment of injured employees.
• Guide team members’ efforts of care.
• Set up station of care in the Main Office. If the Main Office cannot be reached an alternate site will be used.

Needs of the Medical Centre:

• 2-way radio and mobile phone communication;
• Knowledge of the health impacts related to the processes used on site;
• Basic treatment equipment for injuries or illnesses which may arise during an emergency;
• Training in evacuation procedures and awareness of the existence and basic procedures required under this emergency management plan.

5.7 Office Administration

• In case of bomb threat, follow bomb threat procedure.
• Undertake steps to protect all IT equipment and confidential information during an evacuation.

Needs of the office administration:

• 2-way radio and mobile phone communication;
• Training in evacuation procedures and awareness of the existence and basic procedures required under this emergency management plan.

5.8 Other site personnel

• Obey all instructions from emergency controller, site wardens, and emergency services (senior officer).
• Undertake steps to protect all IT equipment and confidential information during an evacuation.
• Need training in evacuation procedures and awareness of the existence and basic procedures required under this emergency management plan.

5.9 Community roles, responsibilities, functions and needs – Neighbours and surrounding businesses

Neighbours and surrounding businesses have the same role and responsibilities in an emergency situation.

• In the case of an offsite emergency, notifies CAG of the details relating to people, property and environment of the emergency immediately;
• Responds to any advice received from CAG relating to an on-site emergency;

Community needs:

• To be advised immediately in the event of an emergency or pollution incident as outlined in the definitions within this plan;
• To advise CAG of any emergency outside the facility which may potentially impact on CAG’s people, environment or property;
• To receive any relevant updates on the progress or closure of any incident.

5.10 External roles, responsibilities, functions and needs

Senior Officer in Charge of the Emergency Services

If any of the Emergency Services or any other agency notified during the procedure for immediate notification have responded to the emergency the Senior Officer will assume control
of the situation upon arrival to the facility and will coordinate any responses from the relevant services.

During an emergency, the directions of the Senior Officer in Charge shall be observed in all respects, by all persons on the premises and to the extent of any such directions are inconsistent with those given by management of the premises or the plant Emergency Controller, the directions of the Senior Officer in Charge shall prevail.

The senior officer in charge will also coordinate any communications to external contacts or owners/occupiers of nearby premises, following the initial notification by the emergency controller, based on information received from the emergency services team. This will include notification of any actions taken to combat any pollution which may have occurred.

The Senior Officer in Charge needs:

- An understanding of this plan to assist in responding to an emergency;
- Communication with site personnel including the warden and emergency controller.

**Emergency Services**

The Emergency services will assume control of the situation upon arrival to the facility.

During an emergency, the directions of the Senior Officer in Charge of the emergency services shall be observed in all respects, by all persons on the premises and to the extent of any such directions are inconsistent with those given by management of the premises or the plant Emergency Controller, the directions of the Senior Officer in Charge shall prevail.

Needs of the Emergency services:

- A six-monthly familiarization of the site and systems to allow any incidents to be responded to;
- To be informed of any major changes to the operation of the site which are to be included in this plan when revised. A copy is to be submitted to the emergency service following review of this plan.
6. EVACUATION PROCEDURES

6.1 Chief Warden

On receiving an alarm, the Chief Warden will:

**STEP 1** Proceed to the main office and announce loudly that there is an emergency situation and that the Wardens should proceed to evacuate.

**STEP 2** Collect emergency procedures manual, mobile phone, necessary keys and a hard hat. Proceed to the location of the emergency to determine the situation.

**STEP 3** Call emergency services by Dialling 000 or 112 to advice of the alarm activation.

**STEP 4** Ensure that the Wardens and any Volunteer Wardens are aware of the assembly point. The Wardens and any Volunteer Wardens must report back on the status of the emergency evacuation to the Chief Warden.

**PLEASE NOTE:** If communication cannot be established with the area of origin of the emergency you must assume an evacuation procedure and activate the evacuation. Remember to contact the Fire Services to confirm the emergency.

**False alarm**

If the alarm situation is under control and there is no danger to occupants, the Chief Warden and Wardens will:

**STEP 1** Contact emergency services if they have previously been contacted and advise that it was a false alarm.

**STEP 2** Deputise a person to proceed to the assembly area and advise that the situation is under control and ask the people to return to their previous activity.

**Confirmation of emergency**

If there is danger to occupants and/or the situation unexpectedly changes, the Chief Warden will:

**STEP 1** Ensure that a “000” or “112” call has been made to the emergency services.

**STEP 2** Deputise any extra Volunteer Wardens as required – tell them what is required, giving clear instructions.

**STEP 3** Proceed to the designated muster point as marked on the maps, make your way along the designated pathway to await emergency services.

**STEP 4** Direct emergency services to the location of the emergency and location points for gas and electricity.

**STEP 5** Remain in the designated area in. On the foot path (if safe to do so) and wait for the Wardens to report their evacuation is complete. Render assistance if requested. **Note:** if it is unsafe to remain too close to the entrance of the property proceed further along the muster point.
STEP 6 As Wardens report to you, record the following evacuation information for each area:

- All Clear
- Persons with disabilities and their location
- Refusals to evacuate
- Medical emergencies
- Occupants remaining in the building

STEP 7 Advice emergency services of the evacuation information noted above as well as the location and status of the emergency.

STEP 8 Prevent re-entry into buildings until authorised by the Emergency Services.

6.2 Building occupants

On becoming aware of a fire emergency, a building occupant will:

- Evacuate from the immediate danger area, using the designated fire exit.
- Proceed to the designated muster point.
- Look for the Warden and notify him/her of the situation.
- Assist the Warden, if requested to do so, with the evacuating occupants from the immediate danger area, using the designated fire exit.
- If you are trained, attempt to combat the fire. (REMEMBER: Only personnel who are trained in the use of extinguishers should attempt to fight the fire, and ONLY if safe to do so. There is to be a minimum of two people present).
- If the fire cannot be contained, the Wardens will order the party to withdraw and close all doors to slow the progress of the fire.
- On evacuation of an area, the Wardens will ensure all occupants have been accounted for (check toilets, blind passageways, etc.).
- Upon complete evacuation of the area, the Wardens will report to the Chief Warden to give the “All Clear”.

6.3 Procedure to account for employees, contractors and visitors

In the event of an evacuation all persons should proceed to the nearest evacuation point and remain there until the “all clear” is communicated. Evacuation is signalled on 2-way radio specifying to please ‘evacuate the plant’.

- Supervisors will account for all employees in their area by referring to the manual time sheets.
- Contractors and visitors should make their presence known to a Warden.
- Wardens will communicate to the Emergency Controller the status of the area, including the presence of any persons, such as visitors, contractors or other employees not normally in that department and any persons unaccounted for.
- The Emergency Controller shall refer to the sign in books in the Main Office to account for all contractors or visitors onsite.
• The Emergency Controller shall direct the Wardens in searching for any persons unaccounted for.
• The Emergency Controller shall communicate the status of the evacuation to the Senior Officer in Charge of the Emergency Services, including any persons unaccounted for.

Where a full site evacuation is required, this will be advised by the Senior Officer in charge of the Emergency Services and will be coordinated by the Emergency Controller.

6.4 Persons with special needs

Definition of a person with a special need

A person with a special need is one who is unable to exit the building without the assistance of a Warden or a nominated assistant. They could be for example:

- Wheelchair bound or need assistance with walking;
- Visually or hearing impaired; and/or
- Injured as a result of the emergency.

Register of persons with special needs

<table>
<thead>
<tr>
<th>AREA</th>
<th>NAME</th>
<th>TYPE OF SPECIAL ASSISTANCE REQUIRED</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

In the event of an emergency

The Warden will ask a volunteer to assist the person with special needs out of the immediate danger area initially, and then to the Assembly area if able to do so. The Volunteer must remain with the person at all times. The Warden will notify the Chief Warden of the location and status of the mobility impaired person by reporting to him/her at the entrance to the property. The Emergency Services will be notified on their arrival.

6.5 Procedures for refusals to evacuate

Wardens should never use physical force to remove someone who refuses to evacuate.
If a person refuses to evacuate the Warden will:

1. Attempt to verbally persuade the occupant to evacuate;
2. If unsuccessful allow the person to remain;
3. Report the location of this person to the Chief Warden;
4. Ensure that the Emergency Services is notified on arrival.

6.6 Procedures for evacuating unconscious persons

Wardens will evacuate any unconscious person (in imminent danger only), on the basis of implied consent, by dragging him/her to the nearest fire safe area outside the building. (Hold the unconscious person under the arms/shoulder and drag him/her to safety – ask for help if needed).

The Warden will ask a volunteer to remain with the unconscious person. The Warden will notify the Chief Warden of the Location and status of the unconscious person. The Emergency Services will be notified on its arrival.

NOTE: Do not move the unconscious person more than is necessary as you may be unaware of the full extent of his/her injuries.

If the unconscious person is not in imminent danger, do not move him/her, but ensure that someone remains with that person and the Chief Warden is notified of their location.
7. FIRE

7.1 Procedure

A fire at the plant is an emergency that causes the greatest concern for staff and employees. If all employees accept that fire prevention is their responsibility, the potential for fires can be greatly reduced and the severity of any fire that does start will be minimised. Fire has the potential to burn, cause asphyxiation, create poisonous gases, and impact on the environment by releasing noxious gases, releases chemicals, or allowing additional compounds to be formed by the exposure to heat. Where any fire or related impacts threatens actual or potential environmental harm, the procedures for immediate notification should be followed.

Any person discovering a fire should:

- Report it to the nearest supervisor
- Raise an alarm (FIRE FIRE FIRE)
- Rescue any person in immediate danger, if it is safe to do so.
- Isolate the area (close doors and windows), alert other people in the immediate area.
- Contact the Plant Manager on 2-way radio and give the following details:
  - Location of fire
  - Extent of fire (or nature of incident, including the type of substance burning and potential fumes generated/other environmental impacts)
  - Are there any injured persons (e.g. is an ambulance or medical assistance required)
  - Name of person reporting the fire or incident. This call should be reported to the Chief Warden.
- Fight the fire if trained and safe to do so. This will also limit the potential for environmental harm to occur.
- Take direction from supervisors or wardens

Note: Do not endanger yourself whilst fighting a fire.

The risk of fire is reduced by ensuring all plant and equipment is correctly maintained.

7.2 Firefighting equipment

There are a number of extinguisher types available i.e. Dry Chemical Powder and Water extinguishers, the Wardens should familiarise themselves with the type/s which have been installed on the site. Ensure that the extinguisher has not exceeded it’s used by date.
Types of fires and appropriate extinguishers

There are three main classes of fire as follows:

<table>
<thead>
<tr>
<th>CLASS A: Ordinary, free burning materials such as paper, clothing, packing materials, wood and textiles. This type of fire is best combated using the following extinguishers:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Water (Red or Silver)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dry Chemical Powder (red with a white band)</td>
<td></td>
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</tbody>
</table>

*CLASS B: Liquids such as petrol, spirits, paint lacquers, thinners and chemicals in liquid form. This type of fire is best combated using the following extinguishers: |
| | |
| • Dry Chemical Powder (red with a white band) | |

*CLASS E: Fire which originates at electrical equipment. To combat these fires, extinguishers must be non-conductors of electricity such as the following: |
| | |
| • Dry Chemical Powder (red with a white band) | |

*NOTE: Do not use water or foam extinguishers on this type of fire.

Fighting fires with extinguishers

The following procedure should be used when fighting a fire with an extinguisher:

- Remain calm
- Announce a fire warning to everybody in the area **(FIRE FIRE FIRE)**
- Request that someone contact the Chief Warden and have it confirmed that you are attempting to fight the fire/evacuate the area
- Always stay between the doorway and the fire
- Check if you have the correct type of extinguisher to fight the fire
- Have someone back you up with another extinguisher if one is available
- **Remember the PASS formula:**
  - **PULL THE PIN**
  - **AIM THE NOZZLE**
  - **SQUEEZE THE HANDLE**
  - **SWEET THE FIRE**
- After the emergency has passed, notify the Chief Fire Warden of the extinguishers used so that they can be replaced.
8. INTERNAL EMERGENCY

This section deals with emergency situations that can arise due to certain system failures, structural concerns and or services failures. Such incidents can cause major disruption and inconvenience to the plant, which in turn can lead to greater risk to the welfare of employees and also have the potential for an unplanned environmental release or situation. There are various factors which could influence the likelihood of an internal emergency, these include: inclement or severe weather conditions, change to operating systems, unplanned site access, changes to working hours, or during major projects underway.

The risk of these situations is reduced through regular maintenance of plant and equipment, completion of risk assessments prior to major works and taking appropriate action if severe weather systems are approaching the site.

Emergency Action:

- Quickly assess the situation
- Raise the alarm, notify your supervisor, including any instances of potential or actual environmental harm, which need to be reported as per the procedure for immediate notification
- Evacuate (if necessary)
- Assist and guide other people
- Take care not to move people from safety to danger!
- Administer first aid if needed
- Liaise with emergency services and maintenance staff to control any environmental impacts including potential release of contaminants to the environment. This may include the containment and capture of spilled liquids, or isolation of leaking gases.

8.1 Power failure

There will be times when the power goes off. There are two basic causes - faults and overloads. In either case, protection equipment operates to switch off supply to limit any damage and prevent further problems. Power failure can cause the failure of plant cooling systems, electrical processes, air extraction systems impacting on employee wellbeing. It can also cause odour collection systems, water transfer and treatment systems to fail, impacting water treatment and/or effluent transfer.

Faults are mainly caused by accidents or weather conditions, and therefore have an increased likelihood of occurrence during storms, severe rain, extreme winds or hail.

Overloads occur when the demand for electricity exceeds the capacity of the distribution system to supply it. Faults and overloads can also occur inside particular buildings and subsystems.

Emergency Action:

- Contact maintenance to determine the cause of failure
- Instruct employees to remain still and calm.
• Assess situation and evacuate if necessary, giving consideration to any pumps which may have stopped and the potential for water to over top its normal containment structures. Power failure is also likely to result in the odour collection systems ceasing operation. Odour collection systems may need to be reset following the power failure.

• Isolate critical systems (such as refrigeration) in extended outages, as liquids and gases can expand causing damage to infrastructure.

8.2 Water leaks or flooding

Floods caused by domestic systems usually do not endanger people but can cause extensive damage to buildings and equipment and may cause or threaten environmental harm (requires immediate notification in this instance). The risk of environmental harm is increased when the leak involves the effluent pipe from the Save All to the waste water treatment plant. Floods caused by the extreme weather are extremely dangerous and may require the evacuation of buildings. Flooding is caused by extreme rainfall (locally or upstream in the catchment) or failure of pressurised water systems, or water storage on site and is therefore more likely during wet seasons, or a rapid change in weather conditions which may causes ground movement. Floods may also cause the release of contaminated waters, or the mixing of clean and contaminated water streams.

Safety and environmental issues to consider:

• What is in the water? Has it mixed with dangerous chemicals, sewerage, etc.?
• Where will the water drain or flow to? Is there a risk of pollution or contaminant release?
• What is floating in the water that you cannot see?
• How deep is the water? You might not be able to see the large hole or basement stairs covered in water. Access pit lids usually float off in flooded water.
• Is the water live with electricity? For floods inside buildings, this is especially dangerous with most power points and power boards close to the floor.

Emergency Action:

• Notify maintenance, including any potential risks to the environment.
• Turn off water at source if possible.
• If possible, isolate electrical sources at the switchboard or call maintenance.
• If available and considered useful, local spill kits or bags of ice could be used to restrict the flow of water.
• Isolate area by closing doors, using temporary bunding, or blocking off stormwater drains of exit points where the water quality may have been impacted.
• Mobilisation of earthmoving equipment located on site or nearby may assist where fill is available to contain the water

Consider evacuation:

• Partial evacuation of affected area by word of mouth
• Building evacuation
8.3 Uncontrolled hazardous material releases

Hazardous substances may have the potential to harm human health or to release contaminants to the environment. These substances may be solids, liquids or gases (they may be pure substances or mixtures). When used, opened, consumed or spilt, these substances can generate vapours, fumes, dusts and mists. Uncontrolled reactions may be more likely to occur when new chemicals are being used, new employees are handling chemicals, or temporary chemical/substance storage is occurring due to planned maintenance or other project work.

Emergency Services (Hazmat) should be notified for any emergency involving uncontrolled hazardous material reactions. Immediate notification procedures should be followed for any circumstances which threaten or cause environmental harm.

Onsite this may include:

- Reactions between acids and alkalis
- Violent reaction between ammonia and water
- Uncontrolled spread of fire involving polystyrene insulating panel
- Violent depressurization of compressed ammonia

8.4 Gas leaks (flammable or toxic)

8.4.1 Ammonia

The properties of ammonia gas are that it is lighter than air and will dissipate into the atmosphere in the unlikely event of a leak outside. If the leak is within the building the situation needs more care.

General information:

- Time Weighted Average (TWA) for ammonia is 25 ppm. TWA is the exposure level, of the average airborne concentration that a person can safely work in, over an eight-hour working day, for a five-day week over an entire working life.
- Ammonia reacts violently with water. DO NOT attempt to hose or wash away.
- Do not disturb any liquid ammonia that may have pooled. Non disturbance of the ammonia will also limit the potential for soil and surface water pollution.
- Maintenance personnel specifically trained in ammonia and refrigeration are best equipped to deal with this type of emergency.
- Ammonia has zero global warming potential.

The purpose of the ammonia gas detection kit is to give employee’s early warning of a potential ammonia incident. The system comprises ammonia monitor that is used in the refrigeration engine room, ceiling spaces and throughout plant production spaces for detection.

Exposure to anhydrous ammonia can have the following health effects:


- up to 100 ppm – no adverse effect for the average worker with no deliberate exposure for long periods permitted
- 400 ppm – immediate nose and throat irritation with no serious effect after 30 minutes to one hour
- 700 ppm – immediate eye irritation with no serious effect after 30 minutes to one hour
- 1700 ppm – convulsive coughing, severe eye, nose, and throat irritation; could be fatal after 30 minutes
- 2000-5000 ppm – convulsive coughing, severe eye, nose, and throat irritation; could be fatal after 15 minutes
- over 5000 ppm – respiratory spasm, rapid asphyxia and fatal within minutes.

Levels of emergency

At CAG, we differentiate between the following levels of an emergency:

**Level 1:** Ammonia leak can be contained inside the engine room or is of small scale outside of the engine room, but not in close proximity to any working area, in which staff are permanently present; no danger to any personnel in any of the work areas

**Level 2:** Ammonia leak cannot be contained to the engine room or is of larger scale and outside of the engine room and may affect staff in particular work areas; **evacuation of staff in particular work areas**

**Level 3:** Leak cannot be contained to the engine room or is of very large scale outside of the engine room and may affect staff working on site as well as neighbouring areas outside of the plant’s boundaries; **evacuation of all staff on site and initialising of community protection actions.**

Organisational structure: responsibilities and training

Below is an overview of how specific training relate to different roles:

- Visitors: complete site induction and registration at security hut, need to be accompanied by a company employee and in the event of an emergency, follow directions of the company representative
- All staff and contractors: site safety induction including recognition of alarms and evacuation procedures as announced by emergency response team
- Selected operational staff: first aid training, use of fire extinguishers
- Emergency response team (for the purpose of this document called ‘designated maintenance staff’): incident management training, use of PPE (in particular breathing apparatus and chemical protective clothing), emergency procedures including use of gas detectors, location of isolation of valves and emergency shutdown
- Senior Management: incident management training, media training

Appropriate training records (who, when and what) are kept in the Main Office. The level of staff is checked on a regular basis by:

- Observing performance
Written testing, and/or
Oral testing.

Training documentation reflects how the level of understanding was measured and/or verified.

Resources and equipment
The following resources and equipment are available to respond to an emergency and assist in the recovery phase:

**Respiratory and skin protection**

Breathing apparatus and canister type masks are located in the maintenance workshop.

**Communication Equipment**

Two-way radios, mobile phones and landlines can be utilised in case of an emergency.

Identifying the source of a leak

At CAG designated and trained maintenance staff are responsible for identifying the source of an ammonia leak, determine the extent and the actions to take.

Portable hand-held gas detector is a valuable tool for helping to determine the location and extent of the leak. Detector is located in the maintenance workshop. For the detection of low level leaks sulphur sticks can also be used. These are located in the maintenance workshop.

Those entering an area where ammonia is likely to be present for fault-finding or rescue must wear an appropriate level of personal protective equipment. Because of ammonia’s heavier-than-air behaviour when cold, a person entering an area where ammonia is present may experience a wall effect where a relatively low concentration is followed by a rapid increase in concentration.

Wearing appropriate personal protective equipment will protect against this wall-effect. A high level of personal protection (e.g. breathing apparatus) can be reduced once the situation is known and controlled. Under no circumstances should anyone enter areas where a flammable concentration of gas is likely to exist. Note: Smell must not be relied on to locate the source of the leak.

Triggers for action

This emergency plan includes trigger levels that recognise abnormal atmospheres and initiate specific actions. Trigger levels can be based on the concentration of ammonia gas present and the selected trigger level will be determined by the required outcome. For example, a low trigger level would be set to initiate an evacuation of a process area, but a relatively high trigger level would be set to initiate electrical isolation of a plant room.

Specified trigger levels are used in the emergency procedures to guide specific actions such as:

- wearing specifically identified personal protective equipment
- initiating electrical isolation of an enclosed area
- initiating evacuation procedures
- calling external emergency services, and
- initiating community protection actions.
Emergency action:

- Notify maintenance and safety departments immediately;
- Rescue any person in immediate danger if safe to do so. Use of self-contained breathing apparatus is only appropriate for trained persons working in pairs;
- Isolate leak and repair if possible. This should only be attempted by trained and competent persons in refrigeration;
- Once the leak is repaired, escaped ammonia in liquid or gaseous form can be dealt with by ventilating the area with fresh air by use of fans, evacuating the ammonia using exhaust fans or by applying dry ice snow or carbon dioxide vapour to the area to neutralise the ammonia. CAUTION – always monitor oxygen levels in areas where carbon dioxide has been used to treat the ammonia leak. Monitoring should be undertaken using the portable gas detector.
- Continue to treat the area with CO2 and do not allow re-entry of people to the area until the ammonia level drops and remains below 25 ppm & the oxygen level is 19.5% to 21%. Again, monitoring for CO2 should be undertaken using the portable gas detector.

Consider evacuation:

- Determine concentration of ammonia in working parts of the plant using a monitor.
- Partial evacuation of affected area may be required if levels greater than 25 ppm.
- Assess emergency evacuation paths prior to moving people.
- Do no re-enter area until advised by the Chief or Deputy Warden, site Emergency Team member or Warden that it is safe to do so.

8.4.2 Oxygen

Oxygen is a non-toxic atmospheric gas, but any alteration in the concentration of oxygen effects life processes. Although not flammable, high oxygen levels support combustion. Normal oxygen concentrations within the atmospheric air sit between 20 and 22%.

General Information:

- Increases in oxygen levels are not easily detectable by human senses
- Oil and grease are highly combustible in the presence of oxygen. These materials should not be used to lubricate oxygen equipment.
- Most non-flammable textiles will burn rapidly in air containing just 30% oxygen

Emergency Action:

- Notify maintenance and safety immediately
- Rescue any person in immediate danger if safe to do so.
- Isolate leak and repair if possible. This should only be attempted by trained and competent persons.
- Allow gas to dissipate to atmosphere.
- Nitrogen and argon assist with inhibiting combustion
- If exposed to high concentration levels of oxygen, clothing will need to be changed. Smoking is NOT to occur during this period as the clothing will be highly combustible.
8.4.3 Explosions

An explosion is caused by a rapid expansion of gas from chemical reactions or incendiary devices. Signs of an explosion may be a very loud noise or series of noises and vibrations, fire, heat or smoke, falling glass or debris, or building damage. Thus, explosions impact both personnel safety and have significant potential to impact the environment. A leak of any flammable material, including ammonia, would increase the likelihood of an explosion on site.

Untrained persons should not attempt to rescue people who are inside a collapsed building. Wait for emergency personnel to arrive.

Emergency Action:

- Get out of the building as quickly and calmly as possible.
- Contact First Aid and Emergency Services on 000 if people have been injured.
- If there is a fire, stay low to the floor and exit the building as quickly as possible.
- If you are trapped in debris, tap on a pipe or wall so that rescuers can hear where you are.
- Assist others in exiting the building and move to the designated assembly areas.
- Be on the alert for any burning chemicals, ruptured gas or water lines or spilt/uncontained hazardous substances which have the potential to cause pollution. If any of these events are observed, follow the procedure for immediate notification.
- Keep roadways and walkways clear for emergency vehicles and crews.

8.4.4 Boiling liquid expanding

Boiling liquid expanding vapour explosion (BLEVE) is an explosion caused by the rupture of a sealed container holding pressurised liquid above its boiling point. If the pressurised container ruptures, the pressure that inhibits the liquid from reaching boiling point is lost. When the rupture of the containers significant to the point where it is unable to hold any pressure, it causes the entire volume of liquid to boil instantaneously. This in turn causes a rapid expansion of the liquid. Depending on the substance, pressure and temperature within the container, the expansion may be so rapid that it is classified as an explosion capable of causing severe damage to surrounding areas.

Fires that come into contact with containers holding pressurised liquid can also cause a BLEVE. The structural integrity of a tank is compromised as the fire weakens the metal, whilst heating up the liquid inside. As the liquid heats up, the level of vapours in the tank increases causing a large build up of pressure. Eventually the build up will cause the container to blow apart as the fire has weakened the metal holding it all together. Due to the sudden decompression, a blast occurs followed by the liquid inside the tank reaching its atmospheric boiling point. This causes the liquid transform into vapour, causing any nearby liquid droplets to ignite into a fireball.

Signs of an impending BLEVE include a bulge or bubble within the metal container, sounds associated with heating and expanding metal, and discolouration of the metal container.

Emergency action:

- Get out of the building as quickly and calmly as possible.
- Contact First Aid and Emergency Services on 000 if people have been injured.
- If there is a fire, stay low to the floor and exit the building as quickly as possible.
- If you are trapped in debris, tap on a pipe or wall so that rescuers can hear where you are.
- Assist others in exiting the building and move to the designated assembly areas.
- Be on the alert for any burning chemicals, ruptured gas or water lines or spilt/uncontained hazardous substances which have the potential to cause pollution. If any of these events are observed, follow the procedure for immediate notification.
- Keep roadways and walkways clear for emergency vehicles and crews.
- Ensure that Emergency Services are aware of the danger of a BLEVE. A Boiling Liquid Expanding Vapour Explosion can occur when there is a fire impinging on or heating a LPG vessel. A BLEVE may happen within 10 minutes despite application of cooling water.

8.5 Storm or Storm Damage

Natural hazards, which affect communities most often, and cause the most damage, are severe storms. They can occur at any time but are more numerous in spring and summer. Severe storms may be land gales (continuous winds of 62km/h or more) or thunderstorms with damaging winds, intense rain, large hail or eventropical low pressure systems.

Don't leave loose objects lying around, they could become missiles. Listen for storm warnings on radio and television. They will warn of what's coming, usually with enough time to prepare for the storm's arrival. Keep under cover (not a tree) and avoid using telephones during violent electrical storms.

Be alert during the storm:

- Stay inside and shelter clear of windows
- Listen to a portable radio for storm updates
- If outdoors, find emergency shelter

Remain vigilant after the storm:

- Check buildings for damage.
- Keep listening to the local radio station for official warnings/advice.
- Beware of fallen power lines, damaged buildings, trees and flooded drains.
- Check trees near buildings for damage and stability.

8.6 Unplanned releases, leaks or spills

This can refer to:

- Discharges to air including odour;
- Discharges onto soil;
- Discharges to storm water drains, gutters, creeks, channels and dams;
- Contaminated storm water as a result of another emergency such as fire, storm or flood;
- Overflow or rupture (pond wall failure) of waste water pits or ponds.
Any unplanned leak or spill that threatens or causes material environmental harm should be immediately reported following the immediate notification procedure.

**Immediate notification:** with reference to incidents threatening or causing material environmental harm, immediate notification (without delay) must occur.

### 8.6.1 Containment and clean up

#### General Information

Proper task procedures must be followed when handling chemicals. Always read the labels attached to the chemical container and know what you are dealing with before handling or using the chemical. The site chemical register and copies of SDSs are available on site servers or in hard copy at security.

Knowledgeable and experienced personnel should only do the clean-up of a chemical spill. Spill kits with instructions, absorbents, reactants, and protective equipment are available to clean up minor spills. A minor chemical spill is one that laboratory/maintenance/safety staff is capable of handling safely without the assistance of emergency personnel. All other chemical spills are considered major.

In the event of a chemical spill or hazardous material release which poses a serious danger to personnel:

**Immediate actions:**

- Clear the area
- Check for any persons involved
- Isolate the spill (if safe to do so) and limit the potential for further environmental impact
- Stop the source of the release (if safe to do so)
- Contact the area supervisor or Safety Officer
- The primary concern is to protect health and safety. No action should be taken during an emergency response that directly or indirectly violates this principle.
- The secondary concern is the protection of the environment.

**Considerations for containment:**

- Utilise spill kits
- Prevent discharge from entering storm water drains, gutters, creeks, channels and dams.
- Use sand/soil to isolate and/or control the flow of contaminated water run-off

**Considerations for evacuation for unplanned releases, leaks or spills:**

- Uncontrolled open flame
- Uncontrolled compressed gas release
- Any situation which poses imminent threat to human health or safety
- Elimination of potential sources of ignition should only be done if it can be accomplished without personal risk.
High risk spills:

- Contact the emergency services by calling 000 and explain the situation and follow the procedure for immediate notification, where environmental harm is threatened.
- Contact the site Maintenance Department;
- Follow any advice or information provided by the Emergency Response Team.

Low risk spills:

- Have at least two trained workers to handle the spill;
- Use the proper protective equipment;
- Ensure fire protection is available for flammable spills;
- Control the source;
- Contain free liquids by damming, absorbing if appropriate;
- Place all spill residues in an appropriate container;
- Decontaminate the affected area using an appropriate material;
- Decontaminate the salvage equipment;
- Analyse the area to ensure proper decontamination has taken place;
- Examine walkways, floors, stairs equipment etc. for other hazards or damage.

Debriefing:

- All personnel involved in the spill response should be debriefed after the spill has been resolved. This should include a review of the events for any written reports which are required to be submitted following the incident.
- All spill control supplies should be restocked.
- All damaged or used equipment should be repaired or refilled.
- When the area is deemed clear, it can be re-opened for operations.

8.6.2 Reporting requirements

All leaks, spills or unauthorised releases must be immediately verbally reported to the Plant Manager, whether or not the spill, leak or release stayed on site or went off site.

The Plant Manager will consult with the WHS Officer as to whether the incident is reportable to the EPA. In deciding whether it is reportable, they will consider whether the incident:

- Involves actual or potential material harm to the health or safety of human beings or the environment that is not trivial, or
- Results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000.

Noise and odour incidents are not reportable. Where potential or actual environmental harm is caused or threatened, the incident or event must be immediately reported using the procedure for immediate notification.

Immediate notification: with reference to incidents threatening or causing material environmental harm, immediate notification (without delay) must occur.
8.7 Vehicle accident

Road safety is the responsibility of not only drivers, but cyclists, pedestrians and all other road users.

- Slow down and be aware of pedestrian movement around the plant and pedestrian areas - never assume a pedestrian has seen you.
- Never assume that a driver has seen you and will stop for you. Before crossing the road, think about whether the approaching driver can see you.
- At night wear something light in colour or wear reflective clothing.
- The chance of an accident increases with increasing driver fatigue (late and night, end of working week, during darkness or with the onset of inclement weather).

Emergency action:

- Contact emergency services on 000 or 112, as required.
- Assist any injured people, until arrival of Ambulance Paramedics.
- Prevent unauthorised persons from causing congestion at the accident scene.
- Assist and liaise with authorities at scene.
- Move the vehicle from the roadway and secure if possible. Be alert of hazards such as other traffic and potential fuel leaks.
- At scene of accident seek full details of any other vehicle(s) including registration numbers, names and address of both drivers and/or owners.
- Remain at scene until completely clear of people, animals, vehicle and debris.
- Admission of liability must not be made if CAG employees are involved.
- Report all damage immediately to the Safety Department.

8.8 Structural damage

During construction works, renovations, and general maintenance or through accidents, buildings and infrastructure may be damaged. In some cases the damage may be substantial and occupants may find themselves in a similar situation to those who have experienced an earthquake. In other cases it may be caused by severe storm damage or an explosion.

In minor situations the building may need to be inspected by engineers and maintenance staff to ensure it is safe to continue working in or around it.

Emergency Action:

- Watch for hazards.
- Contact Maintenance and Safety Department. Explain what has happened.
- Turn off electricity, gas, water and steam. Do not light matches until checks for gas, steam or fuel leaks have been completed.
- Check for injuries. Apply first aid. Do not move the seriously injured unless in immediate danger.
- Check for broken water, sewerage or electrical mains.
- Check for cracks/damage, in roof, walls, gantries etc.
- Evacuate if badly damaged.
8.9 Personal threat

Personal threat encompasses a number of areas all of which will display numerous variables and characteristics:

- Confrontation with an armed person
- Confrontation with an unarmed person
- Armed Hold-Up
- Assault / Physical Injury
- Threatening the life of others or oneself
- Hostage / Kidnap scenarios

Due to the inherent nature of personal threat type emergencies, i.e. dealing with people, it is always difficult to expect or plan for certain outcomes. It is the volatility of human nature and emotion that ultimately dictates the way in which this type of emergency will play out. This also limits the extent to which these circumstances can be predicted.

To cater for these characteristics, personal threat emergency procedures must be clear and concise and allow for built in improvisation and flexibility when the situation requires. Common sense and clear thinking are paramount considerations and such factors must always be considered when following the guidelines during this type of response. It is imperative to remember that the welfare and safety of all could be seriously breached during such an incident. Do not act in such a manner that may exacerbate the threat or cause it become a catalyst for life threatening outcomes. Be responsible and understanding whilst never compromising the safety to yourself and the others around you.

Any employee witnessing a personal threat situation should always alert the nearest supervisor.

Emergency Action:

- Try to remain calm.
- Alert a supervisor.
- Be firm but polite with the person and let them know that their behaviour is not acceptable.
- If the behaviour of the person is such that outside intervention is required, contact or arrange to have contacted Security and the Police.
- You should not feel obliged to rectify the situation on your own.
- Abusive phone calls: hang up the phone and notify your supervisor.

8.10 Mass Mortality

Livestock mortalities as part of routine abattoir operations are minimised as far as practicable by implementing good animal welfare practices during unloading and in the holding yards. Small numbers of mortalities will occur as part of day-to-day operations and the carcasses will be disposed of by rendering or collected by a licenced waste contractor for off-site disposal.
Disposal of large numbers of animal carcasses on site would only be required in the event that the on-site vet identifies a disease that must be contained and the containment strategy prohibits rendering or off-site disposal. These options may also be suitable for disease-affected animals; however, the decision is made by the on-site vet on a case-by-case basis in accordance with the guidance documented in the AUSVETPLAN Operation Manual Disposal (National Biosecurity Committee, 2015).

Site Burial

The Batchelor Abattoir has capacity to hold 320 head onsite at any given time. Allowing for burial of this number of carcasses piled one deep (to minimise depth and potential impacts to groundwater) and covered by at least 2 m of soil, the land area required for the disposal site would be approximately 640 sq m. The large size of the property on which the Batchelor Abattoir is located means there is a large land area within which suitable mass disposal areas can be sited, whilst minimising impacts to surface water and groundwater. The following criteria have been used to identify sites that would be suitable for mass disposal:

- At least 250 m from defined depressions, watercourses and surface water catchments (such as streams, rivers, creek beds and wetlands).
- At least 250 m from the nearest bore and neighbouring residential building.
- Soils with clay subsoil are most suitable for burial trenches or composting areas. Soils with high leaching properties (sand, gravelly or rocky soils) are to be avoided where possible. On the Batchelor site landunit 3b has loamy soils that will meet this requirement.
- The base of the trench should be at least 2 m above the water table. Noting this is not a major constraint for the Batchelor abattoir operations as site operations are suspended during the peak of the wet season when water table are higher.
- The site should be accessible.

Site that meet the above criteria are shown in Figure 1.

The following guidelines are to be used for constructing burial pits are as follows (Source: *NSW EPA Authorised Officers Manual - Dead Stock Disposal*):

- the pit should be only about 3m wide as narrow, deep pits eliminate the need to move carcasses once they are in the pit;
- deep enough to allow for a 2m cover of soil over the top;
- when the pit is being dug, topsoil should be separated from the subsoil so that it can be replaced on top later;
- appropriate diversion banks constructed to prevent water entering the pit;
- Each carcass should be covered with a layer of soil, approximately 30cm deep immediately after disposal in the pit.
9. BOMB THREATS

When a bomb threat is received it should always be taken seriously. All people who answer the phone should be aware of the location of the Bomb Threat Check List (see appendix A) readily available to complete in the event of receiving a threat.

Telephone threats

- Recipients of telephone threats should attempt to remain calm and obtain as much information as possible about the caller, recording the exact message if possible. Generally speaking the callers do provide considerable information either knowingly or unknowingly. It should be noted that these callers will attempt to verbally abuse you.
- Attempt to discreetly notify others of your caller this can be achieved by holding up a sign which would have the following statement in big bold letters “I AM RECEIVING A BOMB THREAT, CONTACT THE POLICE”.
- Ask as many questions contained in the Bomb Threat Check List as possible.
- Hold the caller in conversation for as long as possible to enable you to become as familiar with this person as possible.
- Do not hang up the phone on completion of the call. Some modern telephone systems have the ability to keep a line open enabling a trace to be made to the place of origin.
Fire warden duties on receipt of a bomb threat

Chief Fire Warden duties:

On receiving notice of a bomb threat the Chief Fire Warden will:

- Notify the Police by telephone – dial “000” or “112”
- Evaluate the level of threat
- Contact Wardens who are on the premises via phone or by deputising a person to arrange a meeting point and instigate search procedures (refer to search procedures)
- Ensure specific search of escape routes, immediate exterior of the building, car park and assembly area and
- Evacuate the building if necessary using normal evacuation procedures unless the evacuation route needs to be changed to avoid suspected location of the threat.

Warden duties:

On receiving notice of a bomb threat, the Warden will organise his/her Deputy Wardens to carry out a search, keeping in mind to:

- Remain calm
- Confine all messages to the search party
- Not wear safety helmets
- Search the entire building including storerooms, toilets etc. and fire exit paths and
- Notify the Chief Fire Warden by telephone, or in person once the search is completed or suspicious object found (refer search procedures).
Search procedures

Concentrate initially upon the room or area designated in the bomb threat and observes the following procedure:

- **VISUALLY** search from floor level to waist height, e.g. under and on chairs, tables and cabinets. Start and finish at a common point
- **VISUALLY** search from waist to ceiling height, e.g. light fittings, behind drapes, window ledges, wall decorations and tops of cupboards.

**PLEASE NOTE:** If no particular area has been specified in the bomb threat concentrate initially on areas accessible to the public starting at the lowest level within the building.

**IF A SUSPICIOUS OBJECT IS FOUND:**

- Do not remove the object
- Evacuate area around object (if considered appropriate) and
- Inform the Chief Fire Warden immediately.

The Chief Fire Warden will:

- Inform the Police/Bomb Squad and
- Seek instruction on further evacuation.
10. SHUT DOWN PROCEDURES

In the event of an emergency requiring shut down of utilities, persons should contact the Maintenance Department immediately.

10.1 Water

The water is supplied by an on-site bore that can be isolated by closing the ball valves. The water delivery system is a ring main system, so the main water tank valve is required to be shut off to isolate the fresh water supply to the site. In the event these valves need to be closed, the maintenance department should be contacted.

10.2 Electricity

Electrical supply enters the site from the Batchelor town substation. Site electrical supply can be isolated from the High Voltage switching station adjacent to the waste water Save-all system. Only certified High Voltage switching personnel are authorized to perform the switch.

10.3 Gas

Gas supply can be isolated turning off the valve on the gas supply line at this point (valve located at the back of the render plant). The isolation point is contained within a locked enclosure. If the gas supply is required to be shut down, the maintenance department should be contacted.

10.4 Steam

Steam is generated in the site boilers. The site steam supply to different areas of the plant can be isolated at the steam header located in the boiler house (located in the rendering plant). If steam is required to be isolated, contact the maintenance department.

10.5 Ammonia

The ammonia systems on site are highly complex. It is essential that in the event of an emergency, persons notify Maintenance immediately on 2-way radio. Appropriate supply valves can be closed to isolate supply to the plant or to different sections of the plant.

10.6 Effluent System

In the event the effluent system needs to be shutdown due to a pipe failure, transfer pumps can be isolated through the render control panel of emergency stop button at the Save All.
11. EXTERNAL EMERGENCY

Very similar to an internal emergency but located off site. An external emergency may/ will impact the site in some way.

Examples of an external emergency include:

- Aircraft crash
- Truck crashing into a building
- Fire and smoke (car fires, other buildings, bushfire, volcano, etc.)
- Dangerous gas clouds
- Terrorism incident
- Dangerous or aggressive people
- Earthquake
- Hazardous material release from neighbouring facilities
- Efforts to demonstrate at, blockade, or deface the location

Emergency Action:

- Assess the situation
- Raise the alarm
- Explain what sort of emergency it is and how it will affect the plant
- Follow instructions given by Safety or your supervisor

11.1 Protestors / demonstrators

Industrial unrest, emotional international situations or unpopular political decisions may lead to public demonstrations which could threaten the security of the plant. Management should co-ordinate the response to an incident until the arrival of the police to whom they should provide as much assistance as required.

As soon as the Emergency Controller is aware of civil disorder occurring in, or in the vicinity of the building, the following action should be taken:

- Notify the Police and request assistance (dial 000 and ask for the Police Operator)
- Notify Plant Manager.
- Restrict entry to the building.
- Confine presence of demonstrators to the car park, or reception area.
- Restrict contact between demonstrators and plant employees.
- Alert other members of the plant.
- Offices should be locked, cash, valuables and files secured.
- Windows, blinds and curtains should be closed and staff directed not to agitate the demonstrators.
- Management should promote an air of confidence and calm.
11.2 Armed intrusion / threat / hold-up

Procedures

Employees and visitors on the site should ensure cash and valuables are secured and kept to a minimum. Employees and visitors who may be subject to such an incident should be given instruction to ensure their safety.

If you are confronted by an armed intruder

- Obey the instructions
- Try to remain Calm
- Do not take any action to excite the intruder.
- Hand over cash/valuables on request.
- Try to make a mental note of the description, clothing, speech, scars and any/or other markings.

When the intruder departs

1. Contact police by dialling “000” or “112” and ask for police.
2. Provide details of robbery.
   a) Your name
   b) Address: Central Agri Group Batchelor

       165 Meneling Road, Batchelor, NT 0845

   If you have a description of the car, or direction of the intruders travel advise police.
12. CYCLONE PROCEDURE

12.1 Cyclone procedure

CAG, has a responsibility in relation to matters that form part of its undertaking, to endure so far as reasonably practicable that the health and safety of its workers and other people is not put at risk while they are at work. In areas of Australia prone to extreme weather events and cyclones, this responsibility include providing information and assistance to workers in relation to such extreme weather events they may be exposed to whilst at work.

12.2 Cyclone season

The cyclone season in the Northern Territory runs from 1 November each year through to the end of April of the following year. There are on average 7.7 days per season when a cyclone exists in the Northern Region. The north-western Gulf of Carpentaria near Gove has the highest concentration of cyclone days. The Gulf of Carpentaria averages two cyclones a year, while the Arafura and Timor Seas (close to Darwin) tend to follow more regular tracks to the southwest. Over half the cyclones generated in the Northern Region move either southwest or southeast into adjoining regions.

12.3 State emergency services communication

Local authorities and government agencies, including Northern Territory Emergency Services, Northern Territory Counter Disaster Control, and the Bureau of Meteorology ('BOM') communicate via radio, television and internet the latest watches, warnings and supporting information.

There are three key types of broadcasts in relation to cyclones that all workers should make themselves aware of:

- **Tropical cyclone Information Bulletin** – Issued whenever a tropical cyclone exists in Australian waters, but is not expected to cause gale force winds overland in Australia within 48 hours.
- **Tropical cyclone watch** – Issued if a cyclone is expected to affect coastal communities within 48 hours, but not expected within 24 hours.
- **Tropical cyclone warning** – Issued if a cyclone is affecting or is expected to affect coastal communities within 24 hours. Employees should be advised that attendance at work is not mandatory if a cyclone warning has been declared by the Bureau of Meteorology but employees must contact the office to advise this.

12.4 Information bulletin

An information bulletin is issued whenever a tropical cyclone exists in Australian waters, but is not expected to cause gale force wind overland in Australia within 48 hours. While the cyclone remains in Australian waters, a tropical cyclone information bulletin will be issued every six (6) hours. Further information can be obtained from the Bureau of Meteorology website at [www.bom.gov.au/weather/cyclone/](http://www.bom.gov.au/weather/cyclone/).
12.5 Cyclone watch

A cyclone watch is issued if there is an indication that an area will be affected by a cyclone within the next 48 hours. A cyclone watch is updated by the Bureau of Meteorology at maximum six (6) hour intervals. Further information can be obtained from the Bureau of Meteorology website at www.bom.gov.au/weather/cyclone.

12.6 Cyclone warning

A cyclone warning is issued if there is an indication that an area will be affected by a cyclone within the next 24 hours. A cyclone warning is updated by the Bureau of Meteorology at maximum three (3) hour intervals. Further information can be obtained from the Bureau of Meteorology website at www.bom.gov.au/weather/cyclone.

12.7 Operational Cyclone Response Plan

<table>
<thead>
<tr>
<th>Level of Alert Issued by BOM</th>
<th>Risk</th>
<th>CAG and workers shall carry out the following operational requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-season Readiness</td>
<td></td>
<td>CAG individual employee responsibilities:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Seek contact details for all appropriate management staff.</td>
</tr>
<tr>
<td>Information Bulletin</td>
<td>Tropical cyclone exists in Australian waters, but is not expected to cause gale force winds overland Australia within 48 hours.</td>
<td>CAG individual employee responsibilities:</td>
</tr>
<tr>
<td>Watch (tropical</td>
<td>Cyclone may produce gales within 48 hours.</td>
<td>CAG individual employee responsibilities:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Identify loose material, furniture and equipment on site and relocate indoors.</td>
</tr>
<tr>
<td>Warning (tropical</td>
<td>Significant risk of destructive winds within 24 hours.</td>
<td>CAG individual employee responsibilities:</td>
</tr>
<tr>
<td>Level of Alert Issued by BOM</td>
<td>Risk</td>
<td>CAG and workers shall carry out the following operational requirements</td>
</tr>
<tr>
<td>-----------------------------</td>
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<td>-----------------------------------------------------------------------</td>
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<tr>
<td></td>
<td></td>
<td>• Employees are advised that being at work during a cyclone warning is not mandatory. Employees should follow the directives of Government based advice during this period. Directives are issued every three (3) hours by Bureau of Meteorology through their website (detailed above), local television and local radio.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Based on predicted wind speeds and storm surge heights, evacuation may be necessary. Official advice from BOM will be given on local television or radio regarding safe routes and when to move.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• No employees to remain on site where evacuation and/or seek shelter advice has been received from NTG – all personnel must cease work and vacate to their selected refuge.</td>
</tr>
<tr>
<td>Official advice received, threat has left</td>
<td>Beware of fallen power lines, damaged buildings and trees and flooded water</td>
<td>CAG individual employee responsibilities:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Monitor the information bulletins via radio alerts and the Bureau of Meteorology website <a href="http://www.bom.gov.au/weather/cyclone">www.bom.gov.au/weather/cyclone</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Employees will be responsible for contacting their supervisor or manager for direction on return to work.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Employees shall assess their own situation first to ensure it is safe to attend work over the needs of their family and/or property. Should personal circumstances prevent employees from attending work once the plant has reopened then this is to be discussed with their supervisor/manager.</td>
</tr>
</tbody>
</table>

12.8 Workers and your home

CAG understands that its employees will be concerned to undertake all necessary preparatory tasks in relation to the safety of their family or loved ones, homes and other property. To assist workers to do this if necessary, with the permission of the Plant Manager employees will be permitted to leave the workplace to secure their homes and any other property. To help this process the company will make early decisions around closure of the site based on the best information in line with a Tropical Cyclone Warning for Batchelor area. Workers are encouraged to review guidance material, watches and warnings provided by the Bureau of Meteorology [www.bom.gov.au](http://www.bom.gov.au) and the local State Emergency Service Office [www.pfes.nt.gov.au](http://www.pfes.nt.gov.au) and to take all precautions recommended by those agencies where appropriate particularly in regards to NT government recommended pre-season preparedness prior to any cyclone watch event.
12.9 Animal welfare

At that notice of a Warning (tropical cyclone warning – 24 hours notice) any planned cattle deliveries could be put on hold or cancelled. Any cattle on site that cannot be processed within timelines will be released onto adjoining grazing land to the site.

12.10 Cyclone action matrix

<table>
<thead>
<tr>
<th>Stage</th>
<th>Task</th>
<th>Person Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre season Readiness</td>
<td>Attend yearly Cyclone Season Briefing in October to review cyclone policy and sign attendance sheet.</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>Identify approved cyclone shelters.</td>
<td>PM/WHS</td>
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<tr>
<td></td>
<td>Prepare personal emergency kits.</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>Ensure emergency contact details are recorded and current.</td>
<td>All</td>
</tr>
<tr>
<td>Stage 1 – Low Pressure System/Information Bulletin</td>
<td>Monitor low pressure system.</td>
<td>PM/WHS</td>
</tr>
<tr>
<td></td>
<td>Heed all NTG warnings and follow advice given by governing authorities.</td>
<td>All</td>
</tr>
<tr>
<td>Stage 2 – Cyclone Watch</td>
<td>Monitor system via media sources.</td>
<td>All</td>
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<tr>
<td></td>
<td>It is recommended staff stay in communication with one another through appropriate means of contact.</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>Heed all NTG warnings and follow advice given by governing authorities.</td>
<td>All</td>
</tr>
<tr>
<td>Stage 3 – Cyclone Warning 24 hours</td>
<td>Monitor system via media sources.</td>
<td>PM/WHS</td>
</tr>
<tr>
<td></td>
<td>It is recommended staff stay in communication with one another through appropriate means of contact.</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>Heed all NTG warnings and follow advice given by governing authorities.</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>Attendance at work is not mandatory.</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>Identify loose material, furniture and equipment on site and relocate indoors.</td>
<td>All</td>
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<tr>
<td></td>
<td>All cattle deliveries cancelled/postponed.</td>
<td>PM</td>
</tr>
<tr>
<td></td>
<td>Cattle on site released into adjoining grazing land.</td>
<td>Yards Supervisor</td>
</tr>
<tr>
<td>Stage 4 – Safety Management and Lockdown</td>
<td>An official announcement is made by the Northern Territory Emergency Services advising the public to seek shelter.</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>Heed all NTG warnings and follow advice given by governing authorities.</td>
<td>All</td>
</tr>
<tr>
<td>Stage 5 – All Clear Pending</td>
<td>Monitor the information bulletins via radio alerts and the bureau of Meteorology website</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>Employees will be responsible for contacting their supervisor or manager for direction on return to work.</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>Heed all NTG warnings and follow advice given by governing authorities.</td>
<td>All</td>
</tr>
</tbody>
</table>

12.11 Counter disaster links

- www.lrm.nt.gov.au/bushfires
- www.pfes.nt.gov.au
- www.redcross.org.au/emergency-services
- www.ses.org.au
- www.bom.gov.au/cyclone

12.12 Cyclone briefing attendance sheet

I have attended the yearly Cyclone Season Briefing, viewed the counter disaster links and understand CAG’s cyclone procedure.

<table>
<thead>
<tr>
<th>Date</th>
<th>Attendee Name</th>
<th>Signature</th>
</tr>
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<tbody>
<tr>
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</tbody>
</table>
13. BUILDING DAMAGE

Generally buildings in Australia can withstand a certain amount of damage without placing the occupants at risk. However, recent experience has shown that there is a remote possibility of building failure due to unexpected forces such as severe storms or earthquake. Other possible causes of failure may be explosion, internal failure and collision.

If damage occurs:

- Take immediate refuge under a desk, bench, door frame or archway
- Stay clear of filing cabinets, shelves and bookcases
- Maintain refuge until structural safety checks are completed
- Do not use matches or lighters.

The Chief Warden will:

- Notify emergency services
- Contact and organise Wardens to carry out an injury/building safety check and to report back
- Commence evacuation ensuring that:
  - Evacuation routes are safe
  - First aid personnel are available to assist
  - All personnel are accounted for.

**NOTE:** Where possible, evacuation should be discussed with emergency services such as State Emergency Service, Fire Services and the Police.

The Warden will:

- Maintain contact with the Chief Warden
- Organise assessment of injury and damage in his/her area and transmit damage report to Chief Warden
- Commence evacuation when directed.
14. MEDICAL EMERGENCY

The possibility of a medical emergency has to be considered during the course of a normal day. Although not directly related to the operation of the site, Management and Staff must be prepared to take appropriate steps to assist the ill or injured. If any person is made aware of a medical emergency, they should follow the following procedures:

Procedure

1. Contact Senior First Aider
2. Dial “000” or 112 and advise ambulance of details of the injured person, give
   a) Address: Central Agri Group Batchelor
      165 Meneling Road
      Batchelor, NT 0845
   b) Nearest entrance: From Meneling Road
   c) Details of injury
   d) Your name

3. Based on their training, the first aider should render assistance to the injured and make them comfortable and will remain with the injured person until arrival of the ambulance.
4. If the injury has resulted from a fall, do not move the person and where possible do not leave them unattended.
5. Ensure responding emergency services personnel have a clear path of access to the injured person.

Emergency – CPR

- Check for danger
- Stay with the person
- Get help – dial 000 or 112 and ask for ambulance service
- Start resuscitation

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>BREATHING</th>
<th>CIRCULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quickly turn person on side</td>
<td>If not breathing:</td>
<td>Check the neck pulse. If absent begin external cardiac compression.</td>
</tr>
<tr>
<td>Remove foreign material from mouth</td>
<td>• Quickly turn person on back</td>
<td>• Begin external cardiac compression</td>
</tr>
<tr>
<td>Place neck and jaw in correct positions</td>
<td>• Open airway</td>
<td>• Place the heel of one hand on the lower half of the sternum</td>
</tr>
<tr>
<td>Listen for Breathing</td>
<td>• Start mouth to mouth or mouth to nose</td>
<td>• Lock the other hand to the first by grasping wrist of interlocking fingers</td>
</tr>
<tr>
<td>Watch for chest movement</td>
<td>• Check neck pulse</td>
<td>• Keep fingers off the chest</td>
</tr>
<tr>
<td>If breathing, leave person on side – keep airway clear</td>
<td>• If pulse is present, resuscitation at a rate of 30 per minute (1 every 4 seconds) – Check the circulation after 1 minute and then every 2 minutes</td>
<td>One operator</td>
</tr>
<tr>
<td></td>
<td>• If breathing returns</td>
<td>2 ventilation and 30 compressions</td>
</tr>
<tr>
<td></td>
<td>o place person on side</td>
<td>Two operators</td>
</tr>
<tr>
<td></td>
<td>o keep the airway clear</td>
<td>1 compression per second</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 ventilation after every 5</td>
</tr>
</tbody>
</table>
15. RESUME NORMAL OPERATIONS

During and after an emergency can be a confusing and frantic time. This can present hazards when attempting to resume normal operations. It is the emergency controller that signifies the end of any emergency.

15.1 Returning to work after an emergency

Actions taken during an incident or emergency are frequently different to those that occur during normal operations.

It is possible that:

- Equipment was left running or was shut down incorrectly
- Hazards are present in the workspace that were not there when you left, i.e. fallen equipment, poor lighting
- Utility supplies have been interrupted or come back on unexpectedly, i.e. electricity, steam, hot water etc.

Emergency Action:

- Assess the situation
- Assume equipment and supplies were not shut down correctly, so do so when returning
- Complete a thorough inspection of the immediate area and equipment for correct operation.
- Consider having maintenance complete a full start up check prior to employees entering the area in the event of a major emergency.
- Report any concerns to your supervisor immediately.
- Do not start or operate suspect or damaged equipment.
- Follow instructions given by Safety or your supervisor.
- Remain calm.
- Food Safety requirements in the Approved Arrangement are to be followed – e.g. if anyone sits on grass or footpaths clothing must be changed.

15.2 Reducing the effects of exposure to critical incidents

Traumatic incidents are often outside the usual range of experiences and are so powerful and sudden that they can overwhelm a person's ability to cope. Different people have different reactions. The degree to which they are affected, and for how long will depend on many factors. The greater the significance of the incident to a person, the more likely the person is to suffer some effects.

Common reactions are the inability to dismiss the incident during quiet times or when resting or sleeping and disturbed or restless sleep. Thoughts turn to the incident despite trying to concentrate on other things. Anger with oneself or the ‘system’ may tend to overwhelm a person who perceives other actions may have averted the incident. Others may become sullen or moody.
Any reaction that is outside the usual behaviour of the individual should be referred, preferably by the individual, alternatively by peers or management.

Early professional assistance and counselling can assist by speeding up the usual healing and coping process most people have. Some people have limited reactions that last only a few days. Others may take weeks or even months to again feel comfortable. Healing can be significantly assisted by sharing feelings about the incident with others and by timely referral to professional support when necessary.

Suggestions:

- Alternate periods of rest with physical exercise.
- Don’t drink alcohol for a few days after the critical incident.
- Reduce caffeine intake.
- Structure your time – keep busy.
- Talk to people – let your family or friends know what is going on.
- Keep your life as normal as possible in the days following the incident.
- Eat well (regular meals).
- Don’t expect memories to just go away. They will take time to dissipate.
16. RECORD KEEPING

To comply with the requirements of the Australian Standard AS 3745-2010, a form has been developed for recording training and instruction of Emergency Procedures (see below). The Master Record Book must be kept on the premises (preferably in a fireproof cupboard) for inspection by the authorities if requested.

**Emergency procedures training**

Warden Training was conducted at CAG

The training was conducted in accordance with AS3745-2010 and to Level 3 on the Competency Standard – Fire Emergency Response.

The follow topics were covered:

- Operate as part of an Emergency Response Team
- Safeguarding endangered people
- Participation in control of emergencies
- Conducting routine inspections and maintenance of equipment
- Undertaking emergency prevention
17. EMERGENCY COMMUNICATION

17.1 Internal Communications

The methods of communication within the site are:

- Persons
- 2-Way Radio
- Telephone
- Mobile phones

A combination of the above will be used to communicate emergency information to plant employees during an emergency. The site has UHF FM 2-way radio system in place.

Mobile handsets are issued to the management and key personnel.

17.2 External Communications

Communication with neighbouring premises

The Emergency Controller (or delegate) is to contact neighbouring businesses/residents detailed in the Emergency Communication Checklist and Contact Details of this plan. A record is to be maintained of all contact to allow for follow up after an incident.
18. EMERGENCY COMMUNICATION CHECKLIST

1. Have all federal, state, local or other reporting requirements been met, including immediate notification of actual or potential environmental harm as per the immediate notification procedure.

2. Have businesses and residents potentially affected by the incident been contacted?

3. Internal Contacts:
   - Group management
   - Environment
   - Safety
   - Loss control (legal if required)
   - Public Relations
   - Insurance
   - Food Safety

4. Have provisions been made for advising the following?
   - Employees and families (if appropriate)
   - Public officials
   - Customers and suppliers

5. Have all employees been reminded to direct all inquiries from the media or general public to the designated spokesperson?

6. Have all relevant facts been gathered, noting what can as well as what cannot be verified to begin developing talking points or a public statement? Are the appropriate background materials readily available?

7. Have you made provisions for monitoring media coverage to follow up on erroneous reports?

8. Have you made provisions for follow-up information to employees, media, customers, suppliers, public officials, local residents, public officials and business leaders or others who may have been affected by the emergency?

The following information need to be provided where available:
- Name and location of the facility (suburb, street, nearest cross street to relevant site entry);
- Number of injured persons or casualties and the nature of injuries;
- Type and scale of emergency including a brief description;
- The hazards involved, including details of substances, names and quantities;
- Telephone contact number for return messages;
- Name of person making the call; and,
- Any other useful information such as wind speed and direction.
9. Has follow up been made to potentially affect businesses and residents to update on control of the incident?

19. EMERGENCY CONTACT INFORMATION

During a major incident Management shall appoint a media release officer who will act as the point of contact for media and to provide media releases on behalf of the company. All contact with media should be through the media release officer only. Communications/Public Relations will compile a list of missing and injured people. They will coordinate the communication with the company (on and offsite) and outside officials.

19.1 Emergency Services

National Emergency Number 000

On most mobile phones you can dial 112 or 000 to access the Fire, Police or ambulance services.

NT Fire and Rescue 13 14 44

For notification of pollution incidents:

State Emergency Service (SES) 132 500

For Storm or flood emergencies:

Poisons Information Centre 131 126

Environmental Hotline 131 555

19.2 Utilities suppliers

Palmerston City Council 08 8935 9922

Electrical Supply - Power & Water – 1800 245 090 (Emergency only)

Natural Gas Supply – Elgas – 13 11 61 (Emergency only)

Telstra – 1800 687 829

19.3 Government agencies

WorkCover - 13 10 50

Regional Office –NT WorkSafe - 1800 019 115

EPA –Environmental Hotline 131 555

Regional Office – Parap 08 8942 6554

NT Department of Health –Darwin Office 08 8999 2400
Driving directions from Batchelor town to the abattoir
Muster points and evacuation routes
APPENDIX A: Bomb Threat Check List

<table>
<thead>
<tr>
<th>QUESTIONS TO ASK:</th>
</tr>
</thead>
<tbody>
<tr>
<td>When is the bomb going to explode?</td>
</tr>
<tr>
<td>What will make the bomb explode?</td>
</tr>
<tr>
<td>Did you place the bomb?</td>
</tr>
<tr>
<td>What is your name?</td>
</tr>
<tr>
<td>What is your address?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXACT WORDING OF THREAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTION</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Report immediately to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone number:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>a) CALLERS VOICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accent (specify)</td>
</tr>
<tr>
<td>Voice (loud, soft, etc.)</td>
</tr>
<tr>
<td>Diction (clear, muffled)</td>
</tr>
<tr>
<td>Did you recognise the voice?</td>
</tr>
<tr>
<td>If, who do you think it was?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>b) THREAT LANGUAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well spoken</td>
</tr>
<tr>
<td>Irrational</td>
</tr>
<tr>
<td>Message read by caller</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>c) BACKGROUND NOISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street noises</td>
</tr>
<tr>
<td>Aircraft</td>
</tr>
<tr>
<td>Local call</td>
</tr>
<tr>
<td>Machinery</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>d) OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex of caller</td>
</tr>
<tr>
<td>Estimated age</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>e) CALL TAKEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
</tr>
<tr>
<td>Time</td>
</tr>
<tr>
<td>Duration of call</td>
</tr>
<tr>
<td>Telephone number called</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>f) RECIPIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name (print)</td>
</tr>
<tr>
<td>Telephone number</td>
</tr>
<tr>
<td>Signature:</td>
</tr>
</tbody>
</table>

DO NOT HANG UP! POLICE MAY BE ABLE TO TRACE THE CALL
APPENDIX B: Chief Warden evacuation checklist

DATE OF EVACUATION:

TIME OF EVACUATION:

CHIEF WARDEN, WARDENS IN ATTENDANCE OR DEPUTISED WARDENS WHO PROVIDED ASSISTANCE:

<table>
<thead>
<tr>
<th>Chief Warden:</th>
<th>Warden:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warden:</td>
<td>Warden:</td>
</tr>
<tr>
<td>Warden:</td>
<td>Warden:</td>
</tr>
<tr>
<td>Warden:</td>
<td>Warden:</td>
</tr>
<tr>
<td>Warden:</td>
<td>Warden:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area</th>
<th>All Clear (✓)</th>
<th>Disabled Persons</th>
<th>Refusal to Evacuate</th>
<th>Medical Emergency</th>
<th>Comments (including location of remaining occupants)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other Comments:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
### APPENDIX C: Armed hold-up checklist

<table>
<thead>
<tr>
<th>Witness Name</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### DESCRIPTION OF OFFENDER (S)

**NUMBER OF OFFENDERS:**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**SEX:**

- Male
- Female
- Transvestite
- Unknown

**RACE:**

- Caucasian
- Asian
- European
- Aboriginal
- Indian
- Negro
- Islander
- Maori

**AGE:**

<table>
<thead>
<tr>
<th></th>
<th>5-10</th>
<th>10-15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>20-25</th>
<th>25-30</th>
<th>30-35</th>
<th>35-40</th>
<th>40-45</th>
<th>45-50</th>
<th>55-60</th>
<th>70-80</th>
<th>Unknown</th>
</tr>
</thead>
</table>

**HEIGHT:**

- 4'/122cm
- 4'6"/137cm
- 5'/152cm
- 5'6"/168cm
- 5'8"/173cm
- 5'10"/178cm
- 6'/183cm
- 6'2"/188cm
- 6'4"/188cm
- Unknown

**WEIGHT:**

- 8st/51kg
- 8½st/53kg
- 9st/57kg
- 9½st/61kg
- 10st/64kg
- 10½st/67kg
- 11st/70kg
- 11½st/74kg
- 12st/76kg
- 12½st/80kg
- 13st/83kg
- 13½st/89kg
- 14st/94kg
- 14½st/97kg

**BUILD:**

- Thin
- Slim
- Medium
- Heavy
- Husky
- Muscular
- Fat
- Stout

**HAIR:**

- Black
- Brown
- Blonde
- Dirty-Blonde
- Red
- Grey
- White
- Silver
- Dyed………..
- Bald
- Shaved-Head
- Straight
- Curly
- Wavy
- Neat
- Wig
- Afro
- Tied
- Tapered
- Shoulder
- Long
- Spiked
- Flat
- Crew Neck

**TOP:**

- Dirty
- Specific…
- Unknown

**EYES:**

- Black
- Brown
- Hazel
- Blue
- Green
- Grey
- Unknown
### APPENDIX C: Armed hold-up checklist

<table>
<thead>
<tr>
<th>GLASSES:</th>
<th>Sunglasses</th>
<th>Prescription</th>
<th>Wire Frame</th>
<th>Plastic Frame</th>
<th>Rimless</th>
<th>Clear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bifocal</td>
<td>Brown</td>
<td>Black</td>
<td>Gold</td>
<td>Silver</td>
<td>Specific</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COMPLEXION:</th>
<th>Pale</th>
<th>Fair</th>
<th>Medium</th>
<th>Swarthy</th>
<th>Ruddy</th>
<th>Tanned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown</td>
<td>Black</td>
<td>Acne</td>
<td>Freckled</td>
<td>Scarred</td>
<td>Fresh</td>
<td></td>
</tr>
</tbody>
</table>

| Specific… | Unknown |

<table>
<thead>
<tr>
<th>FACIAL HAIR:</th>
<th>Moustache</th>
<th>Beard</th>
<th>Sideburns</th>
<th>Unkempt</th>
<th>Goatee Full</th>
<th>Stubble</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour……..</td>
<td>Specific…</td>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPEECH:</th>
<th>Normal</th>
<th>Foreign</th>
<th>Impediment</th>
<th>Uneducated</th>
<th>Swearing</th>
<th>Husky</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep</td>
<td>High</td>
<td>Squeaky</td>
<td>Quiet/Loud</td>
<td>Type of Accent…</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| PECULARITIES: | |
|---------------| |

<table>
<thead>
<tr>
<th>JEWELLERY:</th>
<th>Earrings</th>
<th>Studs</th>
<th>Bangles</th>
<th>Rings</th>
<th>Necklaces</th>
<th>Anklets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TATOOS:</th>
<th>L/R</th>
<th>L/R L/U</th>
<th>L/R</th>
<th>L/R</th>
<th>L/R</th>
<th>L/R</th>
<th>L/R L/U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand….</td>
<td>Face….</td>
<td>Fingers</td>
<td>Torso….</td>
<td>L/R Arm….</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CLOTHING</th>
<th>Head</th>
<th>BalACLava</th>
<th>Beanie</th>
<th>Stocking</th>
<th>Baseball cap</th>
<th>Akubra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straw</td>
<td>Colour….</td>
<td>Design….</td>
<td>Patches…..</td>
<td>Specific…</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Upper</th>
<th>Pullover</th>
<th>Jacket</th>
<th>T-Shirt</th>
<th>Windcheater</th>
<th>Fiannel Shirt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dress Suit</td>
<td>Collar/Tie</td>
<td>Parka</td>
<td>Colour……</td>
<td>Design…</td>
<td>Labels….</td>
</tr>
</tbody>
</table>

| Specific… | |

<table>
<thead>
<tr>
<th>Lower</th>
<th>Jeans/Shorts</th>
<th>Slacks</th>
<th>Cords</th>
<th>Belt Y/N</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design…..</td>
<td>Labels…..</td>
<td>Stains…..</td>
<td>Holes…..</td>
<td>Length…..</td>
<td></td>
</tr>
</tbody>
</table>

| Specific… | |

---

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### APPENDIX C: Armed hold-up checklist

<table>
<thead>
<tr>
<th>CLOTHING cont.</th>
<th>Underwear</th>
<th>Y Front</th>
<th>Boxer</th>
<th>Jockette (no Openings)</th>
<th>Cotton/Nylon</th>
<th>Colour……</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Design…..</td>
<td>Specific……</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shoes</th>
<th>Runners</th>
<th>Bare Feet</th>
<th>Thongs</th>
<th>Slippers</th>
<th>Boots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desert</td>
<td>Boots</td>
<td>Colour……</td>
<td>Laces…..</td>
<td>Labels…..</td>
<td>Specific…..</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dresses</th>
<th>Short/Long</th>
<th>Waist/Knee/Full</th>
<th>Summer / Winter</th>
<th>Colour……</th>
<th>Design……</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Labels…..</td>
<td>Specific……</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Accessories**

**Make Up**

### DISCUISES:

<table>
<thead>
<tr>
<th>Plastic Mask</th>
<th>Colour……</th>
<th>Specific……</th>
</tr>
</thead>
</table>

### HANDS:

<table>
<thead>
<tr>
<th>Gloves</th>
<th>Cotton</th>
<th>Leather</th>
<th>Rubber</th>
<th>Motorbike</th>
<th>Garden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washing</td>
<td>Colour........</td>
<td>Type........</td>
<td>Specific........</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### WEAPON:

<table>
<thead>
<tr>
<th>Handgun</th>
<th>Long/Short Barrel</th>
<th>Blue/chrome</th>
<th>Revolver/ Automatic</th>
<th>Specific……</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifle</td>
<td>Bolt/Auto/ Pump/Lever Actions</td>
<td>Short/Long</td>
<td>Barrel Full Length/Sawn-off</td>
<td>Telescopic</td>
</tr>
</tbody>
</table>

| Shotgun | Pump/ Automatic/ Double/Single Side by side/Underover | Full length | Sawn-off | Specific…… |

| Magazine | Specific…… | | | |

---

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### APPENDIX C: Armed hold-up checklist

<table>
<thead>
<tr>
<th>WEAPONS</th>
<th>Knife</th>
<th>Sheath</th>
<th>Carving</th>
<th>Kitchen</th>
<th>Butterfly Flick</th>
<th>Retractable Blade</th>
</tr>
</thead>
<tbody>
<tr>
<td>cont.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stanley</td>
<td>Fishing</td>
<td>Cleaver</td>
<td>Folding pocket type</td>
<td>Multi Bladed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Serrated Blade Y/N</td>
<td>Length of blade</td>
<td>Length of handle</td>
<td>Colour of handle</td>
<td>Colour of blade</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Width of blade</td>
<td>Specific</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Witness able to I.D. weapon Y/N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VEHICLE:</th>
<th>Body</th>
<th>Sedan</th>
<th>S/Wagon</th>
<th>P/Van</th>
<th>Coupe</th>
<th>Van</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Commercial</td>
<td>Sports</td>
<td>4x4</td>
<td>Motorcycle</td>
<td>Moped</td>
<td></td>
</tr>
<tr>
<td>Make</td>
<td>Holden</td>
<td>Ford</td>
<td>Toyota</td>
<td>Mitsubishi</td>
<td>Daihatsu</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hyundai</td>
<td>Honda</td>
<td>Nissan</td>
<td>Rover</td>
<td>Fiat</td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>European</td>
<td>American</td>
<td>Japanese</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>Commodore</td>
<td>Falcon</td>
<td>Specific...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td>.................</td>
<td>Soft Top Y/N</td>
<td>Metallic Y/N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Damage/ Fittings</th>
<th>Nearside/ Far side</th>
<th>Front/Rear</th>
<th>Rust</th>
<th>Specific...</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Aerial (CB)</th>
<th>Tow ball</th>
<th>Bull bar</th>
<th>Roof rack</th>
<th>Alloy Wheels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spotlights</td>
<td>Sunroof</td>
<td>Specific...</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interior</th>
<th>Bucket/Bench Seats</th>
<th>Seat Covers</th>
<th>Auto/Manual</th>
<th>Column/Area Shift</th>
<th>Electric Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upholstery</td>
<td>Colour............</td>
<td>Specific...</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stereo</th>
<th>Standard</th>
<th>Fitted</th>
<th>Equaliser</th>
<th>Specific...</th>
</tr>
</thead>
</table>

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<th>Registration</th>
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<td>Colours</td>
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APPENDIX D: Evacuation procedure – Chief Warden

In the event of emergency:

1. Do not panic and put on a hard hat
2. Pick up radio, mobile phone and keys
3. Chief Warden to proceed to location to investigate (access if false alarm or emergency).
4. If there is an emergency:
   a. Contact emergency services – giving clear instructions as to the location of the site. It is important that you can tell the operator which town and state/territory you are calling from.
   b. Ring ‘000’ or ‘112’
   c. Chief Warden to deputise other wardens to evacuate other buildings
5. Deputise a warden to do a roll call and take charge of the assembly area
6. Proceed to the entrance on the Meneling Road, beside Police Station, and liaise with emergency services on arrival – advise them of the location of electricity and gas connections.
7. At the muster point – ensure that there is room for emergency services to drive through the entrance.

APPENDIX E: Roll call procedure

The Warden in Charge of the assembly area should organise the following:

1. Ask the employees or visitors to form area groups (slaughter floor, boning room, loadout, render plant etc).
2. One person from each group to report to the person in charge of the assembly area
3. Report that all are present or report that a person cannot be located
4. Other visitors to site should be identified and accounted for
5. Staff to be identified and accounted for
6. A summary of this information including the last known location of the missing person is to be provided to the Chief Warden in Charge to give to emergency services.

APPENDIX F: Warden

In the event of emergency:

1. Put on a hard hat
2. Evacuate area as per direction of Chief Warden OR Follow directions of maps located in each building – direct occupants towards exits and advise them of the muster point
3. Get assistance to help evacuate any sick or disabled people or those who may have been overcome by smoke
4. Ensure that all people have vacated the building
5. Advise the Chief Warden that your area is all clear
6. Unless otherwise directed by Firefighters or Police, proceed to assembly point to await All Clear from emergency services
7. In conjunction with other wardens or deputised wardens, write a report on the outcome of the evacuation procedure.
APPENDIX G: Emergency procedures – training log

Warden Training was conducted at CAG

Date of training

The training was conducted in accordance with AS3745 – 2010 and to level 3 on the Competency Standard – Fire Emergency Response.

The following topics were covered:

- Operate as part of an Emergency Response Team
- Safeguarding endangered people
- Participation in control of emergencies
- Conducting routine inspections and maintenance of equipment
- Undertaking emergency prevention

Please indicate in the table below whether you are a Warden (W) or Chief Warden (CW).

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<thead>
<tr>
<th>NAME</th>
<th>POSITION &amp; AREA</th>
<th>FIRST AID CERT (Y/N)</th>
<th>SIGNATURE</th>
<th>OFFICE USE (Competency Achieved)</th>
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Training conducted by:

Signature: Date:
APPENDIX H: Caustic soda spill response guide

HAZARDOUS SUBSTANCE/ DANGEROUS GOODS STATUS

Caustic soda (sodium hydrate is classified as a hazardous substance under the ASCC [NOHS:1009 (2004),] also classified as a dangerous goods under the Australian Dangerous Goods Code (ADG Code)

PERSONAL PROTECTION EQUIPMENT PROVIDED

- splash googles and mask
- boots and the clean-up (impervious gloves, pants and coat)
- impervious head wear

HAZARDOUS WASTE HANDLING MATERIAL

- absorbent material (sand bags, pads, spill pillows)
- brush with a long handle
- suitable weak base (sodium carbonate or calcium carbonate)
- pH papers
- shovel (plastic)
- water

CLEAN UP METHODS

- Isolate the contaminated area
- Turn off any equipment operating in the contaminated area.
- Wear all appropriate PPE gear prior to entering the contaminated area and avoid breathing in vapours.
- As quickly as possible bund the contaminated area using sand bags, spill pillows, pads or any absorbent material provided to prevent liquid from leaching further.
- Use a weak neutraliser (such as acetic acid) if necessary. If the spill was in a contained area use water to dilute the solution further.
- Use the neutraliser slowly to avoid any splattering by working from edge of spill inwards.
- Mix the neutraliser with a brush (with a long handle) to ensure that the contaminated area is neutralised.
- Test the pH of the contaminated area to determine the level of neutralisation
- When pH is 6-8 it is no longer consider hazardous waste, therefore the neutralised material can be carefully wash down or scrapped off and disposed in designated listed waste material bins to be disposed of at the land fill.
- Be mindful when handling items used to absorb the acid as these items remain as corrosive and should be handle with extreme care by avoiding direct contact with the skin and dispose into designated listed waste disposal bins.
- After the area has been fully cleaned, spray the area lightly with water and test with pH paper to ensure there is no further contamination.
- Thoroughly ventilate the area after clean-up.
Clean the equipment and PPE gear with water and detergent after spill clean-up has been complete.

**APPENDIX I: Non-corrosive chemicals / solid material response guide**

**HAZARDOUS SUBSTANCE/ DANGEROUS GOODS STATUS**

N/A

**PERSONAL PROTECTION EQUIPMENT PROVIDED**

- splash googles
- mask
- boots
- the clean-up suite (impervious gloves, pants and coat)
- impervious head wear (optional)

**HAZARDOUS WASTE HANDLING MATERIAL**

- absorbent material (sand bags, pads, spill pillows)
- brush with a long handle
- suitable weak base (sodium carbonate or calcium carbonate)
- pH papers
- shovels (plastic)
- water

**CLEAN UP METHODS**

- Isolate the contaminated area
- Turn off any equipment operating in the contaminated area.
- Wear all appropriate PPE gear prior to entering the contaminated area and avoid breathing in vapours.
- As quickly as possible bund the contaminated area using sand bags, spill pillows, pads or any absorbent material provided to prevent liquid from leaching further.
- Use the shovel to pick up all solids and dispose them in the listed waste bins to be transported off to the land fill.
- If the spill was in a bunded area use water and detergent to wash down the contaminated area.
- If the spill was on soil scrape the top contaminated layer and dispose contaminated material in a designated listed waste bin.
- Thoroughly ventilate the area after clean-up.
- Clean the equipment and PPE gear with water and detergent after spill clean-up has been complete.