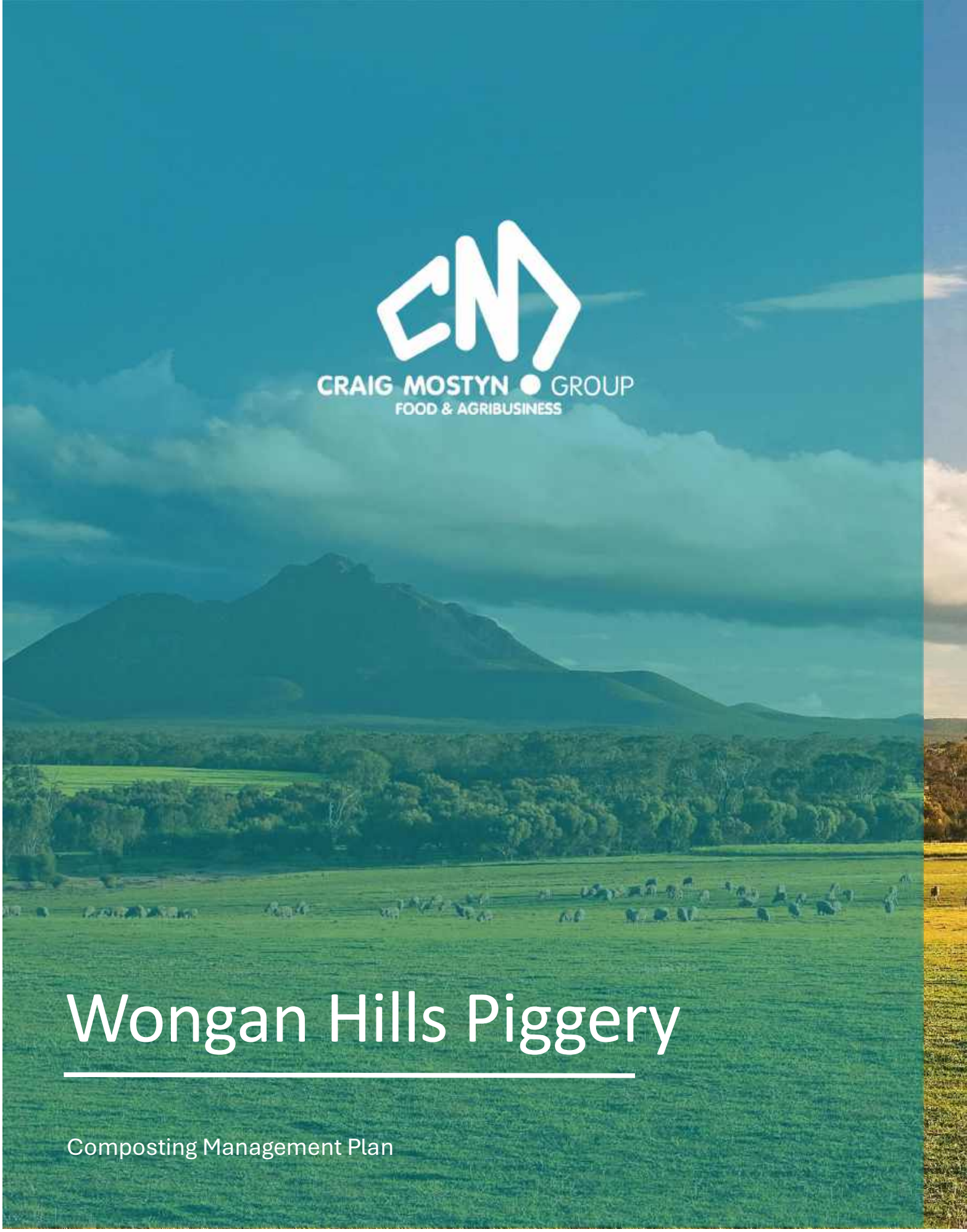

Wongan Hills Piggery

Composting Management Plan

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1. Introduction and Purpose

This Plan has been prepared to support the environmental licence application for the Craig Mostyn Farms Wongan Hills Piggery and supplements the *Wongan Hills Piggery Environmental Management Plan (Rev 1c)* (Land Insights April 2025). The Plan sets out the management requirements for the piggery composting facility to ensure compliance with Australian Standard for composts, soil conditioners and mulches (AS4454-2012) as they relate to management of spend bedding (manure and straw) material and carcasses on an eco-shelter piggery.

As defined in the Standard (Section 3.2.2), any product supplied or described as 'composted' shall comply with the requirements for pasteurization (Section 3.2.1) and achieve specified level of maturity required for compost (Appendix N).

2. Environmental Objectives and Targets

The Wongan Hills farm compost facility will be managed such that the operation should not lead to any reduction of the beneficial uses of surface or groundwaters, or ecosystem function which would result from an increase organic matter or nutrients.

The compost facility's environmental targets are:

- Avoid runoff contamination or soil erosion.
- Contain any runoff from the composting pad and evaporate it.
- Contain any runoff from the pig mortality tunnel and evaporate it.

Eco-shelter bedding and waste management process

The eco-shelter bedding and composting management process for the Wongan Hills farm pig production system consists of the following processes:

Collection:

Once a shelter is emptied of pigs, spent bedding cleaned from each eco-shelter will be kept on a concrete base and picked up on the same day after completion of cleaning activities and transferred to the composting area.

Carcasses will be removed from eco-shelters daily and transported to the concrete composting tunnel.

Treatment:

Spent bedding will be deposited into composting windrows that are maintained at the correct height and width and are turned and managed as required by Australian Standards AS4454.

Carcasses will be placed within the compost tunnel and immediately covered with 300 mm of spent bedding. Once carcass decomposition has achieved the desired quality, the mortality compost will be mixed with the bedding compost.

Removal:

Composted material will be removed from the Premise and spread on adjacent cropping land by a manure spreader or similar equipment. DWER has confirmed that once the spent bedding is composted in accordance with Australian Standards AS4454, it is no longer considered manure or waste and can be spread or taken off-site for use.

Risk Assessment

As part of the *Wongan Hills Piggery Environmental Management Plan (Rev 1c)* submitted as supporting material for the Wongan Hills Piggery environmental licence application, a risk assessment a was undertaken using the *National Environmental Guidelines for Indoor Piggeries* (Tucker, RW 2018) and the Australian Pork Limited *Conventional Piggeries Environmental Management Plan* template. Outcomes relevant to the composting facility are provided below.

Manure storage

The APL Guidelines provide recommendations for the storage and handling of manure, including spent bedding produced at an eco-shelter piggery. The risk rating based on the criteria set out in the Guidelines was rated as *Rating 3 – some protection against risks to the environment*.

The potential emissions and discharges to the environment are leachate from the manure, and odour, dust and noise from manure storage. Specific controls relating to manure storage were:

- Ensure the composting area is bunded to prevent water runoff from leaving the area.
- Ensure water runoff from the composting area is captured in a drainage basin where it can be evaporated.
- Ensure the composting process meets the Australian Standards AS4454-2003.
- Windrows are to be approximately 1.5 metres high (maximum height 3m) and 2-3m wide at the base. Sufficient space should be provided in between windrows for machinery movements.
- Establish groundwater monitoring bores on the Premises with the intention of testing for groundwater nutrients, total dissolved solids, pH and metals.

Mortalities management

The APL Guidelines provide advice on the environmental risks for mortalities and best practice management. The risk rating based on the criteria set out in the Guidelines was rated as *Rating 3 – some protection against risks to the environment*.

Specific recommendations relating to mortality management within the composting area were:

- Construct a concrete composting tunnel for mortality management.
- Ensure there is no water runoff from the composting tunnel.
- Ensure the composting process meets the Australian Standards AS4454.
- Daily, place carcasses onto the compost tunnel and immediately cover with 300 mm of spent bedding.

A parallel risk assessment was also undertaken using DWER's *Guideline: Risk Assessments* (2017). Two emissions were identified for the compost area being:

- wastewater and leachate

- odour.

Based on the existing on-site management of the compost area and the implementation of the additional management as recommended by the EMP, the likelihood of wastewater and leachate impacts to the beneficial use of groundwater and surface water was considered rare and the residual risks low. Residual risks from odour were also considered to be low.

3. Environmental Management

The following management requirements are consistent with the requirements of Australian Standards AS4454 and the Australian Pork Limited *Piggery Manure and Effluent Management and Reuse Guidelines* (2015) as they relate to the objectives and risks detailed above.

Composting

- The eco-shelters will typically be cleaned every eight weeks and spent bedding transported to the composting facility. Spent bedding will be formed into windrows approximately 1.5 m high (maximum height 3 m) and 2-3 m wide at the base.
- Windrows will have a triangular cross section so that they shed water and are oriented with the long axes perpendicular to the slope.
- Sufficient space will be maintained between and around the ends of windrows to provide access for machinery movements.
- The moisture content of the material in the newly formed windrow will be tested once the material is deposited.
    - If it appears dry and no water is released when a handful is squeezed it is classed as “dry”. If water drips from the compost when squeezed, or is leaking from the compost, it is classed as “wet”.
    - Material that is dry will be watered until it reaches field capacity (moisture content of 40–65%). The windrow must be checked at least hourly during watering to ensure there is no leaching. If the material is too wet, it can be dried by turning every couple of days, or dry co-composting materials incorporated into the pile, until the moisture content is optimal.
- Temperature is a key indicator of the composting process. Temperature will be monitored using a long probe thermometer inserted into the pile at separate spots along the length of the windrow.
- Windrow temperature should be monitored at least weekly. The windrow should only be turned after three successive days of high temperatures (>55°C).
- Temperatures in excess of 60°C poses the risk of spontaneous combustion and the windrow should be turned immediately.
- The pile should be turned at least three times during the active phase which may take three months or more.
    - A strong temperature rise after turning indicates that active composting is still occurring.
    - If the temperature does not rise markedly after turning, and the process has been active for 8–12 weeks, the material is approaching maturity.
    - The active phase is considered complete when the pile no longer heats to >55°C after turning

- After completion of the active phase, the compost will be kept in a windrow or formed into a stockpile where it is allowed to cure for at least a month.
- The end product is a friable soil conditioner which will be removed from the Premise and used on adjacent cropping land.

Carcass composting in the composting tunnel

- To start a pile, a 300 mm layer of clean, high carbon material will be placed on the base of the composting tunnel to absorb leachate and provide a source of carbon to aid composting.
- Prior to deposition, the thoracic cavity of larger carcasses will be opened to reduce the likelihood of exposure of bodies due to bloat.
- The carcass will be completely covered with at least 300 mm of spent bedding material to ensure no part is exposed. subsequent layers of carcasses can be placed over the initial layer and also covered.
- At least three months of composting time (from the placement of the last carcass) and three months of compost curing time is recommended. Turning the pile about three months after the last carcasses were added will accelerate the process by improving air flow and promoting mixing, but it is not mandatory.
- The active phase is complete when the temperature within the pile drops. The compost should then be left to cure for a further 3–6 months.
- Once the compost has been cured and there is no evidence of skeletal material, the carcass compost can be mixed into fresh spend bedding windrows.

4. Compost Management Plan Review

The performance of the composting facility should be reviewed annually against the objectives and targets and the Compost Management Plan updated as required.

5. References

APL project 2012/1028, Piggery Manure and Effluent Management and Reuse Guidelines 2015

AS 4454: 2012 – Australian Standard 4454:2012 for Composts, Soil Conditioners, and Mulches. Australian Standards, Sydney, Australia.

Australian Pork Limited Conventional Piggeries Environmental Management Plan (https://australianpork.com.au/environmental-practices/environmental-guidelines)

Department of Water and Environmental Regulation, (2017), Guidance Statement: Risk Assessments, Department of Water and Environmental Regulation, Perth, WA.

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Tucker, RW 2018. National Environmental Guidelines for Indoor Piggeries - Third Edition, APL Project 2015-2221, Australian Pork Limited, Kingston, ACT, Australia