

PIC Australasia Pty Ltd: Bonnie Doon Piggery



Environmental Management Plan

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This report has been compiled to ensure environmental risks are suitably managed at the PIC Australasia Pty Ltd - Bonnie Doon Piggery.

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Tucker RW, 2018, National Environmental Guidelines for Indoor Piggeries (NEGIP), Australian Pork Limited, Canberra

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1. Introduction

This document represents an Operational Environmental Management Plan (EMP) for Bonnie Doon piggery. Its purpose is to provide a structured and systematic framework for the environmental management of the Bonnie Doon piggery to minimise risks to the environment.

PIC Australasia Pty Ltd has operated a piggery on the Grong Grong property for many years. In 2023, the company applied construct a new piggery at the Bonnie Doon site, 240 Flanagans lane Matong. Development approval DA 18/0408.01 was granted to allow for Pig facility of 15,000 SPU. Main Components of EMP includes the following sub-plans:

- Stormwater Management Plan
- Odour Management Plan
- EPA Licence
 - a. Irrigation Management Plan
 - b. Manure and Solid Waste Utilisation Management Plan
 - c. Groundwater Monitoring Plan
- Mass Destruction Event Plan

Contingency plans are incorporated into relevant subplans.

2. Contact Details

The key contact details for this EMP are:

Name: Carlos Gobzalas (Technical and Production Manager)

Land Owner: PIC Australasia Pty Ltd

Postal Address: PO Box 39
Grong Grong 2652

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As Production Manager, Carlos is responsible for managing the implementation of this EMP, and for allocating appropriate financial and human resources. The Bonnie Doon Piggery Manager is responsible for activities occurring within the piggery complex. The Production Manager is responsible for managing on and off-farm reuse.

3. Purpose

The purpose of this EMP is to provide a structured and systematic framework for the environmental management of the Bonnie Doon piggery to minimise risks to the environment.

PIC Australasia Pty Ltd prides itself on producing pigs in an environmentally sustainable way and looks for opportunities to beneficially reuse the pig effluent, spent bedding, SEPS solids and mortalities compost as part of an integrated farming system that includes both Bonnie Doon and other farms under the company's management. The owners of PIC Australasia Pty Ltd recognises that the company has a duty of care to the environment and must play its part in protecting the environment for future generations. To that end, the company is committed to ensuring all aspects of its business operate in an environmentally sustainable way.

A risk assessment process has been used to identify and mitigate potential environmental risks posed by the operation of the piggery. The robust environmental monitoring program included is integral to managing these risks as it will confirm ongoing sound performance and identify emerging environmental risks and impacts. Where practical, risks will be eliminated but otherwise they will be minimised through suitable preventative and corrective actions. Opportunities for ongoing environmental improvement will also be identified and implemented in a timely manner.

PIC Australasia Pty Ltd commits to ensuring appropriate organisational skills, funding and resources will be dedicated to the implementation and ongoing operation of this EMP.

4. Environmental Objectives and Outcomes

The environmental objectives of this EMP are:

- to describe the site activities and their management and within this:
 - to operate in a way that protects all aspects of the environment;
 - to operate in a way that is compatible with surrounding land uses;
 - to beneficially use the nutrients, water and carbon in spent bedding, effluent and mortalities within on and off-site farming systems.
 - identify environmental risks;
- to describe specific mitigation measures and controls that can be applied on-site to mitigate or minimise these environmental risks;
- to specify a monitoring regime that allows for the detection, documentation and mitigation of actual and potential environmental risks;
- to identify emergency situations that could pose a risk to the environment and specify contingency plans for these;
- to promote the identification and implementation of ongoing environmental improvements; and
- to provide for the regular review and updating of the EMP.

5. Site Overview

Figure 2 show the land making up “Bonnie Doon”. As well as the piggery, Bonnie Doon and all adjoining land is used for cropping and grazing.

There are six receptors within 5.5 km of the proposed development (Figure 11). The nearest sensitive receptor is 1,900 m north-east of the proposed development. The structure on Lot 70/DP750838 is a shearing and machinery shed and has not been considered as a receptor (Table 15). Satellite imagery indicates that the surrounding region is generally used for cropping and grazing with what appears to be an aquaculture development adjacent to R1. The Matong State Forest is located to the east of the property..

Cultural Heritage Assessment - The AAIA identified three Aboriginal sites on the property (Appendix J). All sites are in areas that will not be subject to disturbance and, as per the management and mitigation measures in the AAIA, these areas will be signed and fenced with a 5 m buffer. As per the recommendations in the AAIA, an Aboriginal Heritage Impact Permit (AHIP) will not be required as all Aboriginal objects identified were outside the development footprint.

The site is generally flat with a slight slope with a 6 m change in elevation from the highest to the lowest points (0.2 % slope). The facility will be located at an elevation of 163 m above sea level. The property gently slopes from the north east corner to the south west corner of the property towards Bundidgerry Creek which drains into the Murrumbidgee River approximately 5 km downstream (Figure 12). Bundidgerry Creek appears to be an artificially created watercourse. There are no watercourses or drainage features on the property. Bundidgerry Creek is identified within the Biodiversity Values Mapping.



Figure 1 – Site Aerial Photo

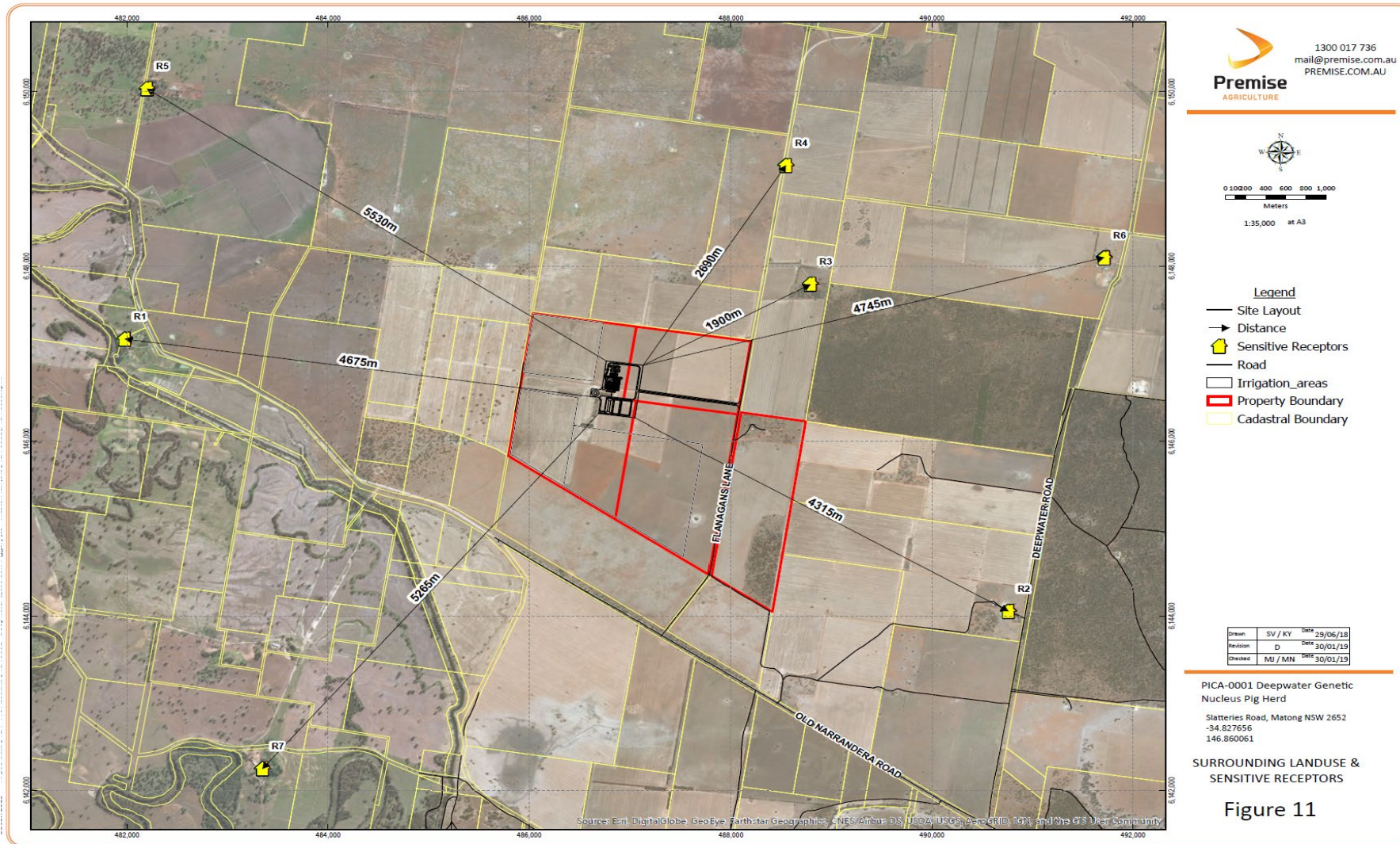


Figure 2 – Nearby Houses



Figure 3 – Topography and Local Waterways



Figure 4 – Topography

6. Design Overview

The piggery is designed to house 1250 sows and their progeny on site – Farrow to Finish operation. The piggery consists of 11 sheds that are conventional sheds with natural and controlled ventilation systems. The design is to house 13,500 pigs or 15,000 SPU equivalents. The proposed layout of the fully developed piggery is shown as Figure 5.

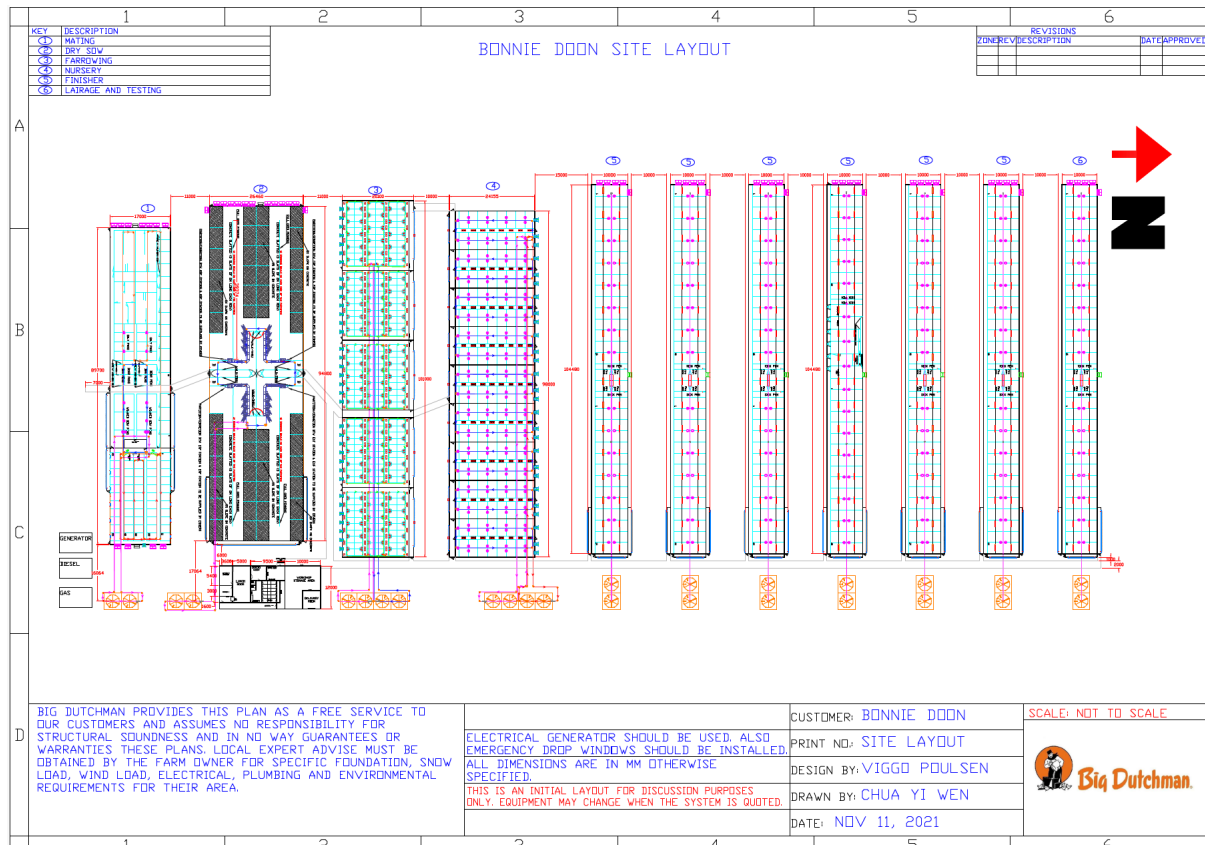


Figure 5 – Layout of Fully Developed Piggery

The conventional housing houses the finisher pigs. The tighter environmental controls within this type of housing promotes more even finishing of pigs. Conventional housing consists of steel-framed sheds with walls that are half solid and half nylon curtain, iron roofing and slatted flooring over concreted under-floor effluent pits with pull plugs.

The effluent system from the conventional sheds will be collected into a central pit. The effluent will undergo two-channel sedimentation and evaporation pond system (SEPS). At any time, one channel will receive liquid effluent and waste matter, the second will channel will be used to dry the sludge / SEPS solids. The drying channel will be cleaned out during the year so that it is ready to receive effluent in the next year. Liquid from each SEPS channel will drain independently to the recycle dam. To protect surface water quality, the recycle dam is sized to restrict overflow events to once every 20 years sheds. Surplus liquid effluent will be irrigated on-farm. Dried SEPS solids will periodically be extracted and

aged on the areas between the channels. The SEPS solids are expected that most SEPS solids will be reused on the current farm site or given to local farmers for use. All components of the effluent system have low permeability bases (1×10^{-9}) to minimise the risk of groundwater contamination.

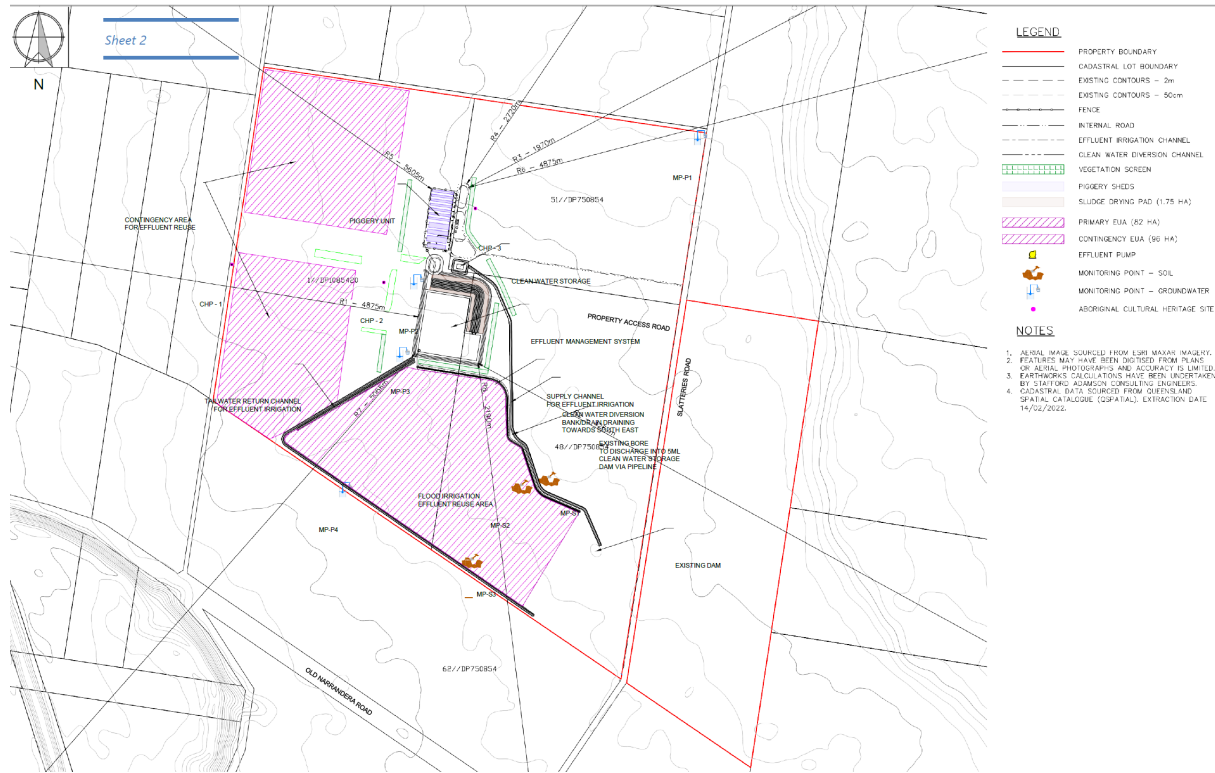


Fig 7 – Evaporation /Recycle Dam

Careful management of reuse is important in protecting the environment. Buffers to sensitive land uses and natural resources will provide additional protection. There is a buffer and recycle drain at the base of the effluent utilisation area are in place to protect against any overflows.

7. Management

7.1. Staffing and Work Hours

Site staffing and work hours will be managed to minimise the likelihood of nuisance for neighbours.

- ensuring the piggery is suitably staffed at all times.
- operational activities will generally occur from 7 AM to 6 PM weekdays and 7 AM to 1 PM on weekends.
- there will be occasions when it may be necessary to operate outside these hours, for example, pigs may need to be loaded and transported in the early hours of the morning in very hot weather for welfare reasons. However, extraordinary work hours will only be used as a contingency to manage unusual events.

7.2. Stormwater Management

To protect stormwater:

- effluent and manure will be contained within bunded or banked facilities prior to reuse.
- effluent and manure will be reused in a sustainable manner (see Appendices 4 and 5 for further information).
- buffers will be maintained between reuse areas and waterways.

The Stormwater Management Plan included as Appendix 1 provides specific the management methods that will be adopted during the construction and operational phases.

7.3. Odour Management

A range of management measures can be used to minimise odour emissions and the risk of odour nuisance for neighbours. The Odour Management Plan included as Appendix 2 provides detailed odour mitigation guidance for all components of this piggery.

7.4. Housing Management

The site is a farrow to finish site with all pigs being housed in conventional housing. These sheds are comprised of natural and controlled ventilation systems. Composed of iron roofing and concrete slated floor systems. These systems allow controlled waste collection and distribution

The conventional sheds are managed by:

- feeding pelleted feed to minimise wastage.
- pressure washing when pen is emptied and pigs taken to market.
- carefully selecting shed cleaning chemicals and using these at very low rates to avoid potential adverse effects on the effluent treatment microorganisms
- emptying the effluent pits every two weeks. The pits of different sheds will be emptied in series to maintain a regular inflow into the waste management system.

- adding a shallow depth of fresh water to the base of the pits after emptying (and plug replacement). This helps to prevent manure from sticking and reduces ammonia releases.

7.5. Effluent Treatment

The facilities for effluent treatment are summarised in section 6.

- transferring sludge to the SEPS using in situ pipework.
- carefully selecting chemicals used for shed cleaning to avoid adverse effects on the effluent treatment microorganisms and using these at very low rates

The SEPS will be managed by:

- allocating one channel for liquid effluent, one for drying the sludge / SEPS solids. The channels used for active sludge accumulation and sludge drying will alternate. As the active channel fills, the drying channel will be cleaned out providing an empty channel for sludge to be put into when needed.
- checking the SEPS channels monthly for solids levels and to ensure free drainage from each SEPS channel to the recycle dam. Any blockages would be promptly addressed.
- emptying the SEPS each summer when warm temperatures will promote more rapid drying
- ensuring the SEPS solids are cleaned from the drying channel before the active channel fills so there is always a channel ready to receive sludge.
- removing SEPS solids as quickly as practicable to minimise odour.
- allowing removed SEPS solids to dry further before spreading by storing in piles on the areas beside the channels.
- manure removal from the solids drying channel of the SEPS is at a 12 monthly interval. The solids are scheduled to be removed annually over the summer months and then applied to land (when applied on-farm) from late summer to autumn prior to sowing.
- To enable solids removal, drying needs to be actively promoted. This will occur by:
 - enabling free drainage of liquid into the recycle dam.

The SEPS channels are designed to be trafficable. Solids will be removed using excavator and tip truck.

The recycling dam will be managed by:

- maintaining a minimum of at least 60 cm of freeboard under normal operating conditions.

- maintaining a storage depth of 60 cm below freeboard under normal operating conditions to provide for capture of an extreme storm.
- checking the storage depth in the evaporation dam visually each day to ensure there is always room to allow for significant rainfall events and managing accordingly. Noting the contour banks around the SEPS and manure storage area prevents most rainwater runoff from going into recycle dam.
- managing the stored effluent depth for forecast significant rainfall events by reducing the stored depth to 100 cm below freeboard if possible (assuming conditions are suitable for effluent irrigation).
- testing the effluent on a six-monthly basis (EPA Licence 21734).
- managing salinity and nutrient levels in the effluent recycle dam by drawing effluent for irrigation when soil / crop / weather conditions allow.

Refer to the EPA Licence 21734 Bonnie Doon Appendix 3

7.6. Effluent Reuse

On-farm reuse of effluent will be managed by:

- testing effluent prior to the main irrigation period and using the results to determine how much effluent is applied.
- irrigating when the crops or pastures on the available land need nutrients.
- only irrigating the land designated for irrigation and maintaining environmental buffers (refer to the Solid and Waste Management Plan provided for more details).
- only irrigating when the available land is dry enough to absorb irrigation without runoff occurring. Irrigation will be by flood irrigation system and therefore reduce aerosol distribution
- applying nutrients at environmentally sustainable rates (refer to the EPA License 21734)

7.7. Manure and Compost Reuse

On-farm reuse of manure and mortalities compost will be managed by:

- only spreading on the land designated for irrigation and maintaining environmental buffers (refer to the Manure and Solid Waste Management Plan included as Appendix 4 for more details).

- applying nutrients at environmentally sustainable rates (refer to the Manure and Solid Waste Management Plan for more details).
- analysing SEPS solids and spent bedding annually before the main reuse period (see section 11.3).
- applying manure and mortalities compost evenly and at controlled rates.
- scheduling spreading of manure and mortalities compost for just before sowing and / or when the crop or pasture is actively growing.
- ensuring mortalities compost is fully broken down prior to spreading.
- only spreading manure that suitably dry.
- ensuring no spreading occurs within 500 m of a receptor house and within 500 m of a house that the wind is carrying towards.
- incorporating SEPS solids into the soil where practical.
- avoiding reuse under windy conditions.
- avoiding reuse under very stable atmospheric conditions (e.g. early in the morning, evening).
- delaying reuse if the soil is saturated, or if it is raining or forecast to rain heavily within 24 hours
- avoiding reuse on weekends or public holidays.
- stopping reuse when significant rain is imminent, or it is heavily overcast or raining.

7.8. Mortalities Composting

Mortalities will be managed by:

- Using the following procedure for composting mortalities:
 - place at least 0.3 m of spent bedding over the base of the area to be used
 - cover each carcass with at least 0.5 m of spent bedding before placing the next carcass. (Stack up to two carcasses high with good coverage between and around each carcass)
 - ensure the carcasses are always well covered. Good coverage promotes composting by adding a carbon source, and is essential for controlling odours and in vermin control
 - active composting will typically occur over a three to four-month period. Aging for at least two months will follow.

- checking the mortalities composting area daily to ensure there is good coverage of all mortalities. As needed, further cover material will be added to achieve a minimum cover of 0.5 m over the bodies.

7.9. Roads and Traffic Management

Roads and traffic will be managed by:

- providing and maintain suitable site access.
- providing and maintaining suitable all-weather roads on-farm.
- watering on-farm roads if needed to minimise dust.
- providing and maintaining suitable car parking close to the office.
- providing and maintaining suitable spaces for trucks to park for unloading and loading
- scheduling trucks to come during the day whenever practical. However, occasional night transportation of pigs will be required during very hot weather for animal welfare reasons.
- implementing safe on-farm speed limits (40 kph on the access road, 10 kph within the piggery complex).

7.10. Rubbish & Other Wastes

The piggery will generate very little rubbish and other wastes. There will be some pharmaceutical and cleaning product packaging and some office wastes. These will be managed by:

- recycling where practical.
- collecting rubbish that cannot be recycled in skips with dispatch to off-farm waste facilities.
- collecting sharps in suitable containers with disposal through an appropriate facility.

7.11. Chemicals

Chemicals will be managed by:

- minimising chemical usage.
- storing, using and disposing of chemicals strictly in accordance with package directions or veterinary advice.
- storing only small quantities of chemicals will be kept on-farm at any time. This will include veterinary chemicals, disinfectants for cleaning the sheds, rodenticides and insect baits, and small amounts of pump fuel.

- storing chemicals indoors in locked areas with concrete floors.
- keeping veterinary chemicals requiring chilling in a refrigerator in a lockable area of the office.
- keeping spill containment equipment in or near chemical storage areas.
- keeping chemical usage records in accordance with the requirements of APIQ✓®.

7.12 Noise Management

Site staffing and work hours will be managed to minimise the likelihood of nuisance for neighbours.

- ensuring the piggery is suitably staffed at all times.
- operational activities will generally occur from 7 AM to 6 PM weekdays and 7 AM to 1 PM on weekends.
- there will be occasions when it may be necessary to operate outside these hours, for example, pigs may need to be loaded and transported in the early hours of the morning in very hot weather for welfare reasons. However, extraordinary work hours will only be used as a contingency to manage unusual events.
- Based on the design of the facilities sheds are positioned so noise is mitigated as the direction of the fan discharge is away from the closer receptor points.
- Refer separation distances Fig 2 &5

7.13 Landscape buffers

- the vegetative buffers shall be managed and maintained for the life of the development in accordance with the landscape plan approved and the requirements of the Environmental Management Plan (EMP)
- areas of the vegetative buffer shall be managed to control weeds.
- Vegetative buffer shall be inspected at regular intervals to assess health and consistency of the buffer
- Plants shall be replaced as required to maintain the vegetative buffer
- Refer Landscape Plan – Appendix 5

8. Risk Assessment

The risk assessment process typically involves:

- identifying hazards
- considering the level of consequence if the hazard were to occur.
- considering the likelihood of occurrence.
- evaluating the risk level.
- identifying practical controls that could be used to reduce risk.
- re-evaluating the risk level with the new controls in place.

In this case, the risks associated with the operation of this piggery were assessed and practical controls to reduce risk implemented. Consequently, the process adopted here considers the risk with those mitigations already in place.

8.1. Hazards

The hazards considered are:

- Housing: manure nutrients, odour and vermin
- spent bedding storage areas: manure nutrients, odour and vermin
- effluent treatment: effluent nutrients and odour
- effluent reuse: effluent nutrients and odour
- manure and compost reuse: manure nutrients, dust and odour
- mortalities composting: nutrients, odour and vermin
- traffic: noise and dust
- rubbish and other wastes: visual and vermin
- chemicals: water impacts

8.2. Consequences

The consequences were evaluated against the criteria in Table 1

8.3. Likelihood

The likelihood was evaluated against the criteria in Table 2

8.4. Risk Levels

Risk level was then determined for each hazard using the risk level matrix based and provided as Table 3.

8.4.1. Housing

Spills of manure nutrients (e.g. due to blocked channels / pipes) could have moderate environmental consequences. However, the likelihood is rare. The risk is low. No additional controls are needed.

For odour, the consequence is low – shed odour is unlikely to cause nuisance on its own. The likelihood is unlikely. The risk is low. No additional controls are needed.

Poor management within sheds could attract vermin. The consequences are minor. The likelihood is unlikely. The risk is low. No additional controls are needed

Table 1 – Consequences Ratings

Low	No or minimal environmental or public health impact.
Minor	Low environmental impact or potential for public health impacts. Examples may include: <ul style="list-style-type: none"> • effluent spill that does not leave the property boundary or enter a watercourse. • nuisance resulting in an isolated community complaint.
Moderate	Medium level of harm to the environment or public health over an extended time. Examples may include: <ul style="list-style-type: none"> • contained off-site environmental incident (e.g. effluent spill on road) • nuisance resulting in repeated community complaints from one incident
Major	Serious harm to the environment or public health. An environmental impact that is severe and likely to impact beyond the immediate site and remain a problem in the medium term. Examples may include: <ul style="list-style-type: none"> • significant effluent spill into a watercourse • nuisance resulting in ongoing community complaints
Severe	something that causes permanent or long term serious environmental harm, life threatening or long-term harm to public health. Examples may include: <ul style="list-style-type: none"> • significant volumes of effluent regularly entering a Ramsar wetland or potable water supply. • worker death resulting from untrained staff working in a confined space or hitting overhead power lines with machinery.

Table 2 – Likelihood Ratings

Likelihood rating	Similarity
Rare	Could happen but probably never will
Unlikely	Not likely to happen in normal circumstances
Possible	May happen at some time
Likely	Expected to happen at some time
Certain	Expected to happen regularly under normal circumstances

Table 3 – Risk Rating Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	Medium

Example: moderate consequence X possible likelihood = medium risk.

The colour-coded output of the risk rating matrix identifies the overall level of risk”:

- Low (green) – acceptable. The siting, design and management is acceptable. No corrective or preventative action is needed although further controls may be considered to further reduce risk if this can be done with little cost and effort.
- Medium (yellow) – at this risk level, additional controls should be considered to try to reduce the risk to low.
- High (orange) – the risk is unacceptable. Risk will need to be mitigated through the implementation of appropriate corrective and / or preventative actions.
- Extreme (red) – the risk is totally unacceptable. Immediate corrective and / or preventative action must be implemented which could include ceasing some site activities.

Risk level	Action
Extreme	Implement corrective and / or preventative actions immediately to lower the risk to an acceptable level, which could include ceasing some site activities.
High	Implement controls as a priority to reduce the level of risk.
Medium	Additional controls should be considered and implemented to reduce the level of risk.
Low	No additional controls are needed although controls could be implemented to further minimise risk, .

8.4.2. Effluent Treatment

Spilled or leached nutrients could have moderate environmental consequences. The spill frequency for the system is acceptable (1 in 10 years on average). The soils at the piggery site have a high clay content. However, construction details are designed to limit . The likelihood is low. The risk is low.

For odour, the consequence is moderate. The likelihood is unlikely most of the time but possible, particularly when the crust of solids drying in the SEPS is broken. The risk is medium. No additional controls are needed. However, any odour complaints should trigger an investigation of effluent system odour.

8.4.3. Effluent Reuse

Runoff or leaching of effluent nutrients could have moderate environmental consequences. Due to the sustainable management practices and buffers, the likelihood is unlikely. The risk is medium. Ongoing monitoring of the soils of reuse areas is recommended.

For odour, the consequence is minor. The likelihood is possible. The risk is medium. Any odour complaints should trigger an investigation of effluent reuse odour if the timing suggests this may be an issue.

8.4.4. Manure and Compost Reuse

Runoff or leaching of manure or compost nutrients could have moderate environmental consequences. Due to the sustainable management practices and buffers, the likelihood is unlikely. The risk is medium. Ongoing monitoring of the soils of reuse areas is recommended.

For odour, the consequence is minor. The likelihood is possible. The risk is medium. Any odour complaints should trigger an investigation of manure and / or compost reuse odour if the timing suggests this may be an issue.

8.4.5. Mortalities Composting

Runoff or leaching of manure nutrients could have moderate environmental consequences. Due to the standard of construction of the pad to be used for this purpose and the fact it is in the effluent system controlled-drainage area, likelihood is rare. The risk is low.

For odour, the consequence is minor. The likelihood is possible. The risk is medium. Any odour complaints should trigger an investigation of the mortalities composting area to make sure the bodies are well covered with a high carbon material.

Any odour from the mortalities composting area is likely to attract vermin and scavengers. The consequences are minor. The likelihood is possible. The risk is medium. Any sign of vermin or scavengers in the vicinity of the mortalities area should trigger an inspection to ensure adequate coverage of the carcasses. Baiting may also be used.

8.4.6. Traffic

Traffic could result in minor consequences, although this is unlikely. The risk is low. No additional controls are required.

8.4.7. Rubbish and Other Wastes

Poorly managed rubbish can look unsightly and create pest habitats, having minor consequences. The likelihood is rare. The risk is low. No additional controls are needed.

8.4.8. Chemicals

Spills from poorly stored, handled or used chemicals close to the piggery could have moderate environmental consequences. The likelihood is rare. The risk is low. No additional controls are required.

9. Contingency Situations and Plans

Environmental impacts could occur in the unlikely event of:

- excessive nutrient levels in soils of a reuse area.
- soil salinity or sodicity concerns.
- runoff of irrigated effluent.
- prevention of effluent pond spills.
- erosions.
- loss of off-site reuser.
- mass mortalities event.

Management of these events is detailed in the management plans provided in Appendices 3, 4, 5 and 7 of this EMP. A summary is provided below.

9.1. Excessive Levels of Nutrients

Excessive soil nutrient levels would be addressed by spelling the area from reuse for one or more cropping seasons. This would usually be possible due to the large area of land allocated for reuse. However, if this were not possible the effluent application rate would be reduced. Crops grown on the area during this time would be selected to strip the applicable nutrient or nutrients. For example, if nitrogen or phosphorus were excessive, grain and straw crops might be grown. If potassium was excessive, high yielding fodder crops might be grown. Double-cropping may be used to more quickly address the issue.

9.2. Excessive Soil Salinity and Sodicity

In the event of excessive salinity, the area might be spelled to allow for natural drainage of salts below the soil profile.

Soil ameliorants (lime or gypsum) could be used to displace sodium.

9.3. Measures to Prevent Foliar Damage

Foliar damage can result from saline effluent coming into contact with plant leaves. Plants vary in their sensitivity to salts, so more tolerant crops (e.g. most grain crops and forage crops) will be selectively grown. To reduce the risk of foliar damage, effluent will be irrigated earlier in the mornings where practical and at lower rates.

9.4. Runoff of Irrigated Effluent

Runoff of irrigated effluent is not expected due to the very low application rates and the irrigation method (spray). Nevertheless, stormwater runoff controls in the form of buffers will be provided.

9.5. Effluent Pond Spills

Management practices to prevent effluent storage overflows, could include:

- daily checks and management of effluent storage to ensure they always have capacity so there are not any overflows
- Ongoing planning of irrigation so effluent storage areas are emptied over summer/dry periods so that there is always capacity for storage in wetter periods

- irrigating effluent in advance of predicted significant rainfall events to maximise available storage capacity in the recycle dam.
- temporarily increasing the storage volume in the uncovered recycle dam.
- temporarily transferring effluent to other farm dams to avoid a spill.
- temporarily raising the bank on the recycle dam using sandbags or a similar method to increase the pond storage volume.
- temporarily holding effluent in the effluent pits to minimise inflows.
- assessing application of effluent at low rates during wet periods to avoid overflows.
- using a larger area for effluent reuse to increase the amount of irrigation and further reduce the pond spill frequency.
- various dams and contour banks on property operate as 'back-ups' to capture effluent on farm in unlikely event of effluent overflows.

9.6. Erosion

On paddocks with greater slope, there is an increased risk of erosion. To mitigate this, manure will be spread prior to cultivation and minimum tillage practices will be used to maintain soil structure while allowing for manure incorporation. Groundcover is the first defence against erosion, so groundcover will be maintained to the extent practicable.

9.7. Separation Distances

To protect amenity, reuse will not occur within 250 m of a neighbouring house.

9.8. Loss of Manure Recipient

If demand for manure dropped, or arrangements with recipients changed, Bonnie Doon has sufficient area to maintain continuous application of solids.

9.9. Mass Mortalities Event

A Mass Destruction Event Plan has been prepared to manage a mass mortalities event. Refer to Appendix 7 for details.

10. Performance Standards

To demonstrate environmentally sustainable operation, the following performance standards are specified:

- all complaints pertaining to the operation of the piggery including on and off-farm reuse areas are received are recorded as EPA requirements. Any complaints will be addressed in a timely manner
- there are no spills from the effluent treatment system.
- an EC of effluent in the recycle dam is considered a trigger for corrective action.
- soil test results for on-farm reuse areas indicate that nutrients are not excessive and the soils are suitable for crop production based on the indicators of sustainability in the National Environmental Guidelines for Indoor Piggeries – Siting and Design).
- the nitrate-nitrogen concentration in groundwater bores does not exceed 20 mg/L.
- details of the quantity of manure products provided to farmers for off-farm reuse are recorded.
- off-farm reusers are provided with a copy of the Duty of Care statement, this EMP and analysis results for the manure products they are receiving.

11. Environmental Monitoring & Record Keeping

PIC Australasia – Bonnie Doon shall operate in accordance with the EPA Licence 21734 granted to PIC Australasia to operate.

As part of its duty of care, management of PIC Australasia Pty Ltd proposes to assess and monitor:

- complaints
- effluent quality
- available water storage capacity in wet weather pond
- effluent and manure solids composition
- effluent and manure solids reuse
- soils of reuse areas

11.1. Complaints

Since PIC Australasia Pty Ltd aims to fit in with the local community, any complaints about the piggery will be taken very seriously. The piggery manager will be responsible for ongoing investigation, action and communications with the complainant. In the event of a complaint, the following will be recorded:

- date received
- details of complaint and complainant
- name of person who took the call
- response time and date and actions taken
- details of follow-up with complainant

All complaints received by staff will be immediately reported to the piggery manager. He will promptly initiate an investigation into possible causes. He may also wish to collect more information from the complainant. This will be done in a positive way, with a clear emphasis on investigating and resolving the issue. He will initiate corrective and / or preventative action and will confirm that the issue has been resolved through follow communication with the complainant. Staff training and SOP revision will be undertaken as appropriate to prevent a reoccurrence of the issue.

Details of complaints, findings of investigations and follow up actions will be promptly provided to EPA upon request.

11.2. Available Effluent Storage Capacity

- The storage depth in the recycle dam will be checked and recorded in the environmental data record monthly.
- Conditions will be considered suitable for effluent irrigation:
 - when the crops or pastures on the available land need nutrients.
 - when the available land is dry enough to absorb irrigation without runoff occurring.
 - when significant rain is not imminent and it is not heavily overcast or raining.
 - when wind is not drifting towards neighbours within 500 m of the reuse area.

Details of any spills from the wet weather pond, including the date/s and estimated volume, will be reported to EPA.

11.3. Composition of Effluent and Manure Solids

Effluent will be tested prior to the main irrigation event. The parameters for testing shall be as per EPA License requirements Appendix 4

11.4. Composition of Manure

SEPS solids and spent bedding will each be tested annually for the parameters recommended in the National Environmental Guidelines for Indoor Piggeries – Siting and Design (Tucker et al. 2025).

- dry matter content
- pH
- total nitrogen or TKN
- ammonium nitrogen
- nitrate nitrogen
- total phosphorus
- available phosphorus
- potassium
- organic carbon
- EC
- sodium

For each product (SEPS solids, spent bedding) multiple samples will be collected from within the stockpile. These will be bulked and mixed for testing.

11.5. On-Farm Reuse

The following records will be kept of on-farm reuse:

- the date/s reuse occurs
- the type of material that was reused
- quantity of material spread
- paddocks spread

For off-farm reuse, the following records will be kept:

- the date/s manure solids were supplied to the reuser
- the name of the recipient
- the type of manure solids that were provided
- quantity supplied
- dates that manure solids analysis results and duty of care statement were provided to reuse

11.6. Soils of Reuse Areas

The soils of one paddock that has been spread with spent bedding and one paddock that has been spread with SEPS solids (if applicable) in any year will be tested twice in the year after application.

Samples will be collected from the topsoil (0-10 cm) and the base of the root zone (e.g. 50-60 cm).

11.7. Groundwater

Groundwater quality will be monitored at six monthly intervals for:

- electrical conductivity (EC),
- nitrate-nitrogen,
- pH, and
- standing water levels.

Refer to EPA Licence for details.

11.8. Surface Water

In the event of effluent runoff or a pond spill suspected of entering waterways, samples of runoff (if feasible) and water upstream and downstream of the entry point to a waterway would be collected and tested for:

- pH
- EC (dS/m)
- thermotolerant coliforms (cfu/100 mL)
- BOD5 (mg/L)
- total nitrogen (mg/L)
- total Kjeldahl nitrogen (mg/L)
- ammonia-nitrogen (mg/L)
- total phosphorus (mg/L)
- available phosphorus (mg/L)

Results for runoff samples and upstream and downstream results would be compared. Any significant reductions in water quality would trigger further investigation and potentially corrective and / or preventative action.

11.9. Management of Monitoring Records

The piggery manager is responsible for ensuring monitoring occurs correctly and at the specified time intervals. He is also responsible for reviewing monitoring results as they come in (periodic measurements) and at least monthly (for ongoing measurements) to identify any trends or concerns. The piggery manager will initiate an investigation, which may include further sampling and analysis, where there are concerns with the results. He will be fully responsible for initiating corrective and / or preventative measures as needed.

The piggery manager will develop a SOP including environmental monitoring schedules and checklists for sampling, interpretation and follow-up actions to ensure these occur in a timely manner.

All environmental monitoring records will be kept in the piggery office for a period of at least four years.

12. Review, Reporting and Updating

This EMP is a dynamic document that is integrated into the day-to-day operations of the piggery. It provides for annual review of assessment and monitoring data, and overall environmental performance.

The environmental performance of the system will be reviewed continually throughout the year. However, a full review of the system and this EMP will also be undertaken annually, with the aim of identifying and addressing any issues (through preventative or mitigation actions) and opportunities for improvement. This EMP will be updated to reflect identified opportunities for improvement.

Off-site reusers will be consulted at least annually to ensure they are aware of their environmental obligations and to identify if more support is needed.

Monitoring records will be made available to EPA upon request.

13. References

Tucker RW, 2018, National Environmental Guidelines for Indoor Piggeries (NEGIP), Australian Pork 2018 Limited, Canberra