DEVELOPMENT APPLICATION

Small Scale Rotational Outdoor Piggery

Dungog Shire Council

Rod & Belinda Blackman

'Alta Via' 3565 Allyn River Road, Upper Alllyn NSW 2311

Post – 8 Janice Street, Wallabi Point NSW 2430

0422-917160

altaviafarming@gmail.com

CONTENTS

INTRODUCTION

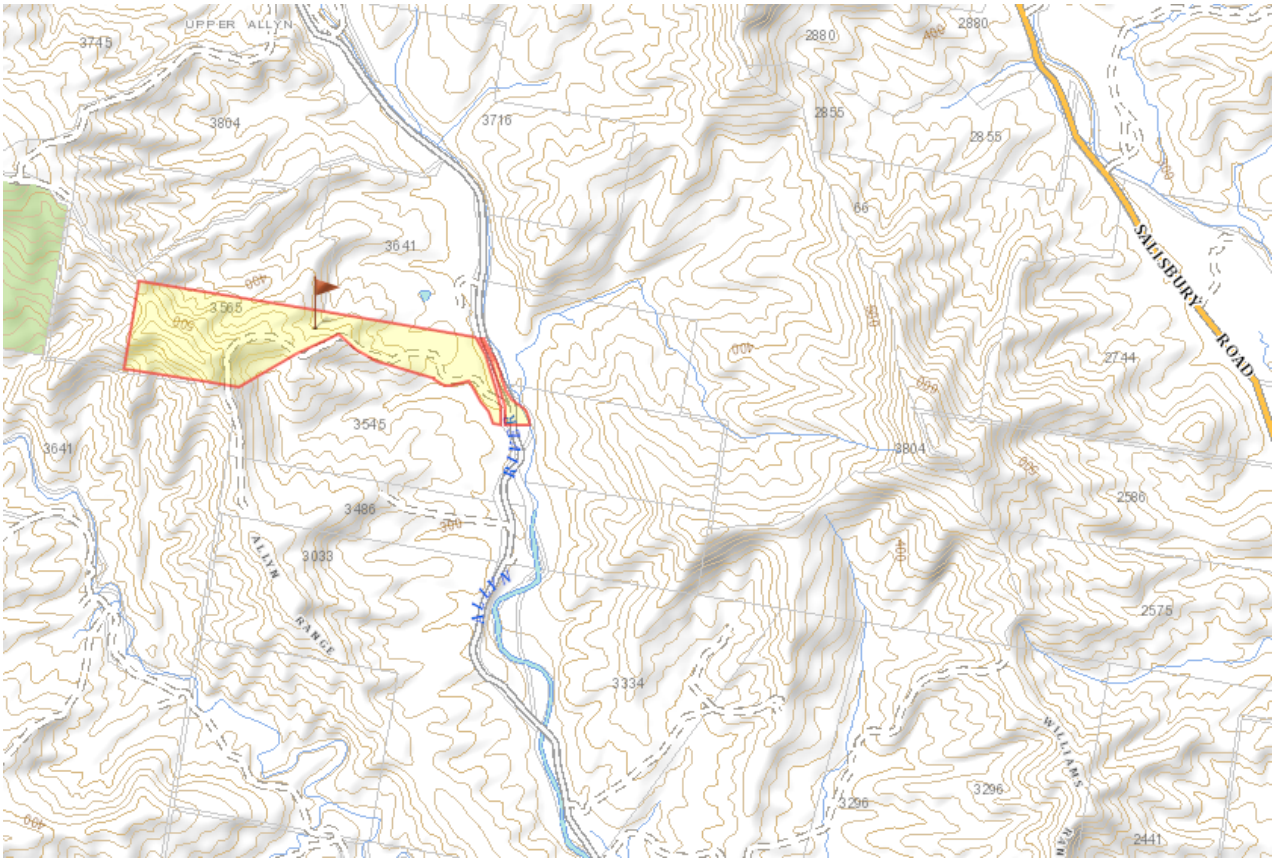
Proposal

To establish a small scale rotational outdoor (pasture raised) pig farm operation, of approximately 13 breeding sows (varying between 10 – 15 breeding sows but not more than 20 breeding sows), in conjunctionwith small crops and orchards.

The proposed operation would be located on an approximate 18-30 hectare portion of land within 3565 Allyn River Road, Upper Allyn (60 hectares), on arable hillside and bushland of the property. This land is owned by the applicants and purchased for agricultural purposes in keeping with the intention of the zoning (RU1).

The mission of the operation is to produce, process and deliver, environmentally sustainable, ethically raised, pasture pigs and the highest quality pork products. The intended market is locally and beyond, purchasers considerate of the source of their animal-based protein, and niche smallgoods.

The proposal aligns with Council's vision contributing to the vibrant, united community with a sustainable economy. The proposal promotes rural character and creates diverse farming opportunities for the region. The lifestyle advantages in this particular location will enhance the community collaboration to achieve a connected farming culture.



Executive Summary

The objective of this farm is to nurture the pigs, gradually improve the paddocks and care for the wider environment. The property was formerly accredited with Australian Certified Organic (ACO) and land care management principles remain and will continue. Due to factors outside the applicants control it is unlikely all requirements for full certification will be achieved (lack of availability of ACO certified slaughter facilities) however an organic ethos is paramount to the plan.

During normal operation, the free-range pig produces comparable impact to a cattle, sheep, or free-range poultry agribusiness.

Despite public perceptions to the contrary, the noise, dust and odour generated by a free-range pig farm is minimal. In fact, a recent two-year study by the University of Queensland found odour was very low compared to mean emissions from similar intensive livestock sources. Dust concentrations were very low with many of the peak concentrations not directly associated with pigs (for example machinery movements), and noise levels were akin to a quiet suburban street – Appendix 3.

It is emphasised that the poor reputation of "piggeries" is largely because of people's experience with intensive, indoor facilities or badly managed, outdoor facilities where pigs are penned in a confined yard and not rotated on pasture.

Effluent on the paddock will be of lower volume than the equivalent cattle grazing enterprise.

Dust, fumes, spray, drift, light and noise will have a predictably lower impact on adjoining land uses than many common alternative agricultural pursuits – a market garden for instance requires regular spreading of fertilisers and often the spraying of harmful chemicals.

This free-range piggery will conform to the definition of a rotational outdoor piggery as found at 5.1 page 12 of the National Environmental Guidelines for Rotational Outdoor Piggeries, 2 0 1 3 (NEGROP) which states:

"In a rotational outdoor piggery, the pigs are kept in paddocks, sometimes with open deep litter shelters or basic huts. The paddocks are rotated with a crop/forage/pasture phase. During the pig phase, the pigs are supplied with prepared feed, but can also forage. During the crop/forage/pasture phase, plant material is grown and harvested from the area to remove the nutrients deposited in pig manure during the pig phase."

Humane Choice True Free Range Standards – Pigs (2011), will be our preferred quality assurance program, states on page 1:

"The purpose of the Humane Choice True Free Range (Humane Choice) program is to

provide a credible, monitored and verified standard for the humane production of wholesome free-range pork while caring for the environment in which we farm and offering assurance to consumers that these certified products meet these standards."

The Humane Choice Standards have been developed in conjunction with the free-range pork industry to provide these standards for the rearing, handling, transport, and slaughter of pigs for use in the "Humane Choice" program.

Humane Choice also acknowledges existing state and statutory requirements that are in place for pork producers in general. We have incorporated the necessary requirements into our Standard so that free range producers are able to meet the specifications for Food Safety, Risk Management, Herd Health and Animal Welfare expected of a responsible pork producer.

FARM MANAGEMENT

Farm design and layout

The free-range pig farm proposal would be located at 3565 Allyn River Road, arable hillside, and bushland of the property.

This location was chosen due its suitability for pigs (with excellent shelter, food sources, scrub land and excellent maintenance of strong ground cover), but also due to the ability to minimise any impact on neighbouring properties, visually and otherwise.

In our plan, paddocks for farrowing (sows with piglets) and breeding (boar and sows together) can be the noisiest and are therefore located within good natural buffer zones from neighbouring homes (there are only two, both well protected). Southern neigbours (Damien & Sandy Bynen) are > 650m from nearest operation point. Northern neigbours (Jane Caro & Ralph Dunning) > 250m exclusion zone and closest semi-permanent infrastructure (small stock yards) > 600m away. Neighours have been consulted and are supportive of the application.

The proposed operation also incorporates a further 20m buffer from boundary fences (internal electric) in addition to the perimeter pest resistant netting.

Stocking densities & breeding

All our pigs will have free access to paddocks during their entire lifetime.

We intend to have a maximum stocking rate of 15 breeding sows, and two boars – with one or two sows put with a boar each month for insemination. Once the pig farm is up and running, this would equate to approximately 12 to 18 litters a year, or, for business purposes – one litter to take to market each month.

According to the Code of Accepted Farming Practice for the Welfare of Pigs, the maximum stocking rates for dry sows is 20-25 sows/ha and lactating sows with piglets 9-14 sows/ha – see Appendix 1. Although the Code does not include figures for weaners to finishers, it is recommended that the following stocking densities be adopted: for sows kept in groups is 300 to 400 m² per sow, for sows kept individually 400-500 m² per sow and around 50 m² per growing pig (up to 30 kg)

The proposed land area of the pig farm is approximately 18-30 hectares. Based on the above information regarding breeding cycles and our proposed stocking densities, the carrying capacity of this pig farm falls generously within this guideline and allows for multiple paddock rotation and rest periods.

Feeding & feed storage

The pig's primary feed source will be from foraging and grazing on improved pasture or crops but in addition to this source, all pigs, regardless of age, will be fed daily on a prepared pig feed to ensure adequate growth, development, and wellbeing.

All pigs will be checked daily to ensure that their health and welfare is maintained and any indications of sickness can be swiftly addressed.

All feeding equipment will be kept clean and in good repair and any automatic / self-feeder equipment will be checked daily to ensure free flow of feed. Feeders can be relocated to different areas within the paddock to minimise impact on soils and pasture surrounding the feeders.

Feed storage facilities – existing sheds – will be equipped with sealed storage vessels to eliminate contamination by vermin, insects, and other pests.

Housing

Housing will be provided in the form of movable hutches. Building materials used will be; hay/straw grown on property, timber milled on property, corrugated iron (in innocuous shades of grey to fit in with local environment), and shade cloth (again in innocuous colouring). Given the natural protection provided by the property the smaller moveable farrowing hutches (approx. 6m2) are likely to be the only housing infrastructure ever seen by neighbours.

The minimum space requirements for shelter accommodation as outlined in the Code of Accepted Farming Practice for the Welfare of Pigs - Appendix 1, will be used. Dry sows in groups require 1.2-1.5 m^2/sow, lactating sows with piglets need 4-6 m^2/sow and boars 2 m^2/boar. There will be sufficient shelters provided to ensure that all pigs will be able to occupy them and lie down at the same time and they will be free to go in and out as they require. These shelters will provide protection against the sun, wind and rain while the paddocks contain trees and shrubs for windbreaks and shade.

Movable hutches will be cleaned regularly to minimize disease and to avoid attracting insects and vermin. Soiled bedding will be removed and replaced with a fresh supply. The spent bedding will be composted for use as organic fertilizer on other areas of the farm.

Water supply

Moveable troughs and water tanks or plumbed lines will be utilized to minimize soil impact on watering locations. Water is supplied by water tank, spring, dam and river. The troughs will be checked daily to ensure that there are no blockages or leakages and will be cleaned and flushed out regularly.

Drinking facilities are separated from feeding areas to enable all pigs to access both feed and water with minimal aggression, and to lessen soil load impact.

Fencing

Our fencing will be constructed to prevent any animal escaping, or predatory animals entering, from its paddock. External fences will consist of well strained hinge joint mesh 8|30|90 (or existing deer mesh) set low to the ground with a barbed wire firmly strained against the bottom wire to prevent the pigs 'snouting'. This form of fencing has proven to be effective on existing free-range production units in preventing pigs from roaming. Additionally, buffer and/or rotation management paddocks will be secured with two strands of electric wire/tape. This method is similarly effective with free-range herds.

Quiet handling

Our pigs will be handled quietly and with minimal stress and transported in accordance with the Australian Standards and Guidelines for the Welfare of Animals – Land Transport of Livestock. We will also gain the required Unit of Competency – Move and Handle Pigs through a Registered Training Organisation as part of our commitment to ongoing training in the pork industry.

Herd health

We have established a Herd Health program to manage the risk of disease to our pigs and have in place a documented management program that identifies potential health and bio-security risks to pigs and specifies actions to prevent or minimize those risks.

Record keeping

Accurate and up to date records will be kept of our production herd and progeny that will readily reflect the number of pigs on our property at any given time. This will be a particularly important part of our operation given our intention to provide the highest level of traceability for our products.

Training

We, and any staff we may employ, will undergo the necessary training to meet the requirements for competency as required by the relevant Codes of Practice.

In addition, Rod Blackman has sufficiently completed a Statement of Attainment – Introduction to Free Range Pig Farming, Pasture Raised on Open Fields – Appendix 2. Further, he comes from a multi-generation farming family.

ENVIRONMENTAL MANAGEMENT

Paddock Rotations

This free-range piggery will provide free access to paddocks for all classes of pigs. The pigs will be kept in fenced paddocks and shelter will be provided by movable hutches and available vegetation, shrubs and trees.

Ground cover of the paddocks will be carefully monitored as it is paramount to good land management and pig welfare. When the pigs have vacated a paddock, it will either be rested and allowed to regrow or undergo a cut and carry cropping phase depending on the nutrient levels in the soil. Paddock rotations will be managed to prevent nutrient build up in our soils, to prevent overgrazing of pasture and aid in the control of parasite infestations in our pigs.

In an effort to minimize possible soil compaction by the pigs, shelter containing deep litter bedding will be made available to the pigs during wet weather when the soil is most vulnerable or they will be moved to alternative areas. The strategic placement of feeders and waters and the relocation of these units on a regular basis to different areas of the paddocks, will ensure that there are no single areas of overuse, that could lead to erosion or land degradation.

Pastures will also be harrowed to spread manure evenly and to help incorporate it into the top layer of the soil.

If after all due care soil compaction should occur, we plan to renovate the paddocks with ripping, planting of pasture / fodder crops and balancing of soil nutrients eg, lime.

Nutrient recycling

Fodder or crops produced during the cropping phase of paddocks will be sold or used on farm as either bedding for the pigs or as a feed source.

Spent bedding will be composted and used as organic fertilizer on areas of land not used by the pigs and when nutrition in the soil is sufficient, we plan to grow and harvest crops on that land. This will also have the effect of removing nutrient from such land, to ensure sustainable nutrient balance and regenerative farming.

Spent bedding will be collected and composted onsite on compacted earth and an earth/hay wall bunding to prevent the escape of run-off. Once fully composted and emitting no offensive odour, it will be spread over the paddocks to be cropped. Composite sites will be rotated, again to continue regenerative farming practice and ecological management.

Topography

Our site is generally undulating with some steep portions of land (>10%) to the west and southwest of the property and will not be included in the operation. The undulating nature of the intended use area is desirable to the business, as along with considered water, feed, shelter placement areas, tend to produce higher muscle ratios on pigs. The applicants also recognise the significant natural beauty, cleanliness of rivers and local flora and fauna in the area and remain acutely sensitive to any potential adverse impact. A densely wooded area on the southwest corner of the property measuring approximately 20 hectares has been sanctioned voluntarily by the applicants as a conservation zone.

Odour, waste and effluent management

Pig odour is most prevalent from a point source where effluent is concentrated, and in the case of an intensive piggery, the predominant contributor to odour would be effluent ponds and indoor housing of pigs in large numbers in close proximity to one another.

In the case of this free-range proposal there will be no such odour from these sources as they simply will not exist.

Our proposed vegetative buffers, farm management plan and generously low stocking densities will be sufficient to mitigate against any negative impacts of grazing animals. Manure waste from the pigs is deposited directly onto paddocks where it is moved below the soil surface by the action of dung beetles, and plant cover will remain. We strive to manage these environmental workers with the judicious use of chemicals, if any, and medications.

In shelter areas, manure is deposited onto bedding of straw/hay and mixed by the action of trampling pig feet. The eastern portion of the property is already yielding quality hay/bedding, providing ample small square bales for localised use.

Spent bedding will be composted (reducing odour) and used as organic fertilizer on areas of

land not used by the pigs. When nutrition in the soil is sufficient, we plan to grow crops or feed as per regenerative plan. This will also have the effect of removing nutrient from such land as above.

We are working towards a holistic approach to pig farming by incorporating our pigs into a sustainable farming system where nutrient removal by crop harvest and/or grazing is equal to the addition of nutrients left by the pigs.

The effluent / manure produced by our pigs will not be treated as waste as such but will be treated as a valuable resource that will improve our land and allow us to grow crops or feed and bedding for our pigs. We intend to employ holistic management techniques on our farm and incorporate the pigs as an integral part of a sustainable farming system.

We have compared the effluent volume produced by a standard size growing pig compared to an average 636 - 650 kg dairy cow. The average pig produces 90 kg VS (volatile solids) per annum compared to the cow which produces 2,321.4 kg per annum. Similar calculations were obtained for relative volatile solid loads from the following source[2].

Therefore, running 100 grower pigs produces the same amount of volatile solids as running 4 - 5 head of dairy cattle. Yet, the manure from the free-range pig farm will be carefully managed, composted, and evenly distributed. There would be no requirements for effluent management for 4 – 5 dairy cattle on the same size property.

All effluent will be deposited on rotated paddocks to prevent buildup of soil nutrient or odour.

The waste from our proposed piggery is not in a mass storage system but is deposited in the paddocks by the pigs themselves. As pigs may favour areas for dunging, we will avoid the possible buildup of nutrient in the one area by planned paddock rotations, size/shape alteration, and the strategic placement of feeders and water stations thus ensuring that manure is spread evenly throughout the paddocks.

[2] Reference: www2.dpi.qld.gov.au/environment/5166.html

Composting

The composting process begins while the litter is in the shelter and hutches where it is continually mixed by the action and trampling of pigs. The litter's liquid absorption ability and capacity to reduce odour is routinely monitored and it is removed from the shelters when it demonstrates signs of high moisture content or developing odour.

Essential to the compositing process is the correct balance of carbon, nitrogen, water and air. Deep litter with a carbon to nitrogen ratio greater than 20:1 will effectively absorb nitrogen (in the form of animal manure and odour), as long as moisture levels are controlled (by covering if necessary in excessively wet weather) and the compost is aerated. Hardwood saw dust has a carbon to nitrogen ration of 200-700:1 so it has a very high capacity to consume nitrogen. Healthy deep litter and compost is un-offensive and smells "earthy".

Spent litter (early compost) is removed from the shelters to composting area. It is turned when necessary to aerate which rejuvenates the composting process and stimulates the activity of beneficial microbes.

Using compost for pasture improvement also reduces the need for artificial chemical fertilisers. Most chemical fertilisers release their nutrients over 2 months, while the growing period for most pastures is six months. Soils high in organic matter slowly release nutrients over the whole growing period and possibly years beyond without the risk of damage that occurs with fast-acting soluble chemical fertilisers.

Pigs are also very efficient in removing insect pests and problem weeds from the soil and pasture and will help to reduce our need for chemical herbicides and pesticides.

The benefits to farming system will be:

- Improved soil structure
- Improved rainfall infiltration
- Improved water-holding capacity of soil
- Improved soil fertility through increased exchange capacity and nutrient retention
- Reduced erosion rates
- Increased plant yields

Noise

Noise will not impact on any neighbours due to the distance between farms, vegetative and implemented buffer zones.

Most noise occurs at feeding time when young animals are squealing for feed, and when breeding. As such, we intend to locate the farrowing and boar's paddocks at locations with the best natural and implemented buffers. Regardless, the noise produced is nominal, particularly compared to a typical rambunctious weaning cattle herd, common in the region.

Further, we intend to minimize such noise by adlib feeding of the pigs in self feeders in the paddock thereby eliminating the noise made by anxious and hungry pigs.

At other times, noise levels will be consistent with normal animal behaviour that should be reasonably expected from any agricultural enterprise on any farm, as outlined in a recent study by the University of Queensland, which found odour was very low compared to mean emissions from similar intensive livestock sources; dust concentrations were very low with many of the peak concentrations not directly associated with pigs (but for example machinery movements); and noise levels were similar to a quiet suburban street – see Appendix 5.

Water management

As a free-range production unit does not require large amounts of water for cleaning of sheds and flushing of effluent systems, we will not have wastewater. Our water use is limited to stock needs, minimal cleaning, and maintenance of wallows.

During periods of wet weather and increased stormwater runoff, existing buffers and vegetative filter strips would provide nutrient filtering and slow down the movement of water.

There should be no impact on surface water as our free-range piggery is not classed as a direct discharge industry and our by-products will be used on our paddocks. Should we experience exceptional climatic conditions, existing buffers, vegetative and implemented filter strips would safeguard surface water. Pasture acts as a filter for rainwater and can be managed by ensuring good paddock rotation and keeping grassed corridors across any slope. This will also ensure access with machinery during wet weather.

The maintenance of ground cover is very important for a free-range piggery. Ground cover will slow the movement of water, provide additional drainage, and help prevent damage to wet soils. Ground cover also acts as an insulator, keeping the ground cooler in hot weather. A key feature of the land on this property is its ability to sustain strong rooted cover grasses and shrubs.

Further, specifically identified 'watercourse exclusion/management' areas have been identified as per 'Farm design and layout'. These areas contain either steeper gullies or are

contour banks for dams. Pigs will not be run in these areas and locked out with exclusionary fencing.

As we are classed as a rotational outdoor piggery, problems which may be encountered by indoor piggeries such as inadequate sealing of flooring, drains, ponds or by-product storage areas, will not impact on groundwater quality. Further, there are no bores on our property and our soils are of clay structure.

Flies and fly breeding

The composting system described above, and the maintenance of our paddocks will prevent unusual levels of fly breeding.

Carcass management

The likelihood of having to dispose of carcasses of mature pigs is minimal on such a small operation. Any deaths are likely to be newborn piglets laid on at birth. Carcasses will be disposed of by composting which is an environmentally acceptable method and has the advantage of producing a soil amendment. Guidelines for this method are provided in the NEGROP and it is noted that this compost should not leave the farm.

Carcasses will be disposed of immediately upon discovery.

Bio-security

As this is a relatively small piggery an unlikely event of mass mortality would be easily managed. Adequate farm machinery (excavator & tractor) are on property and could expeditiously manage a mass composting event.

Bio-security risks will be managed in the following manner:

- A register of all visitors to the piggery will be maintained. The register will include visitor name, address, contact details and the date.
- Visitors will not be permitted free access to the areas of the property containing pigs.
- Unauthorized vehicles will not have free access to areas in the vicinity of pigs.
- Fencing for pigs will prevent the animals from straying.
- Fencing shall be designed to exclude feral pigs.
- Brought in pigs present a risk to herd health. New arrivals must be quarantined for a period of 30-60 days at a distance of at least 100 metres.
- Paddocks must be checked daily, and any sick or dead animals removed promptly.

Chemical storage and handling

We aim to use minimal chemicals and medications in our farming system. Any chemicals are to be stored and handled correctly as per Material Safety Data Sheets and OHS Codes of Practice. A Chemical Register and record of all chemical use or medications administered is kept. This is particularly relevant to our operation which aims to be as close to ACO input guidelines as possible.

Pigs will not be able to access areas of the farm where they may encounter any contaminants.

Vehicle access, traffic volumes and delivery of feed

3565 Allyn River Road has direct access to a public road. A small farm vehicle (e.g. 4 x 4 ute) and box/stock trailer will be used to transport pigs to market approximately once a month. Similarly, backloading with feed will be the preferred transport method. All loading and unloading of feed and animals will only be carried out on property. Given the small size of the operation the effect on traffic volume or type is nominal. There is no other regular traffic to and from the farm.

Visual amenity

Given the topography and natural vegetative buffers there will be nominal visual impact for the proposal. Small transportable farrowing shelters will be the only visual impact to our northern neigbours and even so only rarely. The size and type of these structures is akin to a galvanized feeder commonly seen on cattle grazing properties, as we can see on our neighbours.

Allyn River drinking water catchment consideration – Dungog LEP 2014 – 6.5

The applicant recognizes the property falls withing the Allyn River drinking water catchment. 3565 Allyn River Road has approximately 500m of frontage to that river and is the eastern boundary of the property. Only a very small portion of the property is adjacent to the river before the significant barrier of Allyn River Road splits the holding. The operation sits further west, protected by a thick vegetation strip then 'Alta Via' house yard. Contamination of Allyn River via this most direct route of protective features is nigh on impossible given the topography and environmental management plan as above.

Gullies running north of the operation are heavily vegetated, are > 1000m away and have

multiple farm dam barriers prior to any ability to reach the Allyn River. As such, the Allyn River remains protected.

Gullies to the south of the operation are entirely unaffected given the lay of the land, size and density of vegetation in the barrier.

Given the organic ethos of the applicants, chemical usage and storage will be confined to veterinarian products required and necessary for the welfare of the pigs.

Additional matters relative to 'Intensive livestock agriculture' Dungog LEP 2014 – 5.18

The proposal is not within 3 km of another pig farm.

CONCLUSION

This plan is our formal commitment that all reasonable and practical efforts will be made to operate our proposed piggery in an environmentally sustainable manner.

This will be undertaken through ongoing monitoring of our piggery operations, design and management, incorporating any changes in regulatory requirements and changes in environmental risks.

APPENDIX

Appendix 1 – Free Range Pig recommended stocking rates, Model Code of Practice for the Welfare of Animals – Pigs, CSIRO

3. Recommended practice for outdoor pigs

3.1 Space allowances for outdoor systems

Table 7. Maximum stocking rate recommendations in paddocks

Dry sows	20–25 sows/ha
Lactating sows with piglets	9–14 sows/ha

Feeding facilities are included in this allowance.

Guidelines

The following information is common practice:

Sows kept in groups 300–400 m^2 per sow

Sows kept in individual paddocks 400–500 m^2 per sow

3.2 Space allowances for shelter accommodation

Table 8. Minimum space allowance recommendation for shelter accommodation

Dry sows in groups	1.2–1.5 m^2/sow
Lactating sows with piglets	4–6 m^2/sow
Boars	2 m^2/boar

Appendix 2 – Introduction to Pasture Raised Pigs

PROOF – PASTURE RAISED ON OPEN FIELDS

IS IT FREE RANGE? ASK FOR PROOF
PASTURE RAISED ON OPEN FIELDS

STATEMENT OF ATTAINMENT

Rod Blackman

Has successfully completed the requirements for

INTRODUCTION TO FREE RANGE PIG FARMING

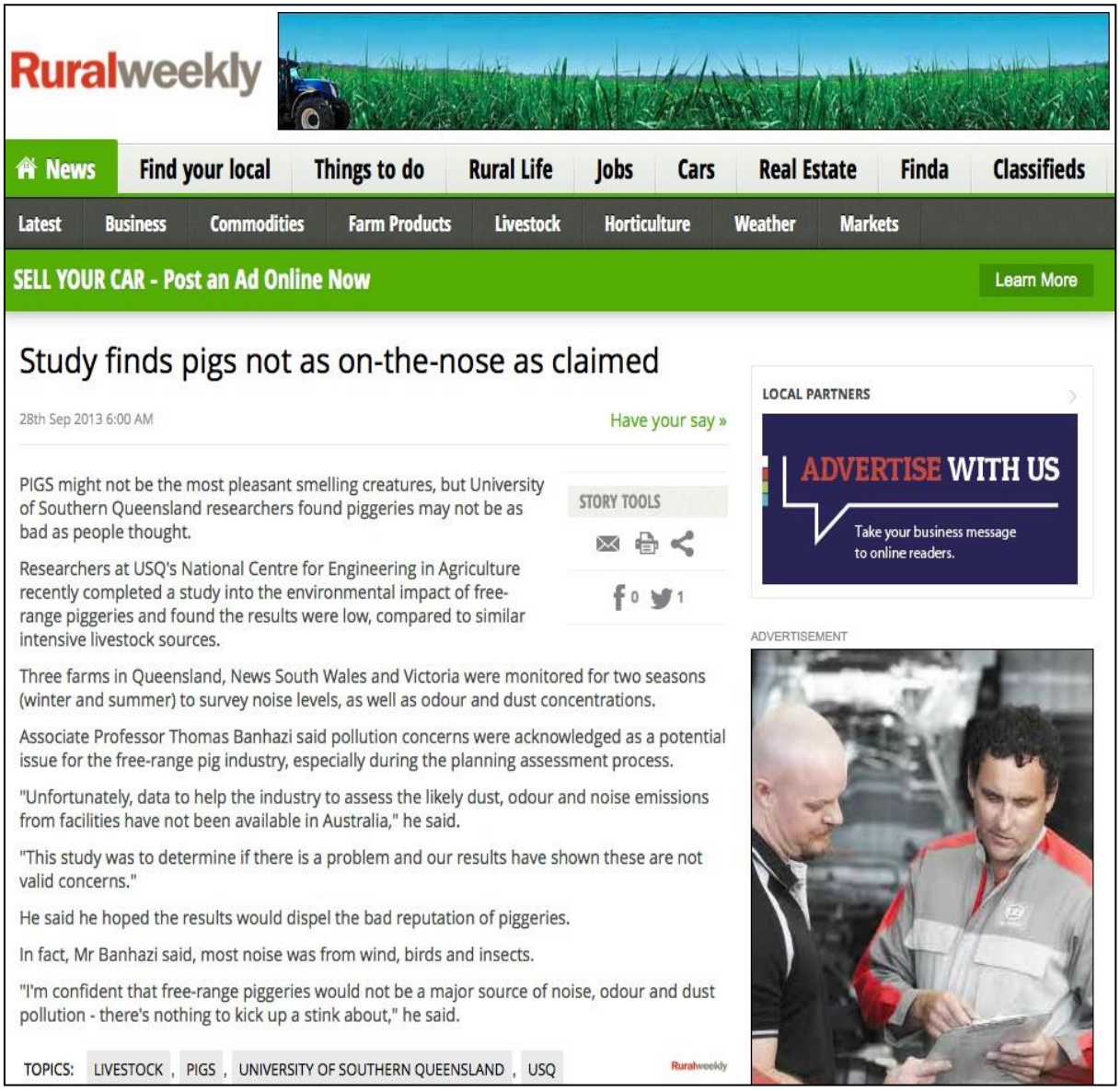
GRADUATE
SCHOOL OF HUMANE FARM MANAGEMENT

Certificate No. 50761936

Date Issued: 25th October 2019

Lee McCosker
Trainer and Assessor
PROOF – Pasture Raised On Open Fields
PO Box 171
Tugun QLD 4224
Ph:0756591429

Appendix 3 - "Study finds pigs not as on-the-nose as claimed", Rural Weekly, 28th September 2013



Ruralweekly

News | Find your local | Things to do | Rural Life | Jobs | Cars | Real Estate | Finda | Classifieds

Latest | Business | Commodities | Farm Products | Livestock | Horticulture | Weather | Markets

SELL YOUR CAR - Post an Ad Online Now — Learn More

Study finds pigs not as on-the-nose as claimed

28th Sep 2013 6:00 AM — Have your say »

PIGS might not be the most pleasant smelling creatures, but University of Southern Queensland researchers found piggeries may not be as bad as people thought.

Researchers at USQ's National Centre for Engineering in Agriculture recently completed a study into the environmental impact of free-range piggeries and found the results were low, compared to similar intensive livestock sources.

Three farms in Queensland, News South Wales and Victoria were monitored for two seasons (winter and summer) to survey noise levels, as well as odour and dust concentrations.

Associate Professor Thomas Banhazi said pollution concerns were acknowledged as a potential issue for the free-range pig industry, especially during the planning assessment process.

"Unfortunately, data to help the industry to assess the likely dust, odour and noise emissions from facilities have not been available in Australia," he said.

"This study was to determine if there is a problem and our results have shown these are not valid concerns."

He said he hoped the results would dispel the bad reputation of piggeries.

In fact, Mr Banhazi said, most noise was from wind, birds and insects.

"I'm confident that free-range piggeries would not be a major source of noise, odour and dust pollution - there's nothing to kick up a stink about," he said.

STORY TOOLS

LOCAL PARTNERS

ADVERTISE WITH US
Take your business message to online readers.

ADVERTISEMENT

TOPICS: LIVESTOCK , PIGS , UNIVERSITY OF SOUTHERN QUEENSLAND , USQ

Ruralweekly

REFERENCES

(i) DESIGNING FILTER STRIPS TO TRAP SEDIMENT AND ATTACHED NUTRIENT. RIVER AND RIPARIAN LAND MANAGEMENT TECHNICAL GUIDELINE NUMBER 1, MAY 2001.

By Ian Prosser and Linda Karssies, CSIRO Land & Water http://lwa.gov.au/files/products/river-landscapes/pr010328/pr010328.pdf

(ii) DRAFT DISCUSSION DOCUMENT; INTENSIVE LIVESTOCK - RELATIVE POLLUTANT LOADS

By Ian Kruger, Agricultural Engineer (Intensive Livestock) - 17 October, 1997. For NSW DPI, Dept Agriculture.

(iii) FEEDLOT WASTE MANAGEMENT SERIES: MANURE PRODUCTION DATA,

Department of Employment, Economic Development and Innovation, Queensland Primary Industries and Fisheries. http://www2.dpi.qld.gov.au/environment/5166.html

(iv) NSW DPI PRIME FACT 68. DEEP-LITTER HOUSING FOR PIGS,

Ian Kruger Environmental Engineer, Graeme Taylor and Greg Roese Livestock Officers for Pigs Intensive Industries Development, Tamworth, Hugh Payne Senior Technical Officer. For NSW Department of Primary Industries.
http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0020/58403/Deep_litte r_housing_for_pigs_-_Primefact_68-final.pdf

(v) TECHNICAL NOTES: ASSESSMENT AND MANAGEMENT OF ODOUR FROM STATIONARY SOURCES IN NSW. November 2006.

Department of Environment and Conservation NSW.
http://www.environment.nsw.gov.au/resources/air/20060441notes.pdf