A newsletter for
pork producers

PigBytes

Issue 20 January 2014

In this issue

Hot weather alert – dangerous conditions for pig transport!

Trish Holyoake, DEPI Vic

Hot weather and high humidity are deadly to pigs because they lack functioning sweat glands.

All stakeholders (farmers, drivers, transporting companies, processors, livestock agents) must be aware of, and adhere to, the relevant state legislation regarding transporting animals in hot weather.

This includes the Australian Animal Standards and Guidelines for Land Transport of Livestock (2012) and the Prevention of Cruelty to Animals Act POCTA (1986). Welfare codes and legislation are available on the Department of Environment and Primary Industries website.

In Victoria, under POCTA, loading a pig in extreme hot weather where suffering results can be deemed an act of cruelty, with associated penalties.

If that pig dies from heat stress, the charge becomes “aggravated” cruelty and that individual is liable to a penalty of up to 492 penalty units ($71,025) or imprisonment for 2 years. These penalties multiply when a number of pigs are involved.

How hot a pig feels depends on a combination of ambient temperature and humidity.

Livestock weather safety index charts are available as references for transporting pigs (Figure 1).

Table 1. Livestock Temperature Humidity Index* (THI) at specific temperatures and relative humidity levels.

Ambient air		Relative Humidity (%)					
Temp. °F	Temp. °C	20	30	40	50	60	70
100	37.8	26	29	30	31	33	34
98	36.7	26	28	29	31	32	33
96	35.6	26	27	28	30	31	32
94	34.4	26	27	28	29	31	32
92	33.3	25	26	27	28	29	30
90	32.2	25	26	26	27	28	29
88	31.1	24	24	26	27	27	28
86	30	23	24	25	26	27	27
84	28.9	22	23	24	25	26	27
82	27.8	22	23	23	24	25	26
80	26.7	21	22	23	23	24	24
78	25.6	20	21	22	23	23	24
76	24.4	19	21	21	22	22	23
Livestock Safety Index (°C)		Normal <23		Alert 24-25.5		Danger 26-28	Emergency >29

* The Livestock THI was adapted from the human Humidex Chart, which can be found at : http://www.ccohs.ca/oshanswers/phys_agents/humidex.html.

Source: http://www.farmers.coop/producer-pools/beef-pool/pool-standards/

To read these charts, check the weather forecast for temperature and humidity. Locate the expected temperature in the column on the left. Extend that temperature in a straight line across the chart until it intersects with a line from the expanded relative humidity.

When the daytime temperature and humidity reach the ‘Alert’ level on the Livestock Weather Safety Index, deliver pigs to the processors by 11:00 a.m.

Temperatures above 38°C are always ‘***Danger***’, and if the relative humidity is above 25%, the situation is ‘***Emergency***’.

When the combination of temperature and humidity reaches the ‘Danger’ level transport pigs at night.

When the combination of temperature and humidity reaches the 'Emergency' level postpone transport until weather conditions become more favourable.

Research at Colorado State University that used death loss statistics from two packing plants indicated that a temperature of 80° F (26.6°C) and 80% humidity is the beginning of a severe emergency zone.

Other recommendations for transporting pigs in hot weather include:

- When the temperature is over 15°C use wet sand or wet shavings for bedding.
- Never bed with straw during hot weather – wet sand or wet shavings saves pigs.
- The hottest compartment in a semi-trailer is the bottom deck right behind the cab. This compartment has poor air movement.
- Remove plugs and panels from the sides of aluminium trailers.
- Open nose vents on trucks for ventilation.
- Load and unload promptly. Heat will build up rapidly inside a vehicle which is standing still. Don't stop at the café and let your pigs roast in the truck. If pigs have to wait in a hot parked trailer, wet them down with a hose.
- If the temperature is 27°C or higher, sprinkle pigs with water immediately after loading. Some trucks have built-in sprinkler systems for hot weather. Keeping pigs cool reduces shrinkage. Pigs that are sprinkled in-transit are also quieter and more content. This reduces trampling and crowding. Transporters should be aware that water from sprinkling that drains onto road surfaces will contain manure.

Caution: Never put a large amount of cold water on swine that are overheated. This may cause shock resulting in death.

References: Cattle and Swine Trucking Guide for Exporters, USDA; T Grandin, Colorado State University

Australian Land Transport Standards are available on the Australian Pork Limited website.

Land transport standards and other explanatory information including the NSW version of Prevention of Cruelty to Animals Act 1979 are also available on the NSW DPI website.

Pork producers discuss industry challenges

Sara Willis DAFF QLD

More than 130 pork industry identities converged on Toowoomba to discuss new technologies adopted by producers to face the challenges in the grower herd. The seminar and trade display organised by the Queensland Pig Consultants Group (QPCG) with support from Australian Pork Limited (APL) and Queensland Department Agriculture Fisheries and Forests (DAFF) was titled "Facing the Challenges in the Grower Herd – Where will you be in 2020?"

As an introduction to the program, John Riley of JCR Associates International summarised the current economic state of the industry. Based on his knowledge of clients businesses he suggested that the operating cost of producing a kg of pigmeat was in the order of $2.90.

Producers shared with delegates the decisions made in their businesses to ensure their long term sustainability. Edwina Beveridge focussed on how the 2200 sow family business, near Young NSW, has invested in Biogas technology to help meet the long term future of their business. Edwina showed two videos made by APL promoting the quality of management practiced at Blantyre Farms in relation to animal welfare and responsible environmental stewardship.

Edwina explained how they harnessed methane to produce biogas to reduce electricity costs and earn carbon credits on a unit feeding by-products from the human food chain.

Zane Harper, the production Manager of CEFN Pty Ltd, a 4000 sow piggery spoke on the technologies adopted by his employer to insulate their business from external forces. He stressed the need for research before investing in technologies. Zane plays a key role in the planning, adoption and implementation of new technologies to improve labour efficiency, pig performance, feed utilisation and marketing.

Laurie Brosnan, a partner in Bettapork, a Biloela family business of 2000 sows shared with those present the thinking behind the decision to build a completely new 2000 sow breeder complex to ensure the long term sustainability of their business. This new facility will allow heavier weaners to be produced resulting in improved performance in their nursery and grower sites.

Recruiting and retaining staff is a problem on many farms due to opportunities in the gas and mining industries. Ken Cameron of CHM reminded those present that after feed cost, labour is the second highest production cost. Along with Maria Nolan and Tracy Cooper of SeeChange Consulting, he discussed the innovative program implemented at CHM to improve staff performance, job satisfaction and staff retention at all levels in the business.

Dr Hugo Dunlop of Chris Richards and Associates presented a paper on how producers could achieve a better return on their investment in veterinary services and health programs.

Sara Willis, chairperson of the Queensland Pig Consultancy Group and a nutritionist with DAFF concluded the program by discussing the impact of feed usage on profitability. Sara demonstrated that a reduction of 80g feed/pig/day or 1 tea spoon of feed/hr would result in an improvement of 0.1 in grower herd live weight FCR worth $4.75/pig at current feed prices.

All the talks are available as webcasts on line:

John Riley, JCR Associates International

"Pork Production - The Economic Realities"

Edwina Beveridge, Blantyre Farms

"The Biogas Opportunity"

Zane Harper, CEFN

"Technology to meet the Challenges of the future - A Producer's Perspective"

Laurie Brosnan, BettaPork

"Meeting the Challenges through Technology Adoption"

Hugo Dunlop, Chris Richards & Associates

"Minimising Health Costs in Grower Finisher - The Veterinary Challenge"

Ken Cameron, CHM Alliance, **Maria Nolan** and **Tracy Cooper** SeeChange Consulting

"People Management - Assess Analyse Act"

Sara Willis, DAFF Qld

"Measuring to Manage Feed Costs" (audio missing at start)

The Challenge of 2014

John Riley, JCR Associates International

In 2013, pig producers in Queensland and Northern NSW experienced very high feed costs which resulted in businesses struggling to break even.

The average cost of purchased feed is in the order of $450- $500/tonne and whilst home mixing can reduce feed costs, the savings are not substantial when the milling and mixing operation is fully costed.

In late 2013, the operating costs of farrow to finish businesses were in the order of $2.90/kg of carcase weight sold. A breakdown of the total figure is included in Table 1.

In the same period, the average price received for all pig meat sold from the farm including culled breeding stock, pigs sold at owners risk and over fat pigs was less than $3.00 per kg for the vast majority of businesses.

One indicator of the well being of the pork business is the relationship between feed cost and pig meat price.

In the USA, the Corn: Hog ratio and in the U.K the Barley: All Pig Price ratio are used as indicators of the health of the industry. In Queensland, DAFF produces the Pig Price: Feed Price ratio. The ratio indicates the number of kilograms of feed that can be purchased by the sale of one kilogram of pig meat (see Figure 1).

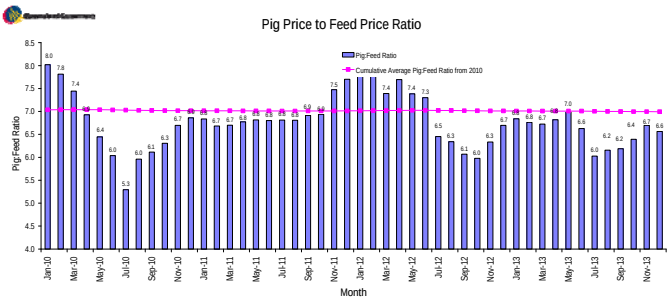
Table 2: Operating costs of producing a kg of pig meat

Operating costs	$/kg carcase weight
Feed	1.85
Labour	0.40
Health	0.15
Electricity & gas	0.04
Water	0.01
Other non feed costs	0.45
Total costs ******	2.90

***** *Excluding depreciation and interest on capital.* *Source: JCR Associates International.*

The chart confirms what generations of pork producers have known, namely that pork production is a volatile business, Feast or Famine. The chart also shows the average Pig Price: Feed Price ratio over the last 20 plus years. With a feed cost of $500/ tonne, the pig meat price would need to be $3.50/ kg to meet the long term average ratio.

Figure 1: Pig price to feed price Ratio.



For more information on the pig price to feed ratio see Pig profit cycle

Looking forward the prospects for the first six months of 2014 is not encouraging. The consumer will continue to demand "A product which is succulent, tender with little fat, competitively priced

and produced in systems that are 'perceived' as welfare friendly, environmentally sustainable and is quality assured".

There may be a drop in feed costs in 2014 although the high temperatures and lack of rain in December and January does not auger well for producers. However, other costs incurred in meeting the consumer's demands including veterinary, labour, legal compliance, auditing and electricity costs will rise in 2014.

To ensure a sustainable profitable business, most producers need to look at improving the efficiency of their weaner herd and grower herd. The performance of the breeder herd is recorded in detail. However, the areas that use 80% of the feed in a farrow to finish enterprise are seldom recorded accurately.

To continue in business, the weaner herd (from weaning to transfer at 30 kg will need a live weight Feed Conversion Ratio (FCR) of better than 1.6:1 and a daily growth rate of 520g. The grower herd from 30 kg to an average load out weight of 105 kg will require an FCR of 2.6:1 or better and a daily growth rate of 875g with at least 97% of the pigs weaned sold for slaughter.

The management of the weaner and grower herd is the Achilles heel of pork production. Most producers recognise the need to "Measure to manage". Few however will use a weigh scale or even a weigh tape to measure growth rate and FCR, the key measures in decision making.

The importance of summer cooling

Trish Holyoake, Vic DEPI

With summer here, it is vital that cooling systems are available and functioning – particularly for sows. Pigs have very poorly developed sweat glands and sows in particular suffer in high temperatures.

The upper critical temperature for sows is about 22°C: at higher ambient temperatures, sows will increase their respiration rate in an attempt to remove body heat. Feed intake will go down, impacting on the milk production and growth performance of the progeny of lactating sows.

High temperatures can cause pregnant sows to abort and deaths can occur when temperatures are extreme without cooling. Now is the time to check:

- There is ample supply of palatable water that can be accessed by pigs. Check drinker flow rates are correct (at least 2L/min for lactating sows), that there are sufficient drinkers (1 drinker per 10-15 pigs and at least 2 drinkers per pen) and that they are accessible (80-90cm high for sows and not angled away from the pen). Note any drinkers that are dirty – this normally means they are not working, and replace them if needed.
- Troughs are best for supplying water to sows housed outdoors. It is important that sows have restricted access to the trough by placing half under the fence line or by partitions inside the trough to prevent wallowing

Figure 2: Pig water troughs need partitions to prevent pigs getting into the trough on hot days.

Source: Trish Holyoake.

- For sows housed indoors, check cool cells used for evaporative cooling to ensure good water distribution. Light, dry areas of the cool cell suggest that air enters the building at the same temperature as outside, which has no cooling effect.
- Check sow drippers are functional in farrowing sheds. Drippers should be set to turn on at 22-24°C, with 1minute on / 10minutes off.

  Water flow rates should be adjusted to around 3-3.5L/hour. Ensure that drippers are not too high that the wind blows the drip away from the sow and onto the piglets' creep area.
- For dry sows housed indoors, ensure that sprayers are functional, that they are set to turn on at 26-28°C, 5 minutes on / 45 minutes off.
- Wallow management is critical to the success of an outdoor unit (providing environmental regulations allow). Wallows must contain water and mud, not just thick mud. The surface area must be large and generous. Wallows can be filled by a pipeline running around the perimeter of the piggery with a valve running off the pipeline so each wallow can be filled independently.

Figure 3: A wallow being replenished via an individual valve off the main pipeline.

Source: BPEX "Wallows in farrowing paddocks"

Successful Farrowing Workshop

Jayce Morgan, NSW DPI

The Farrowing workshop in Forbes in October 2013 was very successful. Forty five farmers and stockpersons attended and the day was rated by participants as meeting expectations. All appreciated the contact with veterinarians in a workshop environment and the opportunity to ask lots of questions on all things pertaining to farrowing.

The workshop was the result of a collaborative effort between NSW DPI Development Officer Jayce Morgan and Dr Alan Sharrock of Lachlan Veterinary Clinic Forbes. Guest presenters included Dr Bernie Gleeson and Dr Sarah De Greef of Chris Richards and Associates, Dr Tim Ahern of Zoetis and Ms Kim Roberts Bred free range farmer and trainer.

Figure 4: Dr Alan Sharrock and Dr Sarah De Greef discussing with workshop participants the attributes a sow needs to be eligible for the farrowing shed.

Source: Jayce Morgan

Sponsorship to run the workshop was gratefully received from Country Vet, Zoetis, Lachlan Veterinary Clinic and Australian Pork Limited.

Thanks must also go to the staff from Westmill for their enthusiasm in helping Dr Alan Sharrock collect all the wonderful sow uterus and dead piglet examples used for the practical demonstrations.

Its not rocket science!

Bernie Gleeson, Chris Richards & Associates

This was the message from Dr Bernie Gleeson of Chris Richards and Associates in his talk on 'Improving Piglet Survival' at the Farrowing workshop at Forbes in October 2013.

There are 3 components to the puzzle of piglet survival.

1. **The piglet** which when given a clean, dry, warm environment and plenty of colostrum from a mother in good condition will thrive.
2. **The sow or gilt** which needs your TLC – yes total loving care. They should be of a body condition score of around 3.5; they should be monitored for early intervention if needed and they should be well fed and watered after farrowing.

   Body maintenance for a sow requires 30 MJ per day; a litre of milk requires 8.5 MJ per litre. For a sow to produce 10 litres per day and piglets to grow around 250 grams per day then the sow needs to eat more than 8.5 kg per day of feed that is 14 MJ per kg. She will also need at least 30 litres of water.
3. **The farrowing pen or hutch** which needs to be clean, dry and warm (no drafts). Wet surrounds or drafts play havoc with the piglet's ability to control its own body temperature. Farrowing pens should be disinfected between litters and have a heated creep area with lamp or heat pad. Outdoor huts should be cleaned and relocated, and plenty of straw provided. A good bed of straw can be worth about 8°C.

Sows need to be sound to enter the farrowing herd – no pre-existing conditions such as lameness or discharge; and a comprehensive vaccination schedule for the gilts, sows and boars administered correctly.

So what contributes to piglet mortality? Approximately 1 in 5 viable piglets in late gestation do not survive until weaning. About half of these are the result of still births, and the other half are the result of pre-weaning mortalities such as overlay or piglet scours.

What can be done? Well this is where records are essential. Good farm records are one of the best diagnostic tools in the farrowing house when looking for the cause of piglet mortalities. For example when investigating a suspected stillbirth problem records can identify at risk sows, at risk

times and whether they are still births or early pre-weaning mortalities.

A stillborn piglet is a normal size and healthy looking piglet that is born dead. They have not breathed. This can be determined by lung colour dark maroon/purple for no breath versus pale pinkish colour for breathed; or by the floatation test – lungs that have breathed will float and lungs that have not breathed will sink.

Records from one farm showed that the risk of still births was higher in older parity sows but gilts also had some still birth problems. As gilts formed the largest proportion of the herd (almost 20% gilts versus <3% parity 8) there was a greater return in terms of still birth reduction from extra effort in working with the gilts.

A key factor in reducing still births is being there. Most farms assume a 115 day average gestation length. If the average gestation length is longer by a day or 2 it can mean peak farrowing falls on weekends where staffing may be at reduced levels. Good records can identify this and allow you to work a strategy to solve the problem.

Figure 5: A teat for every piglet and a good intake of colostrum are essential for piglet survival.

Source: Dr Bernie Gleeson.

The first day of life is most crucial to the piglet and most deaths occur within the first 3 days. So as well as clean, dry and warm environment the piglet needs a good intake of colostrum. Make sure there is a teat for every piglet in the litter and all piglets get to suckle. Remember No Colostrum No Pig.

Finally a note on the value of records:

> If you don't measure it you can't record it.
>
> If you don't record it you can't analyse it.
>
> If you don't analyse it you won't believe it.
>
> If you don't believe it you won't improve it.

Did you know?

A Danish study showed that the probability of piglets dying before they managed to get their first drink of colostrum was nearly 7 times higher at an ambient temperature of 15°C compared to 25°C, despite the floor surface being heated to about 34°C *(Pig Progress Volume 29 No 10 2013 p4).*

Makes a good case for covered creep areas since warm air rises and a cover would stabilise the ambient temperature at piglet level.

Quantifying production losses caused by ileitis.

Stephen Heavener, NSW DPI

Imagine if you could quantify the production losses caused by ileitis, even when there are no clinical signs of the disease (e.g. scouring). A Pork CRC funded project conducted at NSW DPI's Elizabeth MacArthur Agriculture Institute aims to develop a diagnostic tool that can do just that.

Ileitis causes diarrhoea, weight loss, poor growth, lesions in the intestinal tract and even death. Disease results in reduced profitability due to increased medication costs, reduced feed conversion efficiency (FCE), reduced average daily gain (ADG) and an increase in days to slaughter.

The bacterium that causes ileitis is known as *Lawsonia intracellularis.* A new quantitative DNA assay has already been developed at NSW DPI that can measure the number of *Lawsonia intracellularis* bacteria shed in pig faeces. This test has been developed to accurately quantify bacterial numbers in pooled faecal samples, as this is the most cost effective way to test pigs.

We are now investigating the impact that high and low numbers of *Lawsonia intracellularis* bacteria have on the ADG and FCE of pigs under a wide range of commercial production conditions.

Our study aims to identify the critical number of bacteria that lead to production losses on commercial farms by correlating production measures with bacterial numbers, measured with the quantitative DNA diagnostic test.

So what does this ultimately mean for the producer and their production costs? From this study we will be able to show the producer that once the number of *Lawsonia intracellularis* exceeds a certain threshold, pig growth will be compromised.

For example, we already know from experimental studies that pigs lose 131 grams a day when *Lawsonia intracellularis* numbers increase from 10^7 to 10^8. If severe infection lasts for 7 days, that equates to nearly one kilogram of lost weight per pig, with greater consequences caused by prolonged infection.

The research team led by Dr Alison Collins and Stephen Heavener at NSW DPI are aiming to develop an efficient and cost effective tool to guide producers and veterinarians in their ileitis control treatments and help avoid the associated losses in profitability caused by the disease. It is expected that this test will be available at EMAI by mid 2014.

More on Sow Housing options

Jayce Morgan, NSW DPI

The PigSite e-newsletter last November carried a feature article "Considering Housing Gestating Sows in Groups". This article outlined the US National Pork Board sponsored resources for pig farmers considering group housing.

Topics include housing design, nutrition, floor space and group size, sow and gilt groups, production flow and management, conversion and construction of facilities, and economics of conversions.

Anyone still grappling with problems of conversion to group housing may find this site of interest. There are webinars and fact sheets available. Just remember the figures are imperial measure (pounds, feet and inches)

National Pork Board website

Coming Events

Jayce Morgan

February and March 2014 are busy months. Following are some articles on seminars and training available for pig farmers:

Pig Gas workshop – Toowoomba

A second PigGas Workshop will be held in Toowoomba on Friday 28 February 2014. This is an excellent opportunity for pork producers to understand:

- where and why greenhouse gas emissions occur on your piggery;
- how to use 'PigGas' to calculate your baseline on-farm greenhouse gas emissions;
- possibilities on your piggery to reduce greenhouse gas emissions;
- economic opportunities under the Australian Government's Carbon Farming Initiative;
- the 'carbon footprint' of your piggery;
- current pork industry research projects aimed at reducing emissions.

For the first time, piggery managers have a tool to measure and manage their carbon emissions. PigGas uses your own piggery data such as diets, feed intakes and pig growth, waste treatment systems, energy use, transport and pig sales data to estimate your piggery greenhouse gas emissions.

PigGas can highlight problem areas such as inefficiencies in feed utilization and wastage, possible changes in waste treatment and reuse systems and energy use.

The recently elected Australian Government supports the Carbon Farming Initiative. New opportunities to participate in the Carbon Farming Initiative are being developed and will become available over time.

A requirement of the workshop is the ability to use Microsoft Excel. Producers who register for the workshop will be advised by email of the venue and what data to source from farm records to bring along. The workshop is free of charge with meals provided.

The National PigGas Extension Project is delivered by Ian Kruger Consulting and funded by the Australian Government and Australian Pork Limited.

Register now by contacting Ian Kruger: email iankrugerconsulting@gmail.com or phone 0401 365 488.

Dr Tim Safranski Tour

Dr Tim Safranski is Associate Professor and Extension Swine Breeding Specialist at the University of Missouri-Columbia USA. He is touring the eastern states of Australia in February/ March 2014.

In Queensland and NSW he will be accompanied by Dr Paul Hughes of SARDI in South Australia.

In Victoria and South Australia Dr Safranski will be accompanied by Dr Morgan Morrow from North Carolina State University.

Dates are:

- Thursday 27th February 2014 in the Green Room of the DAFF Training Centre, Tor Street Toowoomba, Queensland. Lunch from 12.15pm sponsored by BEC Feed Solutions. Talks from 1pm. RSVP essential by Monday 24th February to Sara Willis ph 07 4688 1214 or email: sara.willis@daff.qld.gov.au
- Monday 3rd March at the Carriage Motor Inn, corner of Sturt Highway and Eunony Bridge Road, Wagga Wagga, NSW. The afternoon begins with the NSW Farmers Pork Group AGM from 1.30pm; afternoon tea 3.00pm; talks from 3.30pm; drinks from 6pm and dinner (sponsored by Pork CRC) from 7pm. RSVP is

essential by Tuesday 25th February to Jayce Morgan ph 02 67631257 or email: jayce.morgan@dpi.nsw.gov.au

- Wednesday 5th March Capital Theatre, 50 View Street Bendigo, Victoria from 10 am. For more details see the following article by Trish Holyoake "Happy Pigs=Healthy Business". RSVP is essential to Trish Holyoake email; trish.holyoake@depi.vic.gov.au
- Tuesday 11th March Roseworthy South Australia. For details and RSVP contact Paul Hughes email; Paul.Hughes@sa.gov.au

Happy Pigs=Healthy Business

Good animal welfare is important on any livestock operation. An important part of good animal welfare, is the early recognition, and prompt treatment of sick or injured animals. It is vital that the response to treatment is monitored and that pigs that do not respond to treatment are euthanased in a timely manner.

The Department of Environment and Primary Industries is holding a seminar "Happy pigs = healthy business" for pig farmers and their staff on Wednesday 5th March at the Capital Theatre, 50 View Street, Bendigo.

The seminar will run from 10am until 4pm, with morning tea available from 9:30am.

We are fortunate to have two distinguished overseas visitors: Dr Morgan Morrow (North Carolina State University) and Dr Tim Safranski (University of Missouri), speaking at this event.

Mr Rob Cumine (Coles) will present on a retailer's perspective on welfare, whilst presenters from the Department of Environment and Primary Industries will give legal perspectives.

Major talks will be supported by hands-on demonstrations of new euthanasia techniques and practical ways of measuring and monitoring pig welfare.

For further information and registration, contact Trish Holyoake email;
trish.holyoake@depi.vic.gov.au

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