Economic Analysis of proposed changes to Code of Welfare Pigs

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Executive summary

The purpose of this report is to provide a net cost analysis of the impact on the pork industry of the proposed changes to the code of welfare pigs and demonstrate how these changes would affect prices for pork products in New Zealand if farmers were able to pass their costs on to consumers.

The Animal Welfare Act 1999 legislates for the welfare of animals in New Zealand. It sets out animal welfare requirements for people who own or are in charge of animals. These people must comply with the Act and both, minimum standards for animal care and management in codes of welfare, and regulations issued under the Act.

Codes of welfare expand on the Act's basic animal welfare obligations by setting minimum standards and recommending best practice for the care and management of animals. The code of welfare - pigs applies to all pigs in all management systems, including pigs not owned by commercial operators.

The current Animal Welfare (Pigs) Code of Welfare 2010 has been reviewed by the National Animal Welfare Advisory Committee (NAWAC), pursuant to the Act. NAWAC has proposed changes to the current code in a draft Animal Welfare (Pigs) Code of Welfare to the Minister, as required by the Act.

New proposed minimum standards for animal welfare of pigs

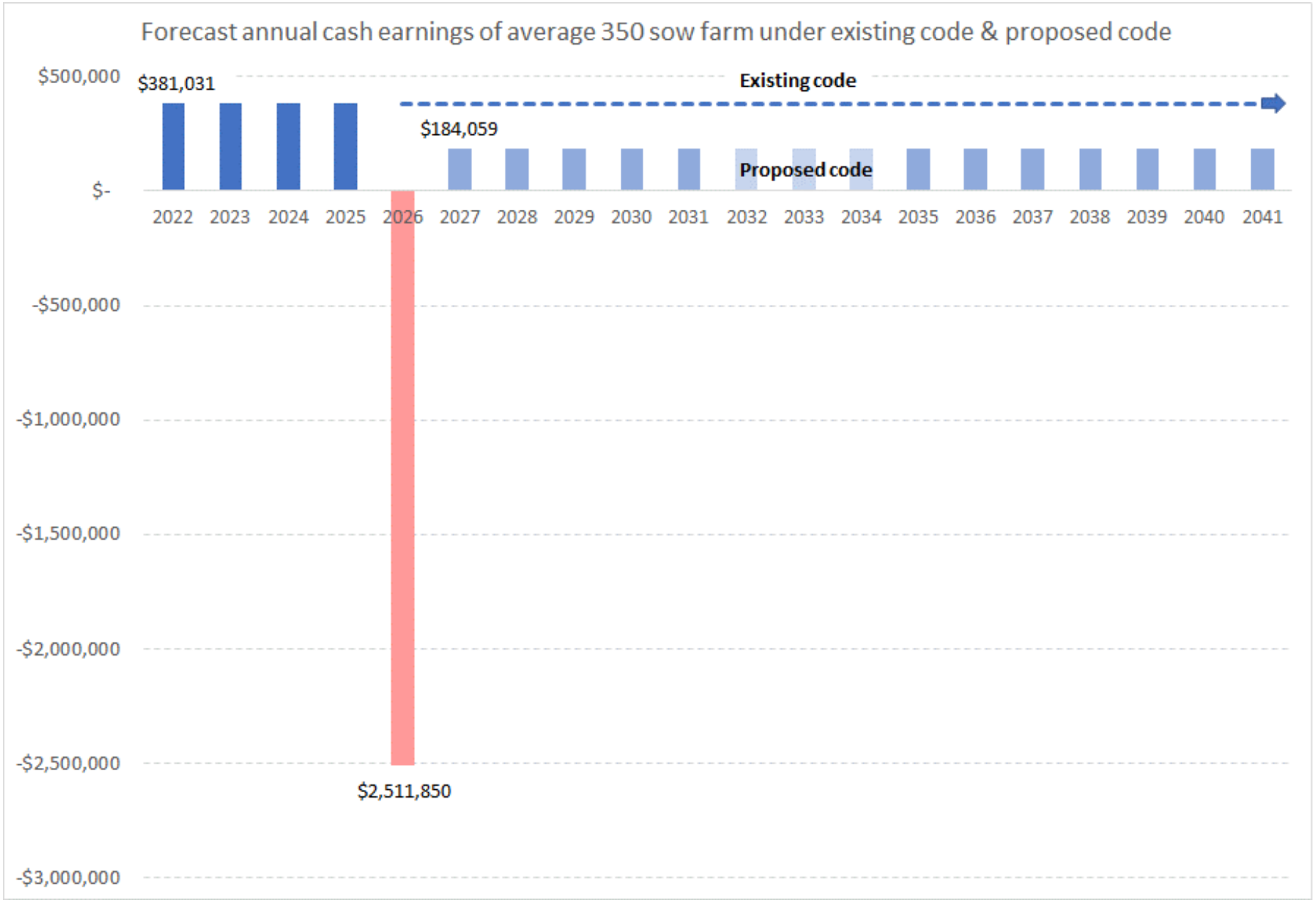
Sapere, has consulted with NZ Pork on the changes proposed to the Code proposed by NAWAC that are most likely to have an economic impact on the New Zealand pork industry. NZ Pork identified these proposed changes as likely to be most significant:

Minimum Standard No. 10 – Interactions between sows and piglets
Minimum Standard No. 6 – Housing Equipment
Minimum Standard No. 11 – Managing dry sows
Minimum Standard No. 16 – Weaning
Minimum Standard No. 9 – Behaviour
Minimum Standard No. 18 – Tail Docking

Focus on changes to minimum standards 10, 6, 16 and 9.

This report largely focuses on changes to minimum standards, No. 10 (Farrowing crates), 6 (Grower space) and 16 (Weaning age) as these are likely to have the largest impact on the industry. The costs of Minimum Standard No. 9 (Behaviour) are lower but are also explicitly included in this net cost analysis. The other minimum standards are discussed but not estimated. Discussions with NZPork have clarified that other proposed minimum standards are likely to have less economic effect on farmers.

The diagram on the next page shows the net cost impacts of the four key proposed changes to minimum standards No. 10 (Farrowing crates), No. 6 (Grower space), No. 16 (Weaning age) and some costs of Minimum Standard No. 9 (Behaviour).


Forecast annual cash earnings of average 350 sow farm under existing code & proposed code
$500,000
$-
-$500,000
-$1,000,000
-$1,500,000
-$2,000,000
-$2,500,000
-$3,000,000
$381,031
Existing code
$184,059
Proposed code
$2,511,850
2022
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Option B for minimum standard 10 (Farrowing crates) & Option A for minimum standard 6 (Grower Space)

NAWAC proposed 2 options (Option A and B) for both minimum standard 10 (Farrowing crates) and minimum standard 6 (Grower Space). The analysis above shows NAWAC's Minimum Standard 10 (Farrowing crates) Option B and Minimum Standard 6 (Grower Space) Option A. These two options have a lower economic impact on the economics of the 350 sow indoor pig farm compared to Minimum Standard 10 (Farrowing crates) Option A; and Minimum Standard 6 (Grower Space) Option B.

Net expected cash earnings

The diagram shows the 350 sow farm earning an operating cash flow of approximately $381,000[1] per year. It is not assumed that the farmer would reduce sows and grower numbers because in Sapere's previous analysis , retrofitting existing shed space and reducing pig numbers to meet the code would result in discounted cash earnings 10 to 15 per cent lower than new builds, with land purchases if needed, to maintain herd numbers

The proposed code is assumed to apply from 2026 and requires a cash investment of around $2.5 million to meet minimum standards No. 10 (Farrowing crates), No. 6 (Grower space), No. 16 (Weaning age) and some costs of Minimum Standard No. 9 (Behaviour). The majority of this amount is capital expenditure and half of it is the result of implementing Minimum Standard 10 Option B alone.

The effect of these codes reduces the operating cash flow to circa $184,000 per year. Half of this fall in expected cash earnings, compared to the status quo is the result of a fall in pork production resulting from higher rates of pre weaning mortality caused by Minimum Standard 10 Option B. Pre weaning mortality is expected to rise from 12 per cent currently to 18 per cent under Minimum Standard 10 Option B. Another quarter of the fall in expected cash earnings post 2026 is modelled to result from cash asset replacement provision of the infrastructure needed to implement Minimum Standard 10 Option B. Other less significant changes in costs include increased labour and other inputs.

Discounted 20 year net expected cash earnings

These cashflows can be discounted to a present value using a real rate of 6 per cent to demonstrate the impact of the proposed code changes on the economics of this 350 sow farm. Under the existing code it is estimated that this farm could be expected to earn $4.6 million over the next 20 year period discounted to a present value today. Under the proposed code, implemented from 2026, it is forecast that this farm's operating cash earnings would fall to a present value of around $826,000 over 20 years.

[1] These value estimates are real cashflows which do not include inflation effects. This removes this changing variable from the analysis making it less complex. This amount is before deduction of any tax, owner's drawings or interest.

Expectation is that earnings will fall to 20 per cent of current level

Expressed as a percentage, the present value of the farm's forecast operating cash earnings under the proposed code changes are therefore 18 per cent of their current expected level.

Impact on price indices

The discounted cash earnings foregone by the average 350 sow indoor farm is estimated at $3.7 million. To leave this farm with the same expected discounted cash earnings as today, prices for its pork production would have to rise by 18.2 per cent from 2022 and maintain that level in real terms for 20 years until 2041.

Pork's share of the food price index (FPI) is 0.97 per cent. Pork only makes up 8 per cent of the meat and poultry category in the FPI.

So, the effect on the FPI of a 18.2 per cent increase in the price of all New Zealand pork would a 0.18 per cent increase in the FPI. The effect on the consumer price index CPI would be 0.03 per cent increase. Competition from offshore pork would make it difficult to sustain a price increase of this size as imports would undercut New Zealand prices which would reduce sales volumes of New Zealand pork. The extent of these effects is difficult to estimate and would depend on how price sensitive New Zealand pork consumers are, and the relative prices of pork compared to alterative meat options.

1. Purpose

The purpose of this report is to provide a net cost analysis of the impact upon the pork industry of the proposed changes to the code of welfare Pigs and demonstrate how these changes would affect prices for pork products in New Zealand if farmers were able to pass their costs on to consumers. A summary of key assumptions used in this report are attached as Appendix C.

2. Introduction

The Animal Welfare Act 1999 legislates for the welfare of animals in New Zealand. It sets out animal welfare requirements for people who own or are in charge of animals. These people must comply with the Act and both:

- minimum standards for animal care and management in codes of welfare
- regulations issued under the Act.

Codes of welfare expand on the Act's basic animal welfare obligations by setting minimum standards and recommending best practice for the care and management of animals. The codes are issued under the Act but are separate from it because with so many different types of animals and situations, it is not practical to include all of them all in the Act. The code of welfare for pigs applies to all pigs in all management systems, including pigs not owned by commercial operators.

The Act also sets out the process for developing and issuing changes to codes of welfare.

Regulations issued under the Act impose enforceable requirements on owners and persons in charge of animals. Penalties for failure to comply with the regulations are specified in these regulations.

The Animal Welfare (Pigs) Code of Welfare 2010 has been reviewed by the National Animal Welfare Advisory Committee (NAWAC), pursuant to the Act. NAWAC has provided a draft Animal Welfare (Pigs) Code of Welfare to the Minister, as required by section 74 of the Act.

NAWAC's proposed changes to the code of welfare for pigs with marked up changes is attached as Appendix A.

Sapere, has consulted with NZ Pork on the proposed changes that are most likely to have an economic impact on the New Zealand pork industry. These changes were identified as follows:

- Minimum Standard No. 10 – Interactions between sows and piglets
- Minimum Standard No. 6 – Housing Equipment
- Minimum Standard No. 11 – Managing dry sows
- Minimum Standard No. 16 – Weaning
- Minimum Standard No. 9 – Behaviour
- Minimum Standard No. 18 – Tail Docking

This report largely focuses on changes to minimum standards, No. 10, 6 and 16 as these are likely to have the largest impact on the industry. The costs of Minimum Standard No. 9 (Behaviour) are lower but are also explicitly included in this net cost analysis. The other minimum standards are discussed but not estimated.

There are a number of other changes which are likely to have a lesser effect but still have some economic consequences. These are:

- Minimum Standard No. 3 – Feed
- Minimum Standard No. 7 – Temperature
- Minimum Standard No. 8 – Air quality

- Minimum Standard No. 13 – Mixing Pigs
- Minimum Standard No. 21 – On-farm killing
- Minimum Standard No. 22 – Contingency Planning
- Minimum Standard No. 23 – Welfare Assurance System

While these proposed changes to the code have been discussed, they have not been cost modelled as it is expected that their economic impact is likely to be low relative to the more significant effects of the proposed changes to minimum standards No. 10 (Farrowing crates), No. 6 (Grower space), No. 16 (Weaning age).

Finally, there are some proposed changes to the Code's minimum standards which are unlikely to significantly alter current practices and will likely have negligible economic effect. These are:

- Minimum Standard No.2 – Drinking water
- Minimum Standard No.4 – Feed: New-born Piglets
- Minimum Standard No. 5 – Shelter for pigs outdoors
- Minimum Standard No. 14 - Handling
- Minimum Standard No. 15 – Moving Pigs
- Minimum Standard No. 17 – Painful husbandry procedures
- Minimum Standard No. 19 – Pre-transport Selection
- Minimum Standard No. 20 – Management of Health and Injury

This report does not explore the potential cost implications of these proposed changes to the code.

3. Minimum Standard No. 10 – Interactions between sows and piglets

NAWAC has proposed two options as follows to be introduced from 18 December 2025:

Option A – Free farrowing

Discontinuing the use of farrowing crates and increasing the minimum size of farrowing pens to 6.5 m^2 with at least 5 m^2 available for the sow.

Option B – Temporary crating

Farrowing crates can be used but only after the nesting period and for no longer than 72 hours and increasing the minimum size of farrowing pens to 6.5 m^2 with at least 5 m^2 available for the sow.

Key economic consequences for farmers of proposed minimum standard No. 10 (Farrowing crates)

- Need to invest in new farrowing pens where these are currently less than the proposed minimum and expand shed space to continue farming 350 sows.
- Increase in piglet mortality due to crushing by sows resulting in lower pork production.

Analysis

Key modelling assumptions

General

- 78 new sow farrowing pens will be required to meet minimum standard 10 (Farrowing crates) on an average 350 sow indoor farm.

Capex : Option A & B

- The cost of a sow place in a new 6.5m^2 Freedom Farrower pen including installation in shed is $13,629.10 at an exchange rate of 0.51 pounds per $NZ (See Appendix B for more details). Option A discontinues the use of farrowing crates while Option B allows temporary use of these. It is assumed that any savings that might result from not including a farrowing crate within the new pen under Option A, because this would not be permitted, would be negated by spending on pen "furniture" designed to manage piglet mortality in a free farrowing pen, such as sloped panels and creep design.

- Both options include a new sow places totalling $1,063,070[2], a new slurry system costing $42,232 and extra land costs of $70,648.

Opex : Option A & B

- The extra opex needed to operate with 78 new Freedom Farrower sow pens is $48,161 per annum. [3] This is mostly economic depreciation of the pens based on a 30 year life assumption with some additional labour costs based on an assumption that an additional labour costs of 5.1 per cent would be required to operate these pens.[4] In addition, there are extra costs for straw of $7,308 per year.

Foregone revenue Option A

- Pre-weaning mortality is assumed to rise from 12 per cent on a current average farm, to 19 per cent to meet the requirements of minimum standard 10 by the assumed use of pens without inbuilt crates. This lowers the estimated cash earnings of the 350 sow average farm by $119,168 per annum[5]. This represents 31 per cent of the total cash earnings of this average farm prior to meeting the proposed Code.

Foregone revenue Option B

- Pre-weaning mortality is assumed to rise from 12 per cent on a current average farm, to 18 per cent to meet the requirements of minimum standard 10 by the assumed use of Freedom Farrower pens. This lowers the estimated cash earnings of the 350 sow average farm by $103,188 per annum. This represents 27 per cent of the total cash earnings of this average farm prior to meeting the proposed Code.

[2] 78 sow spaces x $13,629/ sow space.
[3] Financial summary tab, cell F14
[4] This assumption is broken down into 1 per cent greater overhead costs: e.g. health and safety; compliance costs, 3 per cent greater animal management costs and 1 per cent greater waste management costs than the status quo system.
[5] = Foregone cash earnings from extra pre weaning piglet mortality of 18 per cent for Option B of $90,374/year + additional foregone cash earnings from 1 per cent more pre weaning piglet mortality of Option A of $15,980/year, sourced from 'Financial summary' tab cells B33 and F18.

4. Minimum Standard No. 6 – Housing Equipment

NAWAC's proposed minimum standard is that the unobstructed space allowance for growing pigs must be in accordance with the following table:

Table 1 : Proposed NAWAC grower space requirements

Average weight of pigs in the group	OPTION A : Space per pig	OPTION B : Space per pig
≤10kg	0.20m^2	0.30m^2
10 – 20kg	0.35m^2	0.50m^2
20 – 30kg	0.45m^2	0.70m^2
30 – 50kg	0.65m^2	1.00m^2
50 – 85kg	0.90m^2	1.40m^2
≥85kg	1.10m^2	1.65m^2

Source : Draft Welfare Code for Pigs, Page 13

This space allowance must not include the space for the dunging area, feeding troughs, wet areas around drinkers, or any hospital pens.

NAWAC proposes that Regulation 25 should be amended to reflect higher space values as proposed, and that these changes should come into force via transitional regulation. This is because the adverse effects of this change may mean it is not feasible or practical to implement immediately and because not to do so may result in an unreasonable impact on the sector.[6] In this analysis it is assumed that this is implemented in 2026.

Key economic consequences for farmers

- Need to invest in new grower pens where these are currently less than the proposed minimum. This would be by building new pen space to comply with the proposed minimum standard. (It is not assumed that the farmer would reduce sows and grower numbers because in Sapere's previous analysis[7], retrofitting existing shed space and reducing pig numbers to meet the code would result in discounted cash earnings 10 to 15 per cent lower than new builds, with land purchases if needed, to maintain herd numbers).

[6] See Draft Welfare Code for Pigs, Page 13.

[7] 'Analysis of Economic Impacts of Transitioning to Alternative Farrowing and Mating Systems' Peter MacIntyre, Ashley Milkop and Dr John Hellstrom, 17 May 2021, Executive Summary Page v

Analysis

The content of the two tables reproduced above from the proposed NAWAC Code are shown as Table 1. The approach shown in the table is a change from previous approaches which indicate minimum requirements in line with a particular "k-value". The k-value formula calculates the minimum space requirement in square metres using the following formula:

Space requirement = k * (pig_weight^0.67).[8]

NAWAC's proposed standards based on Table 1 above represent an 81 per cent increase in space for Option A compared to the status quo, and a 174 per cent increase for Option B compared to the status quo[9].

NAWAC's specified discrete weight bands result in space requirements greater than those implied by the k-values. To illustrate this, using the NAWAC's discrete weight bands from Table 1 above a one-stage pig farm with an average exit weight of 92kg per pig would have to meet the >=85kg weight band of 1.10m^2 for Option A and 1.65m^2 for Option B (bottom row of Table 1). By contrast, using the k-value approach would result in space requirements of 0.97m^2 (Option A) and 1.47m^2 (Option B). Use of the k-value approach in this instance would result in 11 to 12 per cent lower space requirements.

We have used the discrete weight bands in Table 1 rather than the k value approach in our analysis. This provides lower discounted operating cashflow compared to the k value approach.

Key modelling assumptions

General

- The construction cost of new shed space is assumed to be $1,076/m^2.[10]
- The 350 sow average farm is an indoor farm with fully slatted floor system.
- Space for growing pigs will be affected by the higher pre-weaning mortality rates of meeting minimum standard 10 (Farrowing pens). This reduces the capex cost impact by a little less than 7 per cent.

Capex: Option A

- To meet minimum standard 6 (Grower space), the average farm must increase space for growing pigs by 81 per cent, from 1452 m^2 to 2627 m^2 using a two-stage farm model, which represents the majority of grower facilities.
- The resulting capex requirement to meet minimum standard 6 (Grower space) is $1,178,391. This is assumed to occur once in 2026.

[8] According to NZPork common industry practice is consistent with a k-value of 0.03.
[9] See model cell G27, H29 and H31
[10] This was sourced from NZ Pork

Capex: Option B

- To meet minimum standard 6 (Grower space), the average farm must increase space for growing pigs by 174 per cent, from 1,452 m^2 to 3,977 m^2.
- The resulting capex requirement to meet minimum standard 6 (Grower space) is $2,531,587. This is assumed to occur once in 2026.

Opex: Option A

- The increase in grower space requirements will increase heating costs as the lower density of pigs in pens changes the average in pen temperature. Option A reduces stocking density to 55 per cent compared to existing levels. The average 350 sow farm's annual heating costs are assumed to be $43,162. The additional costs are scaled up from the lower density to add $34,946 to the annual electricity bill.

Opex: Option B

- As with Option A, the increase in grower space requirements will increase heating costs as the lower density of pigs in pens changes the average in pen temperature. Option B reduces stocking density to 37 per cent relative to existing levels. The additional costs are scaled up from this lower density to add $75,076 to annual electricity costs.

5. Minimum Standard No. 11 – Managing dry sows

NAWAC has proposed to amend the minimum standard for managing dry sows so that pigs must not be restrained using stalls unless the restraint is for the purpose of mating by artificial insemination and it occurs for no more than 3 hours at a time, for a maximum of 3 times per oestrus cycle. Sows and gilts must also have a non-slip floor and access to a dry sleeping area and artificial insemination must only be carried out by persons trained and competent with the procedure.[11]

Key economic consequences for farmers

- There may be additional labour costs to ensure sows are in stalls for a maximum of 3 hours at a time.
- There may also be incremental capex for perhaps 60 per cent of farms to install free access mating stalls. Larger farms are likely to have the infrastructure needed to meet this minimum standard, so the proportion of pigs affected by this standard is likely to be less than 60 per cent.[12]

Analysis

Separate costs for minimum standard No. 11 (Managing dry sows) have not been included in this analysis at this point.

[11] See Code of Welfare for Pigs, Draft for Consultation, Page 22, for full description of what is proposed.
[12] Source : Discussion with NZPork 28 January 2022

6. Minimum Standard No. 16 – Weaning

NAWAC has proposed to amend the minimum standard for weaning by adding that piglets must be at least 28 days old at weaning and that the smallest pigs (runts) must be individually fed or separated into a group to receive extra care. NAWAC is also proposing that Minimum Standard 16 (Weaning age)– that piglets must be at least 28 days old, should come into force via transitional regulation. It states this is because the adverse effects of this proposed change mean it may not be feasible or practical to implement immediately and because not to do so may result in an unreasonable impact on the sector. In this analysis it is assumed that this proposed minimum standard becomes operative from 2026.

Key economic consequences for farmers

- Average weaning age will increase from present practice to circa 5 weeks to allow for variation in managing pig numbers through current infrastructure.
- Farms will need to add 1 or 2 weeks' farrowing accommodation to comply with this minimum standard and batch farrowing farms will need to be re-configured / re-modelled to match with 5 week weaning[13].
- Outdoor farms could be affected by increases in the incidence of lactational oestrus which could change average litter size, farrowing rate and weekly number of pigs farrowing and therefore piglets weaned per week.

Analysis

Key modelling assumptions

General

- To accommodate minimum standard 16 (Weaning age) sow spaces for raising piglets must increase from 78 to 102 on the average 350 sow farm (This is equivalent to 1 and half weeks more time with the sow prior to weaning).

Capex

- The increase in sow spaces by 24 increases capex by $341,569[14]. This is assumed to occur in 2026. This represents these 24 incremental spaces multiplied by the cost per new 6.5m^2

[13] Currently sows and gilts farrow throughout the week but weaning occurs once a week (or every 2, 3 or 4 weeks in batching farms). Weaning age for individual piglets therefore currently varies by a minimum of 7 days, and more than that if they vary weaning age to even out pigs weaned/week to maintain compliance with grower herd stocking densities. 28 days weaning therefore means an average closer to 5 weeks. Adding on another week for cleaning and disinfecting means 6 weeks' worth of farrowing space is needed re-loading with expectant sows.

[14] Financial summary tab, Cell F9

Freedom Farrower pen including installation in shed is $13,629.10 at an exchange rate of 0.51 pounds per $NZ (See Appendix B for more details).

Opex

- The increase in sow spaces by 24 increases opex by $7,269. This is driven by the additional economic depreciation of these pens based on a 30 year life assumption.

7. Minimum Standard No. 9 – Behaviour

NAWAC has proposed to amend the minimum standard for behaviour. The existing Code requirement for pigs to be managed in a manner that provides them sufficient opportunities to express and satisfy normal behaviours has been augmented to 'express and satisfy a range of normal behaviours. These include, but are not limited to, nest building, manipulating objects and material with the snout, chewing (material other than feed), positive interactions with other pigs, and investigation of their environment.' Also, 'pigs must have access to a variety of materials that can be manipulated, such as organic matter (e.g. straw, sawdust), chewable objects (e.g. edible branches, hessian sacks, natural fibre ropes), untreated timber, rope, chains, or other objects that encourage play, foraging and exploring behaviour.' In addition, 'where abnormal or undesirable behaviours are detected, remedial action must be taken to reduce or remove the cause.'

Key economic consequences for farmers

This proposed minimum standard affects all production areas e.g., dry sows, mating, boars, lactation, weaning and finishing. Cost implications include;

- type and amount of materials, replenishment rate, (different types have different effects on drainage systems)
- labour requirements
- floor types

Analysis

- Costs to meet minimum standard 9 (Behaviour) have been included in the analysis of minimum standard 10 (Farrowing crates). This has included the costs of manipulable material and new slurry systems in a slated floor 350 sow indoor pig farm as well as some incremental labour costs.

8. Minimum Standard No. 18 – Tail Docking

NAWAC has proposed a new minimum standard covering tail docking. NAWAC states that tail docking reduces the occurrence of tail biting but does not address the underlying causes. Other methods of managing tail biting include the provision of straw, assessing food provided to ensure it is the appropriate type and composition, modifying ventilation, and providing additional space.

NAWAC has recommended that:

- Measures to prevent tail biting must be implemented and documented before tail docking is considered.
- Tail docking of pigs that are under seven days of age must be performed using hot iron cautery.
- Tail docking of pigs that are under seven days of age must be carried out in a way that creates a clean cut and does not tear the tissue.
- Tail docking of pigs that are seven days of age or over must be carried out by a veterinarian or a veterinary student under the direct supervision of a veterinarian throughout the procedure. The pig must be given pain relief at the time of the procedure.

Key economic consequences for farmers

The main effects of this minimum standard would be any incremental costs of treatment, mortality, mitigation strategies, labour costs, veterinarian costs and carcass condemnations. The most important effects are likely to be mortality and treatment costs from any increase in tail biting that would occur for those farms which are not able to meet this minimum standard. These may include outdoor farms where hot iron cautery is likely to be a fire risk and could result in discontinued tail docking.

Other minimum standards affecting behaviour and space requirements may mitigate tail biting impacts to some degree.

Analysis

Costs for this proposed change in minimum standard have not been included in this analysis at this point.

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9. Net cost impacts

Figure 1 : Net cost impacts of proposed code changes for average 350 sow indoor farm

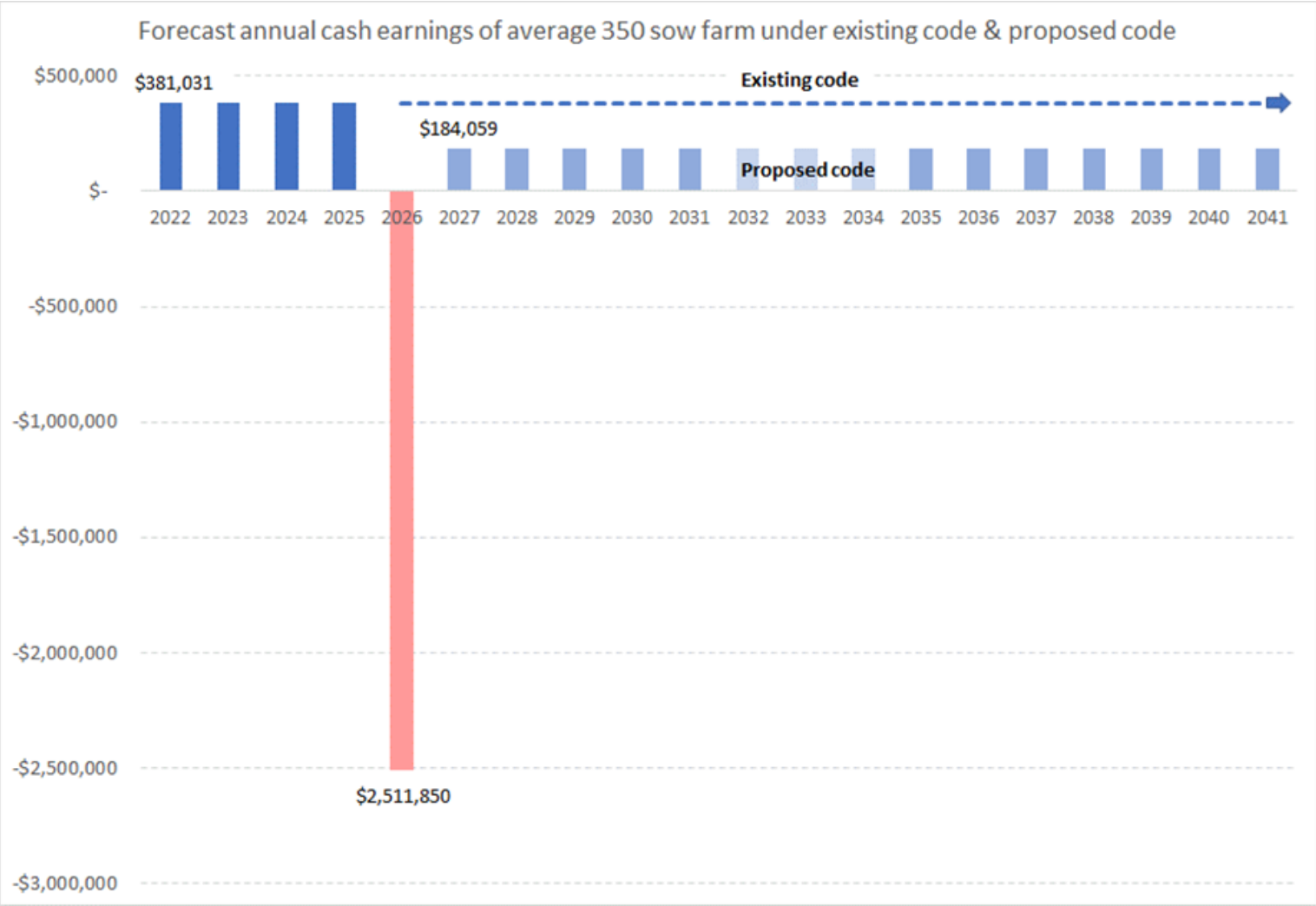


Figure 1 above shows the net cost impacts of the four main proposed changes which are likely to have the greatest economic impact on the industry. These are minimum standards 10 (Farrowing crates), 6, (Grower space) 16 (Weaning age) and 9 (Behaviour). It assumes NAWAC's proposed Minimum Standard 10 (Farrowing crates), Option B and Minimum Standard 6 (Grower Space) Option A. While the four proposed changes have the greatest economic impact, Minimum Standard 10 (Farrowing crates), Option B and Minimum Standard 6 (Grower Space) Option A have the least impact on the modelled 350 sow indoor pig farm. Minimum Standard 10 (Farrowing crates), Option A and Minimum Standard 6 (Grower Space) Option B have a greater economic impact.

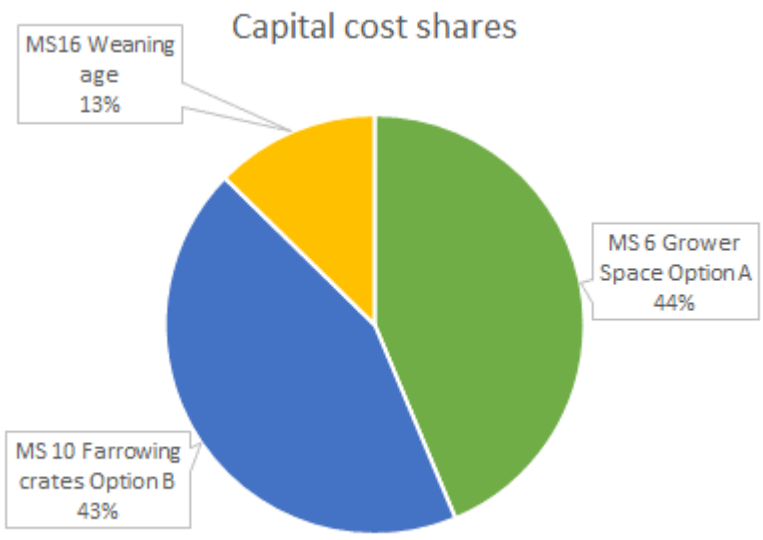
Net expected cash earnings prior to implementation on proposed code changes

Figure 1 shows that before the proposed code changes are implemented in 2026, that farm's annual expected net cash earnings are estimated at $381,031.

Capex required to implement proposed code changes

Implementation of minimum standards 10 (Farrowing crates), 6 (Grower space), 16 (Weaning age) and 9 (Behaviour) together are expected to necessitate a significant investment of cash of $2,695,910 in 2026. The majority of this is capital expenditure and half of it is the result of implementing Minimum Standard 10 as set out in Figure 2 below.

Figure 2 : Breakdown of capex assumed to implement the proposed code changes



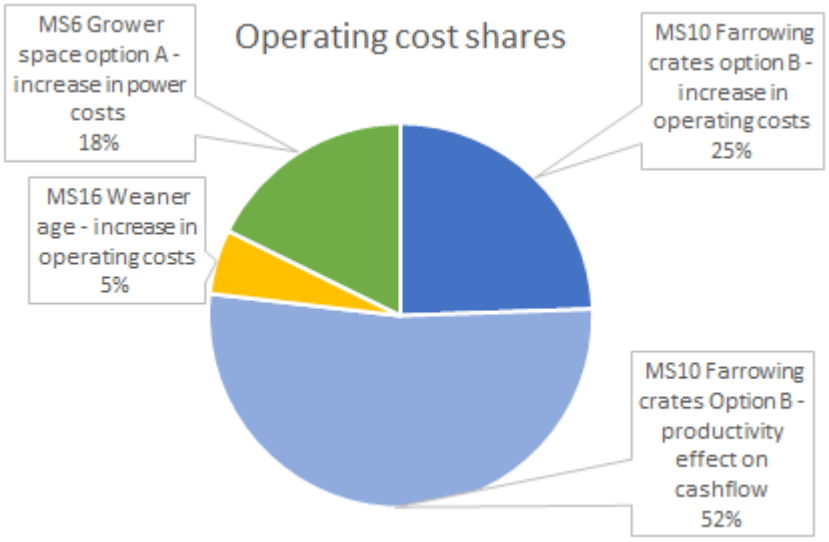
Source : Sapere analysis

Impact of proposed code changes post implementation

From 2027 onwards over the modelling period to 2041 the modelled average 350 sow farm's annual expected cash surplus is expected to fall to $196,874. As shown in Figure 3 below, half of this fall in

expected cash earnings, compared to the status quo is the result of a fall in pork production resulting from higher rates of pre weaning mortality caused by implementing Minimum Standard 10 Option B. Pre weaning mortality is expected to rise from 12 per cent currently to 18 per cent under Minimum Standard 10 Farrowing crates Option B. Another quarter of the fall in expected cash earnings post 2026 is modelled to result from cash asset replacement provision of the infrastructure needed to implement this standard. Other less significant changes in costs include increased power and labour and other inputs.

Figure 3 : Breakdown of reduced net cash earnings post implementation of proposed code changes



Source : Sapere analysis

10. Price effects

Price increase to compensate average farm for costs of proposed code.

The discounted cash earnings foregone by the average 350 sow indoor farm is estimated at $3.8 million. To leave this farm with the same expected discounted cash earnings as today, prices for its pork production would have to rise by 18.8 per cent from 2022 and maintain that level in real terms for 20 years until 2041.

Years to save capital to compensate average farm for costs of proposed code

It would take 19 years of saving of existing cash earnings to cover the cost of the cash needed to invest to meet these proposed code changes if farmers could set aside around $140k per annum (which is the estimated annual operating cash flow of $381k less $240k made up of notional amounts for drawings - $100,000.00, interest - $80,000.00 and tax - $60,000.00) for farm improvements benchmarked from earlier work done by Nimmo Bell.[15]

Looking at this from another angle, how long it would take farmers to pay back the borrowings required to fund the investment needed to implement the proposed code changes from post-implementation cash flows? Our analysis suggests that for this average 350 sow indoor farm that would not be possible. The post implementation annual operating cash flow of $184k would be insufficient to payback and fund the proposed changes.

Impact on price indices

Pork's share of the food price index (FPI) is 0.97 per cent. Pork only makes up 8 per cent of the meat and poultry category.

So, the effect on the FPI of an 18.8 per cent increase in the price of all New Zealand pork would a 0.18 per cent increase in the FPI. The effect on the consumer price index CPI would be 0.03 per cent.

Competition from offshore pork would make it difficult to sustain a price increase of this size as it would undercut New Zealand prices which would reduce sales volumes of New Zealand pork. The extent of these effects is difficult to estimate and would depend on how price sensitive New Zealand pork consumers are, and the relative prices of pork compared to alterative meat options.

[15] 'Economic analysis of farrowing systems, MPI Information Paper No: 2016/06, Final Report for National Animal Welfare Advisory committee and Ministry for Primary Industries, Nimmo Bell, 2016.

Appendix A Proposed Code of Welfare for Pigs

(Append CoW for Pigs)

Appendix B : Freedom Farrowing pen details

SWAP pens

SWAP stands for "Starts with a Pen". They provide more space than a conventional farrowing crate and allow the sow the opportunity to nest-build. The swing-side can be used if litters need to be managed post-farrowing.

These pens are a Danish Freedom Farrowing pen. The front of the creep serves as a customised swing side. This and the sloping allow the sow to be confined in the first days after farrowing where the risk of piglet crushing is greatest. It was developed as part of a collaborative project between University of Copenhagen and Danish Pig Research Centre (with SKIOLD JYDEN, a Danish pig pen supplier).

Sows are given:

- opportunity to build nests as the crate is left open pre-farrowing
- support in lying-down situations.

Piglets are given:

- safe udder access as the crate is closed post-farrowing
- a creep environment
- reduced exposure to the spread of infection between pens.

Key features for staff are:

- fast and safe inspection of piglets
- ability to cross-foster easily during lock-in period
- easy maintenance of good hygiene in the pens
- easy provision of nest building materials.[16]

[16] This section is based on the information provided by FreeFarrowing. See https://www.freefarrowing.org/farrowing-systems/temporary-crating/swap/ for full details

Appendix C : Summary of assumptions for modelling the proposed NAWAC code changes

General assumptions

	Status quo (farrowing crate)	SWAP (Option B temporary or Option A no crate)
Farrowing crates : Main characteristics	- Pen area 4.32m^2 - 5 days in crate pre-farrowing - 4 weeks in crate post-farrowing (total 33 days) - Fully slatted flooring – no separate areas provided - Nesting material: Hessian sacking provided pre-farrowing for farms built post 2010. None provided for farms built prior to 2010	- Pen area 6.5m^2 - Temporary farrowing crate in pen - 1 day in crate pre-farrowing - 2 days in crate post-farrowing (total 3 days) - Nesting material: 15-20kg straw provided 2 days pre-farrowing, topped up daily - Area for piglets to retreat to

<table>
<tr>
<td>Minimum Standard No. 6 – Housing Equipment</td>
<td></td>
<td>NAWAC's proposed minimum standard is that the unobstructed space allowance for growing pigs must be in accordance with the following table:
Table 2 : Proposed NAWAC grower space requirements
<table>
<tr><th>Average weight of pigs in the group</th><th>OPTION A : Space per pig</th><th>OPTION B : Space per pig</th></tr>
<tr><td>≤10kg</td><td>0.20m^2</td><td>0.30m^2</td></tr>
<tr><td>10 – 20kg</td><td>0.35m^2</td><td>0.50m^2</td></tr>
<tr><td>20 – 30kg</td><td>0.45m^2</td><td>0.70m^2</td></tr>
<tr><td>30 – 50kg</td><td>0.65m^2</td><td>1.00m^2</td></tr>
<tr><td>50 – 85kg</td><td>0.90m^2</td><td>1.40m^2</td></tr>
<tr><td>≥85kg</td><td>1.10m^2</td><td>1.65m^2</td></tr>
</table>
Source : Draft Welfare Code for Pigs, Page 13

-</td>
</tr>
<tr>
<td>Minimum Standard No. 16 – Weaning</td>
<td></td>
<td>NAWAC has proposed to amend the minimum standard for weaning by adding that piglets must be at least 28 days old at weaning and that the smallest pigs (runts) must be individually fed or separated into a group to receive extra care.</td>
</tr>
</table>

Retrofitting the new systems within existing infrastructure

		Status quo (farrowing crate)	SWAP – MS10 Option B temporary or Option A no crate MS6 – Housing; and MS16 - Weaning
Costs of making the transition	No. of sows	350	178
	Piglet mortality	12%	18%
	Capital expenditure (year of transition)	$0	$750,945
	Annual cash flow (after transition)	$381,031	$71,187
Time to pay off capital after transition (Sapere analysis, assumes owners required $240k for drawings and interest on borrowings [17]		N/A	Can't pay off based on reduced cash flow

[17] Noting that this time will also be affected by the individual circumstances of the farmers involved, including existing levels of debt and access to credit.

Time to build up capital before transition (MPI analysis, <u>including</u> owners' drawings, interest, and tax)[18]	N/A	5 years, 4 months	5 years, 4 months
Factors that need to be worked through in the transition	- N/A	New waste management system required Access to finance - banks require more equity from pig farmers Investment in capital which will depreciate	- New waste management system required - Access to finance - banks require more equity from pig farmers - Investment in capital which will depreciate
Assumptions	No price premium assumed No price changes assumed No owners' drawings, tax, interests on loans included in Sapere discounted cash flow analysis	No price premium assumed No price changes assumed No owners' drawings, tax, interests on loans included in Sapere discounted cash flow analysis	- No price premium assumed - No price changes assumed - No owners' drawings, tax, interests on loans included in Sapere discounted cash flow analysis

[18] Assumptions: 350 sow farm (same as Sapere) with owner's drawings - $100,000.00, interest - $80,000.00 and tax - $60,000.00. These assumptions were informed by: '*Analysis of Economic Impacts of Transitioning to Alternative Farrowing and Mating Systems',* Sapere, 2021; and '*Economic Analysis of farrowing systems, MPI Information Paper No: 2016/06, Final Report for National Animal Welfare Advisory committee and Ministry for Primary Industries,* Nimmo Bell, 2016).

New build

		Status quo (Farrowing crate)	SWAP – MS10 Option B temporary or Option A no crate MS6 – Housing; and MS16 - Weaning
Main characteristics		- Pen area 4.32m^2 - 5 days in crate pre-farrowing - 4 weeks in crate post-farrowing (total 33 days) - Fully slatted flooring – no separate areas provided - Nesting material: Hessian sacking provided pre-farrowing for farms built post 2010. None provided for farms built prior to 2010	- Pen area 6.5m^2 - Temporary farrowing crate in pen - 1 day in crate pre-farrowing - 2 days in crate post-farrowing (total 3 days) - Nesting material: 15-20kg straw provided 2 days pre-farrowing, topped up daily - Area for piglets to retreat to
Costs of making the transition	No. of sows	350	350
	Piglet mortality	12%	18%
	Capital expenditure (year of transition)	$0	$2,695,910

	Annual cash flow (after transition)	$381,031	$184,059
Time to pay off capital after transition (Sapere analysis, assumes owners required $240k for drawings and interest on borrowings [19]		N/A	Can't pay off based on reduced cash flow

Time to build up capital before transition (MPI analysis, *including* owners' drawings, interest, and tax)[20]	N/A	19 years	19 years
Factors that need to be worked through in the transition	- N/A	- Bankers require more equity from pig farmers than other farmers because of relatively smaller land holdings	- Bankers require more equity from pig farmers - Investment in capital which will depreciate

[19] Noting that this time will also be affected by the individual circumstances of the farmers involved, including existing levels of debt and access to credit.

[20] Assumptions: 350 sow farm (same as Sapere) with owners' drawings - $100,000.00, interest - $80,000.00 and tax - $60,000.00. These assumptions are not included in Sapere's calculations. These figures were informed by: '*Analysis of Economic Impacts of Transitioning to Alternative Farrowing and Mating Systems',* Sapere, 2021; and '*Economic Analysis of farrowing systems, MPI Information Paper No: 2016/06, Final Report for National Animal Welfare Advisory committee and Ministry for Primary Industries,* Nimmo Bell, 2016).

		- Investment in capital which will depreciate	
Assumptions	- No price premium assumed - No price changes assumed - No owners' drawings, tax, interests on loans included in Sapere discounted cash flow analysis	- No price premium assumed - No price changes assumed - No owners' drawings, tax, interests on loans included in Sapere discounted cash flow analysis	- No price premium assumed - No price changes assumed - No owners' drawings, tax, interests on loans included in Sapere discounted cash flow analysis

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