

AUSTRALIAN
Pork[®]

APL projects resulting from the Green Paper process



Reducing cost of production

Automation of the commercial gilt selection process through a digital drafting crush

Project Lead: Divine Tarla, JBS Pork Australia

Completed by: Late 2027

Current gilt selection relies on visual assessment, which can vary between staff and can lead to subjective decision-making and missed defects that can negatively affect production. This project will develop an AI-powered drafting platform that objectively scores replacement gilts for traits including teat number and spacing, external genitalia soundness, body conformation and leg soundness. By identifying the highest value replacement gilts, the platform is expected to improve selection accuracy and reduce labour input by 25-30%.

Slow down and creep it cosy: Improving piglet survival in outdoor farrowing systems

Project Lead: Dr Megan Lucas, University of Melbourne

Completed by: Late 2027

This project aims to reduce piglet mortality in outdoor farrowing systems by improving hut design and piglet protection. Research will investigate sow movements, crushing events, piglet use of creep areas and novel heat sources. A key focus is evaluating a pendulum system designed to slow sow posture changes and reduce rolling related piglet crushing, improving piglet survival and welfare.

Maximising boar nutrition to reduce heat stress and artificial insemination outcomes

Project Lead: Dr Jamee Daly, Adelaide University

Completed by: Late 2026

Seasonal infertility remains a significant challenge for producers. This project will investigate whether targeted summer nutrition and antioxidant supplementation can reduce the impacts of heat stress in boars.

The expected outcomes include improved semen quality, conception rates and litter performance, helping reduce re-mating rates, labour costs and reproductive losses.

No more needles! Investigating micro-needle transdermal patches as an alternative to injection

Project Lead: Dr Kate Plush, SunPork Group

Completed

This project aims to evaluate the use of transdermal drug delivery technologies as an alternative to traditional needle-based delivery in pigs. Traditional injections can cause pain, stress and in some cases even abscesses. The project will pilot the delivery of meloxicam, a commonly used pain relief medication, via a transdermal patch that allows the drug to be absorbed through the skin slowly, extending the period of pain relief.

Needle-free iron injections to eliminate sharps in the farrowing house and improve animal welfare

Project Lead: Divine Tarla, JBS Pork Australia

Completed by: Late 2027

Iron administration is routinely used to prevent anaemia in young piglets, but needle use presents risks to both animals and staff. This project will evaluate the effectiveness of needle-free injectors for delivering iron to three-day-old piglets. The technology has the potential to reduce pain and stress in piglets, while also minimising needle-stick injuries to farm workers.

Animal health and welfare first

Human-animal interactions during pig transport: examining relationships between transport driver attitudes and behaviour and pig behaviour to inform the development of ProHand Pig Transport

Project Lead: Dr Lauren Hemsworth, University of Melbourne

Completed by: Late 2027

Research shows that positive human-animal interactions can improve pig behaviour, while negative handling can increase stress. This project aims to examine driver's attitudes and handling behaviours in Australian operations and use these findings to develop targeted training programs that improve handling practices and pig welfare during transport.

Applying Welfare Quality® Assessment to examine sow and piglet welfare across varied lactation housing systems

Project Lead: Dr Kate Plush, SunPork Group.

Completed by: Mid 2027

This project will provide the first comprehensive assessment of sow and piglet welfare and performance across different housing systems using the internationally recognised Welfare Quality® framework. The research will evaluate welfare, behaviour, health, and productivity outcomes to generate robust scientific evidence to inform future housing investment decisions and support policy development as Australia responds to evolving community expectations and international trends regarding farrowing crate use.

Influenza A virus: baselining endemicity in Australian domestic swine populations in preparedness for emerging threats

Project Lead: Stacey Lynch, CSIRO

Completed by: Late 2026

This project is establishing the first proactive baseline of Influenza A virus exposure in healthy commercial pigs in south-eastern Australia. Early results confirm widespread exposure across sow and progeny populations. The work will strengthen surveillance capability, improve preparedness for endemic and emerging influenza threats and support stronger collaboration between industry, government and research agencies.

Remote monitoring effectiveness of carbon dioxide (CO₂) stunning in real-time

Project Lead: Robert Hewitt, SunPork Group

Completed by: Late 2026

This project will develop a real-time AI-based monitoring system to assess pig welfare during CO₂ stunning in commercial processing facilities. Using accelerometers and machine learning, the system will identify variation in stunning responses and provide objective data to support management decisions. The technology aims to strengthen animal welfare outcomes and provide objective welfare monitoring during stunning.

Better animal welfare through AI surveillance of CCTV footage at abattoirs

Project Lead: Robert Hewitt, SunPork Group

Completed by: Late 2026

As CCTV becomes increasingly common in processing facilities, this project will evaluate AI technology that can automatically monitor footage for potential animal welfare issues in real time. The system aims to support rapid intervention, strengthen compliance and auditing processes, reduce manual monitoring requirements and provide transparent, evidence-based welfare reporting.

Finding the balance between sow welfare, piglet welfare and stockperson safety – Management strategies for temporary confinement farrowing systems

Project Lead: Dr Megan Trezona, Craig Mostyn Group

Completed by: Late 2026

Increasing industry and consumer expectations are driving the need to improve sow welfare during farrowing. Temporary confinement systems may provide a practical balance between sow welfare, piglet survival and stockperson safety. This project will evaluate different confinement schedules and their effects on animal welfare, personnel safety and production performance, with the aim of developing standard operating procedures and identifying key husbandry practices for effective sow and piglet management.

Advancing antimicrobial stewardship in the Australian pig industry

Project Lead: Dr Kylie Hewson, CSIRO

Completed

This project aimed to strengthen antimicrobial stewardship (AMS) in the Australian pig industry by developing a consistent, industry-wide framework to measure, benchmark, and improve responsible antimicrobial use on farms. The objective was to address the lack of a standard method for assessing AMS performance, tracking progress, informing investment decisions, and demonstrating stewardship outcomes to key stakeholders. Through collaboration with the APL AMR Reference Group and broader industry consultation, the project successfully delivered the Pig Industry AMS Assessment Framework. The framework support continuous improvement, and demonstrate the industry's commitment to responsible antimicrobial use, animal health, welfare, and market confidence.

Development of a genomic reporting tool to enhance the control of porcine bacterial pathogens

Project Lead: Prof Sam Abraham, Aquila Scientific

Completed

This completed project developed a proof-of-concept digital platform that combines bacterial identification, antimicrobial resistance genes, virulence factors and serotype information into a single reporting system. While the platform remains a proof-of-concept, it will help veterinarians and producers access complex diagnostic information more easily, support faster disease investigation, improve treatment decisions and enhance antimicrobial stewardship.

2025 PROJECTS

Leading biosecurity

Epidemiological modelling to better understand potential welfare issues on pig premises during an ASF response

Project Lead: Dr Richard Bradhurst, University of Melbourne

Completed by: Late 2026

This project will enhance Australia's ASF modelling capability by identifying animal welfare risks that could arise if movement restrictions are imposed during an outbreak. Improved modelling of pig populations, feral pig interactions, movement controls, disposal requirements and stakeholder input will support preparedness planning and help minimise welfare challenges during an emergency disease response.

Development and piloting of a feral pig exposure assessment tool and feral pig proximity alert

Project Lead: Dr Kirsty Richards, SunPork Group and NSW DPIRD, University of Melbourne, CEBRA, National Feral Pig Action Plan

Completed by: Late 2026

This project is developing Australia's first nationally consistent system for assessing feral pig biosecurity risks to commercial piggeries. By combining existing mapping and alert systems with producer-focused reporting, the project will produce a tool to identify and manage feral pig exposure risks. This will support producers to reduce disease risk from feral pigs, helping strengthen preparedness for ASF and other biosecurity threats.

Assessing the effects of APVMA-approved and other potential decontamination chemicals suitable for EAD events, on livestock truck and trailer infrastructure when used in routine cleaning procedures

Project Lead: Dr Megan Trezona, Craig Mostyn Group

Completed

This project evaluated disinfectants suitable for routine use, both APVMA-approved and not approved. The findings identified products that effectively disinfect while minimising damage to truck and trailer materials when routinely used. The results provide practical guidance for industry and regulators, supporting improved biosecurity preparedness, vehicle longevity and potential APVMA-registration of additional disinfectant products.

2025 PROJECTS

Developing viable environmental solutions

Pork sector emissions abatement via thermal conversion (gasification) of piggery spent litter into sellable biochar

Project Lead: Kari Cooper, SunPork Group

Completed

This project explored whether piggery spent litter could be converted into biochar through thermal processing. While technically feasible, economic challenges currently limit commercial adoption. The research identified opportunities for further optimisation and alternative applications, providing valuable insights for future innovation in waste management, resource recovery and emission reduction outcomes.

Independent validation of PigBal Scope 1 and 2 Calculations

Project Lead: Eugene McGahan, Integrity Ag Pty Ltd

Completed

This project independently validated the greenhouse gas emissions calculations within PigBal 5, the industry's mass balance calculator. The review confirmed the methodology is scientifically robust and suitable for industry use, providing producers with greater confidence when estimating emissions. The work also identified future research opportunities related to pond emissions, outdoor systems and Scope 3 reporting. PigBal 5 is now available on the APL website.

2025 PROJECTS

Increasing share of fresh meat

Evaluation of the timing of Improvac® vaccine and effectiveness in pigs of differing liveweights to control boar taint compounds and pork quality

Project Lead: Prof Frank Dunshea, University of Melbourne

Completed by: Late 2026

This study demonstrated that the second Improvac® vaccination can be administered between two and five weeks prior to slaughter without affecting growth performance, carcass traits, pork quality or profitability. The findings provide producers with greater flexibility for managing growth rates, marketing schedules and processing requirements, while still maintaining effective control of boar taint.

Animal health and welfare first

National AMR Surveillance developing the RASP herd health/AMR index tool for the Australian pig industry

Project Lead: Prof Sam Abraham, Aquila scientific

Completed by: Late 2029

Taking the next step in Australia's pig AMR program, this project will shift from periodic surveillance activities to a comprehensive national system that provides both public-health information and practical, herd-level data for vets and producers. This project will improve understanding of emerging AMR trends on farm, deliver tailored and actionable AMR information to veterinarians and producers and strengthen Australia's capacity to monitor and respond by tracking resistance patterns over time and across regions.

Impacts of minimum and average weaning age on piglet and sow welfare

Project Lead: Dr Kate Plush, SunPork Group

Completed by: Early 2028

This project will compare 21- and 28-day weaning ages under Australian commercial conditions to understand the welfare impacts for both piglets and sows. It will look at whether minimum or average weaning age is the better measure. The project will assess outcomes such as piglet behaviour, injuries, stress, growth, feed intake, health, survival, and later performance. As well as sow body condition, injuries, stress and rebreeding results. The aim is to provide science-backed evidence to guide future weaning age recommendations and support balanced welfare decisions for both piglets and sows.

Monitoring the effectiveness of CO₂ stunning

Project Lead: Robert Hewitt, Sunpork Group

Completed by: Late 2027

This project will quantify the effectiveness of carbon dioxide (CO₂) stunning in Australian pig processing facilities, providing robust scientific evidence to support current industry practices and strengthen community confidence in animal welfare outcomes.

National guidance for stunning and lairage management of cull sows and boars

Project Lead: Dr Sam Allan, All Things Meat

Completed by: Mid 2027

This project will create national, practical guidance for handling, managing and stunning cull sows and boars in Australian abattoirs. It will give processors clear instructions on low-stress movement, lairage management, restraint, equipment setup and effective stunning across CO₂, electrical and captive-bolt systems. The project will deliver a guidance document and quick-reference factsheet to support better animal welfare, staff training, audit readiness and consistent practices across the pork processing sector.

Co-contribution to creation of a detailed action plan for improved access to veterinary vaccines and vaccine innovations for Australian animal health

Project Lead: Dr Kylie Hewson, CSIRO

Completed by: Mid 2027

This project will develop a national action plan to improve access to veterinary vaccines and vaccine innovations for Australian livestock industries, including pork. It will map current and future vaccine needs, identify gaps in vaccine availability, review regulatory and commercial barriers, and bring together industry, government, regulators, researchers and vaccine companies through a Community of Practice. For producers, the aim is to help ensure important vaccines are easier to access, research investments are more likely to become usable products, and the industry is better prepared for endemic and emergency animal diseases.

Pen-side (Point of care) multiplex pathogen detection platform

Project Lead: Kevin Darling, DNAiTECH

Completed by: Mid 2027

This project will adapt a low-cost, point-of-care testing platform for use in the Australian pig industry, enabling rapid on-farm detection of key enteric pathogens including *Lawsonia intracellularis*, *Brachyspira pilosicoli* and *Brachyspira hyodysenteriae*. This technology will provide producers and veterinarians with a practical, pen-side testing tool that delivers reliable results from a range of sample types, reducing reliance on timely lab testing. This accessible and affordable tool will improve disease surveillance and support informed treatment decisions to improve herd health outcomes.

2026 NEW RESEARCH PROJECTS

Developing viable environmental solutions

Novel deep litter management for operational and environmental benefits

Project Lead: Dr Clayton Butterly, University of Melbourne

Completed by: Late 2028

This project will test whether granulated lignite can improve deep-litter pig housing by making bedding last longer, reducing smell and ammonia, lowering bedding and labour costs, and improving the fertiliser value of used litter. For producers, it aims to deliver practical evidence on whether this bedding additive can create cleaner sheds, better litter conditions, fewer environmental impacts and a clear cost-benefit case for adoption in commercial piggeries.

Optimising manure management to deliver lower emissions

Project Lead: Dr Stephen Wiedemann, Integrity Ag P/L

Completed by: Mid 2028

This project will analyse the emission reduction potential of multiple manure management systems and develop an evidence-based roadmap to reduce emissions in conventional piggeries. The roadmap will also quantify the emission reduction potential for the industry. For producers, there will be clear identification of investment and funding models required to support the adoption of emission reduction technologies and identification of the technical requirements and cost-benefit case for different manure management technologies.

Environmental impact of bedding replacement frequency in deep litter sheds

Project Lead: Dr Jessica Craig, JBS Pork Australia

Completed by: Mid 2028

This project will help producers understand how often deep-litter bedding should be replaced to balance pig welfare, shed conditions, fertiliser value and cost. It will compare different bedding replacement methods to see how they affect pig performance, bedding quality, nutrient levels, labour needs and the value of used bedding as fertiliser.

For producers, it aims to provide practical recommendations to help manage deep-litter systems more efficiently, reduce waste and environmental risk, and make better decisions about bedding use and replacement timing.

Reducing impact of plastic waste from reproductive technologies

Project Lead: Prof Roslyn Bathgate, The University of Sydney

Completed by: Mid 2028

This project aims to find solutions to the pork industries largest source of single use veterinary plastic waste through the development of plant derived bioplastic artificial insemination products. This project will provide viable opportunities for the industry to reduce on-farm waste to landfill, continuing the industries leadership in environmentally sustainable production.

Code of practice and guidelines for on-farm biogas production and use in piggeries

Project Lead: Dr Preethi Gopalan Deshmukh, Scolexia P/L

Completed by: Early 2027

This project will update the pork industry's Code of Practice for on-farm biogas production and use, making sure it reflects current technology, safety requirements and regulations. For producers, it will provide clearer, practical guidance on how to safely run biogas systems, navigate approval processes, and better understand carbon credit requirements so future projects are more likely to be compliant, financially viable and able to generate saleable credits.

Mapping of piggery wastewater potential with mobile struvite recovery system

Project Lead: Jayant Keskar, Enpro Envirotech

Completed by: Late 2026

This project will assess whether a mobile struvite recovery system could help piggeries turn wastewater nutrients into a useful fertiliser product while reducing costly blockages in pipes, pumps and equipment. It will map nutrient levels in piggery wastewater, estimate how much phosphorus could be recovered, and develop an early design and business case for a shared mobile system suited to small and medium piggeries. For producers, this will provide evidence on whether this approach could reduce maintenance, improve nutrient management, and create potential fertiliser value from extracted struvite.

Increasing share of fresh meat

Enhancing the colour of sow meat using electrical stimulation and staged chilling

Project Lead: Dr Melindee Hastie, University of Melbourne

Completed by: Late 2027

This project will test whether simple processing changes including electrical stimulation and staged chilling can make sow meat lighter in colour and more suitable for higher-value fresh pork products, rather than mainly being used for processed products. For producers and processors, the key benefit is the potential to increase the value of sow meat using practical, relatively low-cost changes in the abattoir, with the project delivering clear guidance on which treatment works best and whether it is worth adopting commercially.

Reducing cost of production

Slowing late finishing pig growth to improve full value pig grading

Project Lead: Robert Hewitt, SunPork Group

Completed by: Late 2027

This project will test whether in-water treatments can safely slow the growth of late-finisher pigs for short periods when producers need more flexibility, such as during public holiday backlogs, processor disruptions, market delays or emergency disease responses. It aims to identify practical compounds that reduce feed intake enough to slow growth without compromising welfare, helping producers better manage carcase weights, stocking density, processing delays and penalties for pigs falling outside retailer grids.

Understanding the ABC-4 value of Australian nursery feed ingredients

Project Lead: Robert Hewitt, SunPork Group

Completed by: Late 2027

This project will help producers and nutritionists produce more efficient weaner diets by measuring the acid-binding capacity (ABC-4 value) of common Australian feed ingredients. It will show which ingredients help keep weaner stomachs more acidic after weaning, supporting better digestion, gut health, growth and feed efficiency. The project will deliver an Australian ABC-4 ingredient dataset and test whether low acid-binding diets improve weaner performance, helping reduce feed costs and support reduced reliance on antibiotics, zinc oxide and other additives.

Accelerating Australian genetic improvement

The use of oxytocin during post-cervical AI (PCAI) in pigs

Project Lead: Divine Tarla, JBS Pork Australia

Completed by: Mid 2028

This project will test whether adding oxytocin during post-cervical artificial insemination (PCAI) can improve sow breeding results under commercial conditions. It will look at the optimal dose, effects on boar semen, and measure outcomes such as pregnancy rate, farrowing rate, total piglets born, and piglets weaned. The aim is to provide clear evidence on whether this relatively low-cost approach can improve reproductive performance, increase the number of pigs weaned per sow, and deliver a positive return on investment.

Preserving Australian pig genetic resources: a comprehensive diversity assessment

Project Lead: Dr Rea Alexandri, The University of New England

Completed by: Mid 2028

This project will create the first broad picture of genetic diversity in Australian commercial pigs by analysing DNA data from breeding populations across the industry. It will help identify whether any lines are at risk of inbreeding, how different pig populations are related, and where crossbreeding could be used more strategically to maintain diversity and improve performance. For producers and breeding companies the project will deliver a national genetic diversity baseline, confidential company reports, and practical guidance to support long-term breeding resilience and future productivity.

Breeding for the future: genetic innovation for resistance to JEV in pigs

Project Lead: Dr Jo-Anne Harper, JBS Pork Australia

Completed by: Late 2027

This project will use historical data from the 2022 Japanese Encephalitis Virus (JEV) outbreak to investigate whether some pigs are naturally more resilient to JEV than others. It will identify and quantify natural genetic variation in resilience traits, providing the foundational evidence required to inform long-term strategies for disease preparedness and herd health.
