

Pig Health and Welfare Council Biennial Report 2017–2018



Pig Health and Welfare Council

The Pig Health and Welfare Council (PHWC) is a cross-industry alliance representing every stage of pig production along the chain which aims to promote a coordinated and integrated approach to improving pig health and welfare.

Chairman: Dr. Jane Downes BVSc MRCVS Chairs of the subgroups: Dr. Annie Davis BVMS MRCVS, Professor Jim Scudamore and Mrs Grace Webster BVMS MRCVS Agricultural Industries Confederation (AIC) The Animal Health and Welfare Board for England (AHWBE) Animal Plant Health Agency (APHA) Agriculture and Horticulture Development Board – Pork

The Members of the Pig Health and Welfare Council are:

(AHDB – Pork)

British Meat Processors Association (BMPA)

British Pig Association (BPA)

Control of Antimicrobial Resistance Scotland (CARS)

Department for the Environment, Food and Rural Affairs (Defra)

Hybu Cig Cymru (HCC)

National Pig Association (NPA)

Northern Ireland Pork and Bacon Forum (NIPBF)

Pig Veterinary Society (PVS)

Quality Meat Scotland (QMS)

Red Tractor (RT)

Responsible Use of Medicines in Agriculture Alliance (RUMA)

Royal Society for the Prevention of Cruelty to Animals (RSPCA)

Trading Standards

In addition to the formal organisations, there are producer members on all the subgroups of the Council, to represent the diverse production systems within the UK.

Observers invited to attend PHWC meetings:

Food Standards Agency (FSA)

Chief Veterinary Officer (CVO) for UK, Christine Middlemiss

Chief Veterinary Officer (CVO) for Wales, Christianne Glossop

Chief Veterinary Officer (CVO) for Scotland, Sheila Voas

The work of the Pig Health and Welfare Council would not be possible without the valued support from the Secretariats listed below:

The Secretariat for the Pig Health and Welfare Council is provided by AHDB Pork

The Secretariat for the Antimicrobial Usage subgroup is provided by the VMD

The Secretariat for the Pig Meat Safety subgroup is provided by AHDB Pork

The Secretariat for the Surveillance subgroup is provided by AHDB Pork

The Secretariat for the Welfare subgroup is provided by AHDB Pork

Foreword

The Chief Veterinary Officers of England, Wales and Scotland welcome the fourth biennial report of the Pig Health and Welfare Council (PHWC). We recognise and value the work of PHWC in driving pig health and welfare improvements across the sector.

Firstly, we would like to acknowledge the support of PHWC and colleagues in the pig industry in raising awareness of the threat from African swine fever (ASF). ASF presents an important and increasing risk to the pigs in the UK. In an outbreak, heightened disease-control measures and a potential ban on pork exports could have a financial impact on the pig industry. The arrival of ASF would also affect the modest export market of our native rare breed pigs, and those with small populations and genetic pools could be heavily compromised if they had to be culled for disease-control purposes. We must all continue to play our part in raising awareness and communicating the risks to pig owners, promoting good biosecurity and ensuring early detection and effective control if the worst happens.

As we move ever closer towards an EU Exit, it is more important than ever that we maintain and demonstrate our high standards of animal health and welfare. This is critical to our pig industry in optimising production efficiency, underpinning trade, supporting food security, protecting public health and maintaining consumer confidence. We need to work in partnership across government, industry, science and research, using a sound evidence base to agree disease priorities. We can achieve much more by working together to deliver sustainable livestock and food production.

From a 'One-Health' perspective, we note the collaborative work done on food safety and the challenges brought by hepatitis E and livestock-associated methicillin-resistant Staphylococcus aureus (LA-MRSA). Partnering with Public Health England (PHE) and surveillance into hepatitis E within the UK pig population have helped research identify and mitigate risks to public health. Work has progressed on antimicrobial resistance (AMR), an issue of global health significance and important to a sustainable pig industry. Industry leaders have taken a proactive approach in 'grasping the nettle', encouraging best practice and facilitating the collection of data on antibiotic use. We see that PHWC continues to support the industry in reducing antibiotic usage, providing evidence to give producers the confidence to change routine procedures. Communication remains key to promoting the message to all pig owners that veterinary medicine use has to be responsible use – as much as necessary, as little as possible. Reports on reduced antimicrobial use from the pig sector reflect the efforts of pig producers working with veterinary practitioners to use alternative first-line interventions, focusing on biosecurity, animal husbandry and disease control.

PHWC's welfare group has played a key role in the development of Defra's revised draft code of practice for pig welfare. Their input over the last year has ensured that the new code, when published, will enhance welfare standards, have measurable outcomes and be relevant and practical for the pig industry.

In summary, we congratulate PHWC on continuing to provide a sterling service to the pig industry. We are optimistic that we will see even further advances in pig health and welfare over the next 24 months and we look forward to ongoing collaboration with PHWC.



Christine Middlemiss Chief Veterinary Officer (UK)



Sheila Voas Chief Veterinary Officer (Scotland)



Cristianne Glossop Chief Veterinary Officer (Wales)

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Introduction

Welcome to the fourth report of the Pig Health and Welfare Council (PHWC), which recounts the activities of the Council during 2017 and 2018. This has been a challenging time, with the Council working to enable the industry to introduce changes in practices that are necessary to meet the targets in respect of reducing antibiotic usage and driving up welfare standards across production systems. The Council has also continued to deliver high health standards so that the pigs produced from the English pig herd produce pork and pork products which meet consumer demands in the UK and in the wider world export market. The Council has been praised for its forward thinking in the preparation and ongoing delivery of the 20:20 Vision. It is now working toward the 20:30 Vision to secure a safe, sustainable and profitable industry which has the ability to invest in new technologies, disease-control measures and high welfare standards in all production systems to meet the requirements of present customers and new emerging markets.

Working in partnership and being willing to share information and knowledge is key to the success of the Council. The members represent the entire pork chain from farm to processing, allied industries including animal feed, welfare charities, government departments and local authorities and academia. As the industry is integrated throughout Great Britain and because disease does not recognise country borders, representatives from Northern Ireland, Wales and Scotland also attend. This ensures that everyone can benefit from the ongoing research and training initiatives and resources are not wasted through duplication of effort. The Council also works with those representing the other Sector Councils, Cattle, Sheep, Poultry, Fish, Goats and Equines. The sectors face many similar challenges and much work has been done to deliver the Livestock Information system. This system will enable accurate traceability and link to other systems to collect information which will provide the level of surveillance necessary to protect our farmed animals.

The pig industry has made considerable advances in reducing the quantity of antibiotics used during production and in altering methods of administration to allow a greater degree of control. The group continues to support the Veterinary Medicines Directorate (VMD) and AHDB in the accurate completion of the electronic medicine book (eMB), which allows for national monitoring of antibiotic usage and for producers to benchmark themselves against other producers.

Disease surveillance continues to be a major concern for the group. Recognising changes in levels of endemic disease and ensuring new emerging diseases are recognised as early as possible are critical in maintaining herd health. The uptake of disease-control measures, including biosecurity and vaccination, is becoming well embedded throughout the industry. The Council works closely with the assurance schemes to promote necessary standards to achieve health and productivity outcomes. The cleaning and disinfection of housing and the moving of outdoor pigs plays an important role in reducing disease loads.

All animals should have a life worth living at every stage of production and in each production system. Work is ongoing to limit the use of tail docking to prevent tail biting and to give sows greater freedom during the farrowing period.

In respect of public health, there remain ongoing risks which need to be managed carefully to protect the consumer and those working in the industry. Salmonella continues to be the greatest public health risk, but other infections such as MRSA and hepatitis E have been highlighted by EFSA. The group has held two workshops, one for each of these infections, and has ongoing projects to deliver the agreed key actions.

The achievements of the Council are a result of the expertise and dedication of each member of the Council and its subgroups and supported by the continuing financial support of AHDB. I would like to express my sincere thanks to all members and many others who have given up their time to attend meetings and present information in their specialist areas to ensure that we are able to make sound decisions based on current scientific knowledge. I trust that the Council can continue to provide strong leadership in the area of pig health and welfare as we face the challenges and opportunities outside the EU.

Jane Downes Chair

About PHWC

The Pig Health and Welfare Council formed in 2004 to drive implementation of the Pig Health and Welfare Strategy, launched previously in December 2003. Following the review of progress, a new strategy for pig health and welfare in England was developed with the input and support of a broad range of industry organisations, coordinated by AHDB Pork (formerly BPEX) – the division with responsibility for the levy collected on pigs by the Agriculture and Horticulture Development Board.

'20:20 Pig Health and Welfare, A Vision for 2020' was launched in August 2011 and a new Pig Health and Welfare Council was appointed by the cross-industry sponsoring organisations – Agricultural Industries Confederation (AIC); Animal and Plant Health Agency (APHA); British Meat Processors Association (BMPA); Agriculture and Horticulture Development Board – Pork ; British Pig Association (BPA); National Pig Association (NPA); Pig Veterinary Society (PVS); Red Tractor (Assured Food Standards); Responsible Use of Medicines in Agriculture Alliance (RUMA); and the Royal Society for the Prevention of Cruelty to Animals (RSPCA). Defra, Food Standards Agency (FSA) and Quality Meat Scotland (QMS) were invited to attend meetings as observers. Dr Jane Downes was appointed PHWC Chairman on 31 May 2017, replacing Professor Jim Scudamore who was PHWC Chairman from March 2012 to May 2017.

Animal health and welfare has been a major part of Defra's role. Advice from the Independent Responsibility and Cost Sharing Group, set up following the FMD outbreak in England, in 2007, was that animal keepers could play a greater role in tackling animal disease. The Animal Health and Welfare Board for England (AHWBE), established in 2011, brought together independent people with the relevant knowledge and skills, regarding both farm and companion animals, with government officials. AHWBE can make direct recommendations to Defra ministers, regarding strategic policy affecting health and welfare of animals.

Species-specific groups represent the interests of each sector. The Pig Health and Welfare Council (PHWC) plays an important role in liaising with AHWBE, Defra and FSA on common government and industry objectives to improve health and welfare. 2014 saw changes to the structure of the established Pig Health and Welfare Council (PHWC) from the 20:20 strategy, moving from eight objectives to a more streamlined set of key strategic priorities. The reduction has allowed the Council to focus in four key areas which are of significant importance to the industry, while remaining nimble and agile enough to adapt to any unforeseen changes that may appear on the horizon.

The PHWC subgroups now cover the following areas:

- Antimicrobial Usage subgroup Reducing antimicrobial use in pig production
- Disease Surveillance subgroup Improving preparedness for exotic and emerging diseases
- Pig Meat Food Safety subgroup Enhancing pig meat food safety
- Welfare subgroup Enhancing pig welfare

The proposed reorientation of the PHWC strategy into these four themes did not infer that other strategic themes, such as minimising the impact on the environment were no longer of key importance to the industry and wider stakeholders. It is acknowledged that the PHWC may not be the most appropriate forum to affect change in these areas and that a more precisely defined set of strategic themes could culminate in more tangible delivery and success.

The terms of reference for the new format of Pig Health and Welfare Council and its subgroups can be found below (for the full terms please refer to Appendix 1).



Pig Health and Welfare Council

The **Pig Health and Welfare Council** aims to be a resource for the pig industry by providing advice on areas of strategic policy and setting strategies. Key areas of focus are surveillance and disease risk assessment, promotion of welfare as well as prudent antimicrobial usage through improved disease management. This can only be achieved by a close working relationship with pig keepers, the veterinary profession, government and allied industries. The PHWC recognises that its ongoing enterprises must be openly discussed with all interested parties in the pig sector and that results are communicated at all levels from the farmer to government and Chief Veterinary Officer when necessary. The main responsibility for the Pig Health and Welfare Council is to enhance the health and welfare of pigs in England.





Disease Surveillance subgroup

The **Disease Surveillance subgroup** has the main aim of providing advice to PHWC on proposals for effective surveillance of pig health and welfare in England. This is achieved though integrative work across the industry in the same manner as the main PHWC. This group's main focus is to provide horizon scanning on new pathogens and emerging diseases of importance to the pig industry and on changes in levels of endemic disease within the UK. The subgroup then uses this information to formulate strategies of benefit to the UK pig industry and to recommend a course of action in the prevention, reduction or eradication of significant diseases. The provision of a robust, reliable and integrated disease surveillance system forms one of the ongoing long-term strategic aims for this group.



Pig Meat Food Safety subgroup

The **Pig Meat Food Safety subgroup** aims to be the authoritative group for advice on strategic policy, surveillance, research and management and control of zoonotic hazards in pig meat production. This will be manifested by the development of a road map to achieve improvements in pig meat safety. This work requires extensive investigation and evaluation of current knowledge on reducing zoonotic-related food risks and collaboration with government, pig keepers, producers, veterinarians, processors, retailers and allied industries. The inclusion of all these groups is required to ensure that there is 'whole chain' ownership of the road map and that there is shared commitment to its outcomes.



Antimicrobials subgroup

The Antimicrobial Usage subgroup has been charged with reviewing and eliciting change in the pig industry with regards to responsible use and stewardship of antimicrobials. The group will actively seek out information on all aspects of antimicrobial usage by the pig industry and identify crucial gaps in knowledge. The group recognises the need to safeguard antimicrobials for future generations and to reduce the risk of resistance developing. This can only be achieved through an informed approach to antimicrobial usage, based upon evidence in optimising efficacy in antimicrobial administration, as well as investigating alternatives to antimicrobials wherever possible. In addition, it is vital that the whole of the pig industry supports and adopts these measures in good practice. The antimicrobial usage subgroup aims to ensure open and informed communications on its findings to the public and stakeholders.



Welfare subgroup

The Welfare subgroup is focusing on all aspects of pig welfare applicable to the UK pig industry. Pig welfare within the British Isles needs to reflect the diverse production methods within the industry, which often presents unique challenges when compared with our European counterparts. The subgroup aims to bring a consensus on the key pig welfare issues to be investigated and the ultimate aims for each issue. This work requires considerable amounts of facilitation between the pig industry (including pig keepers, slaughterhouses and processors), allied industries, veterinary surgeons and paraprofessionals, welfare scientists, consumer organisations and government. The aim of which is to develop workable strategies and initiatives to address the key issues identified. The subgroup may engage research in areas to which it determines there is a gap in knowledge and utilise this to inform PHWC of any resulting recommendations.

The pig industry structure

3.1 Size and distribution of the industry

3.1.1 Size of the UK pig herd

Latest figures from Defra show that in June 2018 the UK pig herd was just over 5.0 million head, up 1% on the previous year. This was due to a 1% rise in the number of feeding pigs, though the survey also showed a 2% decline in the number of female breeding pigs.



Figure 3.1 Total pigs on agricultural holdings in the UK, 1994–2018.



Figure 3.2 Female breeding pigs on agricultural holdings in the UK, 1994–2018

Thousand head	2016	2017	2018
Total pigs	4,866	4,969	5,012
Breeding pigs	509	512	504
Female breeding herd	415	417	409
Sows in pig	295	297	289
Gilts in pig	55	55	58
Other sows (suckling or dry)	65	64	63
Other breeding pigs	94	95	94
Boars for service	15	14	13
Maiden gilts	79	81	81
Finishing pigs (incl. barren sows)	4,356	4,457	4,509

Table 3.1 Pigs on agricultural holdings in the UK, June 2016–18Source: Defra June Survey of Agriculture

The decline in the breeding herd was somewhat unexpected, given the good financial position of producers during 2017 that continued into early 2018. The number of pigs slaughtered did decline towards the end of 2018, compared with the same time the year before. However, throughputs in January 2019 were higher than January 2018. This suggests the breeding herd may actually have been larger than reported, even if the overall pig herd was broadly accurate. As well as anecdotal information supporting this view, there is also evidence from pig feed production statistics, which show a sustained increase in breeding pig feed production, even if overall pig feed production is falling.

3.1.2 Number and size distribution of commercial holdings

Defra figures from the 2017 June Agricultural Survey show a 2% increase in the number of UK commercial agricultural holdings with pigs between June 2016 and June 2017, reaching 11,100. This was driven by an increase in the number of holdings with up to 299 pigs, which totalled 8,900 - 3% up on the year before. Within this, the 10-49 pigs group particularly expanded (+5%). However, holdings with 299 pigs or fewer contain just over 5% of the total UK herd, with 84% of pigs being held on holdings that number at least 1,000. Conversely, there was a decline in the number of farms with breeding pigs, which fell by 1% to just under 6,000. This was driven by a decline in smaller holdings, while the vast majority of the herd was located on a small proportion of this total. The 806 farms with 100 or more sows accounted for 86% of the national breeding herd. The number of holdings with feeding pigs was up 3% at 8,800, with around 3,700 of these also having breeding pigs. However, it should be noted that the June Agricultural Survey focuses on commercial holdings and, therefore, these statistics may not accurately reflect the number of smaller producers.



The numbers above include many holding that keep pigs but are also engaged in other agricultural activities. Recent UK-wide figures are not available. However, in England, there were 2,187 specialist pig farms in 2017, around 200 more than in 2016.

3.1.3 Location of pig producers

Pig producers are highly geographically concentrated. Of the 5 million pigs in the UK, around 81% were in England, 13% in Northern Ireland, 6% in Scotland and the number in Wales was less than 1%. In 2016, over half of England's pigs were concentrated in just four counties: Norfolk, Suffolk and North and East Yorkshire.



Figure 3.3 Geographical locations of pig production in the UK, June 2017

3.1.4 Abattoirs slaughtering pigs

The number of abattoirs slaughtering pigs has declined considerably over time as many small plants have stopped trading, to be replaced by fewer, larger ones. During 2017, there were 112 English abattoirs killing pigs, around half the number in the late 1990s. Only 15 of these specialised in pigs, with the remainder also handling other species. The decline in abattoir numbers has led to a high degree of concentration. The 15 specialist pig abattoirs accounted for around 74% of all pigs slaughtered in England during 2017. In fact, the 11 largest plants (including two non-specialist ones) killed over 90% of all pigs.

3.1.5 Workforce on pig farms

Detailed figures are available on the workforce in England's specialist pig farms for 2017. At that time, they employed a total of 6,900 workers, an average of 3.1 per holding. Just over 40% of the workers on specialist pig farms were farmers, partners, directors and spouses, working either full-time or part-time. Around 35% were regular full-time workers, including managers. The remainder was made up of part-time and casual workers. The number of people working on non-specialist pig farms is unknown.

3.2 Key facts

- 1. Since the peak of production in 1997–98, the total number of pigs on UK agricultural holdings has fallen from more than **8 million** to **5 million** in 2018, **a fall of 38%**.
- 2. The number of female breeding pigs has fallen from **800,000** to **409,000 (47%)** over the same period.
- 3. There were **11,100** commercial agricultural holdings with pigs: **6,000** had female breeding pigs (average number **70**) and **8,800** had finishing pigs (average number **509**). With the very small units of 5 or fewer breeding pigs or 10 or fewer finishing pigs taken out, the average number of breeding females in a herd rises to **144** and finishing pigs to **852**.
- Of the **5 million** pigs in the UK, **81%** are in England, **13%** in N. Ireland, **6%** in Scotland and less than **1%** in Wales. More than half of the pigs in England are in E. Anglia and Yorkshire.
- The number of abattoirs slaughtering pigs in England has halved over the last 20 years, down to 112, and the 15 specialist ones that only handle pigs account for 74% of pigs killed.
- 6. Approximately **6,900** people work on England's specialist pigs farms, with others working with pigs on non-specialist farms, although the number of these is uncertain.



20:20 Pig Health and Welfare

4.1 Vision

The Vision in 20:20 Pig Health and Welfare for 2020 was established in 2012 to be "An English pig herd where health and welfare are continually improving, which results in better pig performance, the production of a safe and quality product, reduced environmental impact and increased sustainability of an industry that contributes fully to national food security." This vision has continued under the new structure of the Pig Health and Welfare Council but with a more streamlined and targeted approach to try and achieve the same objectives but with a clearer direction on key topics which have been identified as potential issues for industry. The reduction of topics to a few key areas will allow PHWC to affect more strategic change.





4.2 Current delivery structure

Following the restructure of the Pig Health and Welfare Council in 2014, the approach which was taken to continue the delivery of the 20:20 Vision was to restructure PHWC around strategic themes. It was decided that the thematic subgroup approach already established for welfare and surveillance would be adopted for the two remaining themes regarding food safety and antimicrobial drugs. Currently, the overall structure of PHWC is:

Pig Health and Welfare Council

- Chair: Jane Downes
- Two meetings per annum
- Agenda split between subgroup delivery updates and strategic policy debate
- Membership includes subgroup chairs

Disease Surveillance subgroup

- Chair: Jim Scudamore
- Two meetings per annum and monthly conference calls if required
- Knowledge exchange, coordination of activity and policy influence regarding pig disease control and surveillance

Pig Meat Food Safety subgroup

- Chair: Jane Downes
- Two meetings per annum and additional monthly conference calls if required
- Knowledge exchange, coordination of activity and policy influence regarding food safety
- Technical input to industry with regards to media coverage or food safety topics

Welfare subgroup Chair: Annie Davis • Two meetings per annum

 Knowledge exchange, coordination of activity and policy influence regarding pig welfare

Antimicrobial subgroup

- Chair: Grace Webster • Four meetings per
- annum • Monthly conference
- calls • Develop and
- coordinate delivery of pig industry road map to reduce usage of antimicrobials in pigs
- Knowledge exchange, coordination of activity and policy influence regarding antimicrobial use in pigs

PHWC continues to operate and meet on a six-monthly basis. This forum is used as a platform for the four subgroups to report activity and delivery. It also retains its original purpose, which is to bring together a range of industry and government stakeholders engaged in pig health- or welfare-related activities or policy development, resulting in greater visibility, collaboration and coordination between these parties. Efforts are being made to widen the remit of PHWC to take in a more UK-wide view of health and welfare matters, reflecting that disease does not respect boundaries and that sharing information between the devolved regions will be of universal benefit.

The operation of the four subgroups is more ad hoc and dynamic dependent upon the nature of activity being discussed or delivered. Experience to date indicates that informal, shorter, but more regular meetings of the subgroup via webinars and conference calls have resulted in more concerted activity and tangible delivery of this aspect of the strategy.

4.3 Objectives

The main **objectives** of the 20:20 Pig Health and Welfare Strategy for England are to:

- **Support** pig producers in delivering their objectives for continual improvements in pig health and pig welfare
- Eliminate or control significant enzootic pig diseases locally, regionally and nationally
- Eliminate or control significant infections of food safety and public health concern (e.g. *Salmonella*)
- **Develop and promote** new knowledge on the assessment of welfare outcomes
- **Promote** the open exchange of information on the disease status for herds and regions
- **Promote and encourage** responsible and appropriate use of antimicrobials
- **Maintain** freedom from notifiable exotic and emerging diseases of pigs
- **Deliver** an integrated approach to improving pig health and welfare with all stakeholders, allied support industries, retailers, foodservice and government



4.4 Milestones for the PHWC 2017–2018

The existing list of milestones set out in the previous PHWC report specified wide-reaching and ambitious targets for the pig industry and the Council to achieve in 2017–2018. Some of these targets have proved to be longer-term goals and therefore work towards achieving them will continue into 2019–2020.

Key milestones for the PHWC 2017	Comments
Review the pig health and welfare objectives in the 20:20 Vision	To evaluate the success to date and identify feasible priorities for the next three years to 2020
Continue to participate in the Sector Council and ensure a comprehensive input on the issues impacting on the pig industry	This will include producing a biennial report for 2017–2018 to report back the progress of PHWC over the two-year period
Explore the potential impacts of Brexit on pig health and welfare	In exploring the potential impacts of Brexit on pig health and welfare, PHWC will suggest how to mitigate any negative effects and identify the opportunities Brexit might give the UK pig industry
Key milestones for the PHWC Disease Surveillance subgroup	Comments
Use the lessons learned from Porcine Epidemic Diarrhoea (PED) since its emergence to produce template(s) for managing new and emerging diseases	Work with government and industry to resolve areas of concern or further work identified by a disease simulation exercise to test the robustness of the Contigency Plan planned for early 2017
Develop a syndromic surveillance system for disease in pigs	Develop a comprehensive action plan to implement the recommendations from the syndromic surveillance round table to enable this methodology be used for pig disease surveillance and help prompt detection of new and emerging threats
Identify the priority steps required for a Porcine Reproductive and Respiratory Syndrome (PRRS) control programme	This is to be be led by veterinarians with an overall aim of reducing disease and production losses due to PRRS
Key milestones for the Pig Welfare subgroup	Comments
Gather information from those units that do not dock as to specifically what enables them to rear pigs with intact tails. Compile data on 'solutions' to ameliorate outbreaks when they occur, recorded centrally	The PHWC subgroup is proposing to investigate if specific husbandry methods can be attributed to low incidence of tail biting on farm. The PHWC subgroup is supportive of investigating better methods of managing tail biting on farm when outbreaks occur. With the aim to inform the industry on what is best practice
Consider and review the research around welfare with regard to finishing pigs at heavier weights with the focus on welfare proximate to, before and during slaughter	PHWC subgroup proposes to investigate and recognise the additional challenges involved in rearing pigs to heavier weight and the potential impact this has on welfare. Welfare at the time of slaughter to be kept under review in light of current or new research



Review current practice with respect to euthanasia training at vet schools and for newly graduated vets and ensure the latest information on best practice is provided to producers, including non-assured farms and smallholders	The PHWC subgroup has identified the importance of euthanasia training provided to veterinarians as being of significant importance in maintaining welfare on farm and at slaughter. In turn, this will ensure dissemination of information to fellow vets, producers and smallholders
Key milestones for the Pig Meat Food Safety subgroup	Comments
Collection of evidence to engender confidence in the results reported by industry for the prevalence of <i>Salmonella</i> on pig carcases	PHWC subgroup supports the continued monitoring of <i>Salmonella</i> , recognising it as one of the most important zoonotic pathogens within the pig industry, which continues to require attention
Develop a Salmonella testing routine which could be used to monitor changes of Salmonella prevalence on farm	Develop partnerships to ensure best use is made of all samples collected from pigs on farm or at slaughter to enable cost-effective testing to be established
Consider the recommendations from the Royal Veterinary College (RVC) report and the EFSA report on hepatitis E, when published, and select the key actions required to reduce the risks of UK-produced pigs carrying live virus at slaughter	PHWC continues to support research into any potential food safety risk from heptatitis E
Key milestones for the Antimicrobials Usage subgroup	Comments
The Antimicrobial Usage subgroup is coming to the end of its action plan from the October 2014 workshop and preparing a new action plan covering issues arising from the O'Neill Review. This will include working closely with the RUMA Targets Task Force as they develop an antibiotic usage target plan for pigs	PHWC will work closely with and support the RUMA Targets Task Force to advise on a suitable antibiotic usage reduction plan for pigs and to monitor progress against the plan. This is in line with the government's recommendations from the O'Neill Review on Antimicrobial Resistance
Increase awareness of antimicrobial resistance and	This includes raising public awareness and seeking to incentivise
antimicrobials in pigs	veterinary surgeons and farmers to reduce antimicrobial usage in pigs while maintaining high health and welfare in the national herd
antimicrobials in pigs Identify optimal housing and management conditions for minimising antimicrobial use in pigs	veterinary surgeons and farmers to reduce antimicrobial usage in pigs while maintaining high health and welfare in the national herd Identify best-practice examples of reducing antimicrobial use in commercial pig herds. This will include a focus on hygiene measures to reduce the spread of pathogens, including a focus on internal and external biosecurity
Identify optimal housing and management conditions for minimising antimicrobial use in pigs	veterinary surgeons and farmers to reduce antimicrobial usage in pigs while maintaining high health and welfare in the national herd Identify best-practice examples of reducing antimicrobial use in commercial pig herds. This will include a focus on hygiene measures to reduce the spread of pathogens, including a focus on internal and external biosecurity Development of economically feasible and practically viable 'pen-side' tests in order to assist in accurate diagnosis of bacterial disease and assist in appropriate antimicrobial selection

Pig health

Disease Surveillance subgroup

The Surveillance subgroup has now been in the current format for six years. During the past two years, with the introduction of PEDv controls, the group has focused on disease-control procedures, as well as continuing to identify and evaluate disease threats through various approaches to surveillance and monitoring. Much of the work is carried out in partnership between the pig industry and government. There is a close working relationship with the APHA pig expert group. Members of the group also participate in other groups and make regular reports at the meetings. The group has successfully delivered on its 2017/18 milestones, which are shown in section 4.4 of this report.

5.1 Disease control

Exercise Trent

As a result of its notifiable disease status and concerns over the threat from PEDv, a contingency plan was developed by PHWC and published in 2016. The key elements of the plan were to identify, contain and eliminate PEDv in the face of an outbreak. A disease simulation exercise was held in January 2017 to test the contingency plan for dealing with a PEDv outbreak in an English pig unit. It was organised by the Surveillance subgroup and was implemented primarily by the Agricultural and Horticultural Development Board – Pork (AHDB Pork) with detailed support from the Animal and Plant Health Agency (APHA).

The exercise took place in real time, simulating the first day of a PED outbreak following the confirmation of a mock positive result, followed by a suspect case on a linked unit. A number of key themes were identified during the exercise. These included, i) internal communications with the PEDv Strategic Operations Team, ii) external communication with pig producers and other stakeholders, iii) Tracing the possible source, (iv) identifying possible spread from infected farms, (v) potential control measures in light of a PEDv outbreak, (vi) euthanasia and slaughter, and (vii) cleaning and disinfection.

It was an extremely useful exercise as it identified strengths and limitations in the plan and further work or analysis necessary to ensure that England is fully prepared should there ever be the unfortunate situation where PED is confirmed. The 23 actions resulting from the exercise have been followed up and completed.

Suspect PED case in January 2018

A veterinary practice received a call from a producer in January 2018 describing clinical signs for which PED could not be ruled out, prompting the case to be reported to APHA as suspect PED. Samples were dispatched to APHA Weybridge, with negative results for PEDv received within 24 hours. On balance, the procedures worked well, but there were a number of issues which were followed up. These included actions: i) to specify in detail the procedure to be followed in the case of a suspect case, ii) handling the pig movements for slaughter when the receiving abattoir exports the meat, iii) the economic cost to the producer with the disruption of the timetable for dispatching subsequent batches of pigs to abattoirs, and iv) the fact that many producers are not members of the AHDB Significant Diseases Charter, which limits the ability to pass on information more widely. Lessons learned will be incorporated into the contingency plan and the associated Standard Operating Procedures (SOP).

Contingency plan for PEDv

The current version of the PEDv contingency plan was produced in 2016. It is currently being rewritten to take account of the recommendations from Exercise Trent and the lessons identified during investigation of the suspect case in January 2018. A revised layout for the PEDv contingency plan has been agreed and will follow the outline of the Defra contingency plan structure. Information and detail from the existing plan will be incorporated into the new plan, along with a number of additional items, such as the process for dealing with suspect cases and details of the procedures for epidemiological investigations following a suspect and confirmed case. The revised plan will be reviewed and agreed by the Surveillance group in 2019.

The contingency plan is supported by a range of SOPs which cover all aspects of production during an outbreak. All the SOPs have been reviewed and updated in 2018, taking into account the lessons identified from the exercises, suspect case and discussion with all interested parties.

A review of resources, requirements and training for epidemiological investigations into any suspect or confirmed PED outbreak was completed. Progress has been made towards training for practising pig veterinary surgeons to carry out the epidemiological investigations. AHDB wishes to establish a team of trained private vets who could conduct the epidemiological study on farm if there were a PED outbreak. The proposal has been ratified by the Pig Veterinary Society (PVS). The APHA Field Epidemiology Team have responded positively to the request to provide input to the training with support from PHWC.

Significant Diseases Charter

One of the issues which arose out of Exercise Trent and the suspect PED case in 2018 related to confidentiality and legality of releasing information about the suspect or infected premises. The need to seek the permission of the producer to inform other producers of the positive case or to inform farms within the 5 km radius was identified as a major hurdle for successful PEDv control if the producer did not agree to share this information.

The Significant Diseases Charter is an important component of the contingency plans for swine dysentery and PED. Unfortunately, few producers have signed up to the Charter to date, which limits the ability to pass on information more widely. AHDB has been promoting the Charter since June 2018. If the producer of the suspect or infected pig holding is a member of the Charter, an email notification can be sent to other Charter members on notification of the positive case, which links to further details on PEDv, and informs members of the outcode of the positive unit. Should a unit not be a Charter member then this notification could not be sent without the permission of the producer.

Emerging disease template

The processes of making PED notifiable were reviewed. The emerging disease template is a generic document for use within the pig and other livestock sectors, outlining the assessment of a new and emerging disease as a threat. The purpose of the document is to help with future incidents which may or may not lead to a disease being made notifiable. It is anticipated that Defra would usually take six to nine months for changes to be made in legislation (this would include creating working groups and consultations with industry, etc.). However, legislation could be implemented in an emergency, which would allow for a much reduced timescale if necessary. The Surveillance group reviewed the template document and suggested a number of changes.

Pig transport vehicles

Highly virulent PEDv, as observed in the USA outbreak, is extremely infectious and it has been claimed that one thimbleful of faeces could contain enough of the virus to infect all of the pigs in the United States. Therefore, the effective cleaning and disinfection of pig transport vehicles, abattoir lairage and farms was identified as a priority in the contingency plan.

The Surveillance group has expressed concern about the quality of lorry washing as this is highly relevant in relation to the spread of ASF should it enter the UK, as well as endemic pathogens, in particular, swine dysentery and PRRS. AHDB and Red Tractor are leading an investigation into lorry-wash facilities and will report back to the group in 2019. Data from the BMPA Pork Scheme has been made available and the intention is to use it to create a questionnaire to explore the issues further before creating a guide to best practice.

Future developments

With the increasing importance of endemic diseases and the developing partnership between the pig industry and government, it is feasible that other diseases could be targeted for control on a wider regional or national basis. The PEDv contingency plan, SOPs, the exercise and the development of the epidemiological investigation teams will act as exemplars for dealing with other diseases which pose a threat to the pig industry. Consideration is also being given to expanding the Significant Diseases Charter to include other diseases such as PRRS which occurs in Scotland. The proposed PRRS project linked to the Rural Development Programme for England (RDPE) programme for England is also an important development to reduce the impact of the disease on pig productivity.

5.2 Disease surveillance

Syndromic surveillance

A recommendation from the Pig Syndromic Surveillance round table held in September 2016 was to develop a mobile app to collect disease data in real time from veterinarians attending pigs. This would enable the practitioner to interrogate and see what was occurring in their area. Input was obtained from veterinary practices on the best way to gather data and how outputs might be provided using proxy data. These would allow a practice to look at its own pig farm data in detail and national data on an anonymous basis. The app would need to have an application beyond national surveillance, which could involve its use as a practice management tool to encourage sustainable input over time. It was hoped this work could start in September 2017 but this has been delayed by a combination of factors while the requirements are worked on in detail.

GB pig disease surveillance dashboard

A second recommendation from the round table was for a GB pig disease surveillance dashboard to be developed. This was completed by APHA and launched in October 2017. The dashboard is an online resource developed to share the surveillance information from 2012 onwards derived from submissions to the GB veterinary diagnostic network. It is an interactive tool offering a user-friendly means of accessing surveillance information and allowing people to interrogate the data to suit their requirements. The dashboard is aimed primarily at veterinary practitioners, sharing the data that they contribute to in an easy-to-access format. The dashboard presents counts of diagnoses and users can tailor how they view the data by geographic area, age group, clinical signs and time period. It will also be of value to others interested in diseases diagnosed in pigs by the surveillance network across GB.

Defra surveillance questionnaire

The Surveillance group received a surveillance questionnaire from the Defra Scanning Surveillance Delivery Programme (SSDP) in February 2018. SSDP aimed to build on existing veterinary surveillance activities in the UK to deliver an integrated and sustainable system, where public and private sectors would work in partnership to provide actionable intelligence for both government and industry stakeholders. The questionnaire was divided into five sections, covering i) currently collected animal health data, ii) data gaps, iii) sharing of data, iv) factors which impact on the willingness of industry to provide data, and v) any other relevant points which industry wished to raise. A detailed response was provided by the Surveillance group to Defra on 19 February 2018 and was subsequently discussed at a meeting of all sector councils on 12 March 2018.

Creation of an archive of serum and tonsil samples

Discussions have taken place between AHDB and APHA on creating an archive of serum and tonsils from slaughter pigs. Costings and plans of how to take this forward are being evaluated. A mini trial has taken place to look at the optimum methods for collecting blood and tonsil samples from pig batches. If collection takes place in spring 2019, it will match the timing of those collected in 2013 and allow comparisons to be made with the 2013 abattoir baseline survey. A pig serum archive has been established regularly every five years in Scotland.

Pig Health Scheme

The Pig Health Scheme was relaunched by AHDB in 2019 after a full review and resetting of the baseline. The assessors on the scheme monitor English pigs at slaughter for prevalence and severity of 12 conditions. Assessments are carried out by specially trained veterinary assessors at designated abattoirs throughout England, with all of the main pig abattoirs covered as part of the scheme. This is important as there is currently no robust data from Collection and Communication of Inspection Results (CCIR).

5.3 Disease situation

Input from the APHA International Disease Monitoring team and other representatives on the group assists in monitoring the progress of exotic diseases around the world. The group is also informed of risk assessments on the potential for those diseases to enter the UK and has proposed further mitigating actions and issues to consider to reduce the risk of introduction. This activity is also informed via representation on the APHA Pig Expert Group, and personal contacts between Surveillance group members and their international contacts, which is also useful for information on non-statutory exotic threats, such as Senecavirus A. An informal group has been established with pig experts from a number of other countries, including Canada, USA, and Ireland, etc. Regular teleconferences are held to discuss the situation of significant diseases, control measures and outcomes.



African swine fever

The Surveillance group has expressed considerable concern about risks posed to the UK resulting from the extensive ASF outbreak in wild boar in Europe and widespread outbreaks in domestic pigs in pig-producing Chinese provinces.

The first ASF outbreak in China was confirmed on 3 August 2018 in domestic pigs in the north-eastern Liaoning province. Subsequent information suggested that disease had been present for several weeks prior to confirmation of ASF.

The Australian Department of Agriculture reported that ASF virus was detected in products from China confiscated by authorities at points of entry. ASF virus was found in five of 152 samples analysed by the Australian Animal Health Laboratory. In addition, South Korea, Japan and Taiwan have also reported the identification of ASF in confiscated products at ports of entry since August 2018. In view of this, the Surveillance group emphasised the importance of having measures in place at UK airports to minimise any illegal entry of potentially infected pork and products into the UK by travellers or in baggage.

Defra has published a number of qualitative risk assessments concerning the risks to the UK from ASF on the European continent and China. One published in November 2018 considered the risk of introducing ASFV into the UK pig population from European Member States via human-mediated routes. The situation with ASF in the EU has deteriorated, with several new geographic areas in Poland, Romania, Hungary, Czech Republic and Belgium reporting disease. These new foci of infection at least 100 km from the nearest wild boar case are most likely to have been associated with the movement of infected meat products into areas where wild boar can access them, or through the introduction into domestic pig farms with low biosecurity. The report of ASF in wild boar in Belgium in September 2018 demonstrates another long geographic jump, the source of which has not been officially stated but is also very likely to involve a human-mediated means of entry.

The Defra report concluded that "the overall annual risk level is considered to be medium because of the combination of the pathways for introduction. In terms of exposure, the probability is given for the three pig sectors and considering the most likely pathways. Feral pigs and non-assured or small holders are the highest risk and given a 'likely' score. The spread into the commercial pig sector will probably depend on how long disease has been present but undetected in the country, and would be substantial." The Surveillance group was particularly concerned about lorry drivers arriving in the UK overnighting in lay-bys near to outdoor pig units where there was the potential for discarded food to be eaten by pigs. The group recommended that some form of publicity about the risks was necessary and that signage should be placed in lay-bys wherever possible. NPA is urging producers with outdoor pigs in particular to put up signage in paddocks next to public footpaths and with public rights of way, telling people not to feed the pigs due to risk of spreading disease. Free signs and posters, some in a number of languages, are available from AHDB Pork.

Feral wild boar

A number of presentations were made to the Surveillance group, which is especially concerned about the increasing number of wild boar, particularly in the Forest of Dean. This relates to the possibility of wild boar becoming infected with ASF, CSF and FMD as a result of rummaging in bins/ bags containing waste food put out by residents. In the same context, it was important for Defra to have an up-to-date contingency plan to demonstrate freedom from these diseases should wild boar become infected.

At a meeting on Living with Feral Wild Boar held by the Forestry Commission in 2017 for various interest groups near the Forest of Dean, it was reported that the Commission's cull did not achieve its targets as not enough boar were seen. It was clear that residents are becoming concerned as wild boar are moving out of the forest searching for food.

The tracking wild boar programme stopped when the person responsible retired. The main areas for action are surveillance, research and identifying those responsible for carrying out any action. A system to report sightings (as for the deer programme) would be also be useful. Methods of controlling wild boar vary. The Czech Republic fenced the boar into a large area and then culled using police and trained hunters paid a fee for each boar shot, which proved expensive but effective.

There appear to be two opposing areas of research on whether decreasing the population of wild boar reduced the spread of ASF. One concluded it did reduce the transfer of ASF and the other decided it did not reduce the spread. There continue to be significant knowledge gaps regarding feral pigs and disease transmission, including how far they can move, the effect of hunting on their movements, the effect of scavenging on disease transfer, interactions between boar and outdoor pigs, cost and effectiveness of trapping and methods to minimise impact by wild boar An action group to develop a strategy for feral wild boar management in England has been formed to understand the risk, economic impact and potential options. The action group is funded and chaired by AHDB. Meetings with local groups, including the Forestry Commission England in the Forest of Dean, take place to consider implementation of the most appropriate actions.

Current status of PEDv

There has been one suspect case of PED since the disease was made notifiable in 2015. Routine weekly batch PEDv PCR testing of non-suspect cases of diarrhoea in pigs continues at APHA, funded by AHDB, and between June 2013 and December 2018, over 800 submissions tested negative for PEDv. A small number were from Wales, with the remainder from England. Samples taken in Scotland are sent to SRUC for testing.

Porcine reproductive respiratory syndrome (PRRS)

Discussions took place with Defra concerning the use of RDPE funding in relation to PRRS control during 2017. A detailed submission was made to Defra justifying the need to take action against PRRS, which currently has a major impact on the pig industry. As it was considered appropriate for AHDB to lead on this, a Significant Disease Working Group was established in November 2017 to develop a scheme for the control of PRRS and identify areas where RDPE funding would be appropriate.

A meeting was convened by Defra on 25 October 2018 to discuss the process for developing a programme which would be led by the industry. There were three stages: i) develop a proposal, ii) procurement of a service provider, iii) programme delivery. Around £3 million was available for the programme, which is anticipated to begin in June 2019, with completion in 2021 when RDPE funding would end. RDPE funding could cover training, advice, mapping and diagnostic testing to support advice but cannot cover capital costs and would be restricted to England only. Meetings were held by Defra in November and December, with further meetings in 2019 to finalise the proposal.

Swine dysentery

Outbreaks of swine dysentery occurred in several regions of the country during 2017–18, including: North, South and West Yorkshire, Lancashire, Somerset, Worcestershire, Devon, East Anglia and Wales. This is of concern as swine dysentery is a production-limiting disease in commercial herds that the industry has targeted for control. Whole genome sequencing was undertaken where Brachyspira hyodysenteriae isolates were available and showed that the outbreaks were not due to a single strain spreading, with several different strains identified.

The trend in the diagnostic rate is slightly upwards, with new herds being infected, indicating there are sources of active infection. Producer communications encouraging heightened biosecurity and vigilance were disseminated by AHDB and APHA. Membership of the Significant Diseases Charter is also important so that producers can be contacted to warn them of outbreaks.

Welfare

Welfare subgroup 6.1 20:20 Pig Health and Welfare

The scope of investigation specifies the need to:

- Evaluate the usefulness of measuring welfare outcomes and work with farm assurance schemes on incorporating a harmonised approach into standards. Such schemes can be used to earn recognition for progress made and provide a clear focus on ongoing improvement
- To achieve progress in improving pig welfare that is not at the expense of deterioration in other areas, e.g. production costs that are unsustainable; reductions in tail docking should not be at the expense of an increase in pigs that are tail bitten
- To promote high welfare standards to consumers and work with retailers to create a virtuous cycle of investment and reward that should become the driver of progress in improving pig welfare
- To work specifically on the following:
- Reduction in the damage to pig tails
- Examine the welfare and production impacts of piglet teeth clipping and feasible ranges for reduction in teeth clipping and grinding
- Reduction in the incidence of lameness
- Seek improvements in welfare at the time of farrowing and during lactation

Top nine welfare issues: consideration for prioritisation

The group produced a list of the top nine welfare issues. This was a challenging task, particularly when prevalence levels are not available for some of these conditions. The focus is on non-health welfare issues, although it is accepted that for some of these issues there is an inherent link with health. The assessment produced by the group was intended to stimulate discussion as the list in not definitive or final. It is hoped that it will serve as an example of an approach for prioritising issues. In this case, an attempt has been made to rank the issues according to number of animals affected, potential severity of the issue, the duration of the issue and feasibility of being able to effect change. The information provided in each of the sections was not exhaustive but intended to offer guidance as to the level of prioritisation given. An indication as to whether the priority was high, medium or low under each criterion was suggested. The issues are listed below in order of priority and the top three have been placed as such not only as a result of the criteria used but also due to prior identification in the 20:20 Health and Welfare Strategy as priority issues.

The list will be regularly reviewed and, where necessary, recommendations made on actions needed.

- Tail biting/docking
- Freedom at farrowing and during lactation
- Raising heavier pigs (this now includes aggression/fighting, sexual behaviour and space requirements)
- Nose ringing
- Teeth clipping and grinding
- Opportunities to express natural behaviours (bedding and enrichment)
- Methods of identification (ear notching, tattooing and slap marking)
- CO₂ stunning/killing (slaughterhouse) this needs to be widened to include LAPS
- Lameness

Regular welfare outcomes assessments have now been required for all units finishing pigs under the Red Tractor Pig Scheme since 2013. This means that, between two and four times a year, veterinarians trained in welfare assessments visit farms and assess the welfare of a representative sample of finisher pigs. We have now amassed a significant amount of data, some of which has been published, and the next step for the Real Welfare scheme is to widen the scope of assessments, maintaining their relevance as an on-farm management tool.

The focus on tail damage, and the requirement to produce a nationwide action plan to promote a reduction in tail docking, has increased. The Tail Docking Action Group has been formed, under PHWC, which seeks to improve the recording of tail-biting outbreaks and promote best practice in both preventing and addressing outbreaks of vice when they occur. This is a further example of collaborative working with APHA, DEFRA and a wide representation from the industry as we seek to achieve what the European legislation requires while not putting our producers at a needless disadvantage.

Although prevention of tail biting is a live and current focus of the Pig Health and Welfare group, the group also continues to consider the latest developments in welfare science, including the farrowing environment, with the focus on sow freedom at the time of farrowing and lactation under consideration. This is an area in which we have had input from producers, welfare conferences and the retail sector and it will remain a primary focus for this group.



6.2 Real Welfare scheme

The Real Welfare scheme involves on farm assessments of finisher pig welfare, using a set of five objective and repeatable animal-based 'welfare outcomes'. The standardised data from these assessments provides information regarding on-farm welfare, as well as trends both between farms and over time.

The Real Welfare Steering Group has reviewed the scheme and recommended that it continues, but future work is need to promote the scheme and its benefits to producers and vets, as well as to continue to improve on the protocol for finishers. Incorporation of recording hospital pen usage data into the Real Welfare scheme has been agreed, and further investigation into improving the measures for recording environmental enrichment use (optional measure within the scheme) is being undertaken.

6.3 Real Welfare update

In the first four years of the Real Welfare scheme (2013–2017), over 8 million pigs have been individually assessed by specially trained vets, to provide a credible, benchmarked level of welfare at both an industry and an individual-farm level. A further year of Real Welfare outcome data has been statistically analysed, and an update report to the 2017 Real Welfare baseline report is available online (ahdb.org.uk/knowledge-library/realwelfare-update-report-2013-2017).

6.4 Tail biting risk assessment

Tail biting has been identified as a key welfare concern in pigs, and the pig industry continues to focus on reducing this and the need to tail dock. To help support the work of the PHWC Tail Docking Action Group, AHDB has been further developing the Tail Biting WebHAT (Web-based Husbandry Advisory Tool), designed to be an interactive resource for producers to assess the key risks on their farms and specific suggestions for reducing those. It is now able to offer further resources to assist the recording and monitoring of tail-biting outbreaks and the recording of the actions taken on farm to minimise those risks and their effectiveness. The WebHAT can be accessed via: **webhat.ahdb.org.uk**



The Real Welfare scheme involves on-farm assessments of finisher pig welfare by specially trained vets

Food safety and public health

Pig Meat Safety subgroup 7.1 Zoonotic diseases

The Pig Meat Food Safety subgroup group (FSG)has built up strong links with Public Health England and their experts attend the meetings, providing an update on the situation in humans in relation to each disease. This has enabled the group to react in the early stages of any potential changes in the number of human cases and to initiate interventions. There have been no major food scares relating to pig meat during the period of this report and the group has focused on assisting the industry in demonstrating to its global customers that significant infections of food safety and of public health concern are monitored and controlled in the English pig herd.

Salmonella

Salmonella remains the most common zoonosis identified in pigs and pig meat. There has been no further national testing programme for the prevalence of Salmonella in the English pig herd. Abattoir operators are required to take swabs from carcases and the results of these tests are collected by the Food Standards Agency. Any positive samples are forwarded to APHA for serotyping, which allows the monitoring of changes, such as the increase in monophasic Salmonella Typhimurium. The level of contamination of pork carcases with Salmonella indicated by these tests is <1%. This is significantly lower than in the national surveillance programme of 2014 and may be due to the delivery of Salmonella control plans on farm and additional hygiene controls in processing. To provide additional confidence in these results, FSG drew up an action plan to corroborate the results at various stages of testing and the first stage has been completed. APHA undertook a ring trial with some of the laboratories involved with the testing. However, further refinements to the project are in development. Permission has been sought and granted to use faecal samples collected to meet regulatory compliance with LA-MRSA monitoring for further testing for Salmonella. Agreement from the industry to use these samples for this purpose is currently being established.

Hepatitis E (HEV)

FSG received presentations from PHE and took note of the EFSA report published 11 July 2017 which confirms that foodborne transmission appears to be a major route of infection and pigs and wild boar are the main sources of HEV. However, the report also states that the risk associated with eating pig products is low. The main risk comes from pigs with a high viral load entering the food chain and where that meat is not adequately cooked. The industry aims to achieve a single approach to the future monitoring and management of this virus. The work commissioned to develop a probabilistic risk model for hepatitis E was completed and presented by the Royal Veterinary College. However, the model cannot be effective until sufficient data has been collected to provide meaningful results. This outcome was supported by the EFSA report, which called for more effective testing to improve the knowledge baseline for this virus. Closing this data gap is a key area of future work. APHA has supported these aims by using Defra funding to carry out a longitudinal study to look at the persistence and transfer of HEV on farm. A cohort of pigs is being monitored to identify at what age they first test positive for HEV and when live virus is no longer detectable.

Livestock-associated methicillin-resistant Staphylococcus aureus (LA-MRSA)

LA-MRSA can be carried by pigs and transmitted to people. The bacteria is known to be highly prevalent in some counties and is present in UK pigs. A workshop, hosted by the National Pig Association, brought together all those interested in preventing the bacteria becoming highly prevalent in the UK. Animal Plant and Health Agency, medical colleagues, an expert from the Danish pig industry and a member of the EFSA panel shared their knowledge with a wide range of stakeholders, who agreed a list of possible actions. This project is being taken forward by a task and finish group which has met twice, identifying the actions that could be developed and providing material to raise the profile of this virus with producers and enable them to protect themselves, their staff and their families from becoming infected or carriers. Minimising the risk of spreading the bacteria throughout the UK pig herd requires the same detailed attention to biosecurity and hygiene controls as for other transmissible diseases.

Trichinella

Trichinella is a parasite that can be transmitted to humans through the ingestion of undercooked pig meat. EU Regulation requires the testing of pig meat unless a country has been granted freedom from the disease. It was hoped that England would be in a position to declare freedom from Trichinella as there have been no positive carcases identified in pigs since 1979 and the testing is a considerable financial burden on the industry. However, through presentations to FSG, it was understood that EU regulation also requires that the disease surveillance programme takes into account the risks from outdoor-reared animals and wildlife such as fox and feral boar. Outdoor pigs are considered to be a high-risk category and so the requirement to continue with the current level of testing remains.

Results of meat inspection

FSA have completed a project to streamline the information collected at meat inspection and to collect data electronically where possible. The outcome of inspections are now published on the FSA website, providing useful data to identify any major changes in disease in health-status pigs delivered for slaughter.

7.2 Pig Health Scheme

Pig Health Scheme, the successor of the British Pig Health Scheme (BPHS), provides information on the diseases producers may not be aware of, or producers have accepted as liveable with on their unit. Ultimately, the scheme's aim is to improve the health and welfare of pigs and to help reduce production losses throughout the supply chain. The former BPHS was halted in October 2017 while all aspects of the scheme went under a review. During this time, visits were made to the scheme's participating abattoirs to improve the operations. The report received by producers was also revised and improved and the scoring of health conditions was reviewed by a small group of experienced vets to guarantee accuracy and consistency in future assessments. Following a successful tender process in 2018, the training and quality assurance part of the scheme was awarded to Vetscore Limited and the physical abattoir assessments was awarded to Eville and Jones Commercial Services Limited. The revised scheme assesses the prevalence and severity of 12 different health conditions in the: heart, liver, lung, skin and tail. These assessment are carried out at the 11 main abattoirs used in the previous BPHS scheme. The assessment dates are published on AHDB's website for members to view to ensure that pigs can be sent on the specified dates. Reports are provided to abattoirs, members and their associated vet. Abattoirs receive a quarterly report showing the results for the pigs assessed at their plants and vets receive a daily report for their clients. Members receive three reports:

- 1) Individual batch report, which is sent out 48 hours following the assessment
- 2) A unit comparison report, which allows benchmarking against other units
- 3) A time comparison report, which uses historical data from the last three years, once it's available

The scheme can be used as a resource for producers and their vet to monitor the effects of any changes relating to feed or vaccination programmes, for example. Producers can look at the post-mortem information alongside antibiotic use patterns recorded on eMB, as well as physical performance data. Pig producers can join the Pig Health Scheme for free via their Pig Hub account, using the same log-in details as the eAML2 system, at **pighub.org.uk**. Once signed up, members will only start to receive their assessment reports provided that pigs are sent on a designated assessment date.

Key initiatives by the pig industry to address food safety:

- The pig industry has been involved in research into key food safety pathogens such as *salmonella* and hepatitis E. Work is ongoing to identify risk factors for public health and to seek routes through which risk to human and animal health can be minimised
- A collaborative approach to food safety has been adopted by FSA so that data is shared with key stakeholders in the pig industry to benefit the health of the UK pig herd
- Traceability throughout the food chain is recognised as a key priority of the pig industry. AHDB Pork are involved in ongoing trials to assess the reliability and sustainability of individual identifiers for pigs from birth through to the end of the slaughter line
- The Pig Health Scheme provides producers with data on their pig herds to monitor current health status and identify any subclinical disease issues

Medicines

Antimicrobial Usage subgroup

The PHWC Antimicrobial Usage subgroup has developed a new action plan, which has been merged with outstanding actions raised at the original PHWC workshop (Optimising the Responsible Use of Antibiotics) in October 2014. The new action plan draws on the recommendations from Lord O'Neill in his report 'Tackling Drug-Resistant Infections Globally: Final Report and Recommendations', published in May 2016, where they relate to animal health.

Amongst the conclusions in the O'Neill report, was the recognition that there was insufficient information and understanding of how much antimicrobials are used in human and animal medicine. This also was highlighted at the 2014 round table event and was a priority for the Antimicrobial subgroup. As indicated in the 2015–2016 biennial report, the development of the electronic medicine book (eMB Pig) by AHDB and VMD has fulfilled this requirement. In 2015 and 2016, 65% of the UK's slaughter pigs were covered by the data gathered, but in 2017, this rose to 87% due to the Red Tractor farm assurance requirement to record retrospective data from April of that year. In Scotland, the QMS farm assurance scheme made it mandatory to record quarterly data from 1 August 2016. In 2018 the coverage rose further to 94%.

The eMB gives pig keepers a numerical aggregated figure for the total use on their farm in mg/PCU, shows usage trends, a breakdown by antibiotic class and use of critically important antibiotics. In June 2018, a benchmarking facility was incorporated to allow farmers to compare their usage levels with similar farm types. This is a useful tool for producers and their veterinary surgeons and encourages adoption of best practice in managing the herd to refine and reduce their antibiotic usage.

Number of users	925
Average number of submissions per quarter	2,460
Number of sows and boars	490,000
Number of finished pigs	20m
2018 UK Finisher herd coverage	94%
* Data tales from MD Dire on 15/00/0010	

* Data taken from eMB-Pigs on 15/03/2019

eMB-Pigs 2017–18 summary

The data generated was used to agree a target for reduction in response to the government's requirement to set sector-specific targets. RUMA established a Targets Task Force, who published their final report in October 2017. Using a combination of the eMB data from 2015 and VMD's Veterinary Antibiotic Resistance and Sales Surveillance (VARSS) report, a starting figure of 278 mg/PCU was agreed and a reduction target of 99 mg/PCU by 2020 was set for the pig industry, representing an overall reduction of 63% in the antibiotics used in this sector. In addition, building on a low starting point, ongoing reduction in use of High Priority Critically Important Antibiotics (HP-CIAs) was targeted. These targets were determined to be challenging but achievable by the pig industry, without compromising animal health and welfare.

Significant progress has been made in reducing and refining usage in 2017 and 2018 within the pig sector. This has been recognised in the government's UK One Health Report, published in January 2019, which highlights a reduction in antibiotic usage across all species and demonstrates reduction in resistance in bacterial isolates from pig meat and healthy pigs at slaughter. In 2016, the volume of antibiotics administered to pigs in the UK dropped by 34% from 278 mg/ PCU to 183 mg/PCU and this was followed by a further 28% reduction in 2017, to 131 mg/PCU. In 2018, the volume of antibiotics administered to pigs in the UK dropped by a further 16% to 110 mg/PCU. This figure has been calculated using the returns submitted up to the Red Tractor submission deadline of 11 February 2019. In total, there has been a 60% reduction in antibiotic usage since eMB recording began in 2015.

Analysis of the data has revealed that the majority of pig farms are low users of antibiotic and that there are a smaller number of persistently high users. A proposal is being developed which will offer the highest users laboratory support from APHA to carry out free post-mortem examinations and serology. Making this offer without alienating individuals requires a careful approach, so the subgroup has taken advice from the government's Behavioural Insights Team on the most effective way to influence behaviours through approaches that are 'Easy, Attractive, Timely and Social'. The subgroup will continue to work with the Behavioural Insights Team to ensure that communications with both veterinarians and farmers encourage behavioural change. These reductions have been achieved by pig producers working with their private veterinary surgeons to create improvements in pig health, environmental conditions, water provision and biosecurity. AHDB has produced an interactive app 'Think BioRisk', for pig producers to increase understanding of biosecurity. This is free to use and demonstrates the effect of good and bad practice on the health of the pigs through interactive videos.

The subgroup, in conjunction with AHDB Pork, has developed a Practical Guide to Responsible Use of Antibiotics on Pig Farms. These guidelines offer practical advice for farmers and stockpersons on using any presentation of antibiotics when they are prescribed by a veterinary surgeon to treat a health issue. The guidelines must be used in conjunction with advice on optimal management practices to ensure that use will safeguard animal health and welfare without compromising the effectiveness of antibiotics for use in human and animal medicine. The Red Tractor Standards require that the guide is accessible on farm. RUMA has indicated that they will adopt the guide as part of their review of their Responsible Use Guidelines.

Key initiatives by the pig industry to tackle antimicrobial resistance:

- Development of the Animal Medicines Best Practice (AMBP) programme, which The National Office of Animal Health (NOAH) coordinated with a cross-sector collaborative working group made up of a wide range of industry stakeholders. These training modules were made available for farmers to access via an online LANTRA eLearning platform from mid-July 2018. In addition to the farmer portal, a vet portal will also be developed to allow vets to access resource materials, enabling them to deliver training to their clients. It is hoped that this will help to demonstrate that UK farmers, as professional keepers of animals, have the skills and training to use antibiotics responsibly, providing reassurance to consumers and policy makers
- Health improvement programmes across the UK have contributed to a 60% decrease in antimicrobial use within a three-year period. An ambitious strategy to control or eliminate PRRS across the UK is currently being developed. This viral disease is the most significant health issue facing the UK pig industry due to its capacity for immunosuppression in the host animal, which results in the pig being susceptible to concurrent infections and responding poorly to vaccines to control these diseases, often resulting in increased antibiotic usage. This type of endemic disease control is highlighted in the UK 5-year action plan for 2021–2025, published by the government in January 2019

- The Pig Health Scheme which monitors and reports on pig health at the abattoir has been reviewed and has been relaunched in 2019. The data generated will help to inform and guide further health improvements, as well as monitoring the effect of interventions on farm
- The pig sector has engaged with retailers in a Food Industry Initiative on Antimicrobial Use. This consists of a steering group and three subgroups, looking at data collection, responsible use and research and development. It is hoped that this group will use its collective power to influence and support best practice and deliver consistent messages from retailers to further reduce AMR in agriculture
- AHDB Pork are supporting antibiotic discussion groups for pig farmers led by private veterinary surgeons to share best practice and encourage management changes and vaccine usage that can lead to reduced antibiotic usage
- An update to the NPA's Antimicrobial Stewardship report was published in July 2018, highlighting the progress made by the pig industry and outlining the ongoing activities to antibiotic stewardship

Biosecurity

Biosecurity continues to increase in importance for the pig industry. The industry has experienced more than its fair share of new and emerging diseases over the last few decades (PRRS, PCV2, SIV, etc.). Add to this the threat of ASF, swine dysentery and the possibility of other unknown diseases, biosecurity is now more important than ever. The great achievements that the industry has made in reducing antibiotics is only sustainable as long as disease challenge can be limited. Again, biosecurity is of paramount importance if these reductions are to be sustained. Encouraging the industry to work at maintaining good biosecurity on a daily basis is difficult, but without every member of the industry playing a role, we put our industry at risk. A number of resources have been developed by groups on PHWC; these include posters in different languages, videos and guidance on how to keep disease, especially ASF, out. They are freely available on AHDB's website: ahdb.org.uk/knowledgelibrary/african-swine-fever





Research

PHWC continues to promote and support research into the areas of pig health and welfare topics. This is in recognition of the need to continue to develop and help the English pig industry to become a lead on the world stage, which is becoming even more important in light of Brexit. Research topics commissioned by PHWC are wide and varied and contribute towards the aims and objectives of each of the strategic areas, now the subgroups, of the Council.

There are two main areas for pork research at AHDB Pork currently:

- Establishing the value of precision technology for pork producers
- Network building and farmer-to-farmer learning

The AHDB Pork board (comprising processors and farmers) has identified in the AHDB 2017–20 strategy that exploiting management data throughout the supply chain is a key priority for KE activity. This programme of work aims to deliver against the AHDB Pork priority: Engage the supply chain in using automated data capture to improve business performance.

End2End project

In 2017, AHDB funded a successful proof of concept trial into producing traceable pork from sow to finished pig and beyond into the supply chain. The key elements of the project were DNA sampling and electronic identification (RFID) tagging to give pigs a unique identifier (UI), allowing traceability throughout their production. Tissue samples taken from carcases at the abattoir could be traced back to the sow from which they were born using their DNA.

The project raised some opportunities for AHDB to be at the heart of step change in traceability and precision livestock production, key aims being to:

- Identify the real value to the supply chain of investing in RFID and auto data capture
- Identify hardware on farm/software that can provide efficiency/added value
- Show how historic data be presented in a form that provides business insight
- Use historic data to create decision-making tools through predictive modelling

Planned activity

There are four aspects of the project that can be developed further:

- To test the use of RFID ear tags on finished pigs as they go through the abattoir on a normal production run, week after week. While RFID tags were used successfully with the progeny of a limited batch of sows (60), the project did not test the abattoirs (processors) in a typical production run. The next step is to see if the reading of RFID tags can be replicated at least in terms of UIs on a day-to-day basis.
- 2. To link health data (alongside carcase data) gained at the abattoir to individual pigs and feedback to the producer. The relaunch of the Pig Health Scheme (PHS) provides an opportunity to gain health data and feed back the results to producers on a subset of individual pigs. This could be cross-analysed with production data, eMB and on other health interventions during production. This data could be analysed and feedback given on the value (£) of any losses/rectifications to the producer.
- 3. To test the use of RFID ear tags on farm with a range of other management technologies to further demonstrate their use. There are significant advancements in on-farm automated technology, such as weighing systems, optical sorting, grading technologies and feed systems. The incorporation of RFID tags and UIs into these systems will allow analysis of trends in pig performance at a level never before seen.
- 4. To explore the use of modelling on entire herd management data (inc. UI data) gained from the above, to predict desired outcomes, e.g. carcase weights, culling, health incidents. The trial project tested the use of modelling to produce a carcase weight prediction model that could be used to predict when pigs would reach a specific slaughter weight. This would be useful for both producer and processor to predict throughputs. Other areas could be modelled to predict culling, health incidents, etc., using other production or environmental data, such as humidity or health interventions, feed intake, primal yields, etc.

These areas take the project beyond the initial proof-of-concept stage and start to embed RFID as a key tool for improving productivity through the supply chain. It will aid KE delivery, enabling consistent data collection on Strategic Farms and field trials, demonstrate precision technology on farm and link the herd data collected to tools that the producer and processor can use to aid decision-making.



Benefits to industry and AHDB

The five main areas of benefit to the industry are as follows:

- Health and disease control
- Inventory management
- Supply chain information and assurance
- Continuous improvement or active management
- Benchmarking and trials

Health and disease control

Although we have good traceability using batches to date, the option to have individual identification using RFID would support any future centralised traceability system for pigs. The value being to quickly stop the spread of disease and underpin export market access through the ability to rapidly prove that disease issues are traced and antibiotic usage meets the required levels for the food chain and export markets. Individual health treatments could also be recorded for both the reason and the medicine used individually and linked into eMB.

Inventory management

Electronic identification can support inventory management when combined with herd software systems, in the same way it does for consumer goods supply chains. The project will extend inventory management beyond the breeding herd to the rearing and finishing herd to the individual level.

Supply chain information and assurance

The project will allow for supply chain data such as carcase weight, fat depth (future primal yield data) and health data from the Pig Health Scheme/CCIR to be passed back to producers. At the individual level, these records could be linked to the building, pen and feed used in the production phase. For the processor, the information would mean increased traceability and the ability to support marketing campaigns to retailer and consumer. Through greater efficiencies, it would lead to a more consistent product.

Continuous improvement or active management

One of the main aspects of continuous improvement is the monitoring and benchmarking of production data, both physical and financial. If done well, such analysis can highlight which management and technologies are achieving a superior result. RFID allows for data capture to be automated, therefore making the collection of data more robust.

Benchmarking and trials

The project would underpin future work done by AHDB Pork on both Strategic Farms and field trials. Manual data entry is open to transcription errors, both in its capture and entry; this work would remove the potential for this type of error. This then means that AHDB when publishing the results of any demonstration or trial work can be confident in the raw data.

Network building and farmer-to-farmer learning

The pork KT team are building a network of allied industry and pork industry stakeholders to act as a dissemination network for research as well as a source of innovation to feed into EUPiG and Innovative Farmers. The network is known as PiN (Pig Innovation Network) and is currently supported by a quarterly newsletter that details current research, innovations and opportunities to engage, as well as inviting feedback from the network.

PiN is also supported with a closed forum to establish a two-way dialogue between the network and AHDB so as to help shape the research priorities across the pork supply chain. There are currently 42 members, but the aim is for this to grow to encompass a larger group of key influencers across the entire supply chain and the allied industries.

PiN is currently being used to draw entries for EUPiG, which is entering its third year. There are currently farmer case studies under the themes of:

- Health
- Welfare
- Precision
- Meat Quality

Under each theme there are four case studies, representing two case studies per year from 2017 and 2018. The ambassadors challenges, solutions and cost benefits are described in a range of ways, including 360 photo tours of facilities, photo stories and videos, as well as supporting technical materials. All materials can be found at **eupig.eu** as well as contacts of regional members of EUPiG for further information around either the challenges or the ambassadors.

Challenges for 2019 are as follows:

- Welfare Strategies to reduce aggression between animals: management systems, novel techniques or technologies that lead to a reduction in the aggression between production animals at any stage of production
- Welfare The quality of the farm atmosphere: in connection with the health of the breeders and the animals
- **Meat quality** Replacing GMO in soy for feed production: in some countries, retailers ask explicitly not to use any feedstuffs that are derived from GMO raw material
- **Meat quality** Strategies to open farms to public to improve transparency of animal production and trust in consumers: pig farms are increasingly the object of public concern related to animal welfare, to environmental sustainability and to the use of antibiotics
- **Precision** Reducing piglet mortality: stillbirths or 'mortality until weaning', also in hyperprolific sows where do you gain the highest effect?
- **Precision** Dashboard systems/benchmarking: (nudging-, motivation) systems to easily identify reduced performance increased costs – keep the production on track
- **Health** Early warning of diseases and production errors: novel technology, thematic systems and predictive modelling
- Health Influence of gut health on disease and production data: tools, systems and methods of monitoring gut health. Novel approaches to ensuring appropriate gut health development

Innovative Farmers aims to follow the EUPiG model of producing farmer-led case studies showcasing innovations that allow producers to adapt to industry challenges. While the investment test has only just been completed, it is expected that field labs, consisting of small groups of farmers, will start work in 2019 on industry challenges.

Each field lab will be supported by an academic researcher with specific industry knowledge in each challenge area, a member of the Linking Environment and Farming team and, where required, AHDB support. Further AHDB support is offered in the form of in-kind donations of time and equipment for recording results of labs, e.g. weigh scales and or data analysis.

A list of research projects that PHWC are involved in can be found in Appendix 2 of this document.



Knowledge transfer and training

11.1 Specific activities and services

The overall AHDB Strategy 2017–2020 'Inspiring Success' provides the context in which the Pork and other sector strategies will be implemented.

The AHDB vision is to be 'a world-class food and farming industry inspired by and competing with the best'.

To achieve this, there are four strategic priorities:

- 1. Inspire British farming and growers to be more competitive and resilient.
- 2. Accelerate innovation and productivity growth in line with competitors through coordinated R&D and knowledge exchange.
- 3. Help our industry understand and deliver what consumers will trust and buy at home and internationally.
- 4. Deliver thought leadership and horizon scanning.

The KE function delivers its KE activities through its AHDB Farm Excellence activities, these can be broken down into:

- Monitor Farms
- Strategic Farms
- Discussion groups and clubs
- Technical events and training
- Digital tools and resources

Key priorities for AHDB Pork are as follows:

Improve productivity

We will work with producers in new and innovative ways to inspire them to adapt their business to a more competitive marketplace. We will seek out the best new ideas from within the British industry and from our competitors in other countries through building effective knowledge networks. We will maximise the use of the €2 million EUPiG (Pig Innovation Group) being coordinated through AHDB. We will communicate information by all available channels from farmer-to-farmer contact through to the use of new technology. We will be more targeted and focused on those things that have the biggest impact on profitability.

Increase demand

We will substantially increase our investment in rejuvenating the image of pork in the domestic market and build on the success of the Pulled Pork campaign. We will move the focus of our work onto growing the relevance of pork in midweek meals. Farm Excellence builds on research that has revealed farmers learn best from those they trust and are more likely to make beneficial changes and adopt best practice if they see it in action on farm, in their own region.

AHDB Farm Excellence builds on the fact that we are unique in being able to blend farm economics and skills development with technical advances and innovation. The six action-driven themes combine research and KE so that outputs are targeted and delivered through the two new delivery platforms.

Key developments in 2018 have been the recruitment of five new Strategic Farms, with a further two due to come on board in 2019. These have had a focus on:

- Tackling tail biting
- Water infrastructure
- Precision technologies

The knowledge generated on the Strategic Farms in these areas will be rolled out in a series of campaigns in 2019, developing new tools and resources for industry to use, and through delivery at technical events and discussion groups to engage producers.

We will focus on eating quality through improved product specification and cooking and communicate the health benefits of eating pork. We will use our unique position to work with government to secure new export markets and promote pork from Britain in these and existing growth markets around the world.

Improve information

We will work to stimulate the introduction of a new carcase classification system which more effectively transmit consumer demands through the supply chain to producers. We will work with other sectors to increase the in-depth understanding of the market dynamics vital for businesses across the supply chain that are planning to invest. This will become more important as the UK moves out of the EU.

Themes	Programmes	Platforms			
Realising genetic potential	Network building				
Building sustainable plant		Farm excellence platform			
and animal nealth			suo		
Managing resources efficiently and sustainably	Supply chain integration		unicati	Reach	
Driving precision technology in to practice	Business development		Comm		
Facilitating trusted food in		Disital aletteras			
the supply chain	Digital platform		Digital platform		
Honing business and technical skills	Intelligence gathering				
Focus	Coordinate	Accelerate			



Integrated Approach

12.1 20:20 Pig Health and Welfare

The Vision specifies the need to:

- Address issues of coordination and integration in annual reviews of progress towards the objectives and targets of the strategy
- Ensure that where the 20:20 Pig Health and Welfare Strategy, other industry initiatives and Defra's Structural Reform Priorities (Defra Business Plan 2011–2015) are aligned, then activity can be integrated for mutual benefit

12. 2 Agricultural Industries Confederation (AIC)

The feed industry plays a vital role in ensuring the supply of nutritionally balanced diets for each class of livestock, combined with professional feeding management advice. Good nutrition, together with appropriate livestock husbandry and management skills, can promote health and contribute to antimicrobial reduction at farm level.

Medicated feeds are manufactured as a service to the farmer customer and only on receipt of a prescription issued by a veterinary surgeon. Once instructed by a veterinary surgeon, the feed manufacturer's role is to produce feed with the prescribed medicines accurately incorporated to the specified levels.

The feed industry reinforces the message that nutrition can be part of the solution. Feed manufacturers support the Antimicrobial Stewardship plans of the livestock industry and make a significant contribution by researching and developing innovative nutritional products that support animal health.

The EU One Health Action Plan Against AMR now clearly states the Commission will continue to promote animal husbandry, including aquaculture and livestock farming systems, and feeding regimes, which support good animal health and welfare to reduce antimicrobial consumption.

AIC and the UK feed industry

On behalf of its feed members, AIC:

- Keeps its members up to date with all legal requirements controlling the marketing and use of animal feed, including those containing veterinary medicinal products (VMPs) and specified feed additives (SFAs)
- Continues to develop the Universal Feed Assurance Scheme (UFAS) for the protection of human and animal health by ensuring safe practices in the manufacture, merchanting and distribution of feed for farm livestock. It is a requirement of UFAS that participants comply with all feed safety legislation, including those provisions controlling the manufacture and supply of medicated feeding stuffs. The scheme contains a section dealing specifically with medicated feed. UFAS is accredited to ISO 17065, is independently audited on an annual basis and has been granted Earned Recognition by the FSA working with VMD
- Is a long-standing and active member of the Responsible Use of Medicines in Agriculture Alliance (RUMA)
- Continues to develop the Feed Adviser Register (FAR), which promotes efficient feeding advice and high standards of animal health and welfare

Nutrition and animal feed

The feed industry has a major positive input on livestock wellbeing through sound nutrition and feeding management advice. This advisory role works at two levels:

- A level where sales staff provide general knowledge on good husbandry and management
- A technical level where the nutritionist may work with the prescribing veterinary surgeon and the farmer to help review factors affecting the animal's health and its ability to resist pathogens, with the aim of reducing as many contributors to a problem as possible in order that the veterinary surgeon has better clarity for a diagnosis.

Feed companies also research and design diets to maximise health by enhancing the immune system, the microbiome, gut health and general well-being.

Specific and relevant AIC initiatives

1. Medicated Feed regulation

AIC has been actively involved in the consultation and lobbying process on the redrafting of the Medicated Feed Directive which was published, as the Regulation on the production of Medicated Feed, in January 2019, though it does not come into force until 28 January 2022.

The regulation sets proportionate technical requirements for the manufacturing of medicated feed in multipurpose feed mills, this being a key concern for both AIC and FEFAC. The restrictions on prophylactic and metaphylactic use with a view to reducing the occurrence of AMR are consistent with the political decisions made in the context of Veterinary Medicinal Products Regulation.

Carry-over limits of active medicinal substances into non-target feed will be defined by the European Commission one year after the EU regulation becomes applicable, in consultation with the European Food Safety Authority (EFSA).

During the political negotiations, AIC and FEFAC have always reminded officials both in the UK and EU that the production of medicated feed is a service provided by compound feed manufacturers to livestock farmers, based on the advice and prescription by the veterinarian. The EU institutions have recognised that medicated feed is one of the safe and legitimate ways of administrating a veterinary medicinal product to a farm animal, with its specific advantages as regards homogeneity.

2. Authorised maximum copper content in feed

AIC developed, and delivered, a strong case to EFSA for the retention of higher levels of copper in piglet diets. The original proposal in the legislation was for complete removal of copper other than at the minimal level required for nutritional needs. The EU Commission had argued that the copper levels in use under the existing regulation combined both the nutrient requirement of the animal and the medicinal additive requirements and that these should be separated.

AIC considered that, with antibiotic reduction as a key priority for the industry, coupled with the removal of zinc oxide, it was vitally important to make a stand for the retention of enhanced copper levels. The resulting text, allowing copper levels of 150 mg/kg in suckling and weaned piglets up to four weeks after weaning and 100 mg/kg in piglets from fifth week after weaning and up to eight weeks after weaning, should be seen as a positive result for the industry.

AIC sees the retention of copper as vital in allowing pig producers to continue their focus on antibiotic reduction and also to prepare for the loss of zinc oxide.

Feed industry statistics

AIC members produce an estimated 90% of the compound feed fed to UK farm livestock.

AIC regularly surveys members of two of its standing committees and data on medicated feed production is shared with VMD.

Feed companies provide their farmer customers with collated information on medicine usage so that they can comply with the requirements of the Red Tractor farm assurance scheme.

12.3 Animal and Plant Health Agency (APHA)

The Animal and Plant Health Agency (APHA) supports the work of the Pig Health and Welfare Council (PHWC) and is represented on the Council as well as providing input into each of the subgroups (Surveillance, Antimicrobial Use, Welfare and Food Safety) in working towards improvements in pig health and welfare in British pigs and food safety. APHA plays a wide-ranging and key role in pig health and welfare through its involvement in notifiable disease, surveillance, contingency planning, disease diagnosis and scanning surveillance, animal welfare, international trade, Salmonella research and antimicrobial resistance monitoring and other activities. APHA's scientific expertise in pig pathogens, such as classical swine fever, swine influenza, porcine reproductive and respiratory syndrome (PRRS) virus and Salmonella, and disciplines such as virology, bacteriology, antimicrobial resistance, epidemiology and pathology, remain highly relevant to the Council's work.

APHA continues surveillance for porcine epidemic diarrhoea (PED) and has collaborated as part of the PHWC Surveillance subgroup on work on PED outbreak preparedness. The experiences involved in making PED notifiable were captured in an emerging disease template, which provides a generic framework for processes required to assess and make a disease notifiable. The APHA International Disease Monitoring Team undertakes risk assessments and maintains awareness of global developments in notifiable diseases which threaten the UK. Their publications relating to pigs have been dominated by the spread of, and risks from, African swine fever (ASF) in wild boar and domestic pigs in Europe and South East Asia. APHA has coordinated key communications to a range of audiences, aiming to reduce the risk of ASF being introduced to the UK pig population, in particular to prevent feeding of meat or meat products, including kitchen scraps, to pigs.



Scanning surveillance across England and Wales is delivered by a network of post-mortem examination (PME) sites made up of APHA Veterinary Investigation Centres and non-APHA partner post-mortem providers, with a free carcase collection service to farms outside one-hour drive from a PME site to ensure access to the diagnostic service. Veterinary practitioners and pig keepers are the 'eyes and ears' of pig disease surveillance and since the PHWC Surveillance subgroup's Syndromic Surveillance round table, there is an agreed priority objective to develop an app to allow systematic capture of pig disease incident information from veterinarians attending pigs.

In 2017–18, Defra-funded scanning surveillance activities at APHA identified and investigated a variety of threats or potential threats as summarised in the horizon scanning section. Those reported from outside the UK were assessed, with African swine fever being most prominent, alongside regular updates about PED and vesicular disease due to Senecavirus A elsewhere in the world. The detection of a novel porcine circovirus (PCV3) was reported by several countries including the UK; this virus is newly discovered but evidence indicates it has been in the pig population globally for decades. Two interactive dashboards were launched: one for GB pig diseases and the other for porcine reproductive and respiratory syndrome (PRRS), allowing veterinarians, pig keepers, and others the ability to access and interrogate surveillance findings and enhancing awareness of key endemic diseases. PRRS remains the most significant endemic viral disease diagnosed by APHA in pigs in England, with the peak diagnostic rates in 2018. Changes in the diagnostic trends of several other endemic diseases detected through the GB scanning surveillance network were reported at different times during 2017–18. Of particular note was the upward trend in swine dysentery, with cases diagnosed in several regions of the country, prompting disease alerts and follow-up whole

genome sequencing and antimicrobial sensitivity testing under surveillance funding to assist affected producers. APHA, the Moredun Institute and AHDB Pork, in collaboration with the pig veterinarian involved, oversaw the first confirmation of ivermectin resistance in *Oesophagostomum* species worms in sows on a farm in England. Antimicrobial sensitivity testing of pathogens isolated from pig disease surveillance detected beta-lactam resistance in *Actinobacillus pleuropneumoniae* and penicillin resistances in clinical isolates in GB. Further details of these and other potential threats are given in the quarterly scanning surveillance reports for 2017–2018, available on this link: **gov.uk/government/publications/pigdisease-surveillance-reports-2018**

The PHWC Food Safety subgroup has provided a platform for the sharing of knowledge from recent APHA research and surveillance activities focused on foodborne zoonosis. In particular, APHA have engaged with PHWC and supported their aims by designing on-farm studies into hepatitis E and a *Salmonella* laboratory ring trial to evaluate their effectiveness in detecting *Salmonella* from ongoing monitoring programmes. Expert input was provided to the LA-MRSA round table and to meetings on hepatitis E virus and Trichinella.

Provision of CPD and dissemination of surveillance outputs to veterinary practitioners who work with pigs and pig producers continues to be an essential component of APHA's role in knowledge transfer and maintaining disease awareness and preparedness, for both non-notifiable and notifiable pig diseases. APHA has contributed to meetings on leptospirosis, diagnosis and pathology of enteric and respiratory disease, updates on current threats, particularly ASF, and others, over the last two years.



The spread of African swine fever in wild boar and domestic pigs in Europe and South East Asia has been dominating APHA's publications

12.4 Red Tractor (Assured Food Standards)

Red Tractor (RT) is the largest food standards scheme in the UK, covering the areas of animal welfare, food safety, traceability and environmental protection. RT food and drink has been responsibly produced to some of the most comprehensive and respected standards in the world. All stages are regularly checked by independent experts and all the major UK supermarkets use the RT standards as the basis for their UK sourced food. The RT logo is on over £13 billion worth of food and drink annually.

The standards are continuously under review and, by working with industry representatives, RT aims to meet the expectations of a wide-ranging group of stakeholders. As part of this ongoing review, Red Tractor has continued to collaborate with, and participate in the work of, PHWC by providing input to the Council and its subgroups to support the key strategic priorities and bring benefit to the pig industry. Examples include: providing data on compliance to relevant standards, for example, the requirement to upload antibiotic usage data onto eMB every quarter; communicating to pig vets (eMB) and producers, hauliers and processors (importance of lorry washing); and suggestions of possible new standards (proposed to the Red Tractor Pig Technical Advisory Committee), such as the requirement for producers to have a downloadable copy of the PHWC 'Practical Guide to Responsible Use of Antibiotics on Pig Farms' (from April 2019).

From 1 November 2018, Red Tractor rolled out a new risk-based approach to inspections in the pig sector. Red Tractor is working towards 100% compliance from every member on every standard every day as it is vital that consumers have complete trust in the assurance scheme if they are to continue to buy food and drink bearing the logo. The new inspection approach is an internal system which uses the nature and number of non-conformances to categorise each member according to reputational risk. Poor performers will receive an increase in inspection frequency, which will be unannounced and at their cost. If improvements are not made, those poor performers will be suspended or withdrawn from the scheme to protect the reputation of British farming and the Red Tractor logo.

The vast majority of members do a fantastic job adhering to every standard every day, and those who continue to achieve these high standards and can demonstrate this at their normal inspection will notice no changes to their inspection programme. The decision to strengthen the inspection programme is part of a strategy to increase consumer confidence that food carrying the logo is safe, traceable and farmed with care. September 2018 also saw the first ever RT TV advertising, designed to increase shopper understanding of what the Red Tractor logo means and the lengths taken to ensure robust compliance to the standards. www.youtube.com/watch?time_ continue=2&v=evdRtQbhfls

12.5 Agriculture and Horticulture Development Board – Pork

AHDB is a statutory levy board, funded by farmers, growers and others in the supply chain to help the industry succeed in a rapidly changing world. We want to create a world-class food and farming industry, inspired by and competing with the best.

AHDB Pork is a sector body of AHDB supporting the English pig industry. Its strategy is to work with industry to address the challenges facing it and to maximise the opportunities. The key priorities of AHDB Pork are improving productivity, increasing demand and improving information.

A number of skilled teams, including Environment and Buildings, Exports, Health and Welfare, Knowledge Exchange, Marcomms, Marketing and Market Intelligence, all contribute and work together to drive the strategy forward.

The **Environment and Buildings team** focuses on sustainability and resource efficiency, climate change, renewable energy, water supply and management, waste streams, permitted agriculture, planning and development of pig buildings, protecting soil, water and air, nutrient management, NVZs and environmental legislation.

The value of the exports market to the producer can be overlooked but has a huge impact on the price a producer is paid for their pigs. Exports are worth hundreds of millions of pounds a year to the industry and it is estimated that up to £30/ pig produced is derived from the thriving export market. The AHDB Pork Export team has worked constantly not only to open new markets but also to develop existing ones and increase the range of products we sell. Recent successes include:

• Receiving official notification to supply pig trotters to China in November 2017 after a lengthy process of technical negotiations led by AHDB, in collaboration with Defra, FSA, UKECL and the wider industry, to demonstrate equivalence of animal health and hygiene standards



• In 2018, UK pork was approved for export to Taiwan. This came after meetings with senior Taiwanese Government officials in early 2017 and inspection visits in July 2017 with Defra and other organisations. The deal means that UK farmers and pork processors will be able to add value and generate income from cuts not commonly consumed domestically but in demand in Asia

The work of the **Health and Welfare Team** will ultimately improve productivity. The team works closely with PHWC, particularly on developing measures for surveillance and control of disease, improving pig welfare, reducing antimicrobial usage and the promotion of food safety. Recent activities include:

- Development of the contingency plan for dealing with a possible outbreak of PEDv
- Promotion of the Significant Diseases Charter
- Funding routine testing of samples from outbreaks of diarrhoea by APHA for PEDv to assist in early detection of the disease
- Coordinating and funding meetings of a cross-industry/ government group to assess the risk the feral wild boar population poses to the pig industry with regard to ASF. The group is also identifying the actions needed to minimise that risk and develop a forward plan of action
- Contribute to a Defra working group on PRRS
- Conducting a full review of the Pig Health Scheme in 2018
- Contributing to cross-industry groups on welfare issues
- Development of tools for producers to help improve pig welfare, including AHDB Tail Biting WebHAT and A Practical Guide to Environmental Enrichment for Pigs
- Publication of the Real Welfare baseline report in 2017
- Following the launch of the electronic medicines book (eMB) in 2016, AHDB Pork has continued to raise awareness of the importance of prudent use of antibiotics. We have seen the industry decrease its antibiotic usage from 263.5 mg/PCU in 2015 down to 110 mg/PCU in 2018, (2017 figure 131 mg/ pcu), but we are also ensuring that such reductions do not undermine animal welfare
- In June 2018, AHDB Pork, in association with Pig World, held a round table on meeting the antibiotic challenge the output from that event was published in Pig World in August 2018

The majority of the work of the **Knowledge Exchange team** is outlined in section 11 of this report. The team has introduced a new skills framework. Following a comprehensive industry review of PIPR (the existing training recording system), it was agreed that AHDB would build an alternative solution. The solution is Pig Pro, which is now available as a free online training recording system accessed through Pig Hub. Pig Pro answers the industry's need for a tool to record details of staff training and development and provides easy access to evidence for assurance schemes. The role of the **Marketing and Communications (Marcomms) team** is to raise the profile of sector activities, using appropriate channels, to benefit our levy payers. The team works with others across AHDB to deliver targeted messages which are both relevant and useful, with the ultimate aim of raising levy payer engagement and driving behavioural change among farmers.

The role of the **Marketing team** is to engage the entire supply chain, in order to work together and provide consumers with compelling reasons why they should be buying, cooking and eating more pork. Recent campaigns include the 'Pick Pork' and the 'Midweek Meal' campaigns.

The Market Intelligence team provides farmers, growers and food businesses the world-leading intelligence and insight to inform decisions, whether it is the latest prices or shifting consumer trends, detailed insight on the big issues or the future outlook for supply or demand for agricultural commodities. Better-informed businesses with an understanding of market dynamics are able to respond to opportunities and threats more quickly, driving improved resilience in the sector. Recent work includes helping the farming industry understand some of the key impacts of Brexit through the Horizon series of reports. This team has also produced a report on the potential impact of African swine fever and a range of sector-specific data and statistics, including UK Pig Meat Market Updates and Pig Market Weekly.

12.6 British Meat Processors Association (BMPA)

BMPA has worked to improve biosecurity in the supply chain in its recent review of the BMPA Pork Schemes. The principal change is the requirement that every livestock lorry is cleaned and disinfected before it leaves the abattoir site. To ensure the cleaning and disinfecting is both effective and efficient, new requirements on the standard of the washing facilities have also been included in the review of the standards that took place in 2018, which can be found on the BMPA website.

12.7 British Pig Association (BPA)

The British Pig Association continues to work with small-scale producers to raise awareness of biosecurity issues.

We have used the BPA pages of Practical Pigs magazine to remind small-scale producers of the threat of importing African swine fever and other notifiable diseases and the need for contingency planning.



Working with APHA and the Defra Farm Animal Genetic Resources Committee, we have drawn up a set of biosecurity guidelines for keepers of breeds at risk which should help them to meet the requirements of the veterinary risk assessment which will be carried out before any decision on sparing from culling can be made. The need to establish a track record of good practice during 'peacetime' will help to improve biosecurity standards.

We have also continued to stress the need for vigilance against importing non-notifiable diseases such as highly pathogenic (HP)-PRRS and we continue to work with the Council and other sectors to ensure that pedigree breeders and small-scale pig keepers are aware of the need for additional testing of imported animals.

Working with AHDB Pork, we have established a number of small-scale pig producer meetings, where issues such as swill feeding, antimicrobial resistance and the importance of traceability and pig movements can be discussed.

12.8 National Pig Association (NPA)

Tackling antimicrobial resistance (AMR) through responsible antibiotic use in the pig sector continues to be a priority. In July 2018, NPA published a progress report for the Pig Industry Antibiotic Stewardship Programme, which was compiled with support from the PHWC Antimicrobial Use subgroup. The report outlines progress against the pig sector's reduction targets and draws attention to the range of activity ongoing in the industry to improve pig health and refine antibiotic use.

As part of the drive to tackle endemic disease, NPA has been involved with a PRRS working group, established to assist Defra with the development of a proposal for an RDPE-funded PRRS control programme. If the project funding is awarded, NPA will play a crucial role in promoting the project to pig producers and encouraging them to be involved. Similarly, we will continue to promote AHDB's Significant Diseases Charter to our members, in order to increase coverage of the Charter.

We are delighted to see that government has recognised the importance of tackling endemic disease, in order to improve pig health and productivity, and we are working closely with PHWC and AHWBE on the proposed Animal Health Pathway, as described in Defra's Health and Harmony paper. NPA has also been heavily involved with the development of the Livestock Information Service, which we anticipate will greatly benefit the industry's efforts to improve the health of the national pig herd through improved traceability and data capture and use.



The NPA has been encouraging pig producers to erect warning signs to highlight the dangers of pigs gaining access to food waste

NPA continues to be particularly active in raising awareness of the threat of African swine fever – with pig producers, the haulage industry, the public, government and UK Border Control. The association has been encouraging pig producers to erect warning signs on their units where they are close to laybys, public rights of way and footpaths, to highlight the dangers of pigs gaining access to food waste.

Linked to this, NPA has played a key role in bringing together relevant stakeholders in an attempt to coordinate activity aimed at improving control of the feral pig population in the Forest of Dean and beyond. We are now actively lobbying government to update its action plan for managing feral wild boar in England, by raising our concerns with Defra ministers.



In terms of pig welfare, NPA has been extremely busy over the past 18 months, consulting with Defra on the update to the Code of Recommendations for the Welfare of Pigs. Similarly, we have been working in close collaboration with Defra, APHA, PVS, AHDB and the PHWC Welfare subgroup on an industry action plan for tackling tail biting, with the aim of minimising the need for tail docking. This is a particularly challenging issue to deal with, as there is no simple solution, but we are working hard to ensure pig producers have plenty of guidance to support them with improving the welfare of pigs with regards to tail biting.

12.9 Pig Veterinary Society (PVS)

The Pig Veterinary Society (PVS) is a specialist division of the British Veterinary Association. The membership of PVS includes veterinary surgeons and scientists who work in the pig sector, and the Society aims to assist its members in their professional lives by ensuring they have access to the latest information with regards to pig health and production. PVS also represents the membership at a national level, making sure that pig welfare is a priority considering the latest research with regards health and management on farm. The vast majority of UK commercial pigs are part of assurance schemes and are regularly visited by veterinary practitioners, almost all of whom are members of the PVS.

The optimisation of pig health is recognised as being one of the highest priorities needed to safeguard pig health and welfare and enable profitable and sustainable pig production. Veterinary advisors work closely with their pig-keeping clients to select and implement interventions to prevent and control disease in their pigs and improve their health and welfare. This advice can cover specific inputs to vaccine and treatment regimes, biosecurity and hygiene measures, slaughterhouse health monitoring, production record analysis, disease diagnosis and monitoring and other areas to guide decisions and lead to improvements in pig welfare.

PVS members are represented on the Pig Health and Welfare Council and its subgroups, contributing to the aims of these subgroups individually and also through consultation with other PVS members. During 2017–18, there has been a continued large input to all areas that PHWC covers, with increased attention in the Antimicrobial Use and Welfare subgroups. The continued reduction in antibiotic use, recorded through the eMB, has been down to a lot of hard work from the members of the subgroup itself, PVS members and producers on farm. The attention that has moved towards several aspects of improving welfare on farm over the past year is now utilising the expertise from both within and outside the pig sector, where PVS members and representatives are playing a major role at setting a constructive way forwards for us all and to the benefit of the pig.

The Society holds two scientific meetings each year to provide continuing professional development to PVS members and an opportunity to discuss and debate pig health, diseases, welfare and many other issues that relate to the pig industry and pig production. In addition to these meetings, extra continuing professional development for pig practitioners is provided by the Society through the John Walton training days, along with the parallel sessions that take place at the London Vet Show in order to reach those vets who do not have pigs as a major part of their usual caseload. Details can be found on the PVS website: **pigvetsoc.org.uk**

12.10 Responsible Use of Medicines in Agriculture Alliance (RUMA)

RUMA is a unique, independent non-profit Alliance of 26 organisations that have an interest in the stewardship of animal medicines in agriculture.

It provides leadership to the UK livestock industry, encouraging innovative and proactive efforts to improve the responsible use of veterinary medicines while ensuring optimum animal health and welfare. It uses evidence-based information to defend or promote the industry's responsible use of medicines. RUMA has a current focus on antimicrobial resistance (AMR) and is committed to supporting a One Health strategy to address the risk.

The responsible use of medicines continues to play a key role in maintaining the health and welfare of pigs. RUMA is pleased to participate in the Pig Health and Welfare Council and its Antimicrobial Use subgroup to ensure a two-way flow of information on related issues.

RUMA supports the initiatives of the AMR subgroup which promotes the provision of practical information to pig producers on how they can reduce the disease threat on farm and so reduce the need to use antimicrobials. The sector has worked hard to capture data on antimicrobial use through its eMB and the data gleaned from this will form the basis of reporting the sector progress towards the AMR target published in the 2017 RUMA Targets Task Force report, of which a progress report will be published by RUMA for all sectors

in November 2018. Intended as an overview of agricultures response to the AMR challenge, it will support the positive news that the use of antibiotics in livestock has reduced by 40% between 2013–2017.

RUMA also provides guidance for farmers and vets on the responsible use of medicines on farm. The guidelines are species-specific and are available free of charge for download from the RUMA website **www.ruma.org.uk**. In the context of the pig sector, RUMA is in discussions with the PHWC AMR subgroup to adopt its 'Practical Guide to Responsible Use of Antibiotics on Pig Farms', written over the course of 2018.

In November 2016, RUMA launched a new website in order to provide more balanced information on the use of antimicrobials on farm (www.farmantimicrobials.org). It continues to respond to those who aim to challenge the responsible use of medicines in farmed animals. Over the course of 2018, RUMA coordinated two cross-sector communication campaigns to amplify available information generated by organisations in the sectors promoting good animal health. The aim was to raise awareness to the importance of good vaccination and the provision of adequate colostrum in young animals. The #colostrumisgold campaign won the Community Communications category at the Antibiotic Guardian awards.

12.11 Royal Society for the Prevention of Cruelty to Animals (RSPCA)

The RSPCA, founded in 1824, is the world's largest and oldest animal welfare organisation. It is the Society's vision to live in a caring world where all animals are respected and treated with compassion.

The RSPCA supports the work of the Pig Health and Welfare Council and is represented on its Council and its Welfare subgroup. Further, the Society has undertaken a number of key initiatives over the past couple of years to assist with the delivery of PHWC's 20:20 strategy.

Over a quarter of pigs in the UK are currently reared to the **RSPCA welfare standards** for pigs and are under the RSPCA Assured scheme (formerly known as Freedom Food). The standards and the scheme offer highly tangible mechanisms for the Society to help practically support and drive the aims of the Council's strategy.

Measuring welfare outcomes for all pigs is a key target within the Council's strategy and, in April 2016, Welfare Outcome Assessment (WOA) became fully integrated into the RSPCA Welfare Standards for Pigs. Therefore, all members of the RSPCA Assured scheme are now assessed against a number of key welfare measures, including lameness, enrichment use, body marks and tail lesions. WOA provides a practical, objective, animal-focused 'picture' of the level of welfare being achieved within the scheme and helps to inform what effect the inputs (i.e. the provision of resources) are having overall on pig health, physical condition and behaviour. The welfare measures are predominately scored on three levels: (0) absence, (1) moderate, and (2) severe, which helps build a more comprehensive picture of not only the prevalence of issues within the scheme but also the severity of those issues. The assessments also focus on the use of environmental enrichment items and scores pigs investigating or manipulating suitable, as well as unsuitable (e.g. other pigs manure), substrates and/or objects. Along with the wealth of farm data, including data from health records, WOA can provide invaluable information about the welfare potential of different systems and management practices. The focus of the Society's work in this area over the past two years has been to collect and analyse WOA data and, working with RSPCA Assured, identify key areas for improvement and set targets for scheme-level improvement. As part of our process of continual welfare improvement, we will review WOA data to inform future standards updates.

In terms of development of the RSPCA welfare standards for pigs, recent developments have focused on the issue of tail damage. Tail docking is not permitted under the standards, except in exceptional circumstances. Producers wishing to tail dock must, with input from their herd veterinarian, seek written permission from the RSPCA to do so. As part of this process, they are required to provide the welfare rationale for doing this, as well as data of tail-biting incidences for their herd. With the current government (European and national) spotlight on the recording of tail biting, and actions to mitigate the risk of this vice, the Society is currently reviewing the process by which such permission is granted, including the information required and the frequency of submissions. The next version of the RSPCA welfare standards for pigs (scheduled for 2019) will be amended accordingly pending the outcome of this review.



Horizon scanning

Summary of disease-related threats and potential threats to GB pigs identified in 2017–2018

Pig disease-related threats identified in 2017–2018 and reported in the Quarterly Pig GB Disease Surveillance and Emerging Threats reports are summarised below. More details on each threat, or potential threat, are included in the relevant quarterly report(s) cited for each threat. The quarterly reports are produced by the APHA Pig Expert Group and include actions taken to address identified threats. They, and monthly APHA surveillance reports, are found through the following links:

- gov.uk/government/publications/pig-disease-surveillancereports-2017
- gov.uk/government/publications/pig-disease-surveillancereports-2018
- gov.uk/government/collections/animal-diseasesurveillance-reports#monthly-reports

Veterinary Investigation Diagnosis Analysis (VIDA) diagnoses and analyses referred to in the table below are recorded on the APHA FarmFile database and SAC Consultancy: Veterinary Services LIMS database and comply with agreed diagnostic criteria against which regular validations and audits are undertaken.

Type of threat Notifiable diseases Description **Brief summary** Confirmed in GB **Q** Report AFRICAN SWINE FEVER (ASF): outbreak and risk assessments from APHA's International Disease Monitoring team are found on: gov.uk/government/collections/animal-diseases-international-monitoring ASF persisting in wild ASF continues to persist in wild boar in Eastern Europe with No 2017 Q1 boar in Eastern Europe occasional outbreaks in domestic pigs **Risk of ASF introduction** Risk raised from very low to low following cases of ASF in dead No 2017 Q2 to UK raised wild boar in the Czech Republic, the first case in Romania in backyard pigs and westward spread in Poland Westward spread of ASF ASFV-positive wild boar found dead around 140 km from eastern No 2017 Q3 in Eastern Europe border of Poland, representing westward spread into previously unrestricted area and nearer more pig-dense area in western half of Poland No 2017 Q4 Westward spread of ASF Multiple ASF cases in wild boar further west near Warsaw and in Poland recent cross-border spread in wild boar in northern Poland from Russia into an area of higher wild boar density First report of ASF in First detection of ASF in Hungary and outside the border No 2018 Q1 Hungary surveillance zone, which is concerning. Most likely source is considered to be contaminated meat or food waste brought in by non-EU workers First report of ASF in ASF reported for first time in NE China, information suggests that No 2018 Q2 China and spread in disease may be more widespread there. ASF spread in E Europe, Romania including Romania in backyard pigs ASF spread to Belgium First ASF cases in wild boar in Belgium near French border. No 2018 Q3 and in China and Europe Spread continues in China and Europe and risk of introduction to UK raised to medium following a significant increase in backyard and commercial pig outbreaks in Romania

ASF spread in SE Asia	ASF detected across China, and Mongolia and Vietnam have reported ASF cases. Several countries found ASF virus-infected pork or pork products seized at their borders	No	2018 Q4
Feed ingredients and/ or packaging as risk pathways for introduction of novel exotic and notifiable disease viruses to the UK	Publication on survival of pathogens in shipped animal feed ingredients relevant to risk pathways for introduction to UK from Asia and elsewhere of variety of viral pathogens affecting livestock. IDM risk assessment published later in 2018 for Europe risk pathways, EFSA working on risk pathways from Asia	No	2018 Q1
Swine fevers ruled out in haemorrhagic disease	Pigs with haemorrhagic lesions reported as suspect swine fever; both negated after official investigation. Subsequently diagnosed as thrombocytopenic purpura and erysipelas	No	2017 Q2
Swine fevers ruled out in pig disease outbreak	Pigs affected by PRRS, pasteurellosis and a few with likely PDNS prompted an official investigation and ruled out swine fevers	No	2018 Q4
<i>Brucella sui</i> s in imported raw hare meat in the Netherlands	New potential route of transmission of <i>Brucella suis</i> into UK pig population identified when <i>B. suis</i> biovar 1, a zoonotic pathogen, detected in a dog in the Netherlands believed infected from raw hare meat imported from Argentina	No	2017 Q3
Type of threat	New disease or pathogen		
Description	Brief summary	Confirmed in GB	Q Report
Porcine circovirus 3 (PCV3)	:		
Porcine circovirus 3 reported in pigs globally	Novel porcine circovirus (PCV3) detected in samples from pigs both healthy and with various disease presentations from several countries (including US, China, Italy, Poland, Spain, UK), suggesting it is widespread in pigs globally	Yes	2017 Q3
Evidence of historical porcine circovirus 3 infection globally	Publications indicate PCV3 has been in the pig population globally for a number of years before its first detection. There is uncertainty about the significance of PCV3 in porcine disease. More systematic evaluation of PCV3 in diseased and healthy pigs, and experimental infections needed	Yes	2018 Q1
Porcine circovirus 3 detection with multisystemic inflammation	PCV3 detected in stillborn piglets on one farm. Publication on experimental infection of weaned pigs with PCV3 that induced disease resembled some aspects of PDNS	Yes	2018 Q4
Novel pestivirus identified in pigs in Austria	Novel 'Linda' pestivirus identified in Austrian herd with congenital tremor. Only one affected herd was described	No	2017 Q2
Kobuvirus detected in pigs in China	Porcine kobuvirus (PKV) found in piglets with severe diarrhoea in China with porcine bocavirus 1 (PBoV1). PKV importance as a primary pathogen still uncertain. No zoonotic infection reported; no studies on PKV reported in the UK	No	2017 Q3



Endocarditis and septicaemia due to Streptococcus gallolyticus	Streptococcus gallolyticus isolated from cases of septicaemia/ meningitis or endocarditis in seven pig diagnostic submissions between 2015 and 2017	Yes	2017 Q4
Novel bat-derived enteric virus in pigs in China	A novel enteric coronavirus causing diarrhoea and high mortality in neonatal piglets in 2017 described in China. Evidence indicates the virus moved from horseshoe bats into pigs and the novel coronavirus is being called swine acute diarrhoea syndrome coronavirus 'SADS CoV'	No	2018 Q1
Brachyspira suanatina detection in pigs in Germany	First description of <i>B. suanatina</i> infection in pigs outside Scandinavia and confirms the ability of this <i>Brachyspira</i> species to cause swine dysentery. Several other detections of <i>B. suanatina</i> is described in healthy sows and diarrhoeic finishers	No	2018 Q1
Porcine circovirus-like P1 virus reported in China	A novel unclassified circovirus called porcine circovirus-like virus P1, first reported in 2012, is widespread in pig herds in central and eastern China. its clinical significance is uncertain; the virus has been detected in pigs showing wasting and congenital tremor	No	2018 Q3
Recrudescence of vesicular disease due to Senecavirus A (SVA) in Brazil	Re-emergence of vesicular disease associated with SVA clinically indistinguishable from notifiable vesicular diseases in pigs in Brazil. Lesions appear more severe and take longer to resolve. Whether due to a change in the virus or in herd immunity is being investigated	No	2018 Q4
Type of threat	New pathogen variant		
Description	Brief summary	Confirmed in GB	Q Report
Atypical <i>Brachyspira</i> <i>hyodysenteriae</i> detected causing diarrhoea	Tiamulin-sensitive <i>B. hyodysenteriae</i> isolated in culture from diarrhoeic faeces testing positive for <i>B. innocens</i> by PCR on one farm in England. Similar isolates have occurred rarely. Whole genome sequencing undertaken to investigate	Yes	2017 Q1
Virulent strains of PRRSV-1 in Europe	Publications report PRRSV-1 (European) virus strains with greater virulence. One Belarus strain isolated 2009, one in Austria caused outbreaks with severe neonatal piglet mortality in 2015	No	2017 Q2
Porcine epidemic diarrhoea upsurge in Canada	Significant escalation in PED cases in Manitoba, Canada, since May 2017. PED outbreaks confirmed in breeding, nursery and finisher herds	No	2017 Q2
Porcine circovirus 2 – genotype 2d in GB PCVD cases	PCV2d detected again in 2018 porcine circovirus 2 associated disease outbreaks and predominant in those genotyped, with PCV2b in the minority. This shift to PCV2d is reported in pigs globally. Currently there is no clear evidence that vaccine efficacy is affected	Yes	2018 Q2

Reassortant H1avN1 swine influenza strain detected	Reassortant H1avN1 swine influenza strain detected since 2012 in archived samples from pigs in England	Yes	2018 Q2
Actinobacillus pleuropneumoniae detected bearing Apx1 toxin gene	APP isolates with Apx1 toxin gene detected and are rare in GB pigs. Serovars producing Apx1 are considered more virulent, especially in combination with Apx2. Serotypes producing Apx1 were not detected between 1995 and 2015 in England and Wales, while in Scotland, one was identified in 2012	Yes	2018 Q2
Type of threat	Changes in endemic disease		
Description	Brief summary	Confirmed in GB	Q Report
Porcine reproductive and	respiratory syndrome (PRRS):		
PRRS virus in epidemic outbreak – diagnostic PCR amended	PRRSV strain was detected by a sequencing PCR targeting different region of genome from diagnostic PCR which was negative. Amendments made to the diagnostic PCR to resolve the issue	Yes	2017 Q4
Typical winter rise in GB PRRS diagnoses	Diagnostic rate for PRRS in GB in Q1-2018 was highest recorded with a familiar annual seasonality pattern showing a peak in diagnoses in winter months and dip in summer months. Interactive PRRSV dashboard launched online	Yes	2018 Q1
PRRS diagnoses prominent	The diagnostic rates in the three quarters of 2018 for PRRS in GB have each been the highest Q1, 2 and 3 recorded. There was no reduction over summer months. Sequencing of the ORF5 gene in PCR-positive samples shows a continued trend in GB virus diversity	Yes	2018 Q3
Myoplasma hyorhinis disease in PRRS outbreaks	Outbreaks of polyarthritis, with pneumonia and polyserositis due to <i>Mycoplasma hyorhinis</i> with concurrent PRRS in growers	Yes	2017 Q3
Swine dysentery due to B	rachyspira hyodysenteriae:		
Swine dysentery outbreaks continue into Q2-2017	More diagnoses of swine dysentery recorded in in the first six months of 2017 in England. Represents a slight upward trend compared with 2015–16. Isolates tested for tiamulin sensitivity and none were resistant	Yes	2017 Q2
Slight upward annual trend in swine dysentery	Diagnoses of swine dysentery in 2017 recorded in VIDA in pigs in North Yorkshire, York and Humberside, East Anglia and Cheshire	Yes	2017 Q4
Swine dysentery outbreaks continue into 2018	Further diagnoses of swine dysentery in Q1-2018 in South or North Yorkshire. Tested isolates were sensitive to tiamulin	Yes	2018 Q1

Swine dysentery diagnoses in several regions of Great Britain	In 2018, diagnoses confirmed in North, South and West Yorkshire, Lancashire, Somerset, Worcestershire and Devon, and one diagnosis in Wales. Whole genome sequencing showed outbreaks involved more than one <i>B. hyo</i> strain	Yes	2018 Q3
Swine dysentery diagnosed in East Anglia	<i>B. hyodysenteriae</i> isolate not similar to any analysed by APHA from outbreaks elsewhere in the country	Yes	2018 Q4
Leptospirosis outbreaks in jaundiced pigs	Leptospirosis diagnosed in pre-weaned and post-weaned pigs showing jaundice. Likely involvement of rodent-associated pathogenic leptospires	Yes	2017 Q3
Leptospirosis in jaundiced growing pigs in autumn– winter months	Severe outbreak described. Outbreaks tend to be in autumn–winter months; scarcer and rodents (and possibly other wildlife) coming into greater contact with pigs. Advice provided on control and measures to reduce zoonotic risk	Yes	2018 Q4
Seasonal Klebsiella pneumoniae (Kpp) septicaemia outbreaks	Summer Kpp outbreaks typical of those occurring annually since 2011 in East Anglia, and one in south-west England in pigs just weaned rather than the usual occurrence in pre-weaned pigs	Yes	2017 Q2 and 2017 Q3
Summer outbreaks of Klebsiella pneumoniae septicaemia	Kpp septicaemia outbreaks over summer 2018. Typical incidents in East Anglia; sudden deaths of pre-weaned piglets in good body condition on outdoor breeding farms. One outbreak on an indoor farm in Thirsk catchment area was the second diagnosed in north-east England	Yes	2018 Q2 and 2018 Q3
Increased diagnostic rate of <i>Lawsonia</i> <i>intracellulari</i> s-associated disease	GB diagnostic rate increased during each quarter of 2017. Supported by practitioner survey through Pig Veterinary Society in which changes in antimicrobial use and increased use of diagnostics were main reasons cited for the rise	Yes	2017 Q4
Lawsonia intracellularis diagnostic rate increases	Diagnostic rate was the highest recorded for the years 2006–18. Reduction in antimicrobial use, particularly tetracyclines and macrolides, could allow more <i>Lawsonia</i> -associated disease unless additional control measures are taken	Yes	2018 Q3
Porcine circovirus 2-associated disease remains a threat to unvaccinated pigs	PCVD diagnosed in growing pigs with respiratory disease which had inadvertently missed PCV2 vaccination at weaning. A significant PCV2 challenge to unvaccinated pigs persists on such units, emphasising need for vaccination	Yes	2017 Q3
Swine influenza infection in sows associated with several abortions	Seroconversion to pandemic H1N1 2009 strain of swine influenza in sows showing late-term abortion, likely due to maternal factors relating to the influenza. Swine influenza infection is very variable in clinical presentation in breeding pigs	Yes	2017 Q2
Slight increase in diagnostic rate of swine influenza	Slight rise in diagnoses of swine influenza; H1N2 predominant. Almost all H1N2 strains identified in GB pigs are now reassortant H1N2 swine influenza A virus strain with an internal gene cassette from pH1N1/09 virus and outer components from swine H1N2 virus	Yes	2018 Q1

Streptococcus suis serotype trends	Relatively more S. <i>suis</i> serotype 1 than previous trends, possibly reflecting more diagnostic investigations in younger pigs and efforts to reduce antimicrobial use. Isolates kept for possible autogenous vaccine production	Yes	2018 Q2 and 2018 Q3
Respiratory disease and mortality incidents due to Actinobacillus pleuropneumoniae	<i>A. pleuropneumoniae</i> (APP) outbreaks diagnosed in different regions of England and the rise in diagnostic rate was a likely seasonal effect; no unusual serotypes detected	Yes	2018 Q1
Rise in parasitic pneumonia cases (Metastrongylus apri)	GB diagnoses of parasitic pneumonia rose for the 12 months to end of June 2018. One diagnosis in farmed wild boar, others in commercial pigs aged 9–18 weeks. Lower airways of lungs must be inspected during post-mortem examinations to detect this lungworm	Yes	2018 Q2
Increase in diagnostic rate of vitamin E and selenium-associated disease	Upward trend in diagnoses of mulberry heart disease over six months. Absolute vit E/Se deficiency not always identified and rapid growth, activity, stress and intercurrent disease can predispose to disease, as well as dietary factors or food-storage issues	Yes	2017 Q1
Type of threat	New or rare emerging resistance		
Description	Brief summary	Confirmed in GB	Q Report
Investigations into possible anthelmintic resistance in sows	Reduced ivermectin efficacy demonstrated on farm in <i>Oesophagostomum</i> sp. worms. Further investigation of resistance planned in collaboration with Moredun and AHDB Pork	Yes	2017 Q1
lvermectin resistance confirmed in adult Oesophagostomum dendatum	First confirmation of resistance to ivermectin in adult <i>O. dentatum</i> worms in pigs in UK by controlled efficacy trial at Moredun. Predisposing factors: long-term ivermectin for parasite control and continuous use of accommodation. Other testing suggested that benzimidazole effective	Yes	2018 Q1
Staphylococcal skin infection and antimicrobial resistance	Livestock-associated meticillin-resistant Staphylococcus aureus (LA-MRSA) identified in piglet with skin disease. Greasy pig disease due to <i>Staph hyicus</i> likely predisposed to LA-MRSA colonisation of skin	Yes	2017 Q2
Resistance to toltrazil in piglet coccidiosis in the Netherlands	First report of toltrazuril resistance in <i>Cystoisospora suis</i> (cause of piglet coccidiosis) confirmed experimentally in parasites from a farm with field evidence of poor efficacy	No	2017 Q3
Penicillin resistance in <i>Streptococcus suis</i> serotype 5	Penicillin-resistant S. <i>sui</i> s serotype 5 identified as an unusual cause of abortion in a sow. Serotype 5 is not a common serotype in GB pigs and there was no ongoing disease	Yes	2018 Q2
Beta-lactam resistance in Actinobacillus pleuropneumoniae	Beta-lactam (ampicillin) resistance associated with presence of bla-ROB1 gene, may be transferable AMR as this gene often on plasmid	Yes	2018 Q4

Type of threat	Unusual diagnoses or presentations				
Description	Brief summary	Confirmed in GB	Q Report		
Leptospirosis associated with reproductive disease	Eptospirosis associated Limited incident of leptospirosis identified with antibody to th reproductive disease servar Pomona (also to Icterohaemorrhagiae and Bratislava) in affected sows. Wildlife-adapted Pomona type Pomona (not pig- adapted Pomona type Kennewicki) identified in 2011 on pig farm in same region and situation as in this herd		2017 Q1		
Large intestinal impaction associated with excessive soil ingestion	Multiple gilt deaths with abdominal catastrophies due to excessive soil and sand ingestion highlighted to raise awareness – indoor breeding pigs being introduced to outdoor conditions appear more susceptible	Yes	2017 Q1		
Chronic skin disease and kidney failure in boars	Investigation into boars affected with widespread skin thickening with bacterial infection, mange not confirmed but possible earlier involvement	Yes	2017 Q1		
Liver lobe torsion	Two unlinked farms reported to have had cases of liver lobe torsion in sows in lactation/at weaning. Possible dietary/mechanical factors highlighted; both farms home-mill and mix feed	Yes	2017 Q1		
Unusual nervous signs in finisher pigs with a likely viral aetiology	Single outbreak in grower pigs of flaccid forelimb paralysis, malaise, and a preference for lateral recumbency. A non-suppurative, likely viral, myelitis found. No sapelovirus or teschovirus identified by PCR	Yes	2017 Q2		
Severe outbreak of inclusion body rhinitis in young pigs	Severe rhinitis from three weeks old on single farm. Extensive viral cytopathic lesions in nasal cavities confirmed due to inclusion body rhinitis; the severity of lesions correlated with the marked clinical picture on farm	Yes	2017 Q2		
Bone abscesses in post-weaned pigs	Lameness due to osteomyelitis in long bones of early post-weaned pigs. <i>Trueperella pyogenes</i> isolated. No evidence of osteochondrodystrophy and likely dt haematogenous spread	Yes	2017 Q3		
Aeromonas hydrophila associated with pleuropneumonia lesions	Aeromonas hydrophila isolated from focal haemorrhagic Actinobacillus pleuropneumoniae-like lung lesions at slaughter. This organism has a predilection for aqueous environments and water system in finisher sheds considered a potential source of infection	Yes	2017 Q3		
Sporadic haemorrhagic diathesis in one pig	One of a series of cases of sporadic haemorrhagic diathesis in a single pig. The pathology can resemble swine fevers; however, clinical and epidemiological features meant swine fevers not suspected in this case	Yes	2017 Q4		

Aerococcus viridans disease in PRRS outbreaks	A. viridans in pure growth from lesions in multiple pigs pointing to a role in disease, likely secondary to viral infections identified. A. viridans reported in the literature in association with arthritis, pneumonia, endocarditis and meningitis	Yes	2018 Q1
Congenital tremor with concurrent deformities	Atypical porcine pestivirus (APPV) identified in gilt litters affected by CT. In same herd, stillbirths, some with limb deformities, negative for APPV. PCV3 later detected (see under novel pathogens)	Yes	2018 Q3
Skin lesions with mortality incident in growing pigs	Significant spike in mortality with skin lesions in growing pig. Investigated as potential food-safety incident; effects were short-lived effects and a farm-specific management issue was suspected	Yes	2018 Q3
PCV2-associated disease with unusual cerebellar lesions	An unusual finding in PCVD but reported in the literature and detected in GB PCVD cases on a few occasions. This is a less common differential for neurological disease in growers	Yes	2018 Q4
Mycotic abortion due to <i>Aspergillus</i> species infection	Mycotic (fungal) abortion relates to exposure of the pregnant sow to fungal spores in the environment, usually from bedding, bedding stores or feed	Yes	2018 Q4
Type of threat	Other		
Description	Brief summary	Confirmed in GB	Q Report
Potential issues in global vitamin E and A supply	Shortage in world supply of vitamin E and A. Diets of rapidly growing animals fed supplemented concentrate feed at most at risk	Yes	2017 Q4
Straw bedding shortage in the UK	Straw in short supply, prices likely to rise. Potential issues if less straw used for bedding increasing risk of disease, and others relating to some alternative bedding materials	Yes	2017 Q4
Abortions suspected to relate to hot weather	Abortions induced by hyperthermia in association with the late to hot weather hot weather suspected to have caused abortions. Advice on addressing the adverse effects of hot weather on AHDB website		2018 Q2



Milestones for 2019-2020

As well as general milestones for PHWC, each of the subgroups sets out milestones for the upcoming year. These milestones illustrate strategic goals and specific objectives which are in line with the horizon scanning performed by each group. The approach of the overarching Pig Health and Welfare Council is to ensure that these milestones are on target to achieve their objectives and that progress is continuing to be made. In addition to the milestones outlined below, a longer-term priority of PHWC is to:

Review the methods for integration of existing and future data sources considered to be of surveillance value to provide a comprehensive surveillance system for pig health and welfare.

Key milestones for the PHWC 2019-2020	Comments
Report on the outcomes achieved in the 20:20 Vision	The Council will assess which of the objectives have been achieved, which are still critical to the industry and must be taken forward and those that have been superseded and are no longer relevant
Publish the PHWC 20:30 strategy	Following consultation with interested parties, set out the objectives the Council has identified as necessary to support a successful industry which is prepared to adapt to new challenges and adopt new technologies

contribute to the achievement of the specific milestones of the four strategic subgroups

Key milestones for the PHWC Disease Surveillance subgroup	Comments
Continue to develop and update disease-control measures to ensure that the pig industry is in a position to take appropriate action against new, emerging and endemic diseases	 PHWC will:- Update contingency plans and standard operating procedures for PEDv and apply these to other endemic disease as necessary Plan disease-control exercises when appropriate Develop the capability and capacity for epidemiological investigation Promote improved biosecurity Investigate the use of compartments to minimise the impact of notifiable and other disease outbreaks on trade PHWC will work in close partnership with government
Develop a comprehensive surveillance system for the pig industry which is fit for purpose and which maintains and utilises existing and new data sources	Develop an action plan to provide and coordinate appropriate surveillance systems for the pig industry, government and veterinarians. These will need to be capable of detecting current and emerging threats to pig health and welfare as well as providing baseline information against which progress could be monitored
Identify the priority steps and monitor the outcomes being achieved by the PRRS control project and use this to plan the next steps	The RDPE project is the first step and an overall plan for PRRS control is needed. This should be led by the pig industry through the Pig Health and Welfare Council with the overall aim of reducing the impact of PRRS and increasing productivity



Contribute to discussions and, as appropriate, development of testing for exclusion for pig notifiable disease	PHWC supports the concept of testing for exclusion, in particular, for swine fevers and will provide comment and input as required to discussions and plans with Defra and others to develop a beneficial scheme
Key milestones for the Pig Welfare subgroup	Comments
Working across the industry to reduce tail damage on farm, collaborating with APHA to produce a Tail Action Plan for each unit	The PHWC subgroup is encouraging and supporting investigating methods of managing tail biting on farm, when outbreaks occur. We are working towards collating data regarding the incidence and potential triggers to outbreaks on farm to inform advice on preventing tail damage
Review the research around welfare as pigs are finished at heavier weights, including a focus on welfare proximate to, before and during slaughter	PHWC recognises the additional challenges involved in rearing pigs to heavier weight and the potential impact this has on welfare. Welfare at the time of slaughter to be kept under review in light of current or new research
Review current practice with respect to pig medicine teaching and euthanasia training at UK vet schools, for newly graduated vets and mixed-practice vets with little pig experience. Ensure the latest information on best practice is provided to producers including non-assured farms and smallholders	The PHWC subgroup has identified the importance of euthanasia training provided to veterinarians as being of significant importance in maintaining welfare on farm and at slaughter. In turn this will ensure dissemination of information to fellow vets, producers and smallholders.
Key milestones for the Pig Meat Food Safety subgroup	Comments
Assess the impact of disease-control measures put in place to reduce the risk of <i>Salmonella</i> infection from pork	To include monitoring the results of statutory industry testing and the testing for the prevalence of <i>Salmonella</i> in pig intestinal content post-slaughter. To identify new and emerging methods of reducing <i>Salmonella</i> carriage in pigs. Develop partnerships to ensure best use is made of all samples collected from pigs on farm or at slaughter to enable cost-effective testing to be established
Action the outcomes of the hepatitis E workshop	This will include developing: An agreed communication document on the work of the industry to reduce the risk of hepatitis E in slaughter pigs Ranking the proposed research and operational projects in terms of deliverability, including costs, and work in partnership with retailers, producers and government departments to generate a science-based reduction programme



Deliver the agreed actions from the LA-MRSA workshop of April 2018	 To include shared communications, enabling the industry to meet any recommendations from the EFSA report on LA-MRSA To support the industry in operational delivery of effective biosecurity standards The risk to the general public of colonisation or infection with LA-MRSA is currently low in the UK. FSA confirmed the risk from eating and handling meat is very low, so no direct action to be taken To develop communication plans including two Q & As, one aimed at the public and one at farmers and vets. These will include health and safety considerations and biosecurity on farm. To raise awareness amongst producers of LA-MRSA and how to protect themselves their families and others who come into contact with their pigs
Key milestones for the Antimicrobials Usage subgroup	Comments
Support initiatives and guide knowledge transfer for vets and producers aiming for continued responsible use and reduction in antimicrobial use in pigs	This will include engaging with producers that are consistently using the highest levels of antibiotics through diagnostics and advice. Incentivising veterinary surgeons and farmers to reduce antimicrobial usage in pigs while maintaining high health and welfare in the national herd. Identifying best-practice examples of reducing antimicrobial use in commercial pig herds. There will be a focus on hygiene measures to reduce the spread of pathogens and a focus on internal and external biosecurity
Support RUMA in increasing awareness of the importance of ensuring responsible use of antimicrobials in pigs. This will also include advising the new RUMA Targets Task Force as they develop targets for the period from 2020 to 2025	PHWC will work closely with and support the RUMA Targets Task Force as they develop targets for further antibiotic usage reduction in pigs and ongoing refinement of use of these medicines. The group will continue to monitor progress against these targets, facilitate implementation of responsible use of antibiotics across the industry, encourage development and use of rapid pen-side testing and develop an understanding of the environmental impact on AMR
Assess the impact of the rapid reduction in antibiotic use on the health and welfare of the UK pig herd	The impact of a rapid reduction of antibiotic usage on the health and productivity of the national pig herd should be established using a range of data sources, including PHS, CCIR, Agrosoft, eMB Pigs and VIDA to ensure that health and welfare are not being negatively affected
To explore systems that encourage a response to surveillance of antimicrobial resistance in the UK pig herd	We will explore the development of systems that collate the knowledge gained from surveillance of antimicrobial resistance and use this knowledge to effect behavioural change in antibiotic usage
Ensure the industry is prepared for the loss of zinc oxide in 2022, seeking effective antimicrobial alternatives and methods of ensuring that when antimicrobial use is necessary, it is targeted and optimal	Identify optimal housing and management conditions for minimising antimicrobial use in newly weaned pigs and ensuring the development of a healthy microbiome that minimises colonisation by pathogenic <i>E.Coli</i> . Explore alternatives to antibiotics in the absence of zinc oxide

Conclusions

The Pig Health and Welfare Council's vision is "An English pig herd where health and welfare are continually improving, which results in better pig performance, the production of a safe and quality product, reduced environmental impact and increasing sustainability of an industry that contributes fully to national food security". Its key areas of focus are disease control and surveillance, promotion of pig welfare, responsible antibiotic usage and pig meat safety. To work towards achieving its aim, the Council has continued to build on the effective working partnerships which have been developed especially between the industry and government departments and agencies.

The Council recognises that many of the challenges that faced the industry in 2017 and 2018 will continue to be of importance in 2019 and 2020, including the threat of disease, welfare issues, zoonotic diseases and antibiotic resistance.

The threat of disease with the increasing outbreaks of swine dysentery in the UK and the increased risk of African swine fever in Europe and Asia highlights the need for industry to take action to heighten biosecurity and be vigilant.

This threat and strategies to control disease have been the focus of the Disease Surveillance subgroup. The work completed by the subgroup has ensured that the industry is well prepared to tackle disease incursions, but more can be achieved in developing and updating disease-control measures, developing a comprehensive surveillance system, identifying the priority steps and monitoring the outcomes being achieved by the PRRS control project. They will have an important input into discussions on the development of testing for exclusion for pig notifiable disease.

Welfare of pigs is a priority for PHWC. Welfare issues are often complex, with complex solutions needed to address them. Bespoke solutions may be required for different animals in different environments, which adds to the complexity. This is true for two key areas of concern: tail biting and freedom at farrowing. While tail docking has been shown to reduce tail biting, docking comes with its own welfare concerns. The issue of tail biting and the solution to enable producers to stop tail docking have been a high priority for PHWC. The Tail Docking Action Group will continue to identify good practice and try to gain better understanding of the complex issues causing tail biting.

A particular need is to get a better understanding of how to ameliorate damage in a tail-biting outbreak. Investigations into the welfare of sows and piglets during farrowing and lactation is continuing to highlight the challenges in developing better systems and the group will be active in searching for the right alternatives.



The issue of tail biting and the solution to enable producers to stop tail docking have been a high priority for PHWC



The safety of pig meat is usually taken as a given by consumers and therefore is crucial to the reputation and sustainability of the industry. *Salmonella* remains the most common zoonotic pathogen identified in pork, but hepatitis E and Livestock-associated methycillin-resistant Staphylococcus aureus (LA-MRSA) remain as important concerns. The subgroup itself is not able to sample for the prevalence of these infections and it has been the 'working in partnership' and data sharing that has enabled the group to progress with the development of control measures and it still continues to do so.

Antibiotic resistance and the promotion of responsible use of antibiotics in the industry will remain a significant challenge. There has been a very successful programme with AHDB, Industry and Red Tractor to require the recording of antibiotics administered and the signposting of alternative management practices which can result in a reduced requirement for antibiotic usage. The Antimicrobial Usage subgroup will continue to identify and share strategies aimed at reducing overall usage and will support RUMA in increasing awareness of the need to ensure responsible use of antibiotics in pigs. However, the rapid reduction in antibiotic use may impact on the health and welfare of the UK pig herd and must be carefully monitored, together with the ongoing surveillance of antibiotic resistance in pigs in the UK. Other changes, such as the ban on the therapeutic use of zinc oxide coming in 2022, may negatively impact health and welfare and the group aims to have provided the industry with supporting strategies.

One previously unforeseen challenge facing the industry over the next two years includes the possible far-reaching consequences of the UK leaving the European Union. A high health and welfare herd with the data to support these claims will mitigate against some of the risks, so the access to data, how data is analysed, reported and acted upon is critical to making the right choices. The Council will continue to support the industry through the delivery of the wide-ranging and ambitious milestones it has set for 2019–2020. PHWC and its subgroups will continue to prioritise the milestones and will also redeploy resources should unforeseen events occur requiring action by the industry.

In 2019, the Council will be working with the pig industry to update the 20:20 Vision to take the industry forward to 2030. We aim to secure a sustainable and profitable industry which has the ability to invest in new technologies, disease-control measures and high welfare standards in all production systems, meeting the requirements of both present customers and new markets.



Glossary of abbreviations

16.1 Abbreviations of organisations or institutions

AFS	Assured Food Standards (See also Red Tractor)
AHDB Pork	Agriculture and Horticulture Development Board – Pork
AHWBE	Animal Health and Welfare Board for England
AIC	Agricultural Industries Confederation
APHA	Animal and Plant Health Agency (Formerly AHVLA)
BMPA	British Meat Processors Association
BPA	British Pig Association
CARS	Control of Antimicrobial Resistance Scotland
Defra	Department for the Environment, Food and Rural Affairs
EFSA	European Food Safety Authority
FAWC	Farm Animal Welfare Committee
FSA	Food Standards Agency
НСС	Hybu Cig Cymru (Meat Promotion Wales)
NIPBF	Northern Ireland Pork and Bacon Forum
NOAH	National Office of Animal Health
NPA	National Pig Association
PEG	Pig Expert Group
PVS	Pig Veterinary Society
QMS	Quality Meat Scotland
RDPE	Rural Development Programme for England
RSPCA	Royal Society for the Prevention of Cruelty to Animals
RT	Red Tractor (see also Assured Food Standards)
RUMA	Responsible Use of Medicines in Agriculture Alliance
SRUC	Scottish Rural University College
VMD	Veterinary Medicines Directorate

16.2 Abbreviations of terms

AMBP	Animal Medicines Best Practice Programme
AMR	Antimicrobial resistance
ASF	African swine fever
CCIR	Collection and Communication of Inspection Results
FMD	Foot-and-mouth Disease
HEV	Hepatitis E
кт	Knowledge transfer
LA-MRSA	Livestock-associated methycillin-resistant Staphylococcus aureus
PCR	Polymerase chain reaction
PCU	Population corrected unit
PED	Porcine epidemic diarrhoea
PEDv	Porcine epidemic diarrhoea virus
PRRS	Porcine reproductive and respiratory syndrome
RFID	Radio-frequency identification
SOP	Standard operating procedure
SSDP	Defra Scanning Surveillance Delivery Programme
VARSS	Veterinary Antibiotic Resistance and Sales Surveillance

Subgroup terms of reference

The new subgroups, as well as the Pig Health and Welfare Council, have established key milestones for each group for 2019, which are available through the AHDB Pork website.

PHWC – terms of reference:

The terms of reference agreed by the Pig Health and Welfare Council are:

- The Council will **advise on** strategic policy and setting priorities for surveillance, research and disease-risk assessment, management, elimination and control
- The Council will **work with** pig keepers, the veterinary profession, the livestock, food and allied support industries, government, consumers and other stakeholders to foster ownership of the Strategy and a shared commitment to its outcomes
- The Council may **investigate** any topic falling within the scope of the Strategy and publish such advice, analysis and commentary as it considers appropriate
- The Council will **promote** a coordinated and integrated approach to best practice in the prevention and control of disease to maintain and/or enhance the health, welfare and well-being of pigs in England

PHWC subgroups:

There are four subgroups of the Council.

The Disease Surveillance subgroup:

- The subgroup will **provide** evidence-based advice to the Pig Health and Welfare Council on proposals for effective surveillance of pig health and welfare in England and the wider UK when required
- The subgroup will **work with** pig keepers, the veterinary profession, the livestock, food and allied support industries, government, consumers and other stakeholders to identify surveillance needs and delivery mechanisms
- The subgroup will **investigate** issues of relevance to the delivery of surveillance for the pig industry
- The subgroup will **gather** and analyse relevant information on all aspects of new and emerging disease,s including scientific, practical experience, commercial, economic issues, and identify crucial gaps in knowledge
- The subgroup will **facilitate** better knowledge exchange with EU and global colleagues
- The subgroup will **provide** the Pig Health and Welfare Council with analysis, commentary and recommendations on endemic and exotic diseases as appropriate
- The subgroup will facilitate ongoing activities and set measurable milestones and objectives for each issue being addressed
- The subgroup **may** co-opt relevant experts from outside the group as necessary on an ad-hoc basis
- The subgroup will **advise** the Pig Health and Welfare Council, but final decisions on adopting any strategy shall rest with the Council

The Pig Meat Food Safety subgroup aims to:

- Identify and focus on zoonosis identified by industry, current research and survey findings to be the most relevant biological hazards to public health
- Facilitate and promote implementation of a risk-management plan which drives the reduction of the risks to consumers from significant hazards of food safety and public health concern in UK pig-meat products (e.g. Salmonella) by the following activities:
- i. Evaluate, coordinate and promote new knowledge and effective protocols for reducing food-safety and public-health risks from zoonosis of pigs
- ii. Promote the open exchange and timely dissemination of information on management of zoonotic risks

- iii. Promote an integrated whole-chain approach to improving pig-meat safety with all stakeholders, allied support industries, retailers, foodservice and government
- iv. Provide expert support to the communications teams in respect of pig meat-safety
- Review progress in reducing food-safety risks and changes in the prevalence of zoonotic or indicator organisms at key cost-effective stages, such as on pig carcases in abattoirs
- Support development and implementation of a National Control Programme if required by statute
- Support the implementation of the revision of meat-hygiene controls in 854/2004 that require the collection and reporting of FBO testing against the *Salmonella* criterion and an action plan and strict supervision of its outcome for FBOs who regularly fail to comply with the *Salmonella* criterion limits in 2073/2005 as amended
- · Provide expert evidence to the competent authority when required

The Antimicrobials subgroup:

- **Provide** evidence-based advice to the Pig Health and Welfare Council on proposals to ensure effective and responsible antimicrobial usage for the pig industry in the UK
- Gather and analyse relevant information on all aspects of antimicrobial usage in the pig industry and identify crucial gaps in knowledge
- Investigate issues of relevance to antimicrobial usage for the pig industry
- **Facilitate** cooperation and collaboration between all relevant parties (pig keepers, scientists, consumer organisation(s), the veterinary profession, the livestock, food and allied industries, government, and other stakeholders with relevant expertise [e.g. agricultural economist, social scientist])
- Facilitate ongoing activities and set measurable milestones and objectives for each issue being addressed
- Provide advice on approaches to public and stakeholder engagement and communication
- Communicate to the public and stakeholders as necessary

The Welfare subgroup:

- The subgroup will gather and analyse relevant information on all aspects of the welfare issues to be addressed welfare science, practical experience, commercial, economic and identify crucial gaps in knowledge
- The subgroup will provide the Pig Health and Welfare Council with analysis, commentary and recommendations as appropriate
- The subgroup will facilitate cooperation and collaboration between all relevant parties (pig keepers, welfare scientists, consumer organisation(s), the veterinary profession, the livestock, food and allied industries, government, and other stakeholders with relevant expertise [e.g. agricultural economists, social scientists]) to enable development of strategies and feasible timelines for addressing each welfare issue, including undertaking initiatives aimed at effective support mechanisms and knowledge transfer, etc.
- The subgroup may co-opt relevant experts from outside the group as necessary on an ad-hoc basis
- The subgroup will facilitate ongoing activities and set measurable milestones and objectives for each issue being addressed

All subgroups may co-opt relevant experts from outside the group as necessary on an ad-hoc basis.

Research

Studentships	Institution/Contractor	Description	Status
Residency: Production animal pathology with a research component and specialisation in porcine pathology	Royal Veterinary College, Boerhingher Ingelheim	The research project developed expertise in an aspect of porcine pathology (Exploring the Pathogenesis of Early Stage PCV2 Infection) of anatomic pathology with special focus on production animals in order to gain specialist qualifications	Completed
Reduce variability and improve the efficiency of pig-production system	Newcastle University	To find intervention strategies that reduce weight variability within pig herds and by doing so to improve the efficiency of UK production systems. The project will develop strategies that will enable lightweight pigs to catch up with their heavier weight counterparts	Completed
Development of novel (bio) sensor technology for boar taint detection to assist with the production of taint-free pork	University of the West of England, JSR Genetics	To develop novel biosensor technology for the measurement of concentrations of individual saturated, mono-unsaturated and poly-unsaturated fatty acids. To link technology to a user-friendly display of the data once inserted into a carcase or cuts of meat	Ongoing
Understanding the role of nutrition when manipulating pig odour and ammonia emissions	Agri-Food and Biosciences Institute	To investigate finishing pig nutrition to change and ultimately reduce the offensiveness of odour in parallel with reducing ammonia emissions. To investigate the impact of these changes on gut microbiota, gene expression of the microbiota (metagenomics and proteomics) and the resultant pork flavour compounds. And to field-test across two commercial herds tested diets showing most promise in 'changing and/or reducing' odour	Ongoing
Effect of supplementary milk on creep feed intake, pre-weaning behaviour, gut development and lifetime performance of sow-suckled litters	Harper Adams University	To understand the effects of supplementary milk on the feeding behaviour of individual piglets and how this relates to birth weight and teat order, or how supplementary milk affects the intake of creep feed. To analyse performance data of small pigs (<4 kg) post-weaning that have had access to supplementary milk. To investigate the provision of supplementary milk for the entire lactation if creep feed is also provided and whether differential management is beneficial for different-sized pigs	Ongoing
Use of machine learning and predictive analytics for the forecasting of production trends, disease and vice incidents in pigs	Newcastle University	The use of machine learning and predictive analytics to analyse the data generated by Precision Pig on an individual basis to predict future productions yields and health and welfare trends for the UK pig industry. Including the development of potential predictive applications for the UK industry	Proposed

Field Trials	Institution/Contractor	Description	Status
The effects of lighting on pig productivity	AHDB Pork	AHDB is currently undertaking a range of work, looking at lights and lighting for pigs, including a series of lighting guides similar to those compiled for the horticulture sector. We are working with light emitting diode (LED) lighting suppliers to assemble a portfolio of all the LED lights available to UK pig production, including data collected from our assessment of the systems available from suppliers. Currently, the work focuses only on 'full spectrum' or 'daylight' LED lights and not wavelength-specific ones (e.g. blue or green)	Ongoing
Ultra high frequency ear tags trial	Cranswick (Watton), Wayland Farms, Hellenic Systems LTD, Woodhead Brothers/ Morrisons PLC, Frontmatec	The practicalities of using UHF technology on farm was first tested by tagging and weighing approximately 1,800 piglets at birth on one of AHDB's strategic farms. These pigs were followed through to slaughter, showing a 98 per cent retention of tags during the process. The system is now fully operational at the first site, Morrisons PLC (Colne). The system is currently being tested on a second site at Cranswick (Watton) with support from Hellenic Systems Ltd. and Frontmatec with tagged pigs from Wayland Farms. UHF tag data will be analysed to confirm if successfully matched from farm to abattoir using DNA samples. The commercial grow trial and UHF ear tag trial have shaped the direction of the new Precision Pig Programme	Completed



Ultra high frequency ear tags were tested on one of AHDB's strategic farms.

Field Trials	Institution/Contractor	Description	Status
Precision Pig Programme	AHDB, Strategic Farms and wider industry	 Precision Pigs has the following aims: To test the use of RFID ear tags on finished pigs as they go through the abattoir on a normal production run, week after week. While RFID tags were used successfully with the progeny of a limited batch of sows (60) it did not test the abattoirs (processors) in a typical production run. The next step is to see if the reading of RFID tags can be replicated at least in terms of UIs on a day-to-day basis in plant with batches from an individual farm being processed during a normal kill day, week after week. To link health data (alongside carcase data) gained at the abattoir to individual pigs and feedback to the producer. The relaunch of the Pig Health Scheme (PHS) provides an opportunity to gain health data and feed back the results to producers on a subset of individual pigs. This could be cross-analysed with production data, eMB and on other health interventions during production. This data could be analysed and feed back given on the value (£) of any losses/rectifications to the producer. To test the use of RFID ear tags on farm with a range of other management technologies to further demonstrate their use. There are significant advancements in onfarm automated technology such as, weighing systems, optical sorting, grading technologies and feed systems. The incorporation of RFID tags and UIs into these systems will allow analysis of trends in pig performance at a level never before seen. To explore the use of modelling on entire herd management data (inc. UI data) gained from the above, to predict desired outcomes, e.g. carcase weights, culling, health incidents. The trial project tested the use of modelling to produce a carcase weight prediction model that could be used to predict when pigs would reach a specific slaughter weight. This would be useful for both producer and processor to predict turoughputs. Other areas could be modelled to predict culling, health incidents, etc. 	Ongoing

Field Trials	Institution/Contractor	Description	Status
Pigs Tomorrow Conference 14–15 May 2019	AHDB Pork, Pig World	The conference took place on 14–15 May 2019	Closed
EU PiG Innovation Grant	AHDB Pork	EU PiG is a four-year project to look at health management, precision production, animal welfare and meat quality, made up of a consortium of 19 organisations from all across Europe and led by AHDB. It has identified 16 ambassadors with solutions to challenges faced by the pig industry across the EU under the four work areas described above. The current Grand Prix is looking to recruit the next eight. All materials from previous ambassadors is available at eupig.eu	Ongoing
Developing Pig Expertise	AHDB Pork	 The Developing Pig Expertise (DPE) Programme is being piloted to provide professional development to individuals that advise pig producers and upskill new entrants to the industry. DPE has been influenced by the successful AHDB Beef & Lamb Developing Expertise programmes, AHDB Educational Strategy, and Knowledge Exchange (KE) offer within the academic and commercial sectors. The benefits for participants attending the DPE programme include: Improving knowledge of the business issues faced and the economics of being in pig production Providing recently qualified and advisers new to the industry with the opportunity to network and learn from existing experts Building the capacity of experts working in the sector Increasing joint working within the pig sector and better align outcomes at each stage of the supply chain Updating participants on the latest tools and resources available when working with clients 	Ongoing
Pig Innovation Network	AHDB Pork	A network of key influencers across the wider pork sector, including allied industries, to both disseminate knowledge and create a dialogue about opportunities and issues for the industry	Ongoing



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