

final report

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The Creation of ASHEEP Flock QA

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Abstract

Western Australia's Ovine Johnes Disease (OJD) status was downgraded from low to medium in 2011. This cost our region access to the adjoining South Australia premium market for selling breeding sheep.

Even though our members had no previous experience with OJD we did know it was present in the Great Southern area of WA. With no controls placed on stock movement and no requirement to use the Sheep Health Statement (SHS) we decided we could become exposed and needed to know more about OJD.

We commenced an abattoir surveillance testing program in 2011 and this was very strongly supported for 2 years. The MLA project commenced after the new National guidelines for OJD management were released in July 2013. Unfortunately, our testing levels dropped off due to farmer complacency following low levels of detection in the previous period. We also ran into problems with accessing all test result data due to DAFWA confidentiality restrictions.

Following a visit to Kangaroo Island we changed to Pool Faecal Culture (PFC) testing and deliberately sought and tested high risk locations and situations. We almost immediately found more positives and communicated this to our members which resulted in an increased demand for tests. We also evolved our group into a QA style structure that incorporates, at an arm's length, an Independent Veterinary Monitor (IVM).

We have dug deep enough for long enough with our testing to justify a recommendation for vaccination. Those that tested positive during this program will be assisted by the Independent Vet Monitor (resourced by ASHEEP Flock QA).

Executive summary

Our interest in this project began with the blanket downgrading of WA's OJD status in January 2011 and the subsequent loss of the premium South Australian market for surplus breeding sheep. Furthermore, our members had no background experience with OJD.

On enquiry, we were informed that there had been two historic regional detections but due to the DAFWA confidentiality policy we knew little about them. ASHEEP then moved to facilitate disease education and abattoir surveillance testing to better identify regional prevalence and define a need, or not, for vaccination.

ASHEEP negotiated with Animal Health Australia (AHA) to engage an abattoir surveillance tester to test regional mutton throughput. Initial farmer response was strong with 119 PICs testing in 2011 and 100 PICS in 2012 which in total recorded 3 positive detections and this was the situation when we commenced our MLA PDS project following the release of the new National guidelines in July 2013 for management of OJD. Unfortunately, local farmers decided earlier testing demonstrated a low OJD risk situation and driven by complacency annual testing fell by two thirds over the 2013- 2015 period.

Following difficulties in accessing individual abattoir test results and on the basis of lessons learnt from the MLA sponsored visit to Kangaroo Island, we changed tack in 2016 to a program of targeted PFC testing for willing regional farmers deemed to be at an elevated risk. PFC testing is a far more accurate process than abattoir surveillance especially in the early stages of infection. Sampling was undertaken by our appointed IVM on a private client basis which allowed the lab culture results to be returned directly to the IVM. Effectively we are now able to look for the disease, secure the results and resource services to positive testers and other at-risk farmers.

We believe we now have a QA style self-managed biosecurity model that could also accommodate other infectious diseases if needed. Our model involves the ASHEEP QA group using bulked data from the IVM plus our annual member survey to produce an annually updated Regional Assurance document. Our appointed IVM works independently with the individuals testing to meet their needs.

At the 2016 ASHEEP AGM & conference, newly discovered positive testers from the PFC trial were willing to stand up and identify their changed status. We then offered an initial free PFC test to any regional farmer who had a genuine reason to believe they were at risk of OJD. We got an immediate and strong response to this offer from local farmers.

Key messages and learnings from the project are:

- The incidence of OJD in the Esperance area is higher than initially thought
- However, it is likely to be in an early stage and at low incidence to opportunities for its control are positive
- PFC testing is a far more accurate process than abattoir surveillance especially in the early stages of infection
- A process of targeted vaccination supported by the Asheep QA program and IVM should be initiated by ASheep members
- The OJD vaccination can either be used as a blanket security control or a valuable tool in early eradication and shouldn't be avoided on cost grounds.
- Disease education programs work best when the impact of the threat is made most evident. This PDS project provided clearer evidence of the capacity for lateral movement OJD which renewed local growers' interest.

- A different approach to confidentiality by some industry bodies may be needed when dealing with contagious stock diseases in WA. We should be balancing an individual's right to confidentiality with the right of nearby individuals to be informed of the potential risks.

Table 1: Assessment of the objectives and outcomes of the project

Project Objectives	Project Achievement
1. Demonstrate that a self-managed group can be efficient and compliant with common operating principles.	It was apparent that a shift in focus from 'biosecurity' to 'QA' would allow the group to be more efficient and compliant due to the following factors- <ul style="list-style-type: none"> • Inability to obtain individual testing outcomes from DAFWA • Complacency factors emanating from initial 2011/2012 testing. • Farmer hesitation issues with perceptions of 'bureaucracy' surrounding a more rigid 'biosecurity' framework
2. Develop and demonstrate a system, for securing a local supply of certifiable disease free sheep that may provide some premium pricing for members	Although it is in the early days of the PFC testing program, initial results from the targeted high risk component of the regional flock indicate there is more work to be done in this region before we could secure a local supply of certifiable disease free sheep for breeding ewe markets.
3. Demonstrate the feasibility of accommodating multiple disease conditions within an OJD Plan	There are currently no other diseases of significance that requires the OJD plan to be actioned. There is still further work to be done to bed down the OJD plan but once this is completed it should be a simple matter of activating the plan for any contagious sheep conditions. A regional farmer member survey is completed annually to monitor levels of select diseases that are most at risk of becoming a problem. This will alert us if the OJD plan needs to be activated for any other disease.
4. Establish the value proposition for a self-funded group of 40 members to continue the biosecurity group plan beyond the PDS funding	Given the recent identification of increasing OJD infection rates in the region it is recognise that resources need to be directed to encourage farmers into an effective vaccination program. The most efficient way to do this would be to allow ASHEEP's 91 farmer members voluntary access to the in-house entity called 'ASHEEP Flock QA'. This entity will be funded by an increase in ASHEEP membership fees.

Project Outcomes	
1. Demonstrate an alternative pathway to vaccination, as a way forward, for those experiencing a positive test.	Following the required change to testing methods, from abattoir surveillance to PFC, and the learnings from the tour of Kangaroo Island as well as the 2 PDS sites, it is clear that vaccination is the most effective method of disease control in the event of a positive OJD test
2. Demonstrate a proactive approach to local farmers that quality biosecurity principles can minimise OJD infection	We did have to break through some farmer mindset barriers to get the action required to meet the OJD challenge. The results of the targeted PFC testing and the willingness of positive testers to openly discuss their mitigation programs has seen a strong reversal of the complacent attitude of farmers in the region.
3. Provide evidence that a local biosecurity group can be effective and act as a basis for inclusion of other diseases	The involvement of the IVM in the Flock QA group has enabled producers to have good local support, in the event of a positive test or if they believe they are at elevated risk of contracting OJD or other infectious disease. ASHEEP also has a good relationship with the local veterinary practice, further enhancing the groups capability as a local biosecurity group. The group was effectively able to turn around the complacency of farmers towards proactively managing OJD and this gives us confidence we could do the same for other infectious diseases if required.
4. Demonstrate that a proactive approach to biosecurity can prevent vaccination costs of up to \$1,417,000 across the ASHEEP group	We have delved hard enough and deep enough into our region to demonstrate that it would be imprudent for our farmer members to contemplate going forward without utilising vaccination.

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1 Background

ASHEEP is a pasture & livestock focused grower group based in Esperance WA. The group was formed in 2003 to combat the decline of livestock in the region by promoting the role of sheep & cattle in a mixed farming system. ASHEEP has 120 members, of which 84 are farmer members.

ASHEEP's interest in this project occurred in January 2011 when the OJD status of WA was downgraded from a Low Prevalence ranking (4 ABC points) to a Medium Prevalence ranking (2 ABC points). Unlike other states, the WA rating was applied as a blanket rating across the whole state and no attempt was made to define the areas or regions of greatest OJD risk.

Farmers in the Esperance region had previously established high value market connections for their sheep into the eastern states, particularly South Australia. The loss of this premium market genuinely hurt local sheep producers in an area that held geographical advantage for entry to it. Farmers accessing this market were already conditioned to entry to SA and the mandatory requirements of utilising the Sheep Health Statement.

Up until 2011 our member farmers had never seen nor experienced OJD. On enquiry, we were informed there had been 2 historic positive detections of OJD within the region however we could not get further details on the current status or location or even if those properties were still running sheep due to confidentiality protocols. We were however aware that OJD was present and becoming established in some Great Southern localities about 500km West of Esperance with no known co-ordinated containment program in place at that time.

Given this, ASHEEP decided to take active interest in OJD and how we might most effectively react to the threat here. The initial response was to run information programs in which we engaged guest speakers with knowledge and previous experience of OJD. This involved engagement with regional vets from both Esperance and Narrogin as well as bringing over people from the Eastern States to talk at ASHEEP seminars and meetings open to all farmers. These speakers alerted us to the insidious nature of OJD and how early- stage infection could go unnoticed.

General consensus within the ASHEEP committee was to consider some optional frameworks to create a Regional Biosecurity model that could target OJD initially and then add other sheep diseases later. This became the subject of our initial discussions with Animal Health Australia (AHA) and MLA.

AHA supported OJD abattoir surveillance testing from Esperance flocks started in 2011. However, further proposal changes towards a new National OJD Management Plan for

2013-2018 saw ASHEEP & MLA defer a start to this project. Work commenced on defining a farmer-group managed regional biosecurity model for contagious sheep diseases, with MLA support, after the new rules of engagement were known (which included encouragement for producers to develop regional biosecurity plans for areas where OJD was either unknown or uncommon).

2 Project objectives

This project tests whether a self-managed biosecurity group operating under a common set of principles can maintain OJD prevalence to 1% or less within the group member's flocks.

The PDS will:

1. demonstrate that a self-managed group can be efficient (including number of members entering / leaving per year) and compliant (number of negative issues arising from audit reports & number of negative annual abattoir surveillance tests) with common operating principles.
2. develop and demonstrate a system, for securing a local supply of certifiable disease free sheep that may provide some premium pricing for members
3. demonstrate the feasibility of accommodating multiple disease conditions within an OJD Plan while maintaining a low OJD prevalence of 1% or less.
4. establish the value proposition for a self-funded group of 40 members to continue the biosecurity group plan beyond the PDS funding

The project outcomes will:

1. demonstrate an alternative pathway to vaccination, as a way forward, for those experiencing a positive test.
2. demonstrate a proactive approach to local farmers that quality biosecurity principles can minimise OJD infection
3. provide evidence that a local biosecurity group can be effective and act as a basis for inclusion of other diseases
4. demonstrate that a proactive approach to biosecurity can prevent vaccination costs of up to \$1,417,000 across the ASHEEP group

3 Methodology

3.1 Testing and Monitoring Phase One

Initial emphasis was put on getting as many regional flocks as possible abattoir testing for OJD to get a feel for any underlying levels of OJD present in the region. AHA located and engaged Gary Tonkin, an experienced abattoir tester. Gary was both interested, flexible and provided testing for sheep sent to Shark Lake Abattoir (Esperance), WAMMCO (Katanning), LSS (Beaufort River) and Fletchers (Albany). The testing was carried out for some 5 years up until Gary's retirement in early 2016. Since then we have been restricted to testing at the Albany works only (with that now in some doubt).

We had very strong support for the abattoir testing in 2011 & 2012 with over a hundred PIC's tested in each of those 2 years identifying only 3 positive testing PIC's. For the 3 years 2013- 2015 local PIC testing fell by some two thirds (35-39 testing per year). We consider this reflected complacency amongst local farmers who felt safe after two successive years of negative tests and very few positives known.

Unfortunately, we could not effectively connect to the individual farmers testing as DAFWA refused to provide individual outcomes to ASHEEP on confidentiality grounds even though those testing had already signed a document giving ASHEEP permission to access their results. This was however a turning point, we simply had to find another way or wrap the project up.

3.2 Searching for an Alternative Methodology – Kangaroo Island

ASHEEP arranged for Peter Altschwager to come to our 2014 PDS Field Day as a guest speaker. Peter's background and experience with OJD matters at both State & National levels was invaluable to us on the issues we had to work through. He spoke of the SA experience and the value SA got from being very proactive when a positive OJD site was identified- not just the site itself but also others adjoining or nearby at elevated risk. Peter supported our intention of visiting Kangaroo Island to observe their ongoing and successful program of reducing OJD infection levels there.

Our ASHEEP appointed IVM Erica Ayers and owner/operator of the PDS site Simon Fowler were the nominated people to visit Kangaroo Island and both spent 2-3 days there. Peter Altschwager had arranged with Dr Deb Lehmann (private veterinarian) and Andrew Ewers (PIRSA Animal Health Officer) to engage with our people and create good opportunities to meet actively engaged farmers. Simon & Erica were hospitably treated on Kangaroo Island and given an invaluable insight into OJD issues from the veterinarian and farmer perspectives and experiences.

Erica & Simon came back convinced from their Kangaroo Island experience that, given our previous five known positive testers, there was a significant risk that the disease might have moved on from the original detected sites. This could have been masked by the decline in regional abattoir testing for OJD due to complacency by many farmers who obviously had not tested since 2011/2012.

Erica's full report from the Kangaroo Island visit is attached. Doubts expressed by the Kangaroo Island veterinarian on the effectiveness of abattoir surveillance in picking up early stage OJD infection led Erica to her concluding statement quoted here-

"If we did find more widespread evidence of OJD (via PFC testing), vaccination would be the fundamental method of controlling the impact of the disease. If vaccination started in the early stages of the disease, the Kangaroo Island experience would suggest that it is highly effective in management. However, at present there is a reluctance by regional producers to vaccinate because they feel it is unnecessary. Personally, I would like to see their position either supported or refuted by further and more sensitive testing"

3.3 Testing and Monitoring Phase Two

Following Simon & Erica's return from Kangaroo Island, discussions were held at a sub-committee level on how we could get more local farmers testing. It was decided to purposefully go looking for the disease in situations where OJD risk was perceived to be the highest. Our positive testing PDS site was a large operation with multiple neighbours and we decided to start with Pooled Faecal Culture (PFC) testing neighbours to that. The IVM collects faecal samples from the 50 ewes sampled per mob. These 50 samples are pooled into one and sent to the DAFWA lab for testing on behalf of the IVM's private client. In this way the IVM gets direct access to the lab results.

The testing method chosen was targeted PFC requiring 2x 50 sample tests from mature ewes. The 50 ewe samples were not necessarily randomly selected as any 'tail' or poor conditioned sheep from the flock were to be deliberately included. The first site tested was a historically negative testing PDS site which adjoined the positive PDS site. The negative testing site had 5 successive years of negative abattoir surveillance tests and had the boundary fence to the positive PDS site doubled when OJD was discovered next door in 2013. A further 7 tests were completed around two other willing neighbours with large flocks.

On the back of the Kangaroo Island experience and following discussion with the IVM, the owner of the negative testing PDS commenced vaccinating his ewe lambs at marking prior to the results from his PFC test (even though he had an abattoir surveillance negative on 340 mature ewes 3 months earlier plus 5 successive years of clean tests). The outcome of the PFC was prophetic- a positive! Prior to the mid-year ASHEEP AGM & conference a second positive test was detected some 60 km from the two PDS properties referred to above.

The ASHEEP AGM & conference in 2016 was very well attended. Both Simon & Erica spoke of their Kangaroo Island experiences and both bought back some strong messages for those who had discontinued testing. The most recent positive tests were advised and high risk situations (nearby known positives, neighbours trading sheep etc.) were gone over again.

We explained our new PFC test for small to medium flocks initially and requested any farmer who felt their particular circumstances may have put them at elevated risk from OJD to contact ASHEEP and a test would be arranged and paid for by the project. Some came forward publicly that day and requested a test, the initially budgeted quota for PFC testing was quickly reached.

The multiple targeted tests throughout the region allows us to gain some regional perspective of the sub-districts where OJD is and the number of farmers at elevated risk. Our final strategy will be based on this and vaccination will certainly now become part of our management strategy. The PFC test appears better suited to picking up OJD in its early stages and we will be proceeding with that, especially given the unknown future of abattoir surveillance in WA.

ASHEEP will continue to survey the region annually to provide a profile of disease, productivity and best practice take up within livestock programs.

4 Results and Discussion

4.1 Project outcome results and discussion

4.1.1 Project objective 1

Supplying disease-free sheep to a premium priced market

Although it is in the early days of the PFC testing program, initial results from the targeted high risk component of the regional flock indicate there is more work to be done in this region before we could realistically approach SA for entry of mature breeding ewes.

4.1.2 Project objective 2

Demonstrate the group can maintain OJD flock prevalence at 1% or less

As a matter of clarity, we are not completely sure where the 1% figure came from in regards to member flocks. Initial 2011/2012 abattoir testing indicated we were starting with between 1-2% OJD affected regional flocks testing through our scheme. Not all of these were necessarily members of our biosecurity group and given DAFWA's confidentiality impositions we remained uninformed on many individual outcomes.

Most members testing did however co-operate with our group administration throughout the project phase in respect to advising the outcomes of their testing. This was confined to 35-39 tests per year over the 2013 to 2015 period. Only one regional positive was identified from abattoir testing in that 3 year period. Lack of knowledge on some individual testing in each year and the relatively small numbers testings in the final 3 years limited our ability to make any proper judgement on prevalence.

Abattoir surveillance testing results for our region obtained by ASHEEP for the 5 year period is shown below-

Year	PIC's Testing	Negative	Positive
2011	119	117	2
2012	100	99	1
2013	37	36	1
2014	35	35	0
2015	39	39	0

One of the two 2011 positives was indicated to have been from a sheep outside of our shire. We note one further positive test was detected by post mortem during this period. We also note that one reported single positive was disputed by the sender on the basis that he had 1- 2 more sheep tested in his name than what he sent to the abattoirs (out of a mob of around 800). Private vets in Esperance have recently advised they detected four positive OJD tests in the 2013-2016 period.

We discussed trace back situations with all known positive testers (3). In each case there was a similar background of importing trade of breeding sheep from the Great Southern region of WA.

On the basis of abattoir surveillance testing we have been unable to fully meet this project objective due to range of factors including-

- Inability to obtain individual testing outcomes from DAFWA
- Complacency factors emanating from initial 2011/2012 testing.
- Farmer hesitation issues with perceptions of 'bureaucracy' surrounding a more rigid 'biosecurity' framework

The consequences of this was to move from a 'Biosecurity' to a 'QA' approach to attract more participants to the scheme whilst still delivering assurance outcomes on both an individual and regional basis.

4.1.3 Project objective 3

Demonstrate feasibility of accommodating multiple disease conditions within an OJD Plan

There is no other prominent sheep disease causing significant problems in Esperance at this point in time. ASHEEP flock QA commenced an annual survey of member sheep operations

in 2014. This will remain ongoing annually as the survey forms the basis of our regional profiling and assurance on sheep disease, sheep productivity and best practice take up occurring in our region. A copy of the survey is attached in the appendix.

The other sheep diseases and conditions that we are currently monitoring are Campylobacter, lice, lameness and Brucellosis.

There have been a few isolated confirmations of Campylobacter in local sheep flocks. Vaccination is available but not necessarily recommended by local veterinarians who believe many flocks quickly develop immunity. We have 2 members who are vaccinating for Campylobacter and we will be monitoring their outcomes with maiden ewe lambing percentages. Campylobacter is included in the annual ASHEEP flock QA survey where it is requested that members isolate the lambing percentage of their maiden ewes from their mature ewes. There is also a question on suspected lamb abortions.

Some 32% of survey respondents indicated some level of problem with lice. An initial response is likely another educational update on products, resistance and application. Those 16% of members who breed from ewes other than merinos may be contributing to this situation so we may reshape that question on the survey, particularly in regard to shedding breeds whose owners rarely treat for lice

Around 34% of survey respondents indicated seasonal lameness issues but no footrot is known to have been present in Esperance for the past 20 years. Unfortunately, this is another sheep condition that DAFWA covers with the same confidentiality protocols that apply to OJD. There is some footrot present in the Great Southern region and again we need to educate farmers on the risk of importing the problem and emphasise the value of requesting a SHS.

Brucellosis has occurred in Esperance before however no survey respondents had an issue last year. This is a condition we could utilise our Independent Vet Monitor on if needed.

When the OJD system is bedded down it should be a simple matter of activating this same system to work on any of the above contagious sheep conditions.

4.1.4 Project objective 4

Establish the value proposition for a self-funded group of 40 members to continue beyond the PDS funding.

ASHEEP has some 91 farmer members who will all hold rights to access the services of the 'in house' entity ASHEEP Flock QA. While accessing those rights is entirely voluntary we would not expect very many to stand outside of the QA services and the annual survey. Our initial expectation is 60% of ASHEEP members to be part of ASHEEP Flock QA, but 100% is the ultimate goal.

Given the recent identification of increased levels of OJD in our region we need to optimise our resources to encourage farmers into an effective vaccination program in 2017. Our current thoughts are that as the Flock QA is an entity held within ASHEEP we could most simply fund its operation via an approved increase in farmer annual membership to ASHEEP. Once our members are vaccinating we can move the utilisation of PFC testing

downstream towards the eventual demonstration of OJD clearance. This could require a PFC 350 because the PFC 350 is a national standard recognised by all states and sheep MAP

The adjoining PDS sites, situated around 100kms east of Esperance, played an important role in demonstrating the insidious nature of OJD and how it could infect a property without any obvious early visual signs or production loss of the sheep. Our committee now considers there could be value in extending the life of the PDS sites in regard to monitoring the outcomes of work aimed at clearance of OJD. In one case where the eradication program had to start from clinical levels of OJD and the other where OJD is clearly pre-clinical. To optimise regional interest in clearance programs we could also include one of the recent positive tests properties west of Esperance as a PDS, as explained below.

4.1.5 Project outcome 1

Alternative treatments to vaccination in the case of a positive test

Following the outcomes from the change in testing methods (to PFC) it became clear that vaccination was the most effective method of disease control in the event of a positive OJD test.

For the majority of the period of this project, say 2011 to 2015, incorporating 330 abattoir surveillance tests over 5 years we only produced 3 local positives (plus 1 from post mortem). We had reached a point in 2015 where it appeared possible that underlying OJD levels were low enough for us to evolve a strict crop/sheep rotational program that might achieve a disease clearance via rotational quarantining of farm areas.

The visit of our IVM and PDS operator to Kangaroo Island alerted us to the KI experience that abattoir surveillance was an inferior methodology for early OJD detection compared to the PFC test, albeit the latter at a flock level. Using the PFC test we found more OJD from our targeted testing with 5 positives from 16 PICs tested in 2016. This was further compounded by advice from a local veterinary practice that they had diagnosed four positives among their clients in the 2013-2016 period.

Double fencing of boundaries between neighbours proved to be an unsuccessful prevention method demonstrated by neighbouring PDS properties. At the beginning of the project, one PDS tested positive and the neighbouring PDS property tested negative. Double boundary fences were erected. The negative testing PDS property recorded its first positive OJD test on 4 year old purple tag ewes via PFC taken in March 2016.

A second PFC was taken at the same time from the same property on 5 year old green tag ewes and remained negative however these green tag ewes recorded a positive OJD result from abattoir testing in December 2016.

The purple tag ewes marked 126% lambing percentage and remained above condition score 3 for the full season and showed no obvious symptoms of OJD. Likewise, the older green tag ewes marked 110% of lambs and maintained good condition with no wasting or scouring obvious. This also demonstrated to our members that early in the OJD infection phase sheep condition and performance may provide nil to nominal clues to the presence of the disease.

Taking into account the above findings, we conclude that even in a district with moderate OJD levels, vaccination provides necessary insurance and security against an OJD contamination that may not become obvious to the farmer during the pre-clinical disease stages and may not be picked up early by abattoir surveillance.

4.1.6 Project outcome 2

Demonstrate to local farmers that quality biosecurity principles can minimise OJD infection

We had to break through some farmer mindset barriers on biosecurity, basically because few had ever observed clinical level OJD symptoms and outcomes. These farmers were hesitant about implementing any rigid controls that might have been required in a Market Assurance Program style approach. We changed the nature of the group on the basis that it was preferable to hold the majority of farmers in a less rigid, but still effective, QA style group than the minority in a more controlled structure.

In our final biosecurity model all farmer members of ASHEEP automatically become members of ASHEEP Flock QA and are automatically entitled to access all services provided by that entity. This should optimise the number of farmers taking proactive approach to the recommended vaccination program. Positive testers will also have access to the IVM if needed.

Please note these same IVM services will be available to non-members of ASHEEP but at cost. This means no regional farmer will be denied assistance with contagious disease issues which is important given the recent removal of our regional DAFWA vet positions.

The more farmer flock data that we can capture in our annual member survey will both improve the statistical accuracy of emerging sheep disease issues as well as adding credibility of the regional assurance profiling.

Recent farmer response to the targeted PFC testing of enhanced risk properties and the willingness of positive testers from that program to openly activate mitigation programs in consultation with the IVM gives us confidence that our current direction can work and has potential to minimise OJD infection. Noting abattoir surveillance has basically been withdrawn as a farmer service in WA to become a private information channel between DAFWA and the abattoir.

4.1.7 Project outcome 3

Provide evidence that a local biosecurity group can be effective and act as a basis for inclusion of other diseases

By facilitating a local qualified veterinarian as our IVM we are effectively reintroducing this essential skill set and qualification into services relative to OJD and other infectious diseases and conditions that may arise. ASHEEP's annual member survey will assist in identifying and prioritise appropriate disease targets other than OJD for the IVM to focus on.

Swans Veterinary Services are a large and diverse veterinary practice operating from an Esperance base. This business has held an associate membership with the ASHEEP group since our inception and has provided updates on livestock management disease issues at ASHEEP seminars on a regular basis. The diversity of their staff gives us access to a wide range of expertise and the connection is mutually valued by both sides.

The recent programs to encourage those farmers considering themselves at elevated risk in contracting OJD (due to location, sheep purchase history, straying stock etc.) to contact ASHEEP or the IVM was strongly supported by local farmers seeking to get a definition of their position via PFC test. With MLA assistance we expanded the original number of tests programmed. In 2016 we undertook 16 deliberately targeted tests which identified a further 5 positive testers.

It was a bumpy ride for much of this project's journey with changes to the National OJD Plan, farmer complacency following the first 2 years of abattoir testing identifying few positives, DAFWA head office denying both ASHEEP and our IVM a direct flow of test results.

However, if the first period was difficult the past year has been extremely gratifying. The Kangaroo Island experience taught us to look harder at targeted risk areas and when we did, we found more OJD. This exercise killed off the complacency factor and we had member demand for more focussed testing. Importantly most that recorded a positive test stood up and personally and publicly identified their situation. We considered this strong evidence that a local biosecurity group can be effective and we, as a group, look forward to managing disease threats more effectively in the future.

4.1.8 Project outcome 4

Demonstrate that a proactive approach to biosecurity can prevent vaccination costs of up to \$1,417,000 across ASHEEP group

We have delved hard enough and deep enough into our region to demonstrate that it would be imprudent for our members to contemplate going forward without utilising vaccination.

It is our view that the better direction for us to take, under current circumstances, would be to begin a program of vaccinating ewe lambs primarily bred for replacements. Other lambs, for example, mixed sex terminal bred cross bred lambs and merino wether lambs, could be left unvaccinated provided they were all turned off as lambs.

Those that have tested positive have either already started vaccinating lambs or will be starting in 2017 and will have a big incentive to achieve clearance of OJD in the medium term. Given most testers to date appear to be clean or in early preclinical stages of infection, the cost of vaccination should appear minor alongside the potential losses and costs of OJD becoming fully established in our region. In this regard our work has been successful

4.2 Monitoring, evaluation and reporting (MER)

Table 2: Project targets and achievements

Areas of focus	Project targets	Project achievements
Inputs <i>Describe the planned and expected inputs involved in your project.</i>	Establish one PDS site. Enough producers testing via abattoir surveillance to establish OJD prevalence in the region. 5 PFC tests to further establish prevalence. \$40k of funds requested from MLA. \$100k worth of abattoir testing paid for by AHA. \$30k of in-kind auditing and admin time from Bob Reed. Erica Ayers in-kind reduction of standard hourly charge- \$11k.	Two PDS sites were established and are still running. 111 abattoir tests completed from 2013- 2015. 16 PICs tested using PFC in 2016. MLA funded \$40k towards project. In-kind time spent on this project by Bob Reed and Erica Ayers is substantial and without a question over and above what was budgeted.
Outputs <i>Describe the outputs planned/expected from your project:</i>	One field day to PDS site, 1 study trip to Kangaroo Island, 2 information/update days, establish an ASHEEP biosecurity group.	A Field day titled 'Sheep Diseases- Managing enhanced risk' was held on the 26 th August 2014 and attracted 28 attendees. Speakers from across Australia attended and spoke of their experience on this topic Bob Reed held an open discussion/update at ASHEEP's AGMs in June 2015 & 2016. (69 and 80 attendees respectively) ASHEEP Flock QA group will continue to run within the ASHEEP group.
Changes in knowledge, attitudes and skills <i>Describe the changes in KASA that you are planning to achieve:</i>	Provide recommendations to local farmers with confirmed OJD based on project results. Create a group that can tackle not only OJD but other contagious stock diseases of concern.	A one-page recommendation to members has been published and is included in the Recommendations section of this report. The current model of the group means it can be easily activated for other diseases if required.
Practice changes <i>Describe the practice changes that you are expecting to achieve by the end of your project:</i>	Encourage local farmers to secure their farms from OJD infection whether they have a positive test result or not. Demonstrate the value in proactively tackling this disease.	The response to calls for interested parties to perform PFC testing at the 2016 AGM was strong indicating farmers are keen to tackle the issue. In the 2016 ASHEEP census 60% of respondents said they had begun a vaccination program. Compared to 3% in 2014.

General observations	Vaccination is not the ideal prevention or treatment method. Abattoir surveillance shows that infection rates in the region are low. Abattoir surveillance is the most effective way of getting the required volume of animals tested to establish infection levels and prove ongoing disease-free status.	Vaccination is the way forward in treating OJD infections and preventing further spread. An IVM is essential in ensuring flow of testing results from DAFWA to ASHEEP. PFC is the superior testing method. There is more OJD in the region than expected.
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5 Conclusion

ASHEEP has worked hard to establish the underlying prevalence of OJD in the Esperance region to form the basis of an appropriate set of response recommendations to our members. Clearly we have ended up finding more OJD than we initially expected and our response to that is embodied in the next section, 'Recommendations'.

The opportunity we do have is that both abattoir and PFC testing has indicated that the majority of positive testers would appear to still be in early pre-clinical stages of infection. If we, as a region, react promptly with vaccination we should be able to contain the disease and then move on to eradication programs to enhance our regional assurance.

Information derived from our PDS properties was readily observed by our members who recognised the increased threat and reactivated their interest in testing and prevention. We can also monitor eradication progress from these sites in the future.

We were able to demonstrate that PFC testing was more sensitive and more likely to pick up early OJD infection than abattoir testing.

The matter of how far you go with confidentiality protocols when dealing with contagious stock diseases should be a matter of future discussion between WA Government bodies and farmer bodies. Currently maintaining strict confidentiality on positive tested sites in WA is not assisting disease control outcomes. This is especially the case when those Government bodies are withdrawing rather than increasing staff and resources in these areas. We need to balance an individual's right to confidentiality with, for example, a neighbour's need to know of the potential risk to them. South Australia has this balance so we are confident that it can be done.

We have found a way through the above problem via PFC testing and trust this can be sustained. PFC testing is important as the availability of abattoir testing in WA is becoming very limited.

We see the role of an IVM acting at an arm's length but cooperating with a project on contagious disease being undertaken by a farmer group as an efficient and effective concept that could also work for other regions and situations. In areas where government specialist staff and resources are being withdrawn it might yet be possible for farmer bodies to negotiate with the Government to fund or part fund private vet support for disease/biosecurity work being done on behalf of a group or area rather than for individuals.

6 Recommendations

Continue ASHEEP Flock QA operating in conjunction with an independent Veterinary Monitor

ASHEEP Flock QA will operate as an entity within the ASHEEP Group and all farmer members of ASHEEP are entitled to access services facilitated by ASHEEP Flock QA.

This entity will promote a proactive approach to the identification and control of contagious sheep diseases and conditions and will facilitate the services of an Independent Veterinarian to assist on testing and control programs on targeted diseases, initially OJD.

An initial program of abattoir testing arranged by ASHEEP Flock QA from 2011 to 2016 involved some 330 PIC tests over 5 years which only produced 4 positives. A further 4 positives were confirmed by private veterinarians during this period. A swing to targeting “at risk” sites for testing via the more sensitive Pooled Faecal Culture (PFC) method in 2016 produced 5 new PIC positives from 16 tests. Clearly OJD is moving out from original areas of infection and this could compound in momentum if we remained inactive.

Given the above, our recommendation is for our members to commence a program of vaccinating the ewe lamb portion* of their lamb drop at marking this year. This will provide them with progressive cover for the 4-5 year period needed to get all flock ewe age mobs vaccinated. Those who test positive will be able to seek guidance on appropriate response measures from our Independent Veterinary Monitor.

In choosing to join this program, ASHEEP FLOCK QA members agree to accept that all OJD tests on their flocks will become known, initially to the IVM and eventually via bulk data transfer to the ASHEEP Committee. In the case of a positive test any neighbour or nearby farmer, not yet vaccinating and or deemed by the IVM to be at elevated risk will also be alerted. Those choosing to vaccinate should apply an appropriately stamped “V” tag at marking – ideally at 16 weeks of age or less.

All Members will be urged to request a National Sheep Health Statement (and/or other verification of sheep health) when buying sheep and to provide a SHS when selling sheep to other farmer destinations. Sheep Health Statement booklets will be available, on request, from ASHEEP administration.

Members will be contacted by ASHEEP staff to complete an annual survey on their flock health, production and best practice take up after the close of each calendar year. Over time this will build to provide a comprehensive profile of sheep health and productivity in our region which could be essential to wider market entry in the future.

Please note the accessing of ASHEEP FLOCK QA services is entirely voluntary, but available to both ASHEEP Member Farmers as a member entitled service and non-member regional farmers (at cost) for initial testing purposes and IVM follow up in the case of a positive test.

**Please note those farmers that are still retaining wethers beyond the lamb/early hogget stage or breeding their own flock rams should also vaccinate those classes at marking.*

7 Appendix

7.1 Kangaroo Island Trip Report by Erica Ayers, Independent Veterinary Monitor

As the Independent Veterinary Monitor with ASHEEP's Regional Flock QA group I went on a study trip to Kangaroo Island in July 2015 with Simon Fowler who is an Esperance sheep producer and positive testing PDS sire manager. The purpose of the trip was to learn more about the spread and control of Ovine Johnes Disease as experienced on the island. Our meetings and farm visits were kindly hosted by Dr Debra Lehmann, a private veterinarian, and Andrew Ewers, an Animal Health Officer with PIRSA. Dr Lehmann and Mr Ewers have both played a pivotal role in the control of the disease on Kangaroo Island and are extremely knowledgeable on all aspects of the disease. Kangaroo Island is effectively an isolated epidemiological case study of the spread and control of the disease. At its peak approximately 20% of sheep farms on the island were infected with OJD, this has now reduced down to 6% and is still falling.

Disease on the island was in the relatively early stages when it was first detected in 1998 (i.e. in a flock with an overall death rate from all causes of less than 1%). Dr Lehmann believes control on the island was fast tracked through early detection of the disease via extensive PFC testing. Any cases of disease were controlled through destocking high risk groups of sheep and their progeny, and then entire flock vaccination on infected plus neighbouring properties. A South Australian industry funded approach significantly subsidized the cost of this program to the affected producers. During our visit to the island we had farm visits with 5 producers which included both stud and commercial flocks. It was very useful to gain an understanding of the different impacts and experiences of a variety of producers which varied depending on their personal and business circumstances.

Our overall aim of the trip was to help us with our approach to OJD as it relates to our ASHEEP Regional Flock QA group. My knowledge and understanding of the disease increased significantly and the biggest take home messages included-

- Some further testing (preferably PFC) is desirable to support our district low incidence rating as suggested by the abattoir surveillance work that has been done to date. This was strongly recommended by Dr Lehmann to detect if disease is present in the early stages that we not picking up in the abattoir surveillance testing.
- PFC testing to monitor whether disease is spreading to neighbouring properties where known positive cases have occurred
- This increased district profiling is to add to the strength of our Regional Biosecurity Status and also to gain a greater understanding of how the disease behaves in our mixed rainfall zone which in many cases have a high proportion of cropping in the system.
- The management and control options to any producers testing positive to the disease is will supported by the Kangaroo Island experience
- Confidence that with early detection of the disease both the financial and animal welfare outcomes can be well managed.
- Assuming low disease incidence is supported it will help the groups case to move sheep back in to SA and reopen some of the markers that have closed in recent years.

- If we did find more widespread evidence of disease with the further testing, vaccination would be the fundamental method of controlling the impact of the disease. If started in the early stages of the disease, the Kangaroo Island experience would suggest that vaccination is highly effective in management. However, at present there is reluctance by producers to vaccinate because they feel it is unnecessary. Personally, I would like to see this position supported or refuted by further and more sensitive testing.

7.2 ASHEEP Annual Member Survey

ASHEEP FLOCK QA – PROFILING REGIONAL SHEEP PRODUCTIVITY, BEST PRACTICE TAKE UP & SHEEP HEALTH.

SUPPORTING INFORMATION FOR ANNUAL GROUP ANALYSIS FOR THE 2016 YEAR

FARM OPERATING ENTITY CONTACT PERSON

PHONE MOBILEEMAIL.....

TOTAL FARMED AREAHA, CROP AREAHA, WINTER GRAZED PASTURE AREA HA

AVERAGE RAINFALL.....

LIVESTOCK STRUCTURES AT END OF PAST CALENDAR YEAR :-

MAIDEN EWES 1.5 YRS+	COWS/HEIFERS PTIC
EWE 2.5YRS+	DRY COWS
EWE WEANERS	WEANER HEIFERS
WETHER/RAM WEANERS	WEANER STEERS
WETHERS 1.5 YRS+	BULLS
RAMS	
EWE BREED	SIRE BREEDS USED (SHEEP)
NUMBERS OF LAMBS MARKED	FROMMATURE EWES.
NUMBER OF LAMBS MARKED.....	FROMMAIDEN EWES
NUMBER OF LAMBS WEANED.....	
WERE LAMBS MULESED? YES / NO	COMMENT
WERE EWES PREG SCANNED? YES / NO.	PERCENTAGE SCANNED PREGNANT
WERE MULTIPLE BEARING EWES SEPARATED? YES / NO	
WHAT MONTH DO YOU LAMB?	

WERE SHEEP GRAZED ON CROPS? YES / NO WERE CATTLE GRAZED ON CROP? YES / NO

DID YOU UTILISE AGISTMENT DURING PAST YEAR? YES / NO. NUMBER AGISTED

DID YOU FORWARD SHEEP FOR ABATTOIR OJD TESTING IN PAST YEAR? YES / NO. NUMBER

DID YOU TEST FOR OJD BY ANOTHER METHOD (PFC, PM)? YES / NO

DID YOU VACCINATE AGAINST OJD (GUDAIR) IN PAST YEAR? YES / NO

IF SO, WHAT SHEEP CLASSES WERE TREATED (EWE LAMBS, MATURE EWES, RAMS ETC).....

IF YOU ARE NOT ALREADY VACCINATING FOR OJD, DO YOU INTEND TO START IN 2017? YES / NO

DO YOU SEE A ROLE FOR THE USE OF THE SHEEP HEALTH STATEMENT IN SHEEP TRADING
TRANSACTIONS YES/NO

IN THE PAST YEAR HAVE YOU EXPERIENCED ISSUES WITH:-

PREDATION	YES / NO.	COMMENT
BRUCELLOSIS	YES / NO	COMMENT
LICE	YES / NO	COMMENT
LAMENESS	YES / NO	COMMENT
LAMB ABORTION	YES/NO	COMMENT

(PARTICULARLY IN YOUNG EWES)

INEFFECTIVE TREATMENTS YES / NO COMMENT OTHER YES / NO COMMENT

PASTURES

DID YOU SOW PASTURES OR SHORT PHASE FODDER VARIETIES IN THE PAST YEAR? YES/NO IF SO,
WHAT VARIETIES?.....

WHAT WAS YOUR ESTABLISHMENT METHOD?

SUPPLMENTARY FEEDING

IN THE PAST YEAR-

WHAT FODDER SOURCES WERE USED FOR FEEDING LIVESTOCK?.....

WHAT CONDITION SCORE DO YOU AIM FOR PRIOR AND DURING LAMBING?

DID YOU NEED TO SUPPLMENTARY FEED TO MAINTIAN THIS CONDITION SCORE DURING LAMBING?
YES/NO

WERE MINERAL SUPPLEMENTS SUCH AS LICKS OR ADDITIVES UTILISED? YES/NO

RED CLOVER SYNDROME

DID YOU HAD RED CLOVER SYNDROME IN THE PAST YEAR YES/ NO/ DON'T KNOW

WHAT VARIETIES WERE AFFECTED.....

ANY OTHER COMMENTS?.....

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