Year End Descriptive Epidemiology Report: Bovine bTB Epidemic in the England Edge Area

Regional Office: North
County: Cheshire (part)
Year end report for 2016

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1. Executive Summary

The Edge Area was established in January 2013 and was later incorporated into the Government’s strategy to achieve Officially Bovine Tuberculosis Free (OTF) status for England by 2038. It has a low but recently rising incidence of infected farms. This report describes the bovine tuberculosis (bTB) epidemic in the North Edge Area of Cheshire, which comprises approximately the northern and central two thirds of the county.

Cheshire is predominantly a dairy county with some large dairy herds; there are also large beef fattener herds and many small suckler herds.

Over recent years, the incidence of bTB has increased dramatically in Cheshire, especially in the East of the county, despite increased surveillance and control measures in cattle herds, but it now has reached a level where it appears to be plateauing.

The incidence rate has increased slightly to 10% in 2016, compared to 9.8% in 2015 using adjusted figures, taking into account the six monthly herd testing that has applied in the Edge Area of Cheshire since January 2015. Just over 30% of all of the new breakdowns in the Edge Area of England in 2016 were detected in the Cheshire Edge (116/383), which is a slight decrease from 2015 (33%).

The occurrence and distribution of cases in 2016 followed much the same pattern as 2015 with few notable changes, except for the occurrence of some explosive breakdowns close to Manchester airport and further south between and beyond Congleton and Macclesfield in the east of the county. There is circumstantial evidence that substantial badger activity may have been a contributing factor, as the breakdowns were not associated with cattle movements or purchases.

The overall numbers of new herd breakdowns in 2016 remained similar to 2015 (111 breakdowns in 2015 & 116 in 2016). The number of fully confirmed cases (OTFW breakdowns) reduced by 8% in 2016 (67) compared to 2015 (73), whilst the number of strongly suspected cases (OTFS) rose by 29%. This may be in part due to the fact that six-monthly whole herd bTB testing completed its second year in the Edge Area of Cheshire and disease is being detected earlier.

Slaughterhouse surveillance continued to identify new breakdowns, but no increased numbers were reported compared with 2015. This may be indicative of the sensitivity of the skin herd testing regime and that 56% of those breakdowns were likely to be purchased animals. However, only three of the culture-confirmed slaughterhouse cases were genotypes not found in Cheshire (74:a, 10:a & 9:c), but they were not recently purchased cattle.

The seasonal pattern in 2016 differed from 2015 with a greater proportion of breakdowns being disclosed in April and May when there was a 44-57% increase compared with the same period of last year. There was then a reduction on 2015 proportions in June and July, followed by substantial increases in August to November.

36,199 more cattle were tested in 2016 compared to 2015 (see appendix 3: animal level statistics). Although 192 fewer herds were bTB tested in 2016 compared to 2015, this could be due to the fact that some herds have been sold and others have expanded in numbers of cattle.

Most (66%) of the new breakdowns in the Cheshire Edge Area were detected by routine herd testing in 2016 and a substantial proportion (12%) were found on retesting inconclusive reactors.
Farmer concern about IRs is increasing, reflected by a case where an IR that retested clear was sent to slaughter, identified as a bTB suspect, and confirmed on culture.

Recurrence of infection (herds with repeat TB breakdowns) continues to be important; 34% of all new breakdowns (39/116) in 2016 had a confirmed incident of bTB in the previous three years which is similar to 2015 (39/111).

The majority (78%) of the fully confirmed (OTFW) breakdowns were caused by spoligotype 25 (mostly genotype 25:a, the predominant strain of *M. bovis* in the North Midlands), consistent with previous years; 9% were spoligotype 17; other sporadic genotypes included 74:a, 10:a, 9:c & 9:d.

The final source attributed to each resolved fully confirmed case (n=31) at the end of 2016 shows that 48% were most likely attributed to exposure to infected badgers, indirectly through contamination of feed, or during the housing or grazing period through environmental contamination. 26% were most likely attributed to purchase of infected cattle and 19% were classed as having an obscure origin due to the fact that no genotyping was completed for these cases or if there could be multiple reasons. This compared with the provisional source assessment for the 67 fully confirmed (OTFW) cases in this period of 49% attributed to wildlife, 31% to purchase and 1% to obscure, equally weighted risk pathways. The badger surveys in 2014 & 2015 have significantly contributed to the evidence of badger infection in the Cheshire Edge Area. The genotypes of *M. bovis* found in local badgers are consistent with those found in cattle breakdowns in most areas where badgers were the most likely source of infection (genotype 25:a). Voluntary sporadic badger vaccination has taken place in areas of Cheshire, but was suspended for 2016 & 2017 due to lack of available vaccine.

There were two TB incidents in non-bovine species reported in 2016 in the Cheshire Edge area, both involving domestic cats from residential areas in Macclesfield and Knutsford. The overall number of test reactors disclosed increased in 2016 to 1100, compared with 979 in 2015, which represents an increase of almost 13%. In terms of skin reactors, in 2016 there was an increase in the disclosure of skin reactors from 496 in 2015 to 714 which represents an increase of 44%. However, the disclosure of interferon-gamma test positives fell by 20% in 2016 compared to 2015 from 483 to 386.

The number of reactors per breakdown (9) and the number of reactors per 1000 cattle tested (3) remained largely the same for 2016 & 2015.

The increased cattle controls in the Cheshire Edge Area are improving early detection and likely to be preventing escalation of the epidemic; these benefits are expected to continue and to reduce overall reactor numbers over time. However, it seems likely that the epidemic will continue to plateau unless a reduction in the heavy infection challenge from infected badgers in some areas, particularly in east Cheshire, is facilitated through targeted control measures.

1. Introduction

A key action in the implementation of the Government’s objective to achieve Officially Bovine Tuberculosis Free (OTF) status for England by 2038 was to recognise the different levels of bTB in different parts of the country and varying the approach to control accordingly. To this end three management regions or zones have been established. This report describes the epidemiology of...
bovine bTB in the Cheshire Edge Area which forms part of the ‘Edge Area (see Appendix 1). This area has a low but recently rising incidence of infected farms and control efforts are seeking to slow down and reverse geographic spread, and reduce the incidence rate, with the aim of obtaining OTF status for this area as soon as possible.

Data statement

All data are derived directly from the transactional database ‘Sam’ and so may differ slightly from similar data quoted in other reports which were downloaded later in the year so are more complete, and have had additional review to remove duplicates and correct errors.

2. Cattle industry in the Edge Area of Cheshire

Dairy herds predominate in the Cheshire Edge Area (71.2%) with beef and dual breeds accounting for the remainder. There are a few very large dairy herds which have expanded over recent years and many smaller to medium sized herds, presumably many of which are smaller beef suckler and fattening herds. The dairy herds can range in size from 100, up to 2000 cattle with most being in the region of 100-350. Beef fatteners can be up to 800 head and beef suckler herds up to approximately 300. Most herds are traditionally managed where cattle are housed in winter and grazed in summer, but a small number zero graze and others graze all year round. The former provide increased risks for indirect contact with wildlife through contaminated cut grass and exposure to infected areas of pasture. All year round grazers are more likely to move stock to fragmented grazing or land which can increase exposure to other risks.

![Figure 1. Proportion and number of cattle premises in the Cheshire Edge Area with the number of cattle shown](image)

(n=1465, data in appendix 2)

**Markets**
There are only two markets within Cheshire and farmers will also use markets in the neighbouring HRA which facilitates the movement of cattle from the west and south HRA areas into Cheshire. All of these markets operate approved slaughter gatherings and pre-movement testing exempt sales under licence so this mitigates the risk of spread of bTB by this method as they can only go to slaughter or to approved units for further fattening. Increased cattle controls have reduced the risks considerably with farm–to-farm movements via markets and pre-movement bTB testing and post-movement controls into the LRA.

Approved and exempt finishing units (AFU)

The number of AFUs in the Cheshire Edge has increased to 22 after the onset of six monthly bTB testing and many of the EFUs have undergone conversion to AFUs. These are all non-grazing units so this mitigates the risk as long as they are correctly used.

3. Overview of the bTB epidemic in the Edge Area of Cheshire

History of bTB in the Edge area of Cheshire

Between 2009 and 2010 there was an almost two fold increase in the number of breakdowns in Cheshire and this appeared to stabilise until 2012 to 2014 when there was a large increase of almost 60% during this period. Prior to 2013, many of the Cheshire parishes were on two, three and four year bTB testing. In January 2013, the Edge area was established and annual whole herd testing commenced for all cattle herds which resulted in an overall increase in bTB testing with some exemptions. This explains the increase in breakdowns identified from this period onwards. The number of new breakdowns in 2016 is largely the same as in 2015 which may indicate a plateau effect but it is still too early to make these assumptions.

Figure 2. Annual number of new bTB breakdowns in the Cheshire Edge Area, 2006-2016
Figure 3. New breakdowns per month showing the trend between years in the Cheshire Edge Area. 2006-2016

In figure 3, the seasonality of bTB testing is reflected in the incidence of new breakdowns with increased testing taking place in the spring and autumn months reflected in increased cases. In years 2015 & 2016, six monthly herd bTB testing has been undertaken which has resulted in the effects of seasonality having less of an effect as more all year round bTB testing is performed. Increased numbers of breakdowns were observed in September to November which may indicate new infection being disclosed at the end of the grazing period.

Geographical distribution of bovine bTB cases (new and ongoing) in the Edge Area of Cheshire

The geographical distribution of all new bovine bTB breakdowns and pre-2016 breakdowns still ongoing at the end of the report period is shown in Figures 4 & 5 which also shows the cattle holding density in the Cheshire Edge Area.
Figure 4. Geographical distribution of all new bovine bTB breakdowns in 2016 overlaid on a cattle holding density map for the Cheshire Edge Area. (Please note that the Edge Area is the area outlined in red)

The pattern of breakdowns largely mirrors the areas with the highest densities of cattle holdings as shown in Figure 4. The highest density of cases is in the east and south-east of the Cheshire Edge Area. The most northerly breakdown was in a beef fattening herd and the source was likely to have been purchased. There is also a cluster of cases in the north east of the Edge in a less densely cattle populated area where infected badgers were identified in 2014. This will be discussed further in section 4. There are also two non-bovine incidents shown which will be discussed in more detail in 4.
Figure 5. Geographical distribution of pre-2016 breakdowns which were still ongoing at the end of the reporting period in the Cheshire Edge Area in 2016.

In Figure 4, the longer term breakdowns are also concentrated in the east in the area of the highest density of breakdowns and cattle holdings. This is consistent with endemic infection and likely infected wildlife with high levels of environmental contamination. There is a single persistent breakdown in the north of the area which is currently under investigation but is a herd which relocated from the HRA with other concurrent complications.

The picture is largely the same as it was for 2015 but with more cases creeping towards the north easterly edge of the area which will be discussed later.
Figure 6. Maps showing the homerange and distribution of genotype 25:a in Cheshire in 2015 (left) and 2016 (right). (The red hatched area is the homerange for the genotype and the orange areas show the distribution of breakdowns with genotype 25:a with the darkest colour being the most number of cases in a parish). (Extracted from SPIDA 2017).

78% of the fully confirmed breakdowns were spoligotype 25 (mostly genotype 25:a); 9% were spoligotype 17; other sporadic genotypes included 74:a, 10:a, 9:c & 9:d.

Figure 6 shows that there has been a spread of 25:a infection towards the LRA of Greater Manchester (A) in 2016 which is illustrated by the density of colour reflecting the number of cases in the bordering parishes. There also appears to have been a higher concentration of breakdowns associated with 25:a in the central east area (B) and the area bordering Staffordshire, near Congleton (C) compared to 2015. Infected badgers were identified in these areas in the 2014 survey and in Greater Manchester in 2015-16. Genotype 25:a was isolated from them all.

There has been a marked change in genotype 25:a distribution in some parishes. By using a comparison of parishes in 2015 & 2016 there has been a threefold increase in genotype 25:a breakdowns for the same parishes (11 vs 35). Gawsworth and Siddington both had the highest numbers of 25:a cases in both years but comparing each parish, there has been a 64% increase in cases associated with 25:a in 2016. Since 2015, we have also seen further spread of disease with 25:a northwards and south of area B (Gawsworth & Siddington) towards Wilmslow (area A) and towards Smallwood (area C) which we have not seen before. This is not thought to be associated with cattle movements but is likely to be locally acquired infection.
Figure 7. Map of area of concern in east Cheshire containing a high density of cattle breakdowns and two infected cat reports in 2016 (from iTB) (Red C = infected cat).

The above map shows a very high density of cattle breakdowns and the location of the infected cats described in 4c. below. This area contains over half of the bTB breakdowns for 2016 and also includes the majority of the pre-2016 breakdowns and is considered locally as an endemically infected area. It is an area where we have seen a high percentage of recurrent breakdowns and also a high proportion overall of the infected badgers found in the 2014 University of Liverpool survey all with genotype 25:a. There is evidence that infection is creeping northwards beyond Wilmslow and further south past Congleton as discussed in the previous section.

36,199 more cattle were tested in 2016 compared to 2015 (see appendix 3: animal level statistics). Although 192 fewer herds were bTB tested in 2016 compared to 2015, this could be due to the fact that some herds have been sold and others have expanded in numbers of cattle.
Figure 8. Number of strongly suspected (OTFS) and fully confirmed (OTFW) cases of bTB in the Cheshire Edge Area in 2015 & 2016.

The number of fully confirmed cases (OTFW breakdowns) has reduced by 8% in 2016 compared to 2015 whilst the number of strongly suspected cases (OTFS) has risen by 29%. This may be in part due to the fact that six monthly whole herd bTB testing has completed its second year in the Cheshire Edge and disease is being detected earlier. The overall numbers of breakdowns remains similar to 2015 (111 breakdowns in 2015 & 116 in 2016).

Figure 9. New bTB breakdowns per month in the Cheshire Edge in 2015 & 2016

In April and May 2016, there was an increase in new breakdowns by 44-57% compared with the same period of last year. However, there was a reduction of over 60% in June, 25% in July and increases of up to 133% in August to November. The number of new breakdowns decreased again in December compared with the same months in 2015. This is difficult to explain other than the fact that we may be seeing more disease identified at the end of the grazing period for traditional farms rather than during the housing period. Anecdotally in some areas, farmers expect to find reactors in the autumn with less disease after the housing period. This implies that more exposure to infection is occurring at pasture, although further evidence is required to make informed conclusions. This appears to be the case in 2016 for September to November compared
with the same period for 2015 where a 50% increase was observed. With six monthly bTB testing the seasonal effect of testing is now less marked due to temporal smoothing.

4. Descriptive epidemiology of bovine bTB in in the Edge Area of Cheshire

Definitions

Fully confirmed or OTFW cases refer to cases where lesions were visible at slaughter or culture has confirmed the presence of *M. bovis*.

Strongly suspected or OTFS cases refer to those cases where lesions were not clearly visible at slaughter and may not have been cultured as per the current Edge policy for all new breakdowns or may have returned negative culture results. *M. bovis* is difficult to culture and lack of a positive result does not mean that it was not present.

Level of bovine bTB

Incidence of bTB in the Cheshire Edge Area

The incidence figures have been recalculated for the last three years to account for the fact that each herd is undergoing more bTB testing with six monthly bTB testing, radial testing and contiguous testing so the denominator, which is derived from the total number of herd tests, has been modified so that each herd is only counted once in the figures. This means that the apparent decrease in incidence last year was an error resulting from more frequent testing and did not reflect a true reduction in new infections.

With the modification:

The incidence for 2014 is 16.3%, for 2015 it is 9.8% and for 2016, the incidence is 10%. This appears to correlate with the breakdown figures for the Cheshire Edge Area which have changed very little since 2015 and where six monthly herd testing has been ongoing for both years.

![Figure 10. Breed purpose compared with percentage of breakdowns in the Cheshire Edge cattle population.](image)

Figure 10 shows that there are more bTB breakdowns in beef herds than dairy herds compared with the overall breed purpose of cattle in the Cheshire Edge.
The incidence for beef herds is likely to be much higher than for dairy herds after adjusting the total herds tested as a percentage of the sector in appendix 2. This probably relates to the fact that the fattening herds are more likely to purchase more cattle and possibly from higher risk areas than the dairy herds would. There is also a higher throughput which may also increase the chances of picking up infection.

**Duration of bTB restrictions**

48 herd breakdowns had resolved within the reporting period and of these, the mean duration of restrictions for OTFS breakdowns was 4.8 months (n=21) and was 5.1 months for OTFW breakdowns (n=27). This is much the same as 2015. Possible factors include the use of the gamma interferon test and the fact that with six monthly testing, disease is being detected earlier with less opportunity to propagate and spread within the herd.

However, a longer duration of bTB restrictions can have significant economic effects on farm income due to the restricted outlets for stock, especially on dairy farms where all male calves are usually sold via markets or via agents. Tightening of licensing controls has added to this effect combined with a reduced number of outlet opportunities with competition from other areas. There are reduced opportunities for local movements of calves within Cheshire and the neighbouring counties with many being transported to the south west for rearing in grazing AFUs. The added costs of transportation and bTB testing in grazing units, markedly reduces the value of these categories of stock.

**Risk pathways for bTB infection:**

In Figure 4, breakdowns in areas A & B are more likely to be attributed to wildlife infection as there appears to be endemic infection in this area. The provisional source is attributed to a maximum of three possible risk pathways at the time of the initial disease report which takes into account the herd activity, whether the reactor was homebred, purchase and movement history of the herd, contiguity to other cattle, previous disease, wildlife activity on farm and degree of biosecurity or opportunity for contact.

![Figure 11. Provisional risk pathways for OTFW breakdowns in the Cheshire Edge Area in 2016 (n=67)](image-url)
In Figure 11 above, more than 50% attributed the source to infected wildlife due to the abundance of badger activity and in some areas deer activity; 28% to possible purchased cattle and 21% to multiple equally weighted risk pathways in the absence of genotype information at that stage. If a farmer purchases a bull occasionally with no other cattle movements onto his premises, this purchased animal cannot be excluded as a potential source of introduction of infection at the initial stages of the investigation. It is important to consider all possibilities when determining the initial risk pathways for each breakdown.

Figure 12. Final risk pathways attributed to resolved OTFW breakdowns in the Cheshire Edge Area in 2016 (n=28)

The final risk pathways are attributed at the end of the breakdown when the disease report form is being closed and when conclusions can be drawn from all available information. Of the final risk pathways, there were seven cases attributed to purchased origin. One was a cow purchased 18 months prior to being disclosed as a reactor with genotype 74:a and this could be traced back to a herd dispersal in Oxfordshire. Five were beef fattening herds including three AFUs and there was no evidence of further spread within the herds as the groups were depopulated as they were fat cattle. One had purchased some cattle via a dealer from a closed herd in Cheshire which had an explosive bTB breakdown in 2016 within the same month. The last one was a purchased animal from Shropshire with genotype 25:a which was disclosed in a herd with no evidence of transmission laterally and close to the LRA.

50% of the resolved cases were attributed to wildlife due to the endemicity of the area of concern described earlier. These were homebred cattle in herds described as closed (n=11) or had purchased cattle from Scotland or the LRA – all had local genotypes 25:a & 17:a. The latter was in a herd which had a single farm premises and did not purchase any cattle, using artificial insemination for breeding. 17:a has been found in other non-contiguous herds in recent years and wildlife infection is suspected in this area but none have been identified to date.

Six cases were marked as undetermined or obscure as equal ranking was given to more than one risk pathway in the final risk assessment. This is due to the fact that wildlife could be suspected of being infected but the herds had experienced confirmed breakdowns in the past or had purchased...
local cattle with onward spread within the herd. All of these had genotype 25:a consistent with the local home range. These farms were all within the area of concern described above.

**Role of other species:**

**Badgers and other wildlife**

![Map showing the distribution of infected badgers found during the 2014 University of Liverpool survey (green) and the more recent Stockport survey in 2016 (purple).](image_url)

In the 2014 found dead survey, 18 infected badgers were found in Cheshire, 14 of which were in the Edge Area mainly in the east of the county. All were genotype 25:a and the distribution of cattle breakdowns closely related to the distribution of infected badgers in this area. The location of infected badgers further west in the Cheshire Edge does not closely correspond with large infected cattle populations but badgers can range large distances and there are cattle breakdowns locally in these areas but less densely populated than in the east of the area. With six monthly herd testing, this is under close surveillance.

A risk of spread towards the Greater Manchester area was highlighted in previous reports and this has been confirmed by these findings. The cattle are undergoing some radial bTB testing from cattle breakdowns and will be monitored.
Figure 14. Map showing cattle breakdowns and infected badger locations in the Cheshire Edge Area in 2014-2016.

Figure 14 shows the relationship between the cattle breakdowns and infected badgers and there is good correlation between locations of both infected cattle and badgers in these areas. Only a relatively small number of badgers were submitted in view of the perceived populations. The 2016-17 DEFRA survey will provide further information. Further evidence of the importance of infection in badgers has come to light in 2017 with the submission of two dead badgers with lesions. They were found on one farm with a prolonged (not yet persistent) breakdown where repeat gammas have identified cattle with lesions at three tests and heavy environmental challenge is obviously present but the farmer does not purchase cattle and only uses a single site. In the same area there are several other unrelated breakdowns where large numbers of cattle have been slaughtered as bTB reactors with ongoing infection on the premises.

There have been no other suspect wild mammal submissions in Cheshire and no wild or park deer reported with suspicion of bTB in 2016.

Badger vaccination activities ceased in 2016 due to a global shortage of BCG vaccine. It is expected that they will resume as the supplies become available.

Other domestic species:

In 2016 in the Cheshire Edge Area, two cats were confirmed with bovine bTB and genotype 25:a was isolated from both.
Cat 1: a domestic cat living in a non-farming household in Langley, Macclesfield. It was a stray cat which was adopted by the family in 2015 with no farming connection. She was presented to the vet with a chronic abscess below the left eye. The cat was treated with antibiotics but there was no improvement and a biopsy of the mass revealed acid fast organisms consistent with suspicion of bTB. The cat was sampled for gamma interferon and was positive. She was euthanased and a lung biopsy sent for culture which revealed *M. bovis* infection. The other pets in the household were gamma tested and monitored but appeared healthy.

On examining the location and likely roaming area for this cat, it is interesting to note that within 1km there was an explosive bTB breakdown in a cattle herd which had lost 42 in calf heifers at the disclosing test early in 2016. Also close by there was another high health status Pedigree beef suckler herd which was also disclosed in 2016. There was no contact between the two herds but abundant badger activity had been observed in the area. The abscess was attributed to a probable injury from a badger or from another infected cat.

Cat 2: a domestic cat living in a non-farming household in Knutsford presented at the vet with a swelling behind the right ear. She was treated with antibiotics but there was no response and the mass was drained. Samples were sent for culture and a chest x-ray revealed an interstitial pattern consistent with lung infection. The cat was subsequently euthanased and further samples sent for culture which confirmed *M. bovis* infection with genotype 25:a. The cat lived near to a park and a small open farm with deer in the park and abundant badger activity. To date, there have been no issues with the cattle which are also in the park. The premises is situated near to a busy railway line and approximately 3km away there was another explosive cattle bTB breakdown where 37 cattle were disclosed as bTB reactors at the disclosing test in mid-2016. Interestingly, this herd is also close to the railway line that potentially links the two premises. The cattle herd is mainly

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**Figure 15.** Map showing the location of two cats infected with *M. bovis* genotype 25:a in the Cheshire Edge area in 2016.
closed and the last purchase was a bull several months previously (which to date has passed seven skin tests and three gamma tests). The cattle were housed and were fed grass and silage thought to most likely be contaminated with infection. Infected badgers have also been found locally with genotype 25:a and it is not impossible that they have used the railway line to move between areas. Likewise, cats could roam along railways whilst hunting and this cat regularly disappeared for several days.

In summary, it is interesting to note the close proximity of these cats to cattle breakdowns which have been attributed by the private veterinary surgeon to likely indirect contact with infected badgers. The injuries both sustained were attributed to likely badger contact or potentially contact with other infected cats. These two cats were thoroughly investigated by the vets, but there may be many more infected cats which do not get investigated for economic reasons.

**Detection of cases**

![Diagram showing method of disclosure of all new breakdowns in the Cheshire Edge Area in 2016.]

**Figure 16. Method of disclosure of all new breakdowns in the Cheshire Edge Area in 2016.**

Routine testing includes whole herd testing (WHT) which is currently six monthly in the Cheshire Edge Area. Non-routine testing includes post-breakdown testing, trace tests, check tests and pre-movement bTB testing. Slaughterhouse includes cases disclosed at routine meat inspection in an abattoir or at post-mortem examination.

From Figure 16 above the most common method of disclosure is through routine herd testing (66%), followed by non-routine testing (27%) as described above and finally by passive slaughterhouse surveillance (8%). The latter is important due to the sensitivity of the skin test and heavily infected cattle could potentially pass the skin test. Also many cattle moving direct to slaughter do not have to be skin tested before they move so this is a good method of surveillance in the absence of skin testing. There are exemptions for beef fattening herds which are continuously housed, where no breeding takes place and move direct to slaughter so passive surveillance is vital to monitor for infection. Most of these herds move batches to slaughter regularly and are continuously monitored in this way.
The methods of detection are in much the same proportions as for 2015.

Six monthly bTB testing is identifying disease much faster and earlier which is proving to be beneficial in case management in the majority of breakdowns.

**Inconclusive Reactors**

![Bar chart showing the methods of detection for inconclusive reactors in the Cheshire Edge Area in 2016.]

**Figure 17. Methods of detection of inconclusive reactors in the Cheshire Edge Area in 2016.**

12% of all new breakdowns in 2016 were detected on retesting inconclusive reactors (IR). 43% became OTFW breakdowns. 86% were disclosed from routine herd tests. 50% of those found at routine herd tests became OTFW breakdowns. This shows the importance of the policy of retesting IRs once only and the risks they pose. In the Cheshire Edge Area we have seen a shift in farmer attitude towards IRs and they are more becoming aware of the risks they present with many opting to either voluntarily slaughter them or in breakdown situations to remove them as direct contacts. In one case the IR retested clear and was sent to slaughter to be reported as a slaughterhouse suspect which was confirmed on culture.
Recurrence of bTB

Figure 18. The proportion of breakdowns which recurred after an OTFW breakdown in the previous three year period in the Cheshire Edge Area in 2016 (n=39)

In Figure 18, almost 80% of breakdowns which had an OTFW incident in the previous three years had an OTFW breakdown in 2016 whereas 20% had OTFS breakdowns in 2016. These account for 34% of the total breakdowns in 2016. There are no figures to compare the total number experiencing OTFW breakdowns in the previous three years and remaining OTF in 2016. This would be a useful comparison. The reasons for recurrence can be multiple and include residual infection in the herd.

Herd activity could also be important, such as beef fattener herds which regularly purchase stock. Finally, location of the herd is important and whether there is known wildlife infection in the area and the likelihood of contact.

Figure 19. Methods of detection of recurrent breakdowns in the Cheshire Edge Area in 2016
In Figure 19, 36% of the recurrent breakdowns in 2016 were detected as a result of routine herd testing and 51% by non-routine herd testing such as post-breakdown testing, tracing tests or check testing. The remaining 13% were detected via slaughterhouse surveillance and the majority were beef fattening units which regularly purchased cattle.

64% of the recurrent breakdowns were located in the area of concern described previously.

**Herd Size for Breakdown Herds**

![Herd Size Chart]

Figure 20. Herd size and cattle breakdowns in the Cheshire Edge Area in 2016.

Figure 20 shows that almost 50% of the breakdowns in 2016 were of herd size 101-200 followed by 201-350 (24%). Further analysis comparing herd size in the overall cattle population in the Cheshire Edge area with breakdowns occurring in the same categories is shown below.

![Percentage Chart]

Figure 21. Percentage of all herds compared to herd size and percentage of bTB breakdowns compared to herd size in Cheshire Edge breakdowns.

Figure 21 above shows that although 41% of the herds in Cheshire have 1-50 cattle, the number of breakdowns is significantly lower (13.2%) than herd sizes of 101-200 and above. There is a
clear effect of herd size with larger herds being at greater risk and smaller ones at lower risk in the Cheshire Edge

**Burden of bovine bTB**

The burden of bTB in the Cheshire Edge Area is considerable in terms of the number of breakdowns at any one time, the number of cattle being slaughtered, the economic effects on both the farming business, associated agricultural businesses, trade, the impact to the taxpayer and the emotional impact. bTB impacts on the ability to move cattle off the breakdown premises which can have considerable consequences for breeding stock (bulls, cows and heifers), for weaned beef calves, stores and for dairy calves not normally reared on farm. Likewise, replacement stock for reactors which have been slaughtered can prove difficult in the case of Pedigree or Organic herds especially for large numbers of reactors at disclosing tests when no stock is allowed to move on before the first breakdown test. The length of time on restrictions can also impact on the burden imposed by bTB. The average duration for resolved breakdowns in 2016 has been shown to be just less than 6 months but there will be a significant number of farms under bTB restrictions for much longer and some into many years depending on location and likely source of disease.

![Figure 22](image)

**Figure 22. The number of skin and gamma reactors disclosed in the Cheshire Edge Area in 2015 & 2016.**

Figure 22 shows that in 2016, 1100 cattle were slaughtered as skin test reactors or interferon-gamma test positives. The overall number of reactors disclosed increased in 2016 compared with 979 in 2015, which represents an increase of almost 13%. In 2016 there was a 44% increase in the disclosure of skin reactors detected, from 496 in 2015 to. However, the disclosure of gamma-interferon test positives fell by 20% in 2016 compared to 2015 from 483 to 386.
In Figure 23, in 2016 the number of reactors per breakdown has increased slightly by 3% compared with 2015 and the number of reactors per 1000 cattle tested has risen by almost 2%.

**Key drivers of the bovine bTB epidemic**

Disease is being driven in the Cheshire Edge Area by 1) infection ‘creep’ from the HRA, 2) infection ‘creep’ from the areas of concern where we have seen new breakdowns occurring further north and south from the area considered to be endemically infected and 3) possibly through the unknowing purchase of infected stock which have tested clear before movement due to the limitations of the skin test.

Finally, evidence of endemic *M. bovis* infection in badgers, in areas described above, is responsible for more than half of all breakdowns in the Cheshire Edge Area. There is little evidence for cattle to cattle transmission on neighbouring premises as farmers are much more aware of using crop breaks and double fencing than they used to be. They are also more aware of the risks of purchasing cattle from certain areas due to the widely publicised risk areas in the UK and voluntary risk-based trading. The launch of the bTB Hub website (http://www.tbhub.co.uk/) and the interactive bTB mapping website (http://www.itb.co.uk/) have proved to be useful sources of information and education for farmers and vets. The farm level bTB portfolio reports have also proved to be very useful for farmers to learn about their local situations and to be proactive in improving biosecurity on their farms during breakdowns and it is hoped that these will have a longer term effect post-breakdown of making farmers more aware of local risks and methods of reducing the risks.

In 2016, there were at least four busy livestock markets which were being used by Cheshire farmers. Two of these are in the HRA which provides a route for higher risk cattle into Cheshire, However, these risks are mitigated by pre-movement bTB testing and the fact that these cattle will be included in six monthly herd testing in the Cheshire Edge. This means that the risk is much reduced as any incoming infection should be identified at the earliest opportunity.
One of the main concerns is to support the robust cattle measures which are currently in place in the Cheshire Edge Area with more robust wildlife measures to control the reservoir of *M. bovis* infection shown to be present in badgers.

**Prospects for OTF status**

With a slight increase in incidence from 2015 and the increase in numbers of reactors slaughtered, it is currently unlikely that the Cheshire Edge Area will achieve OTF status in 2025.

**Summary of risks to the Low Risk Area (LRA) and any mitigating factors**

The summary of risks to the LRA from the Edge Area of Cheshire is largely as described in the 2015 report and there are no new perceived risks.


Post-movement bTB testing is now policy in the LRA, so any cattle movements into neighbouring Greater Manchester and Wirral should be more closely monitored with this policy. However, there are limitations with the skin test for individual animal testing and it would still be possible for an infected animal to pass into the neighbouring LRA without detection. There have been several explosive cattle breakdowns close to the border with the LRA near Manchester airport. In one breakdown 34 skin reactors were disclosed at the initial herd test representing 18% of the herd. All cattle were homebred and housed. A possible explanation for this was contamination of feed as an infected badger had been found near this location. There were a further 21 reactors at another breakdown close to this area, again associated with probably contamination of feed from infected badgers as all reactors were homebred. This represented 20% of the milking portion of the herd. These explosive breakdowns are surprising given that the herds are on six monthly herd testing which indicates a more likely sudden exposure to infection most likely through contaminated feed consumption. Both of these breakdowns had genotype 25:a which is consistent with infected badgers identified on the 2014 survey at these locations. There have been other explosive breakdowns in other areas of the Cheshire Edge Area. One was a closed herd on a single site, where 11 reactors were disclosed in a test of 19 cattle initially as part of a pre-movement bTB test. Subsequent skin testing and repeat gamma testing has resulted in almost total depopulation of this herd. Reactors were disclosed at both skin and gamma testing which is indicative of an ongoing source of infection most likely through contamination in the environment or feed as all cattle are homebred and there have been no purchases or movements from the premises for many years.

The fact that the Stockport survey has identified infected badgers to be present is a concern. This is in a four-yearly testing area adjoining Northeast Cheshire and it is important that vigilance is maintained and the cattle herds in the area continue to be closely monitored using radial and one-off check testing if a new OTFW breakdown occurs.

**Summary of the risk to the Edge Area from the HRA**

Again this is largely the same and is as described in the 2015 report

There have been some very explosive cattle herd breakdowns in the HRA of Cheshire in 2016 particularly in the Audlem area and these have been attributed to likely wildlife infection, which is a concern especially for the Edge Area. Infected badgers were found in 2014. The rollout of six-monthly whole herd testing in the HRA of South Cheshire from January 2018 should help to reduce the spread of disease within herds.

5. Assessment of effectiveness of controls and forward look

Enhanced cattle controls

Six monthly herd testing appears to be effectively identifying disease much earlier in herds, which is advantageous in the longer term. It is recommended that this continues as it has been widely accepted by farmers and vets as an alternative to radial bTB testing.

The continuation of parallel interferon gamma testing in OTFW breakdown herds is also proving very effective in removing infected cattle from herds as evidenced by the reduced duration of OTFW breakdowns compared to other risk areas in most cases and the recommendation would be to continue with the current policy, but also to allow more discretionary sampling in herds in the HRA and for OTFS herds.

It is essential to remove large numbers of reactors as swiftly as possible as these are very difficult to effectively isolate especially if they are milking cows. It is logistically difficult to dump milk from large numbers of reactors which further emphasises the need for swift removal from farm.
6. Appendices
Appendix 1: Overview of risk and surveillance areas of England and Edge Area objectives and controls

Figure A1. Bovine bTB risk and surveillance areas of England (effective since January 2013) as set out in the strategy for achieving Officially Bovine Tuberculosis Free status for England

1.1 Policy objectives for the Edge Area:

Short to medium term:

- slow down geographic spread
- maintain crude herd incidence of OTFW breakdowns <2% overall by 2019
- begin to reduce the incidence rate

Longer term:

- reduce geographic spread of bTB and push the Edge Area boundaries westward
- reduce OTFW herd incidence to <1% by 2025
Attain OTF status (incidence of indigenous OTFW herd breakdowns <0.1) for the lowest incidence counties in the Edge Area.

1.2 Key Control Measures

Surveillance

Enhanced herd test coverage (annual) and six monthly in the Cheshire Edge Area.

- extend targeted surveillance to 3km around new OTFW breakdowns in Derbyshire (radial testing), with six month follow-up
- possible RTA badger survey

Management of cases (‘breakdowns’)

- increased sensitivity of breakdown herd testing:
  - OTFS breakdowns to pass two short interval tests at severe interpretation to regain OTF status
  - mandatory IFN-g parallel testing in OTFW
- Enhanced epidem. investigation and data analysis
- information sharing - location of breakdown herds

Appendix 2: Cattle industry in the Edge Area of the region

Table A2.1. Number of cattle premises by size band in the Edge Area of the region at 1 January 2015

(RADAR Cattle book 2008 (or most current update))

<table>
<thead>
<tr>
<th>Cattle per premises</th>
<th>1-50</th>
<th>51-100</th>
<th>101-200</th>
<th>201-350</th>
<th>351-500</th>
<th>501+</th>
<th>All</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of premises</td>
<td>607</td>
<td>200</td>
<td>245</td>
<td>219</td>
<td>96</td>
<td>98</td>
<td>1477</td>
<td>163</td>
<td>77</td>
</tr>
</tbody>
</table>
Figure A2.1. Number of cattle premises by size band in the Edge Area of the region at 1 January 2015

Figure A2.2. Number of Breakdowns

Number of Approved Finishing Units (AFUs) registered in the Region’s Edge Area = 22

Common land in the County or Counties: No common land in Cheshire

Table A2.2. Cattle/herd purpose

<table>
<thead>
<tr>
<th></th>
<th>Beef</th>
<th>Dairy</th>
<th>Dual purpose</th>
<th>Unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Cattle</td>
<td>58087</td>
<td>171236</td>
<td>71.2</td>
<td>11031</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td>24.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>42</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>240396</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure A2.3. Cattle/herd purpose

The description of the cattle industry in the Cheshire Edge Area can be seen in the 2015 report.


Table A2.3. Breakdowns by month

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>9</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>66</td>
</tr>
<tr>
<td>February</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>10</td>
<td>22</td>
<td>6</td>
<td>8</td>
<td>74</td>
</tr>
<tr>
<td>March</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>10</td>
<td>19</td>
<td>12</td>
<td>7</td>
<td>88</td>
</tr>
<tr>
<td>April</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>14</td>
<td>10</td>
<td>9</td>
<td>13</td>
<td>75</td>
</tr>
<tr>
<td>May</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>11</td>
<td>59</td>
</tr>
<tr>
<td>June</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>11</td>
<td>7</td>
<td>13</td>
<td>5</td>
<td>60</td>
</tr>
<tr>
<td>July</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>12</td>
<td>9</td>
<td>63</td>
</tr>
<tr>
<td>August</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>49</td>
</tr>
<tr>
<td>September</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>9</td>
<td>9</td>
<td>14</td>
<td>22</td>
<td>9</td>
<td>14</td>
<td>94</td>
</tr>
<tr>
<td>October</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>7</td>
<td>14</td>
<td>11</td>
<td>4</td>
<td>6</td>
<td>14</td>
<td>72</td>
</tr>
<tr>
<td>November</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>14</td>
<td>9</td>
<td>9</td>
<td>10</td>
<td>9</td>
<td>13</td>
<td>14</td>
<td>88</td>
</tr>
<tr>
<td>December</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>11</td>
<td>10</td>
<td>11</td>
<td>4</td>
<td>56</td>
</tr>
<tr>
<td>Grand total</td>
<td>37</td>
<td>26</td>
<td>32</td>
<td>39</td>
<td>72</td>
<td>73</td>
<td>85</td>
<td>117</td>
<td>135</td>
<td>112</td>
<td>116</td>
<td>844</td>
</tr>
</tbody>
</table>
Appendix 3: Summary of the Edge Area regional headline cattle bTB statistics

Table A3.1. Herd-level statistics

<table>
<thead>
<tr>
<th>Herd-level statistics</th>
<th>Cheshire Edge 2016</th>
<th>Cheshire Edge 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of cattle herds live on Sam at the end of the reporting period</td>
<td>1371</td>
<td>1418</td>
</tr>
<tr>
<td>Total number of herd tests carried out in the period</td>
<td>2669</td>
<td>2861</td>
</tr>
<tr>
<td>Total number of OTF cattle herds bTB tested during the period for any reason</td>
<td>1155</td>
<td>1229</td>
</tr>
<tr>
<td>Total number of OTF cattle herds at the end of the report period (i.e. herds not under any type of bTB02 restrictions)</td>
<td>1230</td>
<td>1329</td>
</tr>
<tr>
<td>Total number of cattle herds that were not under restrictions due to an ongoing bTB breakdown at the end of the report period.</td>
<td>1297</td>
<td>1364</td>
</tr>
<tr>
<td>Total number of new bTB breakdowns detected in cattle herds during the report period</td>
<td>116</td>
<td>111</td>
</tr>
<tr>
<td>OTF status suspended (OTF-S)</td>
<td>49</td>
<td>38</td>
</tr>
<tr>
<td>OTF status withdrawn (OTF-W)</td>
<td>67</td>
<td>73</td>
</tr>
<tr>
<td>Of the OTF-W herd breakdowns:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many can be considered the result of movement, purchase or contact from/with an existing breakdown based on current evidence?</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>New OTF-W breakdowns triggered by skin test reactors or 2xIRs at routine herd tests</td>
<td>39</td>
<td>49</td>
</tr>
<tr>
<td>New OTF-W breakdowns triggered by skin test reactors or 2xIRs at other bTB test types (forward and back-tracings, contiguous, check tests, etc.)</td>
<td>18</td>
<td>14</td>
</tr>
<tr>
<td>New OTF-W breakdowns first detected through routine slaughterhouse bTB surveillance</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Number of new breakdowns revealed by enhanced bTB surveillance (radial testing) conducted around those OTF-W herds (may not be applicable to every county in the Edge Area)</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>OTF-S</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>OTF-W</td>
<td>n/a</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Number of OTF-W herds still open at the end of the period (including any ongoing OTF-W breakdowns that began in a previous quarter)</td>
<td>74</td>
<td>40</td>
</tr>
<tr>
<td>New confirmed (positive <em>M. bovis</em> culture) incidents in non-bovine species detected during the report period (indicate host species involved)</td>
<td>2 cats</td>
<td>1 alpaca</td>
</tr>
</tbody>
</table>

**Table A3.2. Animal-level statistics (cattle)**

<table>
<thead>
<tr>
<th>Animal-level statistics (cattle)</th>
<th>Cheshire Edge 2016</th>
<th>Cheshire Edge 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of cattle tested in the period (animal tests)</td>
<td>392802</td>
<td>356603</td>
</tr>
<tr>
<td>Reactors detected:</td>
<td>1100</td>
<td>979</td>
</tr>
<tr>
<td>tuberculin skin test</td>
<td>714</td>
<td>496</td>
</tr>
<tr>
<td>additional IFN-gamma blood test reactors (skin-test negative or IR animals)</td>
<td>386</td>
<td>483</td>
</tr>
<tr>
<td>Reactors per breakdown</td>
<td>9</td>
<td>8.74</td>
</tr>
<tr>
<td>Reactors per 1000 animal tests</td>
<td>2.80</td>
<td>2.75</td>
</tr>
<tr>
<td>Additional animals identified for slaughter for bTB control reasons (DCs, including any first-time IRs)</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>SLH cases (tuberculous carcases) reported by FSA</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>SLH cases confirmed by culture of <em>M. bovis</em></td>
<td>9</td>
<td>11</td>
</tr>
</tbody>
</table>
Figure A3. Reactor and slaughterhouse case density – All TB breakdowns (1/1/2016-31/12/2016)
Appendix 4: Suspected sources of *M. bovis* infection for all the new OTF-W breakdowns identified in the report period

Table A4. Suspected sources of *M. bovis* infection for all the new OTF-W breakdowns identified in the report period

<table>
<thead>
<tr>
<th>Most likely origin</th>
<th>Cheshire Edge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prov.</td>
</tr>
<tr>
<td>Introduction (e.g. purchase) of infected animal(s)</td>
<td>22</td>
</tr>
<tr>
<td>Local - lateral spread from neighbouring holdings</td>
<td>3</td>
</tr>
<tr>
<td>exposure to infected wildlife</td>
<td>34</td>
</tr>
<tr>
<td>other farmed species</td>
<td>0</td>
</tr>
<tr>
<td>recrudescence of residual infection from a previous bTB breakdown</td>
<td>10</td>
</tr>
<tr>
<td>infected human source</td>
<td>0</td>
</tr>
<tr>
<td>Undetermined/obscure</td>
<td>1</td>
</tr>
<tr>
<td>Other (explain)</td>
<td>0</td>
</tr>
</tbody>
</table>

Cheshire

<table>
<thead>
<tr>
<th>Probability of isolated, sporadic ('one-off') breakdown, without secondary cattle to cattle spread</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likely (no secondary breakdowns detected)</td>
</tr>
<tr>
<td>Definite</td>
</tr>
<tr>
<td>Likely</td>
</tr>
<tr>
<td>Possible</td>
</tr>
<tr>
<td>Not likely (indigenous infection in the locality)</td>
</tr>
</tbody>
</table>

OTF-W breakdowns categorised as definite or likely introduced cases with no evidence of local spread shown in greyed-in boxes
Appendix 5: Overview of the bTB Control Programme in this Region of the Edge Area

5.1 Edge Testing Policy

OFT-S enhanced bTB testing with two SITs on severe interpretation & continuation of discretionary measures in all OTF-S incidents such as IFN-gamma testing and removal of inconclusive reactors

The mandatory IFN-gamma is very useful in identifying early disease and disease undetected by the skin test and should be continued

The use of bovine only interpretation should be considered and implemented when required, not necessarily on a herd basis but on an individual cohort group where there have been large numbers of reactors disclosed

Exemptions to the IFN-gamma should continue to be applied using TR173 – particularly applicable to housed intensive beef fattening units where regular ongoing slaughterhouse surveillance is undertaken

Radial bTB testing no longer applies in the Cheshire Edge Area and was replaced with the six-monthly herd testing policy which has proved very useful in terms of earlier disease disclosure, ability for more effective resourcing and better timing of tests throughout the year

There are two cases undergoing enhanced case management the Cheshire Edge. One is situated in the most heavily infected area of Cheshire. Extra testing measures and biosecurity measures are being planned for these. The other has concurrent disease issues and is currently under investigation.

5.2 Unusual bTB breakdowns

There have been a few explosive breakdowns in 2016 in herds already undergoing six monthly bTB testing, all in the area of concern with known badger infection present.

There have been no further confirmed or suspected cases of zoonotic bTB infection reported to APHA for the Cheshire Edge since the six month report although this information is difficult to access due to patient confidentiality.

In 2016 there were no obvious cases of fraudulent skin test reactors although non-specific skin reactors have been suspected on a couple of farms. Investigations have been undertaken on one premises.

There were no breakdowns involving open farms or producer-retailers/ cheesemakers in 2015

5.3 Other Testing Measures

Discretionary exemptions have been granted to a minority of beef units which have signed TR433 declarations as per the Operations Manual procedures where they have declared that they do not graze cattle, no breeding takes place, all cattle are present for fewer than 12 months and all go direct to slaughter. When a declaration is received, CTS checks are made to verify the declaration.
Tests are still marked forward with a view to review the situation on a regular basis. Some previously exempt beef fatteners have applied for Approved Finishing Unit status.

There are no potential hot spot areas in Cheshire, but there are endemically infected areas where it is hoped further information on the level of wildlife infection can be obtained by means of a further found dead survey following that funded by DEFRA in 2016-17.

Overdue bTB testing levels remain low in Cheshire compared to other areas and this is constantly under review. The imposition of financial penalties via the SFP motivates people to get testing completed within the window with a few exceptions.

5.4 Other Control Measures

Several biosecurity events have been held at Reaseheath College – these were aimed at farmers and Vets.

There are plans for the Cheshire Eradication Board to hold a biosecurity event on farm in 2017 which will be useful to view practical solutions to badger-proofing farms and for reducing the environmental exposure to disease.

OV audits by APHA will continue albeit at a reduced rate from previous years. Intelligence led audits are more likely as XL North and Improve International conduct their own OV testing audits. A dedicated APHA auditing team is planned.

Regular monthly meetings with XL North are held to discuss the delivery of TB testing.

The Cheshire Eradication Board remains active although meetings have been held less frequently than in previous years. Visits to other eradication board meetings have been made by board members to share experiences e.g. North Wales bTB Eradication Board, Cumbria, Cornwall and Derbyshire Eradication Board meetings.

Voluntary risk based trading is practised in the local markets and information displayed regarding the testing area and test status where relevant for stock sold. This has become increasingly prominent for buyers from the LRA with the implementation of post-movement bTB testing.

Regular liaison with the local authorities in Cheshire. More work is intelligence based and more efficient use can be made of reduced resources.

The local authorities are still present in markets. This is a useful forum for gaining intelligence and for improving public relations.

The Animal and Plant Health Agency is an Executive Agency of the Department for Environment, Food and Rural Affairs working to safeguard animal and plant health for the benefit of people, the environment and the economy.