Regional Quarterly Report of Descriptive Bovine TB Epidemiology for the Edge Areas of England

Regional office: APHA England North: Cheshire Edge

Year-end report for 2014

1. Cattle industry in the Edge Area of the Region

Cheshire is included in the North region of the APHA regions and is split into a High Risk Area (HRA) south of Nantwich, extending from Malpas to Betley, and the rest of the county is included in the Edge Area under the current bovine TB Strategy for England (see Figures 4&5). Further north the region includes the counties of Lancashire, Cumbria, Yorkshire and Northumberland, Greater Manchester and Wirral-Merseyside, which are all 4-year TB testing counties of the Low Risk Area. To the east, Cheshire borders Greater Manchester and Derbyshire; to the south, Staffordshire; to the west, North Wales and Shropshire, and to the north, Lancashire and Wirral.

The north of the county is bordered by the large urbanised areas of Liverpool and Manchester, the Manchester Ship Canal and the River Mersey. It is divided into two local authorities, Cheshire East and Cheshire West and Chester.

There are two livestock markets, Beeston Castle Auction and Chelford Market, which joined together under the same management in 2014. A single market site is planned for 2015/16. Currently, both markets are very busy with Beeston specialising in cattle sales and situated in the west of Cheshire, south of Chester and attracting people and livestock from all over the UK and beyond for pedigree dispersal sales. Chelford is in the north east of the county near Knutsford and has weekly sales of calves, weanlings, fat stock and dairy cattle as well as sales of poultry, pigs and sheep. They also hold shows and sales of pedigree livestock. They both attract clients from a wide geographical area including North Wales. Just south-west of Cheshire, in Shropshire, there is another busy livestock market at Market Drayton. Many Cheshire farmers also use this market to buy and sell cattle. Many Cheshire farmers also use Leek market in Staffordshire, a few miles south east of Cheshire.

Cheshire also has several cattle abattoirs: Beesons at Haslington, near Crewe and close to the M6, is contracted by APHA and Defra to slaughter TB reactors. Hewitts of Huxley, near Tarporely and Jacksons near Knutsford both kill a variety of species including cattle.

Cheshire is predominantly a dairy farming county with many pedigree Holstein Friesian herds although there are also a large number of beef suckler and beef fattening herds. In recent years, dairy herds have increased in size and the New Zealand style farming system has become more common across Cheshire. Share farming has also increased in popularity and increased the fragmentation of herds with dispersal of cattle all over the county and beyond into the High Risk Areas of the neighbouring counties of Staffordshire, Shropshire and North Wales. The use of robotic milking facilities has increased the amount of zero grazing practised in a few large dairy herds across the county.

The more traditional dairy herds are grazed in summer and housed over the winter. Batch spring calving is increasing in popularity for relative ease of management over winter with the New Zealand systems.

Most farms make grass silage and over the years, to support higher milk yields, maize has become a very popular feed in Total Mixed Rations (TMR) which is fed all year round on many dairy farms. TMR is mixed on farm using straights stored in bulk and fed generally in feed passages both inside and on the outside of buildings.

Grazing practices vary between: strip grazing, set-stocking and paddock grazing.
Most dairy cattle, with the exception of the New Zealand systems, will be housed over winter in cubicle sheds with feed passages both inside or on the outside of the sheds.

Artificial insemination is utilised in many dairy herds with very few relying on natural service. Most farmers purchase bulls and replace them every 2-3 years. Many farmers breed their own replacement heifers although there are a few which are classed as flying and buy all replacements which may be sourced from anywhere in the UK. Many replacements heifers have also been sourced from mainland Europe in recent years. There appears to have been more of a shift towards risk based trading and sourcing replacements more carefully for many farmers. Initially they may like to be classed as closed herds but in reality they may buy a few replacements or import some in calf heifers as replacements.

Truly closed herds are relatively uncommon now as many use multiple sites for management purposes as their herds have increased in size. They may also use heifer rearers where the heifers leave the main farm as calves and return at the point of calving. Some of these are dedicated rearers for one source and others rear for several farmers. Others maintain a single site but may occasionally purchase bulls or replacement heifers to vary the bloodlines.

The majority of dairy herds practise vaccination for BVD, IBR and leptospirosis and many monitor for Johnes disease and use parasite control regimes. Many of the dairy farms have routine veterinary visits 2-4 times per month depending on their size.

There are a relatively large number of beef suckler herds varying in size. These are distributed throughout Cheshire. There is also a moderate number of beef fattening units which tend to house the cattle all year round with dynamic populations of cattle and with most moving stock direct to slaughter on a weekly basis providing a good level of slaughterhouse surveillance for TB.

The beef suckler herds are generally grazed in summer and occasionally out wintered or loose housed. Intensive finishing units will keep cattle continuously housed from purchase and are usually fed a cereal based diet often including maize until slaughter.

In the Cheshire Edge, there are three non-grazing AFUs operating in west Cheshire: two of them are situated very close to the HRA of Cheshire and the North Wales border; the other is situated in the far north of Cheshire near Warrington in an urban area.

Common land in the County or Counties: There are no areas of common grazing in Cheshire.

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

<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>646</td>
<td>216</td>
<td>260</td>
<td>231</td>
<td>100</td>
<td>92</td>
<td>1552</td>
<td>153</td>
<td>73</td>
</tr>
</tbody>
</table>

**Cattle breed purpose:**

<table>
<thead>
<tr>
<th>Number of cattle</th>
<th>Beef</th>
<th>Dairy</th>
<th>Dual purpose</th>
<th>Unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>56366 (23.7%)</td>
<td>172312 (72.3%)</td>
<td>9477 (4%)</td>
<td>65 (0%)</td>
<td>238220</td>
</tr>
</tbody>
</table>

TR398 (Rev. 03/15)
Some of the cattle density and premises data includes the High Risk Area of Cheshire.

**Density of cattle and cattle premises at January 2015.**

![Map - Cattle per square km](image1)

![Map - Number of premises per 100 square km](image2)

**Figures 2 & 3: Cattle density distribution 2014 (left) and premises density distribution maps for Cheshire 2014 (right).**

The maps above illustrate the cattle and premises density in Cheshire including the High Risk Area in the south of Cheshire. The data shows that there are fewer cattle and premises in the far north of Cheshire but both densities increase southerly and easterly. To the east of Cheshire there are more cattle holdings, probably smaller than in the rest of Cheshire.

2. **Geographical distribution of bovine TB breakdowns (new and ongoing) in the Edge Area of the Region**
Figure 4: Cheshire Edge - new introduced OTFW breakdowns and OTFS breakdowns detected in 2014. The map also shows pre-existing breakdowns that lasted into 2014.
Figure 5: Cheshire Edge - OTFW breakdowns in 2014 other than introduced, including locations of potentially positive badgers submitted as part of the University of Liverpool badger RTA survey.
In 2014, there have been 137 new TB breakdowns in the Cheshire Edge Area. In addition there were 26 cases ongoing from the previous year in the Edge. Of the new breakdowns, 90 were classed as OTFW and 47 OTFS2. There were five persistent breakdowns in the Edge which have been carried over from the previous year and which were still under TB restrictions at the end of 2014.

There is a high density of OTFW cases (over two-thirds) in the east quarter of the Edge extending from just south of Congleton to Morley and Adlington in the north and from Holmes Chapel in the west to the Staffordshire border in the east in an area of approximately 368 km$^2$. East Cheshire borders with the Staffordshire Moorlands in the HRA where bovine TB infection has been established for many years. There are no significant geographical barriers in this area. Interestingly, but not surprisingly, the highest density of cattle breakdowns corresponds with the highest cattle and premises densities in the county (figures 2 & 3).

Figure 4 shows the OTFW cases in the Cheshire Edge which have been attributed to introduced infection through purchased animals disclosed mainly as traced cattle from other breakdowns or of non-endemic genotypes to the area. It also shows the pre-2014 OTFW breakdowns which are concentrated mainly to the east of the county and also shows the OTFS2 breakdowns which have occurred in Cheshire during 2014.

At the end of December 2014, there were 5 ongoing pre-2014 OTFW breakdowns still undergoing breakdown testing in the Cheshire Edge. Interestingly, these are also concentrated towards the east of the Edge and mainly concentrated in the Congleton to Macclesfield areas, almost forming a “front” of disease. Disease has been confirmed in these areas since the mid-2000s and genotype 25a is commonly isolated from breakdowns in this area of Cheshire which corresponds to findings across the border in Staffordshire. The isolated breakdown towards northwest Cheshire has been under restrictions for over 12 years and relocated his herd from the Leek area in 2002 seemingly bringing infection with the herd. To date, there appears to have been no spread around this herd but the cattle density is much lower in this area and further north there is a large area of industrialisation and part of the motorway network linking North Wales to Manchester. There has been no evidence of active disease and lesions in this herd for some time and additional measures are being investigated under the persistent herd TB breakdown management project.

Figure 5 shows all other OTFW breakdowns which cannot be attributed to purchase or secondary to a primary breakdown. The map also shows the distribution of potentially positive badgers found on the RTA survey. The distribution mirrors the cattle OTFW breakdown distribution mainly. However, there is concern about a couple of badgers found in central Cheshire where there is currently little cattle disease evident. These badgers have yet to be spoligotyped and further conclusions will be made in the next report when all the analysis has been completed.

3. Summary of the Edge Area Regional Headline Cattle TB Statistics

During the reporting period, 102 badgers found dead had been submitted to the University of Liverpool for post-mortem and culture$^1$. This study has been undertaken as a pilot to obtain information about the status of wildlife in Cheshire (see section 7). Eighteen badgers were positive for $M$. bovis in laboratory culture. Of those, the four most easterly and northerly badgers in the Edge correspond with the areas most densely populated with cattle and cattle premises. The two most northerly badgers (at Morley and Adlington) have been submitted from areas which are relatively new areas for bovine TB in Cheshire and are close to the LRA of Greater Manchester and Stockport. Spoligotyping has been done in only six badger isolates so far and they are all spoligotype 25, which is consistent with the spoligotype seen in the cattle herds in these areas. If the rest of the $M$. bovis-positive badgers are of the same spoligotype or genotype as the local cattle breakdowns, this will be of great concern regarding the threat of introduction of infection into the LRA at these locations as there are no physical or geographical barriers to prevent this. The genotyping data is still outstanding at the time of writing this report.

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$^1$ Culture method – Lowestein-Jensen with pyruvate media & Stonebrink media (both solid slopes) for 12 weeks.
Prior to 2001, there were very few cases of bovine TB in Cheshire. In 2002, there was a dramatic seven-fold increase in the number of cases (29 cases recorded vs 4 cases in 2000) probably due to the fact that no testing took place during the FMD outbreak in 2001. In the past 20 years in Cheshire, the number of cases has increased by over 1760% (from 10 cases in 1994 to 176 cases in the whole of Cheshire in 2014). In 2013, there were 143 new breakdowns recorded for the whole of Cheshire and the average increase in cases each year was 29% compared to previous years (range 7-43%). There were only three exceptions where the number of cases actually decreased between 2004-5, 2006-7 and 2010-11 by an average of 11% (range 7-20%). In previous years, the ratio of OTFS to OTFW cases has been greater with the exception of 2011 (52 OTFW vs. 39 OTFS). In 2007, there was another FMD outbreak, which might explain the slight decrease in cases overall as the TB testing decreased that year due to restrictions on cattle and the risks of spreading FMD virus. During the period for this report, the ratio of OTFW to OTFS has reversed and we have seen a large increase in OTFW cases to almost double that of OTFS cases in the Edge (90 OTFW: 46 OTFS2) for the whole year. This implies that TB is becoming more established both in the cattle population and possibly the wildlife. Some of the OTFW breakdowns have had previous unconfirmed incidents and this appears to be a common pattern in Cheshire indicating initial exposure with establishment of disease at a later date.

In recent years, the testing frequency has increased in Cheshire from large areas of 4 yearly testing to the whole county being placed on 12 monthly testing in 2013 (plus radial testing in the Edge Area in 2014) and this may account for the sharp increase in the number of cases as herds are being tested more frequently in totality. However, endemic infection should also be considered in some areas with continuous lateral spread over time.

The distribution of new breakdowns in the Edge appears to be sporadic in some areas with previously “clean” areas becoming affected (more northerly and westerly). There are several possible explanations although the exact reasons remain obscure at the time of this report due to the genotyping data being incomplete. Even with the genotyping data, there may be no clear conclusions as to the exact source of some bTB breakdowns, especially in herds with previous incidents and with locally purchased stock in the interim.

Genotypes
The most commonly isolated genotype in Cheshire cattle breakdowns in 2014 was 25:a, but genotype 17:a has been isolated towards the west of the county and, more recently, there have been cases of 35:a near the Welsh border in the south west area of the Cheshire Edge. Of the 90 OTFW Edge breakdowns in the reporting period, 61 breakdowns were genotype 25:a with a further 12 breakdowns which are still pending genotyping at the time of writing this report. There were also 11 breakdowns attributed to genotype 17:a, five of which were caused by infected cattle purchased from the same source (a partial herd dispersal from a dairy farm in Cumbria). An additional farm also purchased cattle from this sale but unfortunately, as the breakdown was already confirmed, samples were not submitted from the traced cattle. The pre-existing genotype on this farm in the east of Cheshire was 25:a. Of the five purchased cattle, one had lesions typical of TB. The herd subsequently passed two clear tests.
There was one breakdown with genotype 35:a, which was in the same area, although not contiguous to, a persistent breakdown with the same genotype; genotype 22:a was identified in another breakdown which has associated premises in Herefordshire and also purchases cattle. There were two spoligotype 9 cases, one of which was of Irish origin.

Genotype 25:a is commonly isolated in the east of the county and its range has extended north towards Greater Manchester in the past two years which is of great concern. North of Congleton, we have seen a resurgence of type 25:a in the past 18 months in the Bosley area which borders Staffordshire. In some cases, we have not seen recurrence of disease in these areas since the mid 2000 years and over the past year we have seen recurrence of disease with the same genotype as previously found which may indicate some endemic infection has emerged as these herds tend to be much smaller in size and do not have a high throughput of cattle. Recrudescence is also possible, but after several years of annual testing in these areas, it is less likely to be the case and more likely to be an extraneous source.

Persistent breakdowns
During the reporting period, six premises were identified as persistent breakdowns in Cheshire, three of which are situated in the Edge and three in the HRA. Enhanced management was undertaken in these persistent breakdowns and three cases resolved during the reporting period. Two of the breakdowns have voluntarily vaccinated the badgers on farm with 2014 being the second year of vaccination. One of the farms regained OTF status this year, but has recently received notification of a slaughterhouse case of suspected TB which could be undisclosed latent TB. This farm is in the HRA of Cheshire. The other situated in the Edge continued with skin testing but no lesions had been detected in reactors for the past 12 months. This farm regained OTF status just before the end of the reporting period. The two remaining farms have both submitted badgers which are provisionally *M. bovis* positive. One of the badgers had lesions typical of TB at post-mortem examination. Both of these farms are in the HRA of Cheshire and one regained OTF status during the reporting period.

At the end of 2014, there were five persistent breakdowns, three of which were carried over from 2013 and two more Edge breakdowns were identified as persistent. One is situated in the HRA.

Herd activity
Of the 90 2014 OTFW breakdowns in the Edge, 45 herds are classed as closed herds and 45 as buying in regularly. There are very few flying herds compared to herds which only purchase bulls occasionally or have only purchased a few cattle in recent years and likewise, many are loosely classed as closed as they may operate split sites, use heifer rearers or buy in the occasional bull for breeding. Many have bought in but not for several years and have been regularly TB tested in the interim. Many of the dairy units breed their own replacements as far as possible but some have expanded in recent years and bought in replacements either from lower risk areas or as imports.

Recurrence
49 of the Edge TB breakdowns have had previous TB breakdowns on farm, some of which are the same genotype as before implying recrudescence or a common source. Thirty of them have had confirmed TB in the past 3 years. The remainder of the OTFW cases (41) have never had a TB breakdown before. The suspected recurrent OTFW breakdowns cannot be attributed clearly to purchases, wildlife, contiguity or recrudescence as the genotype is the same as other local breakdowns and for previous breakdown episodes. Very few farmers report contiguous contact with other cattle and many now use double fencing or have crop breaks separating neighbouring herds and so, the source of disease remains obscure in many cases.

Beef fatteners
Fourteen OTFW cases were classed as beef fatteners herds – two of these were EFUs and voluntarily depopulated without further incidence of TB being reported. The majority of OTFW cases were classed as dairy herds (57) and there were 15 beef suckler herds and 4 heifer rearers.

Disclosing tests
Radial testing led to the disclosure of the highest number of breakdowns in the Cheshire Edge, followed by whole herd annual testing and slaughterhouse surveillance. Inconclusive reactors were found in 15 of these herd tests and either became two times IRs or reactors at the retest.

<table>
<thead>
<tr>
<th>Disclosing test</th>
<th>Number of OTFW breakdowns</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAD6</td>
<td>21</td>
</tr>
<tr>
<td>RAD</td>
<td>19</td>
</tr>
<tr>
<td>WHT</td>
<td>17</td>
</tr>
<tr>
<td>SLH CASE</td>
<td>11</td>
</tr>
<tr>
<td>PRMT</td>
<td>6</td>
</tr>
<tr>
<td>TRACE</td>
<td>6</td>
</tr>
<tr>
<td>6M</td>
<td>5</td>
</tr>
</tbody>
</table>

TR398 (Rev. 03/15)
Radial testing
Radial testing was implemented in the Cheshire Edge from 1\textsuperscript{st} January 2014, and this was successful in identifying 69 new breakdowns (40 OTFW and 29 OTFS). A proportion of these would have been due WHTs, which were changed to RAD tests as they were identified in radial zones in order to undergo the radial testing regime. Approximately 48% of the breakdowns were disclosed earlier due to radial testing (of these, 41% were OTFW).

Radial testing in the Edge was the most common reason for disclosure of a new breakdown in 2014. Out of a total of 336 parishes in Cheshire, 203 (~60%) were affected by radial testing. There were approximately 3280 individual herd investigations as a result of radial testing, including overlapping areas. 1446 premises were in more than one radial zone and one was in 11 radial zones. Approximately 280 premises were identified as HRA premises so were not included in testing. In total 52 radial zones were implemented and, of the remainder, 6 were exempted due to purchased reactors and 32 were not implemented due to resource issues.

<table>
<thead>
<tr>
<th>Herd-level statistics</th>
<th>CHESHIRE EDGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Total number of cattle herds live on Sam at the end of the reporting period</td>
<td>1447</td>
</tr>
<tr>
<td>(b) Total number of herd tests carried out in the period</td>
<td>2833</td>
</tr>
<tr>
<td>(c) Total number of OTF cattle herds TB tested during the period for any reason</td>
<td>1468</td>
</tr>
<tr>
<td>(d) Total number of OTF cattle herds at the end of the report period (i.e. herds not under any type of TB02 restrictions)</td>
<td>1362</td>
</tr>
<tr>
<td>(e) Total number of cattle herds that were not under restrictions due to an ongoing TB breakdown at the end of the report period</td>
<td>1392</td>
</tr>
<tr>
<td>(f) Total number of new TB breakdowns detected in cattle herds during the report period:</td>
<td></td>
</tr>
<tr>
<td>• OTF status suspended (OTFS)</td>
<td>46</td>
</tr>
<tr>
<td>• OTF status withdrawn (OTFW)</td>
<td>90</td>
</tr>
<tr>
<td>(g) Of the new OTFW herd breakdowns how many:</td>
<td></td>
</tr>
<tr>
<td>• occurred in a holding affected by another OTFW breakdown in the previous three years?</td>
<td>30</td>
</tr>
<tr>
<td>• could be considered secondary to a primary breakdown based on current evidence?</td>
<td>7</td>
</tr>
<tr>
<td>• were triggered by skin test reactors or 2xIRs at routine herd tests</td>
<td>23</td>
</tr>
<tr>
<td>• new OTFW breakdowns triggered by skin test reactors or 2xIRs at other TB test types (forward and back-tracings, contiguous, check tests, etc.)</td>
<td>56</td>
</tr>
<tr>
<td>• were first detected through routine slaughterhouse TB surveillance</td>
<td>11</td>
</tr>
<tr>
<td>(h) Number of new breakdowns revealed by enhanced TB surveillance (radial testing) conducted around those OTFW herds (Derbyshire and Cheshire):</td>
<td></td>
</tr>
<tr>
<td>• OTFS</td>
<td>29</td>
</tr>
<tr>
<td>• OTFW</td>
<td>40</td>
</tr>
<tr>
<td>(i) Number of OTFW herds still open at the end of the period (including any ongoing OTFW breakdowns that began in a previous quarter)</td>
<td>58</td>
</tr>
<tr>
<td>(j) New confirmed (positive M. bovis culture) incidents in non-bovine species detected during the report period (indicate host species involved)</td>
<td>18*</td>
</tr>
</tbody>
</table>

*Includes 14 infected badger carcases collected as part of the Cheshire road traffic accident survey
Animal-level statistics (cattle) | CHESHIRE EDGE
---|---
(a) Total number of cattle tested in the period (animal tests) | 342975
(b) Reactors detected: | 1342
   - tuberculin skin test | 838
   - additional IFN-gamma blood test reactors (skin-test negative or IR animals) | 504
(c) Reactors per breakdown | 9.87
(d) Reactors per 1000 animal tests | 3.91
(e) Additional animals identified for slaughter for TB control reasons (DCs, including any first-time IRs) | 94
(f) SLH cases (tuberculous carcasses) reported by FSA | 22
(g) SLH cases confirmed by culture of M. bovis | 17 (all Cheshire)

4. 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>Provisional</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction (e.g. purchase) of infected animal(s)</td>
<td>18</td>
<td>11</td>
</tr>
<tr>
<td>Local - lateral spread from neighbouring holdings:</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>- exposure to infected wildlife</td>
<td>58</td>
<td>28</td>
</tr>
<tr>
<td>- other farmed species</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>- recrudescence of residual infection from a previous TB breakdown</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>- infected human source</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Undetermined/obscure</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Other (explain)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Many of the provisional origins have been described as obscure, and even though wildlife is strongly implicated by both the farmer and case vet, there is a lack of evidence of infection in wildlife on farm to date. Some of these cases have had TB breakdowns before, so recrudescence is also possible. However, the same genotype as other farms in the locality also implicates possible wildlife infection as there is rarely contiguous cattle contact reported and very few movements between TB restricted holdings locally. Therefore, the exact source is very difficult to cite in many cases due to incomplete datasets, pending genotype data and investigations of local factors and wildlife.
<table>
<thead>
<tr>
<th>Probability of introduced <em>M. bovis</em> infection</th>
<th>Probability of isolated, sporadic (‘one-off’) breakdown, without secondary local spread</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Likely (no secondary breakdowns detected)</td>
</tr>
<tr>
<td>Definite</td>
<td>10</td>
</tr>
<tr>
<td>Likely</td>
<td>1</td>
</tr>
<tr>
<td>Possible</td>
<td>1</td>
</tr>
<tr>
<td>Not likely (indigenous infection in the locality)</td>
<td>4</td>
</tr>
</tbody>
</table>

Again, this table is difficult to complete accurately due to lack of information on local wildlife and when the available genotypes are almost all the same type. As stated previously, farmers are more conscious of preventing nose-nose contact with other cattle currently than in the past. Unless the herds are truly closed, with single sites and no purchases, it is difficult to say whether there has been lateral spread with such an insidious disease. Only two OTFW breakdowns in the Edge were disclosed at contiguous tests.

5. Overview of the bTB control programme in the Edge Area and assessment of its effectiveness

5.1 Edge Testing Policy

**Gamma interferon testing**

Gamma interferon testing has been used to supplement the skin test as per the Edge policy in all OTFW breakdowns since 1st January 2014. It has also been used on a discretionary basis in other cases in both the Edge and HRA. This has been very useful tool for identifying reactors which were not disclosed by skin testing. Of the 90 OTFW breakdowns identified in the Edge since 1st January 2014, 56 have resolved and we are of the opinion that gamma interferon testing has allowed these breakdowns an earlier resolution. The average time under TB restrictions for 49 resolved OTFW cases which underwent gamma interferon testing was 5.6 months. A comparative study with the previous year’s data would be useful. However, it would be difficult to compare non-identical holdings and a longitudinal study of the same farms will prove more valuable.

Temporary technical staff were taken on to help with interferon gamma testing and during 2014 approximately 22,000 blood samples were taken. Issues with lab capacity have delayed sampling at busy times during the year.

There have been a few exemptions from gamma interferon testing and these have been in cases where the disclosing reactor was clearly purchased recently or where the farmer has agreed to undertake depopulation of the affected group as is the case with breakdowns in Pre-movement Exempt Finishing Units (EFU) or specific epidemiological separate groups of cattle. Similarly, there have been a couple of refusals to allow gamma interferon testing but in one specific case, this was due to confirmation on culture and mandatory skin testing had already been undertaken. Another case was where the purchased animal had only been on farm for 2 weeks and the farmer did not feel that he could stand the financial loss of more cattle. These types of cases are regularly reviewed by local APHA staff but all cases which have refused gamma interferon testing have regained OTF status within the time frame for this report. It is also postulated that recently purchased cattle will present a lower risk of lateral spread within the herd but this is obviously dependent on many other factors.

In the case of one of the Cumbrian dispersal tracings, the traced animal passed a skin test but failed the gamma interferon test. At slaughter, lesions were detected. This illustrates the value of gamma interferon testing.

Gamma interferon testing has also been used in several more persistent breakdowns pre-dating 1st January 2014 and this has also shown encouraging results despite the loss of large numbers of cattle in a few cases. Farmers in OTFS breakdowns in the Edge have also requested gamma interferon testing in their herds as an attempt to identify undisclosed disease in the herd. Farmer attitude to gamma interferon testing has changed over the years in Cheshire to a more proactive approach and the test is generally seen as a useful tool in identifying disease and reducing the number of reactors at subsequent skin tests. It will be useful to monitor the use of this test in the long term and its role in reducing the likelihood of recrudescence in herds.
OTFS TB testing

The policy of more severe skin testing of OTFS breakdown herds has been generally accepted in the Cheshire Edge. Industry appears to recognise the importance of thorough testing before OTF status is regained and it appears to be accepted that this has to be done to reduce the chances of lateral spread of disease.

This has also increased the removal of inconclusive reactors as severe reactors and this is more acceptable to all especially as we appear to be seeing a change in the pathogenicity of IRs in Cheshire. Some farmers with existing breakdowns have voluntarily slaughtered IRs and TB lesions have been detected at post-mortem examination. This type of proactive approach is actively encouraged in Cheshire by APHA staff.

Radial testing

Radial testing has been generally accepted as necessary by the majority of farmers in the Edge. There have been few exemptions made, mainly for fattening units which regularly send cattle to slaughter and have ongoing slaughterhouse surveillance. These units house the cattle and tend to keep cattle for a few weeks before finishing. It is thought that exempting these types of unit is low risk as slaughterhouse surveillance will alert the local office to any issues arising. Radial testing exemptions have also been made for herds with recently purchased cattle which were disclosed as skin reactors after careful consideration.

Issues have arisen where radial zones overlapped and one premises was included in 11 radial zones. Extrapolating data as to which breakdowns result from particular radials is impossible in some parts, particularly the east, of the Cheshire Edge. Radial TB testing is labour intensive both in terms of OV resource and APHA resource in implementing the radials in an area with a relatively high incidence of TB. This sort of operational difficulties led to annual whole-herd testing and radial testing being replaced with 6-monthly herd testing in the Edge of Cheshire from January 2015.

5.2 Unusual bTB breakdowns

Fortunately this year, there do not appear to have been many “explosive” breakdowns where large numbers of reactors have been disclosed initially. This is most likely due to the fact that the whole of Cheshire has been on annual testing since January 2013 and many herds have also had to undergo statutory pre-movement TB testing since the policy was introduced in 2006. Therefore, it is presumed that disease has less time to propagate in herds in Cheshire now compared to several years ago. However, there have been sporadic cases where large numbers of reactors have been disclosed at subsequent short interval testing (SIT) after relatively few initial reactors. An example of this is a herd in an area west of Macclesfield. One homebred reactor was disclosed at the initial whole herd test in October 2013. The herd had never had a TB breakdown before. The second SIT revealed 18 skin reactors, of which 13 had TB lesions detected at post-mortem examination and 8 of these were described as calcified lesions. All of these were 2012-born heifers which had been grazed on a single piece of land at Siddington the previous summer. This land had a waterhole from which the heifers drank and it has been postulated by the farmer that local wildlife may have contaminated the water as there is no other contiguous stock allowing nose-nose contact. The genotype identified is of the same type as other local breakdowns and it is in an area where there have been a many recurrent breakdowns. The farmer also operates more than one site within Cheshire so again, it is difficult to definitively attribute the exact reason for this breakdown. Proactively, the farmer requested a gamma interferon test on the rest of the group of heifers and further infection was identified in 2 out of 3 reactors. Unfortunately, disease appears to have now spread within the herd as a subsequent SIT in June revealed further infected skin reactors in the cows. The farmer has identified that the water in the waterhole originates from a natural spring which also supplies several other farms in the area and all of which have either had or are experiencing OTFW breakdowns with the same genotype. There is abundant wildlife in this area although the TB status is unknown as no badgers have yet been submitted for post-mortem examination to the University of Liverpool.

Further investigations continue.

Another case of concern was disclosed in the North West area of Cheshire where 30 skin reactors were disclosed in September in a herd which had not had a previous breakdown. This was an award-winning 150 head pedigree shorthorn dairy herd which uses AI for breeding and which had only purchased a handful of cattle in 10 years. Over 50% of the skin reactors had lesions and all were described as calcified. The herd had passed a clear whole herd test 9 months prior to disclosure and there had been no movements on in that time. The herd is kept on a single site. Continguous testing and radial testing has not revealed further disease and a subsequent gamma interferon test on the breakdown herd revealed a further 10 positives, 6 of which had lesions. The first SIT has revealed a further 4 skin reactors and two were reported with lesions. Spread tracings have led to further breakdowns. The reason for this breakdown remains obscure and the genotype was identified as 17:a which is not common in this part of Cheshire. A large amount of sub soilting was undertaken on farm during July and August by a waste disposal company and investigations are ongoing.

In the Cumbrian herd dispersal tracings accounting for six OTFW cases in Cheshire (five in the Edge), three of the Cheshire reactors in the Edge had TB lesions in the prescapular lymph nodes. Two of these only had pre-scapular
lesions. It would be interesting to compare the pathology from the other traced reactors as it is felt that this is an unusual site to find single lesions and may explain why the disease was undetected for some time at the farm of origin. Genotype 17:a was isolated from five of these breakdowns with no extra genotyping being performed on a further pre-existing breakdown which has also purchased these dispersed cattle.

It is unknown locally whether zoonotic infection has definitely occurred although it has been suspected on several occasions. Consumption of unpasteurised milk is still widely practised on Cheshire dairy farms. In 2009, a local farmer was skin tested after the herd experienced a large TB breakdown and the person underwent treatment for TB over a nine month period. The herd is sustaining a persistent TB breakdown and a close family member experienced symptoms compatible with TB, which were reported to Public Health England and the person was subsequently treated for TB. It is suspected that some cattle in the herd may be anergic to the skin test as infected cattle were still being revealed until recently despite regular skin testing. This herd is situated in the Edge close to Congleton where potentially positive badgers have been found. Last year, further breakdowns were disclosed in the same area with the same genotype and although there is no contiguous cattle contact possible, there is a large population of badgers in the area which also contains a large sand quarry. The herd is part of the enhanced management of persistent herds project and it is hoped that additional testing can be undertaken to identify undisclosed infected cattle.

Fraudulent reactors
There have been no suspected cases of fraudulent skin test reactors in Cheshire – most farmers are of the opinion that they do not want to risk propagating TB in their herds as it is costly to manage.

Other interesting cases
Last year there was an interesting case of suspected tuberculous milk being fed to calves. The calves had been sold onto several premises and found to be skin reactors at subsequent pre-movement testing. Back tracing to the farm of origin revealed a cow with tuberculous lesions in the udder and her milk had been used to feed to the calves before sale. This incident resulted in several confirmed breakdowns.

Johnes disease also appears to be highly prevalent in herds and most farms have an active surveillance regime in place for detecting infected cattle as part of their herd health planning. The practice of feeding bull calves pooled milk is still widely used. Many private vets advocate feeding heifer replacements milk replacer and bull calves pooled milk. Locally, farmers are being encouraged in the wider use of milk replacer for all calves or using pasteurisation of pooled milk.

There have been no TB breakdowns on open farms or producer retailers in the Edge this year to date.

5.3 Other Testing Measures
Discretionary exemptions for beef fatteners
Some exemptions for TB testing have been given to beef fatteners in the Edge. The criteria are quite strict and are as stated in the APHA Ops Manual: no breeding of cattle; direct movement to slaughter; housed cattle; ongoing slaughterhouse surveillance. TB tests are still marked forward to ensure reviews are done and activities are verified with CTS checks.

Badger RTA survey
In 2014, the University of Liverpool undertook a pilot project to examine badgers submitted for post-mortem after being found dead on roads or farms, usually as a result of road traffic accidents. To date 18 potentially M bovis culture positive badgers have been found in Cheshire out of 102 submissions and these are awaiting genotyping to confirm presence of M bovis. Six have been spoligotyped as type 25 which is consistent with local cattle breakdown spoligotypes. 14 potentially positive badgers have been found in the Edge. Contiguous and radial TB testing has not been undertaken around the potentially positive badgers due to long delays in identifying genotypes of the potentially positive badgers and ensuring that bovine TB is present. In any case, many of the potentially positive badgers were found in areas of intense radial TB testing. A further mitigation will be the implementation of six monthly TB testing in the Cheshire Edge from 1st January 2015 which will replace radial TB testing.

Zero tolerance policy on overdue TB testing
The monitoring regime and actions following overdue skin testing have significantly reduced the number of overdue tests in Cheshire compared to previous years. It is thought that the financial penalties imposed by overdue TB testing and the zero tolerance policy are actively discouraging farmers to deliberately delay skin testing. Due to the radial testing and increased skin testing in the Edge area of Cheshire, OV resourcing is being stretched but many practices are addressing this by employing more staff to undertake TB testing or extending the testing week to include weekends. The reduction in compensation for overdue TB testing is also a disincentive and appears to be working well in Cheshire.
5.4 Other Control Measures

Biosecurity training
Cheshire AHVLA staff have undertaken further local training on wildlife ecology and biosecurity measures this year. This is to ensure that we deliver a consistent message at farm visits and are able to identify any major biosecurity risks on farm. Further training has been undertaken after cross border liaison with our Welsh colleagues. Several field staff attended a biosecurity event on farm organised by the North Wales field staff and this was very useful. We plan to attend further events when available and would like to develop a local event for Cheshire farmers to attend.

OV audits
OV audits are being undertaken on an ongoing programme of unannounced audit visits. To date, no major areas of non-compliance have been identified and the OVs accept that this is being done for quality assurance. We have noticed a change in farmer attitude in Cheshire in recent years and farmers are now much more aware of the standards and importance of correct TB skin testing. Minor non-compliances are found and these are usually corrected at the time of disclosure. More serious non-compliances are dealt with on an individual basis but it is felt that the general standard of TB testing has improved in recent times as a result of the audits and national publicity over cases dealt with by the RCVS.

Cheshire TB Eradication Board
The Cheshire TB Eradication Board was set up initially by AHVLA and the NFU in the autumn of 2012 and was one of the first in the country to do so. The group has grown in membership and includes NFU, farmers, vets, local authorities, wildlife trusts and groups, auctioneers, APHA (formerly AHVLA) staff, Farm Crisis Network, University of Liverpool staff and CLA. Farmers are actively encouraged to attend and to contribute and the chairman is a Cheshire farmer and also an NFU member. The CVO and TB policy members have also attended some meetings. The group has grown in size and meets every two months at various venues. Local TB information is shared and many discussions take place. Invited speakers attend and have given talks on badger vaccination and the results of the cull pilots, risk based trading and new policies amongst many other topics. The Cheshire group actively encouraged the University of Liverpool to undertake the badger post-mortem study as it was felt that this data was vital. The Cheshire markets were amongst the first to instigate risk based trading measures to the sale rings by displaying TB testing information on cattle being sold. The NFU have helped with press releases for the group to send out key messages. It is widely felt that this is a very useful forum for information exchange to inform local stakeholders of the situation in Cheshire and to disseminate key messages and to raise issues with policy colleagues.

Other farmer events
An evening meeting was organised at Chelford for the wider cattle farming community in the Cheshire Edge to try to encourage more farmers to attend a TB meeting. A panel of speakers gave talks on badger vaccination, the TB situation in Cheshire, changes to TB policy and farmer experiences of a TB breakdown. The meeting was attended by approximately 200 Cheshire farmers. It is hoped that further meetings can be arranged when necessary to exchange key messages and information on policy and to obtain valuable feedback on local issues.

Enforcement & partner liaison
The local authorities in Cheshire are very active in enforcing TB legislation. Last year, a local Cheshire dealer was found guilty of multiple TB offences and handed a 12 month prison sentence suspended for 2 years plus court costs of £8000. The dealer has been successfully prosecuted previously for TB offences. This dealer was recently imprisoned for further TB and cattle movement offences. Active monitoring of market activities including movement recording and disinfection between gatherings and slaughter gatherings is continuously taking place in both east and west authorities. There is also good liaison with neighbouring authorities in other counties. Public Health England is also regularly informed and consulted about TB cases and non-bovine reports.

5.5 Risks, Issues and Recommendations

Resource - The amount of radial testing in the county increased the strain on local resources both within the APHA and in local OV resources. To date, one temporary staff member has been employed in Cheshire from the Veterinary Reserve Personnel contract based on temporary contracts and in 2014, six temporary veterinary staff worked in Cheshire during the 12 month period, some of whom required training which delayed the effect of having extra staff. A recommendation would be to employ permanent staff in Cheshire in order to maintain the continuity in case management and to enable staff to undertake more thorough investigations and epidemiological analyses. Local practices have employed more TB testing staff but this is dependent on having a steady work flow. The Veterinary Delivery Partnership will commence in spring 2015.

Biosecurity initiatives – on farm demonstrations are useful to show realistic, practical measures which can be used to reduce contact with wildlife and maintain or improve hygiene standards on farm. Stakeholder meetings such as the eradication board meetings are extremely valuable in relaying this information and they should be actively encouraged throughout the UK.
Liaison – A recommendation for more joined up working with neighbouring regions and shared data made available. This is difficult to arrange with resource issues.

Gamma interferon testing - In Cheshire, rapid gamma testing of IRs has been frequently requested by farmers as an alternative to 60-day re-testing of those animals with the skin test. We would like to continue being able to utilise this option in Cheshire. It is also proving to be very valuable in TB breakdowns especially when used early in the breakdown. Issues include lab capacity at busy times. A recommendation would be to enable more flexibility in capacity as some sampling was delayed until the second SIT due to lab capacity issues.

Risks to the LRA – As outlined in previous sections, there is great concern that disease is progressing towards the LRA in the Greater Manchester/ Stockport area. APHA, Defra and TBEAG reviewed the bTB situation in this area at the end of 2014 and it was agreed to carry out a one-off TB check test of all cattle herds at risk early in 2015 before summer turnout, to enable early identification of any infected herds. This part of Greater Manchester will be closely monitored in 2015.

Wildlife monitoring – it is essential to monitor for infected wildlife if the spread of infection is to be reduced. More resource is required to invest in providing better biosecurity advice for the farming community to ensure that herds are more thoroughly protected.

Increase the controls and consultation with local APHA staff regarding rehabilitation of badgers and release sites and encourage testing and vaccination of rehabilitated wildlife.

Badger Vaccination initiatives – it is important to maintain support for badger vaccination initiatives in the Edge and to actively encourage good quality research in order to provide farmers with scientific evidence of its efficacy in the longer term. Continue to support the Badger Edge Vaccination Scheme and liaison with stakeholders.

Other wildlife control measures – due to the logistical difficulties of vaccination alone, other wildlife control measures should be explored as there is now strong evidence of likely wildlife infection in Cheshire.

Review of the edge area to the east – a regular review of the TB situation in the Edge in east Cheshire bordering Staffordshire. However, it would be important to maintain the ability to utilise the gamma interferon test and to identify disease as early as possible.

Review of radial testing – if radial testing is to be reviewed, consideration could be given to placing Cheshire on 6 monthly TB testing subject to cost-benefit analysis. This was the recommendation in my previous report and this is being implemented from 1st January 2015. A recommendation to continue with more frequent TB testing past 2015 rather than revert to annual TB testing would be advisable or to increase the testing regime in the HRA buffer areas.

Review of policy in the HRA - there is increased TB testing in the Edge area of Cheshire, yet no increase has been made in the HRA of Cheshire. A recommendation would be for a review of this policy to increase TB testing in areas buffering the Edge to monitor for disease more frequently and to monitor the wildlife populations in these areas too. There are no geographical or physical barriers between the Edge and HRAs so it is important to monitor disease more closely to attempt to slow the rate of spread of continuous disease and wildlife from these areas.

6. Established and Emerging Infected Areas

Bosley cluster – River Dane boundary
This is an area to the far east of Cheshire bordering Staffordshire and situated east and northeast of Congleton. The area of interest is bounded by the river Dane from the east extending to the west towards North Rode. The other side of the River Dane is Staffordshire. Further north the land rises along the A54 towards Buxton in Derbyshire and is much less densely populated with cattle. Also traversing the area is the A523 main road from Macclesfield to Leek.

Between the autumn of 2013 and the end of this reporting period, there have been at least 14 OTFW breakdowns in this area all of the same genotype 25:a. Seven of the farms are small traditional dairy farms and are fragmented with parcels of land scattered over this area. The others are small beef suckler herds which extensively graze the land. Wild red deer and badgers are commonly seen in this area. 2km further east towards Congleton, five badgers have been identified with possible M. bovis infection as part of the RTA survey. These have been found in areas where there have been historical breakdowns involving genotype 25:a. Genotyping is currently being undertaken.

Breakdowns have been seen in this area for several years and it is difficult to pinpoint the exact reason for the recurrence of the breakdowns although it is strongly suspected that wildlife may be involved. In the mid-2000s, one of the farmers found a dead red deer lying near the River Dane and lesions suspicious of TB were found at post-
mortem, although no cultures were undertaken. Similarly, a badger with lesions suspicious of TB was also submitted for post-mortem at the time. The area has since been relatively quiet in terms of TB since then and up until last year when disease was once more confirmed in these herds. Locals cull the deer to manage the numbers and have not reported any lesions suspicious of TB to APHA. The locals have noted that badger numbers have increased in the area compared to previous years. Just over the border in Staffordshire is the Rudyard/Leek area which has had a lot of TB breakdowns over the years and a potentially positive badger has been identified in this area. Local APHA staff consider this to be an endemic area compared to other parts of Cheshire.

**S Siddington/Marton/Knutsford clusters**

This area lies further west from the Bosley area on the other side of the River Dane and extends northwest from Congleton towards Knutsford and eastwards towards Holmes Chapel and Goostrey. The area is approximately 100 sq. kms. and contains the parishes of Lower Withington, Marton, Siddington, Gawsworth, Swettenham, Capesthorne, Over Peover and Chelford. In this area, during the reporting period, there were 30 OTFW breakdowns most of which are or have been genotype 25:a in the recent past. Some genotyping is pending but there are very few OTFS breakdowns in this area of Cheshire. Potentially *M. bovis* positive badgers have been found 2km southeast of this area towards Bosley and approximately 5km to the north of this area at Morley.

In the Lower Withington area in particular, there has been a high concentration of breakdowns and there is also an active sand quarry here too. The largest cattle losses have also been in this area. In two neighbouring herds, 43 cattle were gamma positive reactors. This is an indication of the amount of TB to which these cattle are being exposed. They are both well managed herds with no cattle-cattle contact between them. In the past 2 years, there was a small herd of alpacas in the vicinity which were also infected with TB and eventually culled.

Further west and north there are similar cases, with many recurrent breakdowns. Farmers now seem resigned to the fact that they will find reactors at six monthly tests.

In the Gawsworth area in 2003, a whole herd of 450 dairy cattle was slaughtered due to TB infection. This was a mixed infection including genotype 25a. At the time, there was no evidence of local spread but over the years, the area has become a widely regarded as an endemic area locally.

Towards the north-western periphery of this area, there are still a few OTFS cases which may indicate that they are more at the edge of the disease front.

7. **Wildlife**

Badger populations are generally considered to have increased dramatically over the past 10 years. At the DRF visit, it is not uncommon to hear of new setts being reported by the farmer when there were previously fewer setts historically. The general perception is that more badger road kills are seen in Cheshire and far fewer hedgehogs than previously. Fortunately, there are not many feral pigs reported in Cheshire but wild deer are very prominent in the area to the north of Congleton bordering on Staffordshire. Wild deer are easily visible in the Bosley area and it is thought that these can travel large distances over the hills to and from Staffordshire where there is known TB infection. The deer are culled regularly for local consumption and to date, no-one has reported suspicion of TB in these carcasses except for one carcass found near the River Dane several years ago and found to have lesions consistent with TB. Further into Cheshire, there have been deer sightings but these are much less common further south and west from Congleton.

The University of Liverpool pilot study of badgers found dead in Cheshire has revealed 18 potentially *M. bovis* positive badgers submitted from approximately 102 carcasses since February 2014. These badgers have been submitted by farmers and vets at a heavily subsidised rate for post-mortem examination and culture. Fourteen of these badgers were found in the Edge and the remaining four in the HRA (see figure 5). Genotyping is being undertaken at Weybridge but the results were not available in time for this report. This study was actively encouraged by the Cheshire TB Eradication Board and implemented as a result of a request by board members. The locations of the badgers are being monitored with regard to local TB breakdowns and once the genotype data is known, further epidemiological investigations will be done.

The Cheshire Wildlife Trust has been actively working with the Shropshire Wildlife Trust, local vets and APHA staff to encourage badger vaccination in Cheshire. This year the Wirral and Chester Badger Group, also Cheshire TB Eradication Board members, have joined with the Cheshire Wildlife Trust and NFU members to identify areas of Cheshire to target badger vaccination. To date, five Cheshire farms were vaccinated in the whole of Cheshire in 2013 by the Cheshire Wildlife Trust and in 2014, the Trust employed a dedicated badger vaccination co-ordinator to actively help with the vaccination implementation in Cheshire. This year, including the five farms entering their second year of vaccination, a further seven farms have undertaken vaccination of the badgers on farm by the Cheshire Wildlife Trust.

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2 Culture method – Lowenstein-Jensen with pyruvate media & Stonebrink media (both solid slopes) for 12 weeks.
The DEFRA Badger Edge Vaccination Scheme has been actively promoted in the Cheshire Edge and submissions for funding have been made. The successful applicants will be informed in late March 2015.

8. Other Susceptible Species

TB caused by *M. bovis* infection has not been reported in any other non-bovine species this year. However, there have been reports of positive cats in the Macclesfield area in the past year and there was an outbreak of TB in a small herd of alpacas near Lower Withington, Nr Macclesfield two years ago. The herd was skin tested and blood tested. Due to the deteriorating condition of the alpacas the owner culled them over a period of time and despite negative skin and serological test results, lesions were detected at post-mortem of some of this herd. No known cases have been reported since but it is interesting to note that there are several cattle breakdowns which have appeared in the Lower Withington area this year during the reporting period. There is also a sand quarry at this location and an abundant population of badgers. To date, none have been found dead to submit for post-mortem.

9. Summary of Risks to the Low Risk Area (LRA) from the Edge Area and any Mitigating factors

The main risks to the LRA lie to the north east of the county towards the Stockport area in Greater Manchester. Potentially infected badgers have been submitted from the Adlington area and the Morley area of Cheshire. New TB breakdowns have appeared in these locations. However, the genotyping of the badgers is still outstanding so further investigations are currently on hold. However, if the same genotype (25a) is identified in the badgers as is in the local TB breakdowns, then there is great concern for possible spread to the LRA at these locations as the LRA is very close to where they were found. Cattle density maps reveal high cattle densities in these areas of adjoining LRA.

There are a few cattle farmers with farming epidemiological links between the Edge and LRA. Official BCMS links are no longer in existence, but cattle are still moved between holdings either side of this border.

Likewise, to the far west of the Edge we have several farmers with farms in Wales and the Edge. Official BCMS links have also been broken here. There is a similar situation in the south with epidemiological links to the HRA from some Edge farms.

The area further north towards Warrington appears to be less of a concern as the area is less densely populated with cattle disease appears to have been purchased most likely up here as it is mainly beef fattening units that have been affected. The Wirral is the other LRA at risk and although the cattle TB breakdowns are less common in this area, we have seen changes in this area in the past couple of years. We have seen unexplained or obscure origins of breakdowns in herds which are classed as closed herds. Two of the breakdowns south of Chester, were close to each other and within 1km although not contiguous yet they had different genotypes, 25a and 17a were isolated whilst they had either not purchased cattle nor had there been contiguous breakdowns of the same genotype locally. One herd zero grazes and the cattle are kept inside and the only purchased cattle have been imported from the Netherlands. The other farm has not purchased stock for many years and even though the farm is fragmented, it is all farmed within 1-2km of the main holding. There is a farmed deer park nearby and lots of badger activity. Local badgers have been observed to be poor in appearance by AHVLA staff. This will be an area of particular concern over the coming year.

There are several large New Zealand style herds which operate over large areas of Cheshire and extend into Derbyshire, Staffordshire and Shropshire, all of which are currently TB breakdowns. In these types of systems cattle are moved regularly although pre-movement testing and breakdown testing is carried out as required. There is still potential for cattle to be missed or moved before testing especially where SOAs are still in place. There are also several businesses operating multiple farms under one CPH in Cheshire. There is also potential for moving cattle without TB testing them between the multiple premises as there will be no requirement to report movements. These holdings have been allowed to operate in this way as the holdings are all within 10 miles of each other and under the RPA rules, they should only be operating under one CPH. There is potential here for disease spread and propagation.

Links with neighbouring counties and different risk areas should now have been broken by BCMS so this is now less of a risk of spreading disease than it was as affected businesses will now have to report movements and these can be monitored for pre-movement testing whereas previously this was difficult to monitor as the movements did not require notification.

Both Cheshire markets have many cattle sales and also operate red markets and exempt markets. There is potential for movement of cattle through these markets into the LRA. This year a large dispersal sale of cattle from the LRA resulted in over fifty TB breakdowns throughout the UK as a result of the cattle not being pre-movement tested before the sale. This was not the fault of the farmer or the market but illustrates that disease has longer to propagate and to delay disclosure in less frequent testing areas. Cheshire was very similar to this historically and
multiple large breakdowns were identified as a result. With more frequent TB testing in Cheshire, large breakdowns are now rarely encountered.

Unfortunately, except for the urbanisation to the north of the county, there are very few natural barriers between the HRAs of the neighbouring counties, south Cheshire and the Cheshire Edge.

10. Summary of the risks to the Edge Area from the High Risk Area (HRA) and any mitigating factors

- There are no geographical barriers between Cheshire and the HRAs adjoining Cheshire. Cheshire is a very flat county with very sandy soils, making them an ideal habitat for wildlife.
- The large dairy herds which move cattle around Cheshire and across borders into the HRAs.
- High risk dealer activities – some farmers are still driven by economics rather than risk of TB and would prefer to pay less for a replacement cow rather than buying a lower risk cow. Some dealers source cheaper cattle from endemic areas. Habitual activities are difficult to change. The experience of the LRA dispersal sale has dissuaded many farmers from buying in from the LRA and many would prefer to buy a local animal which has recently been TB tested.
- Biosecurity measures often not instigated due to costs – it is difficult to persuade farmers to spend money on fencing and badger proofing. More educational work needs to be done in this area.
- BCMS links – these should now have been broken between HRA, LRA and Edge
- SOAs – exempting cattle from pre-movement testing is a risk in areas where there is a high level of known infection.

11. Plans for the next half-year and future regarding Control Measures

- Continue with all Edge area cattle controls subject to a policy review by Defra later in 2015.
- Continue with 6-monthly herd testing in the Edge of Cheshire at least until the end of 2015.
- Complete an analysis of the results of the round of check testing of cattle herds in the Stockport area immediately the northeast of Cheshire.
- Continue collaboration with wildlife groups to identify and actively develop and to promote badger vaccination strategies in the Edge
- Review and perform cost-benefit analyses of Edge measures by the next financial year
- Continue enhanced management of persistently infected herds as far as possible and seek financial support
- Continue to increase awareness of local farming community regarding bovine TB and its consequences through stakeholder events and through the Cheshire Eradication Board.
- Review the HRA policy and buffer areas of the Edge
- Continue and increase local collaboration between stakeholders, wildlife groups (including rehabilitation centres), private vets and APHA colleagues locally and in neighbouring regions.
- More proactive action against inconclusive reactors either with gamma testing or removal.
- Increased epidemiology input into cases and review of issues with permanent veterinary resource
- Continue with OV auditing
- Increase biosecurity advice for breakdown management and encourage contingency planning after the end of breakdowns

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.