Regional Six-monthly Report of Descriptive Bovine TB Epidemiology for the Low Risk (Four Yearly Testing) Areas of England

Regional Office:
Yorkshire, comprising North Yorkshire (48 and 50) / West Yorkshire (49) / South Yorkshire (47) and Humberside (51)

Report from 1 January until 31 December 2016

Year-end report for 2016.

1. Cattle Industry in the Region

The Yorkshire cattle industry is large and diverse, with 50% of registered herds being beef rearing and finishing herds, 33% being beef breeding herds and the remainder being dairy herds. Bovine tuberculosis (bTB) is found predominantly in beef fattening/finishing units which abound, taking advantage of abundant co-products from the low ground arable sector. To maintain throughput, some of these herds source animals fairly indiscriminately from multiple sources, many from the endemic bTB areas in the West and South West of England / Wales. Very large units (1000+) are becoming more common. By contrast, in some areas of North and West Yorkshire, a high density of smaller herds can still be found.

Most breeding replacement movements take place via local routes, with some imports from other countries. Buyers are generally well aware of the bTB risk. Beef cattle buying follows the general English pattern of West / South West England and Wales to East / North East England. Market movements are frequent and this is further facilitated by dealers who buy from holdings and markets in the West / South West and facilitate supply to finishers in the North and East. The larger beef finishing units, often permanently housed and committed to supply contracts with beef processors, will prioritise semi-continual availability of cattle in their preferred specification over perceived bTB disease risk.

Currently there are fifteen Licensed Finishing Units (LFU) in the region for fattening of cattle from OTF premises under biosecure conditions. We have had enquiries from other farmers in the region to set up other similar units, which we are currently assessing.

Number of cattle premises by size band in the division at 1 January of the reporting year.

<table>
<thead>
<tr>
<th>Cattle per premises</th>
<th>0</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>South Yorkshire (47)</td>
<td>6</td>
<td>220</td>
<td>81</td>
<td>64</td>
<td>33</td>
<td>9</td>
<td>7</td>
<td>420</td>
<td>86</td>
<td>45</td>
</tr>
<tr>
<td>North Yorkshire (48)</td>
<td>26</td>
<td>1338</td>
<td>604</td>
<td>565</td>
<td>315</td>
<td>114</td>
<td>106</td>
<td>3068</td>
<td>117</td>
<td>62</td>
</tr>
<tr>
<td>West Yorkshire (49)</td>
<td>12</td>
<td>690</td>
<td>161</td>
<td>106</td>
<td>55</td>
<td>19</td>
<td>11</td>
<td>1054</td>
<td>65</td>
<td>24</td>
</tr>
<tr>
<td>East Yorkshire (50)</td>
<td>4</td>
<td>108</td>
<td>36</td>
<td>27</td>
<td>12</td>
<td>8</td>
<td>5</td>
<td>200</td>
<td>90</td>
<td>43</td>
</tr>
<tr>
<td>Humberside (51)</td>
<td>11</td>
<td>374</td>
<td>139</td>
<td>118</td>
<td>45</td>
<td>14</td>
<td>11</td>
<td>712</td>
<td>82</td>
<td>43</td>
</tr>
</tbody>
</table>
Cattle breed purpose - numbers and percentages at 1 January of the reporting year.

<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>South Yorkshire</td>
<td>23037 (63.9%)</td>
<td>11545 (32.0%)</td>
<td>1444 (4.0%)</td>
<td>1 (0.0%)</td>
<td>36027</td>
</tr>
<tr>
<td>North Yorkshire</td>
<td>208015 (57.9%)</td>
<td>143207 (39.9%)</td>
<td>7675 (2.1%)</td>
<td>65 (0.0%)</td>
<td>358962</td>
</tr>
<tr>
<td>West Yorkshire</td>
<td>42813 (62.9%)</td>
<td>22014 (32.3%)</td>
<td>3252 (4.8%)</td>
<td>20 (0.0%)</td>
<td>68099</td>
</tr>
<tr>
<td>East Yorkshire</td>
<td>12138 (67.8%)</td>
<td>5304 (29.6%)</td>
<td>465 (2.6%)</td>
<td>1 (0.0%)</td>
<td>17908</td>
</tr>
<tr>
<td>Humberside</td>
<td>43699 (74.8%)</td>
<td>13409 (22.9%)</td>
<td>1319 (2.3%)</td>
<td>5 (0.0%)</td>
<td>58432</td>
</tr>
</tbody>
</table>

Density of cattle and cattle premises at 1 January of the reporting year.

![Animal Density 2016](image-url)
3. Summary of the Regional Headline Cattle TB Statistics

Yorkshire has a relatively small number of bTB incidents. Eradication of infection from these has so far been relatively easily achieved, by application of standard testing regimes. The majority result from direct movement of infected beef fattening animals from endemic bTB areas. There is a small but significant subset of cases that have resulted from movement of infected animals between infected herds within the region prior to their detection. There is currently no convincing evidence of wildlife infection.
There have been 32 new TB herd incidents in 2016, with seven of these being OTFW. In comparison there were seven OTFW cases in 2014 and 15 in 2015 in this region. Of the 2016 OTFW cases, two were found as a result of tracings, four were as a result of slaughterhouse findings and one was an epidemiological link to one of the others.

In three of the new OTFW cases, the radial (RAD) testing exemptions were accepted based on a favourable veterinary risk assessment (VRA). To date nothing has been revealed in the three radial surveillance zones instigated so far in this region (see the map in the penultimate page of this report).

More details of cases can be found in the case reviews in section 8.

<table>
<thead>
<tr>
<th>Herd-level statistics</th>
<th>South Yorkshire (47)</th>
<th>North Yorkshire (48+50)</th>
<th>West Yorkshire (49)</th>
<th>Humberside /East Yorkshire (51)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Total number of cattle herds live on Sam at the end of the reporting period</td>
<td>524</td>
<td>3970</td>
<td>1286</td>
<td>894</td>
</tr>
<tr>
<td>(b) Total number of cattle herds subject to annual TB testing at the end of the reporting period (any reason)</td>
<td>43</td>
<td>313</td>
<td>51</td>
<td>14</td>
</tr>
<tr>
<td>(c) Total number of herd tests carried out in the period</td>
<td>201</td>
<td>1439</td>
<td>332</td>
<td>302</td>
</tr>
<tr>
<td>(d) Total number of OTF cattle herds TB tested during the period for any reason</td>
<td>111</td>
<td>739</td>
<td>232</td>
<td>169</td>
</tr>
<tr>
<td>(e) Total number of OTF cattle herds at the end of the report period (i.e. herds not under any type of TB2 restrictions)</td>
<td>505</td>
<td>3928</td>
<td>1255</td>
<td>875</td>
</tr>
<tr>
<td>(f) 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>517</td>
<td>3955</td>
<td>1282</td>
<td>889</td>
</tr>
<tr>
<td>(g) Total number of new TB breakdowns detected in cattle herds during the report period</td>
<td>8</td>
<td>11</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>• OTF status suspended (OTFS)</td>
<td>7</td>
<td>8</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>• OTF status withdrawn (OTFW)</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(h) Of the new OTFW herd breakdowns, how many:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• occurred in a holding affected by another OTFW breakdown in the previous three years?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>• could be considered secondary to a primary breakdown based on current evidence?</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>• were triggered by skin test reactors or 2xIRs at routine herd tests?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>• were triggered by skin test reactors or 2xIRs at other TB test types (forward and back-tracings, contiguous, check tests, etc.)?</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>• were first detected through routine slaughterhouse TB surveillance?</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>(i) Number of new breakdowns revealed by enhanced TB surveillance (radial testing) conducted around those OTFW herds</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>• OTFS</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>• OTFW</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(j) Number of OTFW herds still open at the end of the period (including any ongoing OTFW breakdowns that began in a previous reporting period)</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
(k) New confirmed (positive *Mycobacterium bovis* culture) incidents in non-bovine species detected during the report period (indicate host species involved) | 0 | 0 | 0 | 0 |

Animal-level statistics (cattle)

<table>
<thead>
<tr>
<th>South Yorkshire (47)</th>
<th>North Yorkshire (48+50)</th>
<th>West Yorkshire (49)</th>
<th>Humberside/East Yorkshire (51)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Total number of cattle tested in the period (animal tests)</td>
<td>6633</td>
<td>90399</td>
<td>12987</td>
</tr>
<tr>
<td>(b) Reactors detected:</td>
<td>9</td>
<td>29</td>
<td>3</td>
</tr>
<tr>
<td>• tuberculin skin test</td>
<td>9</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>• additional IFN-gamma blood test reactors (skin-test negative or IR animals)</td>
<td>0</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>(c) Reactors per breakdown</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>(d) Reactors per 1000 animal tests</td>
<td>1.36</td>
<td>0.32</td>
<td>0.23</td>
</tr>
<tr>
<td>(e) Additional animals identified for slaughter for TB control reasons (DCs, including any first-time IRs)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(f) SLH cases (tuberculous carcases) reported by FSA</td>
<td>2</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>(g) SLH cases confirmed by culture of <em>M. bovis</em></td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

2015 (for comparison purposes)

Herd-level statistics

<table>
<thead>
<tr>
<th>South Yorkshire 47</th>
<th>North Yorkshire 48 and 49</th>
<th>West Yorkshire 49</th>
<th>Humberside/East Yorkshire 51</th>
</tr>
</thead>
<tbody>
<tr>
<td>(l) Total number of cattle herds live on Sam at the end of the reporting period</td>
<td>518</td>
<td>4022</td>
<td>1298</td>
</tr>
<tr>
<td>(m) Total number of cattle herds subject to annual TB testing at the end of the reporting period (any reason)</td>
<td>47</td>
<td>382</td>
<td>99</td>
</tr>
<tr>
<td>(n) Total number of herd tests carried out in the period</td>
<td>313</td>
<td>1841</td>
<td>517</td>
</tr>
<tr>
<td>(o) Total number of OTF cattle herds TB tested during the period for any reason</td>
<td>234</td>
<td>1358</td>
<td>366</td>
</tr>
<tr>
<td>(p) Total number of OTF cattle herds at the end of the report period (i.e. herds not under any type of TB2 restrictions)</td>
<td>507</td>
<td>3979</td>
<td>1280</td>
</tr>
<tr>
<td>(q) 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>517</td>
<td>4005</td>
<td>1293</td>
</tr>
<tr>
<td>(r) Total number of new TB breakdowns detected in cattle herds during the report period</td>
<td>5</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>• OTF status suspended (OTFS)</td>
<td>3</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>• OTF status withdrawn (OTFW)</td>
<td>2</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>(s) Of the new OTFW herd breakdowns, how many:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• occurred in a holding affected by another OTFW breakdown in the previous three years?</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>• could be considered secondary to a primary breakdown based on current control measures?</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Evidence?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• were triggered by skin test reactors or 2xIRs at routine herd tests?</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>• were triggered by skin test reactors or 2xIRs at other TB test types (forward and back-tracings, contiguous, check tests, etc.)?</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>• were first detected through routine slaughterhouse TB surveillance?</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>(t) Number of new breakdowns revealed by enhanced TB surveillance (radial testing) conducted around those OTFW herds</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>• OTFS</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>• OTFW</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(u) Number of OTFW herds still open at the end of the period (including any ongoing OTFW breakdowns that began in a previous reporting period)</td>
<td>1</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>(v) New confirmed (positive <em>Mycobacterium bovis</em> culture) incidents in non-bovine species detected during the report period (indicate host species involved)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Animal-level statistics (cattle)**

- **(h) Total number of cattle tested in the period (animal tests)**
  - 12707
  - 130136
  - 19569
  - 15534

- **(i) Reactors detected:**
  - 11
  - 99
  - 8
  - 9
  - tuberculin skin test
    - 10
    - 48
    - 7
    - 3
  - additional IFN-gamma blood test reactors (skin-test negative or IR animals)
    - 1
    - 51
    - 1
    - 6

- **(j) Reactors per breakdown**
  - 2.20
  - 4.13
  - 1.00
  - 9.00

- **(k) Reactors per 1000 animal tests**
  - 0.87
  - 0.76
  - 0.41
  - 0.58

- **(l) Additional animals identified for slaughter for TB control reasons (DCs, including any first-time IRs)**
  - 0
  - 2
  - 0
  - 0

- **(m) SLH cases (tuberculous carcasses) reported by FSA**
  - 2
  - 18
  - 1
  - 1

- **(n) SLH cases confirmed by culture of M. bovis**
  - 1
  - 6
  - 0
  - 0
4. Suspected Sources of *M. bovis* Infection for all the New OTFW 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>0</td>
<td>7</td>
</tr>
<tr>
<td>Local - lateral spread from neighbouring holdings:</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>• exposure to infected wildlife e.g. badgers</td>
<td>0</td>
<td>0</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>0</td>
<td>0</td>
</tr>
<tr>
<td>• infected human source</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Undetermined/obscure</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other (explain)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Probability of introduced M. bovis infection introduced via cattle movements</td>
<td>Probability of isolated, sporadic ('one-off') breakdown, without secondary local spread from the index case</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Definite</td>
<td>Likely (no secondary breakdowns detected)</td>
<td>Possible (no secondary breakdowns detected, but dataset incomplete)</td>
</tr>
<tr>
<td>Likely</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Possible</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Not likely (indigenous infection in the locality)</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

5. Overview of the bTB Control Programme in the Region

Background four-yearly routine surveillance testing across the region.

- Enhanced bTB herd surveillance (radial testing) instigated for all OTFW breakdowns by default, with any exemptions subject to VRA by the case Veterinary Officer. Three exemptions were granted from radial surveillance within the reporting period. Licensed Finishing Units have been encouraged so that slaughterhouse cases from those units will not generate radial surveillance or enhanced testing of neighbouring herds. Pre movement testing requirements (supplemented by post-movement testing from April 2016) have not been a major issue, as far as we are aware, in the region.
- No interferon-gamma testing exemptions applied for in any of the OTFW breakdown herds.
- TB in other species: see Section 7 below.
- No confirmed or suspected cases of zoonotic (human) M. bovis infection.
- No suspected cases of non-specific or fraudulent skin test reactors.
- No bTB breakdowns involving producer-retailers and unpasteurised cheese-makers or open farms during the reporting period.
- Ongoing liaison with NFU and other local enforcement and public health bodies.

6. Wildlife

No confirmed M. bovis infection has been detected in wildlife in the area.

7. Other Susceptible Species

Red Deer

Bedale, North Yorkshire

Following a successful programme of repeat tuberculin skin testing supplemented by voluntary ad hoc antibody tests, the movement restrictions imposed in August 2012 on this farmed red deer herd were finally lifted at the end of January 2016. Repeat skin testing of the co-located and neighbouring cattle herds over a period of two years did not reveal any evidence of infection spill over from the infected deer herd.

8. Individual summaries of new OTFW breakdowns detected in the region during the report period and ongoing breakdowns from previous years still open at the end of the report period, grouped by county

North Yorkshire
Breakdowns that had started in 2015 and concluded in 2016

Skipton, North Yorkshire

This holding operates as a beef suckler herd. During the investigation visit the stock on farm were 72 breeding cows; 10 heifers and 4 stock bulls, which had all been purchased. There were also approximately 35 female stores and 20 male stores (castrated). They usually sell their cattle as stores at 12-18 months old at Skipton Market and keep some heifers as replacements. The heifers are serviced at approximately 2 years old. They sometimes buy cattle in from local markets, and occasionally from local farms. They house all the cattle between November and May, and in summer they all grazed on the farm fields. There was a previous TB breakdown in 2005 with genotype 17:a. At the time of breakdown detection, the holding was within a 3km radial zone triggered by (OTFW incident: 14/02904). Three NVL, culture negative reactors were disclosed in a pre-movement test on 10/03/2015. Check testing was completed on 30/03/2015 with two culture-negative skin test reactors. However, one of those reactors presented with VL at the post-mortem examination (PME) and, as a result, the breakdown was re-classified as OTFW.

The first Short Interval Test (read at severe interpretation) was carried out on 09/06/2015 when 187 animals were tested out of a total herd size 192 and this was synchronised with the interferon-gamma blood test. This test revealed 3 skin and gamma reactors and one gamma reactor, all had no visible lesions at the PME.

A second Short Interval Test (read at severe interpretation) was undertaken on 25/08/2015 with negative results?

At the next Short Interval Test there were three reactors disclosed that were NVL and culture negative. The IR became an NVL reactor.

A Short Interval Test was carried out in January and another in March 2016 with negative results on both occasions. The restrictions were lifted on 20/3/16.

A 3km radial testing regime has been established, involving 61 cattle premises. One of those premises is an unconfirmed (OTFS) TB breakdown incident. 18 of these premises are already in an existing radial (10 due to 14/02904 confirmed incident, one due to 15/00311, two premises due to 14/02905 and three due to 13/00707. For one of the holdings there is no information on the RAD spreadsheet to identify under which RAD this one has fallen) and 14 were exempted. 14 holdings that had the initial radial test have tested clear, 5 were recorded as having no eligible stock and on one of the holdings an IR was disclosed (will be retested in 60 days).

The most likely origin of this breakdown is unclear at present.

Richmond, North Yorkshire

This premise has a beef suckler herd of Limousins which is basically a closed herd apart from the purchase of bulls and replacement calves. The heifers are homebred. The farm is ring fenced. The majority of cattle are housed in winter and grazed in summer (from May till October/November) with calving all year in batches with cows moving between batches. Bulls move around groups of cattle as required, covering three groups of cows in summer and five in winter. Heifers calve down at 3 years old and join the relevant group of cows. In the summer after weaning the heifers go to summer grazing. Calves are weaned at 6-8 months old. The majority of bull calves are sold privately and the rest of the calves sold at 8-10 months as stores through Leyburn Market.

The check test was completed with 149 out of 163 cattle tested on 27/04/2015. Three were VL, culture positive reactors (genotype: 17:a) and 2 IRs were disclosed.

A gamma-interferon blood test was performed on 27/05/2015 and revealed 16 reactors, 9 with VL at PME.

A first Short Interval Test of the whole herd was undertaken on 17/08/2015 and read at severe interpretation with negative results.

The second Short Interval Test was done on 19/10/15 and read at severe and found one VL reactor. A third Short Interval Test was undertaken on 5/1/16 and revealed one NVL reactor.
A fourth Short Interval Test was completed on 8/3/16 and identified one IR. This animal subsequently tested clear and movement restrictions were lifted on 13/5/16.

A 3km radial testing regime was established following this breakdown and involved 39 cattle premises. Two holdings have been exempted and four recorded as having no eligible stock. 18 holdings have been tested with negative results on the initial radial test and one IR was disclosed that was clear on the retest. No more TB cases have been found on any of the radial testing done subsequently with this case.

The most likely origin of infection into Mr Fawcett's herd is currently obscure.

**Pickering, North Yorkshire**

This holding comprises of approximately 200 suckler cows and their own bulls (Sim/Ch/Lim) with calving taking place at grass in April/May with calves taken to slaughter. The farmer also used to buy in stirks, from various cattle dealers, to fatten indoors. Approximately 120 fat cattle are kept indoors and a few at another location. The rest of the cattle are grazing at four separate geographic locations. This holding was within the 3km radial zone of the OTFW incident 14/03284 and had already had one confirmed slaughterhouse case in the finishing unit in 2008. The disclosing reactor was a homebred heifer, initially an IR at a RAD test and confirmed as VL at slaughter with genotype result:11:a.

The first Short Interval Test was completed on 21/9/15, but 24 cattle were not included in this test as they could not be caught. One reactor was identified (read at severe interpretation) was NVL at slaughter. Because this animal was also a reactor at standard interpretation then this meant two additional Short Interval Tests were required.

After a series of additional short-interval skin tests (all with negative results) and a supplementary interferon-gamma herd test in July 2016 (identifying a single NVL and culture-negative reactor), the OTF status of this herd was restored on 18 October 2016.

A 3km radial testing regime was established involving 60 cattle premises. Two of those were OTFW bTB incidents in 2015. 24 of these premises are already in an existing radial and four were exempted, leaving 32 herds requiring a radial testing regime. Four premises were tested clear on the initial radial test and two have been recorded as having no eligible stock. Radial testing of the remaining 26 premises has been completed with negative results.

At present the suspected origin of the infection is not clear.

**North Yorkshire,**

This is a small dairy herd. An animal was sold to a Lincolnshire farmer with holding. It ended up as a slaughterhouse case when slaughtered in Northern Ireland. Restrictions were served on the farmer on 23/9/15 as it had only been on the Lincolnshire farm for a short period of time.

A Check Test was completed on 23/9/15 and identified one IR at standard.

Disease was confirmed in the slaughterhouse case on 12/10/15, with genotype 25:a identified.

A Short Interval Test plus the interferon-gamma test was completed on 30/11/15. This identified three reactors and one IR on the skin test and 13 reactors on the gamma test. All animals were NVL at slaughter.

Two consecutive Short Interval Test were carried out in February and April 2016 both with negative results.

The suspected origin of infection was a purchased animal from the low risk area, possibly from cattle bought in the market. However, this is unclear.

Restrictions were lifted on 28/4/16.

**North Yorkshire**

This is a small herd of beef cows with a fattening unit. A slaughterhouse case was detected on 30/9/15 and was positive on culture. No genotype is available at present. Another slaughterhouse was revealed on 14/12/15. No samples were taken from this case.
A Short Interval Test was completed at severe on 21/12/15 with negative results.

All animals were slaughtered so no second Short Interval Test was done. The restrictions were lifted on 28/4/16.

The suspected that the source of infection is a purchased animals from low risk area. The herd of origin was given a check test and was clear and therefore the source is unclear.

North Yorkshire

This is a small suckler herd. On 23/11/15 a traced animal was found to be positive on the skin test. It was an 8 month old heifer from a farm in North Yorkshire and had been on this holding for 6 months. Culture received in February 2016 revealed genotype 12:a although the genotype of source premises was 25:a. The Short Interval Test revealed one NVL skin reactor and one NVL gamma positive.

A second Short Interval Test was completed on 11/4/16 and was clear. The third Short Interval Test was completed on 20/6/16 and once again was clear.

The probable source of infection was a purchased animal.

Restrictions were lifted on 8/7/16

North Yorkshire

This is a beef breeding unit that also finishes cattle. A slaughterhouse case found on 4/12/15 in a 2-year and 9 month old animal which was home bred. The spoligotype for this case is 25:a. The first Short Interval Test revealed one NVL skin reactor and 9 NVL gamma reactors.

The second Short Interval Test was completed in May and was clear. The third Short Interval Test was completed in October and the restrictions were lifted on 31/10/16.

The source of infection for this herd remains unclear.

Breakdowns that had started in 2016

North Yorkshire,

The herd comprises of a breeding herd and fattening unit. A trace test of the animal (originated from a herd in Cumbria, LRA) was completed on 20/2/16 & gave a positive result with VL at PME. The genotype was identified as 17:z, although the genotype isolated in the source herd in Cumbria was 12:a. However, this herd is within a geographical cluster of 17:z cases and other spread tracings from the same Cumbrian herd have confirmed 17:z genotype.

The first Short Interval Test was completed with negative results, along with the prescribed interferon-gamma parallel blood test. The blood test identified four positives that were all NVL.

A second Short Interval Test was completed on 5/7/16 with negative results.

Following a VRA it was concluded that there was a very low risk of spread to neighbouring herds and wildlife so it was agreed that radial testing was exempted.

Restrictions were lifted on 14/7/16.

The most likely origin of infection for this herd was a purchased animal from another herd in the LRA.

, York, North Yorkshire

This farm operates as a beef fattening unit comprising approximately 260 cattle all intended for slaughter. Animals are housed during winter and autumn and are put on grass in the summer.

This incident was triggered by a culture-positive slaughterhouse case. This animal was brought on to the holding from a herd in Devon (High Risk Area), via a market, on 13/03/2016 and was slaughtered on 08/11/2016. Movement restrictions were applied on the same day and the case was confirmed by culture on the 30/12/2016. The genotype is 11:a.
The index animal (slaughterhouse case) had been tested with negative results during a Whole Herd Test at the holding of origin in the HRA on 13/07/2015 and again at the pre-movement Test on 29/02/2016.

The holding of origin is in the HRA and is located in close proximity to OTFW TB cases. This particular holding is contiguous to an OTFW TB incident (10/067/0034 - 15/02299) in which culture-positive reactors had been disclosed on 26/05/2015 during a contiguous test.

The first Short Interval Test (read at severe interpretation) was completed on January 2017 with clear results. The gamma interferon parallel test disclosed six positive cattle all of which had no visible lesions. The second SIT is due in March 2017.

Radial testing was instigated with no further cases being revealed so far.

At present the most likely origin is assessed to be the HRA and the spoligotype 11:a helps to confirm this.

Oswaldkirk, York

This farm operates as a fattening unit. The farmer owns another fattening unit in which a slaughterhouse case was confirmed on 30/9/15. No samples had been taken at that time and consequently a genotype result for this earlier case is not available. Dedicated equipment and personnel available for each of the premises.

This is a slaughterhouse case was confirmed on the 23 December 2016. The genotype was confirmed as 9:d.

Due to the fact that the farmer decided to undertake depopulation of his farm, there were no eligible stock at the first Short Interval Test and APHA will lift the restrictions 60 days after the last animals left the farm and cleansing and disinfection has been completed. No slaughterhouse cases were identified when the herd was depopulated.

The slaughterhouse case was born Co. Durham, LRA and was sold through the market to the farm on 06/07/2016. The herd on the farm of origin has a clear testing history and also had a Check Test with negative results on the 31st of January 2017.

Source of infection is unclear.

West Yorkshire

Bradford, West Yorkshire

This is a fattening unit for a separate suckler herd

A slaughterhouse case was disclosed on this farm that was positive on culture. This was an adult cow and had been on this fattening unit for just two months. The OTF status was suspended on 10/9/15 and subsequently withdrawn following culture positive results. The genotype was confirmed as 10:a.

The farmer opted for depopulation of the fattening unit. No slaughterhouse cases were identified when the herd was depopulated. Restrictions were lifted on 11/3/16 following cleansing and disinfection.

The most likely origin of infection was an infected animal that originated from the HRA, but was sold into the LRA in 2008 and then subsequently sold to this farm (see Drake below).

West Yorkshire

This TB breakdown herd is linked to the OTFW case described above. The suckler herd is kept on this premises and the other finishes the cattle.

The slaughterhouse case was resident at the previous fattening unit for approximately two months, having been moved from Drake’s suckler herd. The SLH case animal was resident on the farm for approximately four years. It was purchased by the farmer in 2008 from a North Yorkshire (48) holding, but was actually born in Cheshire.

The farmers herd was considered OTFW following consultation between the case VO and the VA at that time. Movement restrictions were served on 29/2/16 and two Short Interval Tests were carried out with negative results. A gamma interferon parallel test disclosed three NVL reactors. The TB restrictions were lifted on 20/5/16 and a 6 month test has been scheduled for early in 2017.
The genotype identified from the slaughterhouse case was 10:a from the SLH case. All previous holdings of residence for this animal had a clear TB testing history.

After a VRA had been completed it was agreed that radial testing around Mr Drake's holding was not required.

**South Yorkshire**

**Cases disclosed in 2015**

**Rotherham, South Yorkshire**

This herd comprises of approximately 58 cattle: 20 cows; two stock bulls; 16 heifers and 20 calves. The farm operates as a beef suckler herd with approximately six heifers bought in every year and 20% of heifers are kept as replacements. Cattle are bought in mainly from low risk areas through Carlisle market. Approximately five cattle per month are sold either directly to the abattoir or through the red market to the slaughterhouse. This farm was within the 3km radial testing zone due to 13/03678 (genotype 25:a). Cattle are grazing during summer in the adjoining land that surrounds the housing facilities and are housed during the winter. The slaughterhouse case was disclosed on 21/05/2015 and was confirmed (M. bovis isolated) on 27/07/2015. This was a homebred animal was born on 02/01/2011.

Synchronised first Short Interval Test (read at severe interpretation) for 52 out of 53 cattle and gamma-interferon testing was completed on 27/08/2015. Five skin and gamma reactors and one gamma reactor were disclosed. Four skin and gamma-interferon reactors were found with visible lesions. All the reactors that have been disclosed to date have been homebred with a genotype or 25:a.

A second Short Interval Test (read at severe interpretation ) was completed on 22/10/15 with negative results. A third Short Interval Test (read at standard interpretation ) was completed 11/1/16 with negative results. Restrictions were lifted on 14/1/16.

The source of infection in this case is obscure. There was an OTFW breakdown on another farm within 3 Km in 2013. The genotype for that case was 25.

**Cases disclosed in 2016**

**Barnsley,**

This is a beef fattening unit. A slaughterhouse case was found in a 14-month old male animal on 31/5/16 that was positive on laboratory culture with genotype 25:a. The Check Test was carried out on 24/6/16 and revealed one NVL reactor. The animal had been on this holding for six months and was bought from the HRA. The farm of origin has had a breakdown with genotype 25:a as well and therefore we consider this source of infection to be the result of the purchased animal.

A radial surveillance zone has been generated from this case with no problems being identified so far.

The first Short Interval Test completed on 30/8/16 was clear as was the second Short Interval Test completed on 1/11/16. The movement restrictions on this herd were lifted 14/11/16.

**Humberside/East Yorkshire**

**Gate Helmsley, North Yorkshire**

This holding is a fattening herd. A purchased animal was identified as a slaughterhouse case on 26/1/16. This was a 2 year 3 month old heifer which had been on the holding for about six months and had come from the HRA. The genotype was identified on culture as 11:a, which was the same the genotype found on the source farm.

The farmer opted to do an immediate Check Test, which was done on 9/2/16 with a negative result.

A Short Interval Test was completed on 29/3/16 and was clear, however this test has had to be discounted as it was done too soon after the Check Test.

TR397 (Rev. 07/15)
The first qualifying Short Interval Test was completed on 14/6/16 with clear results. The gamma interferon parallel test was completed at the same time with two positive animals that were both NVL.

The third Short Interval Test was completed by 16/8/16 with negative results and therefore the movement restrictions were lifted on 19/8/16.

Radial testing was set up but so far has revealed nothing.

The likely source is the infected animal purchased from the HRA.

**Driffield, East Yorkshire**

This is a beef breeding herd with fattening unit. A trace test on a 20 month old bull revealed a skin reactor that had VL on 9/2/16. The index animal had been purchased two months earlier (on 1/12/15) from the HRA and had been housed until slaughtered. Subsequently it was shown to be genotype 9:b, which is the same genotype found on the source farm.

The first Short Interval Test (read at severe interpretation) was completed on 25/4/16 with negative results. The gamma interferon test done at the same time revealed seven positives, all NVL at slaughter.

The second Short Interval Test (read at severe interpretation) done on 4/7/16 was also negative. Gamma interferon retest done at the same time revealed one positive that was shown to be VL at post mortem. No samples were taken as it is OTFW.

Gamma interferon testing was completed along with two further Short Interval Test on 4/10/16 and 3/1/17. Both Short Interval Test tests were clear and the TB 10 issued on 9/1/17.

The likely source of infection is the introduction of infected cattle into the herd from the High Risk Area.

A radial test exemption for neighbouring cattle herds was granted for this case as the cattle on the farm had all been housed in the brief period between purchase and slaughter of the index animal.
Summary map of RAD testing surveillance zones in Yorkshire and Humberside
Glossary

- **bTB** – (bovine) Tuberculosis (infection of cattle with *M. bovis*)
- **Edge Area (EA)** – the annual bTB testing area of England situated between the High and Low Risk Areas
- **Epidemiology** – the science that studies the patterns, causes, and effects of health and disease conditions in defined populations
- **Genotype** – the genetic makeup of a cell, an organism, or an individual usually with reference to a specific characteristic under consideration

High Risk Area (HRA) – the annual testing area of England comprising the South West, West Midlands and part of East Sussex, in which *M. bovis* infection is endemic in cattle herds and in badgers
- **IFN-γ** – interferon-gamma test (or gamma interferon test). A supplementary in vitro blood test for bTB used by APHA in conjunction with the tuberculin skin test in some situations, usually to improve the overall diagnostic sensitivity in infected herds with OTF status withdrawn.

Low Risk Area (LRA) – the four-yearly TB testing area of the North and East of England in which *M. bovis* infection occurs only sporadically in cattle and is not considered endemic in wildlife. Although the default testing interval for routine bTB surveillance is four years, some higher risk herds in the LRA are subjected to annual testing. There is also more intensive surveillance testing (radial testing) around any herds in the LRA (and parts of the Edge Area) that have their officially bTB free status withdrawn due to a TB breakdown
- **OTF** – Officially Tuberculosis Free status. Herds that are not subjected to bTB movement restrictions of any type are classified as OTF
- **OTF-S** – Officially Tuberculosis Free Suspended status. In England, an OTFS breakdown is a herd in which all the reactors removed had no visible lesions (NVL) on post-mortem examination and had negative culture results for *M. bovis*
- **OTF-W** – Officially Tuberculosis Free Withdrawn status. In England, an OTFW breakdown is a herd in which at least one test reactor with visible lesions (VL) and/or an animal with *M. bovis*-positive culture result have been disclosed
- **Persistent herd breakdown** – a herd that has been under bTB movement restrictions for 18 months or longer due to infection with *M. bovis*
- **Potential ‘Hotspots’** – a temporary area of enhanced bTB cattle and wildlife surveillance that may be declared around some OTFW TB breakdowns of uncertain origin detected in a Region of historically low bTB incidence
- **SIT** – short-interval test. A tuberculin skin test of all bovines in a TB breakdown herd, carried out 60 days after the removal of the last test reactor (or laboratory confirmation of a TB slaughterhouse case) in order to restore the OTF herd status. In the majority of cases, two successive SITs with negative results are necessary. The results can be read using standard or severe interpretation of the skin test. Calves under 42 days old are usually exempted.
- **VRA**: veterinary risk assessment

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.