



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

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### **Regional Office**

Midlands: Lincolnshire

### **Year-end report for 2018**

#### **1. Cattle Industry in the Region**

The Lincolnshire cattle industry can be broken down (in order of significance) into four categories:

1. Finishing units – intensive and extensive
2. Beef suckler herds – pedigree and commercial
3. Dairy herds
4. Hobbyists

### **FINISHING UNITS**

These form the most significant portion of the Lincolnshire cattle population in terms of cattle numbers. Most finishing units are managed intensively with a small proportion of units still operating a traditional extensive grass-based finishing system. A significant feature of the intensive finishing units in this, and other eastern counties, is that these units originally developed to cater for the need/opportunity to utilise both the products and the by-products of the Lincolnshire arable and vegetable units, and so the finishing enterprises have developed and grown as part of mixed arable/vegetable and cattle-finishing units.

**Intensive units** – Store cattle are primarily sourced from the stock-rearing areas of the Midlands, West of England, South-West of England and parts of Wales and moved to the Lincolnshire units for intensive finishing on arable/vegetable by-products. The main reason for the cross-country movement of cattle is that the county of Lincolnshire is not able to supply the number of cattle required by these finishers. This exemplifies the long-standing stratification of the British cattle industry, and thereby demonstrates the movement of the cattle to the feed, rather than movement of feed to the cattle.

These cattle are mainly sent direct to the abattoir on supermarket dead-weight contracts. Few will be sold through the live auction market system. These businesses rely on both the purchase and slaughter of large numbers of cattle on a weekly basis to ensure that supermarket/abattoir contracts for specific numbers of cattle at the specified weights and carcass classifications can be honoured. The intensive nature of these businesses means that the cattle are on farm for a length of time varying from a few weeks to 6 months.

**Extensive units** – store cattle primarily sourced from own suckler herd and finished at grass. These finished cattle will be sold through the live auction market (Louth, Newark, possibly Melton Mowbray). Some may be sold deadweight.

### **BEEF SUCKLER HERDS**

**Pedigree herds** – of some importance to this county, with pedigree stock (+/- semen and embryos) being traded both nationally and internationally. Herds will tend to have controlled/sporadic on–movements of cattle – mainly to source new bloodlines.

**Commercial herds** – replacements are homebred or purchased. Cattle sold as stores through local markets as above or finished on farm for sale through live auction market or direct to slaughter.

## DAIRY HERDS

Dairy herds (commercial and pedigree) are present throughout the county, tending to occur as isolated units rather than clustered in specific geographical areas. Most dairy herds are well-separated from other cattle herds by arable land.

## HOBBYISTS

Small in number, but significant at times because of lack of owner awareness of TB risks (biosecurity) and occasional poor compliance with routine surveillance testing.

Usually beef sucklers (Dexter, Highland). Herds established for pet/ornamental/pasture control purposes. Buying and selling both privately and through live markets.

## Markets –

### Abattoirs - 5

### Licensed Finishing Units (LFUs) - 5

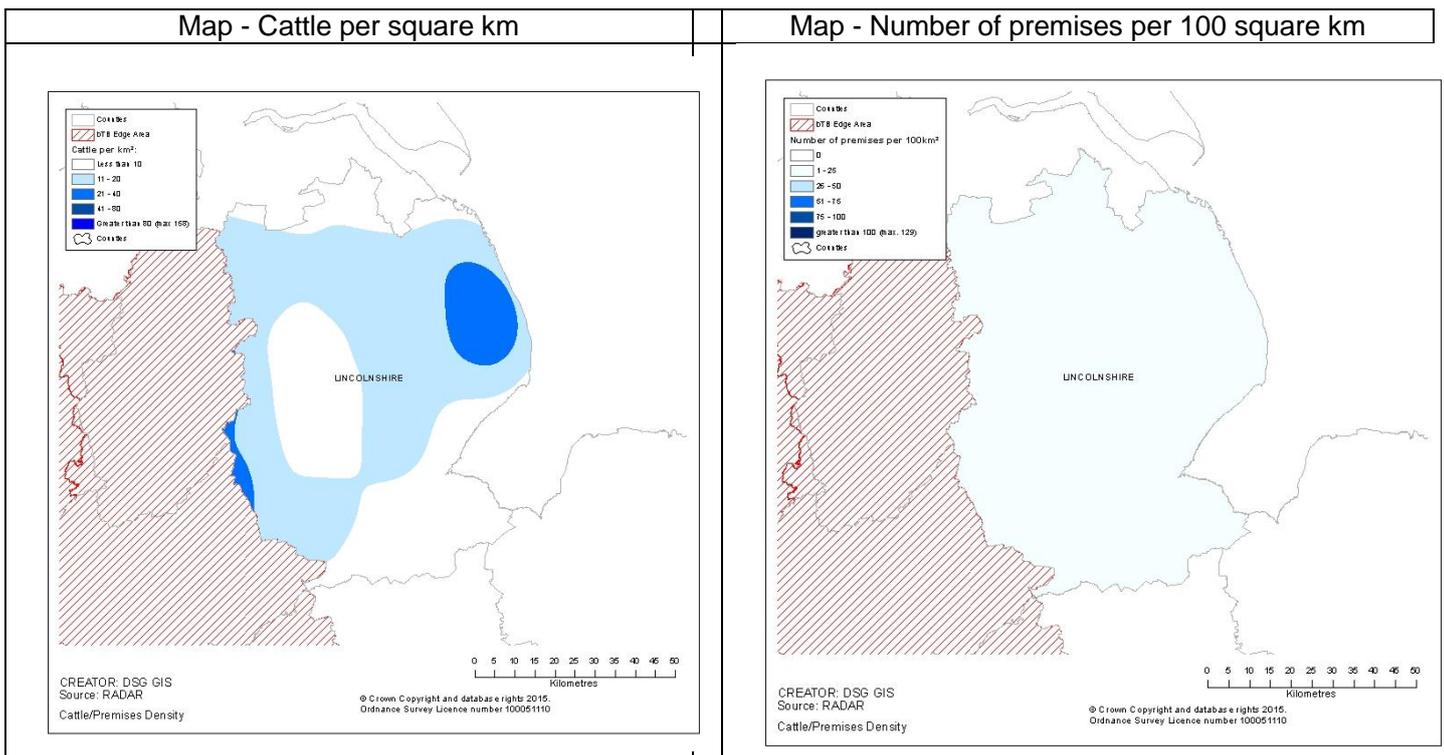
Number of cattle premises by size band in the division at 1 January of the reporting year.

Cattle per premises	0	1 - 50	51 - 100	101 - 200	201 - 350	351 - 500	501+	All	Mean	Median
Number of premises	7	373	147	124	81	34	19	785	108	54

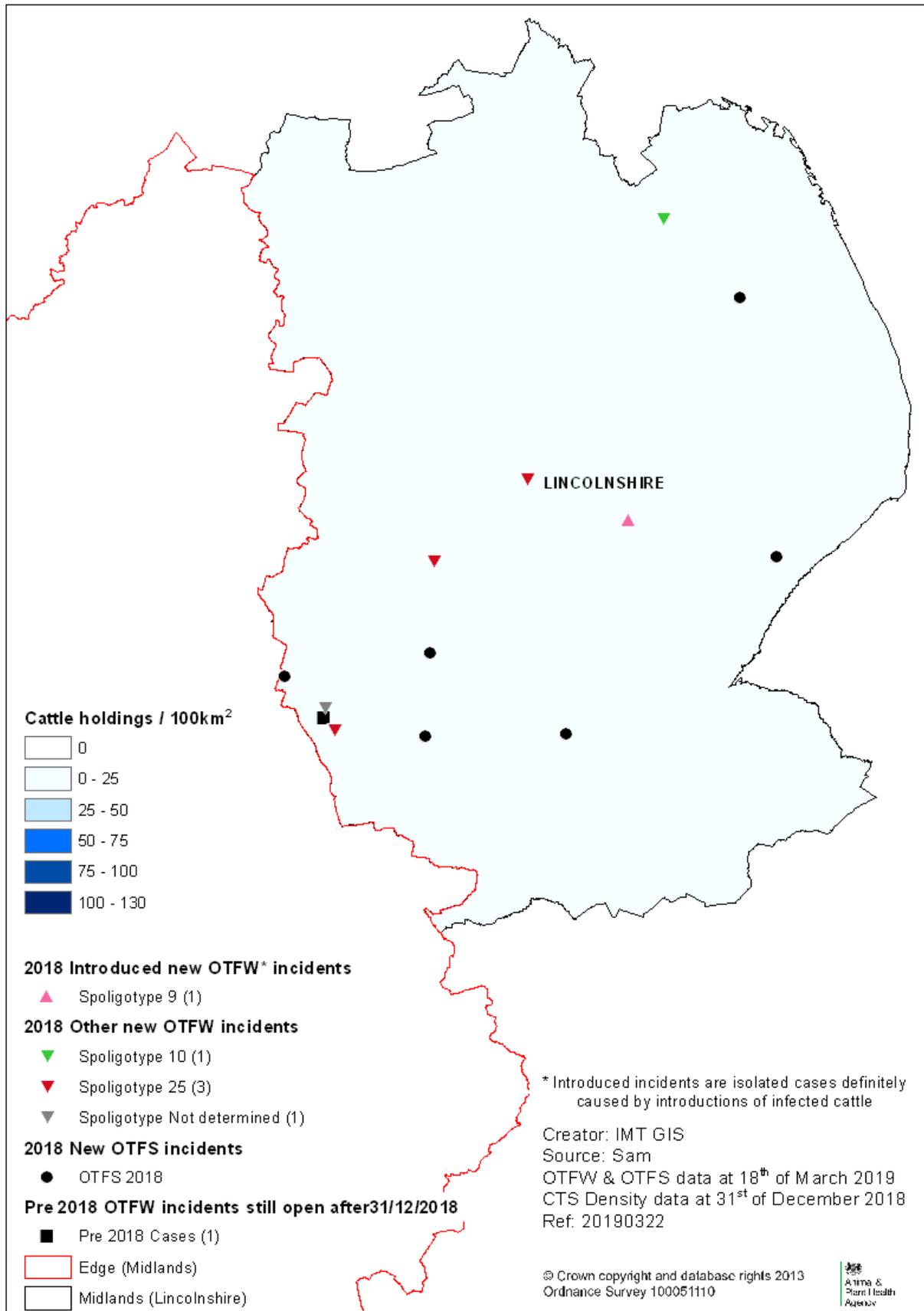
Cattle breed purpose - numbers and percentages at 1 January of the reporting year.

	Beef	Dairy	Dual purpose	Unknown	Total
<b>Number of cattle</b>	68436 ( 81.0% )	14324 ( 17.0% )	1692 ( 2.0% )	5 ( 0.0% )	84457

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



## 2. Geographical Distribution of Bovine bTB Breakdowns in the Region



### 3. Summary of the Regional Headline Cattle bTB Statistics

While the decreasing trend in the total number of herds observed in previous years continued in 2018 (924 herds registered with APHA in 2018, down from 947 in 2017 – see the table below), the total number of herds subject to annual TB testing more than doubled in 2018 relative to the year before (96 from 40). This is likely to be due to radial testing associated to the increase in new lesion- or culture-positive breakdowns with OTF herd status withdrawn (OTFW).

Equally, the total number of herd tests went up in 2018 to 559 from 426 in 2017.

Six new OTFW breakdowns were disclosed in 2018, a marked increase from the total of three OTFW breakdowns in 2017.

Six breakdowns with OTF herd status suspended (OTFS) were also disclosed in 2018, one of these was still ongoing at the time of writing this report. This is a slight decrease from 2017 (8 OTFS breakdowns)

Five breakdowns triggered RAD testing during 2018. Four breakdowns (2 OTFW and 2 OTFS) were disclosed in a RAD test during 2018.

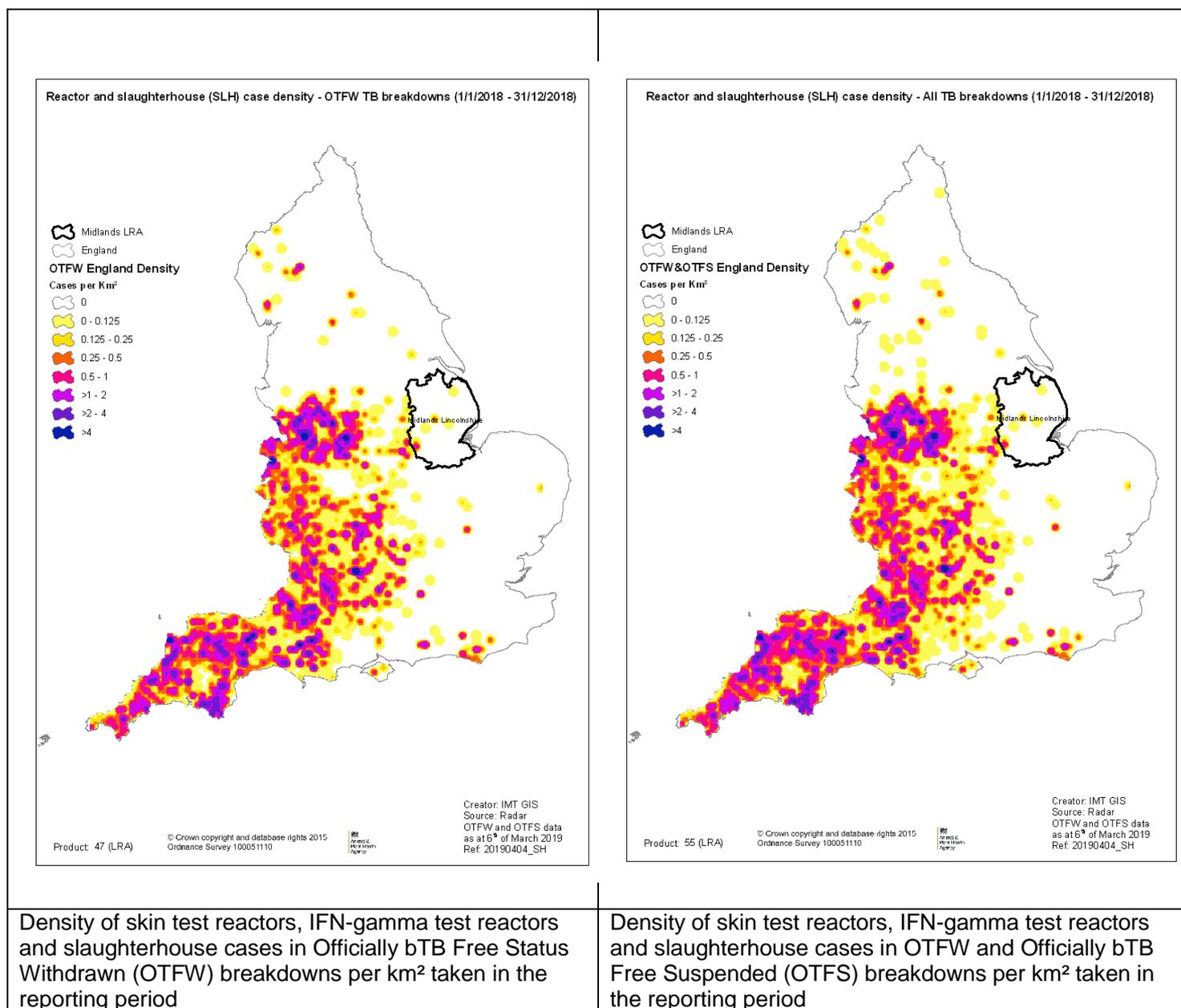
No incidents of *M. bovis* infection in non-bovine species have been detected during the report period.

<b>Herd-level statistics</b>	<b>Lincolnshire (2017)</b>	<b>Lincolnshire (2018)</b>
(a) <i>Total number of cattle herds live on Sam at the end of the reporting period</i>	947	924
(b) <i>Total number of cattle herds subject to annual TB testing at the end of the reporting period (any reason)</i>	40	96
(c) <i>Total number of herd tests carried out in the period</i>	426	559
(d) <i>Total number of OTF cattle herds TB tested during the period for any reason</i>	251	269
(e) <i>Total number of OTF cattle herds at the end of the report period (i.e. herds not under any type of TB2 restrictions)</i>	916	900
(f) <i>Total number of cattle herds that were not under restrictions due to an ongoing TB breakdown at the end of the report period.</i>	926	903
(g) <i>Total number of new TB breakdowns detected in cattle herds during the report period</i>	11	12
• <i>OTF status suspended (OTFS)</i>	8	6
• <i>OTF status withdrawn (OTFW)</i>	3	6
(h) <i>Of the new OTFW herd breakdowns, how many:</i>		
• <i>occurred in a holding affected by another OTFW breakdown in the previous three years?</i>	1	1
• <i>could be considered secondary to a primary breakdown based on current evidence?</i>	0	0
• <i>were triggered by skin test reactors or 2xIRs at routine herd tests?</i>	1	2
• <i>were triggered by skin test reactors or 2xIRs at other TB test types (forward and back-tracings, contiguous, check tests, post-movement, etc.)?</i>	1	3
• <i>were first detected through routine slaughterhouse TB surveillance?</i>	1	1
(i) <i>Number of new breakdowns revealed by enhanced TB surveillance (radial testing) conducted around those OTFW herds</i>	0	4
• <i>OTFS</i>	0	2
• <i>OTFW</i>	0	2

(j) <i>Number of OTFW herds still open at the end of the period (including any ongoing OTFW breakdowns that began in a previous reporting period)</i>	3	5
(k) <i>New confirmed (positive <i>Mycobacterium. bovis</i> culture) incidents in non-bovine species detected during the report period (indicate host species involved)</i>	0	0

<b>Animal-level statistics (cattle)</b>		
(a) <i>Total number of cattle tested in the period (animal tests)</i>	19907	23825
(b) <i>Reactors detected:</i>	37	60
• <i>tuberculin skin test</i>	21	43
• <i>additional IFN-gamma blood test reactors (skin-test negative or IR animals)</i>	16	17
(c) <i>Reactors per breakdown</i>	3	5
(d) <i>Reactors per 1000 animal tests</i>	2	2.52
(e) <i>Additional animals identified for slaughter for TB control reasons (DCs, including any first-time IRs)</i>	0	1
(f) <i>SLH cases (tuberculous carcasses) reported by FSA</i>	5	4
(g) <i>SLH cases confirmed by culture of <i>M. bovis</i></i>	1	1

## Density of TB reactors and slaughterhouse cases in bTB breakdowns per km<sup>2</sup>



## 4. Suspected Sources of *M. bovis* Infection for all the New OTFW Breakdowns Identified in the Report Period

Most likely origin	Provisional	Final
Introduction (e.g. purchase) of infected animal(s)	1	1
Local - lateral spread from neighbouring holdings:		
<ul style="list-style-type: none"> <li>• exposure to infected wildlife e.g. badgers</li> </ul>		
<ul style="list-style-type: none"> <li>• other farmed species</li> </ul>		
<ul style="list-style-type: none"> <li>• recrudescence of residual infection from a previous TB breakdown</li> </ul>		
<ul style="list-style-type: none"> <li>• infected human source</li> </ul>		
Undetermined/obscure	4	
Other (explain)		

Please attempt to categorise all new OTFW bTB breakdowns identified in your region using the following risk matrix, according to (a) the probability of them being the result of introduced infection (inward cattle movements) and (b) the strength of evidence that we are dealing with an isolated incident without further propagation from the index farm to neighbouring herds (or vice versa). Enter the corresponding numbers of breakdowns in the relevant boxes. Any OTFW breakdowns falling in the greyed-in boxes may be removed from the county bTB incidence calculations for the purposes of EU reporting:

		Probability of isolated, sporadic ('one-off') breakdown, without secondary local spread from the index case		
		Likely (no secondary breakdowns detected)	Possible (no secondary breakdowns detected, but dataset incomplete)	Not likely (secondary spread from the index case, or exposure to a common wildlife source has occurred)
Probability of introduced <i>M. bovis</i> infection introduced via cattle movements	Definite	1		
	Likely		2	
	Possible		2	
	Not likely (indigenous infection in the locality)		1	

List the CPHs of those herds with OTFW breakdowns categorised as definite or likely introduced cases with no evidence of local spread (greyed-in boxes):

## 5. Overview of the bTB Eradication Programme in the Region

One ongoing OTFW case (genotype 25:a of *M. bovis*) of undetermined origin that was disclosed in December 2017 is being investigated as an indication of potential endemicity in the area near the south west border with Leicestershire (Leicestershire is in the Edge Area, but several recent genotype 25:a breakdowns of obscure origin in north east Leicestershire have been attributed to wildlife as most likely source pathway). In June 2018 a potential bTB hotspot area was identified and is currently implemented around this case, no data is yet available on submissions of wildlife carcasses.

Six new OTFW breakdowns have been disclosed in 2018 (compared to the total of three OTFW breakdowns during the whole of 2017).

Three out of those six were identified as being of definite/likely purchased origin.

The other three OTFW breakdowns in 2018 were identified as being of undetermined origin. Further investigation of two of those three breakdowns indicate that they are not likely to be related to the index case.

The third OTFW breakdown of undetermined origin was disclosed as a result of RAD testing in the area, but as it was negative to culture of *M bovis*, no further conclusions can be made.

Six OTFS breakdowns were disclosed in 2018, one of these still ongoing. The origin of two of these was identified as being of likely purchased origin, with the remaining four breakdowns identified as being of undetermined origin due to insufficient data.

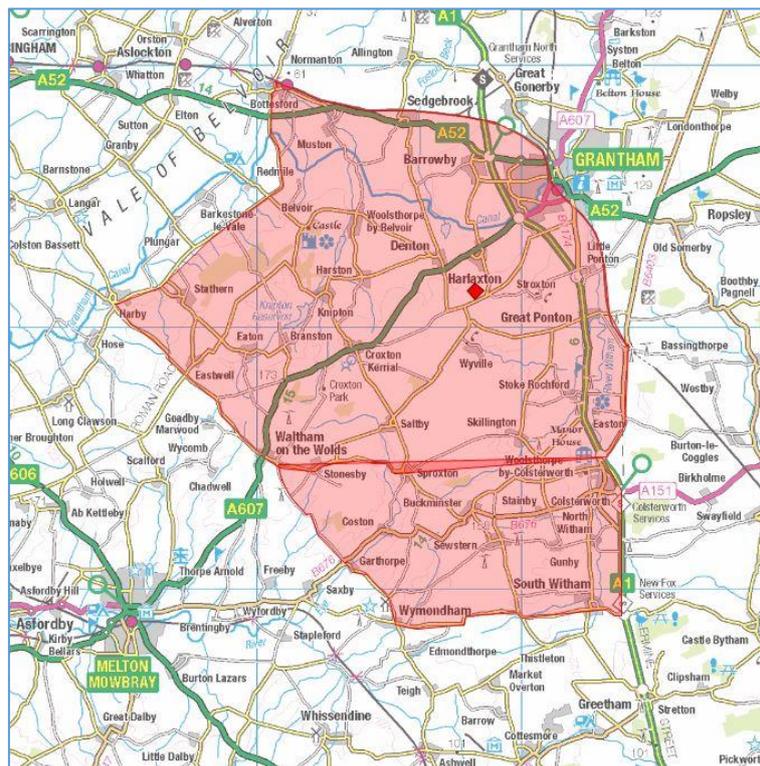
Other features of bovine TB in Lincolnshire in 2018:

- No *ad hoc* routine surveillance testing interval changes for specific herds or parishes
- Compulsory post-movement testing for cattle entering the Low Risk Area from annual (or more frequent) testing areas of GB and voluntary 'pre-sale' bTB check test identified one OTFS case in 2018
- There were no gamma test exemptions granted during the first six months of 2018

- Overall results of radial bTB surveillance: five breakdowns triggered RAD testing during 2018, testing ongoing. Four breakdowns (two OTFW and two OTFS) were disclosed in a RAD test during 2018.
- No unusual breakdowns
- No confirmed or suspected cases of zoonotic (human) *M. bovis* infection
- No suspected cases of non-specific and fraudulent skin test reactors
- No breakdowns involving producer-retailers and unpasteurised cheese-makers, open farms, etc.
- Regular meetings are held with the NFU in the Midlands Region. APHA have given specific support and encouragement to the Lincolnshire branch of the NFU in their drive to keep bTB out of the LRA. Contact with Official Veterinarians (OVs) through OV newsletter, or direct one-to-one contact in areas such as changes to bTB policy and bTB testing protocol. Ongoing audit programme of OVs for compliance with TB testing protocol.
- Collaboration with local Trading Standards Departments on enforcement of bTB legislation. Contact on an as-needs basis regarding individual casework. Routine liaison with CCDC and PHE (public health authorities).
- No significant risks or issues concerning the delivery of TB eradication policies in the region.

## 6. Wildlife

One ongoing OTFW case of undetermined origin that was disclosed in December 2017 in a cattle herd near Grantham (south west border of Lincolnshire with Leicestershire) is being investigated as an indication of potential spread of endemic TB from the adjoining Edge Area. As a result, APHA set up a potential bTB hotspot area of approximately 245 km<sup>2</sup> (HS23) between Grantham (Lincs.) and Melton Mowbray (Leics.) in June 2018. Additional TB surveillance measures are being implemented in both cattle herds and wildlife (badgers and wild deer) within this area as per map below. Notification letters have been sent to cattle keepers and stakeholders. No data is yet available on submissions of wildlife carcasses.

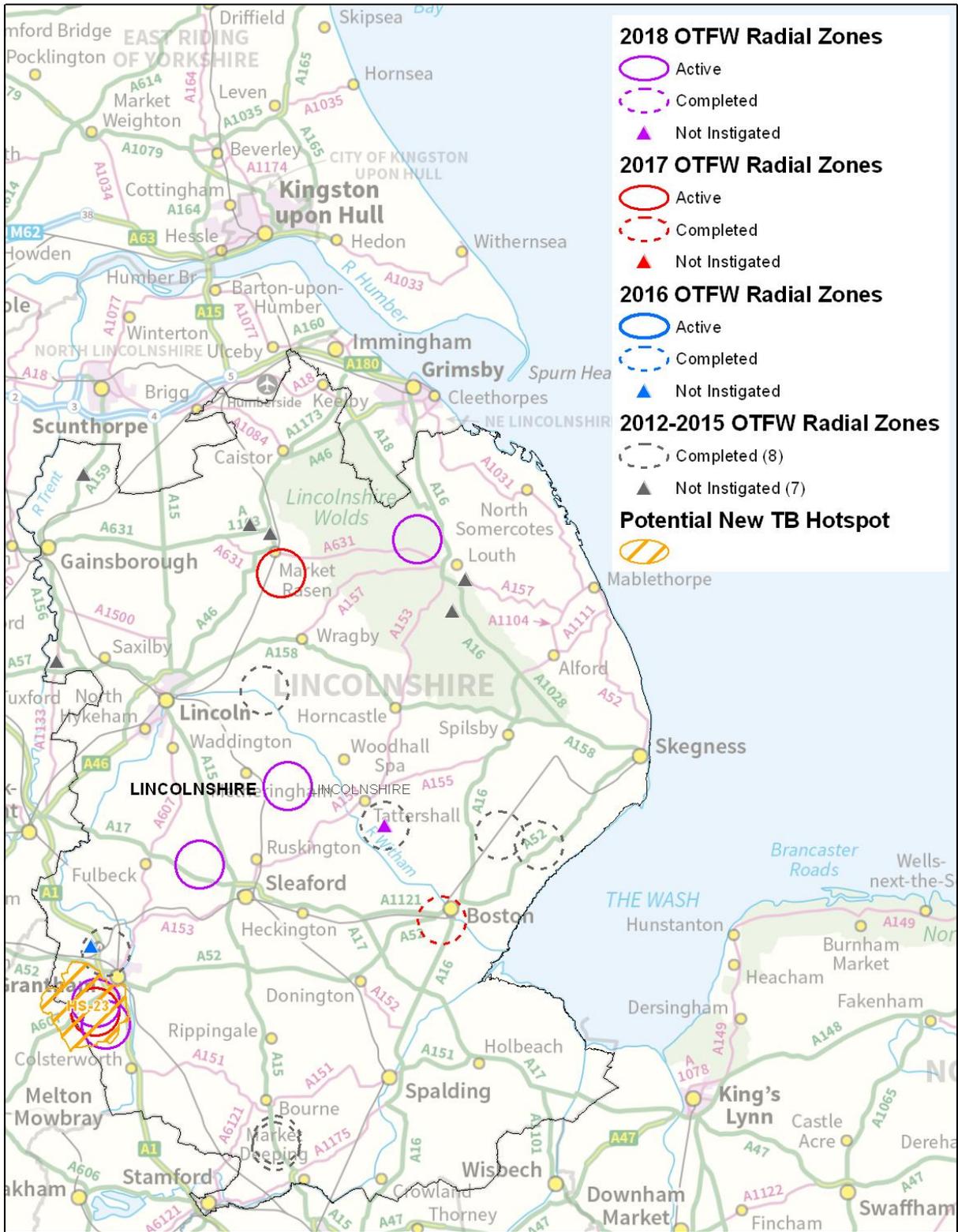


Passive surveillance of hunted wild deer has continued in this area throughout the period and no suspect cases of bTB in wild deer have been notified during the reporting period.

No voluntary badger BCG vaccination known to have taken place.

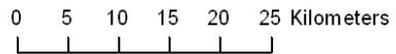
## 7. Other Susceptible Species

No evidence of bTB (*M. bovis* infection) in any other animal species, including domestic non-bovine farm animals (camelids, goats, sheep, pigs), pets, zoo animal collections, captive (farmed/park) deer holdings and captive wild boar farms.



Creator: IMT GIS  
 Source: Sam  
 OTFW data as at 18<sup>th</sup> of March 2019  
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 Product No: 43

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## Glossary

- bTB – (bovine) Tuberculosis (infection of cattle with *M. bovis*)
- Edge Area (EA) – the annual TB 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- $\gamma$  – interferon-gamma test. A supplementary in vitro blood test for TB 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 TB 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 TB free status withdrawn due to a TB breakdown
- OTF – Officially Tuberculosis Free status. Herds that are not subjected to TB 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 TB movement restrictions for 18 months or longer due to infection with *M. bovis*
- Potential 'Hotspots' – a temporary area of enhanced TB cattle and wildlife surveillance that may be declared around some OTFW TB breakdowns of uncertain origin detected in a Region of historically low TB 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.

APHA is an Executive Agency of the Department for Environment, Food and Rural Affairs and also works on behalf of the Scottish Government, Welsh Government and Food Standards Agency to safeguard animal and plant health for the benefit of people, the environment and the economy.