

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

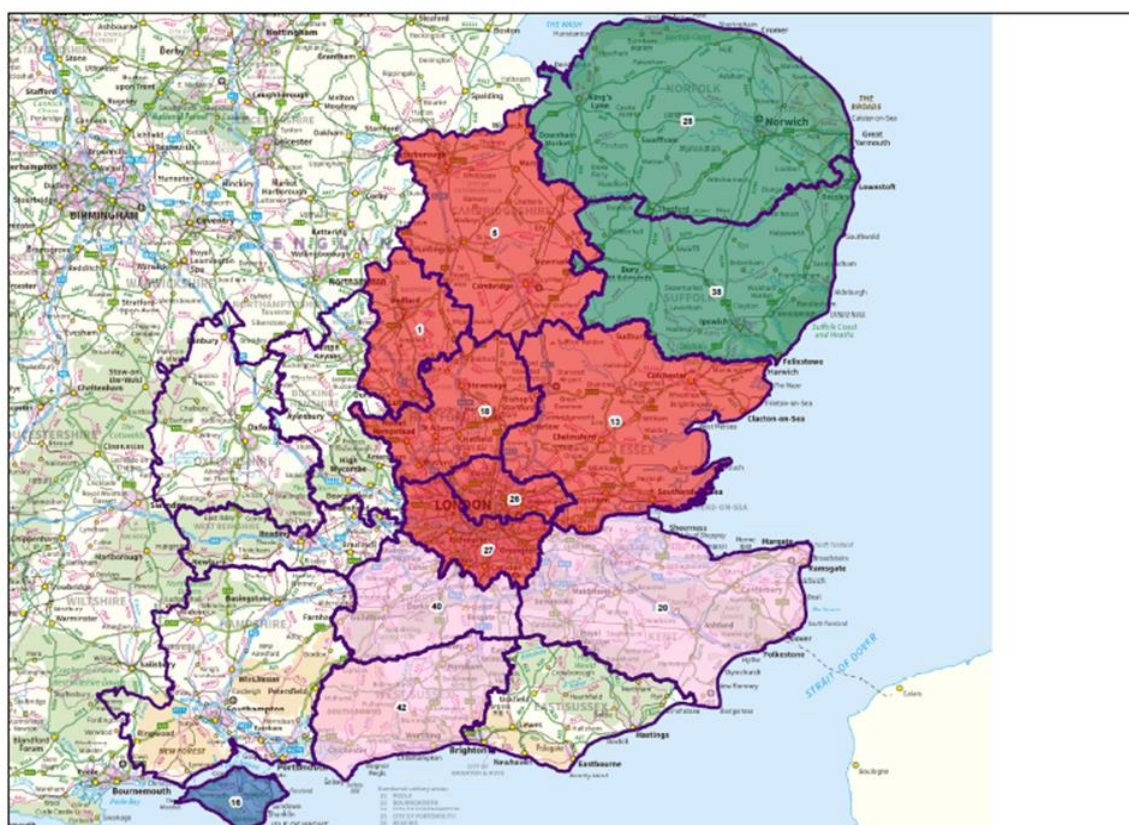
**Regional Office:**  
SE Delivery Area

**Mid-year (first six months) 2018**

### 1. Cattle Industry in the Region

For the purposes of this report, the South East Delivery Area of the Animal and Plant Health Agency (APHA) in England has been split into practical working areas (groups of counties) that are overseen on a regional basis—

- Zone 1 – Norfolk (28) and Suffolk (38).
- Zone 2 – Cambridgeshire (05), Bedfordshire (01), Hertfordshire (18), Essex (13), Greater London North (26) and Greater London South (27).
- Zone 3 – Surrey (40), Kent (20) and West Sussex (42).
- Zone 4 – Isle of Wight (16).



SOUTH EAST ENGLAND LOW RISK AREA ZONES

Note: the remaining counties to the west of the Southeast region (Hampshire, Berkshire, Buckinghamshire, Oxfordshire and East Sussex, shown with no background colour) are part of the Edge Area, where herds are routinely tested annually or every six months.

The majority of the cattle farmed in the east of the Region (Zones 1 and 2) are in the north of the area i.e. Norfolk. The herd types are predominantly fattening, with a reasonable number of suckler herds, and fewer and fewer dairy herds. Cattle for finishing, or stores, are traditionally bought in from other areas of the country

for finishing on areas of grazing that are unsuitable for arable production, or on grain/by-products from that arable production. The areas that cattle are purchased from are often the higher risk areas of the Midlands and South West of England.

In the southern counties (Zone 3), the highest densities of cattle are in southern Surrey and in Sussex, including the South Downs. East Sussex is an annual testing county of the Edge Area, due to the enclave of endemic TB in badgers and cattle in the southern part of the county. Farm types are similar to the East with finishing, store and suckler herds predominating, with fewer and generally larger dairy herds. Surrey, particularly to the north, has many smaller herds. Kent has a generally low density of cattle, but a mix of herd types similar to the rest of the zone. It is becoming more common for cattle herds in these areas to have no contiguous cattle farms.

Dairying used to predominate on the Isle of Wight, but there are now ten dairy herds remaining, dropping from around 150 herds in the 1980s. There are some cattle breeders on the Island that are taking advantage of their disease free (including bTB) status to enhance the value of their sales to farms on the mainland.

The South East Region is a net importer of cattle and the main risk of TB introduction is due to the movements of cattle into this area from higher bTB risk areas of England and Wales. There are only a few relatively low volume cattle markets remaining in the Region. The majority of the larger finishers in the South East have to source their cattle from the higher bTB risk areas due to the numbers required at one time to maintain the size of production groups.

There is currently no evidence of infection in the wildlife in any of the counties in the Low Risk Area (LRA) of the SE Region. Culled deer are routinely inspected by hunters and on occasion suspicious lesions are reported to APHA, but no *M. bovis* infection has been identified to date.

There are four Licensed Finishing Units (LFUs) operating in the LRA counties of the SE Region for the indoor fattening under biosecure conditions of cattle destined for slaughter. These units are kept under movement restrictions (OTF status suspended) and can only accept, as a rule, cattle from OTF herds that have been subject to statutory pre-movement TB testing with negative results, where required.

Number of cattle premises by size band in the division at 1<sup>st</sup> January of the reporting year.

COUNTY	0	1-50	51-100	101-200	201-350	351-500	501+	All	Mean	Median
BEDFORDSHIRE	2	102	33	19	8	2	3	169	73	32
CAMBRIDGESHIRE	0	199	51	42	15	5	9	321	87	29
ESSEX	3	278	49	40	21	4	10	405	72	20
ISLE OF WIGHT	0	74	22	27	8	5	2	138	87	45
HERTFORDSHIRE	1	146	32	26	7	4	1	217	58	21
KENT	13	407	98	67	41	25	18	669	88	28
GREATER LONDON	5	21	4	0	0	0	0	30	17	5
GREATER LONDON	0	29	2	3	0	1	0	35	34	9
NORFOLK	8	501	132	105	53	17	24	840	90	32
SUFFOLK	6	303	69	58	23	9	10	478	72	24
SURREY	1	197	40	29	17	13	10	307	91	23
WEST SUSSEX	10	235	63	67	39	16	15	445	108	38

Cattle breed purpose - numbers and percentages at 1<sup>st</sup> January of the reporting year.

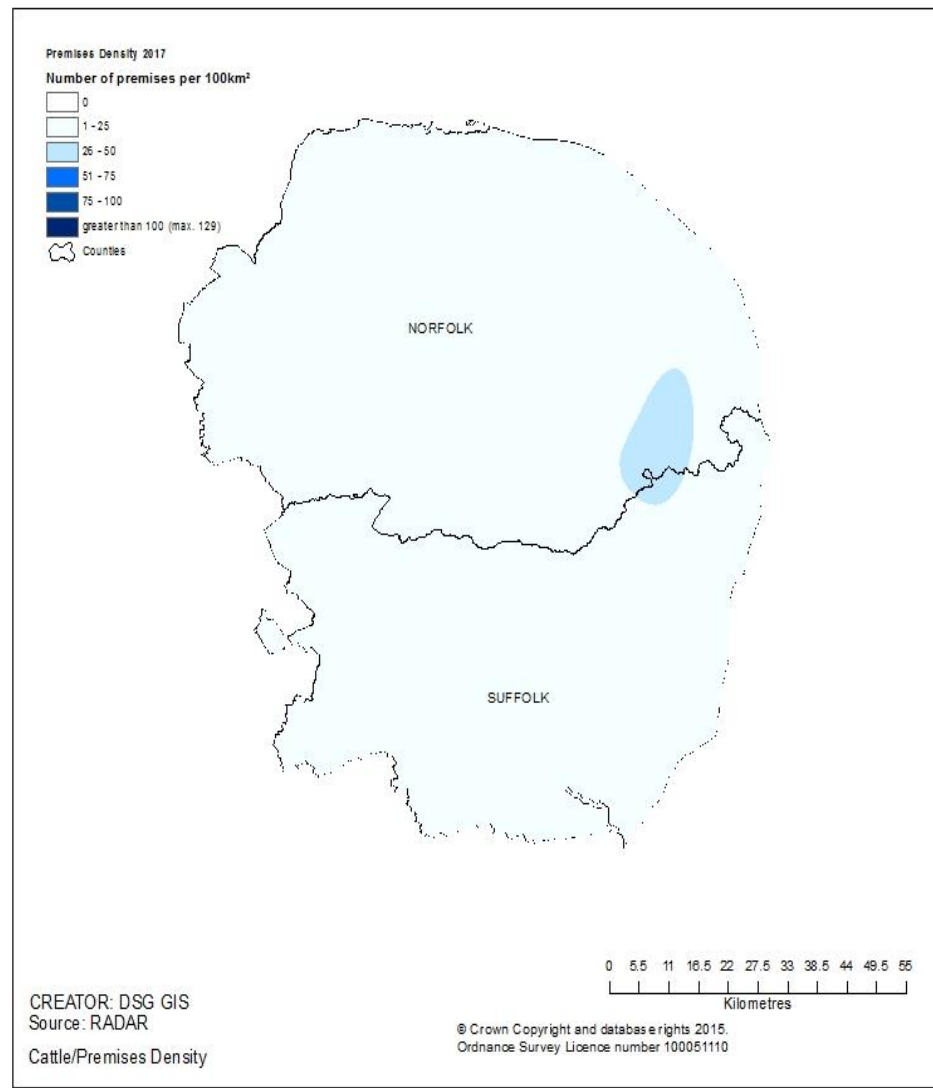
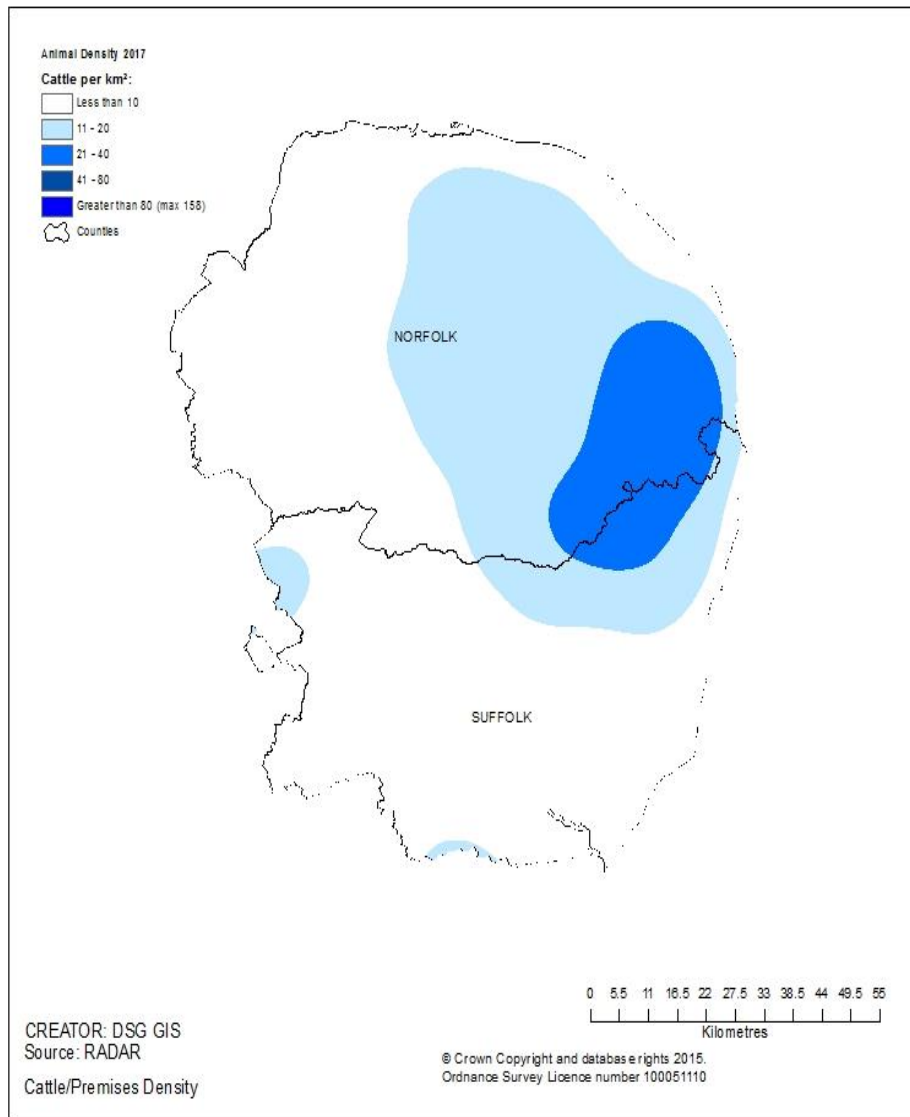
<b>COUNTY</b>	<b>Beef</b>	<b>Dairy</b>	<b>Dual Breed</b>	<b>Unknown</b>	<b>Total</b>
<b>BEDFORDSHIRE</b>	9667 ( 78.0% )	2327 ( 18.8% )	393 ( 3.2% )	2 ( 0.0% )	12389
<b>CAMBRIDGESHIRE</b>	20354 ( 73.2% )	6390 ( 23.0% )	1076 ( 3.9% )	0 ( 0.0% )	27820
<b>ESSEX</b>	21759 ( 74.2% )	6159 ( 21.0% )	1421 ( 4.8% )	4 ( 0.0% )	29343
<b>ISLE OF WIGHT</b>	8517 ( 71.1% )	3192 ( 26.6% )	270 ( 2.3% )	2 ( 0.0% )	11981
<b>HERTFORDSHIRE</b>	10168 ( 81.4% )	1883 ( 15.1% )	425 ( 3.4% )	8 ( 0.1% )	12484
<b>KENT</b>	36367 ( 61.7% )	21483 ( 36.4% )	1093 ( 1.9% )	9 ( 0.0% )	58952
<b>GREATER LONDON</b>	437 ( 87.1% )	10 ( 2.0% )	55 ( 11.0% )	0 ( 0.0% )	502
<b>GREATER LONDON</b>	731 ( 60.9% )	426 ( 35.5% )	44 ( 3.7% )	2 ( 0.0% )	1201
<b>NORFOLK</b>	58730 ( 78.0% )	13033 ( 17.3% )	3497 ( 4.6% )	26 ( 0.0% )	75286
<b>SUFFOLK</b>	23311 ( 67.4% )	7376 ( 21.3% )	3877 ( 11.2% )	11 ( 0.0% )	34575
<b>SURREY</b>	16296 ( 58.2% )	10381 ( 37.1% )	1310 ( 4.7% )	0 ( 0.0% )	27987
<b>WEST SUSSEX</b>	24014 ( 50.0% )	21815 ( 45.4% )	2203 ( 4.6% )	11 ( 0.0% )	48043

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

**ZONE 1**

Map - Cattle per square km

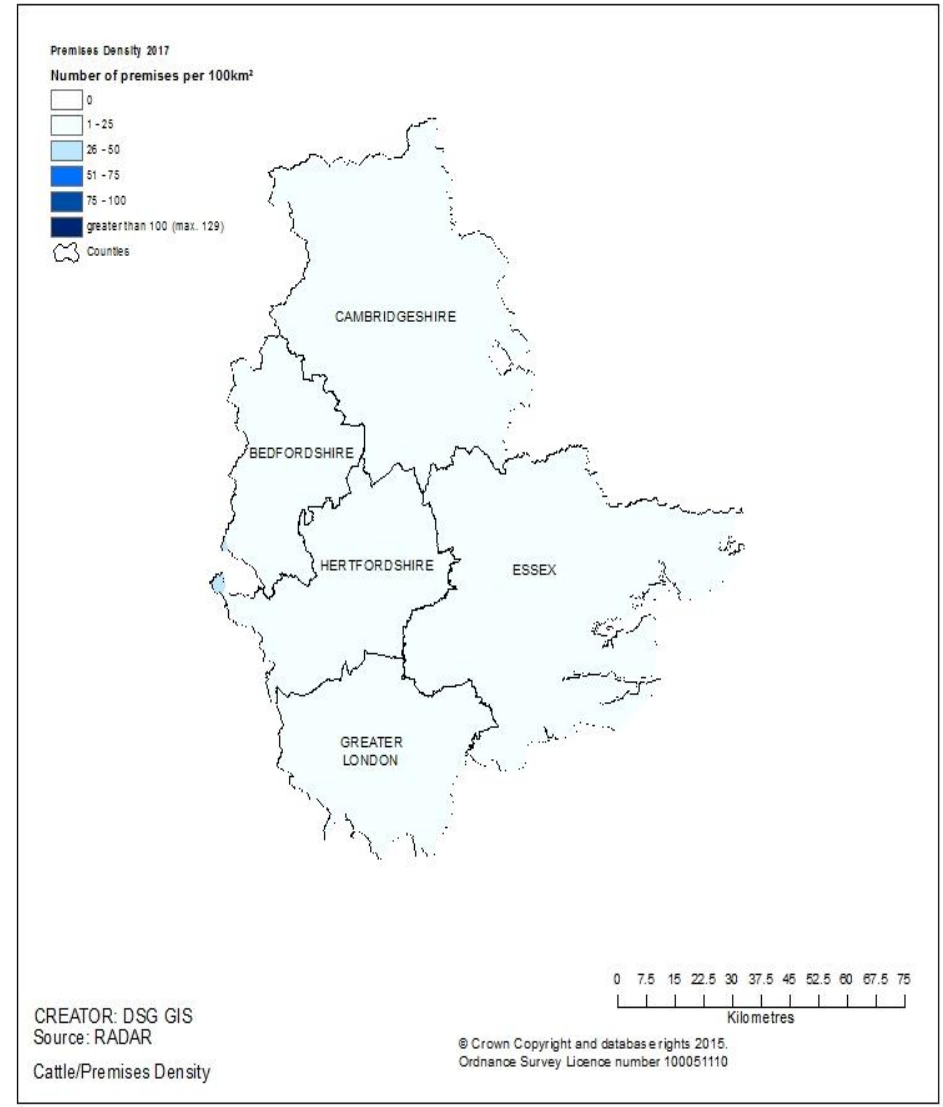
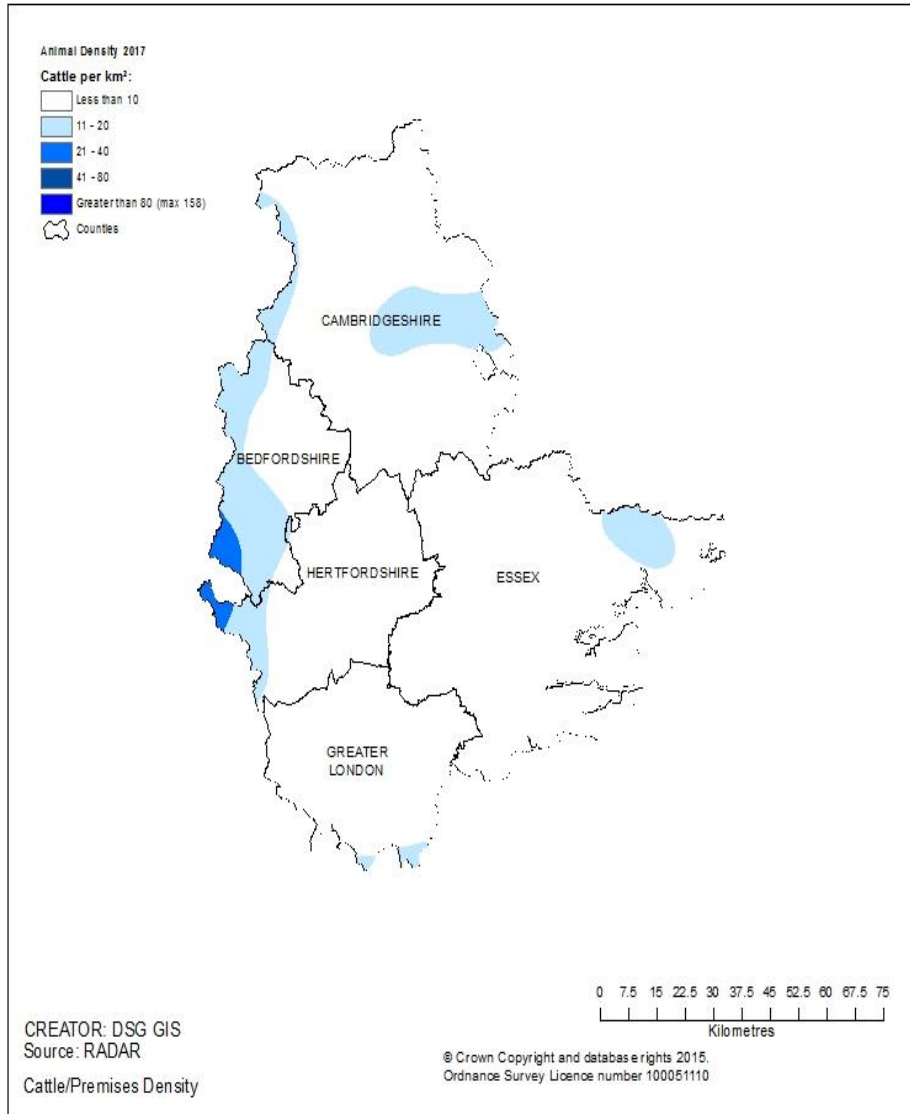
Map - Number of premises per 100 square km



**ZONE 2**

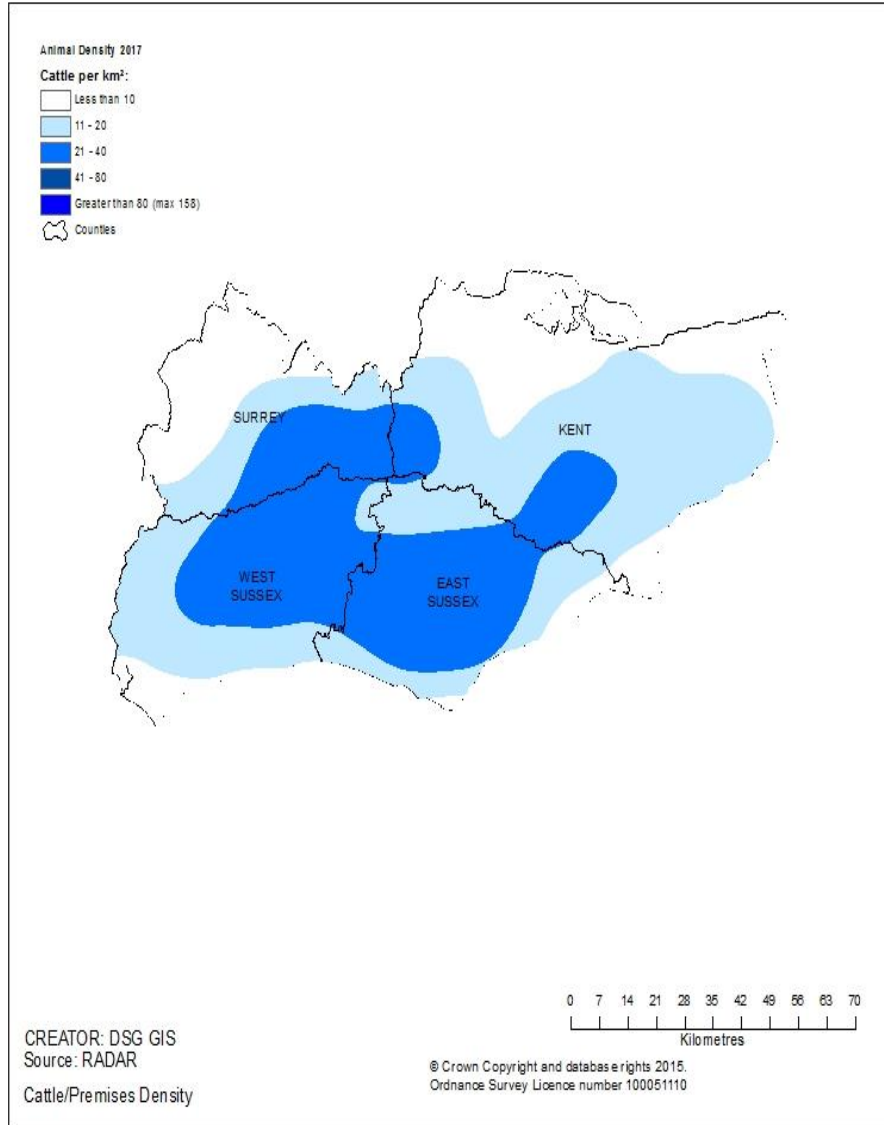
Map - Cattle per square km

Map - Number of premises per 100 square km

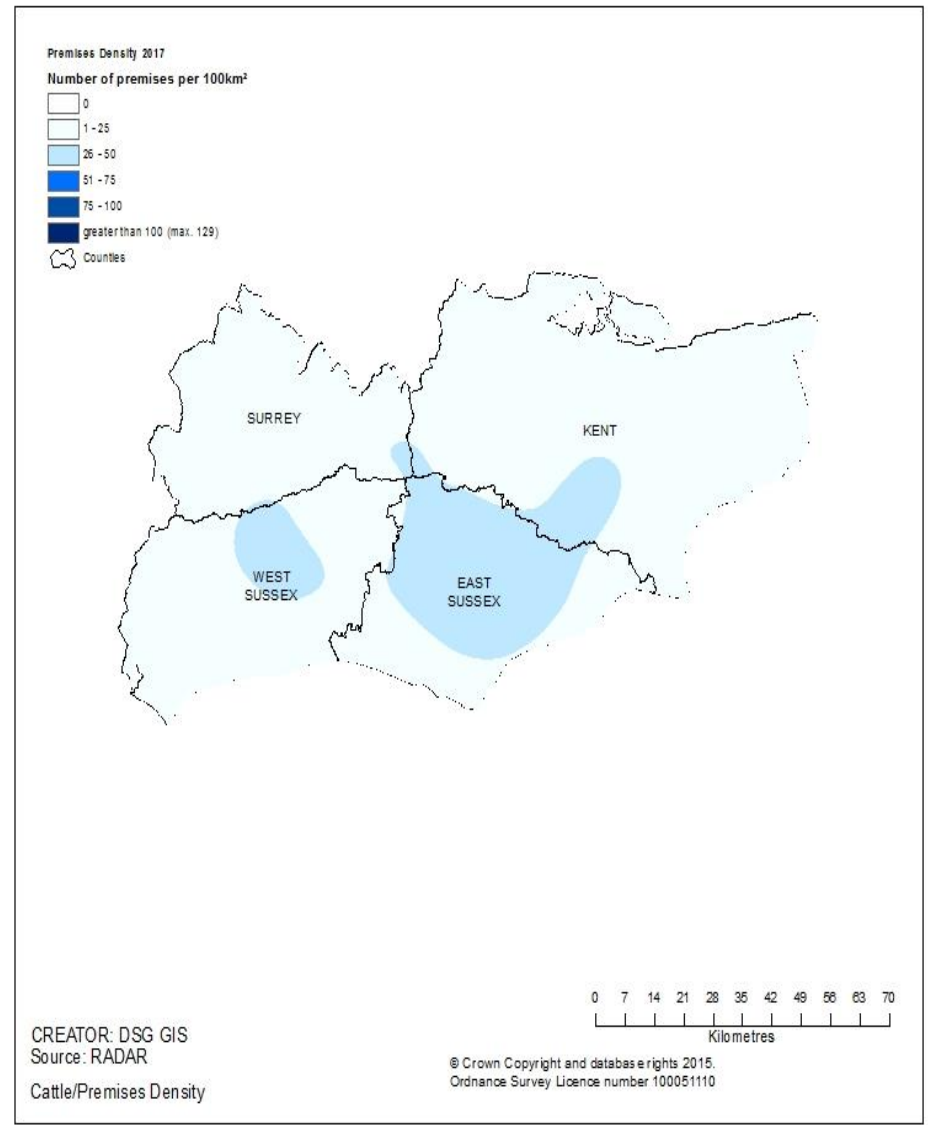


**ZONE 3**

Map - Cattle per square km

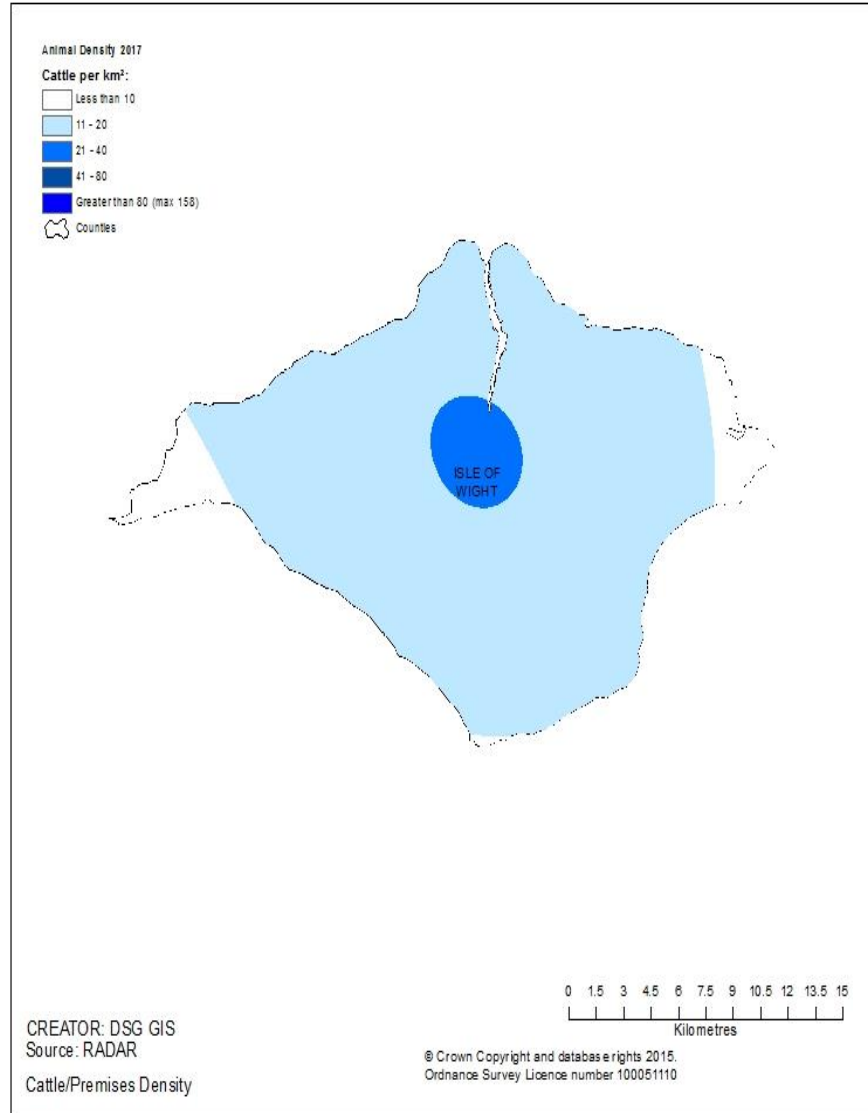


Map - Number of premises per 100 square km

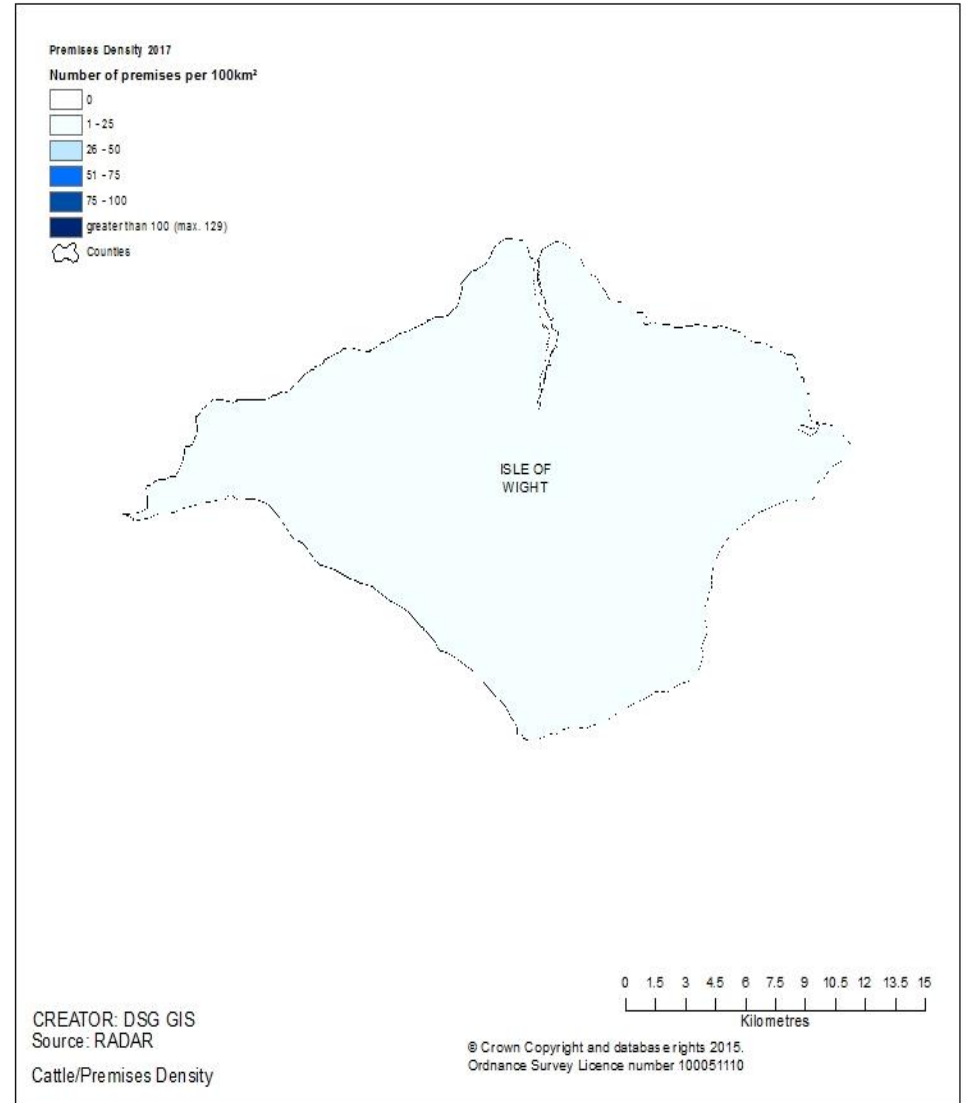


**ZONE 4**

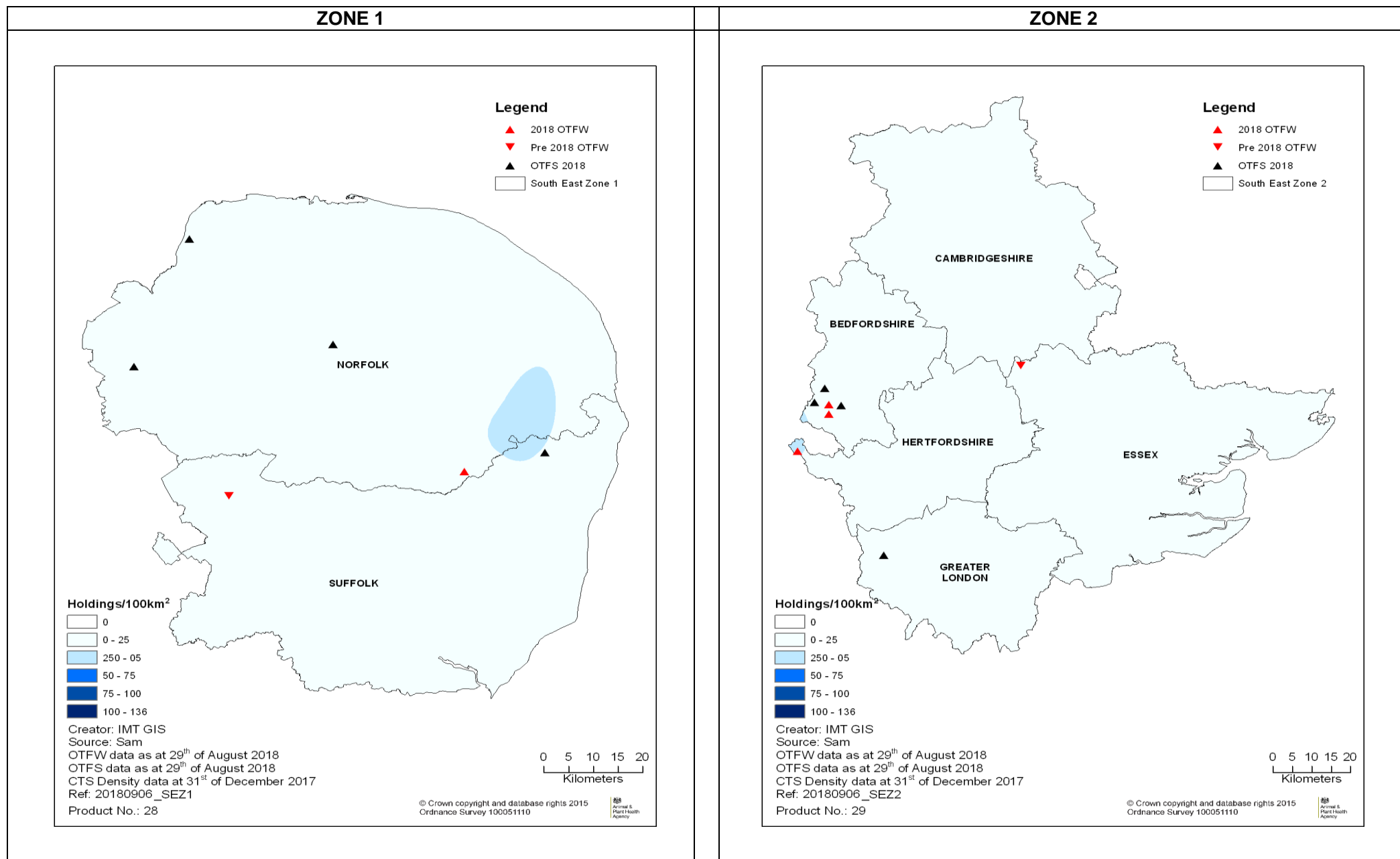
Map - Cattle per square km



Map - Number of premises per 100 square km

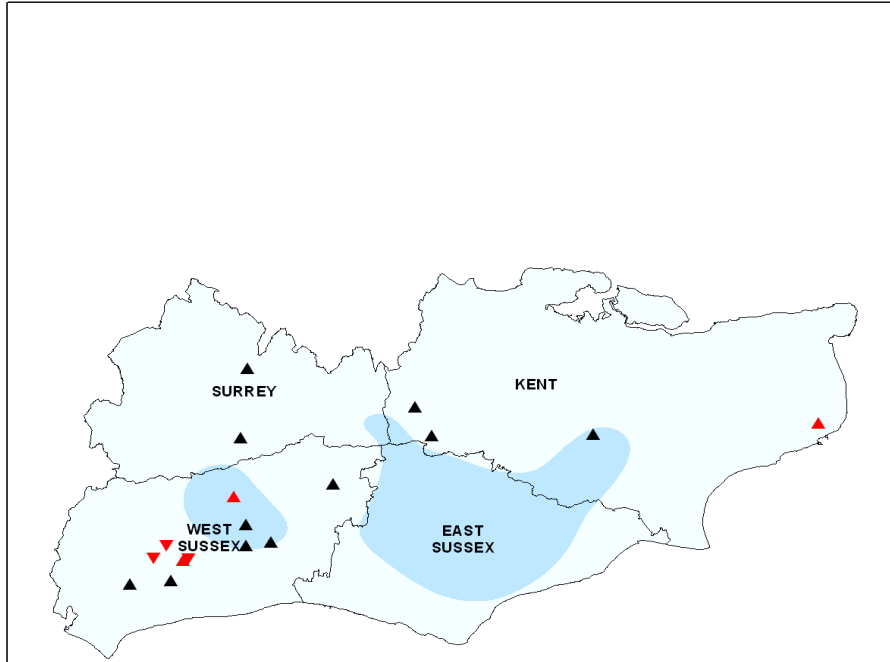


## 2. Geographical Distribution of Bovine TB Breakdowns in the Region

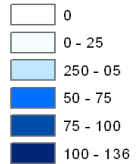




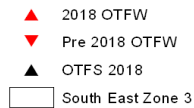
### ZONE 3



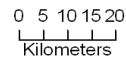
#### Holdings/100km<sup>2</sup>



#### Legend



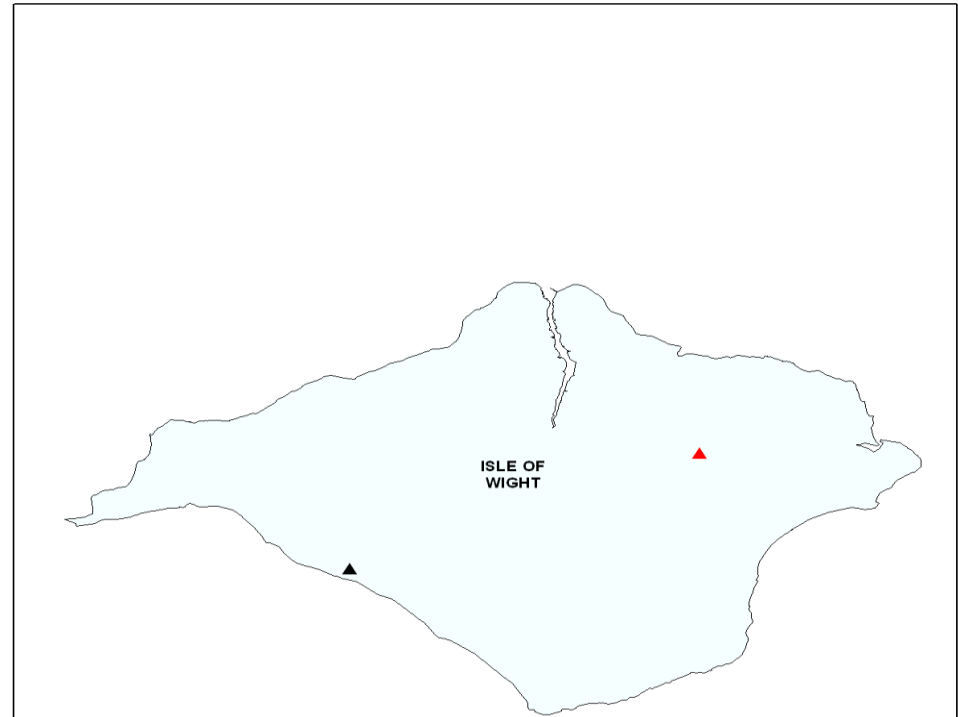
Creator: IMT GIS  
 Source: Sam  
 OTFW data as at 29<sup>th</sup> of August 2018  
 OTFS data as at 29<sup>th</sup> of August 2018  
 CTS Density data at 31<sup>st</sup> of December 2017  
 Ref: 20180906\_SEZ3  
 Product No.: 30



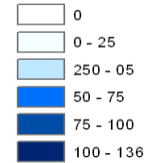
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### ZONE 4



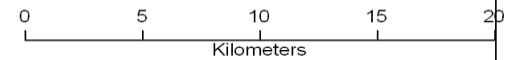
#### Holdings/100km<sup>2</sup>



#### Legend



Creator: IMT GIS  
 Source: Sam  
 OTFW data as at 29<sup>th</sup> of August 2018  
 OTFS data as at 29<sup>th</sup> of August 2018  
 CTS Density data at 31<sup>st</sup> of December 2017  
 Ref: 20180906\_SEZ4  
 Product No.: 31



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

There were eight new OTFW breakdowns in the LRA of the South East region in the first six months of 2018. In addition to that, there were four OTFW breakdowns that began in 2017 and were still opened at the end of the reporting period.

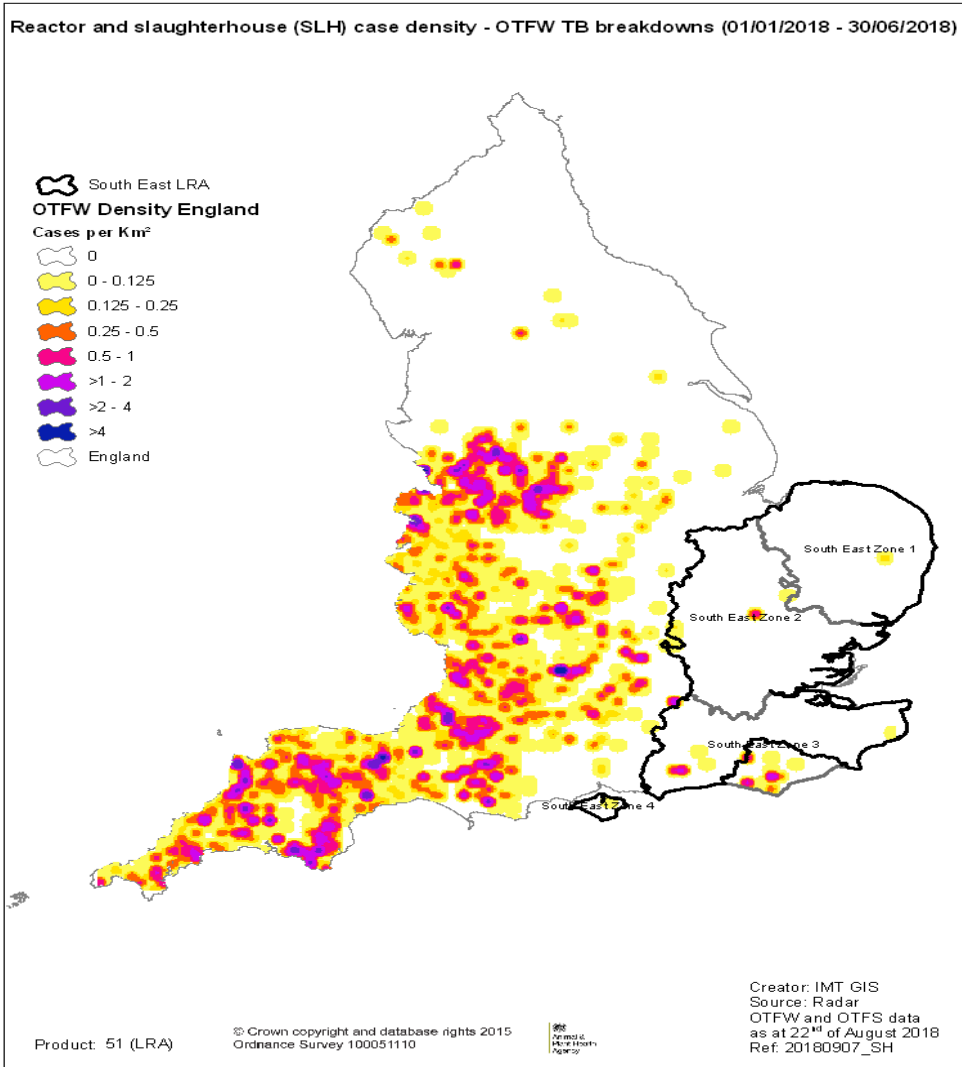
The Southeast Region counties of East Sussex, Hampshire, Berkshire, Buckinghamshire and Oxfordshire are not included in this report as they are now annual TB testing counties and not part of the LRA. The 2018 OTFW breakdowns are briefly summarised in Section 8 in this report.

<b>Herd-level statistics</b>	<b>Zone 1</b>	<b>Zone 2</b>	<b>Zone 3</b>	<b>Zone 4</b>	<b>Total SE Region</b>
(a) <i>Total number of cattle herds live on Sam at the end of the reporting period</i>	1571	1362	1552	150	4635
(b) <i>Total number of cattle herds subject to annual TB testing at the end of the reporting period (any reason)</i>	100	122	185	60	467
(c) <i>Total number of herd tests carried out in the period</i>	421	299	389	50	1159
(d) <i>Total number of OTF cattle herds TB tested during the period for any reason</i>	282	200	237	34	753
(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>	1553	1346	1518	149	4566
(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>	1567	1354	1533	149	4603
(g) <i>Total number of new TB breakdowns detected in cattle herds during the report period</i>	5	7	14	2	28
• <i>OTF status suspended (OTFS)</i>	4	4	11	1	20
• <i>OTF status withdrawn (OTFW)</i>	1	3	3	1	8
(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>	0	0	0	0	0
• <i>could be considered secondary to a primary breakdown based on current evidence?</i>	0	0	0	0	0
• <i>were triggered by skin test reactors or 2xIRs at routine herd tests?</i>	0	0	0	0	0
• <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>	0	3	1	1	5
• <i>were first detected through routine slaughterhouse TB surveillance?</i>	1	0	2	0	3
(i) <i>Number of new breakdowns revealed by enhanced TB surveillance (radial testing) conducted around those OTFW herds</i>	0	3	2	0	5
• <i>OTFS</i>	0	0	1	0	1
• <i>OTFW</i>	0	3	1	0	4
(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>	2	4	5	1	12

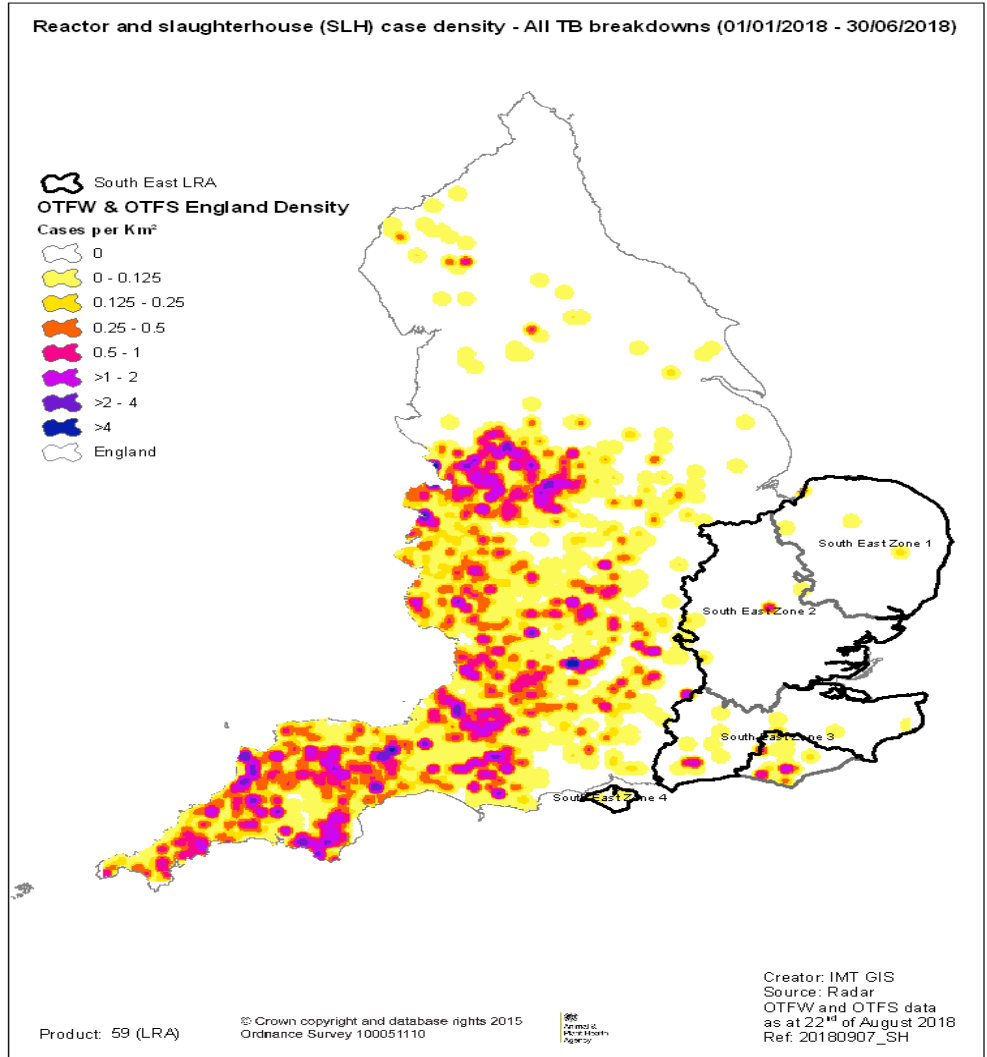
(k) New confirmed (positive <i>Mycobacterium. bovis</i> culture) incidents in non-bovine species detected during the report period (indicate host species involved)	0	0	0	0	0
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<b>Animal-level statistics (cattle)</b>	<b>Zone 1</b>	<b>Zone 2</b>	<b>Zone 3</b>	<b>Zone 4</b>	<b>Total SE Region</b>
(a) Total number of cattle tested in the period (animal tests)	22587	18053	32575	3499	76714
(b) Reactors detected:	19	53	94	4	170
• tuberculin skin test	19	18	37	4	78
• additional IFN-gamma blood test reactors (skin-test negative or IR animals)	0	35	57	0	92
(c) Reactors per breakdown	3.8	7.57	6.7	2	6.07
(d) Reactors per 1000 animal tests	0.084	0.29	0.288	0.114	0.22
(e) Additional animals identified for slaughter for TB control reasons (DCs, including any first-time IRs)	0	0	0	0	0
(f) SLH cases (tuberculous carcasses) reported by FSA	2	2	5	1	10
(g) SLH cases confirmed by culture of <i>M. bovis</i>	1	1	1	0	3

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



Density of skin test reactors, IFN-gamma test reactors and slaughterhouse cases in Officially TB Free Status Withdrawn (OTFW) breakdowns per km<sup>2</sup> taken in the reporting period



Density of skin test reactors, IFN-gamma test reactors and slaughterhouse cases in OTFW and Officially TB Free Suspended (OTFS) breakdowns per km<sup>2</sup> taken in the reporting period

#### 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)	4	2
Local - lateral spread from neighbouring holdings:	1	
<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	1	
Other (explain)		

#### Risk Matrix

		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	2**	4*	
	Likely			
	Possible		2	
	Not likely (indigenous infection in the locality)			

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

- There have been no changes in routine skin testing surveillance policy. The mandatory post-movement testing policy introduced in April 2016 for cattle imported from higher risk areas of GB is now well embedded in the region.
- No known cases of human *M. bovis* infection in the Region attributable to recent contact with infected animals.
- There were no known non-specific or suspected fraudulent skin test reactors.
- No breakdowns involving producer-retailers of unpasteurised cows' milk or on open farms.
- During this reporting period there has been two formal meetings to discuss TB matters: one with local farmers, farming unions and veterinary practice(s) in West Sussex and the second one with the Trading Standards Association Group in the East of England.
- Overall results of radial bTB surveillance have been detailed in individual case summaries in section 8 of this report. One of the new breakdown herds in the reporting period was exempted from radial surveillance. Also there was an interferon-gamma test exemption granted during this reporting period.
- Of all new OTFW breakdowns occurring in the first six months of 2018, 50% were disclosed at radial test, followed by 37.5% of slaughterhouse cases and 12.5% at post-movement tests.

## 6. Wildlife

There have been no reports of *M. bovis*-infected wildlife from the South East Low Risk Area

## 7. Other Susceptible Species

There have been no reports of *M. bovis*-infected animals of other susceptible species in the South East Low Risk Area during the reporting period.

## 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

### Norfolk

#### **Starston, Norfolk**

A medium size pedigree Jersey herd with 366 females and five males (4 homebred, one purchased). Beef calves usually sold to Norwich Market, some are sold directly to 2-3 local farmers at 4 weeks old. The herd uses artificial insemination and keeps replacement heifers. The herd is Johne's disease positive. Grazing occurs between the months of April to October (weather permitting) to rough grazing fields belonging to this holding.

This holding had a clear TB history since 1990. Last clear routine herd test (RHT) was carried out on 14/2/17 (307 animals were tested from a total of 315 animals in the herd). This holding had its OTF status suspended due to a slaughterhouse case on 20/3/18, when a cull cow (UK DOB 30/08/2015) was sent to slaughter after failing to get in calf (barren heifer). The genotype isolated was 25:a.

Check test was completed on 17/4/18 with negative results. The first short interval (SI) and IFN- $\gamma$  parallel tests carried out on 19/6/18 disclosed seven homebred gamma test positive animals (all with no visible lesions at post-mortem). On 8/8/18 a further two homebred gamma reactors (with no visible lesions) were disclosed from a group of 32 resample animals. The second short interval test has been scheduled at the end of October.

There have been only two animals moved onto this holding in the last 10 years. One of the purchased bull moved off Mr Moore's holding to a holding in Norfolk and it has been tested negative at the trace test. It was born in a Suffolk holding, the movements on to this Suffolk holding are from holdings in the low risk areas with no history of breakdowns.

However, the second purchased bull (UK) that is still on the affected farm was born and reared for 16 months on another farm in Norfolk until it moved off onto Mr Moore's holding on 10/6/17. During the period that this bull spent on its farm of origin, CTS shows inward movements of cattle that have been resident on farms in the High Risk Area: a holding in Cheshire that had a breakdown confirmed in August 2017 (genotype 25:a was isolated) and another holding in Derbyshire with breakdowns confirmed in May 2013 and March 2015 (with genotype 25:a isolated).

This is the only OTFW breakdown in the parish of Needham, but the nearby parish of Scole (28/108) had a breakdown in 2013 (purchased origin) where genotype 25:a of *M. bovis* was isolated.

Pending further short interval test results, the theory at the moment is that the origin of this breakdown could be linked to the purchased bull that is still on holding. A proposal to use IDEXX ELISA in conjunction with the flexible extended IFN-gamma test on the purchased bull (tested negative to both skin and gamma test to date) was dismissed by the farmer. However, a whole genome sequencing (WGS) has been requested from the relevant OTFW breakdowns in Cheshire, Derby and the 2013 isolated in the parish of Scole in Norfolk. The origin of this breakdown is still under investigation.

A RAD testing zone has been established around this farm that includes twenty five holdings. To date radial tests carried out in the zone have not revealed reactors.

## **Bedfordshire**

### **Battlesden, Bedfordshire.**

This holding consists in small suckler herd (90 animals) and a large fattening business of over 800 fat cattle.

On 13/2/18 a reactor (UK) and an inconclusive reactor were disclosed at radial test (RAD12) of the fattening unit??. The reactor had visible lesions at post-mortem meat inspection and genotype 17:b of *M. bovis* was isolated on culture.

This farmer usually buys cattle from high risk areas. This holding had two slaughterhouse cases in 2016 and 2014, both of which with negative culture results. The reactor was bought in from a holding in Buckinghamshire (Edge Area), on 20/10/2017. The Farm is in the radial zone of another OTFW breakdown, therefore subjected to previous radial test (RAD0 and RAD6) which have been negative. The negative results of the two previous radial tests plus the fact that the reactor was on holding just for over three months strongly suggest that the reactor came already infected. The source of this breakdown is linked to the movements onto the Buckingham holding from an undisclosed infected animal originally coming from a holding in Oxfordshire (OTFW on 26/4/17 isolating 17:b) that moved to the Buckinghamshire(Edge Area), at the same time than this reactor (UK).

On 24/4/18 an IFN- $\gamma$  parallel test was carried out disclosing four reactors (all with no visible lesions at post-mortem), followed by the first short interval (SI) in May that had negative results. The second short interval test carried out on 24/7/18 had negative results and restrictions were lifted on 8/8/18.

The origin of this breakdown has been assessed as purchased infected cattle.

A RAD testing zone has been established around this farm that includes sixteen holdings. To date radial tests carried out in the zone have disclosed one OTFW (one reactor with visible lesions at post-mortem – see below).

### **Leighton Buzzard, Bedfordshire.**

Medium- sized fattening herd with approximately 270 animals on holding. The farmer grows cattle belonging to another Bedfordshire farmer who buys from markets in the high risk area (HRA). The animals are reared on contract at an holding until aged three months from slaughter and then move back to the owner's holding to be finished before slaughter.

On 23/4/18 at radial test (RAD0) a reactor was disclosed (UK). This holding is under radial testing within the (Farm, see above). This reactor that had visible lesions at post-mortem (genotype 17:g) was born in Hampshire and moved to a holding in Buckinghamshire, both holdings have clear TB history, and finally sold to this farmer through Thame Cattle Market in Oxfordshire.

The first short interval (SI) and IFN- $\gamma$  parallel test carried out on 9/7/18 disclosed two inconclusive reactors and eight gamma positive reactors (all with no visible lesions at post-mortem). The next short interval test has been scheduled at the end of September- October.

There is not a homerange map for genotype 17:g as there are not enough examples of this genotype (only 36 17:g's since 1995) - according to SPIDA genotype 17:g has been isolated in farms in Wiltshire, Herefordshire and Worcester, Gloucester, Oxfordshire, Avon and more recently in the 2018 OTFW breakdowns in Bedfordshire and Hertfordshire. This is different from the genotype (17:b) responsible for the TB incident on the neighbouring farm that triggered the radial surveillance. The origin of this breakdown has been assessed as likely to be purchased infected cattle, but more data is pending.

A RAD testing zone has been established around this farm that includes nine holdings. To date radial tests carried out in the zone have not revealed reactors.

## **Hertfordshire**

### **Puttenham, Hertfordshire**

This holding is a medium-sized 150 suckler cows plus followers and cattle being reared (approximately over 400 cattle on holding). Stock is sold as stores through Thame market in Oxfordshire.

This holding has been sold for property development. They only have some grazing and arable fields on that area. The cattle Unit is at Farm in Tring.

On 15/4/18 a homebred reactor (UK) and homebred inconclusive reactor were disclosed at radial test (RAD0). This holding is under radial testing within the radial zone, genotype 25:a. The reactor had visible lesions at post-mortem isolating genotype 17:g. The last clear routine herd test was carried out was on 10/11/2009 and there are also multiple trace test (mainly in 2012 and 2015).

The first short interval (SI) and IFN- $\gamma$  parallel tests carried out on 26/6/18 disclosed a homebred skin reactor (with visible lesions at post-mortem but negative culture result) and five interferon-gamma test positive animals (all with no visible lesions at post-mortem). The second short interval has been scheduled in October.

The index case of this breakdown is unknown at present as there is incomplete data. The fact that the genotype isolated in the OTFW breakdown that triggered the radial zone (25:a) differs from the one isolated in this holding (17:g) indicates that there is not a common source between the two cases. It is possible that the origin of this breakdown could be purchased infected cattle as farmer buys in cattle from holdings in the Edge and High Risk areas.

A RAD testing zone has been established around this farm that includes ten holdings. To date radial tests carried out in the zone have not revealed reactors.

## **West Sussex**

### **Farm, Horsham, West Sussex**

This holding is a fattening herd with approximately 355 animals on holding. The farmer purchases animals from local farms and markets in spring, fatten them for an average of 18 months and send them to slaughter in autumn. Cattle are generally out grazing all year around. Unless they are continental breeds like Limousine which they are kept housed in the farm buildings.



On 1/6/18 this holding had a slaughterhouse case (UK). The infected animal originally came from a holding in Kent, but moved through several holdings within East Sussex before ending on another Farm. The check test carried out in July had negative results. The first short interval (SI) test have been scheduled in October. This holding had a gamma exemption granted.

This breakdown is likely to be of purchased origin since the slaughterhouse case was on the affected holding for a short period of time (28 days), but in absence of the genotype information this can only be assumed.

A radial testing zone was not established within 3 km of this breakdown due to the short period that the animal suspected as the source of infection spent on the farm.

### **Farm, Pulborough, West Sussex**

Dairy herd of approximately 228 cattle on holding. There are 105 milking animals averaging 11,000 litres a year. The remaining animals composed of followers, beef crosses and veal beef animals.

On 6/2/18 seven reactors (four with visible lesions at post-mortem) and six inconclusive reactors were disclosed at radial test (RAD06). All seven reactors were submitted for culture, however all the results came back negative for *M. bovis*. This holding is currently under radial testing within another Farm Radial Zone and has previously fallen within 3 other farm radial zones.

The first short interval (SI) and IFN- $\gamma$  parallel tests carried out in May disclosed six inconclusive reactors and thirteen gamma reactors (all with no visible lesions at post-mortem). The second short interval test completed on 17/7/18 had negative results. Restrictions were lifted on 15/8/18.

The origin of this breakdown in absence of a genotype information cannot be ascertained. The risk pathways that have been considered as most likely potential routes of infection are nose to nose contact with infected cattle over the fence - there was evidence of cattle from the neighbouring OTFW herd were accessible over the boundary fence. Secondly, sharing contaminated vehicles between OTFW herd and this farmer to transport cull cows to abattoir as there is no biosecurity protocols to routine cleaning of vehicle on or off the premises.

A RAD testing zone has been established around this farm that includes ten holdings. To date radial tests carried out in the zone have not revealed reactors.

### **Kent**

#### **Guston, Dover.**

This farm is a large-sized dairy herd with approximately 647 animals on holding.

On 30/1/18 at routine herd test (RHT) an inconclusive reactor was disclosed. At retest the inconclusive reactor became a reactor (no visible lesions at post-mortem). However, on the 13/6/18 a homebred slaughterhouse was disclosed (UK) isolating spoligotype 9, genotype is pending. The slaughterhouse case had tested negative at the routine herd tests on 21/1/14 and 19/2/18.

The first short interval (SI) test carried out in July had negative results. Due to unforeseen circumstances and timing issues the IFN- $\gamma$  parallel test has been booked for early in October.

The origin of this breakdown is still under investigation pending further test results and genotype information. Most of the cattle in the herd are homebred except a few bought in animals that were purchased over ten years ago. There is only one recent purchased animal (NL) in December 2013 from a holding in East Sussex with clear TB history. There have been two animals that could be exposed to animals with undisclosed infection via movements to Ardenrun Show in August 2017 (FR and LU).

A RAD testing zone is in the process of being set up around 3 km from this holding.

## **Isle of Wight**

### **Farm, Ryde, Isle of Wight**

Fattening herd with 150 animals on holding. The farmer purchases 18 months old cattle from West Country markets which he takes right through to slaughter weight, nothing is sold as stores.

Mainly purchase in spring as he has the use of two other substantial grazing areas as well as his own farm. A number of stock may be overwintered in barns. In January 2018 at post movement test an inconclusive reactor was disclosed. On 20/4/18 the inconclusive reactor became a reactor at retest from. The reactor that was purchased and immediately housed in October 2017 had visible lesions at post-mortem, isolating genotype 21:a.

The first short interval (SI) and IFN- $\gamma$  parallel tests carried out on 23/7/18 disclosed two inconclusive reactors and eight gamma reactors (all eight had no visible lesions at post-mortem). The second short interval test has been scheduled in October.

Although the reactor was born in a holding with no history of breakdowns in Avon the parish of East Harptree has four breakdowns recorded with genotype 21:a isolated. Consequently, the most likely origin of this breakdown has been assessed as purchased infected cattle from the High Risk Area.

A RAD testing zone has been established around this farm that includes thirty six holdings. Radial testing will commenced in September.

### **8.1. Individual summary of ongoing breakdowns from previous years still open at the end of the report period, grouped by county**

#### **Essex**

##### **Saffron Walden, Essex.**

Dairy herd of approximately 523 cattle on holding. The Jersey heifer calves are moved within different farms under the same holding number. The one Farm has 319 lactating cows plus one breeding bull. Another farm has 119 calves (1 to 5 months old). Another Farm has 52 older heifer calves (5 to 10 months old) and another Farm housed 32 heifers (10 to 18 months old). The crossbred calves are sold for fattening and the Jersey bull calves are sent to a hunt kennel.

On 27/11/17 at routine herd test (RHT) a homebred animal was disclosed as reactor (UK with visible lesions at post-mortem, genotype 17:b was isolated). The first short interval (SI) and IFN- $\gamma$  parallel tests carried out in February and March 2018 disclosed thirty one homebred gamma test positive animals (two of which had visible lesions at post-mortem, both samples have been re-cultured, genotyping is pending). The second and third short interval tests carried out respectively in June and September had negative results. Restrictions were lifted on 10/9/18.

There are no contiguous herds with TB susceptible species. This holding could be considered almost a closed herd. According to Cattle Trace System (CTS) there have been no movements onto this holding in the last eight years excepted from a pedigree bull (UK). This animal moved onto this holding on 12/10/13 from its holding of origin in Norfolk which has a clear TB history since 1988.

Further investigations about the movements onto the holding in Norfolk has revealed a couple of interesting movements. The first one is a movement in the last six months of a particular animal (UK) that moved to the holding in Norfolk from a holding in Gloucestershire (OTFW on 20/12/16, isolating genotype 17:b). The other link to homerange is the movement of a calf onto the Norfolk holding from a dam also originating from the same holding in Gloucestershire (OTFW in 2012, 2014 and 2017, genotypes 17:b and 17:x were isolated). The calf from this dam moved to Norfolk holding on 1/2/14, two months after the bull moved off from Norfolk to Essex.

This provides supportive evidence that there are links with the correct homerange, but they are more indicative of the potential movement networks rather than a clear explanation for this breakdown due to timing issues.

The origin of this breakdown is obscure at present and it has been submitted for approval for 'potential hotspot' procedures. However, the declaration of a hotspot has been put on hold pending results of the radial tests in the area.

A RAD testing zone has been established around this farm that includes four holdings. To date radial tests carried out in the zone have not revealed reactors.

## **West Sussex**

### **Farm, Petworth, West Sussex**

The farmer runs a dairy herd of approximately 270 dairy and a small suckler herd with approximately 55 animals. Calving is usually in August time. Calves are reared in a building located a few miles away from main holding at Middle Farm.

This holding had a homebred slaughterhouse case on 12/4/17 (UK) *M. bovis* was confirmed isolating genotype 11:a. The check test (CT) was carried out on 9/5/17 disclosing 13 homebred reactors (eight with visible lesions at post-mortem). The first short interval (SI) and IFN- $\gamma$  parallel test carried out in July 2017 disclosed five skin reactors (four were homebred, one with visible lesions and four with no visible lesions at post mortem and one purchased with no visible lesions at post-mortem originally from a holding in West Sussex (clear TB history). This test also disclosed one homebred inconclusive reactor and seven homebred gamma test positive animals (all with non-visible lesions at post-mortem).

The second short interval (SI) and IFN- $\gamma$  parallel test were completed on 2/10/17 disclosing one skin reactor (with no visible lesions at post-mortem), one inconclusive reactor and 18 homebred gamma positive (one with visible lesions and 12 with no visible lesions at post-mortem). The third short interval (SI) and IFN- $\gamma$  parallel test completed in January 2018 disclosed five homebred gamma positives only (one with visible lesions, 4 with no visible lesions at post-mortem). The fourth short interval (SI) and IFN- $\gamma$  parallel test completed in April 2018 disclosed 23 homebred gamma reactors only, none of which had visible lesions at post-mortem (all reactors are pending to be removed from holding). The short interval test carried out in June had negative results but the latest short interval test completed in September disclosed one inconclusive reactor to be retested in November.

Movement checks confirmed that no animals on the affected holding had been living in homerange areas of genotype 11:a. Only five animals moved on from three different holdings in West Sussex, all of which have a clear TB history.

This holding is under radial test triggered by another OTFW breakdown in the area (Sussex). This holding is also nearby the alpaca breakdown. The origin of this breakdown is obscure at present and it has been recommended and approved for potential hotspot procedures.

RAD zone has been established around this farm that includes 20 holdings. To date there has been two OTFS breakdowns revealed by radial tests in the area.

### **Lyminster, West Sussex**

This holding is a beef finisher with approximately 482 animals on holding. The farmer buys in cattle all year round from a variety of sources, fattens them to slaughter weight and sells them directly to slaughter.

This holding has its OTF status suspended on a number of occasions due to slaughterhouse cases disclosed in previous years (2014 and 2015) that have been cultured negative. This holding is currently caught in three different radial zones triggered by OTFW breakdowns.

This farmer has several holdings in the area and a check test (exposure mitigation check test) was requested and completed between June and July disclosing three reactors and two inconclusive reactors (all with non-visible lesions at post-mortem). The first short interval test completed in October had negative results, however on 13/10/17 a slaughterhouse case was disclosed (UK, genotype isolated 9:f). The second short interval test completed in January 2018 had negative results. The second short interval (SI) and IFN- $\gamma$  parallel test completed in April disclosed three skin reactors and five IFN- $\gamma$  positive animals (all with no visible lesions at post-mortem).

The slaughterhouse case was born in a farm in Devon, where genotype 9:f has been isolated in 2013, 2016 and 2017. Therefore, the origin of this breakdown has been assessed as purchased infected cattle.

RAD zone has been established around this farm that includes twenty holdings. To date radial tests carried out in that zone have disclosed one OTFW breakdown.

### **Petworth, West Sussex.**

This farm has an organic dairy herd with 460 cattle on holding. Spring calving occurs over a 12 week period in a paddock north of the Farm from February to May. The calves are housed at the Farm for approximately 1 month. They are then moved on to weaning and rearing paddocks where they remain for 6-8 weeks. The young stock then move onto summer grazing in Bignor Park where they run with the bull. At the end of August beginning of September they move onto grazing paddocks around Watersfield. They are overwintered in three different paddocks. This stock and the dairy cows move back to the Farm approximately 2 months before calving.

On 21/8/17 at radial test ten inconclusive reactors were disclosed three of which became reactors on retesting (all with no visible lesions at post-mortem). On 23/1/18, at the first short interval of this OTFS breakdown, two inconclusive reactors were disclosed. At retest on 3/4/18 one of the two inconclusive reactors became a reactor UK (no visible lesions at post-mortem). However, at the second short interval carried out on 10/7/18 there were five reactors disclosed (one of which with visible lesions) and fifteen inconclusive reactors. The culture for the reactor with visible lesions (UK) has been repeated. The IFN- $\gamma$  parallel test carried in August revealed 30 interferon-gamma test positives (all with no visible lesions at post-mortem). Next short interval test will be scheduled sometime in November.

This holding has fallen within the radial zones of other herds affected by OTFW breakdowns in West Sussex.

There are various hypothesis regarding the possible sources of this breakdown such as infection via contiguous cattle over the fence. Badger activity is noted by in and around all parts of the farm. Spread by vehicles and fomites is also a possible risk pathway as there is no routine C&D of vehicles between farms. Also purchase of infected cattle from Staffordshire (currently OTFW) onto Farm although this movement represents a potential exposure to infection and possible introduction of undisclosed disease the three reactors on the Farm were all two times inconclusive reactors and the original disclosure date happened in the radial (RAD) test on 21/08/2017 before the movement of these 19 heifers arrived on the farm from Staffordshire. There have been previous inconclusive reactors disclosed on the farm which suggests that there is an ongoing issue.

The origin of this breakdown has not been determined yet, pending further genotype information and further test results.

A RAD testing zone will be established around this farm, but there is not information available yet.

## 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.