Animal & Plant Health Agency

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

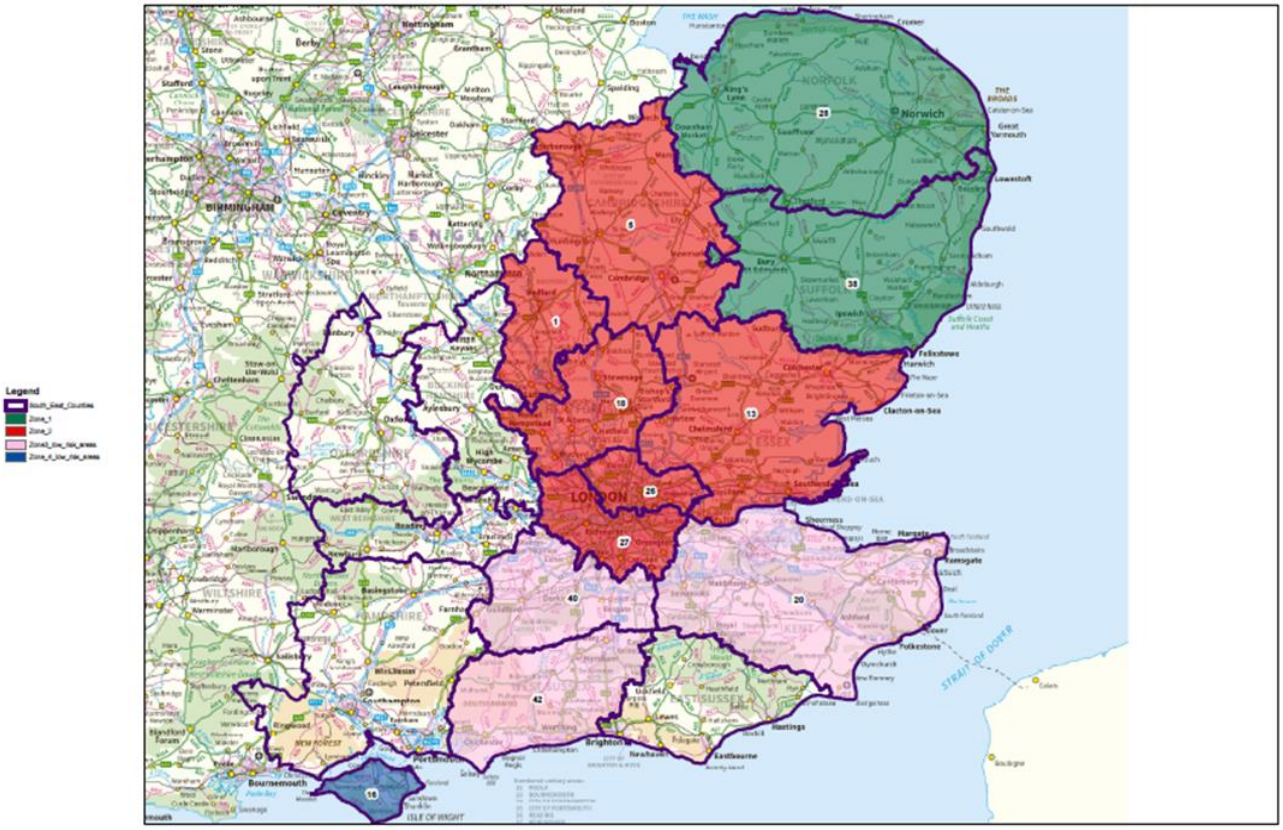
Regional Office:
SE Delivery Area

Year- end report for 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 a reservoir of *Mycobacterium bovis* 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. Cattle herds housed in these units are permanently 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 31st December of the reporting year.

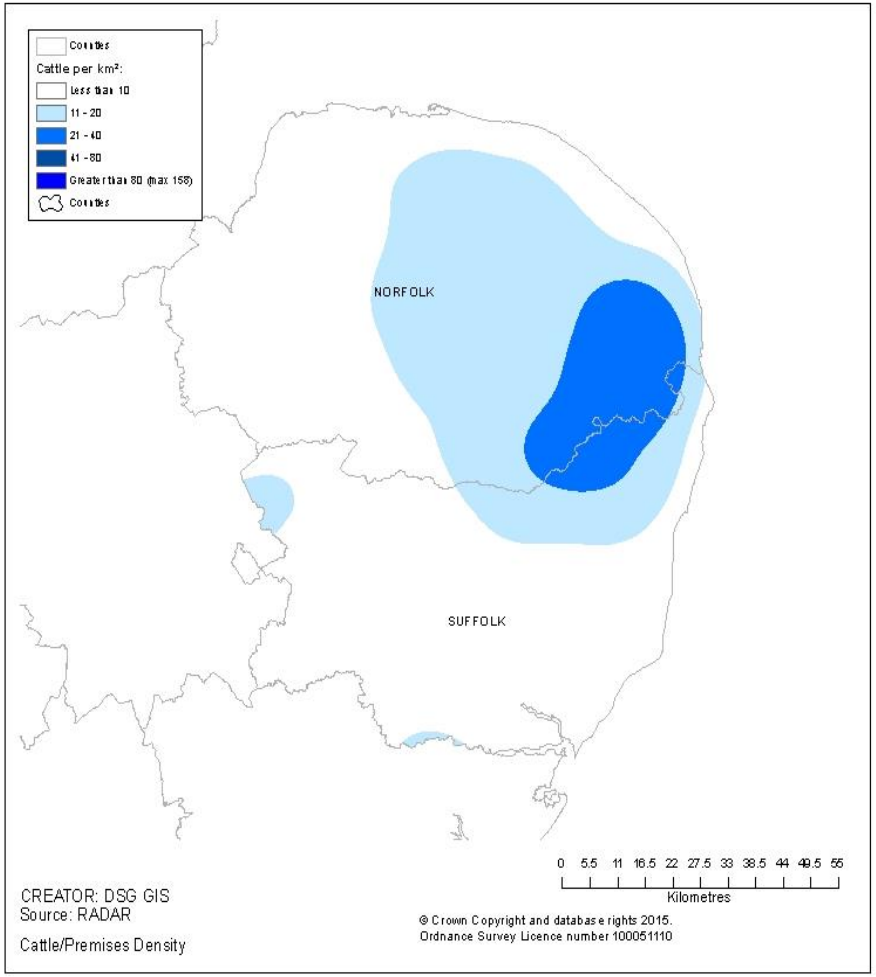
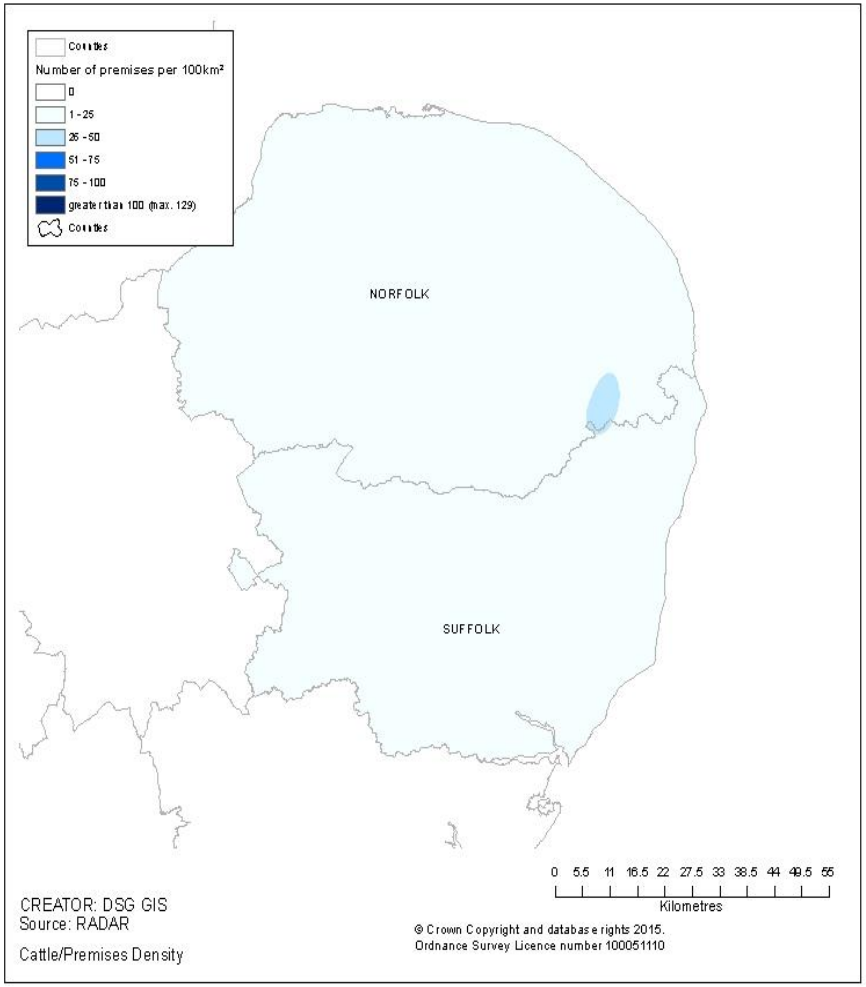
COUNTY	0	1-50	51-100	101-200	201-350	351-500	501+	All	Mean	Median
BEDFORDSHIRE	0	98	36	16	7	1	3	161	70	31
CAMBRIDGESHIRE	4	187	45	49	14	4	10	313	89	28
ESSEX	1	243	49	34	24	4	11	366	83	26
ISLE OF WIGHT	0	71	19	27	9	6	0	132	87	45
HERTFORDSHIRE	2	151	28	21	9	4	3	218	61	21
KENT	11	390	94	71	44	22	20	652	91	28
GREATER LONDON	5	20	3	1	0	0	0	29	22	5
GREATER LONDON	1	31	2	3	0	1	0	38	33	7
NORFOLK	10	481	135	103	58	16	24	827	91	35
SUFFOLK	2	288	67	53	24	13	10	457	79	26
SURREY	4	204	28	30	19	11	12	308	90	21
WEST SUSSEX	8	233	57	60	42	12	19	431	110	40

Numbers of cattle kept in each county of the Southeast LRA, by breeding purpose - numbers and percentages at 31st December of the reporting year.

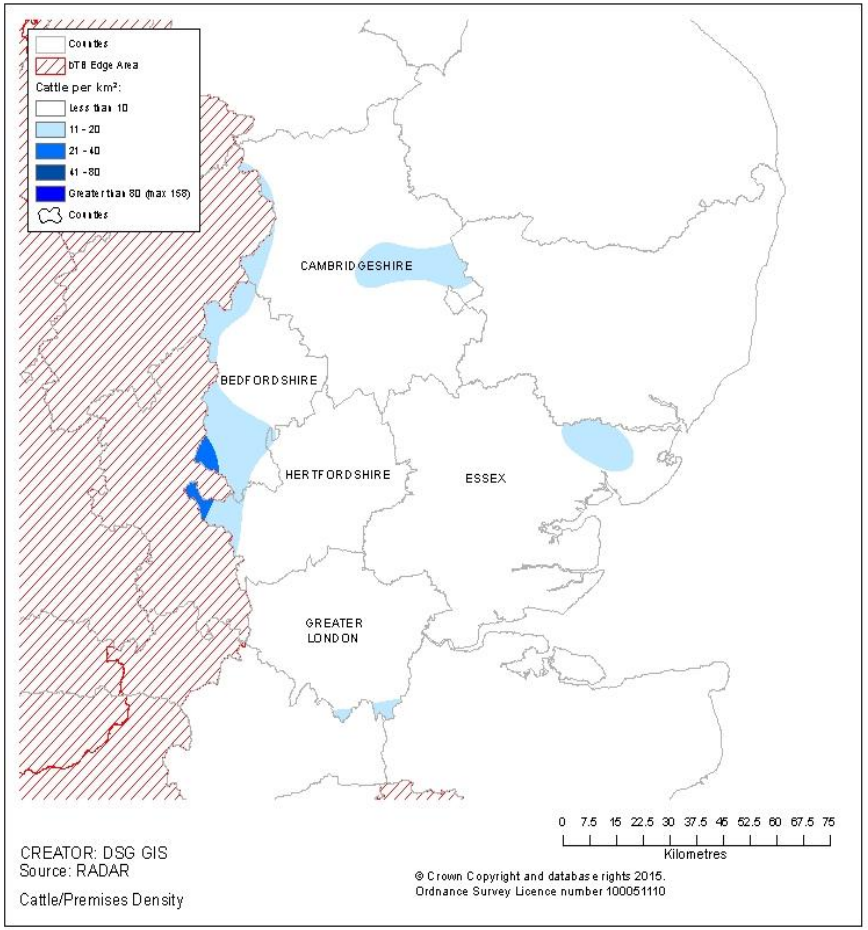
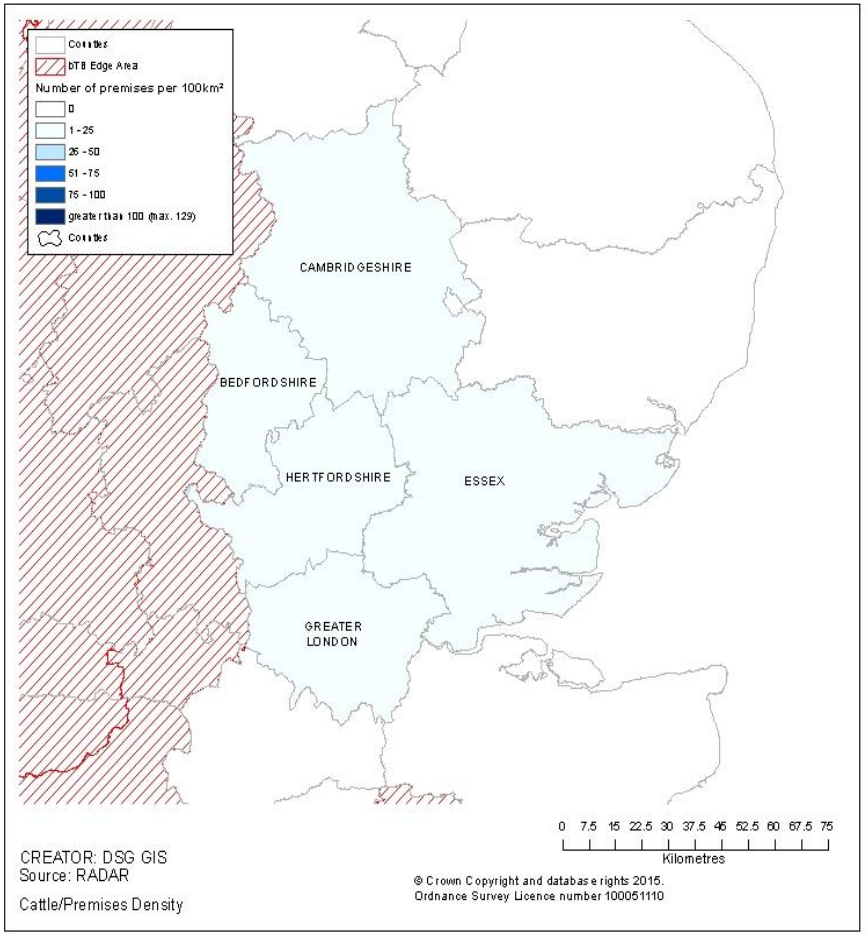
COUNTY	Beef	Dairy	Dual Breed	Unknown	Total
BEDFORDSHIRE	8539 (75.9%)	2179 (19.4%)	531 (4.7%)	1 (0.0%)	11250
CAMBRIDGESHIRE	20786 (74.6%)	6073 (21.8%)	997 (3.6%)	0 (0.0%)	27856
ESSEX	22309 (73.7%)	6536 (21.6%)	1431 (4.7%)	3 (0.0%)	30279
ISLE OF WIGHT	8097 (70.9%)	3051 (26.7%)	273 (2.4%)	2 (0.0%)	11423
HERTFORDSHIRE	10890 (81.8%)	2004 (15.1%)	419 (3.1%)	2 (0.0%)	13315
KENT	36723 (61.6%)	21903 (36.7%)	1016 (1.7%)	5 (0.0%)	59647
GREATER LONDON	447 (71.2%)	102 (16.2%)	79 (12.6%)	0 (0.0%)	628
GREATER LONDON	842 (67.5%)	359 (28.8%)	47 (3.8%)	0 (0.0%)	1248
NORFOLK	58541 (77.5%)	13910 (18.4%)	3087 (4.1%)	8 (0.0%)	75546
SUFFOLK	24571 (68.3%)	7539 (21.0%)	3848 (10.7%)	7 (0.0%)	35965
SURREY	16504 (59.7%)	9677 (35.0%)	1447 (5.2%)	0 (0.0%)	27628
WEST SUSSEX	24375 (51.6%)	20733 (43.9%)	2153 (4.6%)	9 (0.0%)	47270

Density of cattle and cattle premises at 31st December of the reporting year.

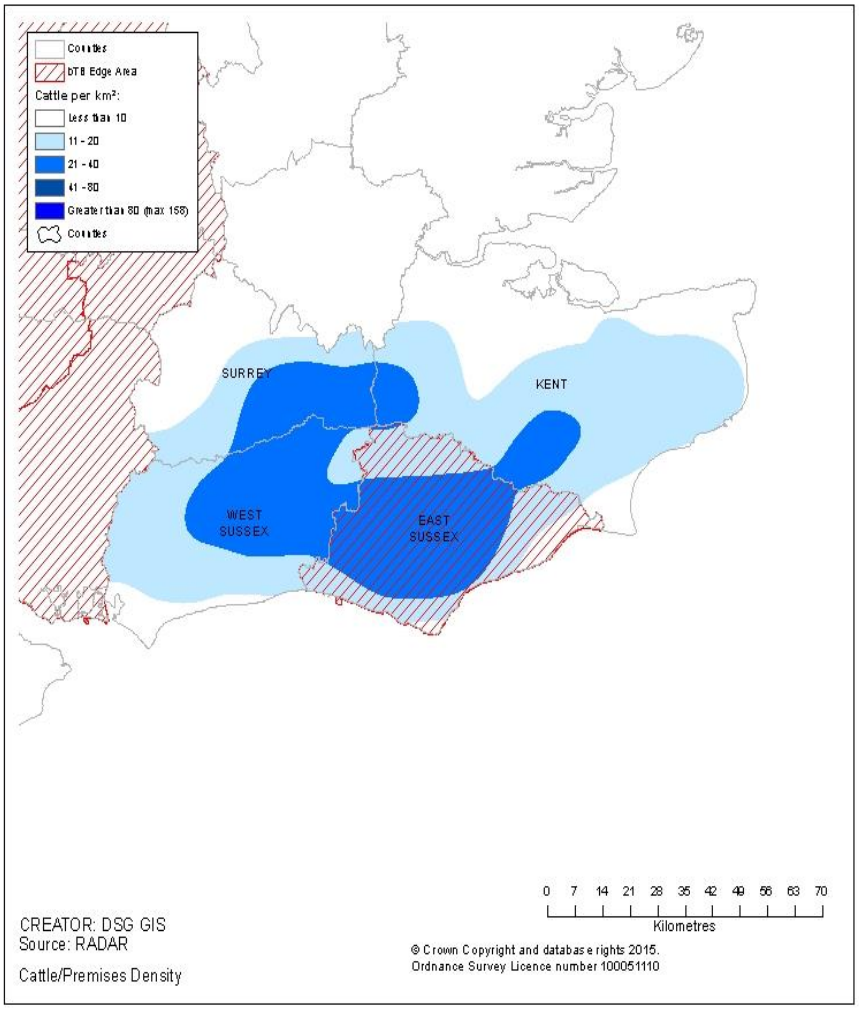
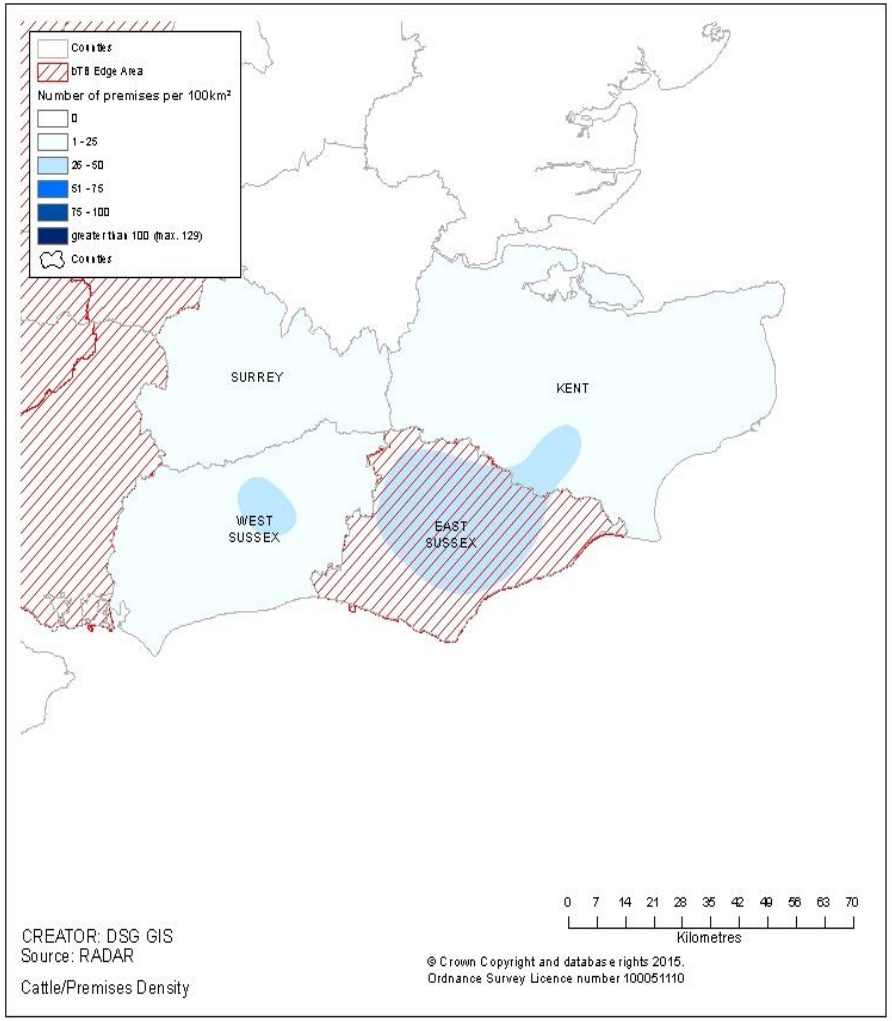
ZONE 1

Map - Cattle per square km	Map - Number of premises per 100 square km
	

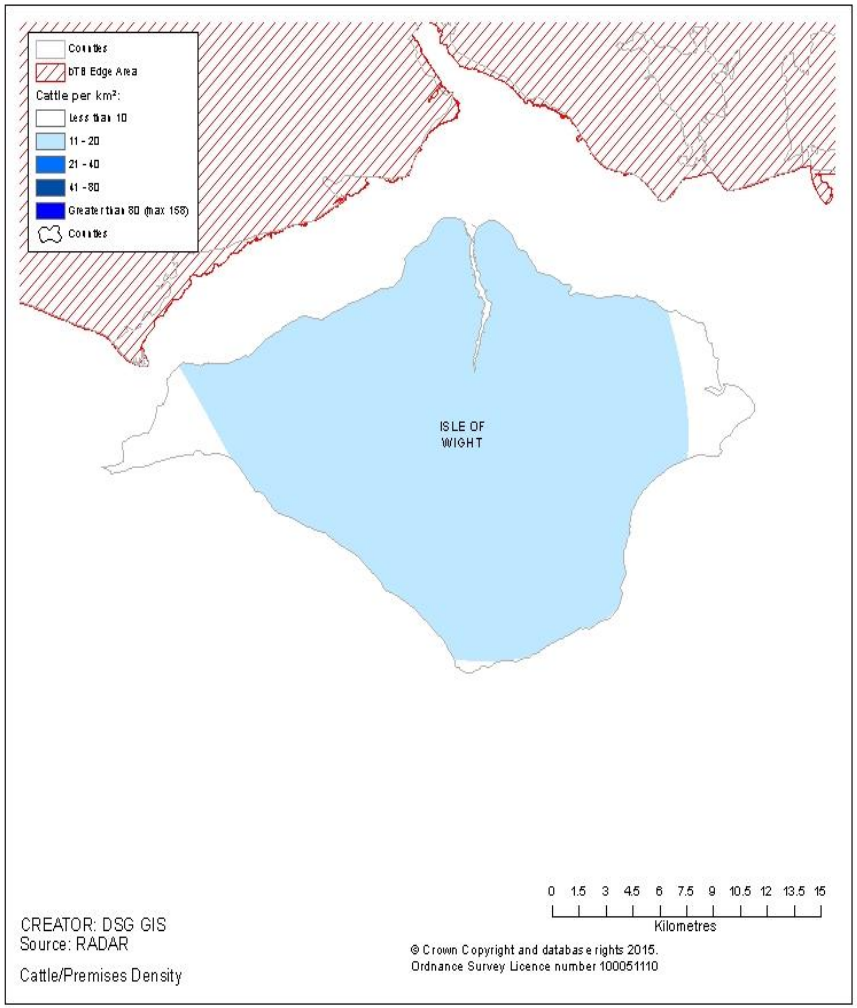
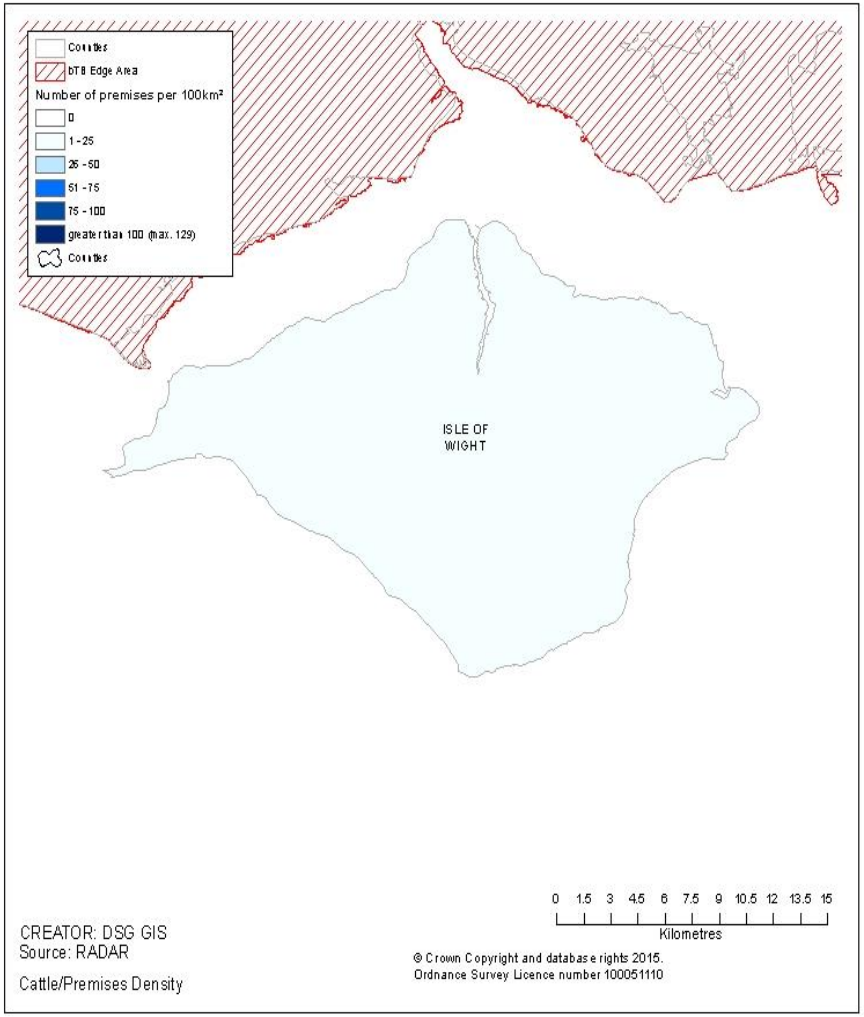
ZONE 2

Map - Cattle per square km	Map - Number of premises per 100 square km
	

ZONE 3

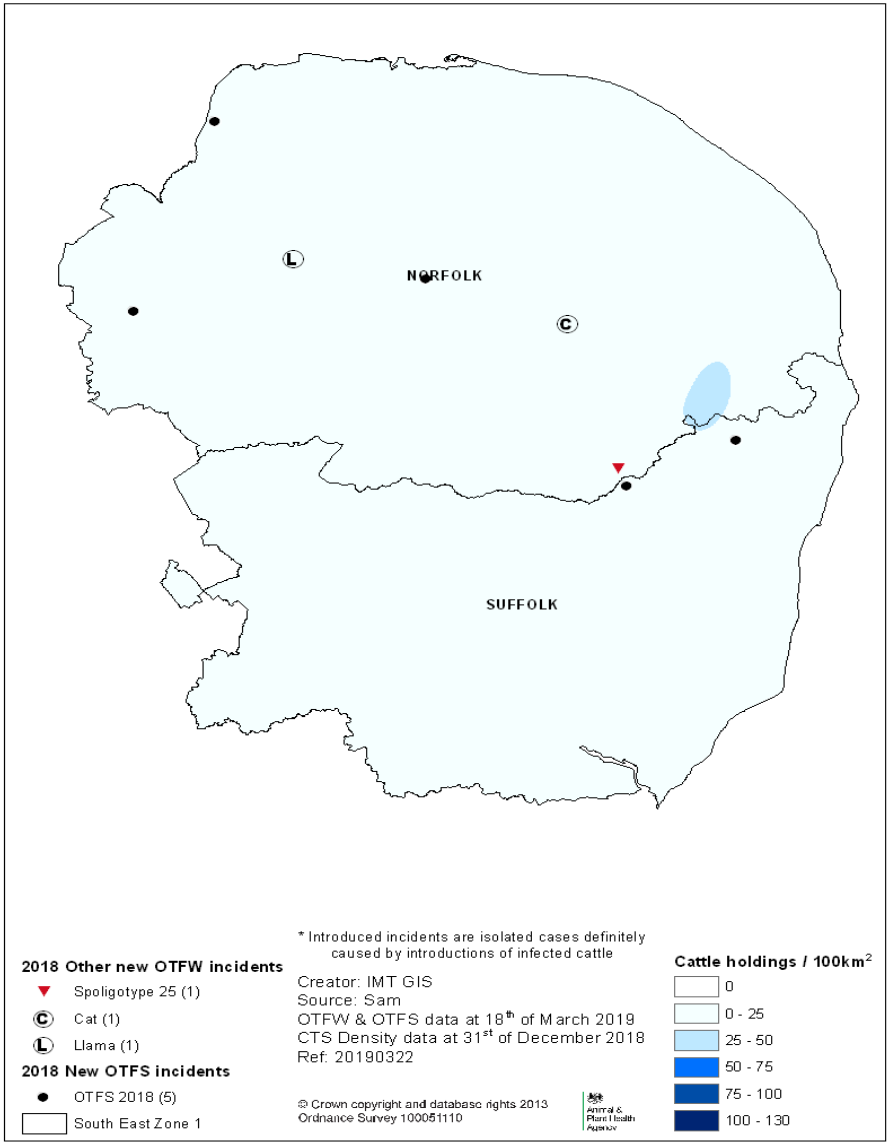
Map - Cattle per square km	Map - Number of premises per 100 square km
	

ZONE 4

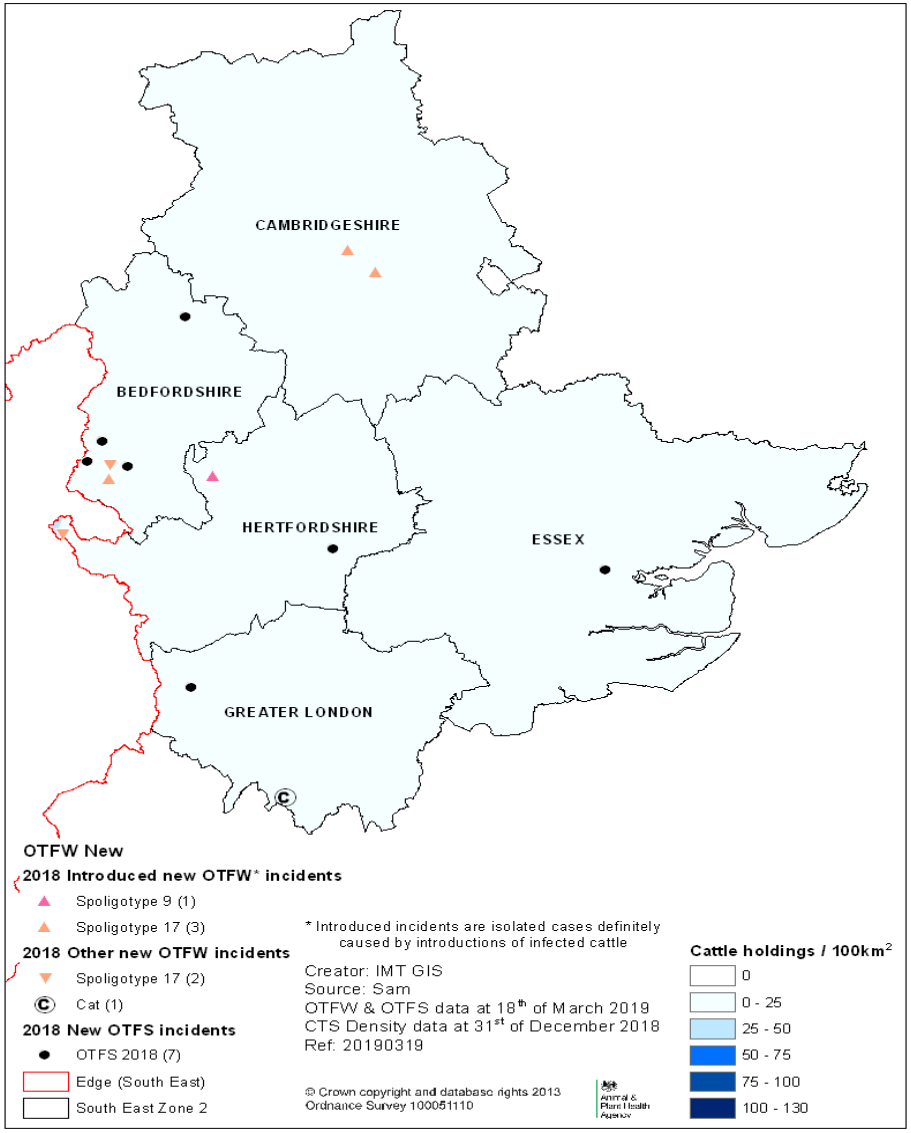
Map - Cattle per square km	Map - Number of premises per 100 square km
	

2. Geographical Distribution of Bovine TB Breakdowns in the Region

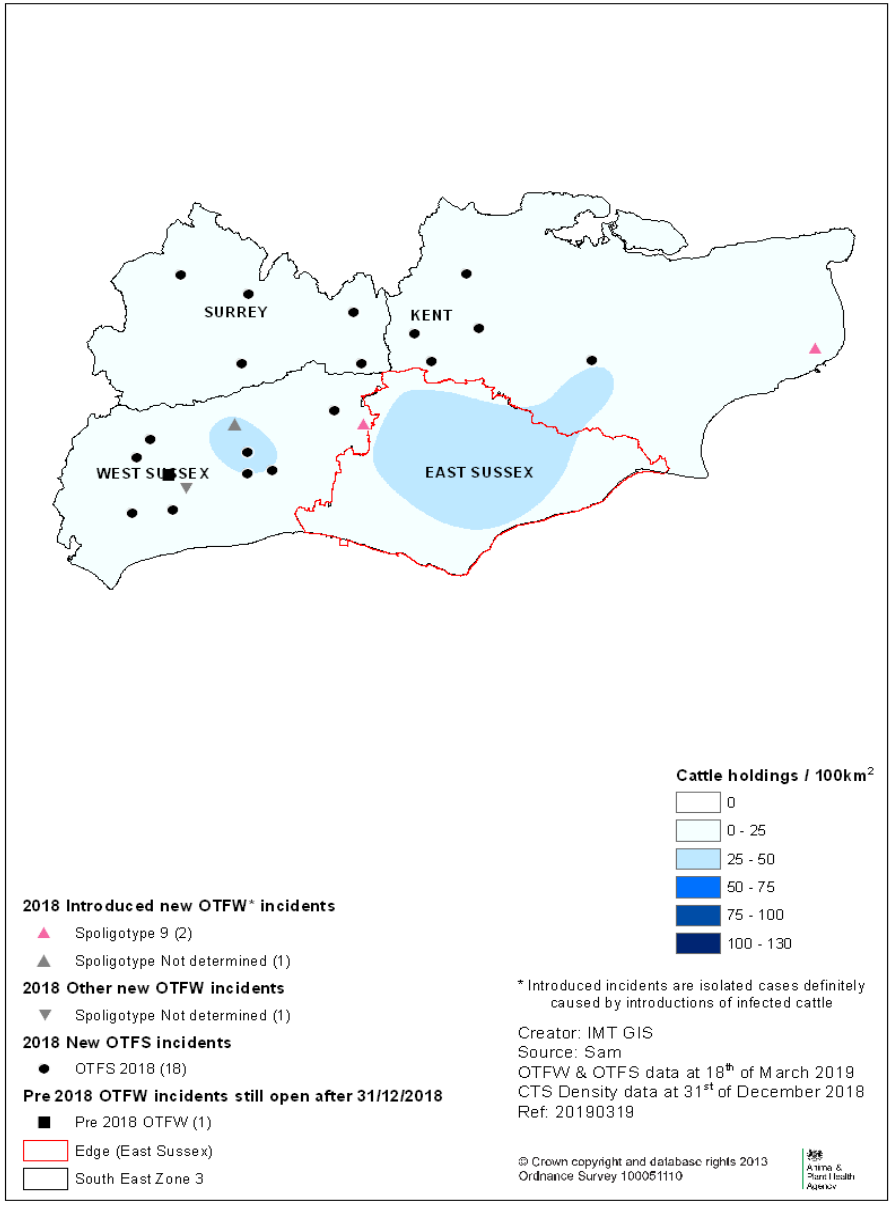
ZONE 1



ZONE 2



ZONE 3


SURREY
KENT
WEST SUSSEX
EAST SUSSEX
Cattle holdings / 100km²
0
0 - 25
25 - 50
50 - 75
75 - 100
100 - 130
2018 Introduced new OTFW* incidents
Spoligotype 9 (2)
Spoligotype Not determined (1)
2018 Other new OTFW incidents
Spoligotype Not determined (1)
2018 New OTFS incidents
OTFS 2018 (18)
Pre 2018 OTFW incidents still open after 31/12/2018
Pre 2018 OTFW (1)
Edge (East Sussex)
South East Zone 3
* Introduced incidents are isolated cases definitely caused by introductions of infected cattle
Creator: IMT GIS
Source: Sam
OTFW & OTFS data at 18th of March 2019
CTS Density data at 31st of December 2018
Ref: 20190319
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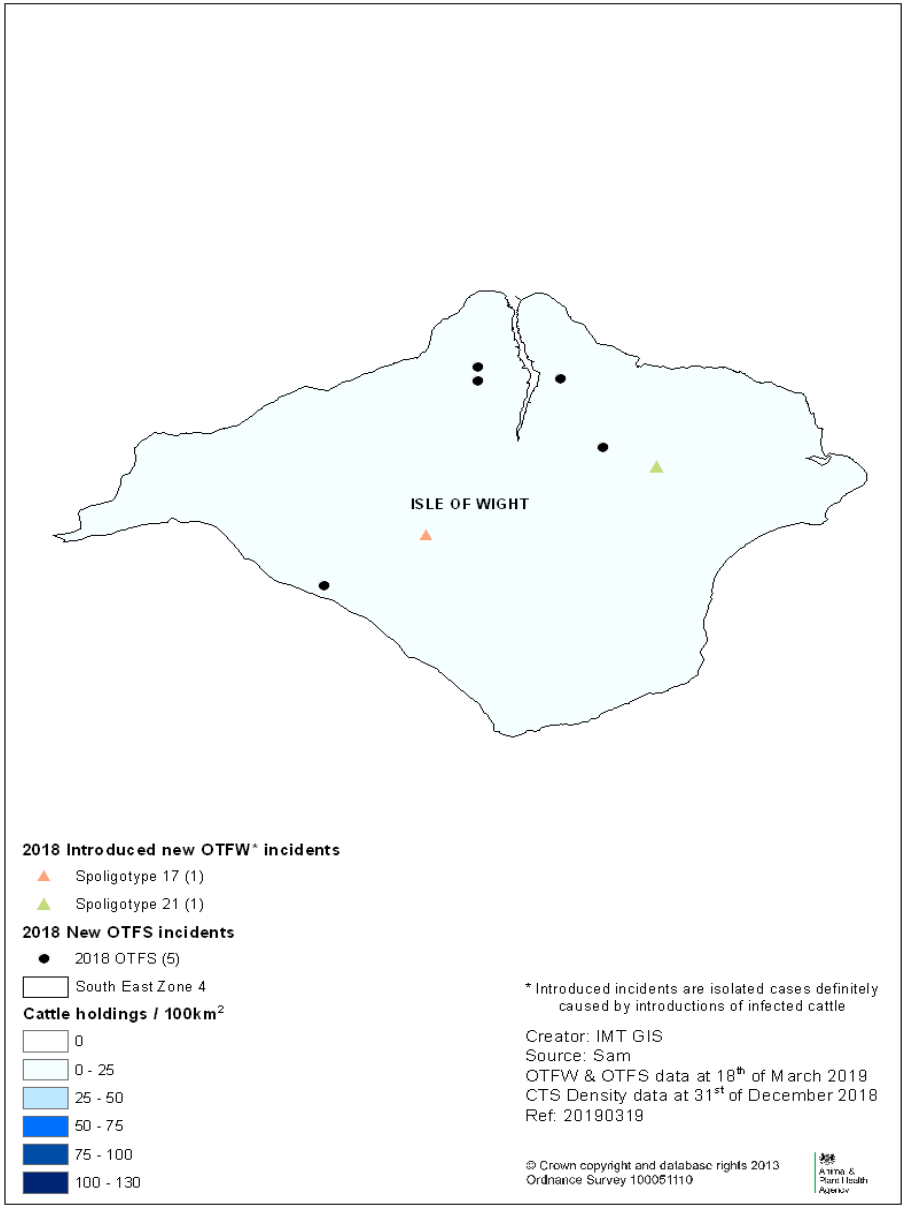
ZONE 4


ISLE OF WIGHT
2018 Introduced new OTFW* incidents
Spoligotype 17 (1)
Spoligotype 21 (1)
2018 New OTFS incidents
2018 OTFS (5)
South East Zone 4
Cattle holdings / 100km²
0
0 - 25
25 - 50
50 - 75
75 - 100
100 - 130
* Introduced incidents are isolated cases definitely caused by introductions of infected cattle
Creator: IMT GIS
Source: Sam
OTFW & OTFS data at 18th of March 2019
CTS Density data at 31st of December 2018
Ref: 20190319
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3. Summary of the Regional Headline Cattle TB Statistics

There were 13 new TB herd breakdowns with OTF status withdrawn (OTFW) in the LRA of the South East region in 2018 (compared with 20 in 2017), plus another 35 breakdowns with OTF status suspended (20 in 2017), i.e. cases triggered by NVL and culture-negative skin test reactors (OTFS). In addition to that, there was one OTFW breakdown that began in 2017 and was still opened at the end of the reporting period. Nine of the 13 new OTFW breakdowns were clearly attributable to introductions of infected animals into the affected herds from other parts of England, from Wales and from Northern Ireland.

Herd-level statistics	**Zone 1**	**Zone 2**	**Zone 3**	**Zone 4**	**Total SE Region**
(a) *Total number of cattle herds live on Sam at the end of the reporting period*	1527	1334	1511	147	4519
(b) *Total number of cattle herds subject to annual TB testing at the end of the reporting period (any reason)*	96	137	163	60	459
(c) *Total number of herd tests carried out in the period*	743	628	739	136	2246
(d) *Total number of OTF cattle herds TB tested during the period for any reason*	453	386	446	37	1322
(e) *Total number of OTF cattle herds at the end of the report period (i.e. herds not under any type of TB2 restrictions)*	1514	1318	1488	144	4464
(f) *Total number of cattle herds that were not under restrictions due to an ongoing TB breakdown at the end of the report period.*	1523	1331	1509	147	4510
(g) *Total number of new TB breakdowns detected in cattle herds during the report period*	6	13	22	7	48
• *OTF status suspended (OTFS)*	5	7	18	5	35
• *OTF status withdrawn (OTFW)*	1	6	4	2	13
(h) Of the new OTFW herd breakdowns, how many:					
• occurred in a holding affected by another OTFW breakdown in the previous three years?	0	0	0	0	0
• could be considered secondary to a primary breakdown based on current evidence?	0	0	0	0	0
• were triggered by skin test reactors or 2xIRs at routine herd tests?	0	2	1	0	3
• were triggered by skin test reactors or 2xIRs at other TB test types (forward and back-tracings, contiguous, check tests, post-movement, etc.)?	0	4	2	2	8

• were first detected through routine slaughterhouse TB surveillance?	1	0	1	0	2
(i) Number of new breakdowns revealed by enhanced TB surveillance (radial testing) conducted around those OTFW herds					
• OTFS	1	1	8	2	12
• OTFW	0	1	0	0	1
(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)*	0	4	2	2	8
(k) New confirmed (positive *Mycobacterium. bovis* culture) incidents in non-bovine species detected during the report period (indicate host species involved)	1 cat & llama	1 cat	0	0	2

Animal-level statistics (cattle)	**Zone 1**	**Zone 2**	**Zone 3**	**Zone 4**	**Total SE Region**
(a) *Total number of cattle tested in the period (animal tests)*	35221	33933	62542	11469	143165
(b) *Reactors detected:*	30	75	180	31	316
• *tuberculin skin test*	21	27	61	11	120
• *additional IFN-gamma blood test reactors (skin-test negative or IR animals)*	9	48	119	20	196
(c) *Reactors per breakdown*	5	4.4	8.2	4.4	6.2
(d) *Reactors per 1000 animal tests*	0.85	1.6	2.9	2.7	2.1
(e) *Additional animals identified for slaughter for TB control reasons (DCs, including any first-time IRs)*	0	0	3	0	3
(f) *SLH cases (tuberculous carcases) reported by FSA*	5	3	8	3	19
(g) *SLH cases confirmed by culture of M. bovis*	1	2	2	0	5

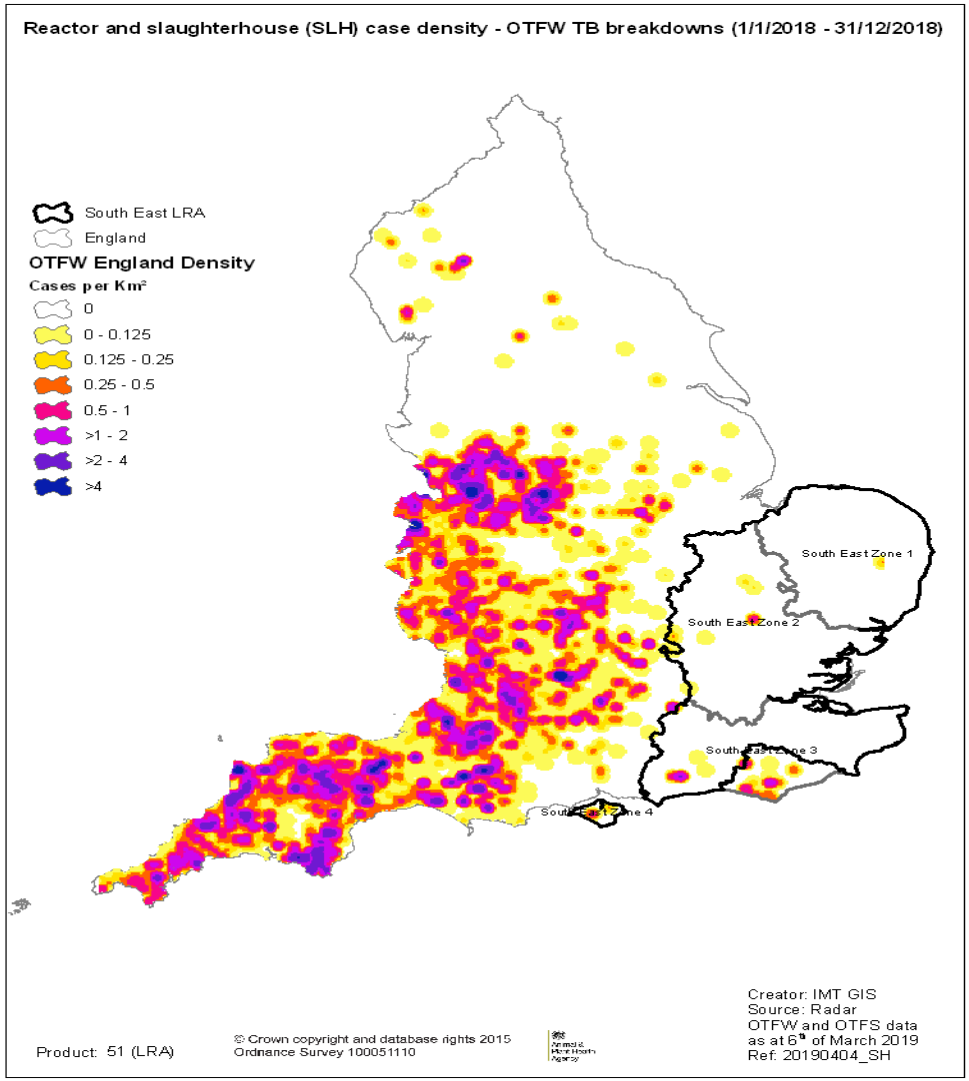
2017 (for comparison purposes)

Herd-level statistics	Zone 1	Zone 2	Zone 3	Zone 4	Total SE Region
(l) *Total number of cattle herds live on Sam at the end of the reporting period*	1,546	1,360	1,576	157	4,639
(m) *Total number of cattle herds subject to annual TB testing at the end of the reporting period (any reason)*	74	96	188	30	388
(n) *Total number of herd tests carried out in the period*	554	488	603	112	1,757
(o) *Total number of OTF cattle herds TB tested during the period for any reason*	342	304	329	46	1,021
(p) *Total number of OTF cattle herds at the end of the report period (i.e. herds not under any type of TB2 restrictions)*	1,506	1,329	1,517	155	4,507
(q) *Total number of cattle herds that were not under restrictions due to an ongoing TB breakdown at the end of the report period.*	1,516	1,340	1,543	155	4,554
(r) *Total number of new TB breakdowns detected in cattle herds during the report period*	11	10	19	0	40
• *OTF status suspended (OTFS)*	4	3	13	0	20
• *OTF status withdrawn (OTFW)*	7	7	6	0	20
(s) Of the new OTFW herd breakdowns, how many:					
• occurred in a holding affected by another OTFW breakdown in the previous three years?	2	2	1	0	5
• could be considered secondary to a primary breakdown based on current evidence?	2	0	1	0	3
• were triggered by skin test reactors or 2xIRs at routine herd tests?	1	2	0	0	3
• were triggered by skin test reactors or 2xIRs at other TB test types (forward and back-tracings, contiguous, check tests, post-movement, etc.)?	6	3	3	0	12
• were first detected through routine slaughterhouse TB surveillance?	0	2	3	0	5
(t) Number of new breakdowns revealed by enhanced TB surveillance (radial testing) conducted around those OTFW herds	0	1	5	0	6
• OTFS	0	1	4	0	5
• OTFW	0	0	1	0	1

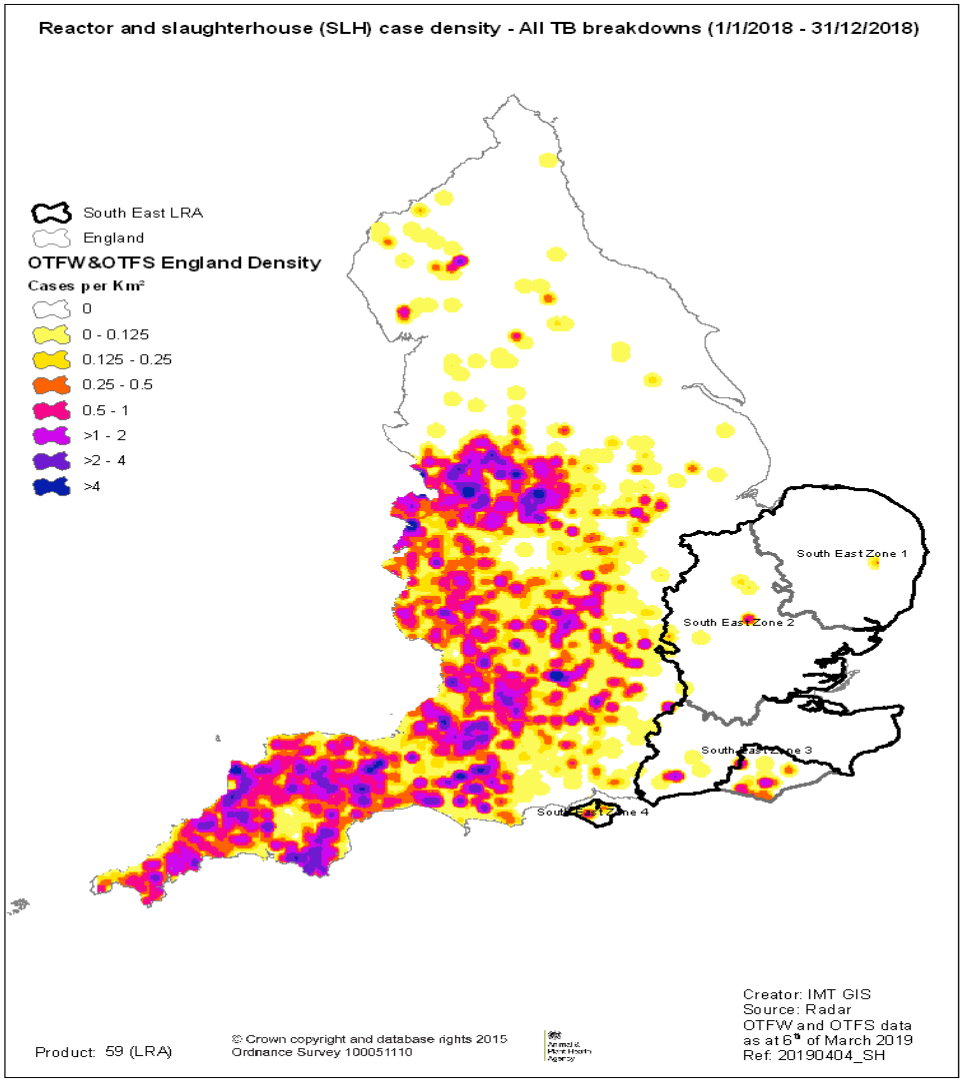
(u) *Number of OTFW herds still open at the end of the period (including any ongoing OTFW breakdowns that began in a previous reporting period)*	5	4	6	0	15
(v) New confirmed (positive *Mycobacterium bovis* culture) incidents in non-bovine species detected during the report period (indicate host species involved)	0	0	1 (Alpaca)	0	0

Animal-level statistics (cattle)	**Zone 1**	**Zone 2**	**Zone 3**	**Zone 4**	**Total SE Region**
(h) *Total number of cattle tested in the period (animal tests)*	28,315	24,107	54,735	6,447	113,604
(i) *Reactors detected:*	49	84	196	78	407
• *tuberculin skin test*	16	9	58	8	91
• *additional IFN-gamma blood test reactors (skin-test negative or IR animals)*	33	75	138	70	316
(j) *Reactors per breakdown*	4.45	8.4	6.26	78	10.17
(k) *Reactors per 1000 animal tests*	1.73	3.48	3.5	12	3.58
(l) *Additional animals identified for slaughter for TB control reasons (DCs, including any first-time IRs)*	0	0	0	0	0
(m) *SLH cases (tuberculous carcases) reported by FSA*	1	4	10	0	15
(n) *SLH cases confirmed by culture of M. bovis*	0	3	3	0	6

Density of TB reactors and slaughterhouse cases in TB breakdowns per km²



Density of skin test reactors, IFN-gamma test reactors and slaughterhouse cases in Officially TB Free Status Withdrawn (OTFW) breakdowns per km² 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 km² 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)		9
Local - lateral spread from neighbouring holdings:	1	
• exposure to infected wildlife e.g. badgers	1	
• other farmed species		
• recrudescence of residual infection from a previous TB breakdown		
• infected human source		
Undetermined/obscure	2*	
Other (explain)		

*This premises has unknown origin (HS25 under potential hotspot procedures)

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 *M. bovis* infection introduced via cattle movements	**Definite**	4*		
	Likely	5**		
	Possible	3***	1****	
	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 were no changes in routine skin testing surveillance policy in 2018. 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.
- There were no known cases of human *M. bovis* infection in the Region attributable to recent contact with infected animals.
- There were no known instances of non-specific or suspected fraudulent skin test reactors.
- No breakdowns involving producers of raw (unpasteurised) cows' drinking milk or on open farms.

- During this reporting period there were five formal meetings to discuss bovine TB eradication with local stakeholders: one with local farmers, farming unions and veterinary practice(s) in West Sussex. The second one with Trading Standards Association Group in the East of England. Also another three other formal presentations/ meetings with the NFU representatives in different counties within the LRA to inform about the latest TB statistics for GB, six-monthly Epi report for the LRA, TB breakdowns and radial testing in the LRA.
- Overall results of radial bTB surveillance have been detailed in individual case summaries in section 8 of this report. Radial surveillance testing was waived for one of the new OTFW breakdown herds in the reporting period, following a veterinary risk assessment. Also there was an interferon-gamma testing exemption granted in one OTFW breakdown herd during this reporting period.
- Of all 13 new OTFW breakdowns occurring in 2018, 30.7% were disclosed at radial test, followed by 23.1% of slaughterhouse cases, 23.1% at post-movement tests, 15.4% routine herd test and 7.7% at post-import test.

6. Wildlife

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

7. Other Susceptible Species

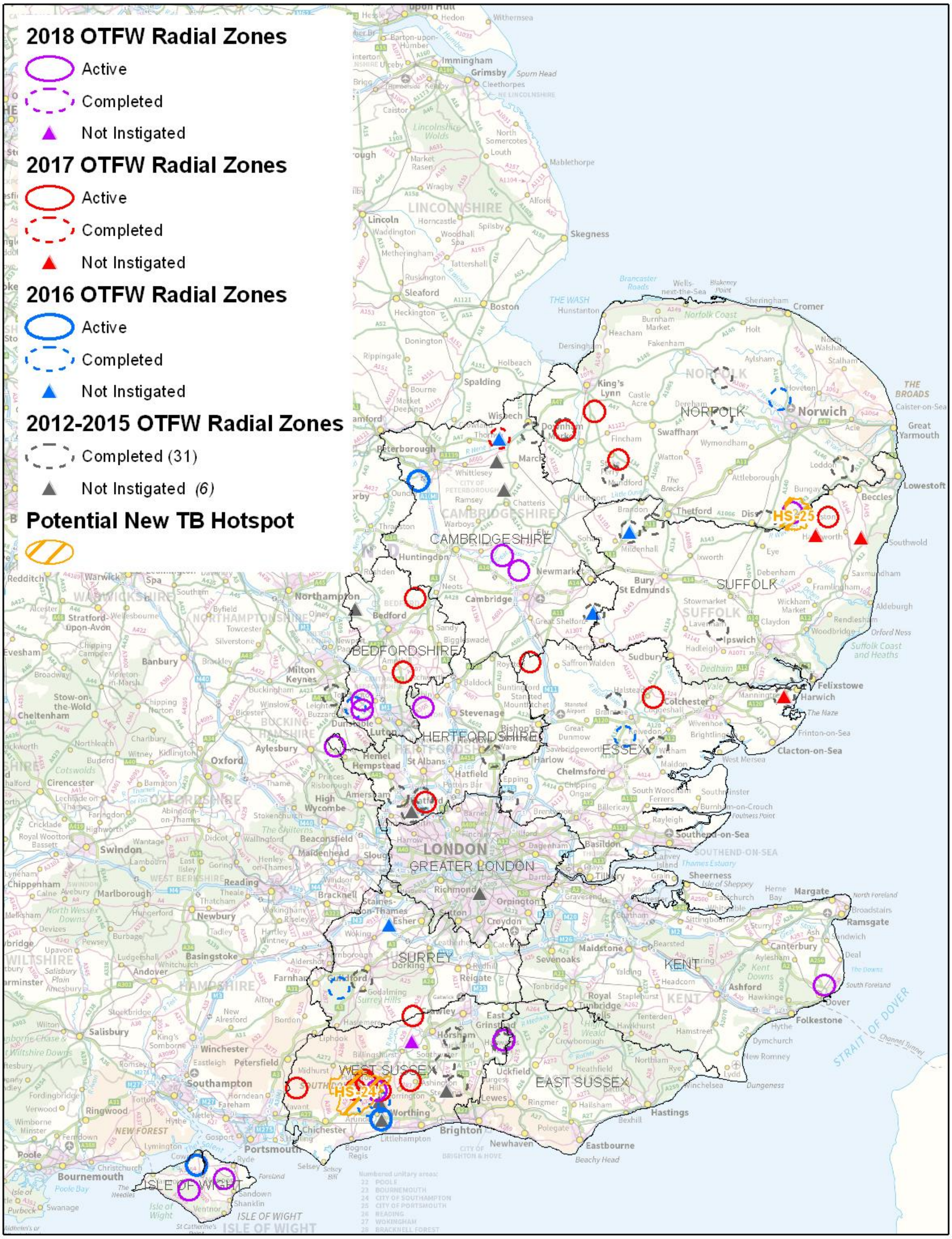
There were three reports of bacteriologically confirmed *M. bovis* infection in other susceptible species in the South East Low Risk Area during the reporting period. Two *M. bovis* positive cases in cats (Norfolk and Carshalton, south of Greater London) and one llama herd in Norfolk.

The llamas (pets) were put under movement restrictions on 24/7/17. The culture positive result for the llama was recorded under a different owner's holding number hence the long delay to finding the culture positive result, almost a year later on 6/7/18. This holding has also cattle that were put under movement restrictions on 11/7/18. There have not been cattle movements on to this holding from homerange areas of genotype 17:a. The cattle had negative results at check test on 14/3/18 and restrictions were lifted as the camelids are a separate epidemiological unit from the cattle.

The index case was a female llama bought in 2012 in Derbyshire together with another male llama. The infected llama was slaughtered following a positive result to a blood (antibody) test which was carried out by the private veterinarian as the llama was losing weight. Post-mortem inspection revealed lesionss typical of tuberculosis in the lungs and other lymph nodes (genotype 17:a of *M. bovis* was isolated in culture).

There are no previous breakdowns recorded on the affected llama premises. In 2015 there was a breakdown in Norfolk with the same genotype (17:a), but no connection could be established between the two farms. The farm of origin of the llamas in Derbyshire had only one TB breakdown in 2010 after the disclosure of two reactors at routine herd test. One of the reactors had visible lesions at post-mortem (genotype 25:a in March 2010) and the other reactor had no visible lesions at post-mortem. Genotype 17:a has not been isolated in the parish of Dalle Abbey in Derbyshire to date. However the parish of Hartingon Town Quarter that is approximately 34 miles away had one OTFW in cattle (17:a). It is likely that the llama purchased by the farmer in Norfolk was already infected.

A serological test carried out by APHA in the affected llama herd on 31 August 2018 was negative. The first short interval comparative skin test of the llama herd carried out on 30/11/18 had negative results. The second short interval test carried out at the end of March had negative results. Restrictions were lifted on 17/4/19.



Creator: IMT GIS
Source: Sam
OTFW data as at 18th of March 2019
Ref: 20190318_SE
Product No: 44

Date: 18/03/2019

0 10 20 30 40 50 Kilometers

Animal & Plant Health Agency

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-γ – 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.