Differences between bovine TB indicators in herds in the IAA and herds in the Comparison Area (Project OG0142): First three years, 1st May 2010 to 30th April 2013

A report commissioned by the Welsh Government under Project OG0142

Produced by:

Department of Epidemiological Sciences

Animal Health and Veterinary Laboratories Agency

New Haw, Addlestone, Surrey, KT15 3NB

Tel 01932 357 100

***Compilers*:**

Data preparation: Tony Goodchild, Adam Brouwer

Author and analysis: Kate Harris, Tony Goodchild

Project management: Emma Wittmann

Internal AHVLA reviewers: Sara Downs, Tony Goodchild, Joanna Lawes, Jessica Parry

***Read and approved for submission by AHVLA TB Science Lead*:**

Signed: Jason Sawyer, Deputy Chief Scientist TB, AHVLA

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Summary & Key messages:

On 1st May 2010, when cattle controls began in the Intensive Action Area (IAA), the numbers of herds in the IAA and Comparison Area (CA) were 317 and 1410 respectively[1]. A descriptive analysis has been undertaken to show bovine tuberculosis (bTB) testing effort and trends in measures of bTB incidence in cattle from 1st May 2005 to the end of April 2013, including the 36 months since the introduction of cattle controls in the IAA. We describe the trends observed in relation to the changes in testing effort, changes in control procedures in bTB incidents and biosecurity in the IAA. In general, the observed differences in trends (except for testing intervals) are small in comparison with the historic variation between years.

The graphs and points below illustrate the key messages, which are described in more detail in the body of the report:

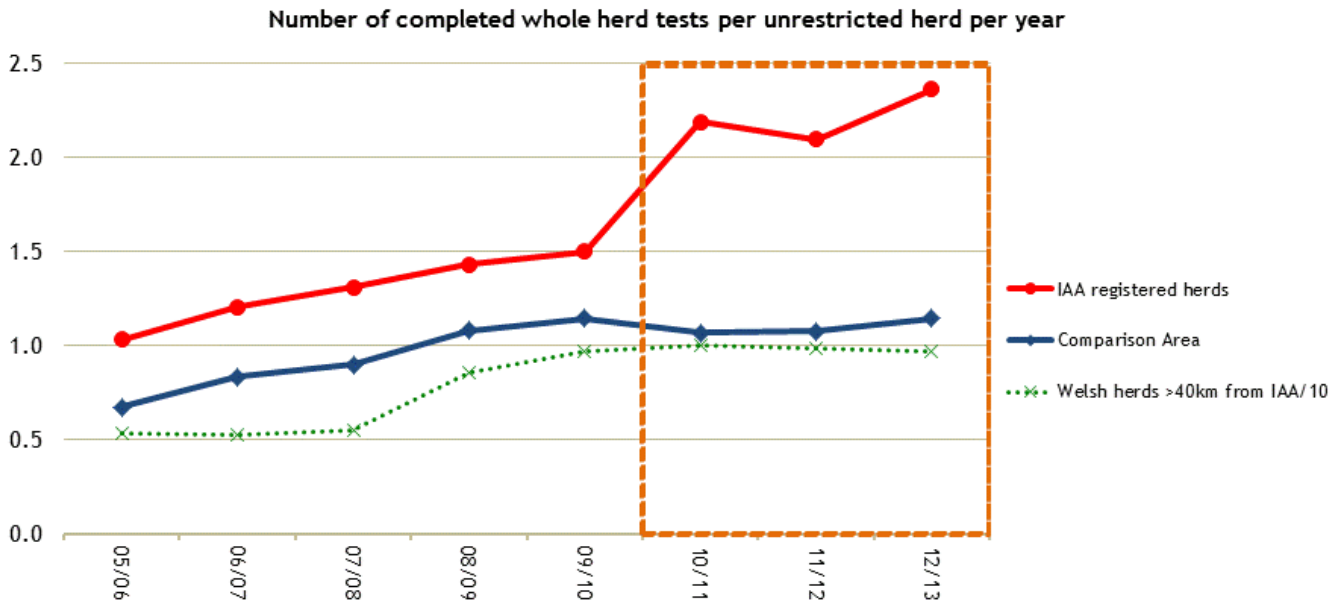

Fig A – Number of completed whole-herd tests (WHTT) per unrestricted herd, 2005/06 to 2012/13

[1] The Comparison Area (CA) contains more herds than the IAA to compensate for the lower apparent force of infection in the CA, evidenced by different proportions of herds with bTB breakdowns in the years leading up to the IAA.

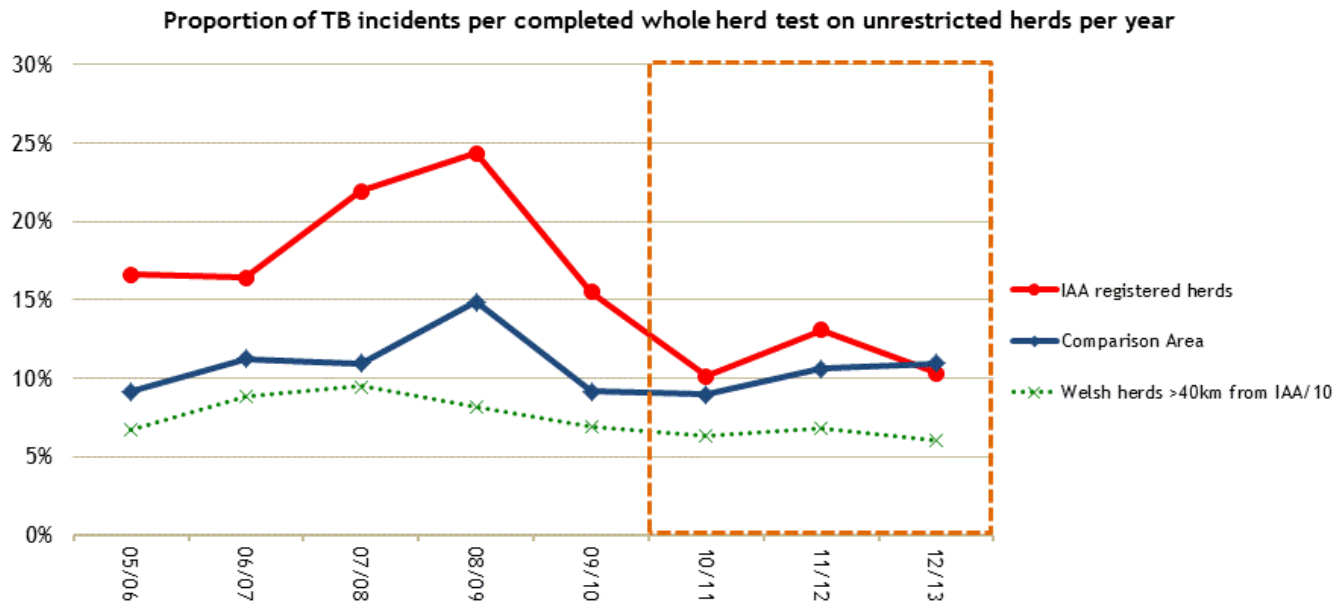

Fig B – Proportion of WHTT on unrestricted herds, resulting in new OTF-W or OTF-S incidents in a 12-month period, 2005/06 to 2012/13

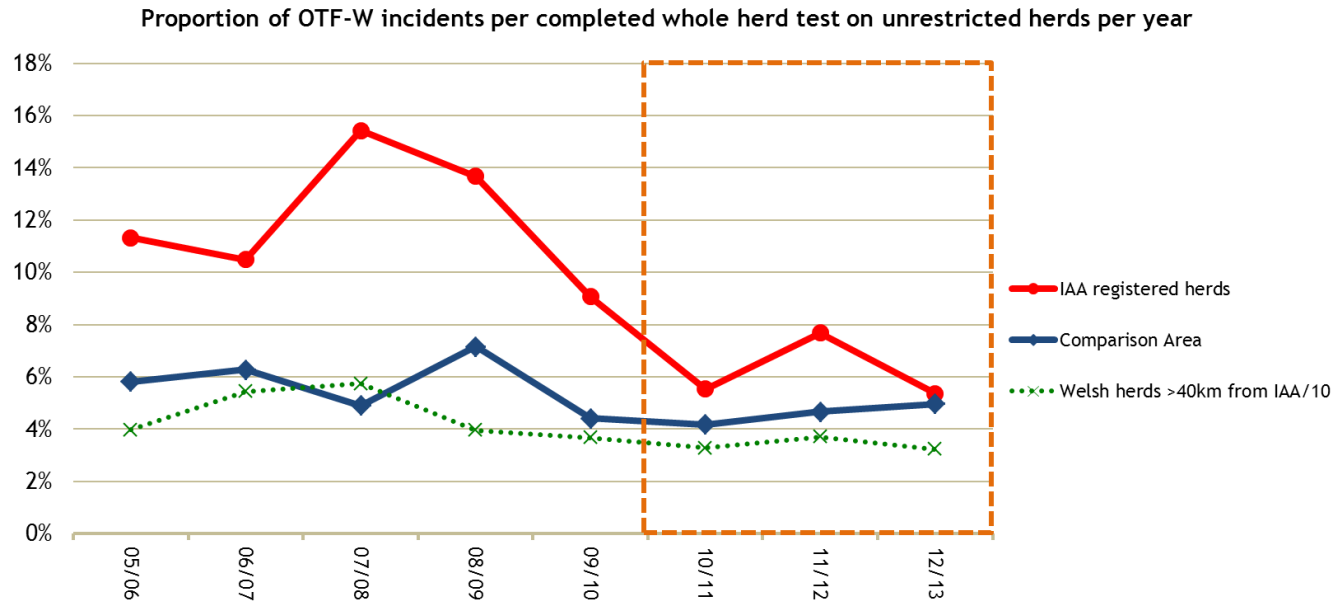

Fig C –Proportion of WHTT on unrestricted herds, resulting in new OTF-W incidents in a 12-month period, 2005/06 to 2012/13

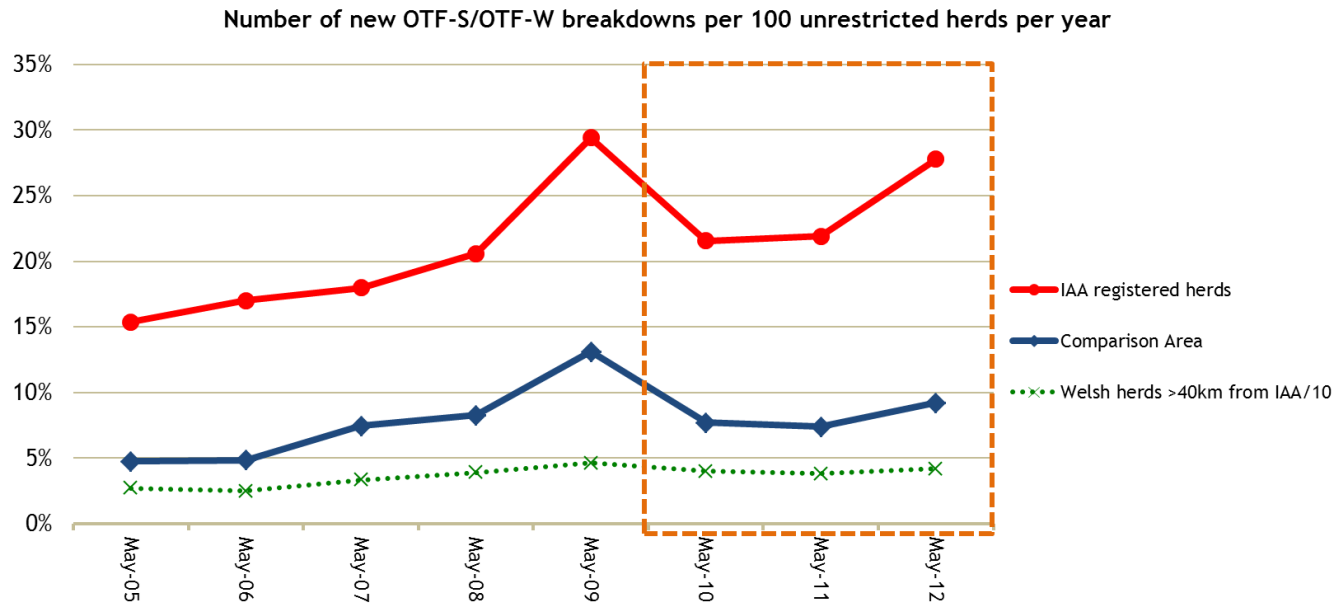

Fig D – Proportion of herds under restriction on 1st May each year because of loss of OTF status

- The frequency of WHTT of unrestricted IAA herds has increased from 1.5 before the start of the IAA in 2009/10, fluctuating between 2.1 and 2.4 from 2010 to 2013; in other areas it was around 1.0 to 1.2 (Fig A, and Fig 2.1 in the full report).
- Between 2009/10 and 2010/11, there was a decrease in the proportion of WHTT in unrestricted IAA herds that disclosed bTB incidents (Fig B, and Fig 3.1 in the full report), both absolutely and relative to herds in the CA. This decrease was anticipated because the interval between herd tests in IAA herds was half that in the CA, reducing the time which herds were exposed to infection. In 2011/12, there was a slight increase in the proportion of incidents disclosed through whole herd type tests and in 2012/13, the proportion decreased to 10%. In the CA, the proportion increased slightly from 2010/11. Thereafter, the proportion of tests on unrestricted herds that disclosed incidents tended towards similarity in the IAA and comparison herds.
- There has been a declining trend in the proportion of OTF-W incidents disclosed per completed WHTT on unrestricted IAA herds since 2007/08, from 15% to 5%, although in 2011/12 there was a slight increase (Fig C, and Fig 3.2 in the full report). In the CA, proportions have increased from 4 to 5% since the start of the IAA.
- The proportion of IAA herds under restriction (for OTF-W *or* OTF-S incidents) since 2010/11 has remained very high compared to the proportion in the CA (Fig D, and Fig 4.1 in the full report) and is likely to be reflecting the high burden of bTB infection within the IAA. The proportion of IAA herds under restriction may be further affected by the introduction of an extra clear test before releasing OTF-S incidents from restriction. The relative increase in restricted herds in the IAA due to an OTF-W *or* OTF-S incident, between 2011/12 and 2012/13 (+27%) was not dissimilar to the increase in the CA (+25%).
- Around 15% of the map references of IAA herds recorded on SAM were located outside the IAA area (Fig E). A similar proportion of herd map references in the CA were also located outside the parish implied by their CPHH. Since the locations of IAA herds had been validated before May 2010 (as being located within the IAA), we concluded that those with

map references outside the IAA area were frequently using land within the IAA. Outside the IAA, most of the discrepancies were no more than a few kilometres.

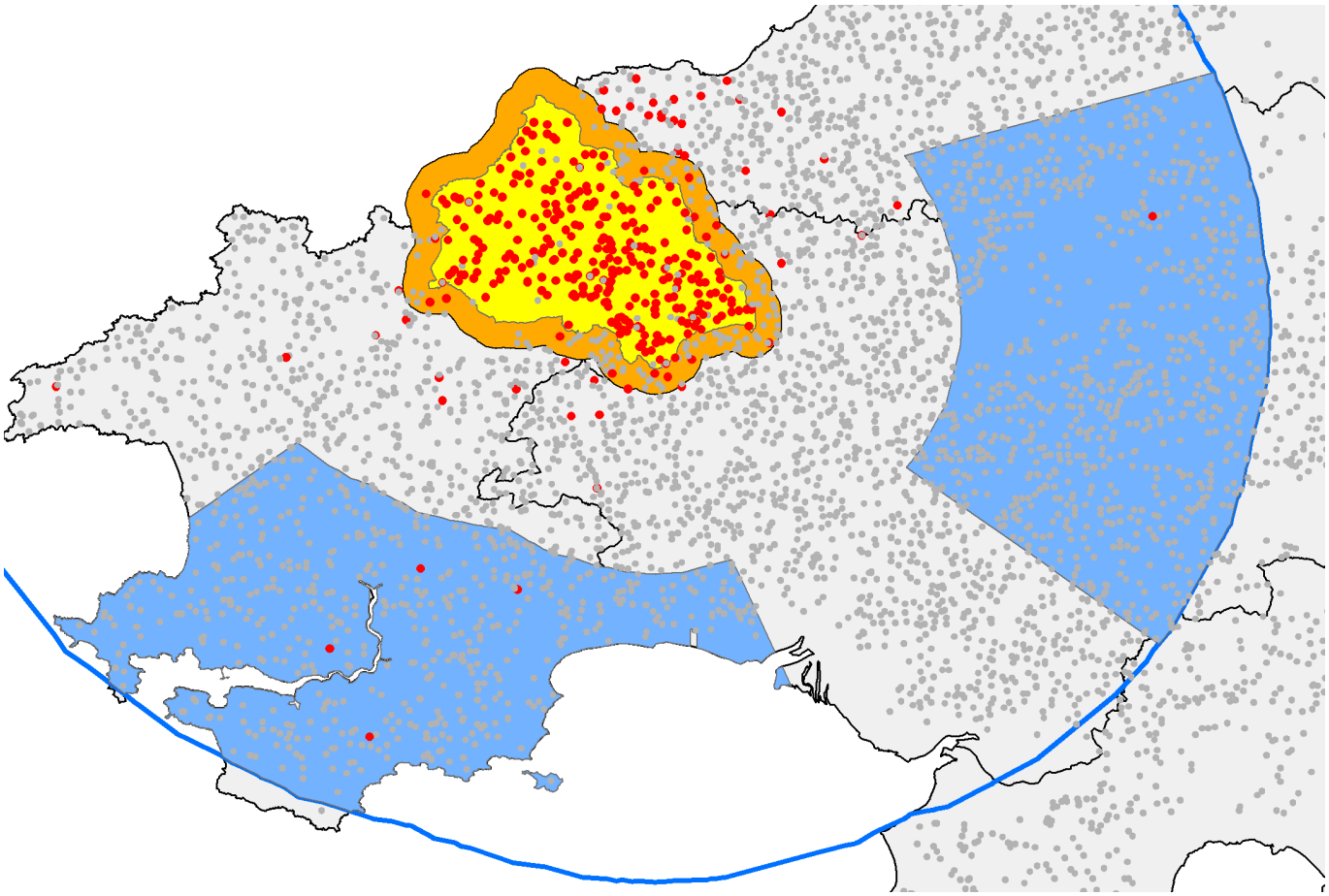

Fig E – Areas contributing to Figures A to D: the IAA Area (yellow), CA (blue, in two parts) and Wales more than 40 km from the edge of the IAA (north and east of the blue circle).

The 307 herds registered in the IAA for at least 6 of the 12 months May 2012 to April 2013 are shown in red; other herds (grey dots) are shown according to their map reference in SAM release 6. The 2km-wide buffer around the IAA is shown in orange.

Summary conclusion

Field surveillance is more intensive in IAA herds compared to the CA, with IAA herds being tested 6-monthly, badgers being vaccinated with BCG since 2012, and animal movements being discouraged. Consistent trends in indicators of bTB incidence have not yet been seen, although the recent reduction in the number of OTF-W incidents per 100 unrestricted herds or per previously-infected herd may be promising. Several years need to pass before any meaningful differences between the herds in the IAA and CA can be confirmed.

Limitations of the report and study design

It will not be possible to use conventional statistical inference in the analysis of data because the IAA and CA were not selected at random from possible candidates and neither of these areas was replicated. Data on bTB indicators in the first three years of the IAA have shown that differences between areas are relatively small in comparison with year-to-year differences. The major changes in testing regimes applied in the IAA compared to usual practice will influence interpretation of the first few years of data for the rest of Wales, and the CA. Secondly, differences in herd demography between the CA and IAA will need careful consideration. Because of this, and a lack of randomisation in herd selection, we predict that any difference in bTB trends due to control efforts between herds in the IAA and herds in the CA will not be detectable until several years have elapsed. In other words, the purposive selection of the IAA and the difficulty in finding a CA with equivalent bTB incidence reduces the soundness of evidence that any observed differences in bTB incidence are due to bTB control strategies, rather than other differences between the areas in the epidemiology of bTB.

There was a small shortfall between the number of herds that were active according to SAM and the number of herds reported by the WG IAA team: it was around two each year. Since the size of the IAA herds was available only in SAM, the size of non-SAM 6 herds does not contribute to the number of animals in IAA herds in the report. Although IAA herd sizes were taken only from SAM, they were derived in an identical manner to other herds in Wales.

A more significant assumption is that the number and size of herds was constant for each area in *all* of the eight 12-month periods. In fact, the number of herds in Wales has decreased at an average rate of 2.5% per year between 2005/06 and 2012/13 (although the number of cattle has decreased less). Ignoring this decrease avoided artificial increases in the many indicators of bTB that used number of herds as a denominator.

Source data quality statement

There are some known, on-going issues with the TB testing data, compiled in the SAM system which affects this report, as they can affect the Wales TB surveillance report. Although attempts have been made to minimise the effect of this in the data, and longer-term fixes are being progressed, these issues with the source data can be observed in some parts of the report:

- It is still possible that testing totals reported may be inflated due to duplicate testing data.

- There are instances where test-types expected to be applied in restricted herds (e.g. short interval tests VE-SI) are recorded to have occurred in unrestricted herds and vice-versa (e.g. contiguous testing VE-CON recorded in response to local breakdowns in already restricted herds)

- Some inconsistencies also occur with denominator data for previous years. Consistent with the Wales TB surveillance report, data queries for previous years are re-run alongside the current reporting year. Changes in the recording of herds which have been reactivated to ‘live’ following an ‘archive’ period resulting in the default output that if they are ‘live’ currently they were ‘live’ in all previous reporting windows. This has meant that herd and animal denominator data for earlier years can be observed as slightly inflated in this report compared to previous reports.

OTF-W-2

As set out in Appendix table A1, this report applies the term officially tuberculosis free status withdrawn (OTF-W) to a herd with a bTB incident in which additional evidence of *Mycobacterium bovis* infection has been identified in at least one slaughtered animal (see Appendix table A1 for more detail). This case definition is consistent with previous iterations of the report and with the annual bTB surveillance reports for Wales, England and Great Britain.

In January 2011 changes were implemented in Wales that were designed to ensure that the officially tuberculosis free (OTF) status of cattle herds was withdrawn rather than merely suspended in cases of breakdowns that met defined epidemiological criteria. These criteria included herds with a pre-existing history of infection with bovine tuberculosis (bTB), consideration of the local disease situation and where an additional epidemiological risk is identified by the Animal Health and Veterinary Laboratories Agency. This cohort has become known as OTF-W-2 herds. In common with other herds where OTF status is withdrawn (OTF-W), two consecutive clear herd tests are required to restore their OTF status rather than the single clear test required by herds with only a suspended OTF status (OTF-S).

The OTF-W-2 cohort is a group of OTF-W herds that is additional to the group as defined in Appendix table A1. Unfortunately this additional cohort remains very difficult to identify within the data available for analysis following extraction from the AHVLA bTB control and surveillance system (SAM). As a consequence OTF-W-2 herds are misclassified and reported within this report and elsewhere as OTFS breakdowns. Ongoing work by the AHVLA to resolve this situation has yielded figures that suggest that the majority of breakdowns within the IAA currently reported as OTF-S may actually be OTF-W-2 in reality. The AHVLA continue to seek a solution to this unsatisfactory situation but, at the time of writing, the reporting error remains unresolved.
Given this situation, a decision had to be made whether or not to present data stratified by breakdown status in this report. In the end stratification by breakdown status was retained both to provide continuity with previous reports and consistency with the annual surveillance reports. The intention is to publish revisions to key statistics once the underlying issue has been resolved.

It is important to understand that OTF-W-2 herds are correctly identified and managed accordingly in the field. The error arises from the way that the data are recorded with a consequent impact on reports derived from these data.

Introduction

The 288-km² Intensive Action Area (IAA) in north-eastern Pembrokeshire experienced one of the highest incidence rates of bovine TB (bTB) in Wales in the 60 months that ended on 30th April 2010 (see previous published reports: http://wales.gov.uk/topics/environmentcountryside/ahw/disease/bovinetuberculosis/intensive-action-area/iaadoc/?lang=en). Intensified cattle controls were introduced into the IAA on 1st May 2010 and a badger vaccination programme in May 2012.

The cattle controls comprised enhanced biosecurity and changes to bTB testing regimes. They include:

(1) restricting cattle movements within the IAA and between the inside and outside of the IAA, involving revocation of SOAs with stricter control on reallocation, withdrawal of BCMS linkages between herds, etc.;
(2) use of source & spread tracing in OTF-suspended herds (in addition to the mandatory tracing in OTF-withdrawn herds), and
(3) A programme of badger vaccination commenced in May 2012. Reports for years one and two can be found at: http://new.wales.gov.uk/topics/environmentcountryside/ahw/disease/bovinetuberculosis/intensive-action-area/badger-vaccination-iaa/?lang=en

Enhanced testing has increased the number of tests applied to animals in herds, with a potential impact on surveillance statistics:

(1) the frequency of periodic surveillance testing of whole herds has been increased from 12-monthly to six-monthly;
(2) two successive clear tests are required before movement restrictions are withdrawn from OTF-S incidents (this is similar to the mandatory practice for OTF-W incidents); and
(3) use of the interferon-gamma (IFNg) blood test has been encouraged in IAA herds. The IFNg test has been used to improve the sensitivity of testing animals in the IAA, but has not been used to disclose new bTB incidents.

This report shows the trends in indicators of bovine TB (bTB) in herds registered as using land in the IAA, in a 2-km buffer around the IAA, in a Comparison Area (CA) between 16 and 40 km from the edge of the IAA, and in Wales further than 40 km from the IAA.

Methods

Reporting periods

Reporting periods begin on 1st May and end on 30th April the following year. The first three 12-month periods of interventions in the IAA are described here (1st May 2010 to 30th April 2013), along with the previous five 12-month periods (from 1st May 2005 to 1st May 2009). These eight periods are labelled 2005/06 through 12/13 in the annual statistical charts in this report.

Definition, selection and location of IAA and Comparison Areas

The identity of all herds registered in the IAA was reported monthly by the WG and sent to us at the start of the compilation of this report, letting us chart the number of active IAA herds. In several cases the map reference attributed to an IAA herd in SAM 6 was outside the IAA geographical area, but this was not considered an error because many herds in the IAA do not use land in the IAA continuously. Herds with Bovine TB located in the 2-km wide buffer around the IAA are reported because of the proximity of the herds to the IAA. However non-IAA herds with bovine TB and map references between 2 and 16 km from the edge of the IAA are excluded from the report because the degree to which they have contact with IAA herds is uncertain.

Selecting the Comparison Area was a compromise, because the nearest set of herds with a bTB incidence rate almost equal to that in the IAA herds was over 100 km away. In order to ensure similar cultural, technical and environmental influences on bTB in the IAA and CA herds, CA herds that were close to the IAA was preferred. For comparison herds, it was necessary to select herds having map references at least 16 km from the edge of the IAA to reduce the likelihood that herds in the CA would use land in the IAA. We selected a CA that was as near to the IAA as this limit permitted but in order to ensure an adequate number of bTB incidents in the CA it necessarily had a larger number of herds and cattle than in the IAA. In the CA the absolute number of bTB incidents was actually slightly larger than in the IAA, which should serve to improve the statistical precision of comparing incidence rates in the future. The CA extends to 40 km from the edge of the IAA and includes most of Carmarthenshire. The CA occupies a band 16-40 km from the IAA, but two parts of the band where bTB herd incidence is low have been excluded.

The inclusion criteria for all non-IAA herds are consistent with the previous report: Non-IAA herds are included based on their map references, ignoring the Parish implied by the first five characters of the CPHH. For some herds the map reference falls outside of the Parish but in most cases this is only by a few kilometres.

Appendices give (A1) a Glossary of definitions and descriptions, (A2) the data upon which the graphs are based, (A3), numerators and denominators for report figures and Appendix A2 and (A4) the total number of tests, bTB and OTF-W incidents per test type (detailed per test group as in Table 1.1).

1. Cattle demographics in the IAA and Comparison Area

The number of herds in the IAA on 1st May 2010 was 317; at that time the number in the CA was 1410, in the 2 km buffer was 129 and the number in Wales further than 40 km from the IAA was 9630 (Fig 1.1). Three years later the number of herds in these groups has decreased, to 306, 1259, 114 and 8662, respectively. The average herd size in the IAA between May 2010 and May 2013 has remained similar (150.3 vs. 150.6). The average herd sizes increased to 112 in the CA, 84 in the 2km buffer, and 89 in Welsh herds more than 40km from the IAA. This meant that the overall number of cattle changed little despite the loss of herds (Fig 1.1). The relative decrease of number of herds in the IAA between May 2010 and May 2013 (-3%, Fig 1.1) was much lower than observed in the CA (-11%).

At the end of April 2013, the number of herds and cattle in the CA were 4.11 and 3.05 times greater than the number in the IAA (Figs 1.1 and 1.2). In the IAA, the proportion of dairy herds (which tend to be larger than beef herds) was greater than in the CA, which in turn was greater than the proportion in Wales more than 40 km from the IAA (Fig 1.3). The increased proportion of dairy herds would thus increase the average herd size in these areas.

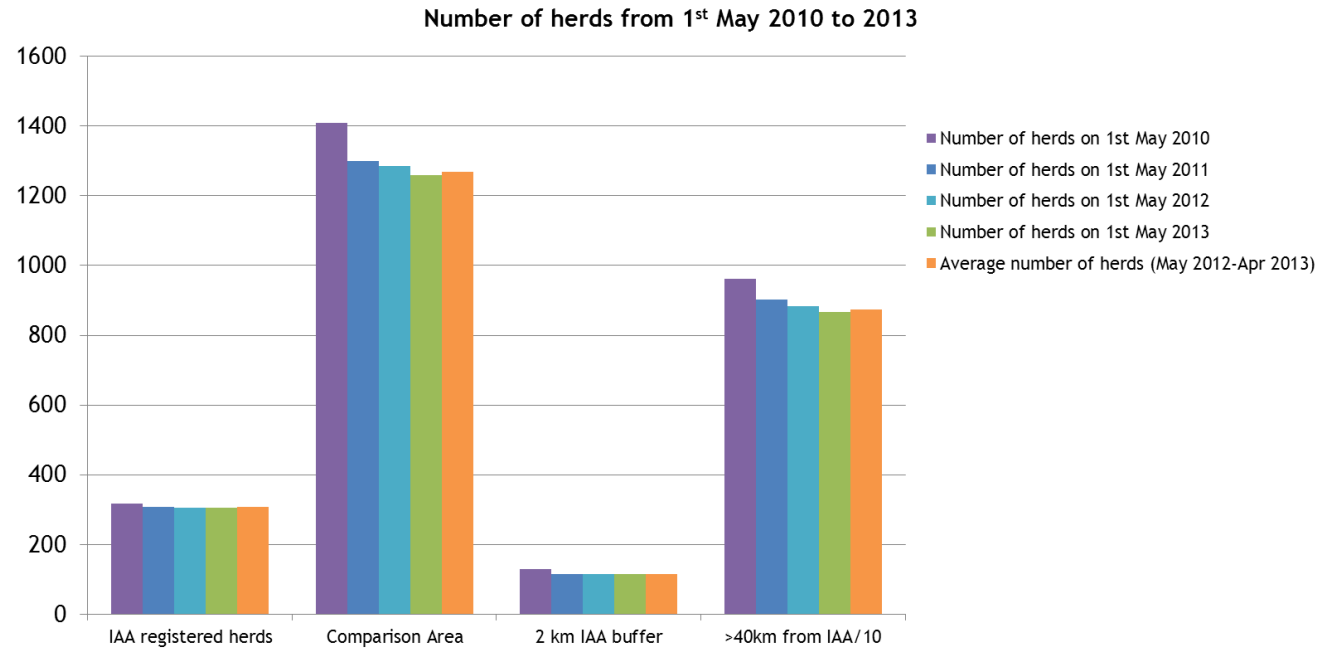

Fig 1.1 – Number of herds from 1st May 2010 to 2013 (including the average number in the IAA reporting period; 1st May 2012 to 30th April 2013)

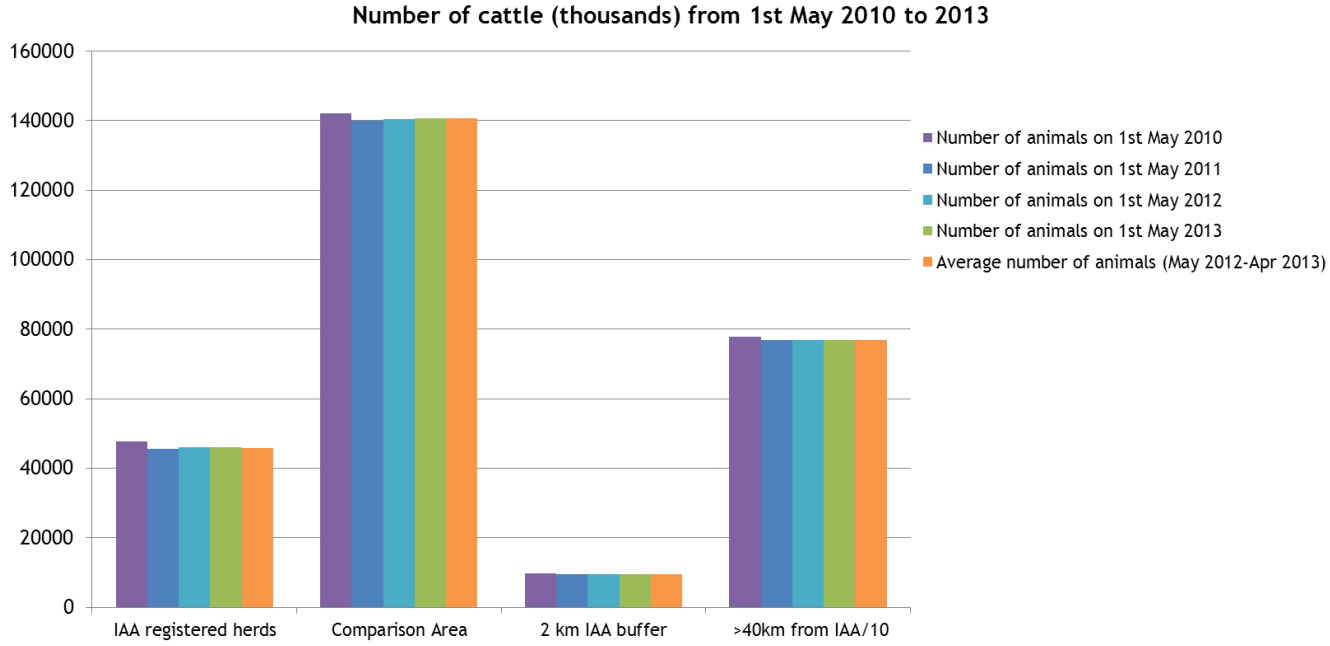

Fig 1.2 – Number of cattle (thousands) from 1st May 2010 to 2013 (including the average number in the IAA reporting period; 1st May 2012 to 30th April 2013)

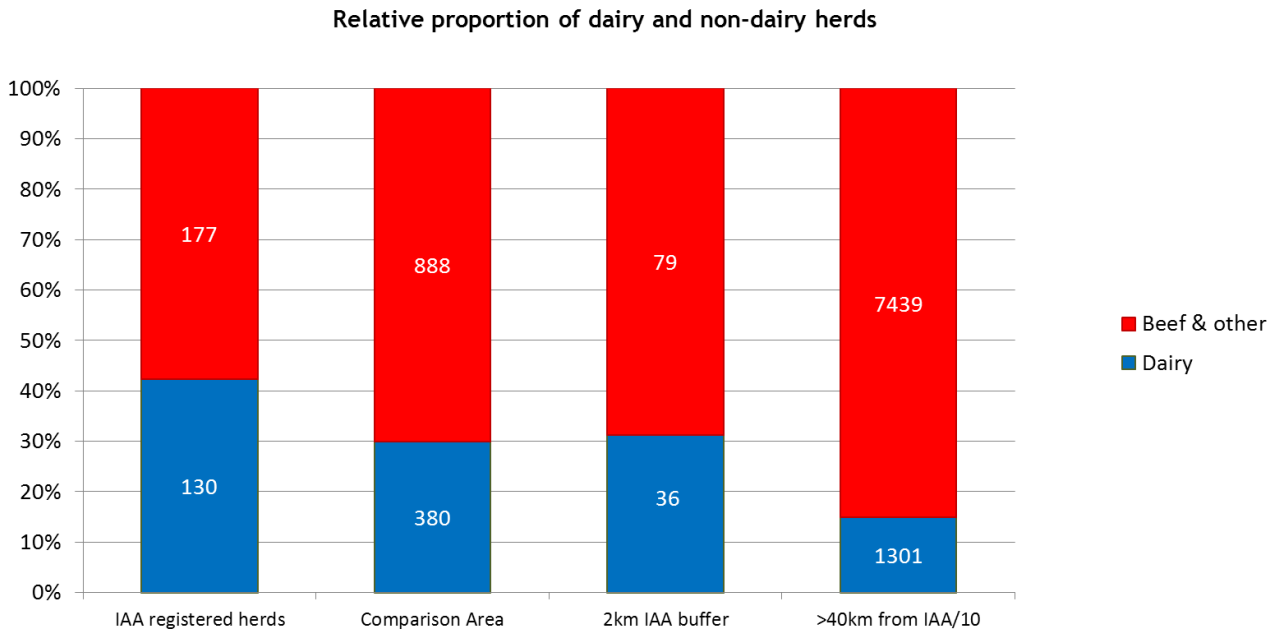

Fig 1.3 – Relative proportion of dairy and non-dairy herds (average from 1st May 2012 to 30th April 2013)

Table 1.1: Number of tests for animals in herds not under restriction (surveillance tests) and resulting incidents (total and OTF-W) according to area

	IAA					Comparison Area				
Surveillance test group		No. incidents		Incidents per 1000 tests			No. incidents		Incidents per 1000 tests	
	Total tests (thousands)*	Total	OTF-W	Total	OTF-W	Total tests (thousands) *	Total	OTF-W	Total	OTF-W
Area Risk	15.41	21	8	1.30	0.52	59.92	76	41	1.24	0.68
Control	7.43	1	0	0.13	0.00	9.94	3	2	0.30	0.20
Herd Risk	12.00	14	6	1.17	0.50	26.46	23	11	0.87	0.42
Movement risk	0.42	0	0	2.40	0.00	1.62	1	0	1.86	0.00
Private, pre and post movement	2.36	3	1	1.27	0.42	12.50	7	2	0.56	0.16
Routine	13.75	14	7	1.02	0.51	27.49	21	8	0.76	0.29
Slaughterhouse**	n/a	2	2	-	-	n/a	12	11	-	-
New herds	0.02	0	0	0.00	0.00	1.03	0	0	0.00	0.00
Other	0.06	0	0	0.00	0.00	0.51	0	0	0.00	0.00

	IAA 2km buffer					Welsh herds over 40km					All Wales				
		No. incidents		Incidents per 1000 tests			No. incidents		Incidents per 1000 tests			No. incidents		Incidents per 1000 tests	
Surveillance test group	Total tests (thousands) *	Total	OTF-W	Total	OTF-W	Total tests (thousands) *	Total	OTF-W	Total	OTF-W	Total tests (thousands) *	Total	OTF-W	Total	OTF-W
Area Risk	7.15	6	3	0.84	0.42	135.80	141	72	0.95	0.49	364.14	373	190	0.97	0.50
Control	0.95	1	0	1.05	0.00	13.74	7	3	0.51	0.22	47.83	17	6	0.36	0.13
Herd Risk	1.65	0	0	0.00	0.00	98.62	97	46	0.98	0.47	192.83	188	90	0.97	0.47
Movement risk	0.16	0	0	0.00	0.00	5.97	1	0	2.18	1.01	10.86	3	1	1.93	0.74
Private, pre and post movement	1.12	2	1	1.79	0.90	107.29	44	25	0.41	0.23	145.41	84	47	0.58	0.32
Routine	7.15	6	3	0.84	0.42	394.37	163	38	0.41	0.10	473.97	240	58	0.51	0.12
Slaughterhouse	n/a	0	0	-	-	n/a	34	33	-	-	n/a	58	56	-	-
New herds	0.02	0	0	0.00	0.00	2.87	0	0	0.00	0.00	6.26	0	0	0.00	0.00
Other	0.00	0	0	0.00	0.00	0.10	0	0	0.00	0.00	0.77	0	0	0.00	0.00

* Excluding 2781 IR tests (where disclosing test is unknown)

** The data for the total slaughterhouse tests per area category was unavailable, only the number of breakdowns by slaughterhouse cases was available.

Note: the denominator for results in the category 'Welsh herds over 40km away from the IAA was significantly greater than comparative areas, therefore for total numbers (in the following figures) this group is divided by 10 to be better compared to the IAA and comparison group.

It will be seen that the lines on the plots for the 2-km buffer of the IAA are often irregular in direction and sometimes exceptionally low or high. This is a result of the small number of denominator herds (129 in 2010, 114 in 2013).

2. Testing effort

Up until 2009/10, the number of tests per unrestricted IAA herd reflected the large proportion of such herds that were tested annually (Fig 2.3), supplemented with check tests when contiguous herds had bTB breakdowns, or six months after incidents etc. Since May 2010, herds in the IAA have been routinely tested six-monthly, in addition to the various types of check test. The number of tests per herd in the CA and other areas is greater than 1.0 because of check tests.

The tests shown in figure 2.1 include those that disclose a bTB incident, but do not include tests conducted *during* incidents *whilst* restrictions are in force. If it took more than one day to complete a test on an unrestricted herd, the test date was considered to be the day of completion. Within the IAA, the number of whole herd type tests per unrestricted herd has increased from 1.5 in 2009/10 to 2.4 in 2012/13.

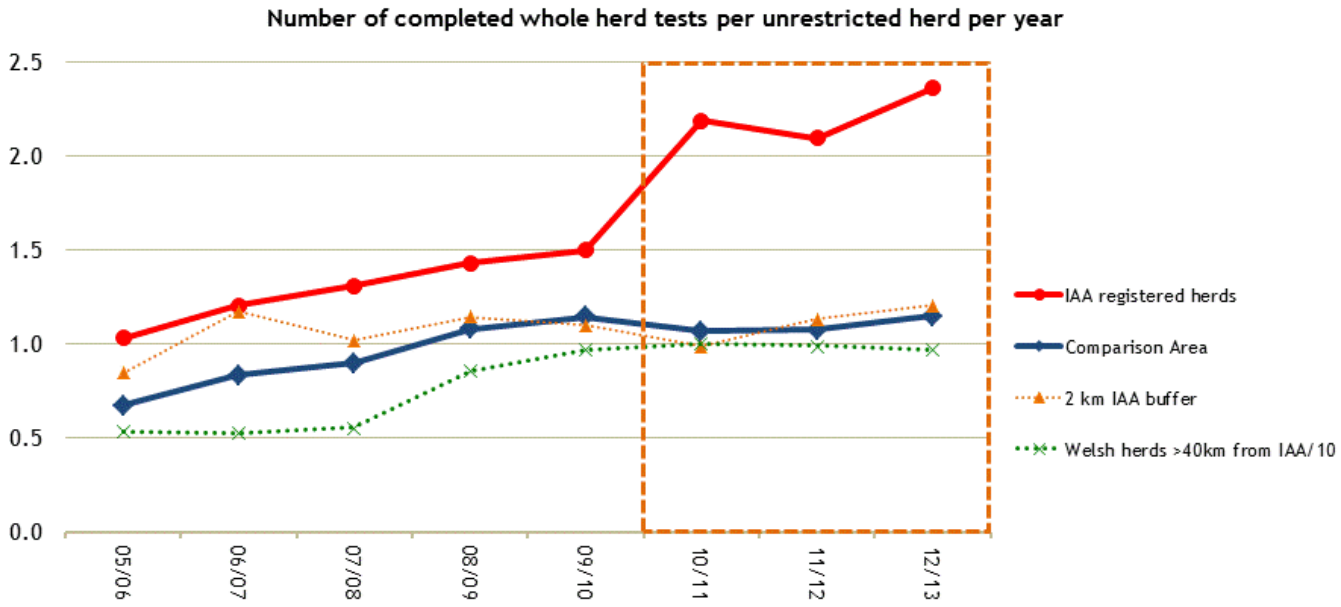

Fig 2.1 – Annualised number of completed whole herd type tests per unrestricted herd, 2005/06-2012/13

The denominator excludes periods during which herds were under restriction.

Figure 2.2 shows the number of SICCT tests (tuberculin skin tests) per animal in unrestricted herds, per year. As with the total whole herd tests per herd (Figure 2.1), the relative number of tests *per animal* has increased between 2009/10 and 2012/13 in the IAA, and also in the CA. The number of SICCT tests per animal in unrestricted herds was 2.12 per animal in the IAA (as expected due to 6-monthly testing), 1.49 in the 2km buffer zone, and 1.24 in the CA.

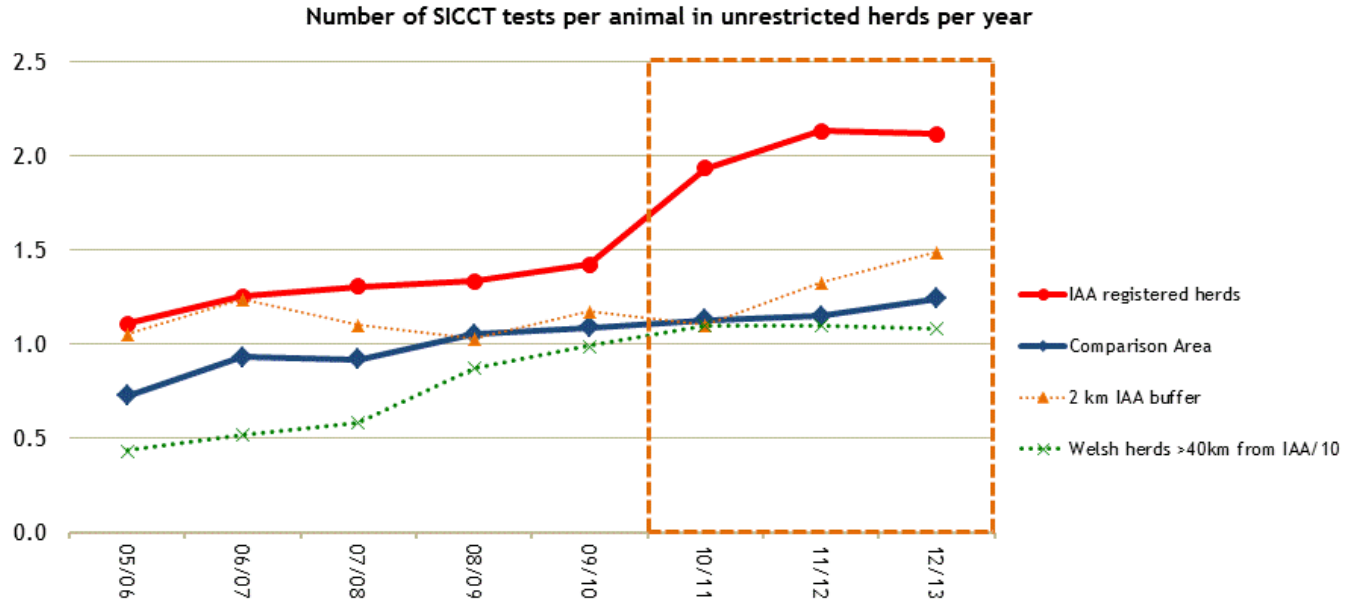

Fig 2.2 – Annualised number of SICCT tests per animal in unrestricted herds, 2005/06-2012/13, including all test types

Between October 2008 and the start of the IAA, all herds in Wales have been tested annually. Before then, comparison herds were tested less frequently than those in the IAA; after the start of IAA cattle controls on 1st May 2010, IAA herds have been tested twice yearly (Figure 2.3).

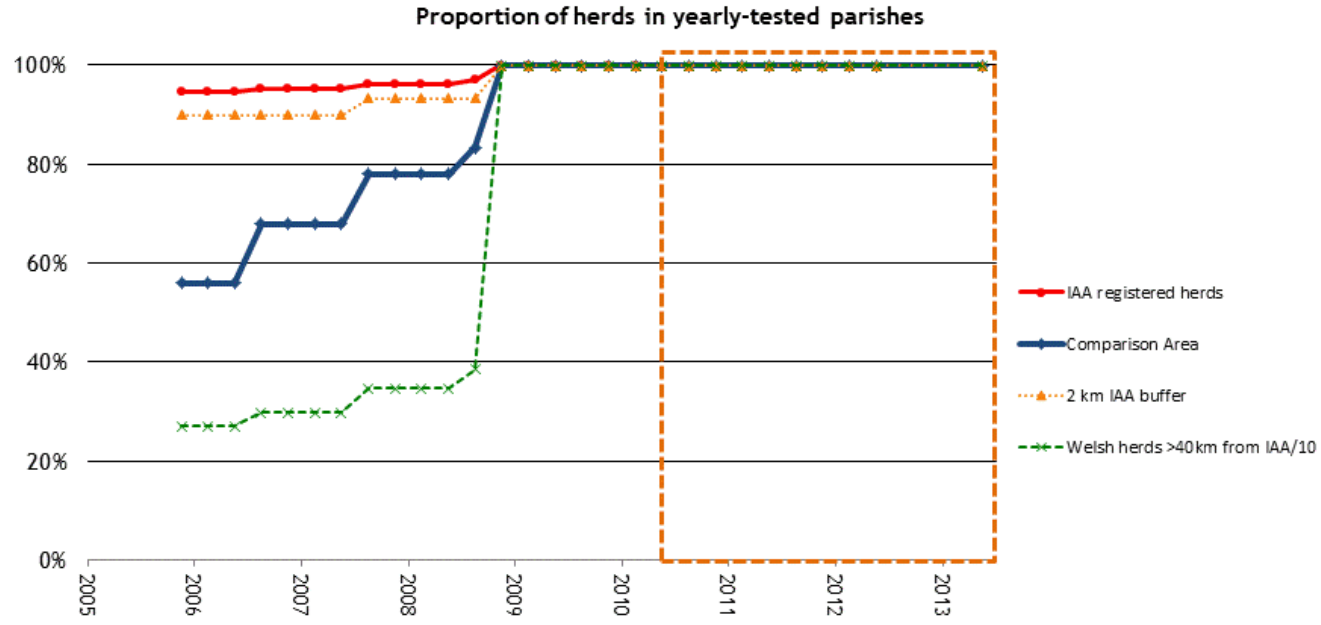

Fig 2.3 – Proportion of herds in yearly-tested parishes, 2005/06-2012/13

Interferon-gamma (IFNg) testing is widely used throughout Wales and is being more widely used in the IAA to help clear infection in repeat-incident herds. The following figures show the total number of IFNg tests on animals in the IAA (Figure 2.4) and the number of reactors per IFNg test (Figure 2.5). Since the start of the IAA, the total number of IFNg tests has increased from around 300 to close to 1000, which is comparable to the total seen whilst dealing with severely infected herds in 2007/08 and 2008/09. The total number of IFNg tests in the CA has varied year-on-year but has nearly doubled in 2012/13 compared to 2011/12.

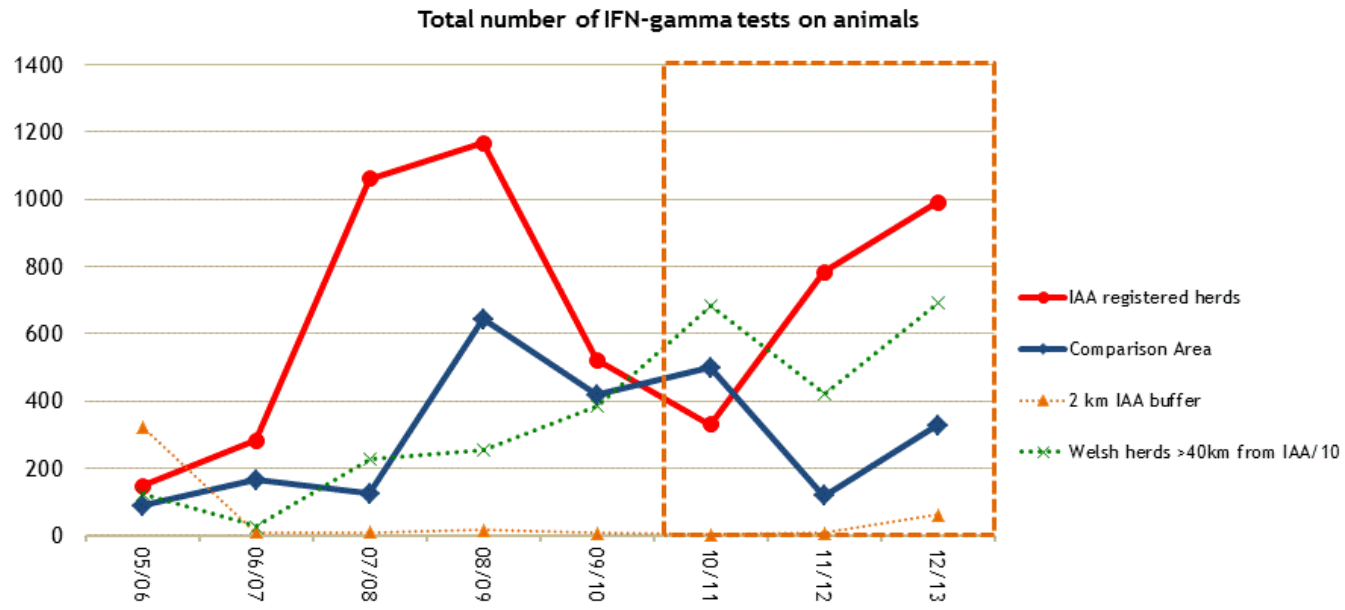

Figure 2.4 – Total number of interferon-gamma tests on animals

Since 2009/10, the proportion of reactors to an IFNg test (per IFNg test) in the IAA has declined from 21.5% to 4.3% in 2012/13; in the CA the proportion has varied and has generally been higher than in the IAA (Figure 2.5). Note that in the 2km buffer of the IAA, there was a sharp peak in 2011/12, but this was due to the low denominator (3 out of 6 animals tested were reactors, compared to 2012/13 where 3 reactors were detected from 61 tests).

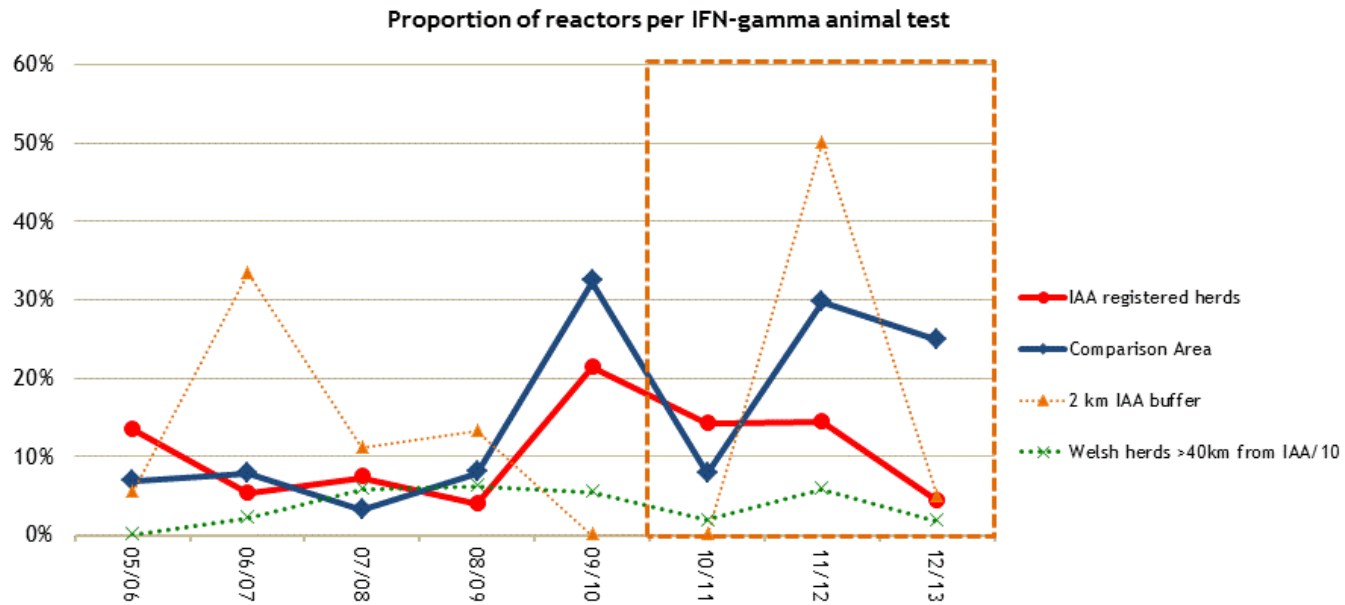

Figure 2.5 – Proportion of reactors per IFN-gamma animal test

3. Incidents and reactors per test

Since 2008/09 there has been a decrease in the proportion of bTB incidents per completed whole herd (WH) type test in the IAA, which can be partly attributed to an increase in the number of tests (Fig 2.1, 3.1). In 2011/12 there was a small increase in the IAA, with herds in the 2 km buffer and CA also affected to a similar extent. The decreasing trend seen from 2008/09 to 2010/11 was resumed between 2011/12 and 2012/13 in IAA herds, representing a 59% decrease and bringing the number of bTB incidents per WHTT to around 10%, which was similar to the level seen in the 2-km buffer and CA. In contrast, the number of herds losing their OTF status per test in the 2 km buffer and CA had increased slightly since 2009/10 after a small (~35%) decrease in the previous year.

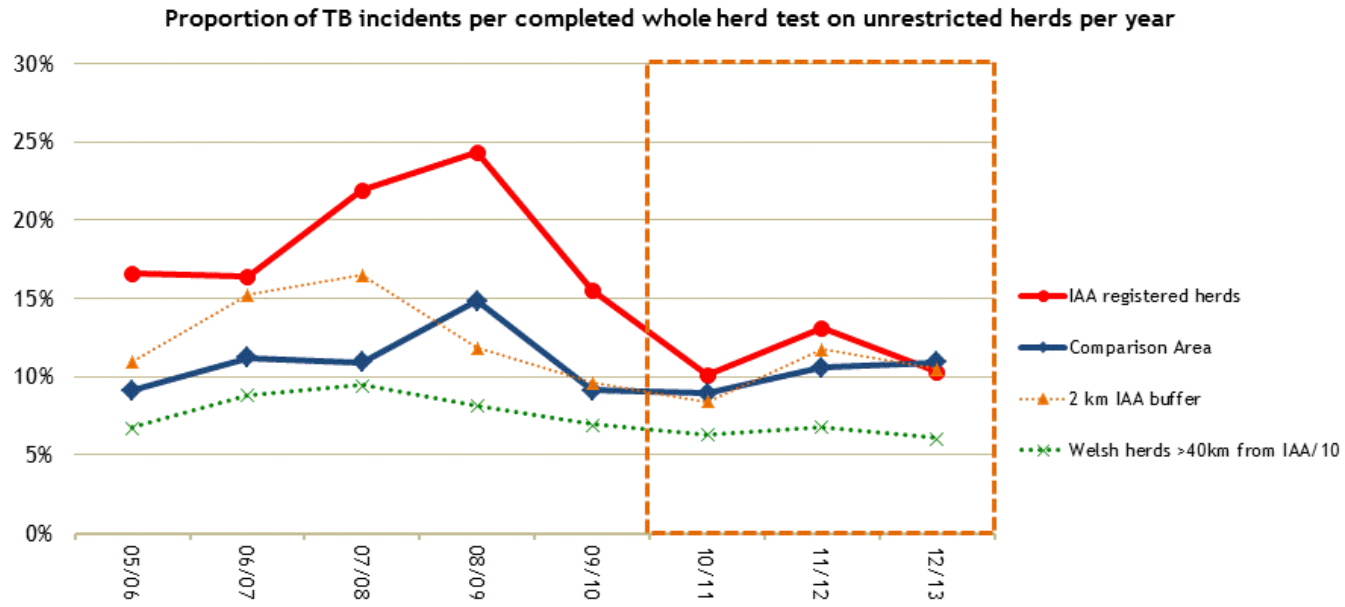

Fig 3.1 – Proportion of herds losing their OTF status (becoming OTF-W or OTF-S), per complete whole-herd type test of unrestricted herds

The tendency for there to be more OTF-W incidents per whole-herd test in the IAA than in the CA did not continue in 2012/13, the difference between the two areas being negligible (~0.4%, Figure 3.2). The proportion of OTF-W herds in the IAA would have been greater than that shown if some incidents with unconfirmed reactors (lesion and culture-free) had been reclassified OTF-W on epidemiological grounds (because of bTB history, contiguous breakdowns, etc.).

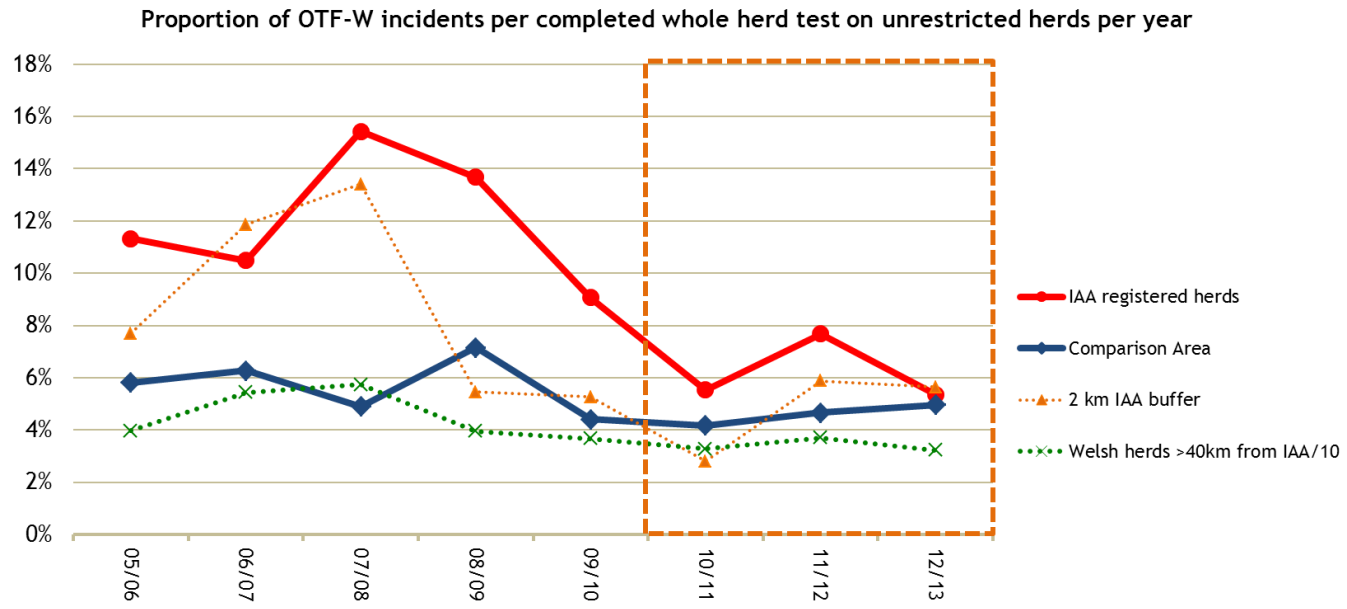

Fig 3.2 – Proportion of OTF-W incidents, per complete whole-herd type test on unrestricted herds

The number of SICCT reactors per 1000 animal tests has continued to decrease since 2008/09 in the IAA (Figure 3.3). Since 2010/11, the number of test reactors has increased in the CA by 37%. The number of reactors per 1000 tests in the IAA was around twice as large as in the CA until 2012/13, when values were fairly similar; the IAA being only 50% greater than in the CA.

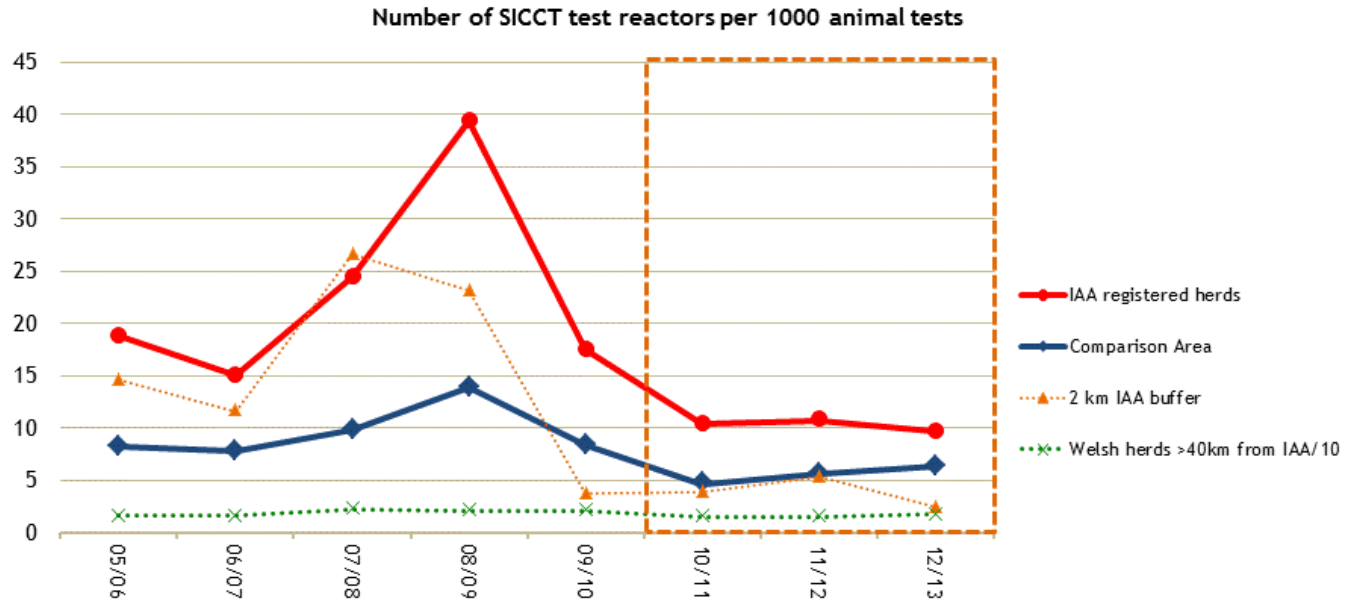

Fig 3.3 – Number of SICCT test reactors per 1000 animal tests (all tests)

The increase in the number of confirmed animals (visibly-lesioned reactors or *M. bovis* culture positive animals) per 1000 tests that was observed in 2011/12 did not continue in 2012/13, with a declining trend being observed since 2008/09 (Figure 3.4). There are now just over 2 (2.34) reactors per 1000 tests in the IAA, and 1.65 in the CA.

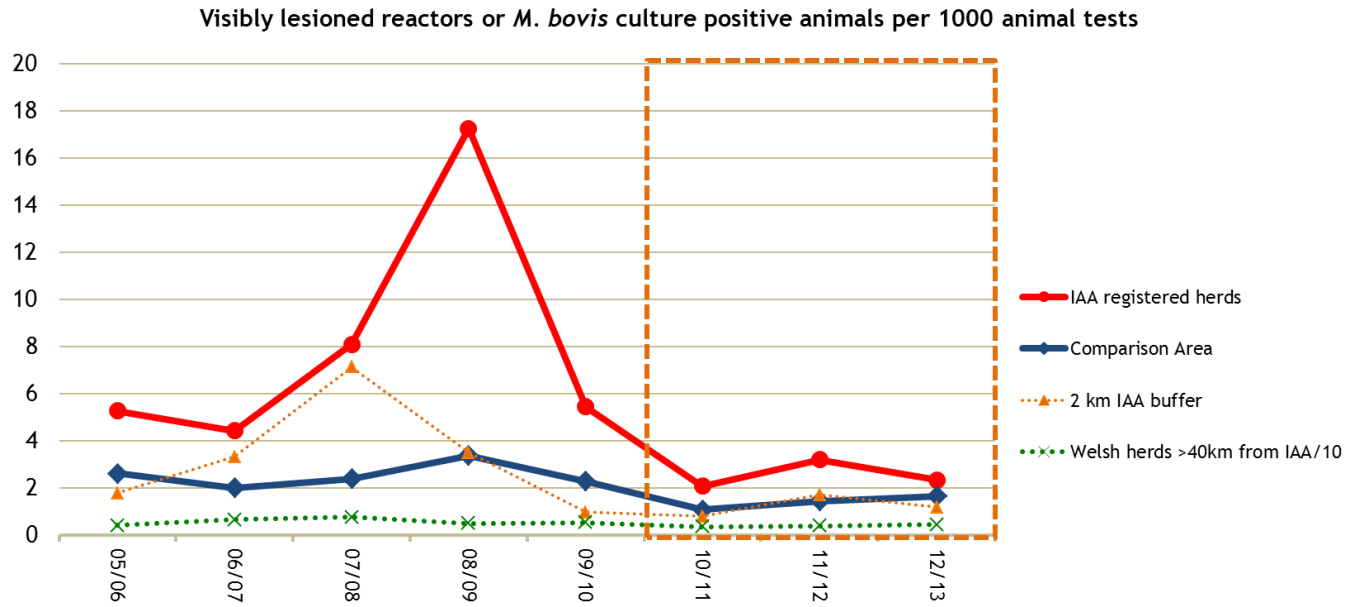

Fig 3.4 – Number of reactors with visible lesions or animals with positive M. bovis cultures per 1000 animal tests (all tests)

The proportion of new bTB incidents that are OTF-W in the IAA has been consistently higher than the proportion in the CA, which commonly occurs when incidence is higher. This difference continued in 2012/13 (Figure 3.5).

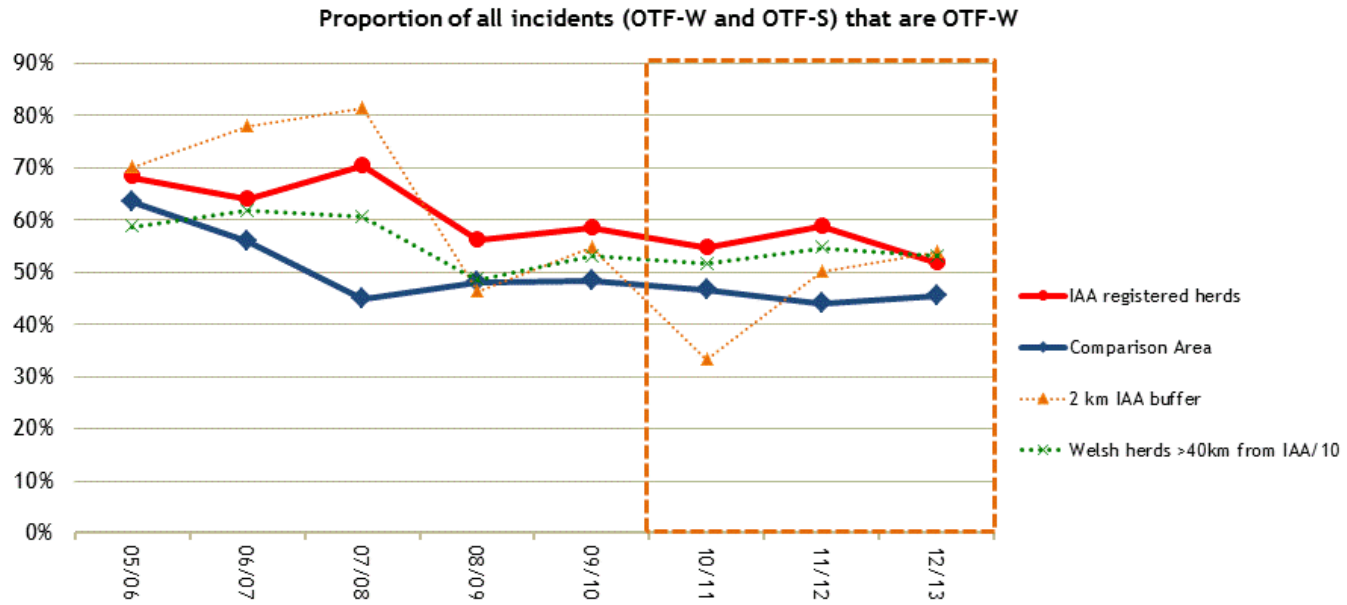

Fig 3.5 – Proportion of all incidents (OTF-W and OTF-S) that are OTF-W

4. Proportion of herds under restriction on 1st May

The proportion of herds under restriction has been around three times as high in the IAA as in the CA since 2005/06 (or before). It has not decreased since the start of IAA controls, possibly because of the extra testing performed at the end of OTF-S incidents in the IAA. In all areas in 2012/13, there was an increase in the proportion of herds that were under restriction due to an OTF-W or OTF-S incident (Figure 4.1).

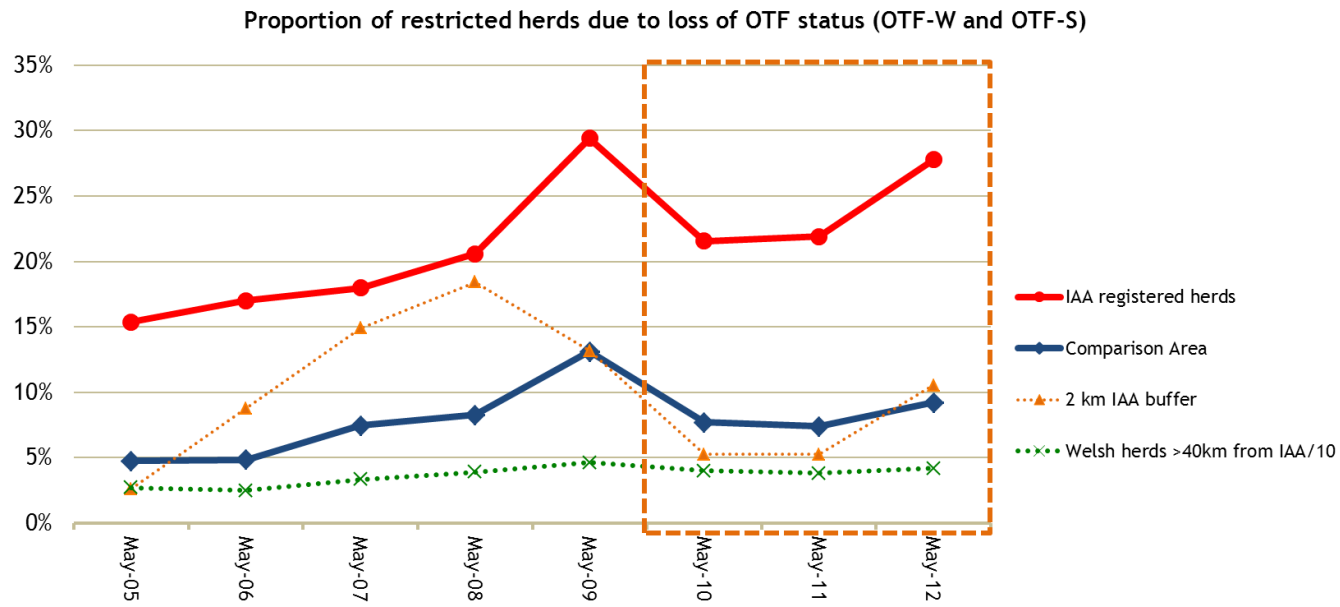

Fig 4.1 – The proportion of restricted herds on 1st May each year due to loss of OTF status (all incidents, OTF-W and OTF-S)

As in Fig 4.1, the proportion of herds under OTF-W restriction in the IAA showed similar trends to the proportion in the CA (Figure 4.2). The difference between the IAA and CA averaged more than threefold, because OTF-W incidents were longer (Figure 5.1) and a larger proportion of incidents were OTF-W (Figure 3.4).

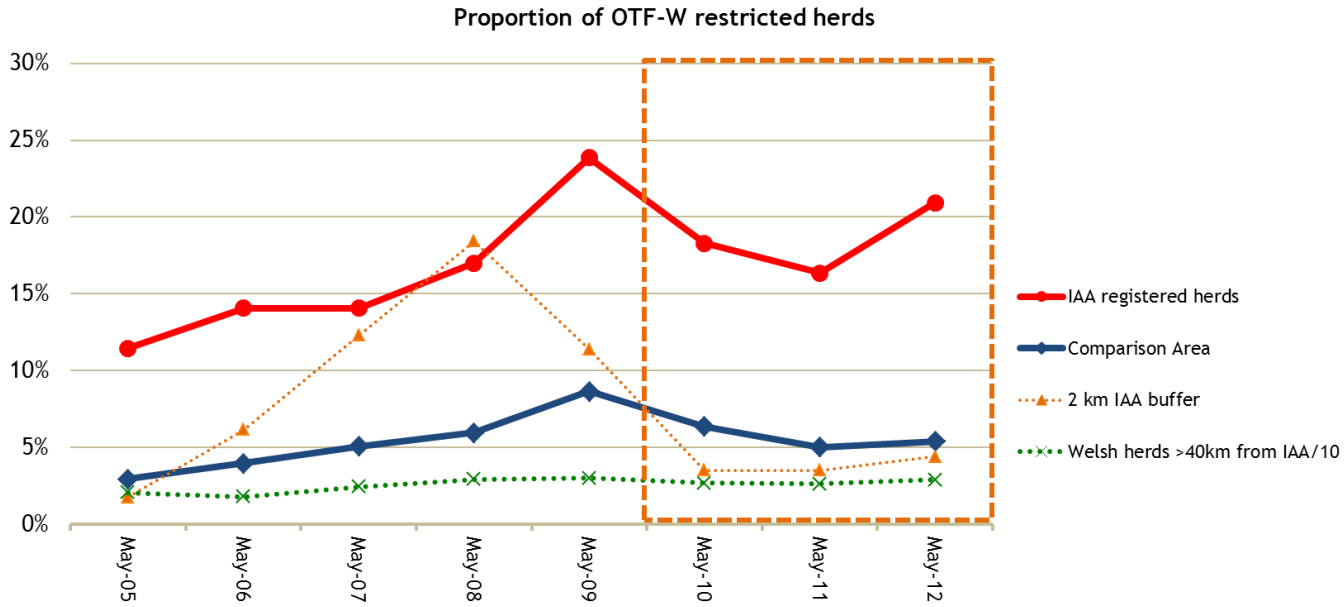

Fig 4.2 – The proportion of restricted herds on 1st May each year because of withdrawal of Official TB Free (OTF) status

5. Duration and lifting of restrictions

In order to include all data for each period, durations are calculated at the end of periods rather than at the beginning. Medians are shown to minimise the effects of skewed distributions.
The duration of incidents in the IAA has increased since the start of controls in the IAA, which could be due to the extra severity of test interpretation at the end of OTF-W incidents and additional short-interval tests. In the CA, the median duration of OTF-W incidents has decreased since the start of the IAA, as have incidents in the 2 km buffer zone (Figure 5.1).

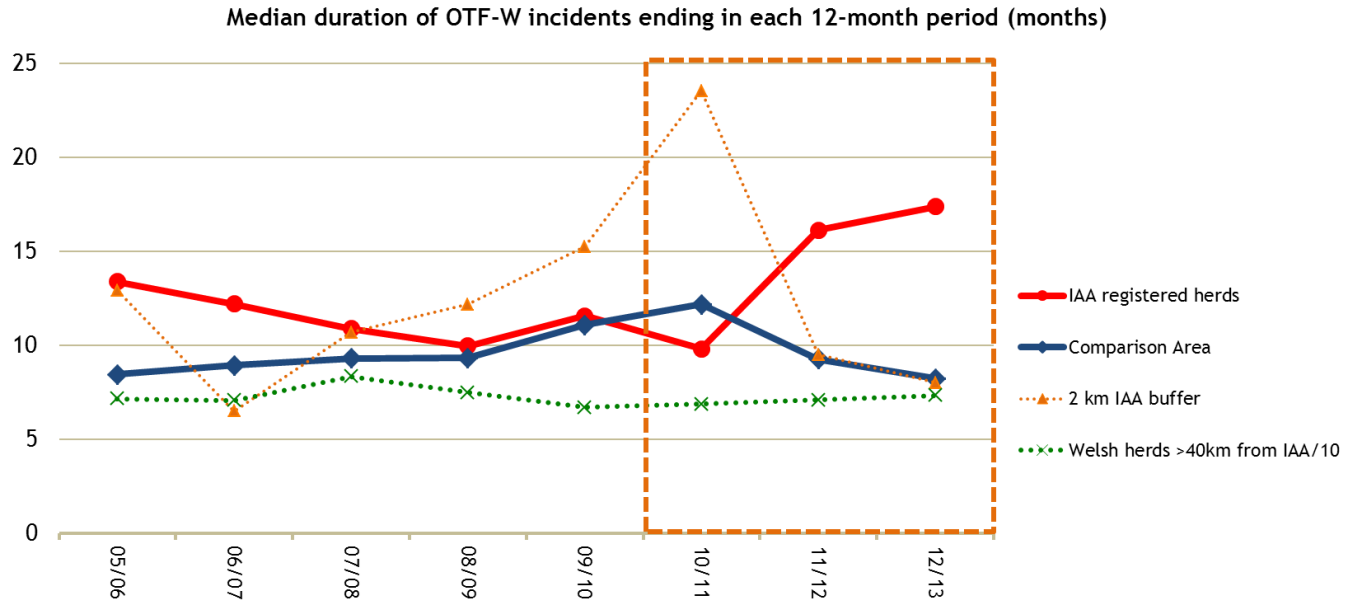

Fig 5.1 – Median duration of OTF-W incidents ending in each 12-month period (months)

The 2-month longer median duration of OTF-S incidents in IAA herds in 2010/11 (relative to herds in the CA) reappeared in 2012/13, although durations were very similar between the two areas in 2011/12 (Figure 5.2). This difference may be due to the extra clear test required in the IAA before an OTF-S incident could end.

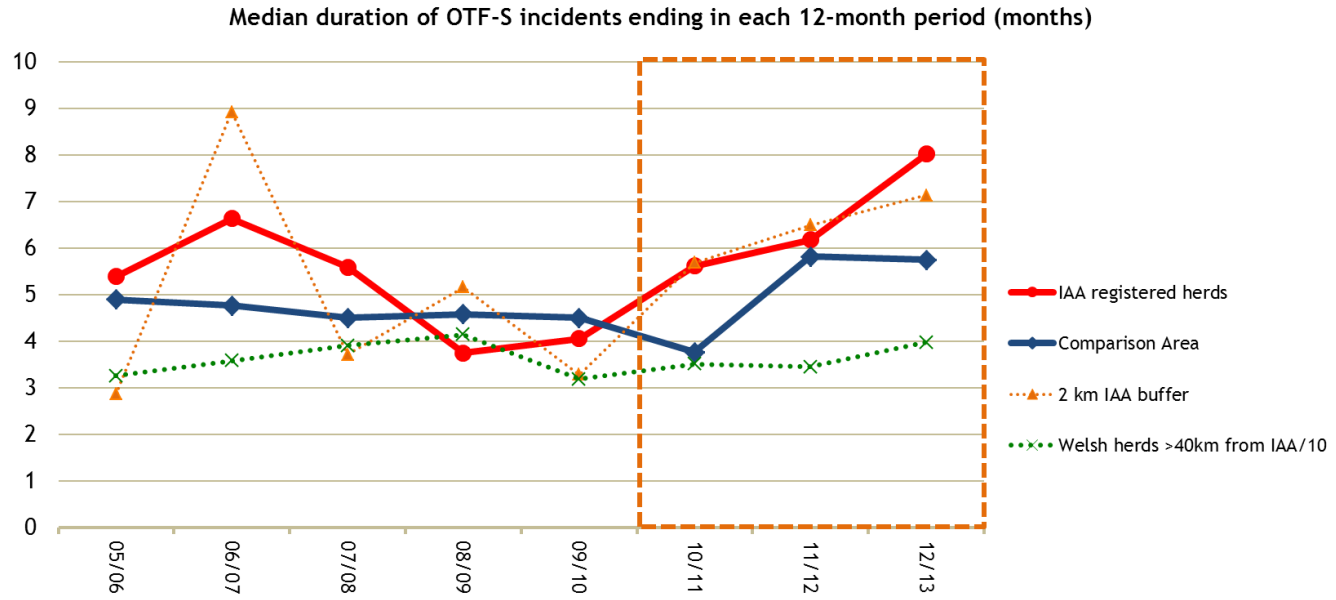

Fig 5.2 – Median duration of OTF-S incidents ending in each 12-month period (months)

In 2012/13, the proportion of herds with a bTB incident where restrictions were lifted (per 100 herds) was around 90% in the IAA, and 120% in the CA, values that have remained fairly constant since 2008/09. The decrease in proportion seen in the IAA last year (2011/12) was reversed in 2012/13 (Figure 5.3). Since this is the ratio between the numbers of incidents *ending* during the 12 months divided by the number of restricted herds at the *beginning* of the period, values greater than 100% are possible and generally represent relatively short incidents.

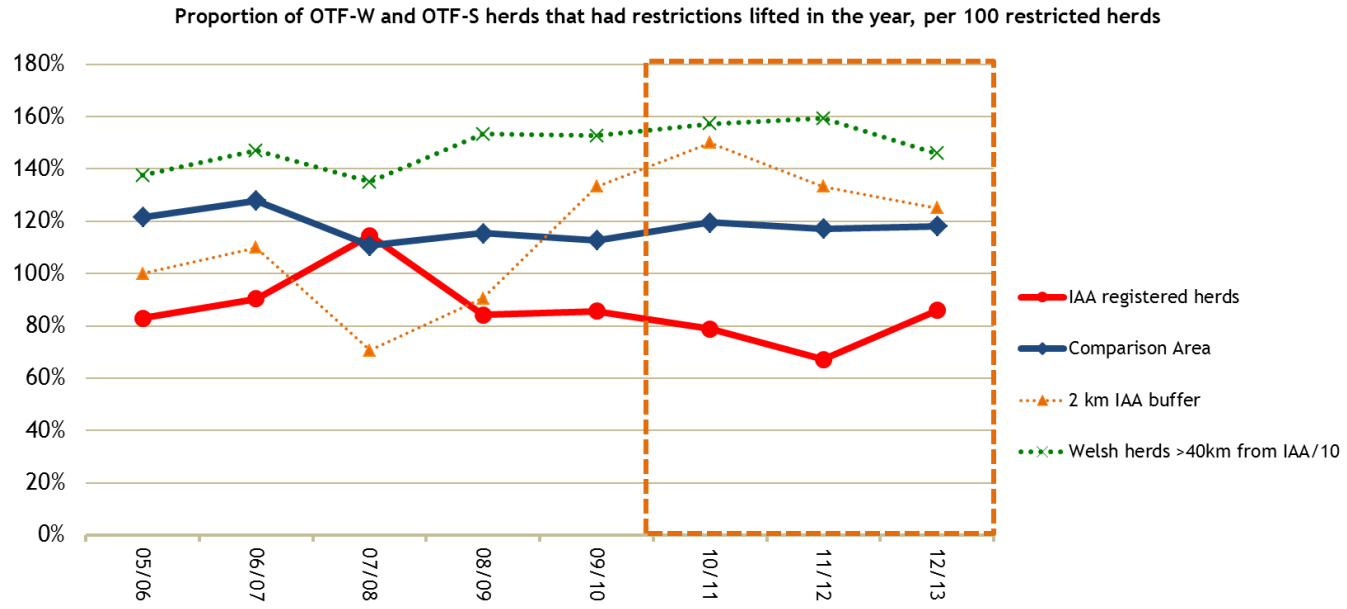

Fig 5.3 – Proportion of herds that had restrictions lifted during a 12 month period, per 100 restricted herds: OTF-W and OTF-S

Figure 5.4 displays the proportion of OTF-W herds that had their restrictions lifted in the year, per 100 *restricted* herds. The pattern was similar to that in Fig 5.3, but the values were lower (reflecting the greater duration of OTF-W incidents) and had increased by around 12% since the beginning of the IAA. The proportion was 70% in the IAA compared to the CA where the proportion was 100%. Both the IAA and CA herds had lower values than the rest of Wales, with the 2-km buffer seeming intermediate but varying widely.

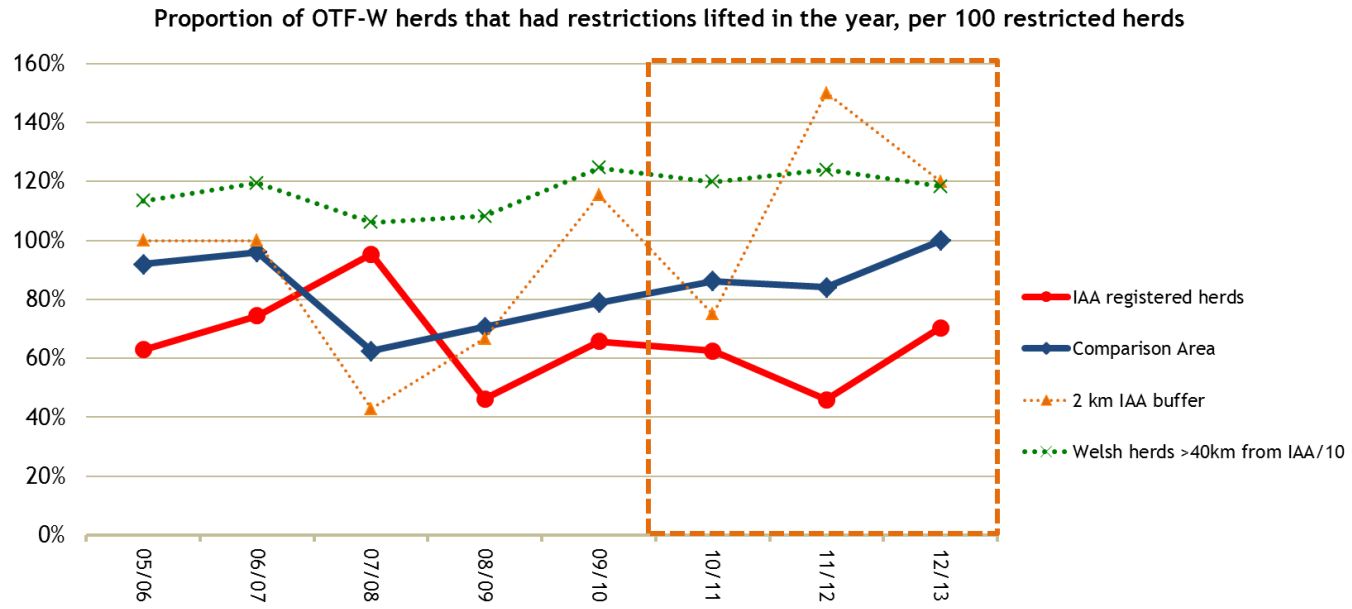

Fig 5.4 – Proportion of OTF-W herds that had restrictions lifted during a 12 month period, per 100 restricted herds

6. Incidents per 100 herds and reactors per 1000 animals

In 2012/13 in the IAA, there were twice as many new bTB incidents per 100 unrestricted herds (25%) than in the CA (12.5%, Figure 6.1). The ratio had been in the range of 2.0 to 2.5 since before the start of interventions in the IAA (2008/09), but the fact that it had *not* increased in 2012/13 after the frequency of testing was changed from yearly to 6-monthly in 2010/11 reflects favourably on these interventions.

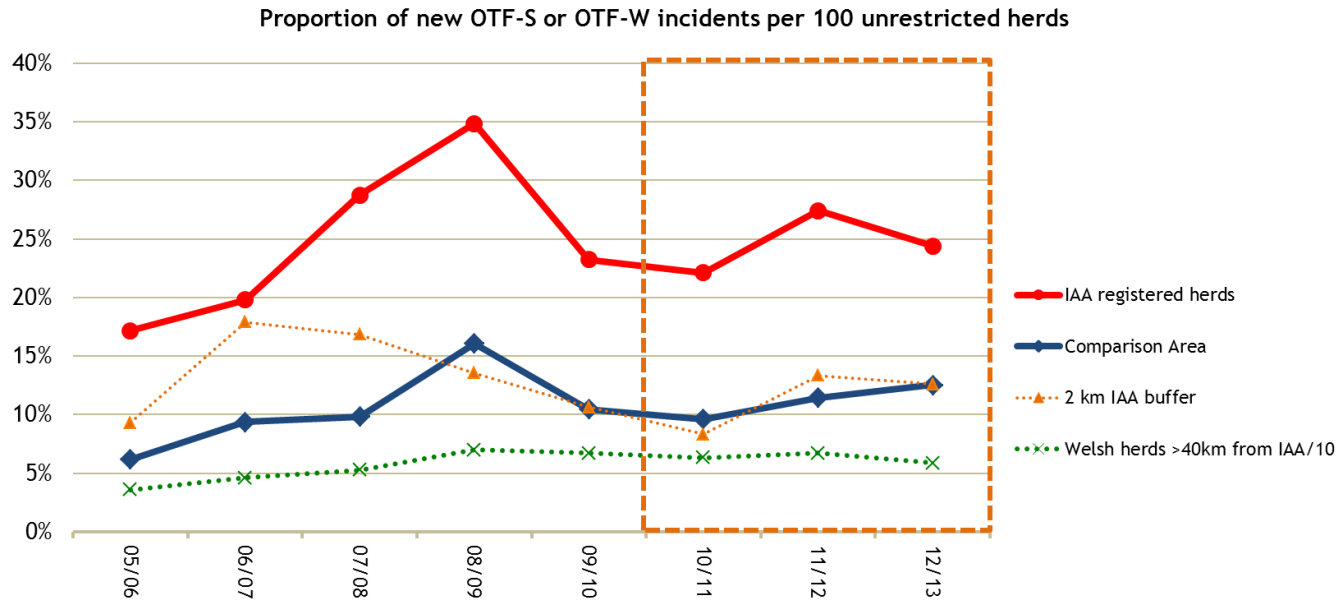

Fig 6.1 – Annualised proportion of unrestricted herds experiencing new OTF-W or OTF-S incidents in each 12-month period (herd incidence rate)

Figure 6.2 shows the herd incidence for OTF-W incidents. The confirmed (OTF-W) herd incidence between 2009/10 and 2012/13 decreased from 13.6% to 12.6% in IAA herds despite an increase in 2011/12. In the CA the herd incidence *increased* from 5.1% to 5.7% over the same period. The incidence had been between 2.5 and 3 times greater in the IAA than in the CA over the 96 months shown, and shows no deterioration in 2012/13 despite increased testing.

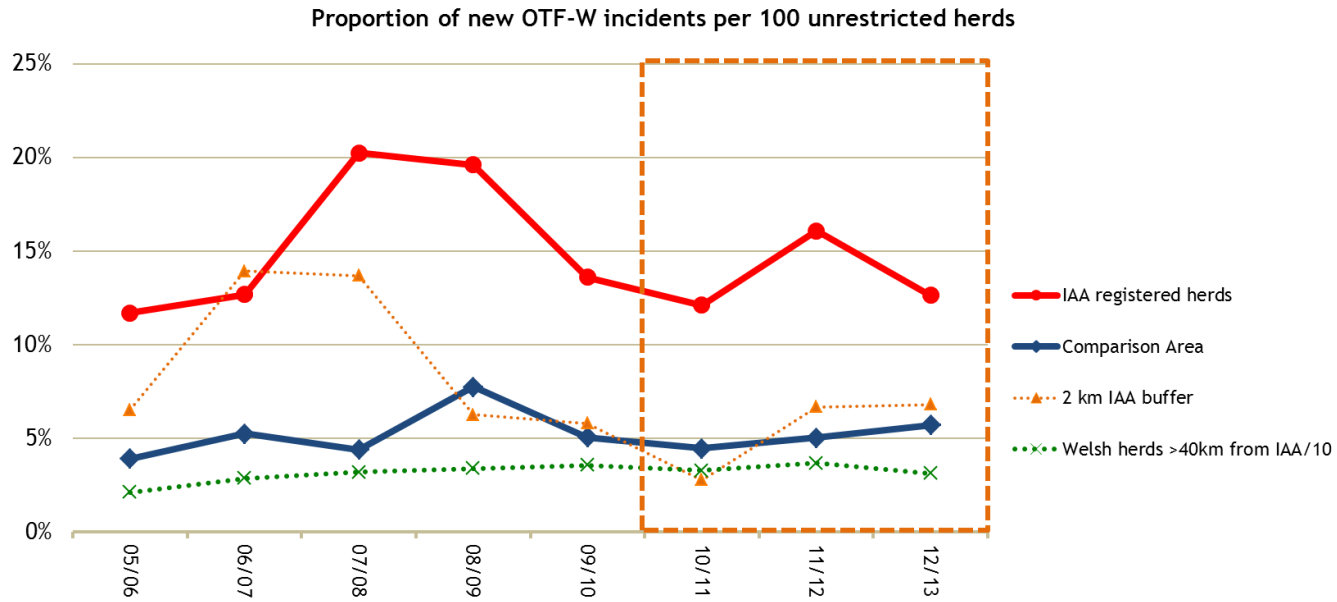

Fig 6.2 – Proportion of unrestricted herds experiencing new OTF-W incidents in a 12-month period

Between 2009/10 and 2012/13, the number of cattle slaughtered for bTB control (per 1000 cattle) decreased overall from 22.5 to 20.5 in the IAA (despite a slight increase in 2011/12, Figure 6.3). The number in the CA, despite a decrease between 2010/11 and 2011/12, showed an increase in 2012/13 back to similar numbers reported in 2009/10. These changes are small when compared with the large numbers slaughtered for bTB control in 2008/09. The ratio between values for IAA and CA has been in the range of 2.3 to 3.2 in all of the eight years, and is now 2.3 again.

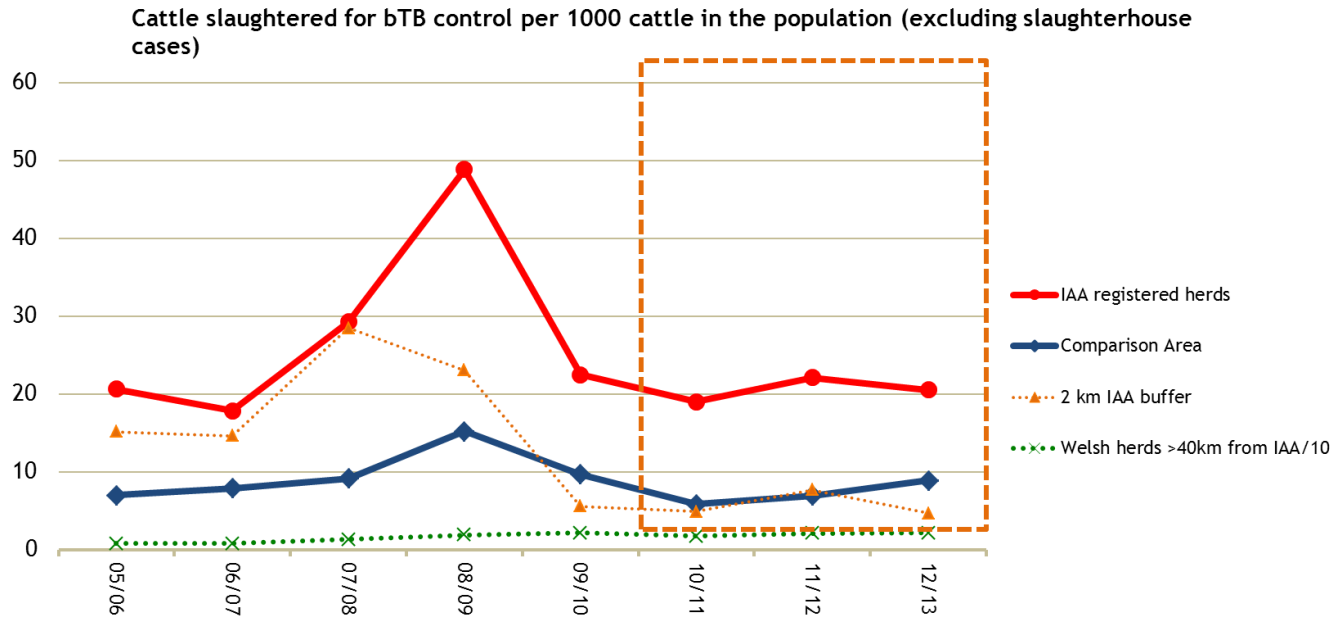

Fig 6.3 – Number of cattle slaughtered for bTB control (excluding slaughterhouse cases), per 1000 cattle in the population

The pattern of SICCT test reactors (Figure 6.4) is almost identical to the pattern of cattle removed for bTB control (Figure 6.3). There has been a -5% decline in the number of SICCT reactors per 1000 cattle when comparing the totals from 2009/10 to 2012/13 in the IAA, compared to a -7% decline in the CA (Figure 6.4). If Figures 6.4 and 6.3 are compared, it can be seen that several animals taken for bTB control were not SICCT reactors (they could be IFNg reactors or dangerous contacts). Of all animals removed, only 77-88% were reactors in IAA herds and 81-90% were reactors in CA herds.

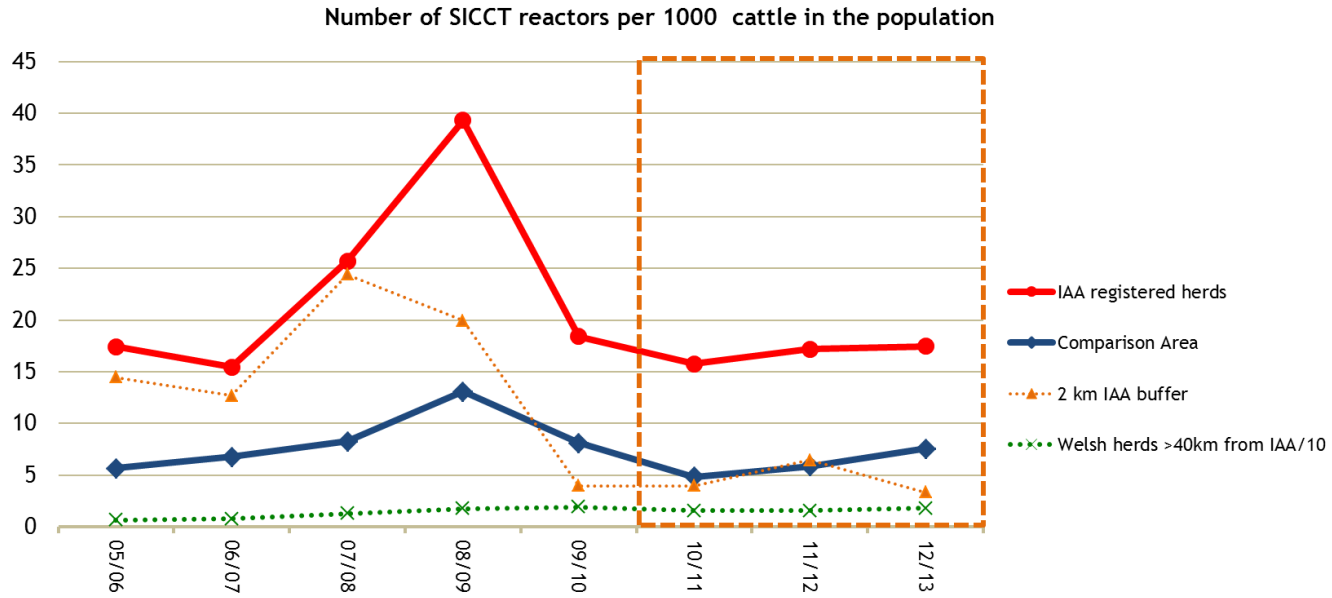

Fig 6.4 – Number of SICCT reactors per 1000 cattle in the population

Following an increase in 2011/12, the relative change in the number of cattle that were reactors with visible lesions or were *M. bovis* positive on culture in 2012/13 was -16.6% in the IAA and +28.5% in the CA (Figure 6.5). On comparison of the year before the start of the IAA (2009/10) and the current year (2012/13), the overall relative decrease was greater in the IAA (-26%) than in the CA (-12%).

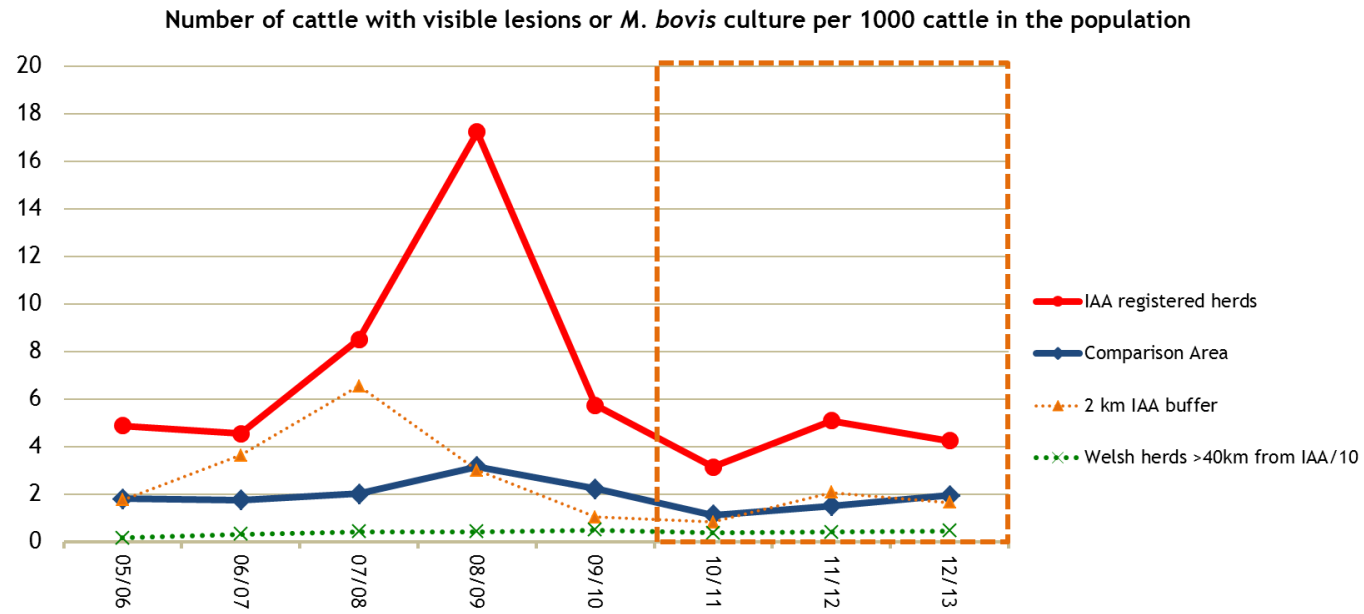

Fig 6.5 – Number of cattle found with visible lesions or M. bovis, per 1000 cattle in the population.

The number of animals becoming slaughterhouse cases (per 1000 cattle) has increased from 2009/10 to 2012/13 in the IAA (0.17%); in the CA number of slaughterhouse cases per 1000 cattle increased to 2011/12 and in 2012/13 has shown a decline to 0.15 (Figure 6.6). The increase in the proportion of infected animals detected in the slaughterhouse after 2009/10 in the IAA and CA may have been related to movement of post-mortem inspection responsibilities from Animal Health to the Food Standard Agency (FSA). One might expect a lower proportion of animals becoming slaughterhouse cases in the IAA than in the CA because of the shorter testing interval and the larger proportion of dairy herds, but no clear difference can be shown.

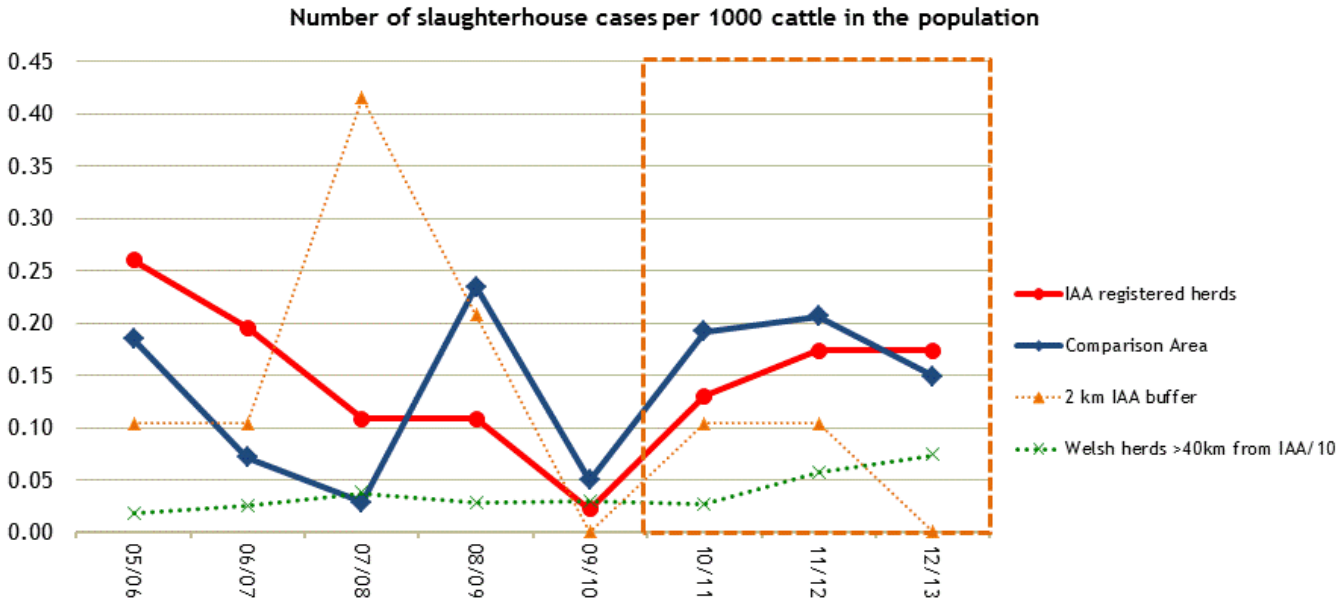

Fig 6.6 – Number of slaughterhouse cases found to have M. bovis on culture, per 1000 cattle in the population

7. Recurrence of bovine TB

As in the annual surveillance reports for Welsh Government, a recurrent incident is defined as the first bTB incident disclosed during the *current period* (i.e. 2012/13) where the herd was under restriction for bTB at any time during the *history period.* The *history period* refers to the 36 months preceding the start date of the recurrent incident, or where there is no recurrent incident in the herd, is the 36 months prior to the mid-point of the *current period*. Since herds must be free from restriction in the current period long enough for a six-month check test to be performed, herds under restriction for the first four months (due to a prior incident) were excluded from the analyses.

Since the start of the IAA, recurrence increased in the IAA in 2011/12 to 34% of herds, but in 2012/13 declined to the same proportion seen in 2009/10 (27.5% of herds having a recurrent incident, Figure 7.1). The relative increase in the IAA when comparing 2009/10 to 2012/13 was +1%. In the CA, recurrence had increased by +16% when comparing the same period, from 20.5% to 23.8% of herds with a history of breakdown(s).

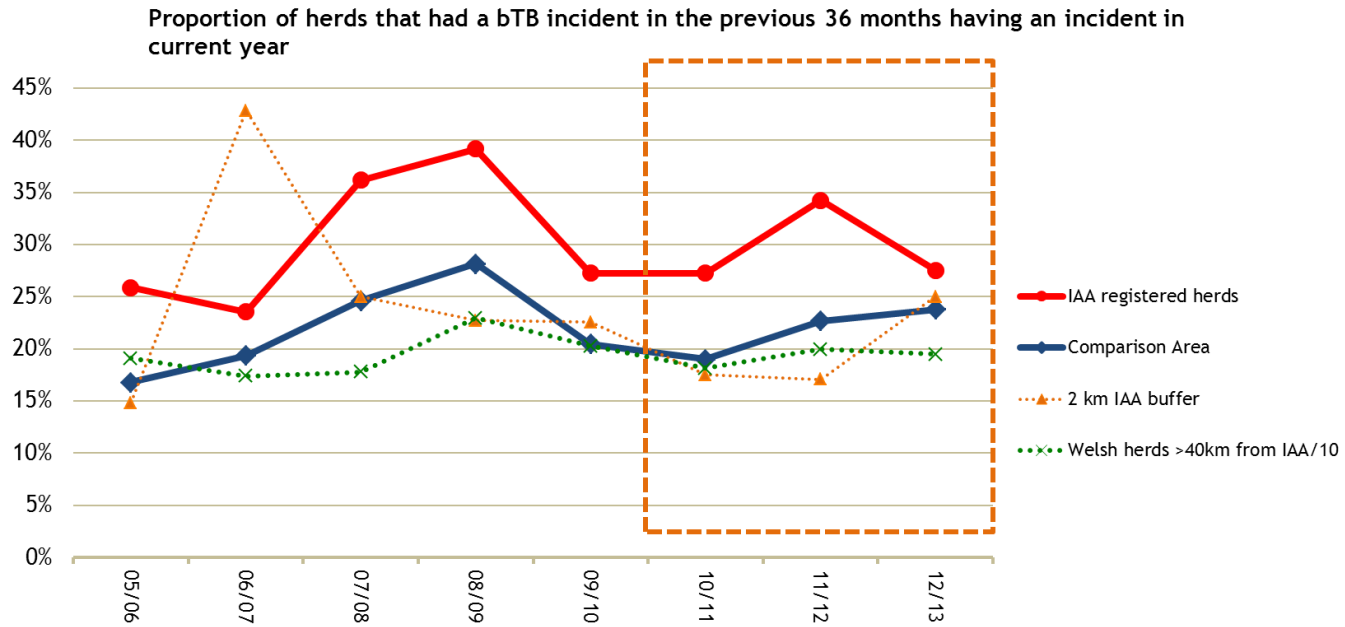

Fig 7.1 – Proportion of herds that had a bTB incident in the previous 3 years, that had an OTF-W or OTF-S incident in the current 12-month period

There were 380 recurrent incidents in all of Wales during the IAA period; 1st May 2012 to 30th April 2013 included in Table 7.1 and the time elapsed between incidents ranged from 34 days to 36 months. Overall in Wales, the median unrestricted time between the last incident in the history period (previous 36 months) and the first incident in 2012/13 tended to be longer when the previous incident was OTF-W than when it was OTF-S. When the incident in the history period was OTF-S, the median time between incidents tended to be shorter where the 2012 incident type was OTF-S rather than OTF-W. This would suggest that herds remained free from bTB for longer after an OTF-W incident, but OTF-W incidents in the history period were more likely to have an OTF-W rather than an OTF-S incident in 2012/13 (155 vs. 69), in contrast to the numbers in 2012/13 following OTF-S incidents in the history period (81 vs. 75). The probability that the current incident was OTF-W rather than and OTF-S was significantly larger after a history of OTF-W (adjusted chi squared value = 9.39, 1 d.f., p = 0.0022).

Table 7.1 also describes recurrence in herds in each of three areas: the IAA, CA, IAA 2km buffer area and Wales further than 40 km from the IAA. Where any bTB incident occurred in 2012/13, the median time elapsed was much lower in the IAA than in the CA, with the time to recurrence being highest *on average* where the previous incident was OTF-W.

When the incident in the history period was OTF-S, the median duration between incidents was lowest before an OTF-W incident in 2012/13 in both the IAA and the CA. Where the incident in the history period was OTF-W, the median duration of the time elapsed between incidents was lowest when the 2012/13 incident was OTF-S in both the IAA and the CA. The pattern seen for all of Wales, in which probability that the current breakdown is OTF-W was greater following OTF-W, was seen in the CA (chi squared value = 3.76, p = 0.053) but not in the IAA (chi squared value = 0.03, p = 0.86).

*Table 7.1: Descriptive statistics of the time elapsed between the end of movement restrictions in the **most recent** TB incident in the history period and the start date of the first incident in the current period, according to area*

Area	Previous incident type[1]	New incident type[2]	Time elapsed (days)[3] Mean	Median	SD	Minimum	Maximum	Count
IAA	OTF-W	OTF-W	537.3	389.5	321.6	104	1027	12
	OTF-W	OTF-S	396.1	334.0	293.0	92	822	7
	OTF-W	Any	485.3	389.0	311.0	92	1027	19
	OTF-S	OTF-W	321.5	333.0	30.6	277	343	4
	OTF-S	OTF-S	705.0	705.0	N/A	705	705	1
	OTF-S	Any	398.2	340.0	173.5	277	705	5
	Any	OTF-W	483.4	346.0	292.1	104	1027	16
	Any	OTF-S	434.8	442.5	292.4	92	822	8
	Any	Any	467.2	346.0	286.8	92	1027	24

Area	Previous incident type[1]	New incident type[2]	Time elapsed (days)[3] Mean	Median	SD	Minimum	Maximum	Count
Area Comparison	OTF-W	OTF-W	497.6	491.0	290.0	75	984	17
	OTF-W	OTF-S	589.3	470.0	376.4	133	1026	9
	OTF-W	Any	529.3	480.5	318.0	75	1026	26
	OTF-S	OTF-W	376.4	217.0	284.7	102	889	7
	OTF-S	OTF-S	597.4	711.0	319.3	108	993	13
	OTF-S	Any	520.1	519.0	318.9	102	993	20
	Any	OTF-W	462.3	436.0	287.8	75	984	24
	Any	OTF-S	594.1	655.0	335.0	108	1026	22
	Any	Any	525.3	480.5	314.9	75	1026	46

Area	Previous i'dent type[1]	New incident type[2]	Time elapsed (days)[3] Mean	Median	SD	Minimum	Maximum	Count
IAA buffer 2km	OTF-W	OTF-W	854.0	907.0	130.8	705	950	3
	OTF-W	OTF-S	1013.5	1013.5	51.6	977	1050	2
	OTF-W	Any	917.8	950.0	129.8	705	1050	5
	OTF-S	OTF-W	908.0	908.0	N/A	908	908	1
	OTF-S	OTF-S	N/A	N/A	N/A	0	0	0
	OTF-S	Any	908.0	908.0	N/A	908	908	1
	Any	OTF-W	867.5	907.5	110.2	705	950	4
	Any	OTF-S	1013.5	1013.5	51.6	977	1050	2
	Any	Any	916.2	929.0	116.2	705	1050	6

Area	Previous incident type[1]	New incident type[2]	Time elapsed (days)[3] Mean	Median	SD	Minimum	Maximum	Count
Ovr40km	OTF-W	OTF-W	500.2	481.5	287.2	66	1091	90
	OTF-W	OTF-S	521.6	511.0	284.4	158	1006	27
	OTF-W	Any	505.1	496.0	285.5	66	1091	117
	OTF-S	OTF-W	586.2	556.5	286.1	34	1027	38
	OTF-S	OTF-S	419.0	262.0	298.8	122	1001	29
	OTF-S	Any	513.8	500.0	301.2	34	1027	67
	Any	OTF-W	525.7	518.5	288.5	34	1091	128
	Any	OTF-S	468.5	426.5	293.9	122	1006	56
	Any	Any	508.3	498.0	290.5	34	1091	184

Area	Previous incident type[1]	New incident type[2]	Time elapsed (days)[3] Mean	Median	SD	Minimum	Maximum	Count
All Herds Welsh	OTF-W	OTF-W	521.1	514.0	291.3	66	1091	155
	OTF-W	OTF-S	529.6	511.0	318.6	49	1050	69
	OTF-W	Any	523.7	512.5	299.3	49	1091	224
	OTF-S	OTF-W	518.9	518.0	281.8	34	1085	81
	OTF-S	OTF-S	436.8	305.0	298.7	102	1001	75
	OTF-S	Any	479.5	439.5	292.0	34	1085	156
	Any	OTF-W	520.4	514.5	287.5	34	1091	236
	Any	OTF-S	481.3	432.0	310.8	49	1050	144
	Any	Any	505.6	475.0	296.7	34	1091	380

[1] Any: The most recent incident in the history period regardless of whether OTF-S or OTF-W incident; OTF-W: the last incident where the last incident was OTF-W; OTF-S: the last incident where the last incident was OTF-S

[2] Any: OTF-S or OTF-W incident(s) between 1st May 2012 and 30th April 2013 (the current period); OTF-W: OTF-W incident(s) occurred at any time in current period (not necessarily the first); OTF-S: only OTF-S incident(s) occurred in current period

[3] Includes only recurrent incidents where the preceding incident ended between 1st May 2009 and the 30th April 2012 (the history period); Time elapsed was calculated as the number of days between the end of the last incident and the start of the first new incident in the current period. If the first incident in the current period was OTF-S but the herd subsequently had an OTF-W incident, the new incident type is shown as OTF-W but the date of the first incident (OTF-S) is used to calculate the time elapsed.

8. Number of reactors per incident

As in 2011/12 the relative decrease in the average number of reactors per incident since 2009/10 is smaller in the IAA herds (-10%) than in the Comparison Herds (-23%). When comparing the average number of reactors from 2011/12 to 2012/13, there has actually been an increase in both the IAA (+14%) and the CA (+19%, Figure 8.1). The pattern reflects the smaller increase in total incidence in the IAA (Fig 3.1). Since the start of the IAA, the average number of reactors per incident in the IAA has decreased from 2.2 to 1.9 times greater than in the CA. The average number of reactors per incident has increased by +5% in the IAA, and +22% in the CA.

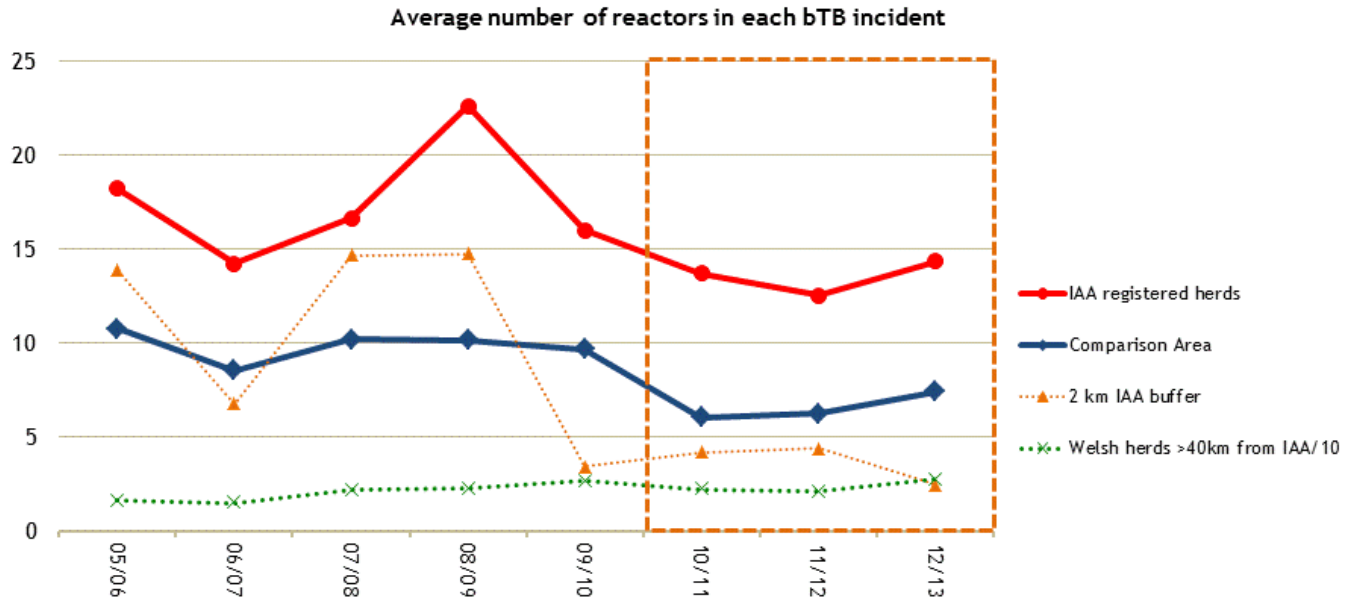

Fig 8.1 – Number of reactors (by skin test or IFN-gamma test) per OTF-W or OTF-S incident starting in the 12-month period

Figure 8.2 shows the number of evidently infected animals (visibly lesioned reactors or *M. bovis* culture positive animals), per OTF-W incident. Relative decreases in the number of animals with lesion or culture evidence of bTB in 2012/13 compared to before the start of the IAA (2009/10), are similar both in IAA herds (-21%) and Comparison Herds (-23%). The larger reduction in number of VL reactors per 1000 animals in the IAA than in the CA (-26% *vs.* -12%; Figure 6.5) has paralleled the reduction in number of OTF-W incidents per 100 herds over this period (-41% *vs.* +13%; Figure 3.2).

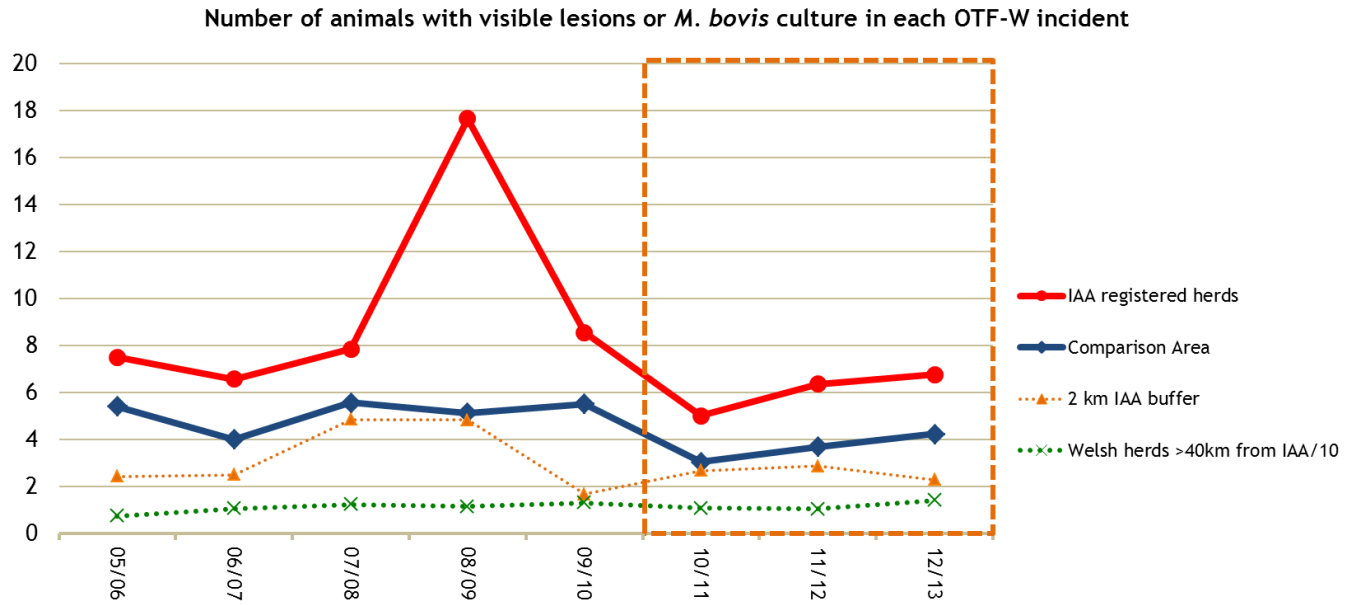

Fig 8.2 – Number of animals with visible lesions or M. bovis culture, per OTF-W incident starting in the 12-month period

Appendix Table A1. Glossary of definitions and descriptions

Short name	Full name	Definition or description
/ year	Annualised	Calculation of ratios and proportions from annual totals or averages. For example, the annualised OTF-W incidence is the *total* number of new OTF-W incidents in a year divided by the *average* number of OTF herds that are active in that year
bTB	Bovine tuberculosis	Infection with *Mycobacterium bovis*, including suspected infection not confirmed by slaughterhouse infection
DC	Dangerous contact	An animal in a herd from which OTF status has been withdrawn and is not a reactor or clinical case, but is slaughtered for bTB control because veterinary judgment considers that the risk of having and spreading infection is high.
Herd size	Herd size	For a bTB incident (OTF-S or OTF-W), herd size is the largest number entered in SAM at any time during the incident. For officially bTB free herds, herd size is the size recorded at the most recent testing occasion.
Herd types	Herd types	***'Beef'*** *includes* Beef, Beef Fattener, Beef Suckler and Stores herds ***'Dairy'*** includes Dairy, Dairy Dealer, Dairy (Other), Dairy Producer-Retailer, House Cow and Producer herds; ***'Other'*** (where shown) includes Calf Rearers, Heifer Rearers, Heifer, Mixed, City Farm, Dealer Herds, and herds described in SAM as 'Other herds'.
Incidence	[Herd] incidence, incidence rate	Herd incidence rate is the ratio between the number of detected bTB incidents of a given type and a denominator for the population, which is the number of unrestricted active herds, regardless of whether they have been tuberculin tested.
Incident	Incident	A bTB *incident* refers to one herd not previously under movement *restrictions* in which at least one test reactor or a culture-positive slaughterhouse case has been found, and also a retested inconclusive reactor (2xIR) in Wales since 2009. The *restriction*, and thus the incident, commences on the date of the disclosing test, and ends on the date that *Form TB10* is issued. A herd may commence more than one TB incident in the same year.
IAA	Intensive Action Area	An area with high bTB prevalence in North Pembrokeshire, adjacent to Ceredigion, in which enhanced cattle control measures (including twice-yearly routine testing and enhanced testing for OTF-S incidents) have been applied since May 2010.
IR	Inconclusive Reactor	An animal showing a particular pattern of reactions to a SICCT test. *If an animal has an inconclusive reactor (IR) test result and is slaughtered as a result, it can be reclassified as a reactor.*
2 km buffer	IAA buffer (2 km)	All land between the boundary of the IAA and 2km outside the boundary.
CA	Comparison Area or comparison herds	A selected area between 16 and 40 km from the boundary of the IAA in which the incidence of bTB had been relatively high between 1st May 2005 and 30th April 2010. Herds with map references in the Comparison Area are termed Comparison Herds.
Active IAA herd or live IAA CPHH	Live herd or Active herd registered in the IAA	A bovine herd identified using the County/Parish/Holding/Herd notation. The definition of an active (live) herd is slightly different between IAA and non-IAA herds. *Live herds in the IAA are listed monthly as being active by AHVLA (field operations), and are considered to be IAA herds regardless of the map reference given in SAM.*

Short name	Full name	Definition or description
Active non-IAA herd or live non-IAA CPHH	Live herd or Active herd (not registered in the IAA)	A bovine herd identified using the County/Parish/Holding/Herd notation. Live non-IAA herds are defined by SAM data as being *active* for at least 6 months in each 12-month period. A herd is *active* for the period between its first registration ("Live" date) and it's reported closing date ("Archive" date). The number of non-IAA herds depends on the accuracy of creation and archiving dates given in SAM, and differs from the number given in Agricultural Censuses (which involves sampling and extrapolation) or CTS (unsuitable because of aggregation at the CPH level). *The geographical area (Comparison Area, 2-km Buffer etc.) in which a non-IAA herd is located depends solely on the Easting and Northing coordinates recorded in SAM*.
M. bovis	*Mycobacterium bovis*	The causative organism of bovine tuberculosis
Movement restrictions	Movement restrictions	Prohibitions on the free movement of animals into and out of a herd because of the presence or suspicion of *M. bovis* infection (these can also be imposed because statutory tests are overdue). The number of herds under restriction is calculated at given time points. Herds under restriction during a 12-month period are here calculated as the average number at the beginning and end of the period. *Herd restrictions due to overdue tests are excluded from analyses in this report because precise data is unavailable and to avoid overestimating disease.*
New BD or new incident	New bTB incident	A newly disclosed *incident* in a herd that was previously OTF.
OTF	Officially Bovine Tuberculosis Free	The state of a herd ***not*** being under restriction because of withdrawal or suspension of Officially TB Free status. A full definition of *Officially TB Free status* appears in Appendix 3 of European Union (1998), Council Directive 98/46/EC. *The terms OTF, OTF suspended and OTF withdrawn were introduced on 1st January 2011, and have been used retrospectively to describe the status of all herds.*
OTF-S	Officially Bovine Tuberculosis Free status Suspended	For the purposes of this report, OTF-S is the status of a herd *restricted* because of a bTB incident where there is suspicion of infection being present but the criteria for OTF withdrawal have not been reached. *OTF suspension due to overdue testing is not reported here*
OTF-W	Officially Bovine Tuberculosis Free status Withdrawn	For the purpose of this report, OTF-W refers to a herd *restricted* because of a bTB incident in which appropriate evidence of *M. bovis* infection has been obtained in at least one slaughtered animal, i.e. *M. bovis* has been identified in a cultured tissue sample and/or lesions are detected in the carcass of a SICCT or IFN-γ test reactor. Slaughterhouse cases with visible lesions typical of bTB result in suspension of OTF status, which is changed to *withdrawal of OTF status* if *M. bovis* has been identified in cultured tissues.
PME	*Post mortem* examination	Examination (to various extents) of the carcass and organs of slaughtered cattle for suspected lesions of bovine TB. Such post mortem examinations include those at an AHVLA Regional Laboratory, those at the slaughterhouse of animals suspected of being infected (e.g. reactors, IRs and DCs), and those constituting routine meat inspection
Reactor	Reactor	An animal showing a particular pattern of reactions to a SICCT test or to a gamma interferon (IFNg) assay that uses bovine and avian tuberculin reagents, not including an animal first suspected to have bTB at the slaughterhouse. *If an animal has an inconclusive reactor (IR) test result and is slaughtered as a result, it can be reclassified as a reactor.*

Short name	Full name	Definition or description
SICCT	Single Intradermal Comparative Cervical Test	Also commonly referred to as the 'skin test' or 'tuberculin skin test', the testing procedure involves the injection of small amounts of *M. bovis* and *M. avium* tuberculins (PPD) into two sites of the skin of the animal's neck, followed by a comparative measurement of any delayed-type hypersensitivity reaction (hard swelling or oedema) which develops at the injection sites after 72 hours. Each tuberculin is a mixture of antigens in the form of purified protein derivative (PPD) of the cell wall of a standard strain of *M. bovis* or *M. avium*
Total cattle	Total cattle	The total of the herd sizes given for herds in SAM. These sizes have been recorded by the veterinarian who performed a most recent skin test, generally the most recent test before the 31st July following the 12-month period being reported.
VE-SlHo	(Confirmed) slaughterhouse case	The finding of visible lesions from which *M. bovis* can be cultured in a bovine animal that had not been under suspicion for bTB at the time of slaughter. The finding of a slaughterhouse case in a herd not under OTF-W movement restrictions leads to the withdrawal of OTF status; the finding of a slaughterhouse case in a herd already under OTF-W restrictions is recorded in SAM but does not disclose a new incident.
TB10	Form TB10	The name of the form issued at the end of a bTB incident to lift the restrictions imposed on cattle movements onto and off the holding.
Unrestricted herds	Unrestricted herds, OTF herds	*Unrestricted herds* include all herds that are not in an on-going incident, which includes herds undergoing a disclosing test, which is allowed up to 41 days for completion. *Herds that are restricted because tests are overdue are not counted as unrestricted herds in this report because precise data is unavailable.*
SAM 6	SAM Release 6 database, TB in Cattle database	SAM 6 is the version of AHVLA's bTB control and surveillance system from which this report has been compiled. It records (amongst other things) details of herds, bTB tests, bTB incidents, slaughtered cattle (reactors, slaughterhouse cases and direct contacts), and inconclusive reactor cattle. The version used at AHVLA (Weybridge) incorporates data from the VetNet database, which was used until September 2011.
WHTT	Whole Herd Type Test	A test in which *at least* as many animals are tested as in a periodic surveillance test. The test types include RHT; WHT; WHT2; 12M; 6M; 90D; CON; CON6 ; CON12; CT; CT(EM); CT(I-I); CT-HS1 & 2; CT-NH1, 2 & 3; CT-RH1, 2 & 3; CT-RTA; CTW 1 & 2; IA6 & 12, (and SI or IASI in herds under restriction). When several part tests are need to complete the herd test, the test date for a multi-day whole herd type test in this report is that purported to be for the final test, identified by the letter "C" (indicating a completed test) at the beginning of the PartCode field.

Appendix Table A2 - Data for Figs 1.1 to 8.2 shown in the body of the report

Note that the *ALL OF WALES* column includes approximately 2300 herds within 40 km of the boundary of the IAA that do not appear in the preceding four columns

Figure description	Date(s)	All IAA herds	Comparison Herds	2 km buffer of IAA	Wales herds >40 km from IAA (actual figure not divided by 10)	ALL OF WALES
Data Table for Fig 1.1 – [Changes in] numbers of herds since the start of the IAA – *all* herds in the respective areas	1st May 2010	317	1410	129	9630	**14060**
	1st May 2011	308	1299	115	9035	**13119**
	1st May 2012[1]	306	1286	115	8839	**12870**
	Average during May12-Apr13[1]	307	1268	115	8740	**12740**
	1st May 2013	306	1259	114	8662	**12628**
Data Table for Fig 1.2 – [Changes in] numbers of animals since the start of the IAA (thousands)	1st May 2010	47.65	142.22	9.79	778.05	**1257.42**
	1st May 2011	45.64	140.03	9.57	769.02	**1239.15**
	1st May 2012[2]	46.00	140.46	9.60	769.48	**1242.70**
	Average during May12-Apr13[2]	45.96	140.66	9.62	769.41	**1242.91**
	1st May 2013	46.08	140.72	9.62	770.05	**1242.71**
Data Table for Fig 1.3 PLUS EXTRA DETAIL – Average *number of beef and dairy herds between 1st May 2012 and 30th April 2013. RAW DATA – all herds in the respective areas*	Beef (finisher)	7	86	4	388	**586**
	Beef (other)	23	132	6	1518	**1886**
	Beef (suckler)	141	638	65	5416	**7380**
	Dairy	130	380	36	1301	**2676**
	Other	6	32	4	117	**212**
	TOTAL	**307**	**1268**	**115**	**8740**	**12740**
EXTRA DATA (not shown as a chart) - Number of cattle by herd type, average between 1st May 2012 and 30th April 2013 (thousands)	Beef (finisher)	0.63	7.54	0.11	24.89	**40.74**
	Beef (other)	1.46	7.05	0.43	82.70	**102.94**
	Beef (suckler)	10.99	38.46	2.77	400.41	**517.73**
	Dairy	32.84	86.40	6.22	256.42	**574.12**
	Other	0.04	1.21	0.09	4.99	**7.39**
	TOTAL	**45.96**	**140.66**	**9.62**	**769.41**	**1242.91**

[1] These were also denominators for Figures 4.1, and 4.2.
[2] These were also denominators for Figures 2.2, 2.3, 6.3, 6.4, 6.5 and 6.6.

Figure description	Date(s)	All IAA herds	Compar-ison Herds	2 km buffer of IAA	Wales herds >40 km from IAA/10 (as in report)	ALL OF WALES
Data Table for Fig 2.1 – Annualised number of completed whole herd type tests per unrestricted herd, 2005/06-2012/13	May05-Apr06	1.033	0.674	0.847	0.532	**0.581**
	May06-Apr07	1.208	0.837	1.174	0.526	**0.628**
	May07-Apr08	1.312	0.898	1.021	0.555	**0.661**
	May08-Apr09	1.434	1.081	1.146	0.856	**0.930**
	May09-Apr10	1.500	1.145	1.101	0.969	**1.024**
	May10-Apr11	2.188	1.071	0.991	1.000	**1.049**
	May11-Apr12	2.096	1.078	1.133	0.990	**1.055**
	May12-Apr13	2.362	1.147	1.204	0.967	**1.058**
Data Table for Fig 2.2 – Annualised number of SICCT tests per animal in unrestricted herds, 2005/06 – 2012/13, including all test types	May05-Apr06	1.11	0.73	1.05	0.43	0.55
	May06-Apr07	1.25	0.93	1.24	0.52	0.66
	May07-Apr08	1.31	0.92	1.10	0.58	0.71
	May08-Apr09	1.34	1.05	1.03	0.87	0.93
	May09-Apr10	1.42	1.09	1.18	0.99	1.04
	May10-Apr11	1.94	1.13	1.10	1.10	1.12
	May11-Apr12	2.13	1.15	1.33	1.10	1.18
	May12-Apr13	2.12	1.24	1.49	1.09	1.21
Data Table for Fig 2.3 – Proportion of herds in yearly-tested parishes from October 2005 to April 2013. (*From October 2008, all herds in Wales were tested annually; from May 2010, herds in the IAA were tested every 6 months*)	Oct05-Jun06	94.6%	56.0%	90.0%	27.1%	**38.3%**
	Jul06-Jun07	95.3%	67.9%	90.0%	29.8%	**41.1%**
	Jul07-Jun06	96.2%	78.0%	93.3%	34.7%	**45.9%**
	Jul08-Sep08	97.2%	83.4%	93.3%	38.6%	**51.9%**
	Oct08-Apr10	100.0%	100.0%	100.0%	100.0%	**100.0%**
	May10-Apr13	(6-monthly testing)	100.0%	100.0%	100.0%	**(All were tested 6- or 12-monthly)**
Data Table for Figure 2.4 – Number of interferon-gamma tests performed on individual animals	May05-Apr06	148	87	323	122.7	**1799**
	May06-Apr07	282	165	9	26.8	**1726**
	May07-Apr08	1061	123	9	228.3	**4335**
	May08-Apr09	1168	642	15	253.8	**5186**
	May09-Apr10	522	418	7	383.7	**5482**
	May10-Apr11	330	498	3	681.3	**8172**
	May11-Apr12	782	118	6	421.2	**7559**
	May12-Apr13	990	326	61	693.2	**10123**
Data Table for Figure 2.5 – Proportion of reactors per interferon-gamma animal test	May05-Apr06	13.5%	6.9%	5.6%	0.1%	**2.6%**
	May06-Apr07	5.3%	7.9%	33.3%	2.2%	**3.2%**
	May07-Apr08	7.4%	3.3%	11.1%	5.8%	**8.2%**
	May08-Apr09	4.0%	7.9%	13.3%	6.3%	**6.7%**
	May09-Apr10	21.5%	32.3%	0.0%	5.4%	**12.0%**
	May10-Apr11	14.2%	7.8%	0.0%	1.9%	**3.6%**
	May11-Apr12	14.5%	29.7%	50.0%	5.9%	**7.9%**
	May12-Apr13	4.3%	24.8%	4.9%	1.8%	**4.2%**

Figure description	Date(s)	All IAA herds	Compar-ison Herds	2 km buffer of IAA	Wales herds >40 km from IAA/10 (as in report)	ALL OF WALES
Data Table for Fig 3.1 – Proportion of TB incidents (OTF-S or OTF-W) per completed whole-herd type test on unrestricted herds, per year	May05-Apr06	16.6%	9.2%	11.0%	6.7%	**8.1%**
	May06-Apr07	16.4%	11.2%	15.3%	8.8%	**9.9%**
	May07-Apr08	21.9%	10.9%	16.5%	9.5%	**11.4%**
	May08-Apr09	24.3%	14.9%	11.8%	8.2%	**11.0%**
	May09-Apr10	15.5%	9.1%	9.6%	6.9%	**8.1%**
	May10-Apr11	10.1%	9.0%	8.4%	6.3%	**7.5%**
	May11-Apr12	13.1%	10.6%	11.8%	6.8%	**8.4%**
	May12-Apr13	10.3%	10.9%	10.5%	6.1%	**7.7%**
Figure 3.2 – Proportion of OTF-withdrawn incidents per completed whole-herd type test on unrestricted herds, per year	May05-Apr06	11.3%	5.8%	7.7%	4.0%	**4.8%**
	May06-Apr07	10.5%	6.3%	11.9%	5.4%	**5.6%**
	May07-Apr08	15.4%	4.9%	13.4%	5.7%	**6.3%**
	May08-Apr09	13.7%	7.2%	5.5%	4.0%	**5.1%**
	May09-Apr10	9.1%	4.4%	5.3%	3.7%	**4.1%**
	May10-Apr11	5.5%	4.2%	2.8%	3.3%	**3.5%**
	May11-Apr12	7.7%	4.7%	5.9%	3.7%	**4.2%**
	May12-Apr13	5.4%	5.0%	5.6%	3.2%	**3.7%**

Figure description	Date(s)	All IAA herds	Compar-ison Herds	2 km buffer of IAA	Wales herds >40 km from IAA/10 (as in report)	ALL OF WALES
Data Table for Fig 3.3 – Number of reactors per 1000 animal tests (all tests)	May05-Apr06	18.78	8.21	14.58	1.56	5.68
	May06-Apr07	14.99	7.73	11.60	1.54	4.99
	May07-Apr08	24.44	9.78	26.57	2.25	7.14
	May08-Apr09	39.35	13.92	23.10	2.09	7.80
	May09-Apr10	17.45	8.33	3.70	2.03	4.72
	May10-Apr11	10.43	4.64	3.79	1.46	3.43
	May11-Apr12	10.74	5.59	5.28	1.48	3.99
	May12-Apr13	9.59	6.36	2.36	1.68	3.98
Data Table for Fig 3.4 – Visibly lesioned reactors or *M. bovis* culture-positive animals per 1000 tests on animals	May05-Apr06	5.26	2.61	1.78	0.41	1.39
	May06-Apr07	4.42	2.01	3.33	0.66	1.28
	May07-Apr08	8.09	2.38	7.12	0.75	2.05
	May08-Apr09	17.25	3.37	3.49	0.50	2.10
	May09-Apr10	5.45	2.29	0.97	0.53	1.15
	May10-Apr11	2.08	1.08	0.80	0.36	0.80
	May11-Apr12	3.19	1.45	1.70	0.39	0.97
	May12-Apr13	2.34	1.65	1.18	0.44	0.91
Data Table for Fig 3.5 – Proportion of all bTB incidents (OTF-W and OTF-S) that are OTF-W	May05-Apr06	68.2%	63.5%	70.0%	58.7%	**58.7%**
	May06-Apr07	64.0%	55.9%	77.8%	61.7%	**56.6%**
	May07-Apr08	70.4%	44.7%	81.3%	60.6%	**55.3%**
	May08-Apr09	56.3%	48.1%	46.2%	48.4%	**46.2%**
	May09-Apr10	58.5%	48.3%	54.5%	53.0%	**50.2%**
	May10-Apr11	54.7%	46.4%	33.3%	51.6%	**47.3%**
	May11-Apr12	58.7%	43.9%	50.0%	54.6%	**49.8%**
	May12-Apr13	51.8%	45.5%	53.8%	53.1%	**48.4%**
Data Table for Fig 4.1 – Proportion of all herds under OTF-S or OTF-W restriction on 1st May each year	1st May 2005	15.4%	4.8%	2.6%	2.7%	**3.9%**
	1st May 2006	17.0%	4.8%	8.8%	2.5%	**3.5%**
	1st May 2007	18.0%	7.5%	14.9%	3.3%	**4.9%**
	1st May 2008	20.6%	8.3%	18.4%	3.9%	**5.8%**
	1st May 2009	29.4%	13.1%	13.2%	4.6%	**7.8%**
	1st May 2010	21.6%	7.7%	5.3%	4.0%	**5.8%**
	1st May 2011	21.9%	7.4%	5.3%	3.8%	**5.4%**
	1st May 2012	27.8%	9.2%	10.5%	4.2%	**6.5%**
Data Table for Fig 4.2 – Proportion of herds under restriction on 1st May each year because of withdrawal of Official TB Free (OTF) status (OTF Withdrawn only)	1st May 2005	11.4%	2.9%	1.8%	2.1%	**2.7%**
	1st May 2006	14.1%	4.0%	6.1%	1.8%	**2.7%**
	1st May 2007	14.1%	5.1%	12.3%	2.4%	**3.4%**
	1st May 2008	17.0%	6.0%	18.4%	2.9%	**4.3%**

Figure description	Date(s)	All IAA herds	Comparison Herds	2 km buffer of IAA	Wales herds >40 km from IAA/10 (as in report)	ALL OF WALES
	1st May 2009	23.9%	8.7%	11.4%	3.0%	**5.1%**
	1st May 2010	18.3%	6.4%	3.5%	2.7%	**4.1%**
	1st May 2011	16.3%	5.0%	3.5%	2.6%	**3.6%**
	1st May 2012	20.9%	5.4%	4.4%	2.9%	**4.2%**
					Wales herds >40 km from IAA (actual figure not divided by 10)	
Data Table for Fig 5.1 – Median duration of OTF withdrawn incidents ending in each 12-month period (months). *RAW DATA*	May05-Apr06	13.39	8.44	12.91	7.15	**9.33**
	May06-Apr07	12.19	8.94	6.51	7.06	**8.63**
	May07-Apr08	10.87	9.30	10.68	8.34	**9.97**
	May08-Apr09	9.95	9.33	12.17	7.49	**9.15**
	May09-Apr10	11.56	11.07	15.24	6.70	**9.40**
	May10-Apr11	9.81	12.17	23.52	6.87	**9.09**
	May11-Apr12	16.13	9.26	9.51	7.10	**9.19**
	May12-Apr13	17.38	8.23	8.02	7.33	**9.07**
Data Table for Fig 5.2 – Median duration of OTF suspended incidents ending in each 12-month period (months). *RAW DATA*	May05-Apr06	5.39	4.90	2.86	3.25	**4.17**
	May06-Apr07	6.64	4.76	8.92	3.58	**4.28**
	May07-Apr08	5.59	4.50	3.71	3.91	**4.51**
	May08-Apr09	3.75	4.58	5.16	4.14	**4.37**
	May09-Apr10	4.06	4.50	3.29	3.19	**3.74**
	May10-Apr11	5.62	3.76	5.68	3.52	**3.74**
	May11-Apr12	6.18	5.82	6.49	3.45	**4.64**
	May12-Apr13	8.02	5.75	7.13	3.98	**5.45**
Data Table for Fig 5.3 - Proportion of herds with OTF-S or W restrictions from which restrictions were lifted	May05-Apr06	0.830	1.217	1.000	1.376	**1.252**
	May06-Apr07	0.904	1.279	1.100	1.470	**1.290**
	May07-Apr08	1.145	1.106	0.706	1.351	**1.260**
	May08-Apr09	0.841	1.154	0.905	1.533	**1.287**
	May09-Apr10	0.856	1.127	1.333	1.528	**1.245**
	May10-Apr11	0.788	1.196	1.500	1.572	**1.341**
	May11-Apr12	0.672	1.172	1.333	1.593	**1.329**
	May12-Apr13	0.859	1.181	1.250	1.459	**1.248**

Figure description	Date(s)	All IAA herds	Compar-ison Herds	2 km buffer of IAA	Wales herds >40 km from IAA/10 (as in report)	ALL OF WALES
Data Table for Fig 5.4 - Proportion of OTF-W herds from which restrictions were lifted	May05-Apr06	0.629	0.919	1.000	1.134	**0.997**
	May06-Apr07	0.744	0.960	1.000	1.195	**0.991**
	May07-Apr08	0.953	0.625	0.429	1.062	**0.897**
	May08-Apr09	0.462	0.707	0.667	1.083	**0.845**
	May09-Apr10	0.658	0.789	1.154	1.246	**0.950**
	May10-Apr11	0.625	0.863	0.750	1.199	**0.969**
	May11-Apr12	0.460	0.841	1.500	1.239	**0.985**
	May12-Apr13	0.703	1.000	1.200	1.183	**1.008**

Figure description	Date(s)	All IAA herds	Compar-ison Herds	2 km buffer of IAA	Wales herds >40 km from IAA (actual figure not divided by 10)	ALL OF WALES
Data Table for Fig 6.1 – Percentage of new OTF-S or W incidents per Officially TB-Free herd	May05-Apr06	17.2%	6.2%	9.3%	3.6%	**4.7%**
	May06-Apr07	19.8%	9.4%	17.9%	4.6%	**6.2%**
	May07-Apr08	28.7%	9.8%	16.8%	5.3%	**7.5%**
	May08-Apr09	34.9%	16.1%	13.5%	7.0%	**10.2%**
	May09-Apr10	23.2%	10.5%	10.6%	6.7%	**8.3%**
	May10-Apr11	22.1%	9.6%	8.3%	6.3%	**7.8%**
	May11-Apr12	27.4%	11.4%	13.3%	6.7%	**8.8%**
	May12-Apr13	24.4%	12.5%	12.6%	5.9%	**8.2%**
Data Table for Fig 6.2 – Annualised proportion of unrestricted herds experiencing new OTF-W incidents in the 12-month period	May05-Apr06	11.7%	3.9%	6.5%	2.1%	**2.8%**
	May06-Apr07	12.7%	5.2%	13.9%	2.9%	**3.5%**
	May07-Apr08	20.2%	4.4%	13.7%	3.2%	**4.2%**
	May08-Apr09	19.6%	7.7%	6.3%	3.4%	**4.7%**
	May09-Apr10	13.6%	5.1%	5.8%	3.6%	**4.2%**
	May10-Apr11	12.1%	4.5%	2.8%	3.3%	**3.7%**
	May11-Apr12	16.1%	5.0%	6.7%	3.7%	**4.4%**
	May12-Apr13	12.6%	5.7%	6.8%	3.1%	**4.0%**
	95% confidence interval 2009/10 is at least:	9.4-18.7%	3.8-6.5%	2.1-12.2%	3.2-4.0%	**3.8-4.5%**
	95% confidence interval 2012/13 is at least:	8.6-17.7%	4.4-7.2%	2.8-13.5%	2.8-3.5%	**3.6-4.3%**
	Relative change, 2009/10 to 2012/13	*-7.1%*	*+12.8%*	*+17.2%*	*-12.5%*	*-4.8%*
Data Table for Fig 6.3 – Annualised number of cattle slaughtered for bTB control (excluding slaughterhouse cases), per 1000 total herd size	May05-Apr06	20.62	6.99	15.17	0.78	**3.49**
	May06-Apr07	17.86	7.88	14.65	0.83	**3.57**
	May07-Apr08	29.27	9.18	28.47	1.34	**5.36**
	May08-Apr09	48.83	15.19	23.07	1.90	**7.89**
	May09-Apr10	22.48	9.69	5.61	2.19	**5.40**
	May10-Apr11	18.99	5.88	4.88	1.75	**4.35**
	May11-Apr12	22.13	6.94	7.69	2.12	**5.42**
	May12-Apr13	20.51	8.90	4.68	2.15	**5.60**
Data Table for Fig 6.4 – Annualised number of cattle becoming reactors, per 1000 total herd size	May05-Apr06	17.43	5.67	14.44	0.66	**2.98**
	May06-Apr07	15.45	6.77	12.68	0.77	**3.17**
	May07-Apr08	25.69	8.28	24.42	1.27	**4.80**
	May08-Apr09	39.30	13.08	19.95	1.75	**6.77**

Figure description	Date(s)	All IAA herds	Compar-ison Herds	2 km buffer of IAA	Wales herds >40 km from IAA (actual figure not divided by 10)	ALL OF WALES
Data Table for Fig 6.5 – Annualised number of cattle found to have visible lesions or *M. bovis*, per 1000 total herd size.	May09-Apr10	18.42	8.12	3.95	1.92	**4.56**
	May10-Apr11	15.75	4.84	3.95	1.54	**3.64**
	May11-Apr12	17.17	5.87	6.44	1.56	**4.41**
	May12-Apr13	17.45	7.54	3.33	1.78	**4.66**
	May05-Apr06	4.88	1.80	1.77	0.17	**0.73**
	May06-Apr07	4.56	1.76	3.64	0.33	**0.81**
	May07-Apr08	8.51	2.02	6.55	0.42	**1.37**
	May08-Apr09	17.23	3.17	3.01	0.42	**1.83**
	May09-Apr10	5.75	2.23	1.04	0.50	**1.11**
	May10-Apr11	3.15	1.12	0.83	0.38	**0.85**
	May11-Apr12	5.10	1.52	2.08	0.41	**1.07**
	May12-Apr13	4.25	1.95	1.66	0.47	**1.07**

Figure description	Date(s)	All IAA herds	Comparison Herds	2 km buffer of IAA	Wales herds >40 km from IAA (actual figure not divided by 10)	ALL OF WALES
Data Table for Fig 6.6 – Annualised number of slaughterhouse cases found to have *M. bovis* on culture, per 1000 cattle in the population, per year	May05-Apr06	0.260	0.185	0.104	0.018	**0.050**
	May06-Apr07	0.195	0.071	0.104	0.026	**0.043**
	May07-Apr08	0.109	0.028	0.416	0.038	**0.043**
	May08-Apr09	0.109	0.235	0.208	0.029	**0.060**
	May09-Apr10	0.022	0.050	0.000	0.030	**0.037**
	May10-Apr11	0.130	0.192	0.104	0.027	**0.060**
	May11-Apr12	0.174	0.206	0.104	0.057	**0.088**
	May12-Apr13	0.174	0.149	0.000	0.074	**0.092**
Data Table for Fig 7.1 – Proportion of herds that had OTF-W or OTF-S incidents in the previous 3 years that had an OTF-W or OTF-S incident in the current 12-month period	May05-Apr06	25.9%	16.8%	14.8%	19.1%	**19.3%**
	May06-Apr07	23.5%	19.4%	42.9%	17.4%	**20.3%**
	May07-Apr08	36.2%	24.6%	25.0%	17.8%	**22.8%**
	May08-Apr09	39.2%	28.2%	22.7%	23.0%	**26.8%**
	May09-Apr10	27.3%	20.5%	22.6%	20.3%	**21.4%**
	May10-Apr11	27.3%	19.0%	17.5%	18.1%	**19.2%**
	May11-Apr12	34.2%	22.7%	17.1%	20.0%	**23.2%**
	May12-Apr13	27.5%	23.8%	25.0%	19.5%	**23.0%**
Data Table for Fig 8.1 – Number of reactors (by skin test or IFN-gamma test) per OTF-W or OTF-S incident starting in the 12-month period	May05-Apr06	18.25	10.78	13.90	1.68	**6.48**
	May06-Apr07	14.24	8.58	6.78	1.53	**5.26**
	May07-Apr08	16.68	10.22	14.69	2.22	**6.64**
	May08-Apr09	22.64	10.17	14.77	2.32	**6.99**
	May09-Apr10	16.02	9.67	3.45	2.66	**5.81**
	May10-Apr11	13.70	6.08	4.22	2.25	**4.85**
	May11-Apr12	12.56	6.26	4.43	2.14	**5.22**
	May12-Apr13	14.36	7.42	2.46	2.81	**5.99**
Data Table for Fig 8.2 – Number of reactors (by skin test or IFN-gamma test) that had visible lesions or *M. bovis*, per OTF-W incident starting in the 12-month period	May05-Apr06	7.50	5.40	2.43	0.75	**2.71**
	May06-Apr07	6.56	4.00	2.50	1.06	**2.38**
	May07-Apr08	7.84	5.57	4.85	1.23	**3.44**
	May08-Apr09	17.64	5.13	4.83	1.15	**4.08**
	May09-Apr10	8.55	5.51	1.67	1.31	**2.81**
	May10-Apr11	5.00	3.04	2.67	1.07	**2.39**
	May11-Apr12	6.35	3.69	2.86	1.04	**2.55**
	May12-Apr13	6.76	4.23	2.29	1.40	**2.83**

Appendix Table A3 - Numerators and denominators for the figures shown above and the tables in Table A2

Statistic	Period	All IAA herds	Comparison herds	2 km buffer of IAA	Wales herds >40 km from IAA (actual total)	ALL OF WALES	Numerator for Figures:	Denominator for Figures:
Number of new incidents (OTF-W or OTF-S) in the 12 months	May05-Apr06	44	74	10	303	**572**	3.1, 6.1	8.1
	May06-Apr07	50	111	18	389	**749**	3.1, 6.1	8.1
	May07-Apr08	71	114	16	439	**899**	3.1, 6.1	8.1
	May08-Apr09	80	181	13	580	**1203**	3.1, 6.1	8.1
	May09-Apr10	53	118	11	557	**974**	3.1, 6.1	8.1
	May10-Apr11	53	112	9	527	**932**	3.1, 6.1	8.1
	May11-Apr12	63	132	14	559	**1050**	3.1, 6.1	8.1
	May12-Apr13	56	143	13	488	**967**		
Number of new OTF-W incidents in the 12 months	May05-Apr06	30	47	7	178	**336**	3.2, 6.2	8.2
	May06-Apr07	32	62	14	240	**424**	3.2, 6.2	8.2
	May07-Apr08	50	51	13	266	**497**	3.2, 6.2	8.2
	May08-Apr09	45	87	6	281	**556**	3.2, 6.2	8.2
	May09-Apr10	31	57	6	295	**489**	3.2, 6.2	8.2
	May10-Apr11	29	52	3	272	**441**	3.2, 6.2	8.2
	May11-Apr12	37	58	7	305	**523**	3.2, 6.2	8.2
	May12-Apr13	29	65	7	259	**468**		
Number of SICCT test reactors detected in the 12 months	May05-Apr06	803	798	139	509	**3705**	3.3, 6.4, 8.1	
	May06-Apr07	712	952	122	595	**3943**	3.3, 6.4, 8.1	
	May07-Apr08	1184	1165	235	975	**5965**	3.3, 6.4, 8.1	
	May08-Apr09	1811	1841	192	1346	**8412**	3.3, 6.4, 8.1	
	May09-Apr10	849	1142	38	1480	**5665**	3.3, 6.4, 8.1	
	May10-Apr11	726	681	38	1188	**4523**	3.3, 6.4, 8.1	
	May11-Apr12	791	826	62	1198	**5486**	3.3, 6.4, 8.1	
	May12-Apr13	804	1061	32	492	**5796**	3.3, 6.4, 8.1	
Number of cattle with visible lesions or *M bovis* in culture reported in the 12 months	May05-Apr06	225	254	17	133	**909**	3.4. 6.5, 8.2	
	May06-Apr07	210	248	35	254	**1009**	3.4. 6.5, 8.2	
	May07-Apr08	392	284	63	327	**1708**	3.4. 6.5, 8.2	
	May08-Apr09	794	446	29	323	**2268**	3.4. 6.5, 8.2	
	May09-Apr10	265	314	10	385	**1374**	3.4. 6.5, 8.2	
	May10-Apr11	145	158	8	292	**1055**	3.4. 6.5, 8.2	
	May11-Apr12	235	214	20	316	**1335**	3.4. 6.5, 8.2	
	May12-Apr13	196	275	16	363	**1326**	3.4. 6.5, 8.2	
Number of herds under OTF-W or OTF-S restriction on 1st May	1-May-05	47	60	3	234	**493**	4.1	5.3
	1-May-06	52	61	10	215	**448**	4.1	5.3
	1-May-07	55	94	17	288	**619**	4.1	5.3
	1-May-08	63	104	21	338	**738**	4.1	5.3
	1-May-09	90	165	15	400	**991**	4.1	5.3
	1-May-10	66	97	6	346	**731**	4.1	5.3
	1-May-11	67	93	6	329	**683**	4.1	5.3
	1-May-12	85	116	12	364	**825**	4.1	5.3
	1-May-13	68	122	10	321	**762**	4.1	5.3
Number of herds under OTF-W restriction on 1st May	1-May-05	35	37	2	179	**343**	4.2	5.4
	1-May-06	43	50	7	154	**337**	4.2	5.4
	1-May-07	43	64	14	210	**427**	4.2	5.4
	1-May-08	52	75	21	253	**541**	4.2	5.4
	1-May-09	73	109	13	260	**640**	4.2	5.4
	1-May-10	56	80	4	231	**521**	4.2	5.4
	1-May-11	50	63	4	226	**457**	4.2	5.4
	1-May-12	64	68	5	251	**530**	4.2	5.4
Number of herds released from restriction (OTF-W or OTF-S) during the 12 months	May05-Apr06	39	73	3	322	**617**	5.3	
	May06-Apr07	47	78	11	316	**578**	5.3	
	May07-Apr08	63	104	12	389	**780**	5.3	
	May08-Apr09	53	120	19	518	**950**	5.3	
	May09-Apr10	77	186	20	611	**1234**	5.3	
	May10-Apr11	52	116	9	544	**980**	5.3	
	May11-Apr12	45	109	8	524	**908**	5.3	
	May12-Apr13	73	137	15	531	**1030**	5.3	
Number of herds released from OTF-W restriction during the	May05-Apr06	22	34	2	203	**342**	5.4	
	May06-Apr07	32	48	7	184	**334**	5.4	
	May07-Apr08	41	40	6	223	**383**	5.4	

Statistic	Period	All IAA herds	Comparison herds	2 km buffer of IAA	Wales herds >40 km from IAA (actual total)	ALL OF WALES	Numerator for Figures:	Denominator for Figures:
12 months	May08-Apr09	24	53	14	274	**457**	5.4	
	May09-Apr10	48	86	15	324	**608**	5.4	
	May10-Apr11	35	69	3	277	**505**	5.4	
	May11-Apr12	23	53	6	280	**450**	5.4	
	May12-Apr13	45	68	6	297	**534**	5.4	
Number of animals slaughtered, excluding slaughterhouse cases	May05-Apr06	950	984	146	603	**4333**	6.3	
	May06-Apr07	823	1109	141	636	**4438**	6.3	
	May07-Apr08	1349	1292	274	1035	**6666**	6.3	
	May08-Apr09	2250	2138	222	1466	**9802**	6.3	
	May09-Apr10	1036	1364	54	1690	**6705**	6.3	
	May10-Apr11	875	827	47	1347	**5405**	6.3	
	May11-Apr12	1020	976	74	1629	**6731**	6.3	
	May12-Apr13	945	1252	45	1652	**6962**	6.3	
Number of animals slaughtered, including slaughterhouse cases	May05-Apr06	962	1010	147	617	**4395**	6.6	
	May06-Apr07	832	1119	142	656	**4491**	6.6	
	May07-Apr08	1354	1296	278	1064	**6719**	6.6	
	May08-Apr09	2255	2171	224	1488	**9876**	6.6	
	May09-Apr10	1037	1371	54	1713	**6751**	6.6	
	May10-Apr11	881	854	48	1368	**5479**	6.6	
	May11-Apr12	1028	1005	75	1673	**6840**	6.6	
	May12-Apr13	953	1273	45	1709	**7076**	6.6	
Number of herds in which an OTF-W or OTF-S incident ended in any of the 36 months before the current period AND there was an OTF-W or OTF-S incident in the present 12-month period	May05-Apr06	22	20	4	101	**201**	7.1	
	May06-Apr07	24	31	12	119	**275**	7.1	
	May07-Apr08	38	46	6	132	**329**	7.1	
	May08-Apr09	47	60	5	202	**445**	7.1	
	May09-Apr10	36	52	7	208	**412**	7.1	
	May10-Apr11	39	65	7	227	**461**	7.1	
	May11-Apr12	50	80	7	278	**605**	7.1	
	May12-Apr13	38	79	8	273	**590**	7.1	
Number of herds that had an OTF-S or OTF-W incident in the previous 36 months	May05-Apr06	85	119	27	529	**1040**		7.1
	May06-Apr07	102	160	28	684	**1355**		7.1
	May07-Apr08	105	187	24	742	**1440**		7.1
	May08-Apr09	120	213	22	880	**1659**		7.1
	May09-Apr10	132	254	31	1027	**1925**		7.1
	May10-Apr11	143	342	40	1252	**2405**		7.1
	May11-Apr12	146	353	41	1392	**2607**		7.1
	May12-Apr13	138	332	32	1402	**2567**		7.1
Total number of tests of any kind on animals (thousands)	May05-Apr06	78.7	144.7	14.3	436.8	952.1		3.3, 3.4
	May06-Apr07	87.4	177.4	17.2	521.0	1123.6		3.3, 3.4
	May07-Apr08	93.9	182.4	20.4	600.3	1257.9		3.3, 3.4
	May08-Apr09	107.1	222.5	19.7	849.3	1625.7		3.3, 3.4
	May09-Apr10	117.2	262.2	18.0	949.0	1831.1		3.3, 3.4
	May10-Apr11	135.6	223.7	14.7	1019.7	1837.9		3.3, 3.4
	May11-Apr12	131.2	231.0	15.4	1012.0	1890.6		3.3, 3.4
	May12-Apr13	135.4	260.8	16.6	1027.0	1986.7		3.3, 3.4
Total number of tests on animals in OTF-W or OTF-S herds (thousands)	May05-Apr06	36.0	47.5	4.8	111.2	**299.5**	2.2	3.3, 3.4
	May06-Apr07	39.9	54.3	6.7	133.8	**333.9**	2.2	3.3, 3.4
	May07-Apr08	45.5	63.2	11.6	166.9	**422.8**	2.2	3.3, 3.4
	May08-Apr09	61.1	90.2	11.4	205.4	**547.0**	2.2	3.3, 3.4
	May09-Apr10	68.6	125.1	7.8	220.4	**631.9**	2.2	3.3, 3.4
	May10-Apr11	66.0	76.9	4.6	207.9	**519.8**	2.2	3.3, 3.4
	May11-Apr12	57.5	83.1	3.7	199.7	**516.9**	2.2	3.3, 3.4
	May12-Apr13	51.6	94.1	3.0	209.1	**529.2**	2.2	3.3, 3.4
Total number of IFN-gamma tests on animals in OTF-W or OTF-S herds	May05-Apr06	148	87	323	1227	**1799**		
	May06-Apr07	223	126	3	218	**1464**		
	May07-Apr08	286	11	2	2133	**3077**		
	May08-Apr09	357	101	4	2339	**3337**		
	May09-Apr10	396	398	7	3664	**5136**		
	May10-Apr11	300	495	3	6223	**7449**		
	May11-Apr12	648	96	4	3882	**5893**		
	May12-Apr13	328	197	59	3870	**5077**		

Statistic	Period	All IAA herds	Compa-rison herds	2 km buffer of IAA	Wales herds >40 km from IAA (actual total)	ALL OF WALES	Numerator for Figures:	Denomin-ator for Figures:
Number of reactors to an interferon-gamma (IFN) test	May05-Apr06	20	6	18	1	**46**	2.5	
	May06-Apr07	15	13	3	6	**55**	2.5	
	May07-Apr08	78	4	1	133	**356**	2.5	
	May08-Apr09	47	51	2	159	**348**	2.5	
	May09-Apr10	112	135		208	**658**	2.5	
	May10-Apr11	47	39		128	**297**	2.5	
	May11-Apr12	113	35	3	248	**598**	2.5	
	May12-Apr13	43	81	3	124	**425**	2.5	
Completed whole herd type tests on unrestricted herds	May05-Apr06	431	1028	117	5302	**8751**	2.1	3.1, 3.2
	May06-Apr07	481	1266	152	5369	**9454**	2.1	3.1, 3.2
	May07-Apr08	532	1338	158	5793	**10218**	2.1	3.1, 3.2
	May08-Apr09	601	1650	191	8513	**13968**	2.1	3.1, 3.2
	May09-Apr10	675	1897	169	9548	**15638**	2.1	3.1, 3.2
	May10-Apr11	877	1617	135	9664	**15355**	2.1	3.1, 3.2
	May11-Apr12	761	1573	148	9592	**15308**	2.1	3.1, 3.2
	May12-Apr13	756	1745	154	9399	**15339**	2.1	3.1, 3.2
Completed whole herd type tests on OTF-S or OTF-W herds	May05-Apr06	166	220	26	811	**1687**	2.1	
	May06-Apr07	176	277	34	948	**1862**	2.1	
	May07-Apr08	208	296	61	1157	**2314**	2.1	
	May08-Apr09	272	434	81	1413	**3031**	2.1	
	May09-Apr10	333	606	55	1519	**3590**	2.1	
	May10-Apr11	353	370	28	1336	**2846**	2.1	
	May11-Apr12	279	328	29	1360	**2778**	2.1	
	May12-Apr13	214	437	30	1353	**2821**	2.1	
Average duration (days) of OTF-W incidents ending	May05-Apr06	452.7	298.8	274.0	250.4	**181.4**	For Information	
	May06-Apr07	451.3	320.7	333.1	252.7	**166.1**		
	May07-Apr08	407.9	335.3	320.2	296.9	**194.1**		
	May08-Apr09	405.7	343.9	410.7	271.9	**192.2**		
	May09-Apr10	462.4	426.0	559.8	294.1	**193.4**		
	May10-Apr11	543.4	449.6	817.3	276.8	**197.4**		
	May11-Apr12	631.8	391.6	316.8	286.1	**205.8**		
	May12-Apr13	678.6	375.3	249.3	298.6	**208.0**		
Average duration (days) of OTF-S incidents ending	May05-Apr06	180.3	163.7	87.0	135.7	**98.8**	For Information	
	May06-Apr07	230.5	201.8	258.8	135.4	**104.5**		
	May07-Apr08	195.7	156.5	119.5	139.5	**104.5**		
	May08-Apr09	141.7	157.8	180.0	151.1	**94.4**		
	May09-Apr10	152.6	178.3	133.8	129.5	**84.8**		
	May10-Apr11	175.4	148.8	145.7	133.7	**86.6**		
	May11-Apr12	275.9	217.8	197.5	130.8	**117.3**		
	May12-Apr13	265.3	213.4	267.7	146.6	**137.9**		

Appendix Table A4: Number of surveillance tests (herds not under restriction), reactors and resulting incidents and the number of disease control tests taken in herds under restriction in the current reporting period (for Table 1.1)

Test		Surveillance tests			Disease Control	Total
Test and test type	Area	Total Tests	Reactors	Incidents	Total Tests	Sum
Area Risk		**15407**	**84**	**20**	**1622**	**17029**
VE-CON	**IAA**	14777	64	18	1622	16399
VE-CON12		566	20	2	0	566
VE-CON6		64	0	0	0	64
Control		**7434**	**65**	**1**	**88493**	**95927**
VE-CT(EM)		0	0	0	74	74
VE-CT(I-I)		1204	4	0	1257	2461
VE-IFN_PERSI		0	0	0	757	757
VE-IFN_SLHERD		0	0	0	14	14
VE-SI		6230	61	1	86291	92521
VE-IASI		0	0	0	100	100
Herd Risk		**11997**	**13**	**14**	**0**	**11997**
VE-6M		11997	13	14	0	11997
Inconclusive reactors		**168**	**37**	**0**	**258**	**426**
VE-IFN_2X_IR		39	17	0	219	258
VE-IR		129	20	0	39	168
Movement Risk		**417**	**2**	**1**	**223**	**640**
VE-TR		412	2	1	215	627
VE-PII		5	0	0	8	13
Private, pre and post movement		**2362**	**3**	**3**	**131**	**2593**
VE-PRI		22	0	0	2	24
VE-PRMT		2340	3	3	129	2469
New Herds		**18**	**0**	**0**	**0**	**18**
VE-CT-NH2		18	0	0	0	18
Other		**59**	**0**	**0**	**497**	**556**
VE-ASG		59	0	0	497	556
Routine		**13751**	**21**	**14**	**10**	**13761**
VE-IA12		3874	2	2	0	3874
VE-IA6		9877	19	12	10	9887
Area Risk		**59919**	**176**	**74**	**88**	**60007**
VE-CON	**Comparison Area**	47112	166	62	88	47200
VE-CON12		12055	7	9	0	12055
VE-CON6		752	3	3	0	752
Control		**9941**	**95**	**3**	**128830**	**138771**
VE-CT(EM)		270	2	1	0	270
VE-CT(I-I)		2366	18	0	3896	6262
VE-IFN_PERSI		436	31	0	436	872
VE-IFN_SLHERD		0	0	0	54	54

Test		Surveillance tests			Disease Control	Total
Test and test type	Area	Total Tests	Reactors	Incidents	Total Tests	Sum
VE-SI		5622	44	2	124444	130066
VE-TBU		1247	0	0	0	1247
Herd Risk		**26462**	**108**	**23**	**0**	**26462**
VE-12M		5488	27	4	0	5488
VE-6M		20974	81	19	0	20974
Inconclusive reactors		**333**	**35**	**0**	**373**	**706**
VE-IFN_2X_IR		31	10	0	292	323
VE-IR		302	25	0	81	383
Movement Risk		**1615**	**1**	**3**	**192**	**1807**
VE-TR		1497	0	2	192	1689
VE-PII		118	1	1	0	118
Private, pre and post movement		**12497**	**18**	**7**	**295**	**12792**
VE-PRI		228	0	0	1	229
VE-PRMT		12269	18	7	294	12563
New Herds		**1029**	**0**	**0**	**0**	**1029**
VE-CT-NH1		584	0	0	0	584
VE-CT-NH2		445	0	0	0	445
Other		**512**	**0**	**0**	**523**	**1035**
VE-ASG		512	0	0	523	1035
Routine		**27486**	**24**	**21**	**70**	**27556**
VE-WHT		27486	24	21	70	27556
Area Risk		**7146**	**17**	**6**	**0**	**7146**
VE-CON	**IAA 2km Buffer**	6014	12	4	0	6014
VE-CON12		1094	5	2	0	1094
VE-CON6		38	0	0	0	38
Control		**954**	**3**	**1**	**5188**	**6142**
VE-CT(EM)		127	0	1	0	127
VE-IFN_SLHERD		0	0	0	50	50
VE-SI		827	3	0	5138	5965
Herd Risk		**1653**	**6**	**0**	**144**	**1797**
VE-12M		414	6	0	144	558
VE-6M		1239	0	0	0	1239
Inconclusive reactors		**34**	**4**	**0**	**18**	**52**
VE-IFN_2X_IR		0	0	0	11	11
VE-IR		34	4	0	7	41
Movement Risk		**162**	**0**	**0**	**7**	**169**
VE-TR		148	0	0	7	155
VE-PII		14	0	0	0	14
Private, pre and post movement		**1116**	**0**	**2**	**0**	**1116**

Test		Surveillance tests			Disease Control	Total
Test and test type	Area	Total Tests	Reactors	Incidents	Total Tests	Sum
VE-PRI		3	0	0	0	3
VE-PRMT		1113	0	2	0	1113
New Herds		**19**	**0**	**0**	**0**	**19**
VE-CT-NH1		6	0	0	0	6
VE-CT-NH2		13	0	0	0	13
Routine		**1066**	**4**	**4**	**255**	**1321**
VE-WHT		1066	4	4	255	1321
Area Risk		**135801**	**264**	**129**	**806**	**136607**
VE-CON	**Welsh Herds >40km**	98835	225	101	663	99498
VE-CON12		36151	38	27	143	36294
VE-CON6		815	1	1	0	815
Control		**13739**	**47**	**7**	**271285**	**285024**
VE-CT		94	0	0	0	94
VE-CT(EM)		1016	2	2	428	1444
VE-CT(I-I)		1450	8	1	10983	12433
VE-IFN_LOW_IN		179	3	2	4470	4649
VE-IFN_PERSI		0	0	0	1899	1899
VE-IFN_SLHERD		0	0	0	64	64
VE-SI		10976	34	2	253436	264412
VE-TBU		24	0	0	0	24
VE-IFN_ANOM		0	0	0	5	5
Herd Risk		**98623**	**270**	**97**	**1622**	**100245**
VE-12M		36072	92	27	338	36410
VE-6M		62551	178	70	1284	63835
Inconclusive reactors		**1220**	**93**	**0**	**523**	**1743**
VE-IFN_2X_IR		2	1	0	349	351
VE-IR		1218	92	0	174	1392
Movement Risk		**5969**	**23**	**13**	**302**	**6271**
VE-TR		5620	22	12	288	5908
VE-AI		4	0	0	14	18
VE-EX		28	0	0	0	28
VE-PII		245	1	1	0	245
VE-PIO		72	0	0	0	72
Private, pre and post movement		**107294**	**69**	**44**	**763**	**108057**
VE-POSTMT		42	0	0	5	47
VE-PRI		1306	0	0	12	1318
VE-PRMT		105946	69	44	746	106692
New Herds		**2873**	**0**	**0**	**0**	**2873**
VE-CT-NH1		2163	0	0	0	2163
VE-CT-NH2		710	0	0	0	710

Test		Surveillance tests			Disease Control	Total
Test and test type	Area	Total Tests	Reactors	Incidents	Total Tests	Sum
Other		**95**	**0**	**0**	**400**	**495**
VE-ASG		95	0	0	400	495
Routine		**394365**	**194**	**163**	**1368**	**395733**
VE-CTW1		89648	10	18	73	89721
VE-CTW2		16635	2	5	0	16635
VE-WHT		263063	180	133	1295	264358
VE-WHT2		25019	2	7	0	25019
Area Risk		**364135**	**868**	**355**	**3611**	**367746**
VE-CON	**All of Wales**	287641	760	289	2934	290575
VE-CON12		74129	104	62	143	74272
VE-CON6		1916	4	4	0	1916
VE-CT-HS1		449	0	0	534	983
Control		**47834**	**453**	**17**	**766898**	**814732**
VE-CT		173	2	1	474	647
VE-CT(EM)		1580	4	4	721	2301
VE-CT(I-I)		7951	125	2	23604	31555
VE-IASI		0	0	0	100	100
VE-IFN_ANOM		0	0	0	15	15
VE-IFN_LOW_IN		179	3	2	4930	5109
VE-IFN_NSR		0	0	0	5	5
VE-IFN_PERSI		436	31	0	3442	3878
VE-IFN_SLHERD		18	0	0	277	295
VE-SI		36120	288	8	733330	769450
VE-TBU		1377	0	0	0	1377
Herd Risk		**192827**	**567**	**188**	**2546**	**195373**
VE-12M		53319	141	40	483	53802
VE-6M		139508	426	148	2063	141571
Inconclusive reactors		**3781**	**262**	**0**	**2359**	**5140**
VE-IFN_2X_IR		126	47	0	1764	1890
VE-IR		2655	215	0	595	3250
Movement risk		**10858**	**32**	**21**	**1040**	**11898**
VE-TR		10189	30	18	1016	11205
VE-EX		28	0	0	0	28
VE-AI		4	0	0	14	18
VE-PII		565	2	3	10	575
VE-PIO		72	0	0	0	72
Private, pre and post movement		**145414**	**135**	**84**	**2035**	**147449**
VE-POSTMT		42	0	0	5	47
VE-PRI		1803	0	0	15	1818
VE-PRMT		143569	135	84	2015	145584
New Herds		**6258**	**0**	**0**	**0**	**6258**

Test		Surveillance tests			Disease Control	Total
Test and test type	Area	Total Tests	Reactors	Incidents	Total Tests	Sum
VE-CT-NH1		3523	0	0	0	3523
VE-CT-NH2		2735	0	0	0	2735
Other		**767**	**0**	**0**	**2145**	**2912**
VE-ASG		767	0	0	2145	2912
Routine		**473969**	**299**	**240**	**1770**	**475739**
VE-CTW1		89749	10	18	73	89822
VE-CTW2		16651	2	5	0	16651
VE-IA12		3874	2	2	0	3874
VE-IA6		9996	19	12	10	10006
VE-WHT		328680	264	196	1687	330367
VE-WHT2		25019	2	7	0	25019
	Overall Total	**1244843**	**2616**	**905**	**782404**	**2027247**