Regulatory Triage Assessment

Title of regulatory proposal	Simplification of the bovine tuberculosis (bTB) cattle testing regime in the High Risk Area
Lead Department/Agency	Defra
Expected date of implementation	Spring/Summer 2018
Origin	Domestic
Date	17.07.2017
Lead Departmental Contact	**carol.hawke@defra.gsi.gov.uk**
Departmental Triage Assessment	Low-cost regulation (fast track)

Rationale for Intervention and Intended Effects

Beef and dairy farms in the High Risk Area (HRA) must routinely test their herd for bTB once a year. In addition to routine surveillance testing, a complex suite of other tests are required to cover specific situations that depend on the disease status of the herd and decisions made by individual farm business operators.

The gradual introduction of new cattle controls, combined with the rigorous testing regimes for herds contiguous to TB infected herds, cattle traced from infected herds, check tests and various other risk based testing arrangements has resulted in a complex TB testing landscape. Stakeholders agreed (when responding to a call for views issued by Defra in 2016) that there would be merit in developing proposals for a simpler and more effective TB testing regime in the HRA built around a default position of 6 monthly routine surveillance testing which would replace some of the other tests thereby simplifying the regulatory environment. In addition a system of earned recognition is proposed to recognise the lowest risk herds in the HRA. If these herds meet objective criteria their routine testing frequency will reduce to either one year or every two years.

Routine 6-monthly testing will reduce the administrative burden for most farm businesses – they would benefit from a simplified and standardised testing regime. In most cases the removal of the various extra tests farmers face will outweigh the burden of additional surveillance testing.

The introduction of earned recognition (reduced testing for farms with a history of being TB free) will reduce administrative burdens further for those farm businesses with the lowest risk of suffering a TB breakdown. The benefit of earned recognition also provides an incentive for keepers to introduce more effective bio-security.

The more frequent testing of higher risk herds in the HRA will bring disease control benefits as TB infected herds will be identified at an earlier stage thereby reducing the time for within herd disease spread as well as disease transmission to other herds and/or wildlife.

Viable Policy Options (including alternatives to regulation)

1) Do nothing. Annual routine tests with a suite of tests reflecting farm business model.

2) Introduce 6 monthly herd tests for all herds in the HRA. Increase period between Short Interval Tests (SIT) to every 90 days from every 60 days.

3) ***Preferred Option****:* Introduce 6 monthly herd tests into the HRA with earned recognition for low risk herds defined by risk score criteria. Low risk herds will be eligible for annual or biennial testing. Increase period between SIT to every 90 days from every 60 days. The need for certain other types of tests (e.g. trace tests) would be removed for herds on 6 monthly surveillance testing.

Initial Assessment of Business Impact

Option 3 (the preferred option) is expected to increase the total number of tests carried out in the HRA by 0.6% and reduce the total cost of testing in the HRA to Defra and by extension the taxpayer by -0.7%. The costs of surveillance and breakdown testing are met by government, and they will not be passed onto industry. Defra estimates that 80% of farm businesses would be subject to less testing than they are at present as a result of consolidating 15 different potential TB tests into the six monthly surveillance tests. Those farms that do face additional tests will incur an increased productivity loss.

Defra estimates the productivity loss to be £2.54 per cattle test and using this estimate productivity losses to industry in Option 3 are expected to be £83,231. This burden increase will fall on the highest TB risk herds which tend to be the larger herds. Owners of smaller herds are more likely to meet earned recognition criteria and so benefit most from reduced administrative burdens.

Farm businesses will also benefit from the improved disease control benefits these measures will introduce. By testing the highest risk herds more regularly, infected animals will be removed from the herd faster giving the disease less time to spread.

The change in SIT intervals is expected to be cost neutral to business and will make it easier to plan and accommodate testing around the business.

The policy will also help move the HRA towards the long term goal of disease freedom which will impart significant economic benefits to both businesses and the general taxpayer.

One-in, Three-out status

The cost to industry of Option 3 (the preferred option) is estimated at £83,231. Using the EANDCB calculator the resulting EANDCB is £0.1m and the Business Net Present Value is -£0.72m over a 10 year appraisal period.

Rationale for Triage rating

The measure is low cost and will fall well below the £1m (gross per annum) threshold for Fast Track approval.

Departmental signoff (*SCS*):

Economist signoff (*senior analyst*):

Better Regulation Unit signoff:

Problem under consideration

Beef and dairy farms in the High Risk Area (HRA) must routinely test their herd for TB once a year. In addition to routine surveillance testing, a complex suite of other tests are required to cover various situations which vary according to each farm business.

A call for views has confirmed stakeholder agreement to develop a more effective approach to increase the regularity of routine tests to every 6 months, removing the need for most of the current tests. There was also support to increase the time between short interval tests (SITs) which occur after a breakdown from 60 days to 3 months.

In addition to this it is proposed a system of earned recognition is introduced where by farms exhibiting low risk to TB in the HRA, e.g. due to effective bio-security measures can benefit by moving to annual or biennial testing.

Rationale for intervention;

TB testing addresses a market failure caused by the under provision of disease freedom in the free market. It provides requirement for farmers to test their cattle, preventing individual businesses to free ride on the disease control efforts of others. However, TB testing legislation can be improved to reduce its administrative burden and provide additional disease control benefits.

A move to 6-monthly routine testing will simplify the regulatory environment by replacing a complex suite of existing tests which depend on the circumstances of each farm business. This will reduce the administrative burden of dealing with different reasons for requiring a test and move farm businesses to a standardised testing regime.

The introduction of earned recognition can reduce administrative burdens further for farm businesses that face the lowest risk of suffering a TB breakdown by reducing the number of routine tests they must do. This incentivises keepers to introduce more effective bio-security to benefit from earned recognition.

There are also expected to be disease control benefits by increasing the regularity with which some farmers are tested. Currently farmers may be tested as little as once a year if they do not make business decisions that require an additional test, but their herd still risks being infected by TB which may not be identified until the next annual test. Six monthly testing can identify infection earlier and could reduce the severity and cost of a TB breakdown, and the risk of disease spread to other herds.

The increase in time between SITs from 60 days to 90 days will make the stated interval more practically enforceable than under the current regime. The 90 day interval will also allow farms to continue on the same testing dates in the year after clearing two SITs under in a six monthly testing regime.

Policy objective

The policy objective is to simplify the existing complex testing regime by eliminating many of the context sensitive tests and increasing the frequency of the standard surveillance tests to compensate. These standard surveillance tests would take the roles of the many different tests they replaced but are easier for farmers to plan around and more cost effective for Defra to administrate.

Defra also wants to recognise low risk farms and move them onto less regular surveillance testing regimes in the HRA. Farms that have a track record of being TB free pose significantly less of a disease risk than those that have had breakdowns recently, so the disease control benefits of testing them more frequently are not as large.

Description of options considered (including status-quo)

The preferred option is to introduce 6 monthly testing in the HRA as default but also introduce earned recognition for farmers that have a proven history of being TB free. This option maintains most of the benefits of 6 monthly testing but does not increase the burden to industry.

1) Do nothing. Annual routine tests with a suite of tests reflecting farm business decisions.

2) Introduce 6 monthly herd tests for all herds in the HRA. Increase period between Short Interval Tests (SIT) to every 90 days from every 60 days.

3) ***Preferred Option****:* Introduce 6 monthly herd tests into the HRA with earned recognition for low risk herds defined by risk score criteria. Low risk herds will be eligible for annual or biennial testing. Increase period between Short Interval Tests (SIT) to every 90 days from every 60 days.

Costs and Benefits

Table 1 shows the high level impact of the three policy options. Option 3 is the preferred option because it combines disease control benefits with cost effectiveness. It is not possible to quantify the disease control benefits but these are discussed qualitatively in the analysis.

Table 1: Summary of costs and benefits

	1) Do Nothing	***2) All of HRA to 6-monthly testing***	***3) HRA to 6-monthly with lower frequency for low risk farms***
Total number of tests	No change	8.5% increase	+0.6% increase
Disease control benefits	No Benefits	Maximum benefit	Large benefit
Total cost of testing	No change	8% increase	0.67% decrease

Option 1) Do Nothing

Under the do nothing option no action will be taken to simplify the existing regime and all farms will continue to be tested annually regardless of risk. There will continue to be a large suite of complex situational tests administered by the Animal and Plant Health Agency (APHA) instead of combining them into one test.

This option does not achieve the policy objectives. It is the counterfactual against which Options 2 and 3 are assessed.

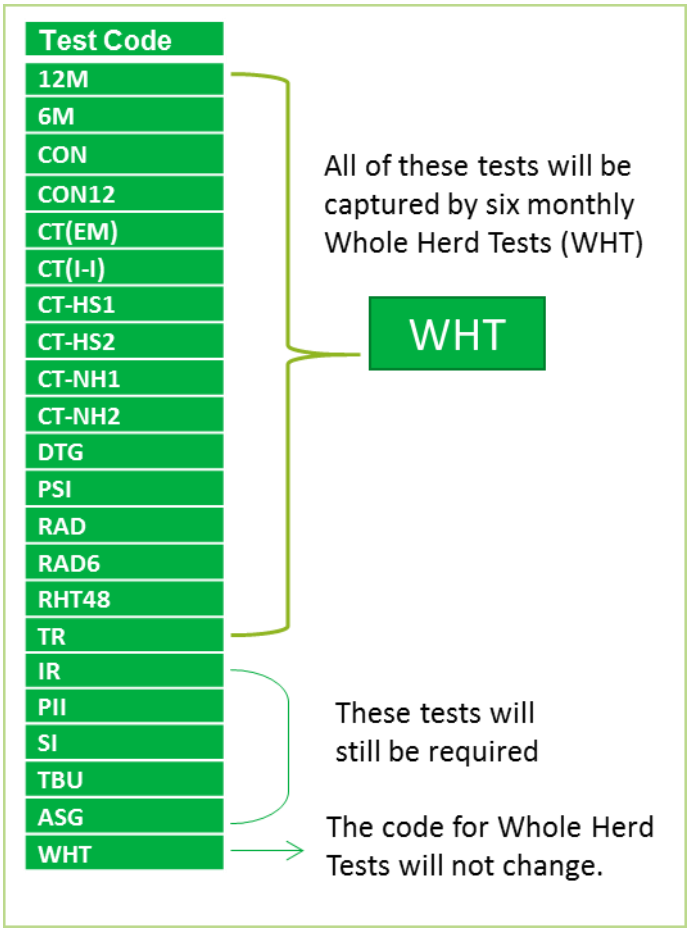
Option 2) Moving all of the HRA to six monthly surveillance testing and increase SIT test interval to 90 days

Test Simplification

The aim of this option is to increase the frequency of whole herd skin testing in the HRA from the current annual test to a new six monthly testing regime. In doing so Defra is able to remove a large number of situational skin tests that farms are required to do, often with short notice. This is because Defra is able to use skin test data from the six monthly surveillance tests in place of the situational skin test data. This is not implemented with annual tests because the period between a test result and the requirement of a situational test is too long (for example, a contiguous test could not use data from seven months ago, when the next test is due in five months).

Figure 2 shows the tests (by APHA test code) that will be merged into the six monthly surveillance tests.

Figure 2: Test simplification



The tests that will be merged are:

- *Current tests carried out after a herd has been cleared of TB or is a new herd (12M, 6M, CT-NH1, CT-NH2)*
- *Tests triggered due to a farm in proximity or which have moved cattle through the farm having a breakdown (CON, CON12, CT (EM), CT(I-I), CT HS1&2, RAD, RAD6)*
- *Tests unique to cattle on grass keep (DTG, PSI).*
- *RHT48 is used in the Low Risk Area and in the HRA in extreme circumstances.*
- *Tracing Tests (TR)*

The tests that will not be merged are:

- *Tests on inconclusive reactors (IR)*
- *Tests on segregated groups of cattle (ASG)*
- *Post Irish Import tests (PII)*
- *Tests on grazing AFUs (TBU)*
- *Short interval tests (SI)*

Combining a set of fifteen different tests into one regular surveillance test will make the testing regime significantly easier for farmers to understand, and will result in less surprise tests. Surveillance tests that are planned in advance can be prepared for ahead of time, saving time and money compared to having to prepare for a test at short notice (for example as currently happens on Radial and Contiguous tests where the test window opens immediately upon the keeper receiving notice of the test). Based on 2016 data, the introduction of six monthly testing would lead to a reduction in total tests for 63% of farmers.

Increasing the SIT test interval from 60 to 90 days

Short Interval Tests (SIT) are performed on breakdown herds with the aim of removing all infected animals from the herd. A herd has to pass (i.e. have no reactors) two successive SITs in order to be declared TB free. SITs are paid for by Defra but farmers will still incur a productivity loss from rounding up cattle for testing. Currently SITs are intended to be conducted every 60 days on breakdown herds (although there is flexibility for the farmer in arranging these tests so in practice the actual average interval between SIT tests is 78 days).

As part of the changes Defra is proposing to increase the period between SIT from every 60 days to every 90 days. Extending the SIT interval period will make the stated period between SITs more realistic and closer to the actual policy implementation. Currently SIT tests are regularly done later than 60 days (hence the actual average interval being 78 days) due to the administration and business planning arrangements required to implement a test (which will be more reasonable with a 90 day SIT interval). In addition, 90 day SITs will line up with farm businesses testing regime, meaning that if a farm is restricted in a surveillance test, passes two SITs and restrictions are lifted it can return to a six monthly or annual testing regime at a similar point in the year. This will make long term business planning around the testing regime easier for farm business owners.

Impact on number of tests carried out

The move from annual to six monthly surveillance tests will not result in a doubling of the total tests because the six monthly tests will replace the fifteen situational tests shown in Figure 2. These tests are being incorporated into the now more frequent 6 monthly Whole Herd Tests (WHT) so the number of total tests will increase by a lower amount.

Using APHA test data on the 12 months to November 2016 we can analyse what impact on the total number of tests moving to six monthly tests would have had (had it been in operation in 2016). As shown in **Figure 2** the new regime would capture a large number of existing disparate tests under one banner (WHT). The number of WHT will increase significantly because they are both doubling in frequency and absorbing equivalent herd tests that take place using different test codes (for example 12M, 6M, CT-NH1 and CT-NH2 replace WHT but will now be merged).

Table 3: Number of tests that would have been carried out in 2016 under option 2

	Do nothing (**Option 1**)		All of HRA to 6 monthly testing (**Option 2**)	
	Instructions[1]	**Cattle Tested**	**Instructions**	**Cattle Tested**
12M	1,793	303,169	-	-
6M	3,120	601,864	-	-
CON	1,757	229,482	-	-
CON12	26	3,561	-	-
CT(EM)	91	11,836	-	-

CT(I-I)	610	107,480	-	-
CT-HS1	4	241	-	-
CT-HS2	1	12	-	-
CT-NH1	484	11,252	-	-
CT-NH2	15	219	-	-
DTG	22	3,670	-	-
PSI	37	13,774	-	-
RAD	19	2,865	-	-
RAD6	10	1,273	-	-
RHT48	1	9	-	-
ASG	359	17,969	389	18,729
IR	2,591	5,523	2,591	5,523
PII	97	1,582	97	1,582
SI	10,907	2,861,080	8,925	2,288,865
TBU	353	97,602	353	97,602
TR	9,038	31,368	-	-
WHT	12,583	1,054,883	33,217	3,402,285
Total	**43,918**	**5,360,714**	**45,572**	**5,814,586**
Absolute Change			+1,654	+453,872
% Change			+3.77%	+8.47%

[1]Instructions refers to number of test callouts. I.e. a WHT on a herd of 200 cattle would be 1 instruction but 200 cattle tested.

The impact in 2016 of six monthly default surveillance testing would have been an increase in the number of cattle tested through Whole Herd Tests (WHT) from 1,054,883 to 3,402,285, or a 222% increase in the number of cattle tested. However, there would also be a decrease of cattle tested through other skin tests of 1,893,530 because these were now replaced by additional WHT. The net effect would be an increase in cattle tests of 453,872, or an increase of 8.5%

Cost to Defra of tests carried out

Using the APHA cost data from 2016 we can analyse the cost impact if six monthly testing had been applied in 2016. **Table 4** shows the cost impact. Six monthly testing would have increased the cost of testing to Defra by £1,042,581 or an 8% increase.

Table 4: Cost of testing in 2016 under option 1 and 2

	Do nothing (**Option 1**)	All of HRA to 6 monthly testing (**Option 2**)
12M	£730,900	-
6M	£1,430,307	-
CON	£573,700	-
CON12	£8,807	-
CT(EM)	£29,483	-
CT(I-I)	£257,370	-
CT-HS1	£697	-
CT-HS2	£68	-
CT-NH1	£47,302	-
CT-NH2	£1,226	-
DTG	£8,939	-
PSI	£31,528	-
RAD	£6,903	-
RAD6	£3,142	-
RHT48	£85	-
ASG	£55,845	£58,772
IR	£136,460	£136,460
PII	£8,284	£8,284

SI	£6,619,112	£5,304,323
TBU	£224,425	£224,425
TR	£506,442	-
WHT	£2,853,843	£8,845,185
Total	**£13,534,868**	£14,577,449
Absolute Change		+£1,042,581
% Change		+8%

Cost to industry of tests carried out

Industry does not have to pay for surveillance testing (which includes all the test codes listed above). However, there is a productivity impact on farmers as a result of having to undergo TB testing including labour costs to prepare cattle for testing and stress to the animals of having been tested. The productivity losses to industry of surveillance testing are estimated to be £2.54[1] for each cattle tested on average, but this includes wide variation. Using this cost estimate the effect on industry of an additional 453,872 tests on cattle would be an additional cost of £1,152,835 per year.

There will be additional benefits to industry in the form of administrative savings from dealing with a simplified testing regime, but these benefits have not been quantified.

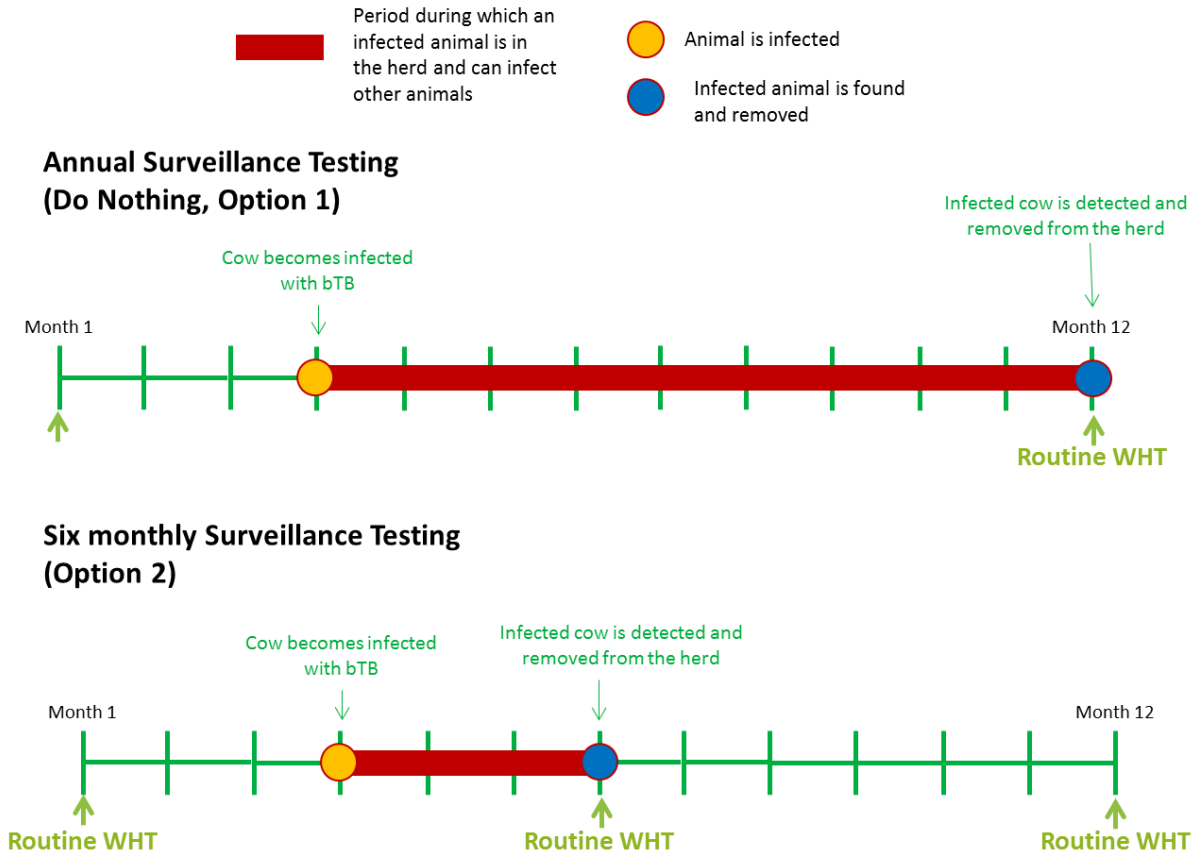
Defra will be using the consultation to call for additional evidence from industry on the cost impact on farmers of routine TB testing.

Disease Control Benefits

Testing for TB and removing cattle that are found to be infected with the disease is the cornerstone of combatting the disease and is central to the government's 25 year eradication strategy. Increasing the regularity of surveillance testing in the HRA from every 12 months to every 6 months will result in infected cattle being found and removed earlier, meaning they have less time to infect other cattle in the herd. **Figure 5** visualises these benefits of testing every 6 months.

[1] Pre-movement testing review (2008 prices) - see Table 14 p.90

Figure 5: The disease control benefits of testing every six months vs. annual testing



Quantifying the disease control benefits associated with testing more often is very difficult due to a lack of evidence scientifically measuring testing frequency for two identical herds. Additionally, as shown by the only 8.5% increase in cattle tested, most herds will have some sort of test in between annual surveillance tests. The benefit of replacing the array of different tests with a regular six monthly test is that it ensures a consistent check is in place for disease, whereas with the current system a herd could have three tests in a year, but they may be in Jan, April and December, leaving a large gap during which disease could spread.

<u>Option 3) Introduce 6 monthly herd tests into the HRA but also introduce earned recognition for low risk herds. Increase SIT interval to 90 days</u>

Option 3 proposes to introduce six monthly surveillance testing in the HRA (and all of the simplification benefits these provide) but allow for farms with a history of being TB free to be tested less often.

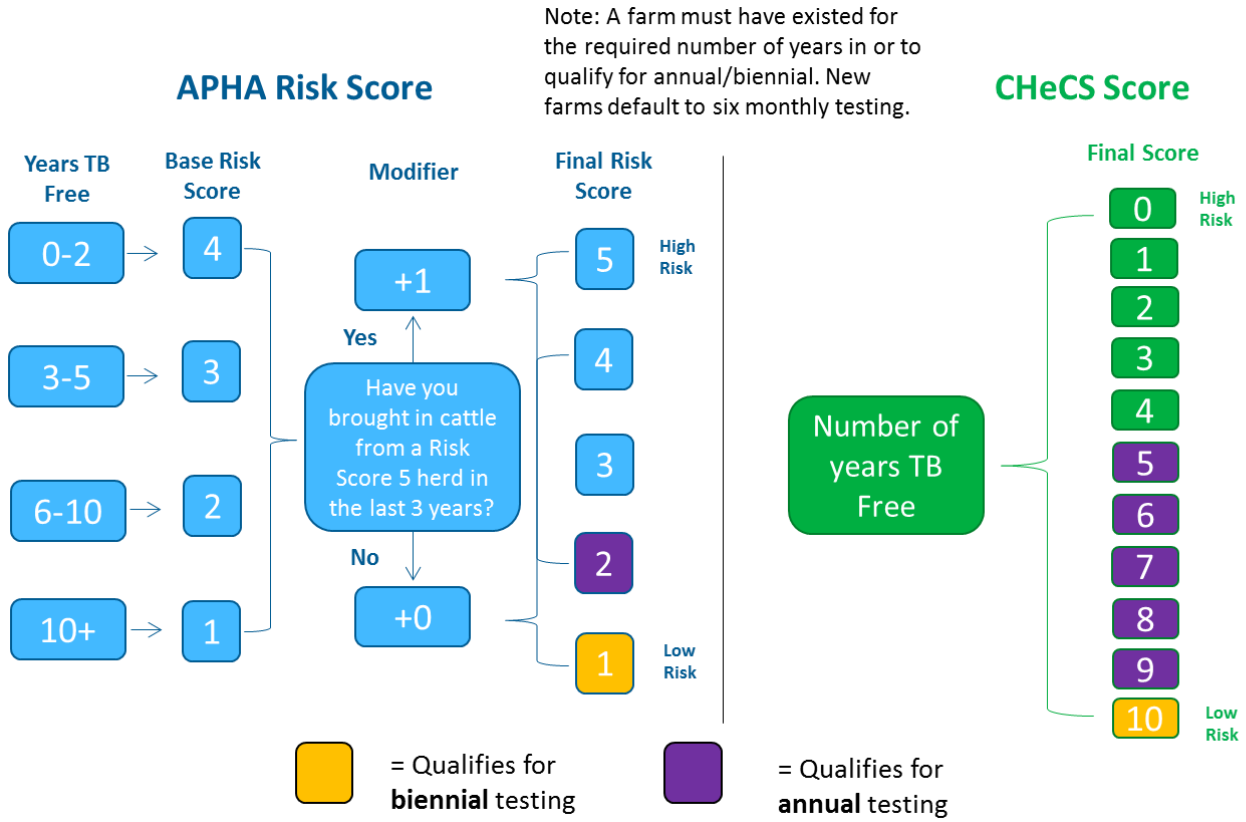
Defra is proposing two levels of earned recognition, which (in addition to the default six monthly testing) will create three testing regimes. The earned recognition of low risk herds will be based on APHA Risk Score or the Cattle Health Certification Scheme (CHeCS). The proposed CHeCS accreditation levels below are not final and open for consultation. The vast majority of herds will be recognised as low risk through their APHA risk score rather than through CHeCS.

- **Default Six Monthly Testing**: Farms that do not qualify for less frequent testing will be placed on this testing regime. If a farm has a breakdown while on annual or biennial testing they will move to six monthly testing. Newly formed herds will also be placed on this regime until they have built up a history of being TB free (even if they would have qualified for APHA Risk Score 1 or 2).
- **Annual testing for CHeCS 5-9 OR APHA Risk Score 2:** If a farm is CHeCS accredited with a score of 5-9 (subject to consultation) or is APHA Risk Score 2 they will qualify for annual testing.

- **Biennial testing for CHeCS 10+ OR APHA Risk Score 1:** If a farm is CHeCS accredited with a score of 10+ (subject to consultation) or are APHA risk score 1 they will be moved to a testing regime where they are tested once every two years.

Figure 6 explains how APHA Risk Score and CHeCS scores are calculated (CHeCS accreditation also requires compliance with a set of standards on biosecurity and trading). It should be noted a farm only has to qualify for one of the systems, not both. So a farm with over 10 years TB Free but which has brought in an animal from a Risk Score 5 herd would still qualify for biennial testing if they are CHeCS accredited (because their CHeCS score would be 10).

Figure 6: APHA Risk Score and CHeCS score calculations.



Test Simplification

Option 3 will incorporate almost all the benefits of test simplification captured in Option 2. This means that even if farms qualify for annual or biennial testing then they will not have to undergo the situational tests that are being replaced with Whole Herd Tests, with the exception of Trace Tests. Those farms on annual and biennial testing will still need to complete trace tests, while those on six monthly testing will be exempt (as in option 1).

The rationale for passing most simplification benefits to all farms is that in order for farms to qualify for annual or biennial testing they must first prove themselves to be low risk. This means the farms will have a history of being TB free and will not have brought in high risk animals into their herds. The value of testing more often in these herds is lower because the probability of finding an infected animal is much lower than in a herd that has a history of TB or brings in high risk cattle. If a low risk herd has a breakdown they will move to six monthly testing; their risk profile will have changed. Trace tests are triggered by a higher likelihood of infection than other skin tests and so will still be done on annual and biennial farms.

Increasing the SIT test interval from 60 to 90 days

The impact of increasing the SIT interval to 90 days will be identical as in option 2.

Impact on number of tests carried out

The aim of option 3 is to preserve most of the benefits of six monthly testing but with reduced costs to business. The total number of tests will be lower than if all herds were on six monthly testing because some low risk herds will be on annual or biennial testing.

To analyse the data from 2016 to determine how many tests would have been carried out under Option 3, each of the ~23,000 herds had to be sorted into a testing regime (six monthly, annual or biennial)[2]. The number of herds that fell into each category is shown in **Table 7** below.

Table 7: Herds in each category based on modelling 2016 data

	6 Monthly Testing	Annual Testing	Biennial Testing
% of all herds	69.67%	15.64%	14.69%
Average herd size	148	65	58

Table 8 below shows the number of skin tests that would have been carried out if six monthly testing with earned recognition was implemented in 2016. Option 2 (all farms in the HRA on six monthly testing) is shown for comparison.

Table 8: The number of tests that would have been carried out in 2016 under Options 1 - 3

	Do nothing (**Option 1**)		All of HRA to 6 monthly testing (**Option 2**)		Six monthly testing in the HRA with earned recognition (**Option 3**)	
	Instructions[1]	**Cattle Tested**	**Instructions**	**Cattle Tested**	**Instructions**	**Cattle Tested**
12M	1,793	303,169	-	-	-	-
6M	3,120	601,864	-	-	-	-
CON	1,757	229,482	-	-	-	-
CON12	26	3,561	-	-	-	-
CT(EM)	91	11,836	-	-	-	-
CT(I-I)	610	107,480	-	-	-	-
CT-HS1	4	241	-	-	-	-
CT-HS2	1	12	-	-	-	-
CT-NH1	484	11,252	-	-	-	-
CT-NH2	15	219	-	-	-	-
DTG	22	3,670	-	-	-	-
PSI	37	13,774	-	-	-	-
RAD	19	2,865	-	-	-	-
RAD6	10	1,273	-	-	-	-
RHT48	1	9	-	-	-	-
ASG	359	17,969	389	18,729	389	18,729
IR	2,591	5,523	2,591	5,523	2,591	5,523
PII	97	1,582	97	1,582	97	1,582
SI	10,907	2,861,080	8,925	2,288,865	8,925	2,288,865
TBU	353	97,602	353	97,602	353	97,602
TR	9,038	31,368	-	-	2,113	6,690
WHT	12,583	1,054,883	33,217	3,402,285	26,187	2,974,491

[2] 178 herds could not be found in either the APHA or CHeCS datasets and so were defaulted to six monthly testing. There were 37 herds that qualified for CHeCS 5+ but were APHA risk Score 4/5. This was due to discrepancies between CPH and CPHH data and these herds were defaulted to six monthly testing.

Total	**43,918**	**5,360,714**	45,572	5,814,586	40,655	5,393,482
Absolute Change			+1,654	+453,872	+3,263	+32,768
% Change			+3.77%	+8.47%	-7.43%	+0.61%

Option 3 would have resulted in significantly less extra tests carried out than option 2, and only a slight increase (0.6%) in tests compared to option 1 (do nothing). The number of test instructions is estimated to decline by 7.4% under option 3 due to the reduced number of WHT from low risk herds qualifying for annual or biennial testing. To note that some trace tests would occur under option 3 because farms on annual or biennial testing would not be exempt.

Cost to Defra of tests carried out

As a result of a decrease in tests compared to option 2, the cost of implementing testing of option 3 to Defra will be lower than option 2. The cost of implementing compared to option 1 will be a decrease (saving to Defra) of around 0.7% (£93,092). **Table 9** shows the costs faced by Defra for skin testing in 2016 and what they would have been under option 2 and 3. The small decrease in cost of option 3 compared to the do nothing option 1 presents excellent value for money for the simplification and disease control benefits.

Table 9: The cost of testing that would have been carried out in 2016 under options 1, 2 and 3

	Do nothing (**Option 1**)	All of HRA to 6 monthly testing (**Option 2**)	Six monthly testing in the HRA with earned recognition (**Option 3**)
12M	£730,900	-	-
6M	£1,430,307	-	-
CON	£573,700	-	-
CON12	£8,807	-	-
CT(EM)	£29,483	-	-
CT(I-I)	£257,370	-	-
CT-HS1	£697	-	-
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CT-NH1	£47,302	-	-
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DTG	£8,939	-	-
PSI	£31,528	-	-
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IR	£136,460	£136,460	£136,460
PII	£8,284	£8,284	£8,284
SI	£6,619,112	£5,304,323	£5,304,323
TBU	£224,425	£224,425	£224,425
TR	£506,442	-	£116,720
WHT	£2,853,843	£8,845,185	£7,592,792
Total	**£13,534,868**	**£14,577,449**	**£13,441,776**
Absolute Change		+1,042,581	-£93,092
% Change		+7.70%	-0.69%

Cost to industry of tests carried out

Industry does not have to pay for surveillance testing (which includes all of the test codes listed above). However, there is a productivity impact on farmers as a result of having to undergo TB testing in the form of labour costs to prepare cattle for testing and stress to the animals of having been tested. Option 3 will increase this productivity burden by only 0.6% due to the small increase in overall tests (and may present a cost saving due to a reduced number of total test instructions).

The productivity losses to industry are estimated to be £2.54 for each cattle test on average[3], but this includes wide variation. Using this cost estimate the effect on industry of an increase of 32,768 tests on cattle would be an additional cost of around £83,231 per year compared to the current system.

Defra will be using the consultation to call for additional evidence from industry on the cost impact on farmers of routine TB testing.

Distributional impacts of increased testing

By testing higher risk herds more often the result is that larger herds will on average be tested more often. This is because herd size is a major risk factor in bTB, larger herds are more likely to be infected (due to increased contact with other cattle and having more cattle able to become infected, etc.). **Table 6** shows the average herd size for herds on six monthly testing was 148, while the average herd size for those on annual testing was 68 and for biennial testing was 55.

Farms on six monthly testing will have more surveillance tests, but this does not mean they will all face more TB testing. In most cases the removal of the various additional tests that will now be captured by the WHT will result in lower overall tests, even for those on a six monthly testing regime. Based on the 2016 data, 61% of farms that would have been on the new six monthly testing regimes would have had fewer tests than they did under annual testing. Including the farms that will stay on annual testing (but get the simplification benefits) and those moving to biennial, 80% of farms would have faced less tests under Option 3 than they did under the current testing regime.

Disease Control Benefits

Introducing default six monthly testing with earned recognition for farms with a history of TB freedom will capture most of the disease control benefits of six monthly testing in Option 2. These benefits are the earlier detection of infection in non-restricted herds and subsequent removal of potentially infected cattle.

Defra already implements risk based testing at a high level, England is split into the Low Risk Area, the Edge Area and the High Risk Area and Defra tests herds in the HRA more often than those in the LRA. Testing in the HRA delivers greater benefits per test than testing in the LRA due to the increased disease prevalence in the HRA. Introducing a HRA testing scheme that targets high risk herds is built on the same principle and allows the department to deliver even greater benefits per test than applying one testing scheme to the whole of the HRA.

Risks and Assumptions

The central assumption when calculating the cost to Defra and on business is that the number of tests conducted per year would remain constant in the counterfactual. This assumption allows for the use of past data to estimate the impact over the appraisal period of 10 years.

[3] Estimate from Defra project SE3112 Assessment of the economic impacts of TB and alternative policies, presented in 2016 prices.

Since 2011 the number of cattle tested has increased by 11.4% but the number of instructions has decreased by 12%. This shift to fewer tests but with more animals per test is a result of a range of several policies implemented over the period (such as the county based routine surveillance testing in 2013 and OTF-W by default changes in 2016).

Between 2011 and 2016 the number of annual skin tests for those categories which will be merged into WHTs (referred to as *Simplified tests* in **table 10**) has increased by 13.3%, driven by additional contiguous testing linked to the increase in disease prevalence in England over the same time period. The standard deviation for both the simplified tests and the Whole Herd Tests was low indicating a relatively stable number of tests over the period. The full dataset on herd tests can be found in Annex A.

Table 10: Analysis of change in annual test numbers 2012 - 2016

	Standard Deviation		Change 2012>2016		
Test Type	**Instructions**	**Cattle Tested**	**Instructions**	**Cattle Tested**	
Simplified tests	1.94%	5.66%	1.32%	13.35%	
WHT	1.55%	1.48%	-4.67%	-0.49%	
SI	3.57%	6.89%	-2.12%	14.79%	
Non-Simplified	11.46%	8.22%	-36.78%	12.47%	(Will not be affected by changes)
Total	4.01%	4.52%	-12.08%	11.40%	

Based on previous data we would expect the main factor to influence the counterfactual number of tests each year would be the disease prevalence in England. Given that it is beyond the scope of this paper to model the spread of the disease it is reasonable to base the counterfactual on the level of testing in 2016.

EANDCB and BIT status

This is a qualifying regulatory policy under the BIT.

The cost to industry of Option 3 (the preferred option) is estimated at £83,231. Using the EANDCB calculator the resulting EANDCB is £0.1m and the Business Net Present Value is -£0.72m over a 10 year appraisal period.

Wider Impacts

SAMBA

These changes will apply to all herds in the HRA, including those classed as small and micro businesses.

Since herd size is a key risk factor we expect small businesses will disproportionately benefit from earned recognition and so face a reduction in productivity costs due to the new preferred testing regime. The analysis of the impact of Option 3 on 2016 testing data (**Table 6)** shows that farms with smaller herds would be the ones benefiting from earned recognition, with the average herd size of those on annual testing being 65 animals, and those on biennial testing being 58 animals. This compares to the average herd size of those on 6 monthly testing of 148 animals.

Contribution to the 25 year strategy

Beyond direct increases in disease control benefits increased testing frequency will contribute towards Defra's 25 year strategy for eradication of Bovine TB. The aggregate benefit of moving towards Officially TB Free status for the HRA is greater than just the disease control benefits, as in the long term it will save the taxpayer and industry hundreds of millions of pounds.

Annex A:

Number of Instructions and Tests carried out by APHA between 2012 - 2016

	2012		2013		2014		2015		2016		Total	
Test Type	**Instruction**	**Cattle Tested**	**Instruction**	**Cattle Tested**	**Instruction**	**Cattle Tested**	**Instruction**	**Cattle Tested**	**Instruction**	**Cattle Tested**	**Instruction**	**Cattle Tested**
Simplified	7,803	1,101,960	7,918	1,166,184	8,230	1,278,760	7,821	1,249,221	7,907	1,271,804	39,679	6,067,929
Non-Simplified	16,896	136,013	16,476	163,257	17,400	174,942	16,664	165,389	12,353	155,396	79,789	794,997
SI	11,021	2,414,841	10,827	2,401,971	9,954	2,397,475	10,413	2,646,457	10,792	2,834,145	53,007	12,694,889
WHT	12,967	1,039,371	12,687	1,018,303	12,633	999,074	12,505	1,008,970	12,388	1,034,341	63,180	5,100,059
Total	**48,687**	**4,692,185**	**47,908**	**4,749,715**	**48,217**	**4,850,251**	**47,403**	**5,070,037**	**43,440**	**5,295,686**	**235,655**	**24,657,874**