

Managing bTB risks at the farm level – challenges and opportunities

Preventing and controlling bTB is not just black and white.

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Introduction

- Mycobacterial diseases (TB/ Johne's) are complex and difficult, if not impossible, to eradicate on a national scale.
- A simple “test and cull” approach in isolation will not work if the risks are unmanaged
- A combination of risk management, selective removal, sustained engagement and motivation are required over a long period for success.
- There are no “silver bullets” - Myhealthyherd is a tool to use for disease control and to be effective has to be used in combination with the right vet/ farmer/ best practice/ science.

The four pillars supporting the health status of a herd

Health status of the herd

Biosecurity
Risk of entry

Surveillance

**Resilience &
immunity**

Bio-containment
Risk of Spread

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4 Pillars Strategy

- For effective sustainable control of infectious disease you should have 4 strong pillars
 1. Effective biosecurity (prevent entry)
 2. Effective bio-containment (prevent spread)
 3. Appropriate surveillance to risk
 4. Resilience or immunity within the herd, with or without vaccination
- Management of these 4 pillars will allow appropriate control strategy to match aspiration and resources of farmer

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The four pillars supporting the health status of a herd for TB

Health status of the herd

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Biosecurity

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TB 4 pillars- the problem

- Not all 4 pillars are in place for effective control
- Simply increasing surveillance and removing infected cattle without controlling risks of entry and spread will not work
- Approximately 20-30% of vet time is spent in the winter testing cattle
- Not enough vet resources are applied to controlling or preventing disease

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Risk of Johne's spread

- Johne's disease enters the herd silently and dependent on risk factors (R_0 Value) the disease spreads
- The risk of spread is the multiplier of the disease and is the key area to target to control the disease
- The relative importance of risk of entry and risk of spread for bTB will vary from herd to herd, region to region and will depend on a wide range of factors (wildlife/ genetics/ cattle contact etc)

Creating a risk profile for the herd

- **Biosecurity risks** = risks of disease **entry** into the herd
 - Cattle
 - People
 - Environment
- General and disease specific risks
- Specific to herd type: beef and dairy



Biosecurity in the beef herd

Sibley

In Practice 2014;**36**:5 238-248 doi:10.1136/inp.g2829

Biosecurity in the dairy herd

Sibley

In Practice 2010;**32**:7 274-280 doi:10.1136/inp.c3913

Creating a risk profile for the herd



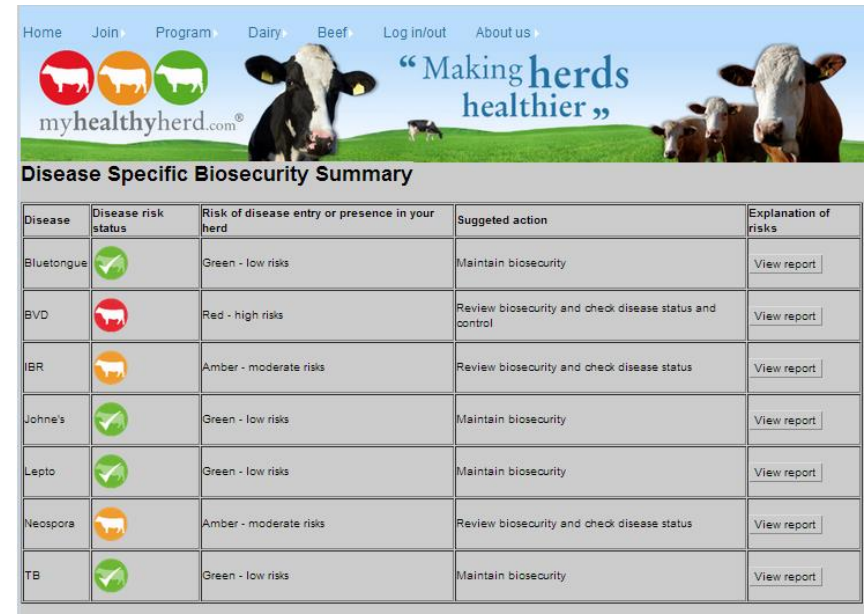
- **Bio-containment risks** = the risk of disease **spread** within and from the herd
- General and disease specific risks
- The **multiplier** of disease (and may influence persistence)

Risk of Johne's spread

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The risk assessment and assignment with the JD program








- Risk data collected on farm by trained vets
- Entered into web based database and algorithm applied according to specific risks and disease
- Risk report, with categorisation .
- Beware the Red-Red herd = high risk of entry and high risk of spread



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Disease Specific Biosecurity Summary

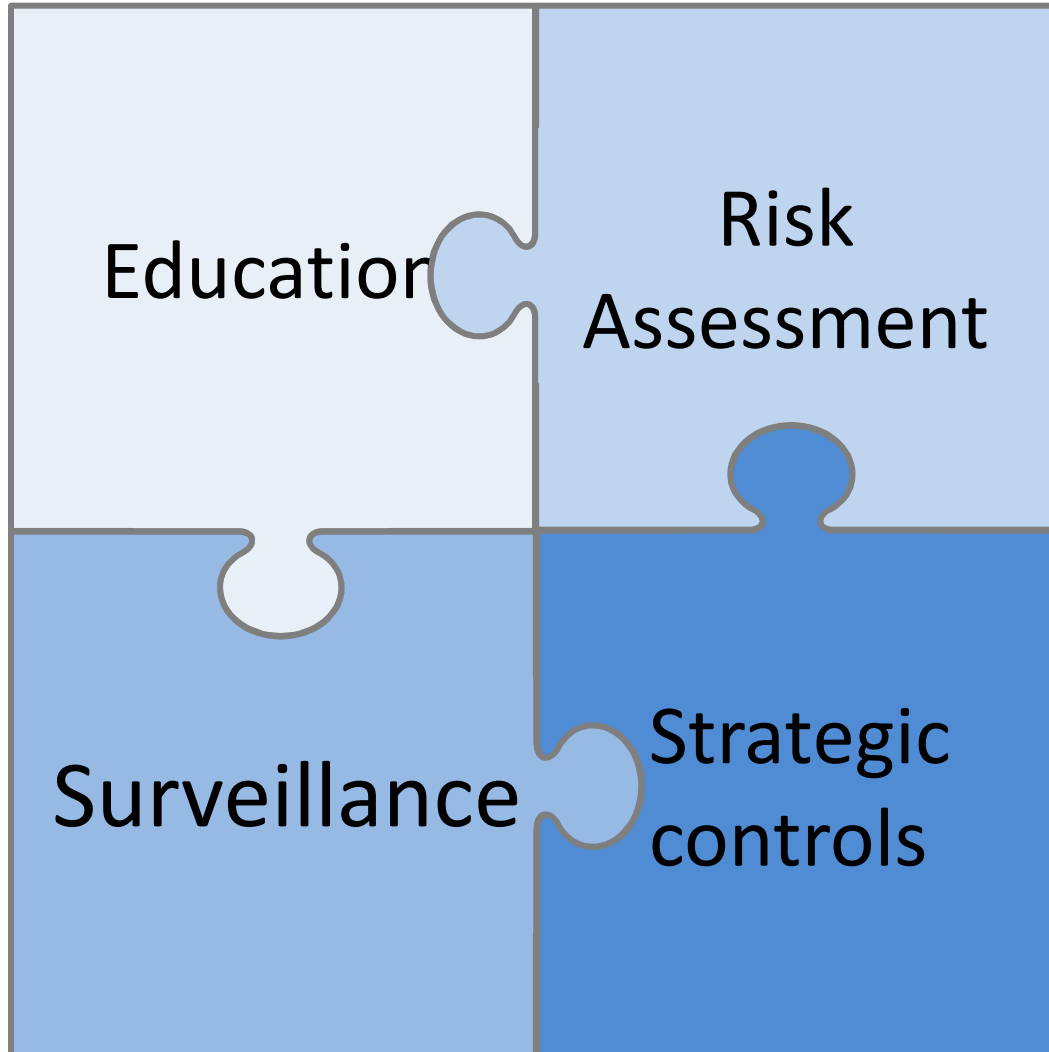
Disease	Disease risk status	Risk of disease entry or presence in your herd	Suggested action	Explanation of risks
Bluetongue		Green - low risks	Maintain biosecurity	View report
BVD		Red - high risks	Review biosecurity and check disease status and control	View report
IBR		Amber - moderate risks	Review biosecurity and check disease status	View report
John's		Green - low risks	Maintain biosecurity	View report
Lepto		Green - low risks	Maintain biosecurity	View report
Neospora		Amber - moderate risks	Review biosecurity and check disease status	View report
TB		Green - low risks	Maintain biosecurity	View report

Combining the risks

- Herds can be categorized into risk groups
- Herds which are red risk for entry and red risk for spread (within the herd and onto other herds) should be targeted for more intervention to help prevent disease spread
- The aim of the program is to focus on protecting the uninfected herds by “getting ahead” of the disease.
- Johne’s and TB are “predict and prevent” diseases as once the disease becomes embedded, particularly in large herds, it is difficult and maybe impossible to remove.....

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UK Johne's Engagement Program



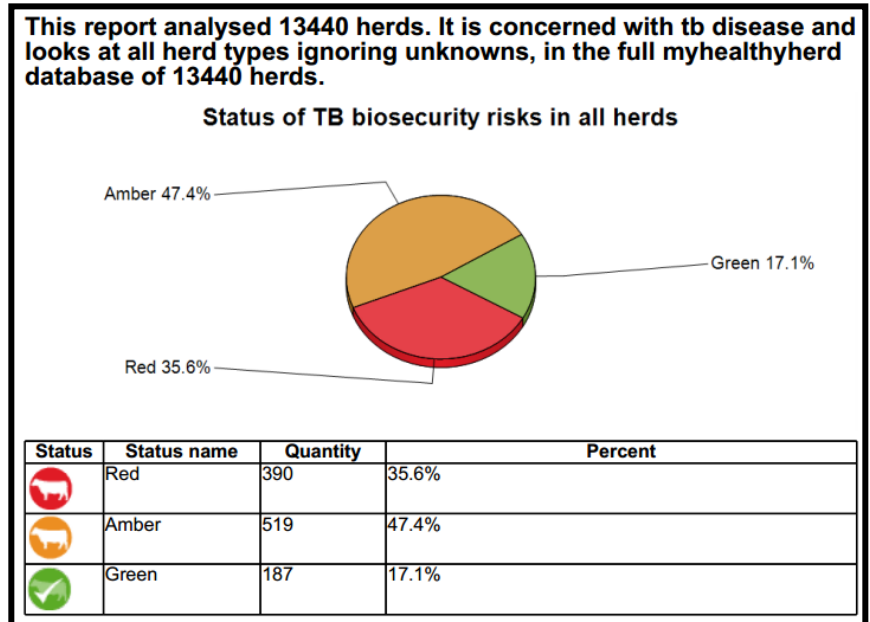
The disease jigsaw

- The success of the Johne's engagement program was driven by education, coordinated farm specific risk assessment, surveillance and controls
- 6 control strategies were offered. Test and cull was not popular with only 11% farmers and vets selecting this option due to its high cost of emergency culling and disruption to the herd performance
- High prevalence Johne's herds normally select less disruptive isolation, test and manage programs with novel use of tests to identify infectious animals for planned removal, akin to the New Zealand system. TbTB policy could learn from this.

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Predict and Prevent

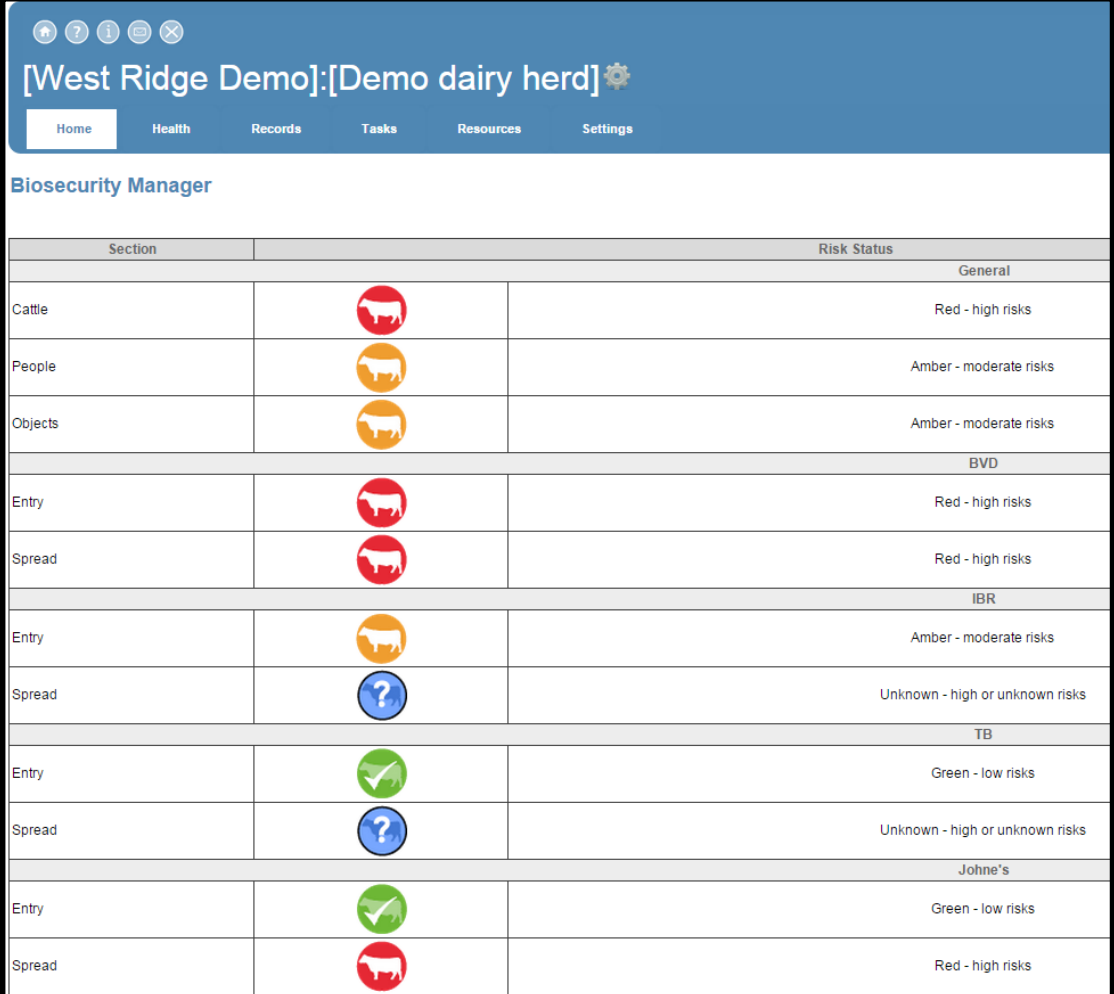
- Over 90% of herd do not have bTB – they need **protection**
- High risk herds – the **Red-Red** herds - can be identified, and specific bTB management plans implemented
- Many **Red-Red** herds are not yet infected - but they will be!



Warning! Many of the herds that have bTB risk assessments are in the South West – data captured as part of the SW Healthy Livestock Initiative

Disease Specific Risk Status












- Biosecurity risks are disease specific
- Some biosecurity risks are more significant than others
- Scoring algorithm allows risks to be assigned to particular infectious diseases for any herd



[West Ridge Demo]:[Demo dairy herd] ⚙️

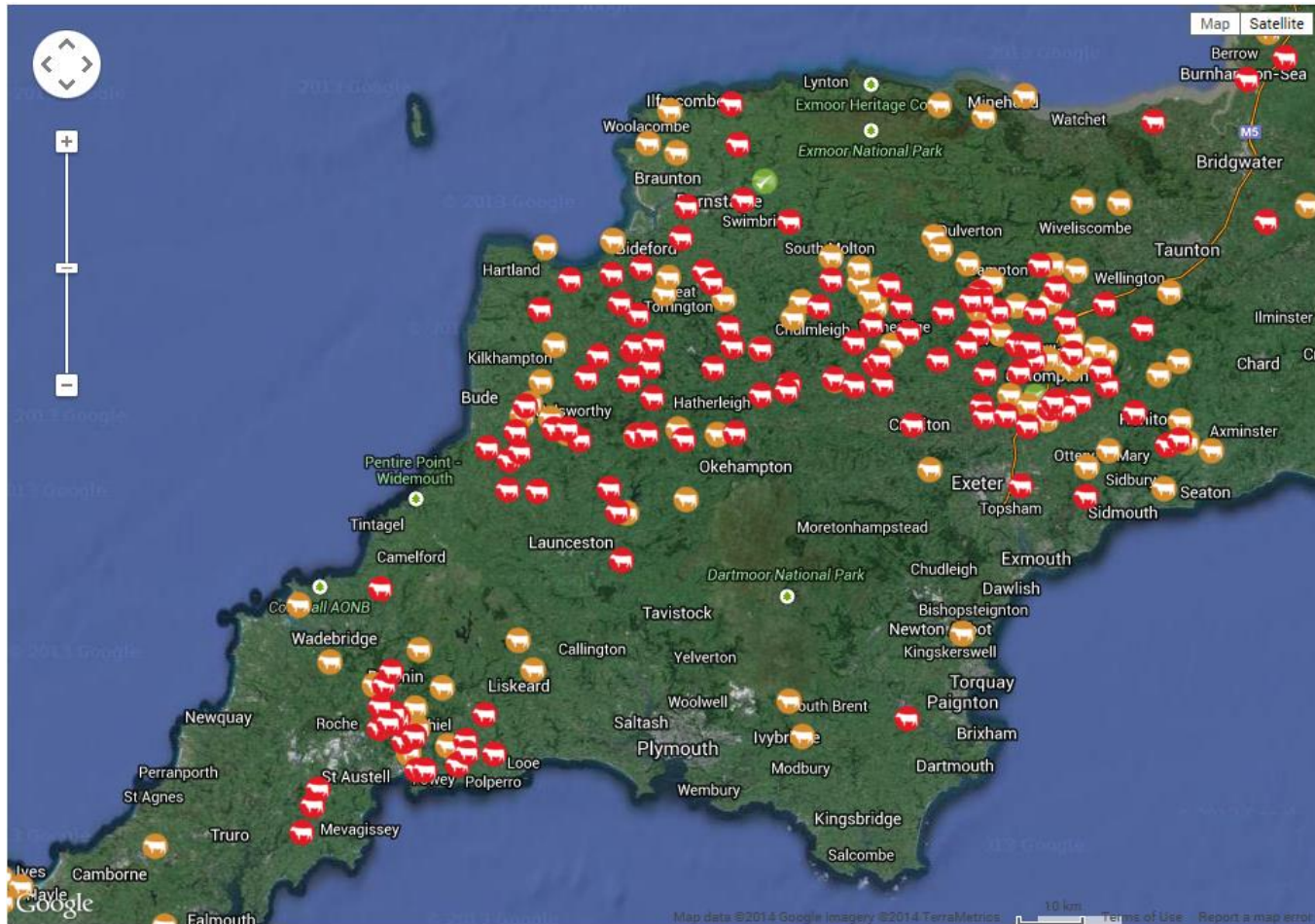
Home Health Records Tasks Resources Settings

Biosecurity Manager

Section		Risk Status
General		
Cattle		Red - high risks
People		Amber - moderate risks
Objects		Amber - moderate risks
BVD		
Entry		Red - high risks
Spread		Red - high risks
IBR		
Entry		Amber - moderate risks
Spread		Unknown - high or unknown risks
TB		
Entry		Green - low risks
Spread		Unknown - high or unknown risks
Johne's		
Entry		Green - low risks
Spread		Red - high risks

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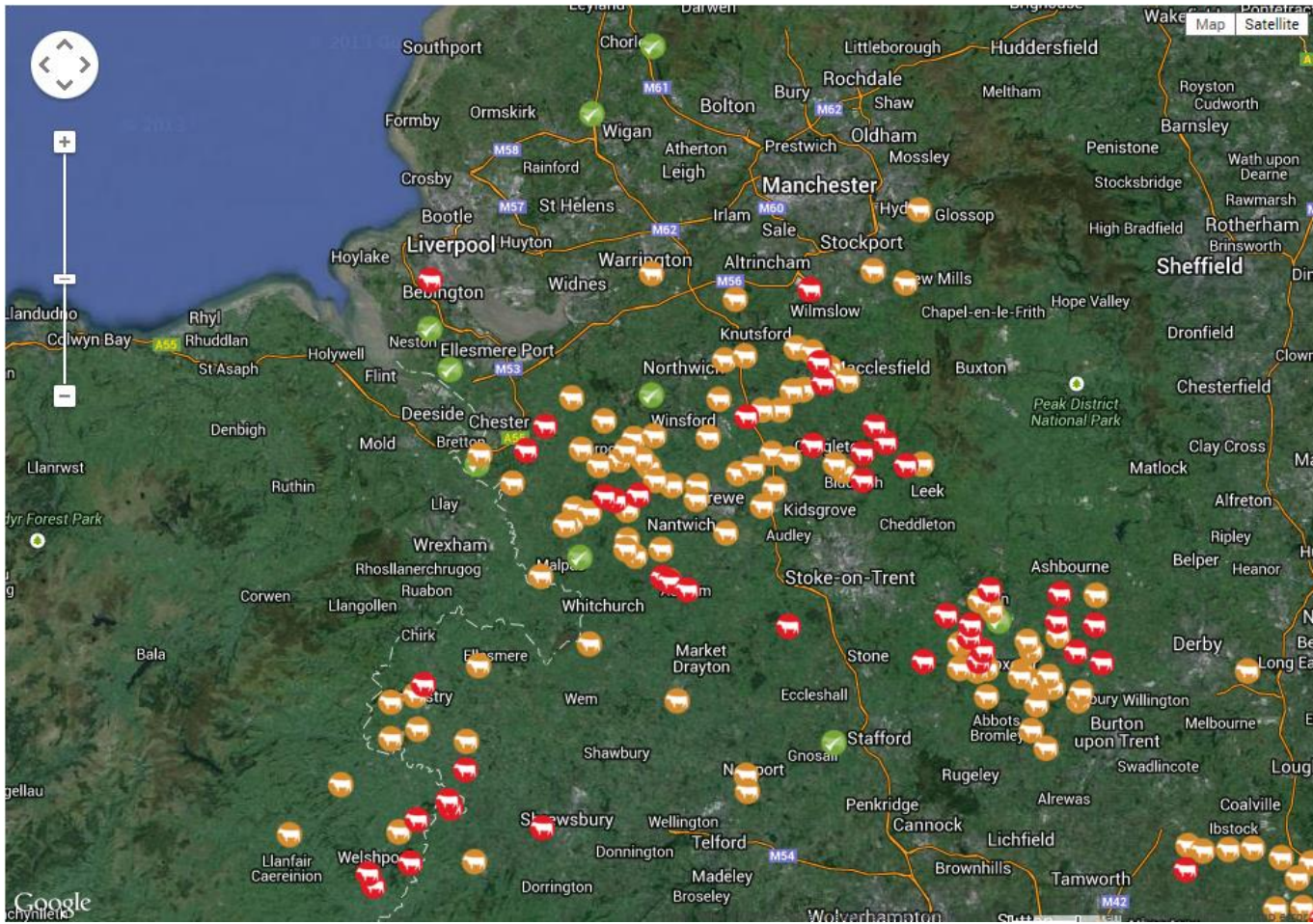
bTB Biosecurity risk status all herd types October 2014



Mapping of risks

- Mapping of disease incidence by region monitors history, but mapping of disease risk monitors the future!
- To be useful, risks need to be tracked on a farm by farm basis not by region. High risk farms exist in Low risk Areas and vice-versa.
- Mapping of risks is more productive as this allows herds to be identified before infection arrives, and help provided to prevent infection – “predict and prevent”
- In High Risk areas there will be low risk farms
- More information is required to know the relative importance of the risks for entry.
- This could be calculated retrospectively using the Myhealthyherd database

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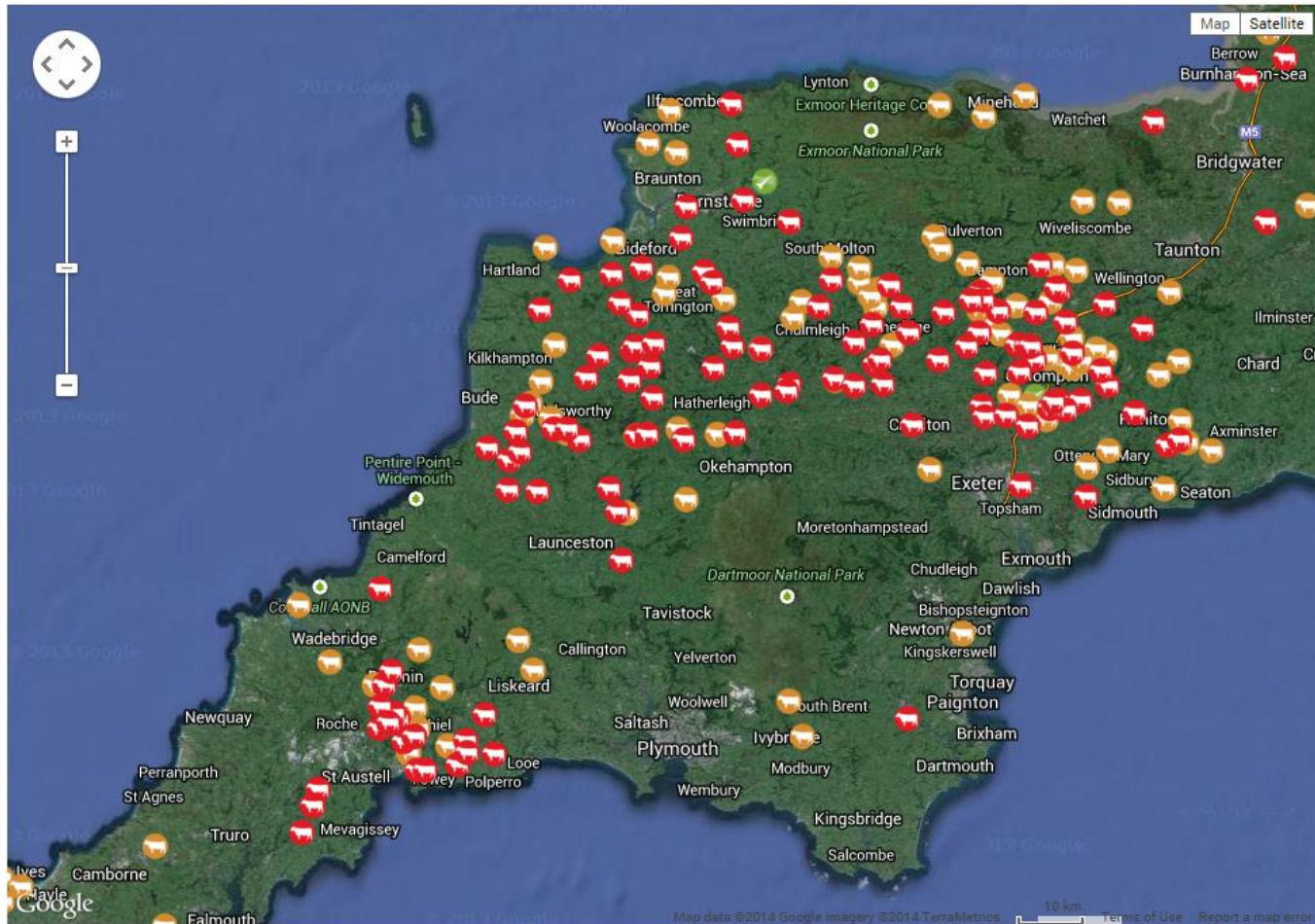
Cheshire Risks

- Risk profiling of Cheshire herds reveals a more intermediate risk of entry profile
- Further work would be required to tease out the variance of risk factors between herds/ regions to help guide regional control engagement plans

Cumbria Risk

- The risk profile for Cumbria shows many green herds with considerably lower risk profiles
- However there are red herds within them
- These herds should have more robust surveillance and or management programs to ideally prevent infection or if that fails identify infection early

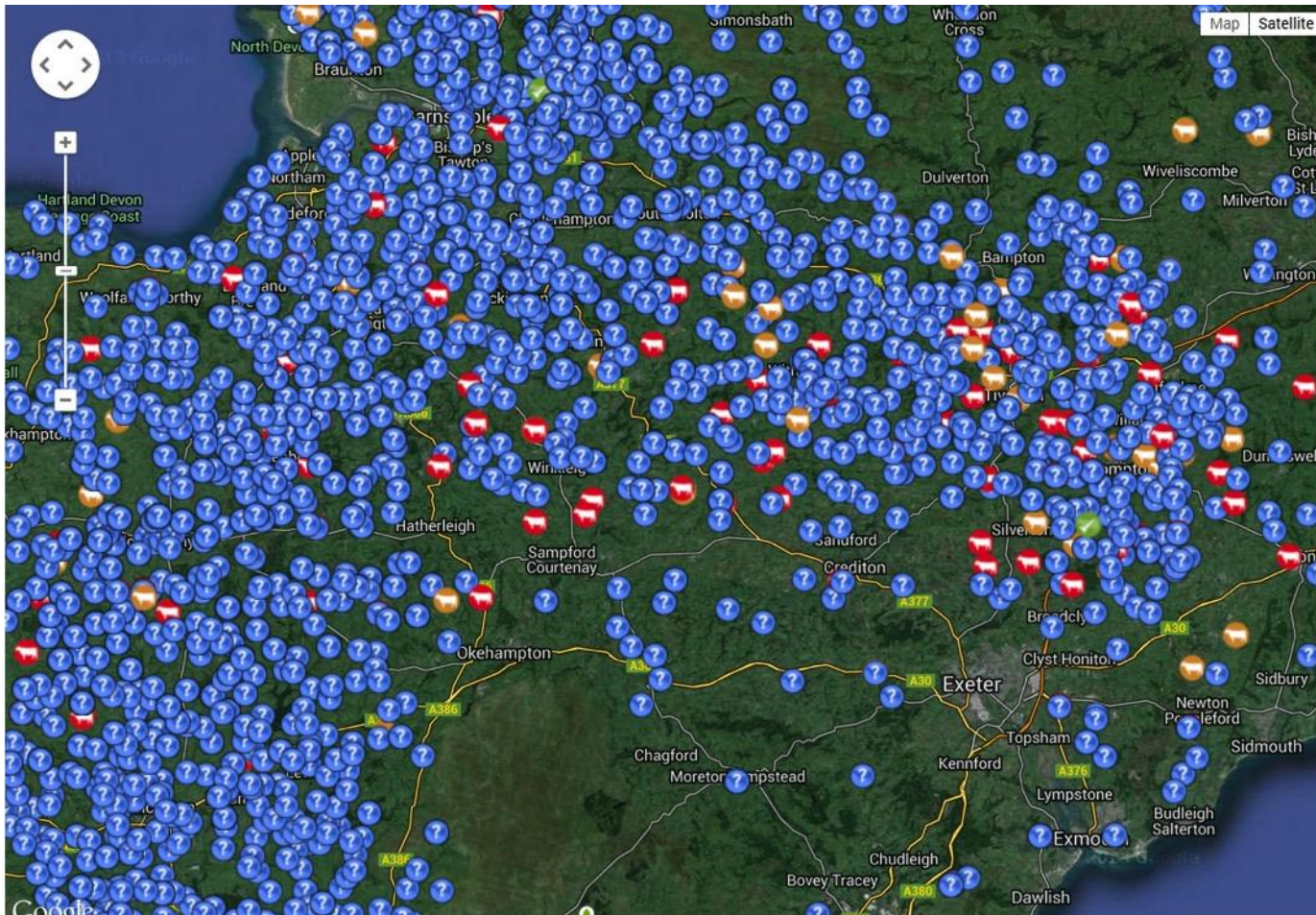
bTB Biosecurity risk status all herd types October 2014



All herd types risks

- Even in high risk areas there are low risk farms
- What can we learn from them?
- How can we protect the test negative herd better?
- Does effective biosecurity in the absence of wildlife controls work in high risk areas?

bTB Biosecurity risk status: all herd types October 2014 Including unknowns



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Unknown risks

- To establish a platform of Risk base trading you need to establish your own risk and status
- Combining these profiles would allow the ranking of herds and facilitate trade along a risk gradient
- This would be popular and effective and would be more supported than regional blocks on trade or other such crude measurements disease status based on historic surveillance alone (which is an unreliable measure if taken in isolation of the biosecurity risks on the farm)
- Risk based trading must allow reasonable trade whilst minimising overall bTB spread and prevalence.

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Where would you start?

Identify lower risk areas,
target the high risk herds,
protect the un-infected and
provide incentives to
improve risk profiles



“Know your risks and know your status – control infection and prevent bTB. Take control and manage bTB.”
Unfortunately, the wildlife risk cannot be ignored, and may overwhelm the controllable risks

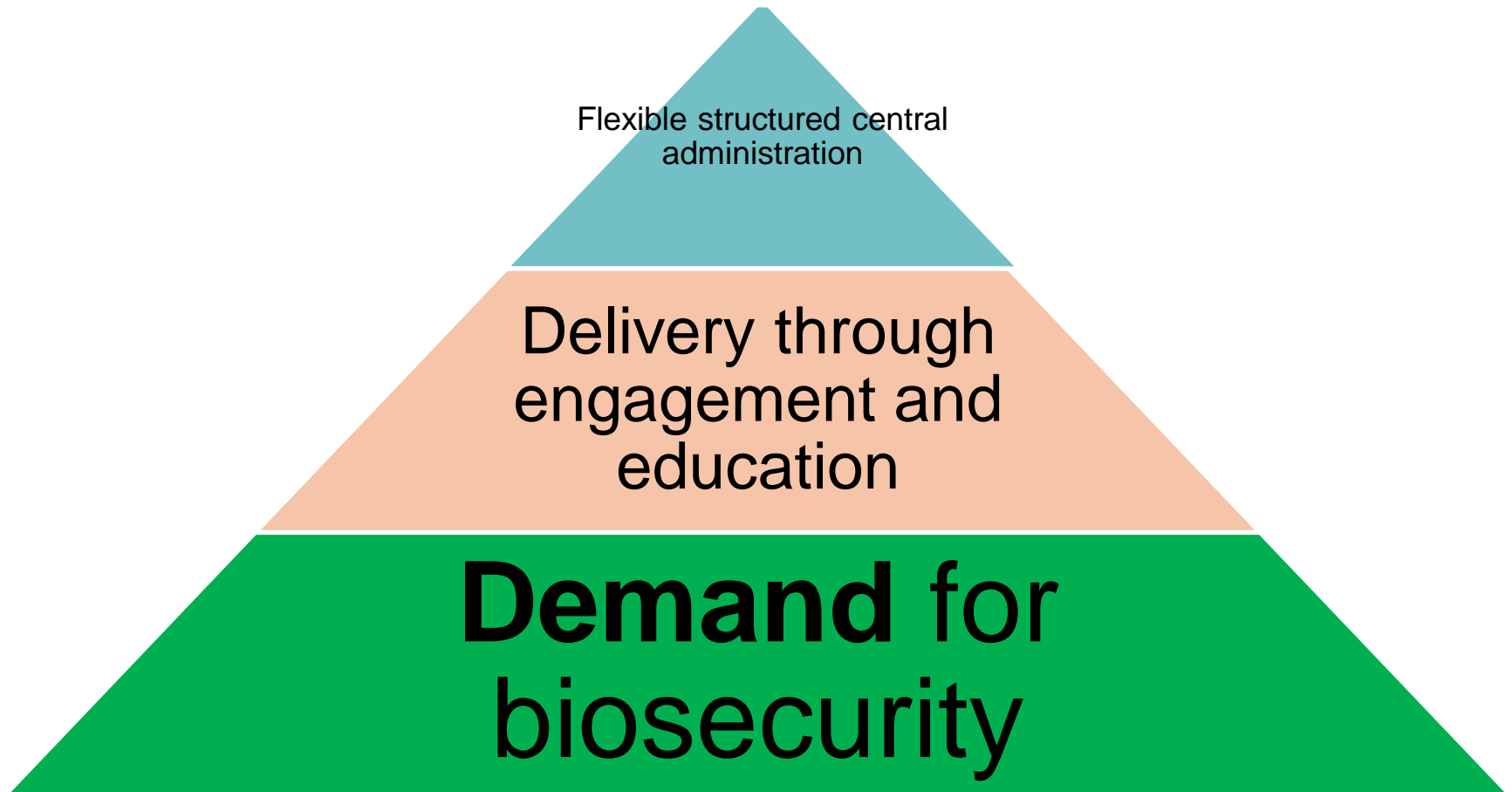
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HOW COULD MYHEALTHYHERD APPROACHES HELP WITH BOVINE TB?

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Structured biosecurity and risk management must be driven from farmers, delivered by educated and engaged vets, and properly administered: eg SW HLI





The Strategy for achieving Officially Bovine Tuberculosis Free status for England –

Myhealthyherd could help see highlighted sections

April 2014

- Contain bTB in the high risk area and progressively reduce its spread, thereby increasing the number of bTB-free herds
- Maintain the commercial viability of herds in the high risk area
- Maintain consumer confidence and exports without undermining the detection and control of bTB
- Reduce the risk of spread of the bTB to currently free areas
- Rapidly find and eliminate bTB wherever it occurs
- Reduce and eliminate the spread of TB from badgers
- Identify and apply management practices that minimise transmission risk within herds
- Deploy market measures, regulation, incentives and deterrents to reduce the risk of disease spread due to movements.



Potential uses of Myhealthyherd for bTB

- As an independent tool to help farmers/ vets make the right decisions.
- Field research. Gathering complex risk data for further research purposes helping us understand the disease better
- Creating practical comprehensible risk profiles for herds
- Platform for development of Risk Based Trading
- Defining surveillance plans based on risks
- Context based knowledge hub providing up to date knowledge on bTb
- Helping farmers with effective control planning using best practice
- Mapping and tracking of risks using “predict and prevent” methodologies

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Do we have a bTB engagement program? Should we have one?

