



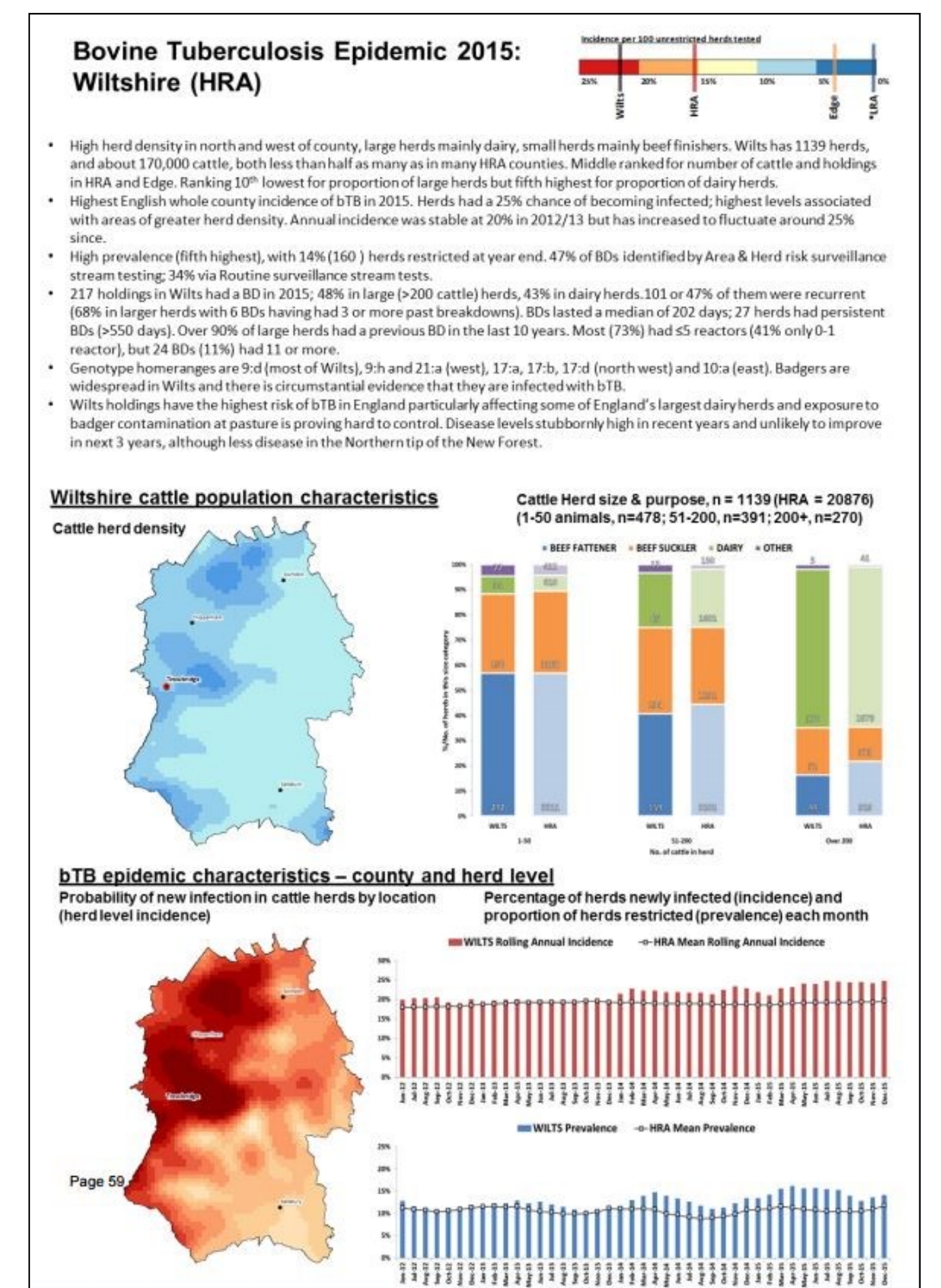
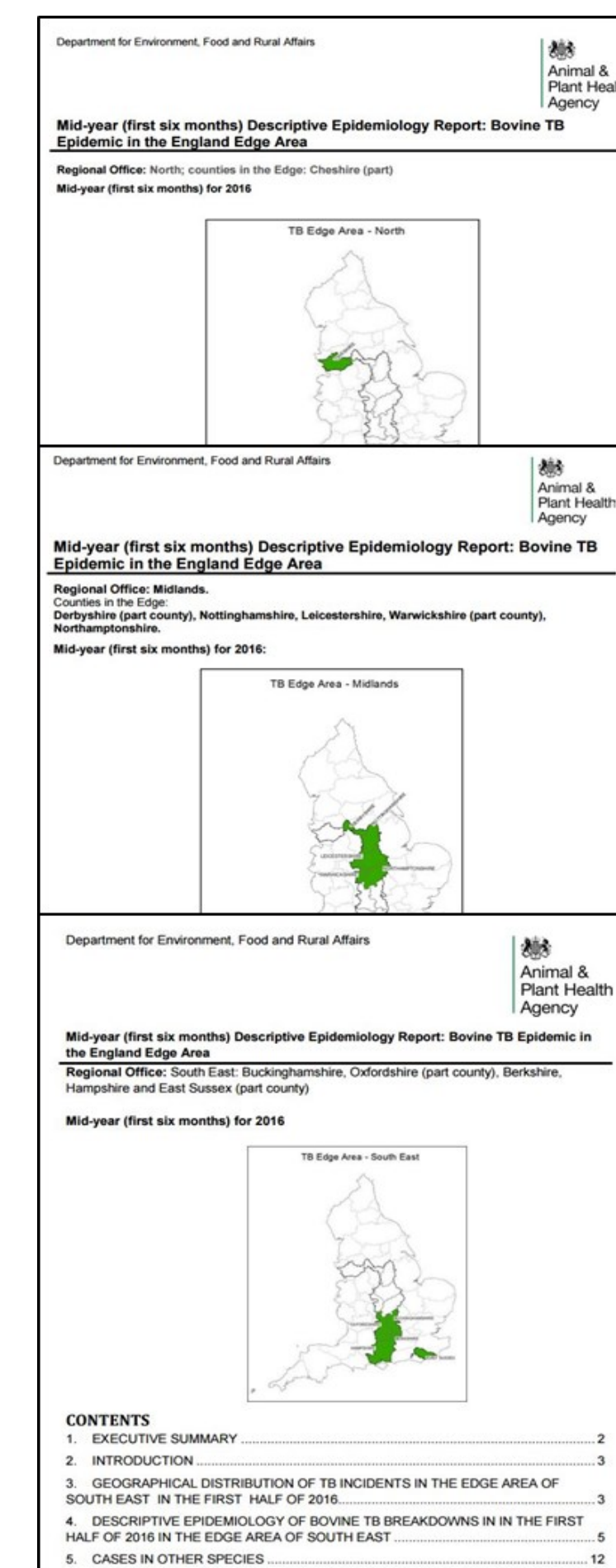
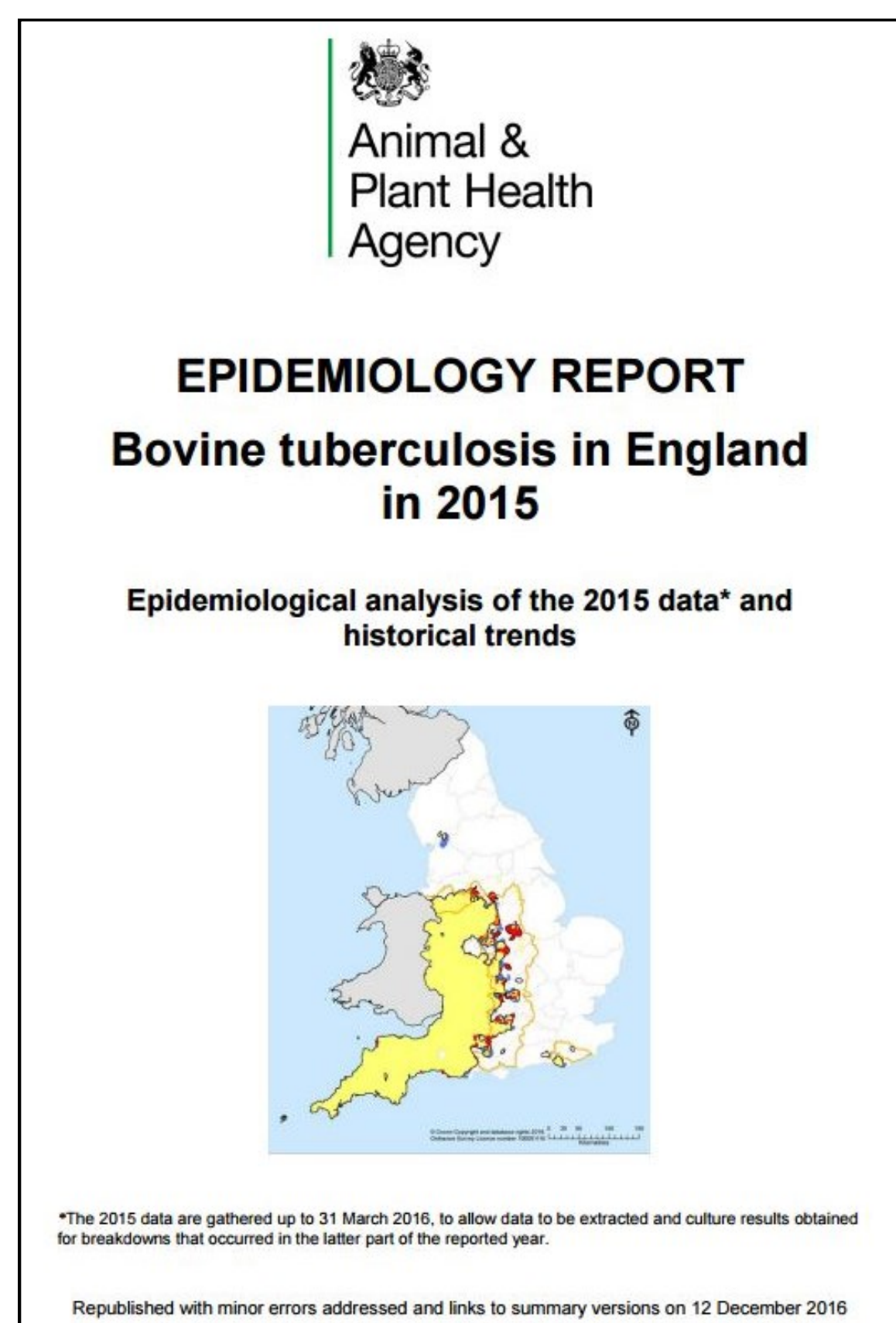
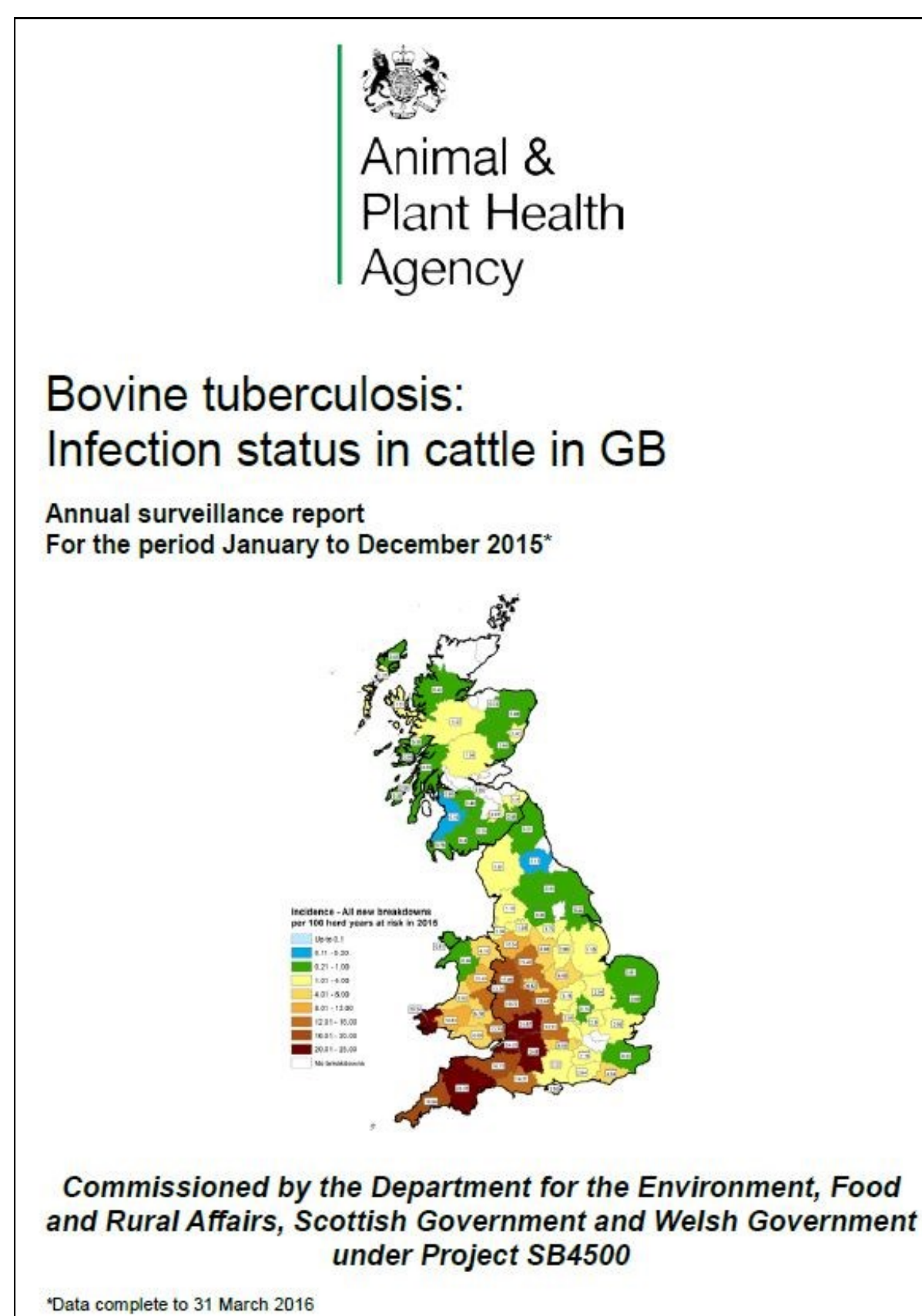
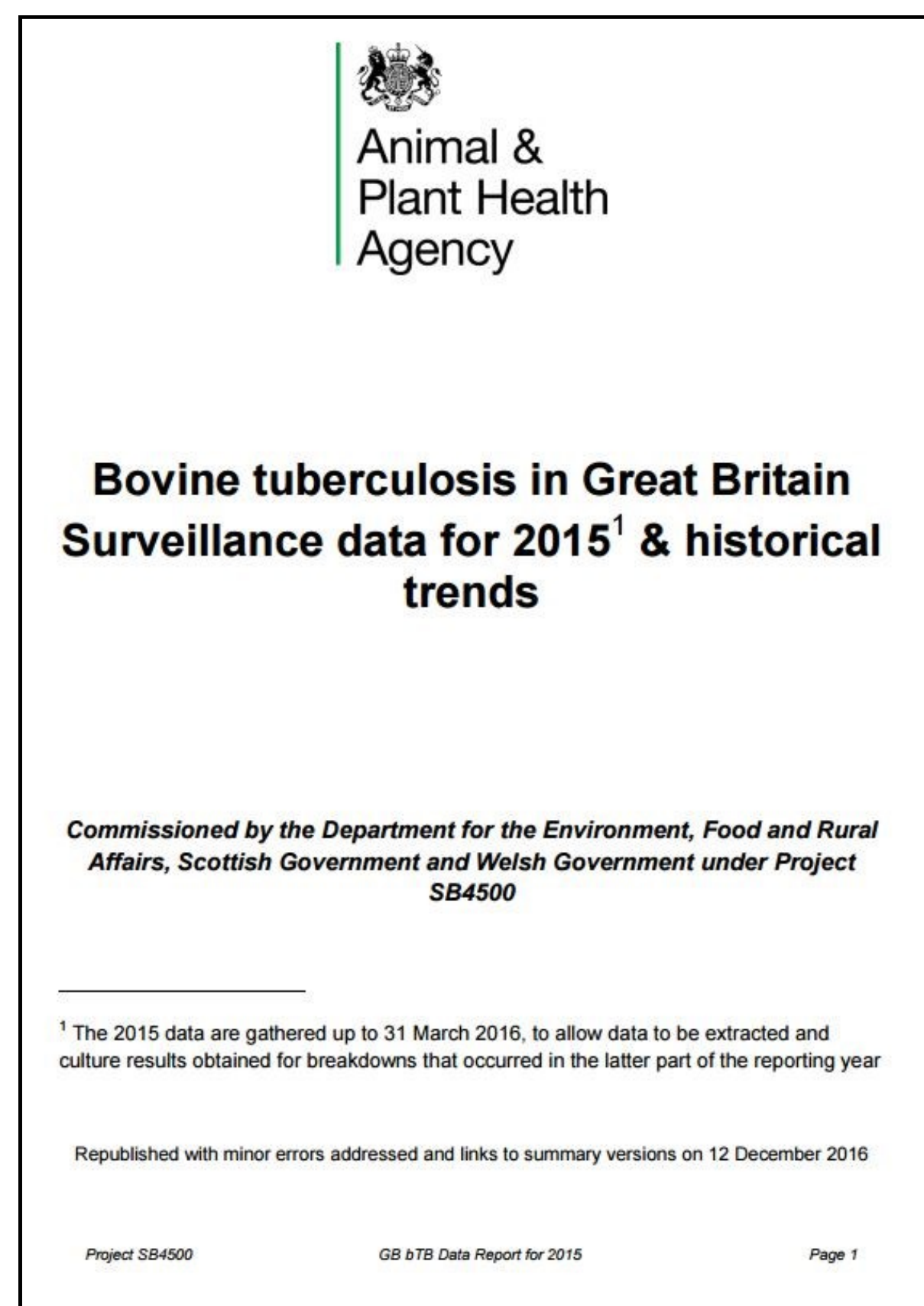
# ENHANCING UNDERSTANDING OF BOVINE TB (bTB) EPIDEMIOLOGY IN GB - PROGRESS

## bTB Epidemiology Enhancement project (TBEEP, May'15) & Epi Assessment Centre (EAC, July'15)

TBEEP was established to design and implement improvements to Animal and Plant Health Agency (APHA) investigation of bTB infection on farms, and to the analysis and control of the bTB epidemic at regional and cluster level. The establishment of a bTB Epidemiology Assessment Centre (EAC) was part of this project and aims to improve understanding at county and farm level to enable better targeted interventions to reduce exposure, enable earlier detection and limit on-farm and geographical spread. This poster updates the poster shown here, presented at SVEPM last year. Further information about the new policy measures described in this poster can be seen on bTB hub: <http://www.tbhub.co.uk/tb-policy/england/>.

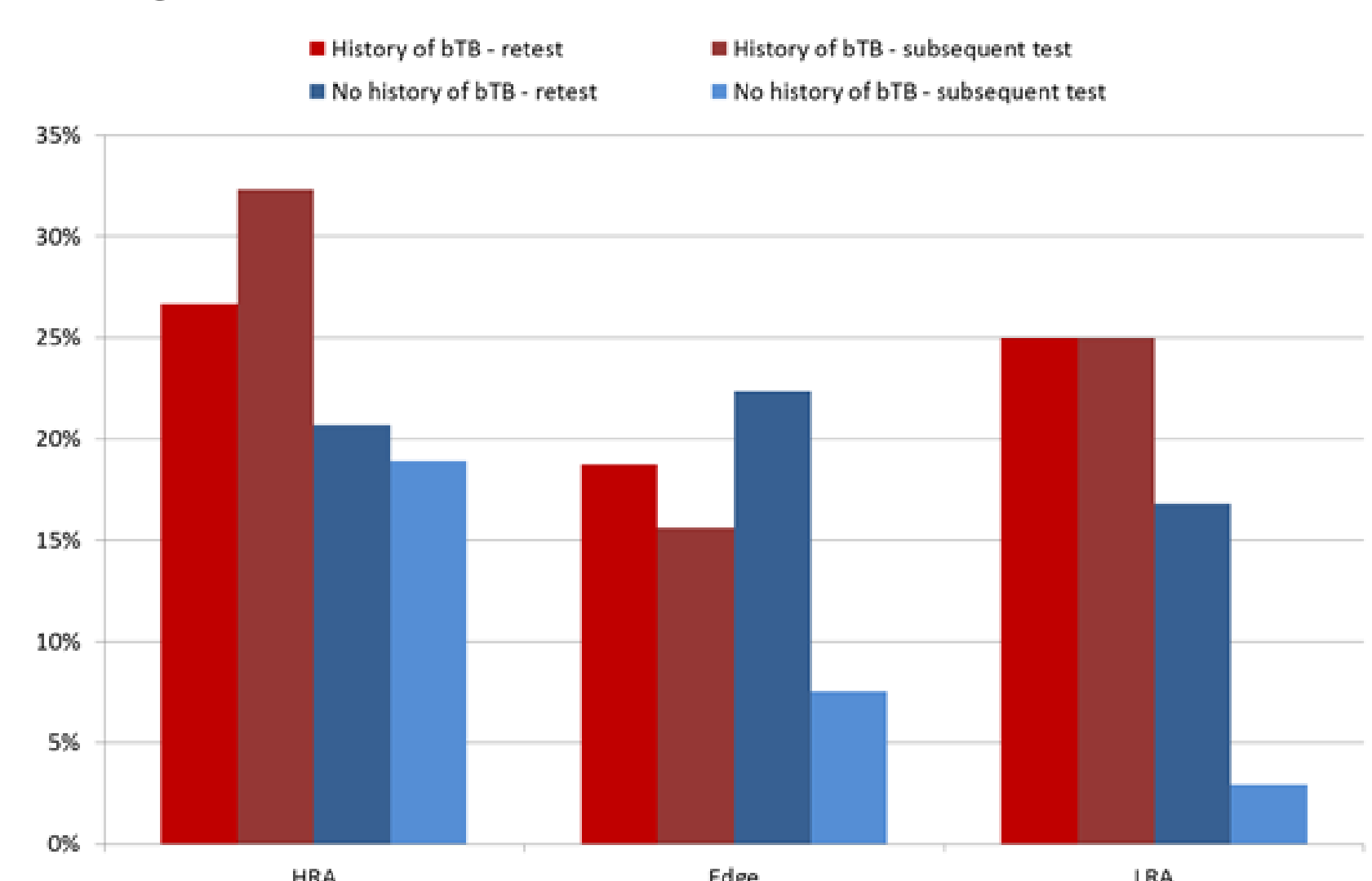
### Progress with bTB epidemiology reporting

Reports for England and GB are published on the GOV.UK website (search on *Bovine TB epidemiology and surveillance in Great Britain*). In 2016 the bTB EAC took responsibility for them and introduced revised formats that focused on epidemic behaviour in light of policy and controls, provided summary sections, and collated all GB bTB data in a single report. New sections provided separate reports & data for each county in the Edge and High Risk Area, enabling focus on county level parameters that can be used to demonstrate and achieve Officially bTB free status county by county as eradication progresses.



### Inconclusive reactors

Cattle that have a limited reaction to the bTB skin test are called 'inconclusive reactors' (IRs) and herds with only IRs have not been subjected to the controls applied to herds designated as infected due to the presence of 'reactor' animals (full reaction to the skin test). However analysis shows herds that contain such cattle have a high likelihood of being designated infected in the subsequent 12-18 months, as IRs have a high likelihood of being infected at the time of first detection.



Proportion of IR-only herds going on to have a breakdown in 2015 at retest/next test

Policy measures to reduce the risk from IRs are being introduced in England from April 2017, following which all IRs in the HRA and Edge Area (and in bTB breakdown herds in the Low Risk Area) that have a negative result on re-testing will remain restricted for the rest of their life to the holding in which they were identified.

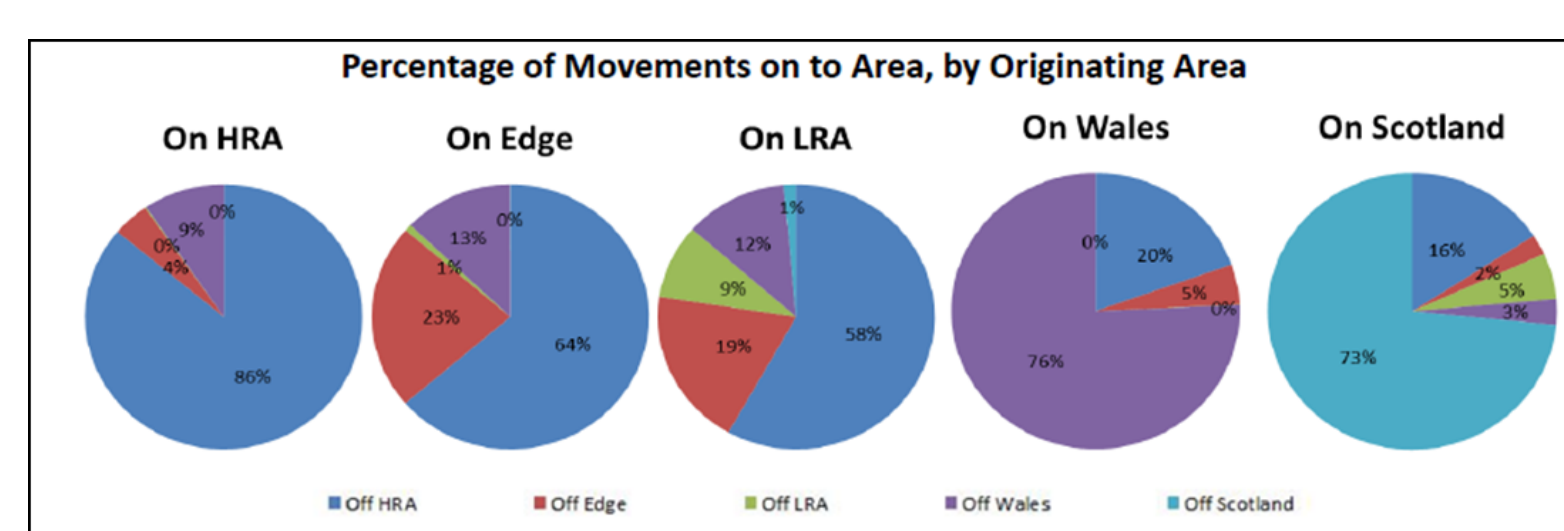
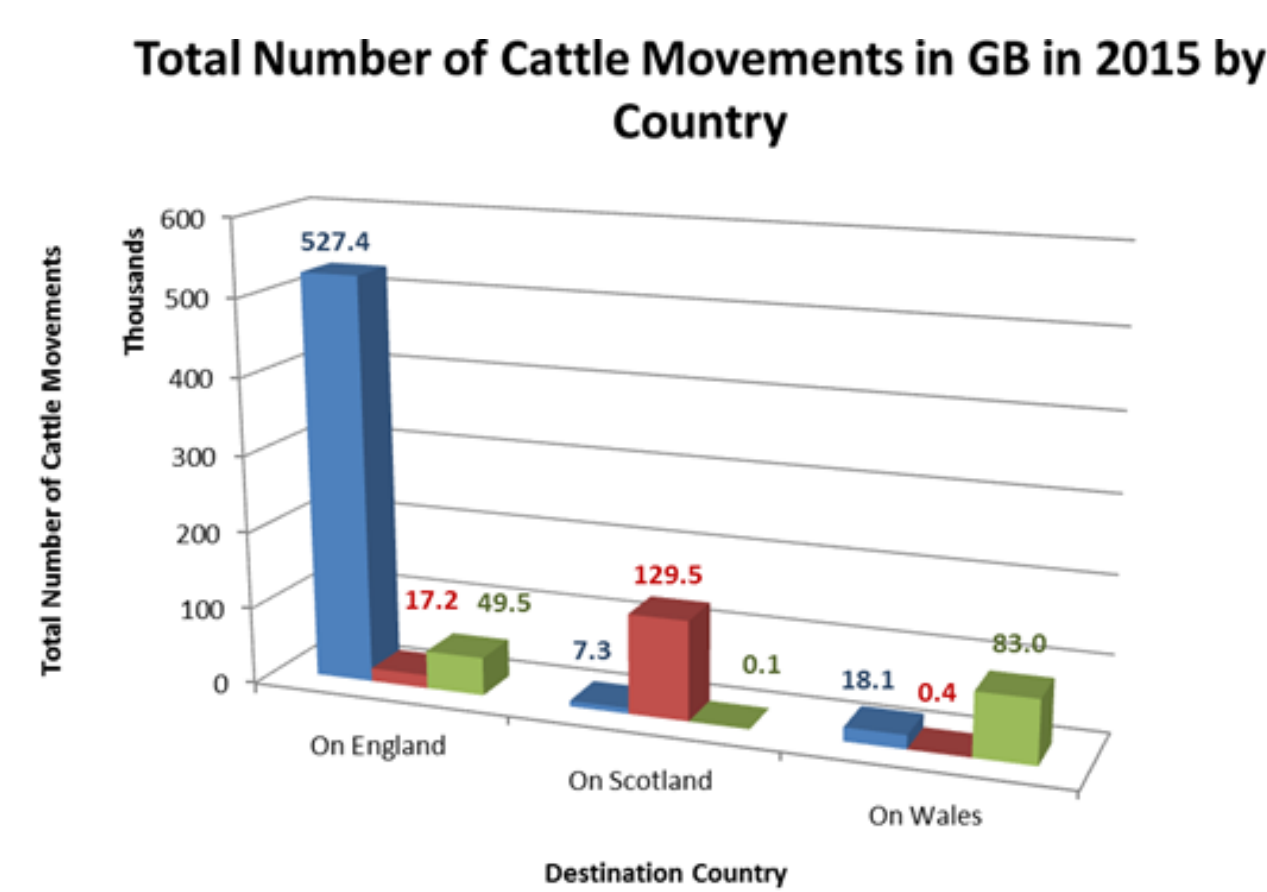
Further analysis of the fate of IRs themselves (rather than their herd) will be explored by an MSc project in the summer.

### Farm-level risk characterisation

Improved bTB epidemiological information on farm level risk for policy decision-makers and herd owners.

#### Cattle movements

While the vast majority of movements take place between farms within each area (country and surveillance risk area), there are interesting variations as the graph shows below. Establishing what the contribution of local movements is to the epidemiology of bTB in an area is challenging, as they share the same characteristics as local infection acquired from neighbouring cattle and badgers, and analysis is ongoing.

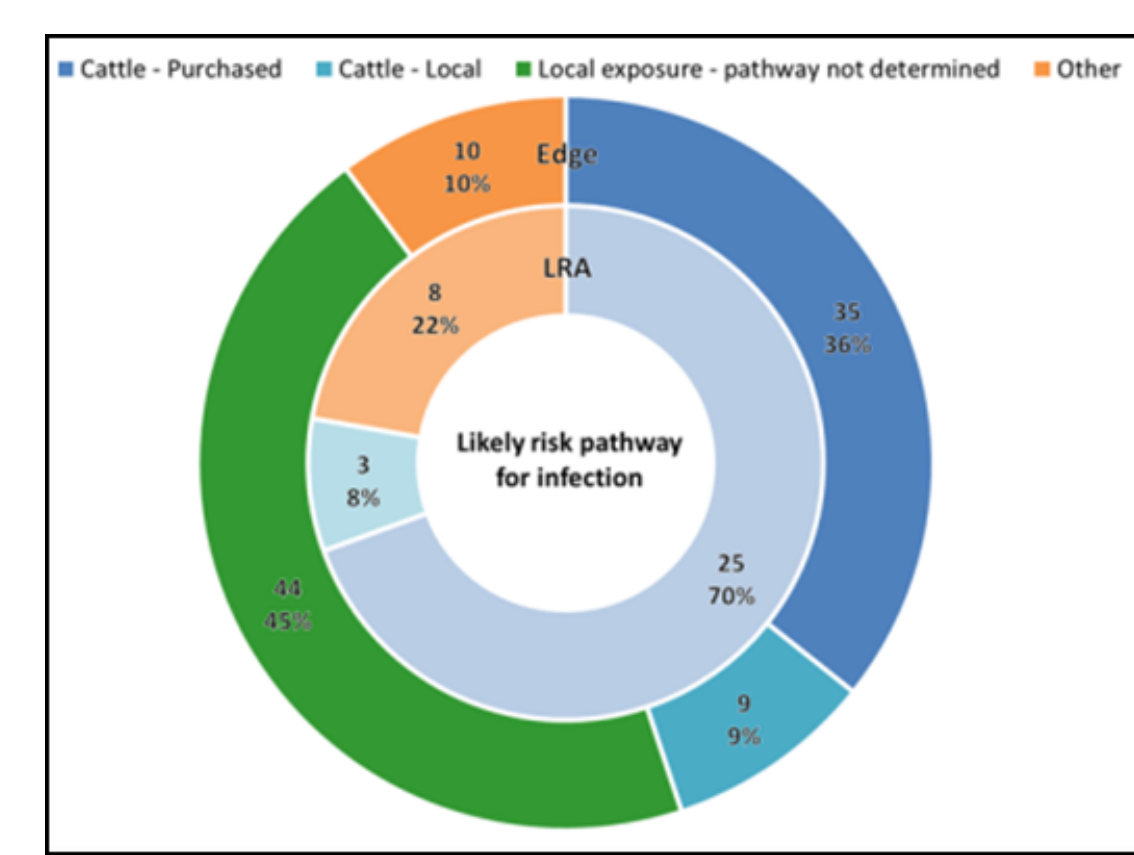


Responsible trading between farms is crucial in disease control. The government introduced post-movement testing in April 2016 to further protect the LRA and the CHeCS bTB Herd Accreditation programme launched in November 2016 includes measures to limit spread through movements.

### Source & route of infection

The capture of more explicit risk pathway data to understand the route of transfer of infection between cattle, or between badgers and cattle, is an initiative of TBEEP.

Early analyses of Edge and Low Risk Area data are shown below and highlight the high proportion in these areas where cattle to cattle transmission is important. It is likely that substantial numbers of cases are due to local cattle movements but data to date cannot differentiate the likely origin of locally derived infection.



Risk pathway for infection for selected breakdowns in 2015 in the Edge (outer ring, n=98) and LRA (inner ring, n=36). (Note: 'Local exposure' includes both badger and cattle sources)

New policy measures to reduce the risk of cattle to cattle infection will come into effect from April 2017 and include wider use of gamma interferon testing in the HRA, where there is evidence of cattle to cattle transmission, repeated skin testing has failed to resolve a breakdown or where there has been at least 2 years of licensed badger control.

The EAC is now designing an approach to make best use of the newly captured source of infection data to enable estimation of the attributable risk to different pathways by which infection may enter a herd.