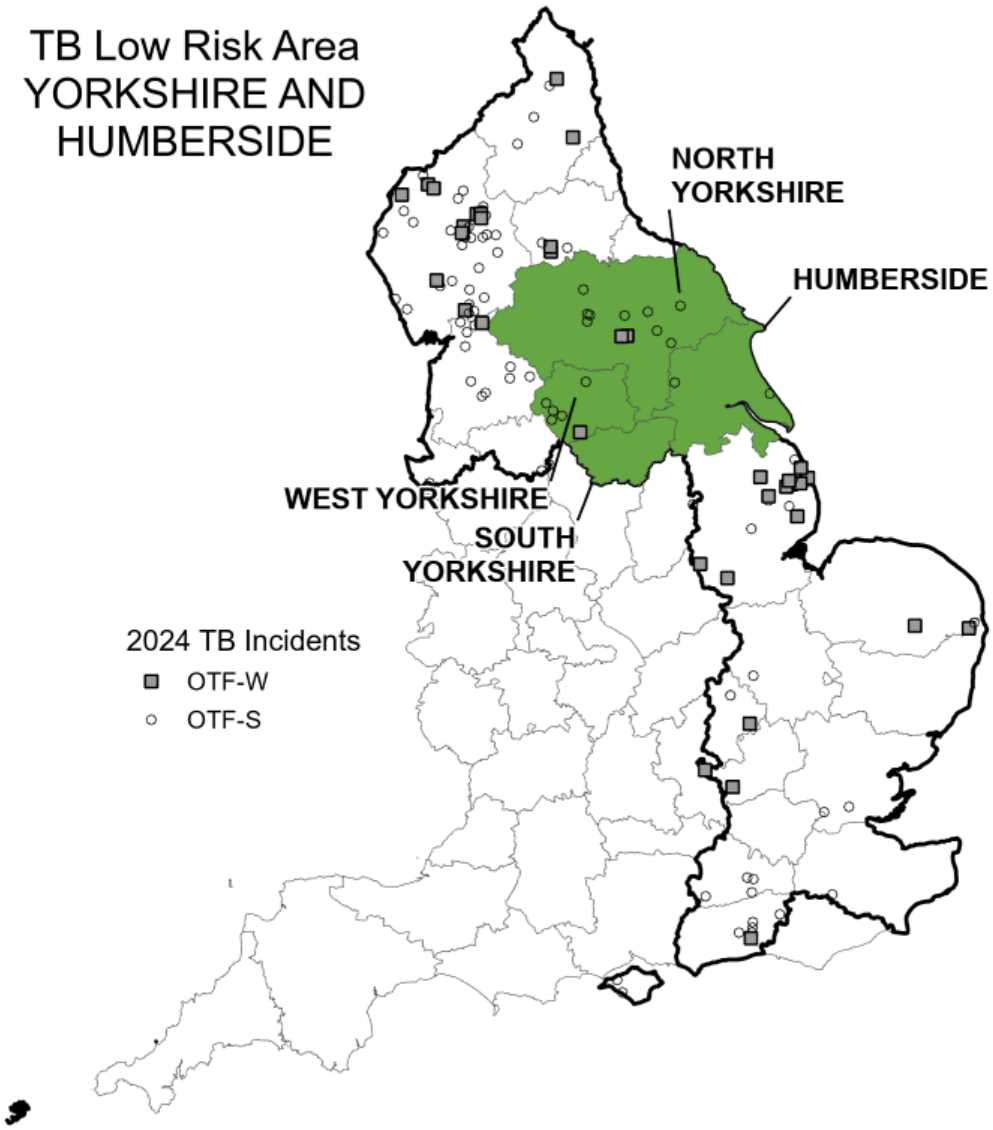
Animal & Plant Health Agency

Year End Descriptive Epidemiology Report: Bovine TB in the Low Risk Area of England 2024: Yorkshire and Humberside



Contents

Introduction

The Low Risk Area (LRA) was established in 2013, along with the Edge and High Risk Areas of England. In 2014 the 3 bovine tuberculosis (TB) risk areas were incorporated into the UK government's strategy to achieve Officially TB Free (OTF) status for England by 2038. A key action was to recognise the different levels of TB in different parts of the country and to adjust the approaches to TB surveillance and control in each risk area accordingly. Overall, the LRA has a very low and stable incidence of TB infected herds. The current strategy for the LRA seeks to mitigate the risk of TB incursions via cattle movements and rapidly contain and eradicate any new foci of infection through:

- mandatory pre- and post- movement testing of cattle entering the LRA from higher risk areas of the UK
- more sensitive testing of infected herds
- temporarily enhanced TB surveillance (radial and hotspot testing) in the vicinity of herds experiencing lesion and/or PCR (Polymerase Chain Reaction) test (or culture) positive incidents of TB

The aim of this combination of measures is to preserve the favourable disease status of this area of England so that its constituent counties can be declared OTF as soon as possible.

This report describes the frequency and geographical distribution of TB in 2024 in cattle herds in the Yorkshire and Humberside region, which is part of the LRA. This region includes 4 counties: North Yorkshire, Humberside, South Yorkshire and West Yorkshire. In 2024, 15% of all new TB incidents in the LRA were detected in Yorkshire and Humberside.

TB in cattle and other mammals is primarily caused by infection with the bacterium Mycobacterium bovis (M. bovis) and the disease is subsequently referred to as 'TB' in this report. Although other sources may refer to TB 'breakdowns', this report will use the term 'incidents' throughout.

This report is intended for those involved in the control of TB, both locally and nationally. This includes, but it is not limited to:

- cattle farmers
- private veterinarians
- government
- policy makers
- the scientific community

Details of the data handling methodology used in this report, a glossary of terms, and the TB control measures adopted in the LRA, can be found in the explanatory supplement for the annual reports 2024.

Classification of TB incidents

Unless otherwise specified, this report includes all new TB incidents detected during the reporting period (1 January to 31 December 2024). This includes both 'Officially Tuberculosis-Free Status Withdrawn' (OTF-W) and 'Officially Tuberculosis-Free Status Suspended' (OTF-S) incidents.

OTF-W incidents are those involving the detection in the affected herd of at least:

- one reactor (positive animal) to the Single Intradermal Comparative Cervical Tuberculin (SICCT) test, or a positive animal to the supplementary interferon gamma (IFN-γ) blood test, with typical lesions of TB identified at post-mortem (PM) meat inspection, or
- one animal (such as a skin test reactor, IFN-γ test-positive animal, or slaughterhouse case) with M. bovis-positive polymerase chain reaction (PCR) test (or bacteriological culture) results in tissue samples collected from carcases during the PM inspection

OTF-S incidents are triggered by reactors to the skin test (or IFN-γ test-positive animals), but without subsequent detection of TB lesions or positive PCR test (or culture) results in any of those animals.

Cattle herds can also have their OTF status suspended without necessarily experiencing a TB incident if, for instance, a TB test becomes overdue, or pending laboratory tests of suspected cases of TB reported at routine post-mortem meat inspection during commercial slaughter of cattle.

In Yorkshire and Humberside there were 32 Licensed Finishing Units (LFUs) active during 2024 (25 in North Yorkshire, one in Humberside and 6 in South Yorkshire). There were no new TB incidents, and one incident which closed in LFUs in 2024. Incidents in LFUs are excluded from the numbers presented in this report due to the limited epidemiological impact of these incidents.

Cattle industry

In 2024, there were 4,584 active cattle herds in Yorkshire and Humberside (Appendix 1, Table 1), of which 61% were in North Yorkshire. Despite the overall number of cattle in this region remaining stable over the previous 3 years, the number of active herds decreased by 2% compared to 2023, by 5% compared to 2022, and by 4% compared to 2021. Although this implies a trend towards fewer, larger herds, small holdings with fewer than 50 animals remained the most common herd structure across all counties in the region. In all the counties and subregions, beef animals predominated, ranging from 65% to 85% of the total cattle population, whereas dairy animals accounted for 12% to 32%, as shown in Appendix 1.

There were 4 TB approved livestock markets operating across the region in 2024, all in North Yorkshire. A total of 32 LFUs were operating across Yorkshire and Humberside in 2024: 25 in North Yorkshire, one in Humberside, and 6 in South Yorkshire. This was an increase from 27 in 2023.

There was one slaughterhouse (SLH) in North Yorkshire contracted by Animal and Plant Health Agency (APHA) in 2024 to process cattle removed from farms for TB control reasons.

Appendix 2 provides a summary of headline cattle TB statistics in Yorkshire and Humberside.

Number of new TB incidents

A total of 19 new TB incidents were disclosed across the Yorkshire and Humberside region during 2024 (3 OTF-W and 16 OTF-S) (Figures 1a to 1d). This was almost half the number of incidents disclosed in the previous year (14 OTF-W and 22 OTF-S). It is not clear why there was a marked reduction in 2024.

Review of the data shows that in North Yorkshire, 10,000 fewer cattle were tested in 2024 compared to 2023, despite the number of herds being tested being approximately the same. This could imply that smaller and potentially less risky enterprises were being tested during the year. Another possible factor could be that several large beef producers set up APHA-approved LFUs once they had regained OTF status after a TB incident and were therefore no longer required to TB test, relying on slaughterhouse surveillance instead.

In West Yorkshire, where incidents decreased from 9 to 6, there were over 100 fewer whole herd tests carried out compared to 2024. It remains to be seen whether 2024 figures constitute the start of a declining trend, or just an artifact of the ‘temporal smoothing’ of routine TB surveillance tests in the LRA, whereby approximately one quarter of all the herds in each parish are skin tested each year. This temporal smoothing does not take into account herd type or size.

In North Yorkshire, there were 11 new TB incidents (2 OTF-W and 9 OTF-S) compared to 19 in the previous year (8 OTF-W and 11 OTF-S). Between 2018 and 2023, the number or new incidents varied slightly, ranging from 16 to 20 (Figure 1a). The 11 new incidents in 2024 represents a marked decrease and a return to the lowest number of new incidents since 2015 (11 new incidents were also recorded in 2016 and 2017).

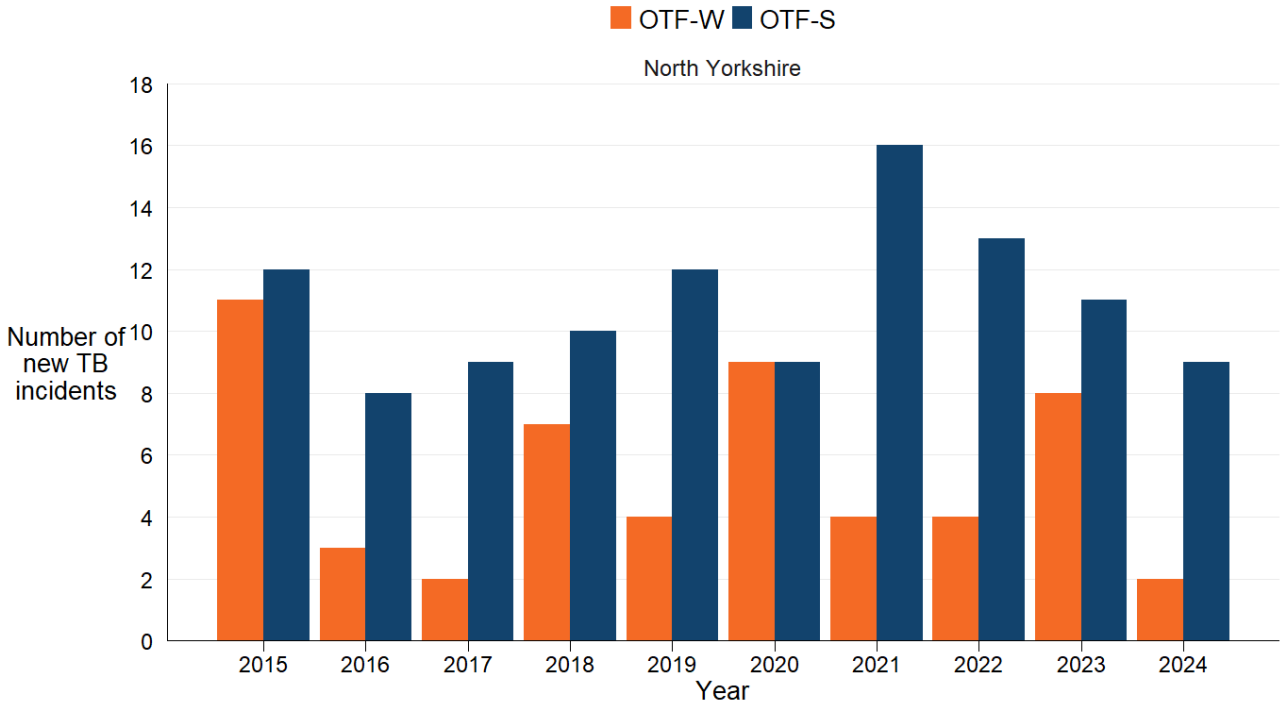


Figure 1a: Annual number of new TB incidents in North Yorkshire from 2015 to 2024.

In Humberside, the number of new incidents decreased to 2 (0 OTF-W and 2 OTF-S) compared to 5 in 2023 (4 OTF-W and 1 OTF-S). This county has typically experienced a low number of TB incidents (between 1 and 5 per year) since 2015 (Figure 1b).

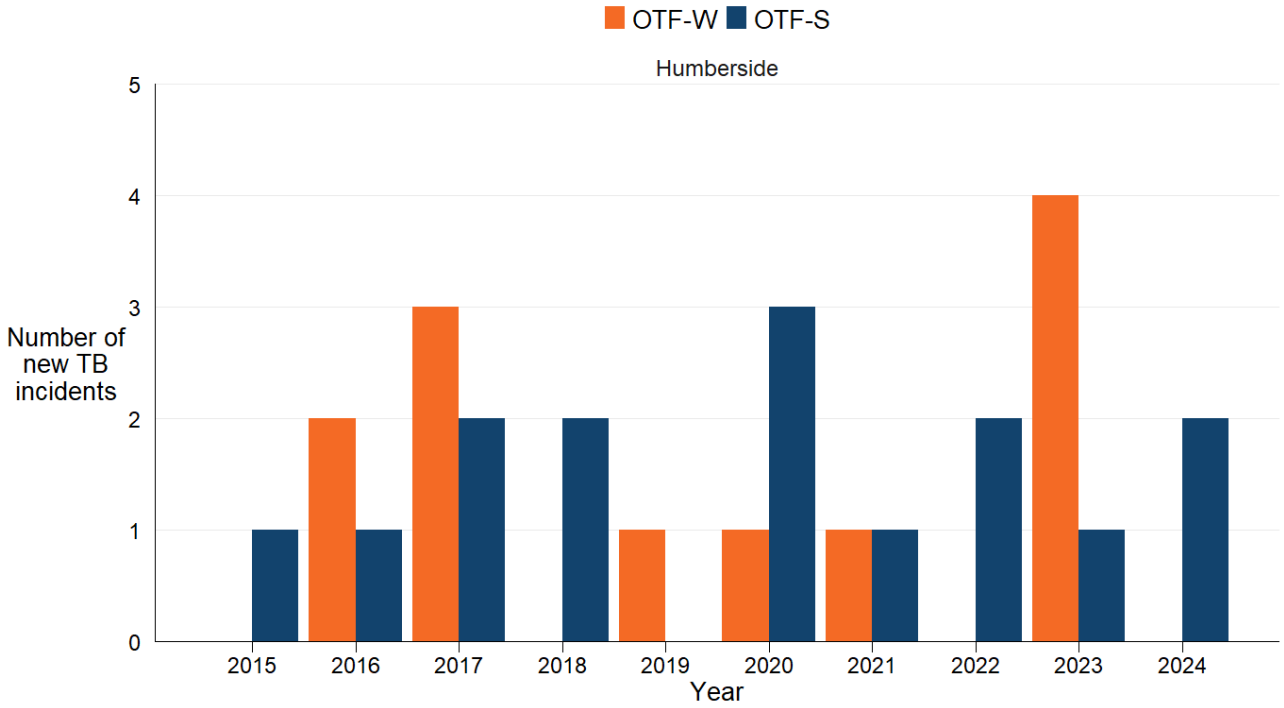


Figure 1b: Annual number of new TB incidents in Humberside from 2015 to 2024.

There were no new TB incidents in South Yorkshire in 2024, compared to one OTF-W and 2 OTF-S incidents detected the year before (Figure 1c). There has been a declining trend in this county since a peak of 10 incidents in 2019.

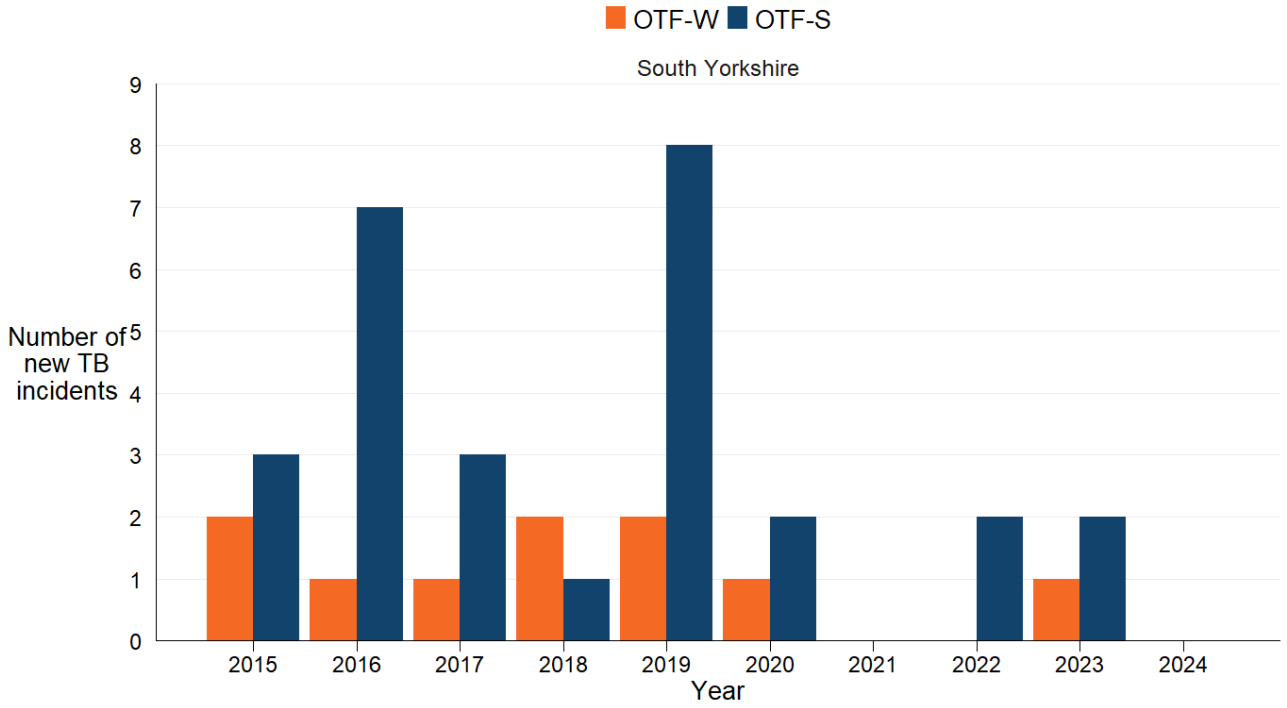


Figure 1c: Annual number of new TB incidents in South Yorkshire from 2015 to 2024.

In West Yorkshire, the number of new TB incidents decreased from 9 in 2023 (1 OTF-W and 8 OTF-S) to 6 (1 OTF-W and 5 OTF-S) in 2024 (Figure 1d). This represents the lowest number of new TB incidents since 2019, when there were 3 incidents. Between 2020 and 2023, the number of new incidents ranged between 7 and 11.

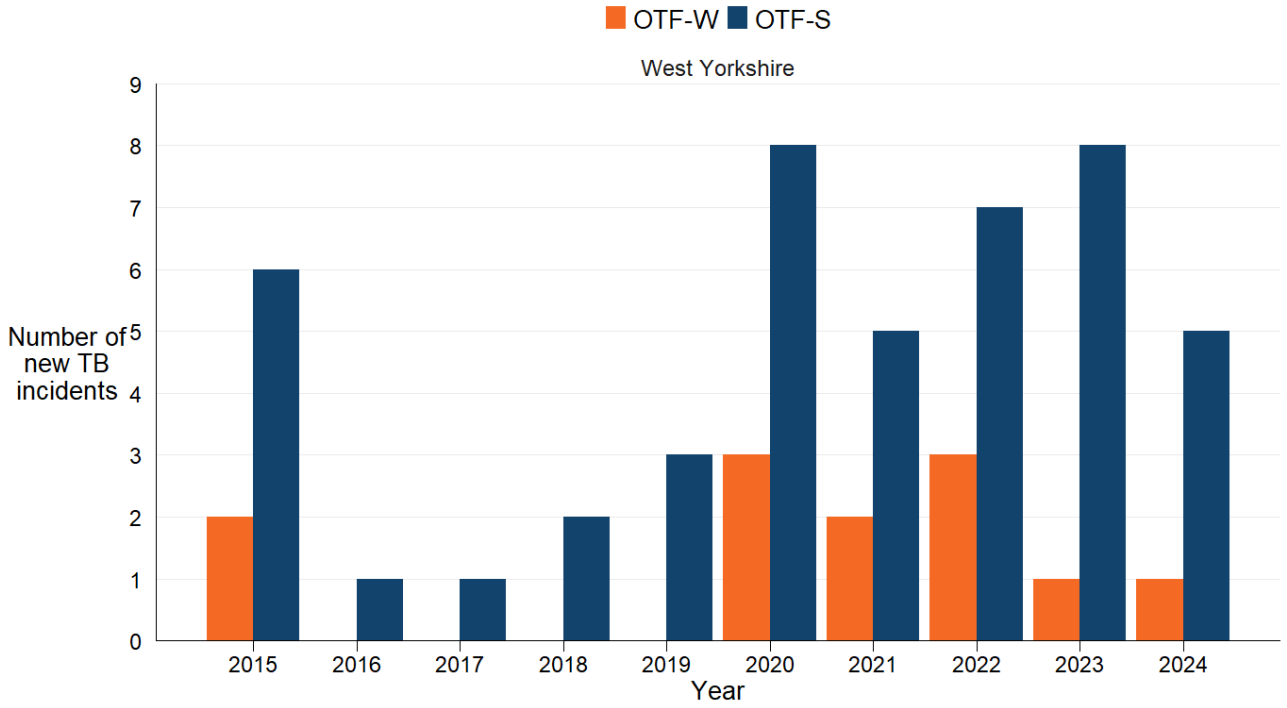


Figure 1d: Annual number of new TB incidents in West Yorkshire from 2015 to 2024.

Disclosing TB surveillance method

As shown in Figure 2, of the 19 new TB incidents in the region in 2024, targeted surveillance tests conducted around holdings affected by OTF-W incidents (commonly known as radial surveillance or ‘RAD’ testing) detected 7 new incidents. This was followed by routine herd testing, which detected 5 incidents, and post-movement testing which detected 3 incidents. Whole herd testing and 12-month (post-incident resolution) herd testing detected one new incident each. Two incidents were detected by ‘other’ tests, which includes, but is not limited to, private testing, inconclusive reactor retests, and export tests.

The distribution of disclosing test types within individual counties was largely consistent with 2023.

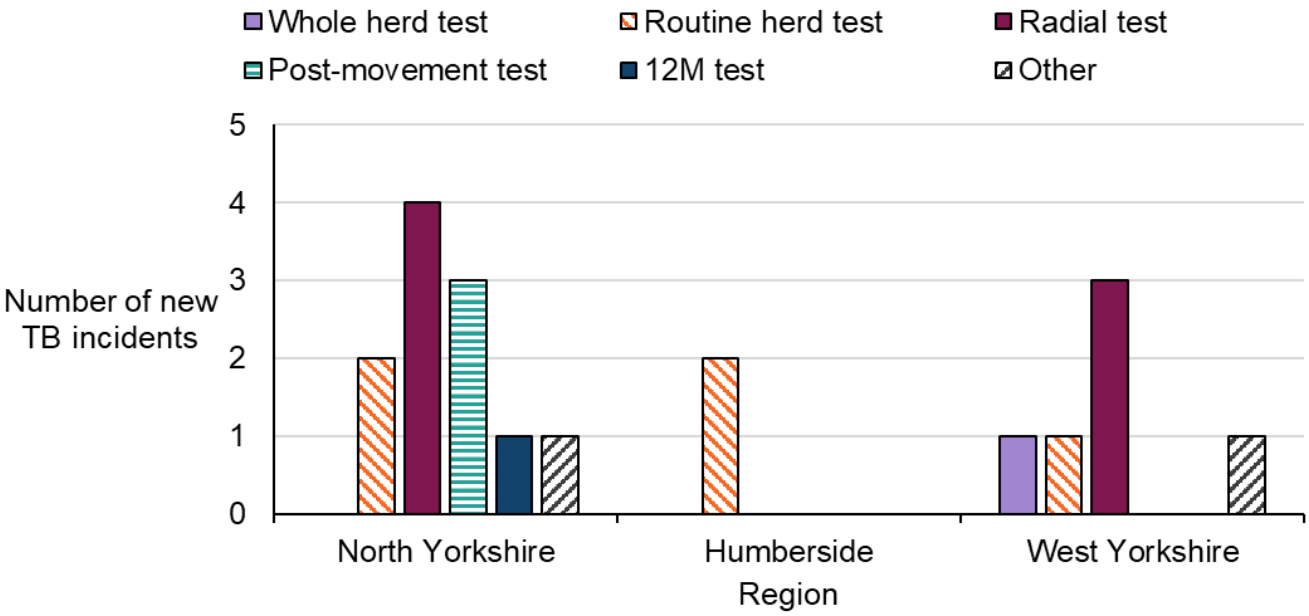


Figure 2: Number of new TB incidents (OTF-W and OTF-S) by county in the Yorkshire and Humberside region in 2024, according to the surveillance methods that detected them. South Yorkshire had no new TB incidents in 2024 and is therefore not displayed in Figure 2.

Duration of TB incidents

Of the 26 TB incidents that were resolved in Yorkshire and Humberside in 2024, 12 started in 2024, 13 in 2023 and one in 2022. Of the 26 incidents that ended in 2024, 9 were OTF-W. One OTF-S incident which closed in 2024 in North Yorkshire was persistent (with the affected herd being under movement restrictions for more than 550 days), as shown in Figures 3a to 3d. In North Yorkshire, 4 OTF-W and 4 OTF-S incidents were resolved within 151 to 240 days and 4 were resolved within 241 to 550 days (Figure 3a). Three OTF-S incidents were resolved quickly within 100 days and a further 2 within 101 to 150 days.

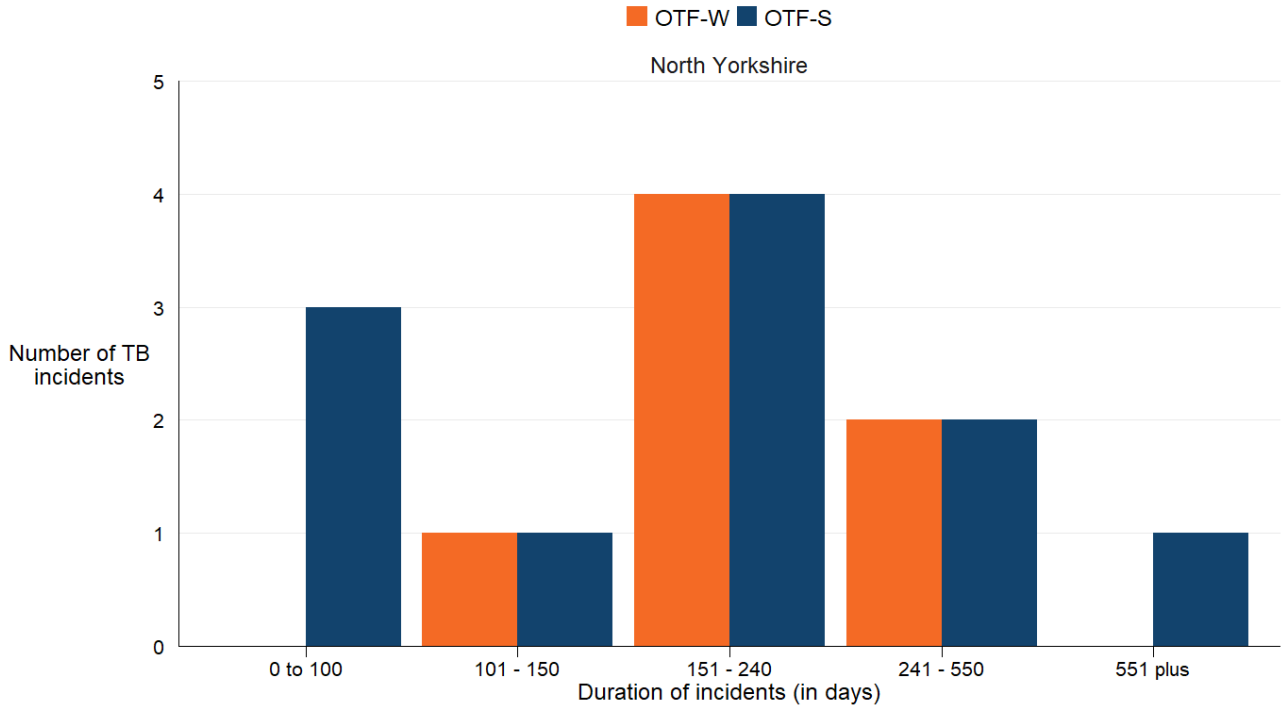


Figure 3a: Duration of TB incidents (OTF-W and OTF-S) that closed in North Yorkshire in 2024.

Humberside had a single OTF-W incident which ended in 2024 (Figure 3b). This was resolved within 101 to 240 days.

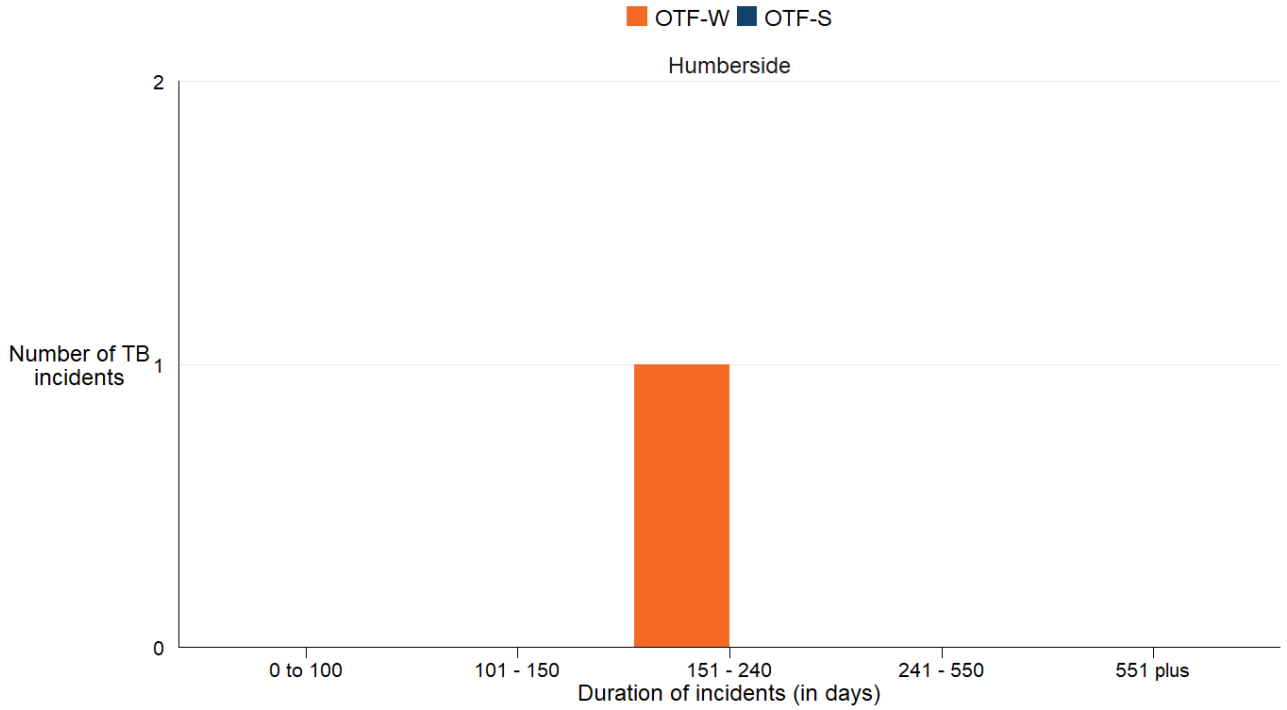


Figure 3b: Duration of TB incidents (OTF-W and OTF-S) that closed in Humberside in 2024.

South Yorkshire also had a single OTF-W incident resolved within 101 to 240 days in 2024 (Figure 3c).

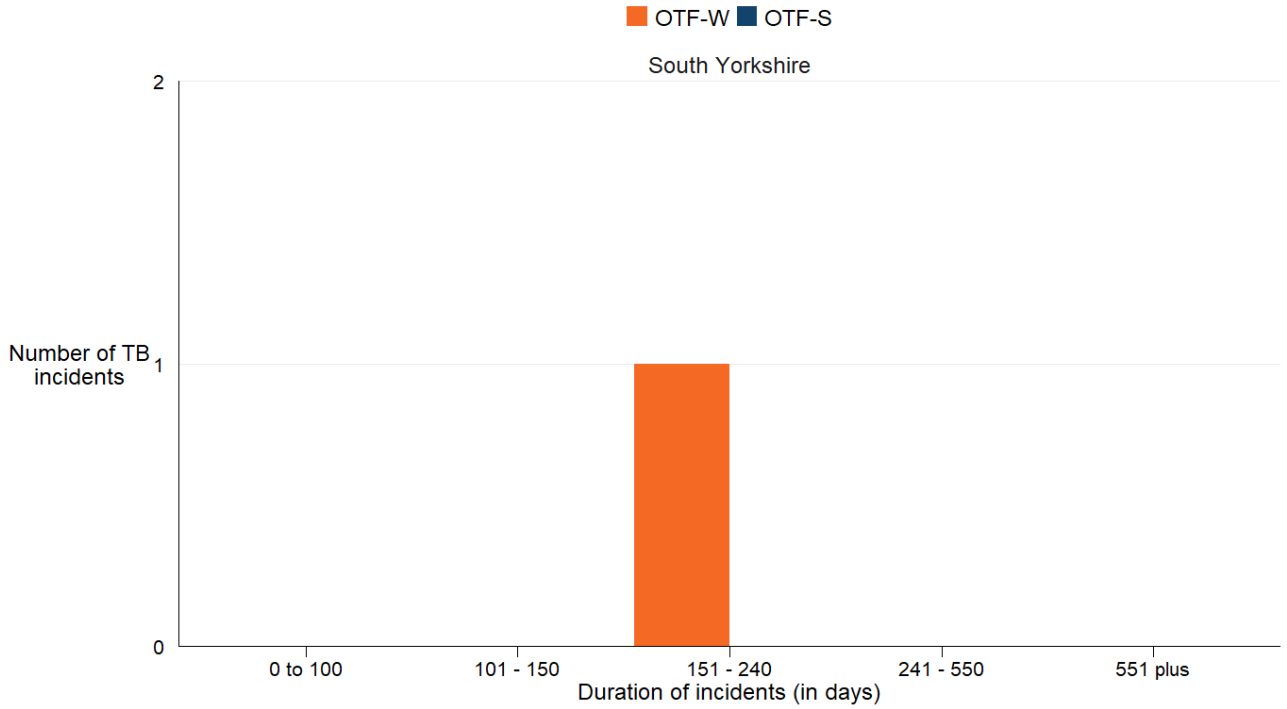


Figure 3c: Duration of TB incidents (OTF-W and OTF-S) that closed in South Yorkshire in 2024.

Half of the incidents that ended in West Yorkshire were quickly resolved within 100 days, and the remaining incidents lasted between 101 and 150 days (2) and between 151 and 240 days (1) (Figure 3d).

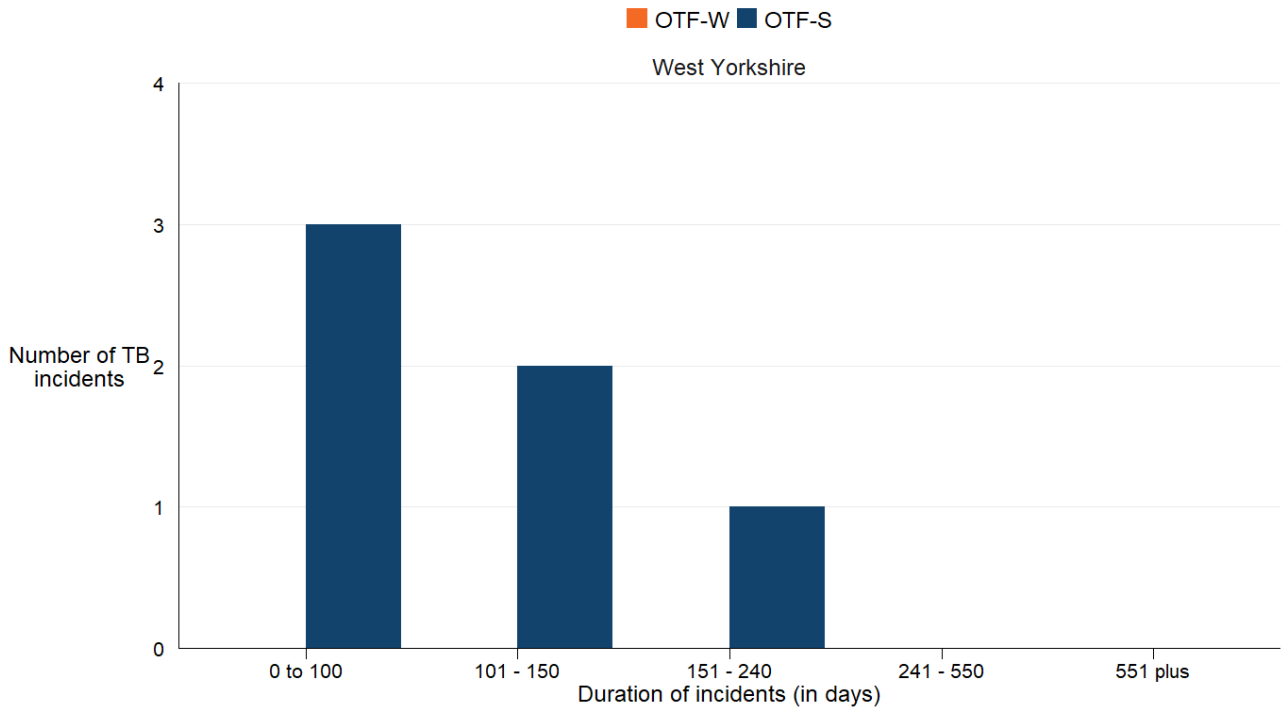


Figure 3d: Duration of TB incidents (OTF-W and OTF-S) that closed in West Yorkshire in 2024.

There were 8 incidents ongoing at the end of the year, the same number as the previous year across Yorkshire and Humberside. Four ongoing incidents occurred in North Yorkshire, 2 in Humberside, and 2 in West Yorkshire.

Skin test reactors and interferon gamma test positive animals removed

During 2024, a total of 37 animals were removed as TB test reactors from herds affected by TB incidents in this region of the LRA (Figures 4a to 4d). Of these, 30 were skin test reactors and 7 were positive by the supplementary IFN-γ blood test. Overall, this was a 57% decrease in the total number of animals removed from TB incidents in 2023 (51 skin reactors and 35 IFN-γ test-positive animals removed) and reflects the almost 50% reduction in new incidents.

In North Yorkshire the number of skin test reactors removed (16) was the lowest since 2016 (Figure 4a). Over the last decade the number was highest in 2015, at 51, which was followed by a marked decrease in 2016 to 12 skin test reactors removed. Subsequently this rose to 21 in 2017 and has remained between 24 and 32 per year up to 2023.

There was a marked reduction in the number of IFN-γ test positive cattle removed from TB incidents in North Yorkshire in 2024, with 7 removed compared to 32 in 2023. Similar to skin test reactors, the highest number of IFN-γ test positive cattle removed peaked in 2015 (51), which was followed by a marked decrease in 2016 (14). There was a subsequent increase to 41 in 2017, followed by a decreasing trend to 15 in 2020. Since 2021 numbers have fluctuated between 16 and 32 per year.

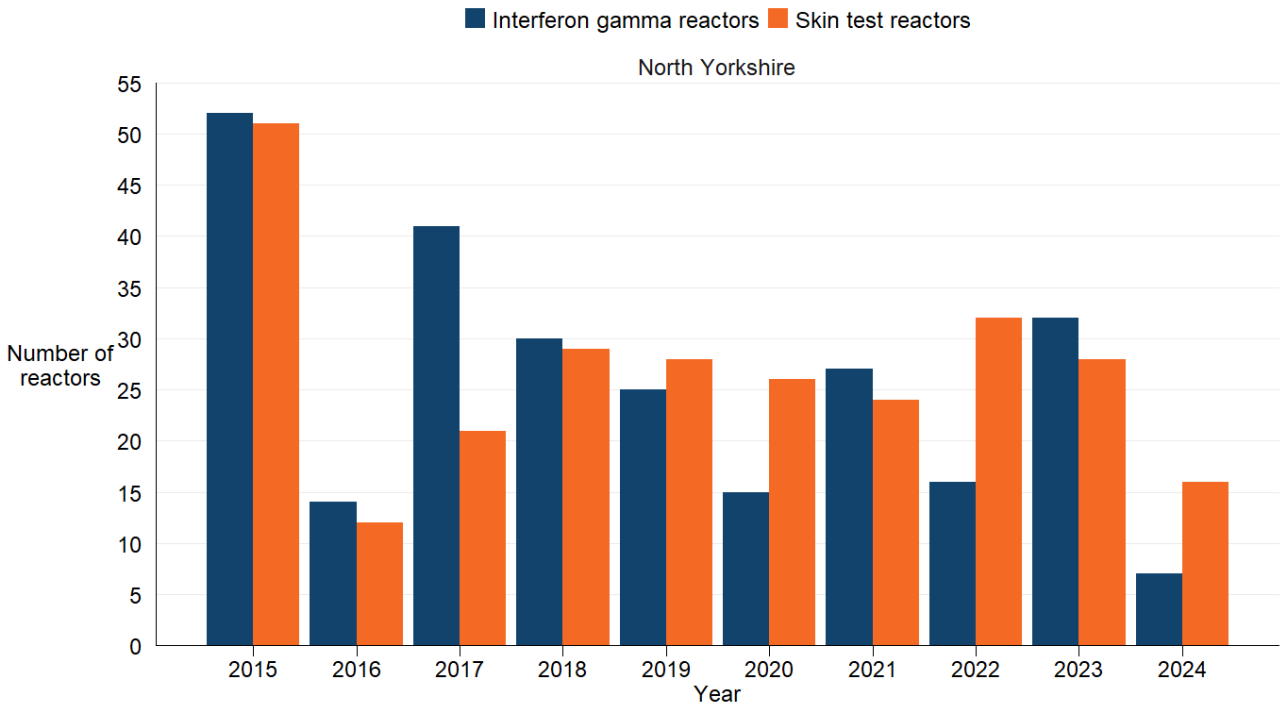


Figure 4a: Number of skin test reactors and IFN-γ test positive cattle removed by APHA for TB control reasons in North Yorkshire from 2015 to 2024.

In Humberside over the last 10 years the number of skin test reactors removed has remained consistently low. In 2024, 7 skin test reactors were removed, the highest number in the last decade (Figure 4b). Numbers have fluctuated between 0 (2019) and 4 (2023). No IFN-γ positive animals were removed from TB incidents in Humberside in 2024. This was a decrease compared to 3 in 2023. Historically the number of IFN-γ positive animals in Humberside peaked at 17 in 2016 but typically ranged between 0 and 10 per year.

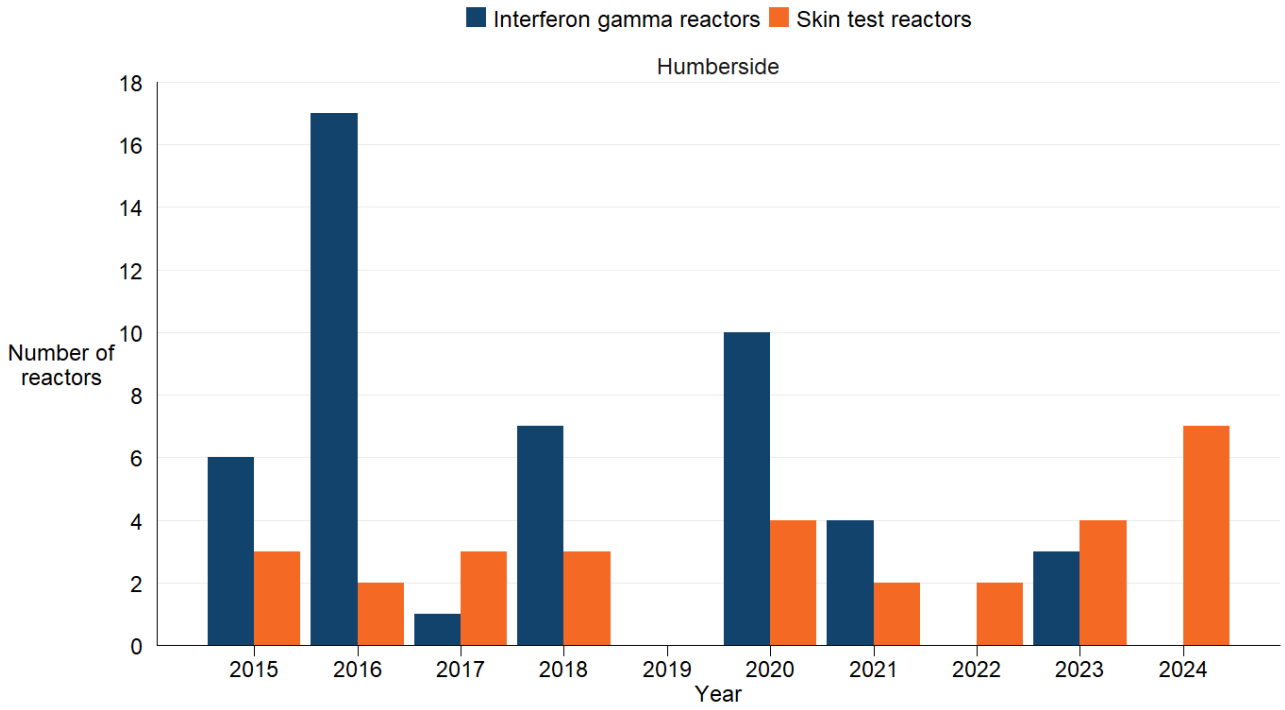


Figure 4b: Number of skin test reactors and IFN-γ test positive cattle removed by APHA for TB control reasons in Humberside from 2015 to 2024.

In South Yorkshire, the number of skin test reactors decreased from 5 in 2023 to 0 in 2024 (Figure 4c). Over the past decade the number has varied between 2 in 2022 and a peak of 16 in 2019. The number of IFN-γ test positive animals removed was also 0 in 2024, consistent with 2022 and 2023. Over the past decade a total of 30 IFN-γ test positive animals have been removed from TB incidents in South Yorkshire, 1 in 2015, 11 in 2018, 7 in 2019 and 11 in 2021.

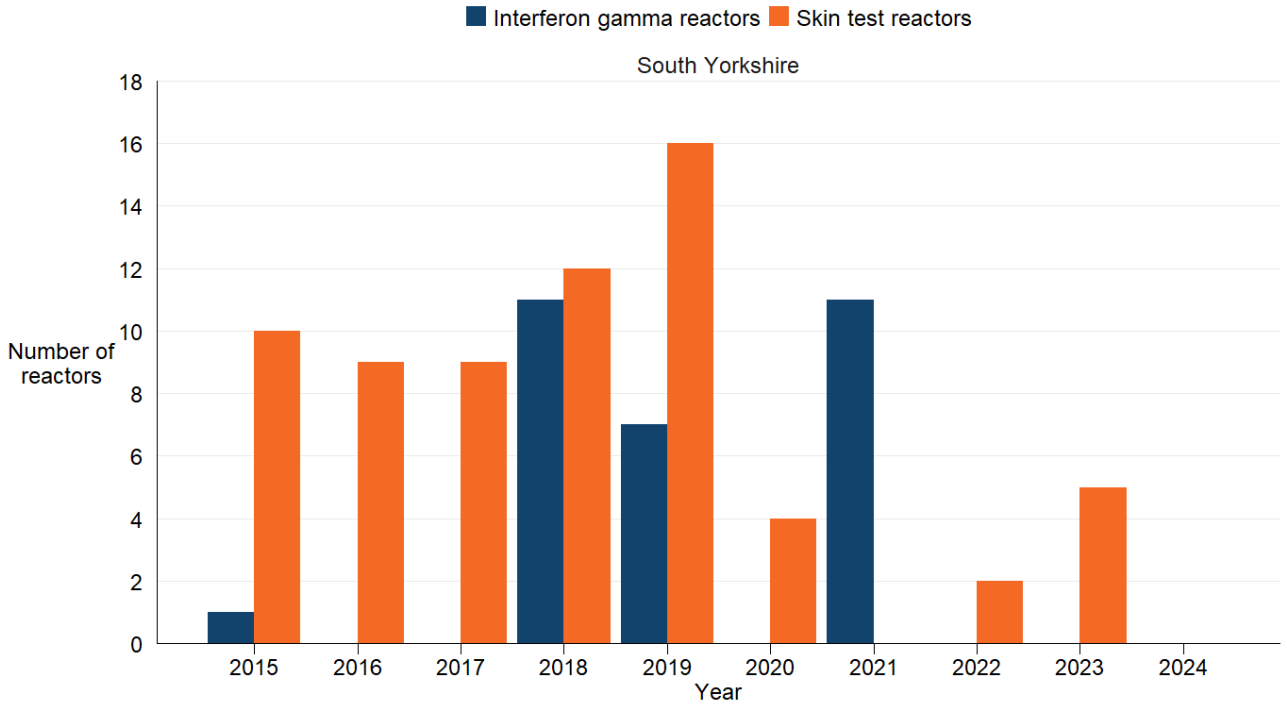


Figure 4c: Number of skin test reactors and IFN-γ test positive cattle removed by APHA for TB control reasons in South Yorkshire from 2015 to 2024.

In West Yorkshire, the number of skin test reactors halved from 14 in 2023 to 7 in 2024, continuing a decreasing trend from 30 in 2022 (Figure 4d). In 2019 West Yorkshire experienced a peak of 38 skin test reactors removed, but between 2015 and 2021 numbers generally fluctuated between 2 and 17 per year. The number of IFN-γ test positive animals in West Yorkshire has also remained low, with a total of 27 removed in the last decade; 1 in 2015, 3 in 2016, 8 in 2019, 4 in 2020, and 11 in 2022. No IFN-γ test positive animals were removed in 2024, consistent with 2023.

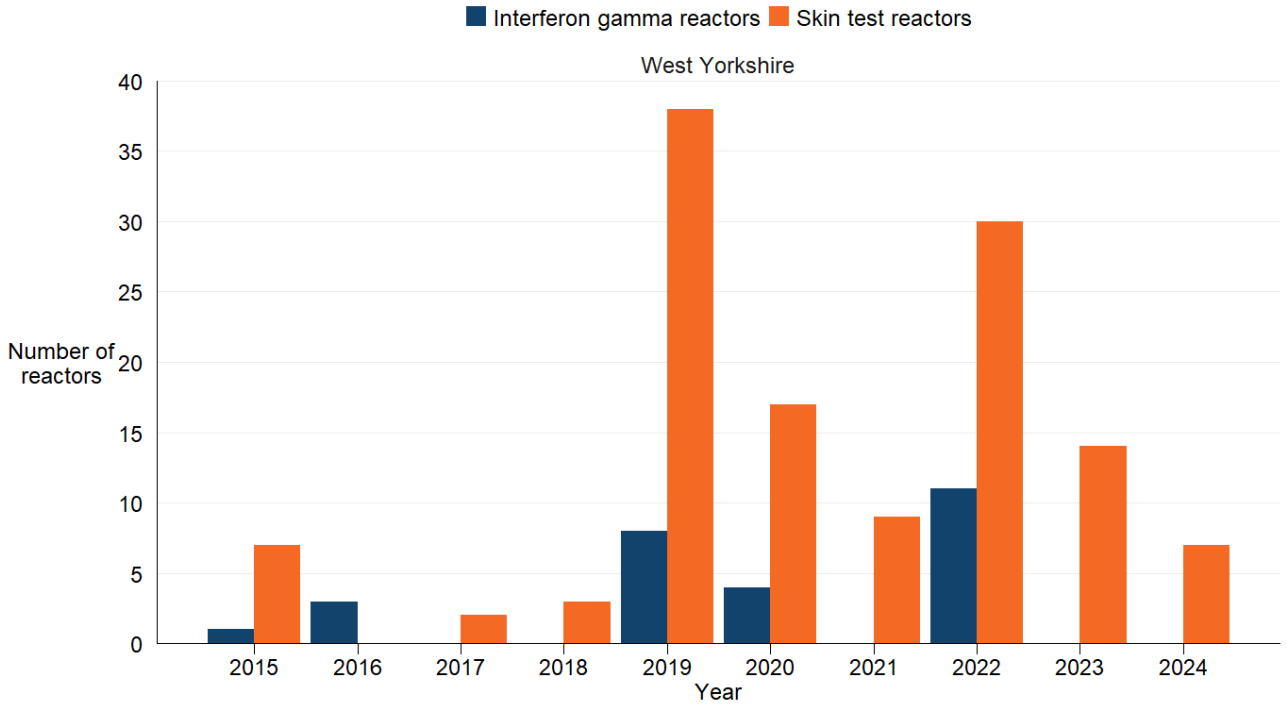


Figure 4d: Number of skin test reactors and IFN-γ test positive cattle removed by APHA for TB control reasons in West Yorkshire from 2015 to 2024.

Recurrent TB incidents

Three-year recurrence

Three (19%) of the 16 herds with a new OTF-S TB incident detected in this region of the LRA in 2024 had experienced another TB incident in the previous 3 years. None of the herds with a new OTF-W incident had a history of TB in the last 3 years (Figures 5a to 5c). South Yorkshire had no new TB incidents in 2024 and is therefore not displayed in Figures 5a to 5c. The Yorkshire and Humberside region had the third lowest overall percentage of recurrent herd incidents in 2024 (16%) of all LRA counties and subregions, lower than Lincolnshire (44%), Cumbria (21%), North West (20%), and South East (17%) regions, but higher than the North East (0%) and Isles of Scilly (0%). The overall percentage in the whole LRA was 21%.

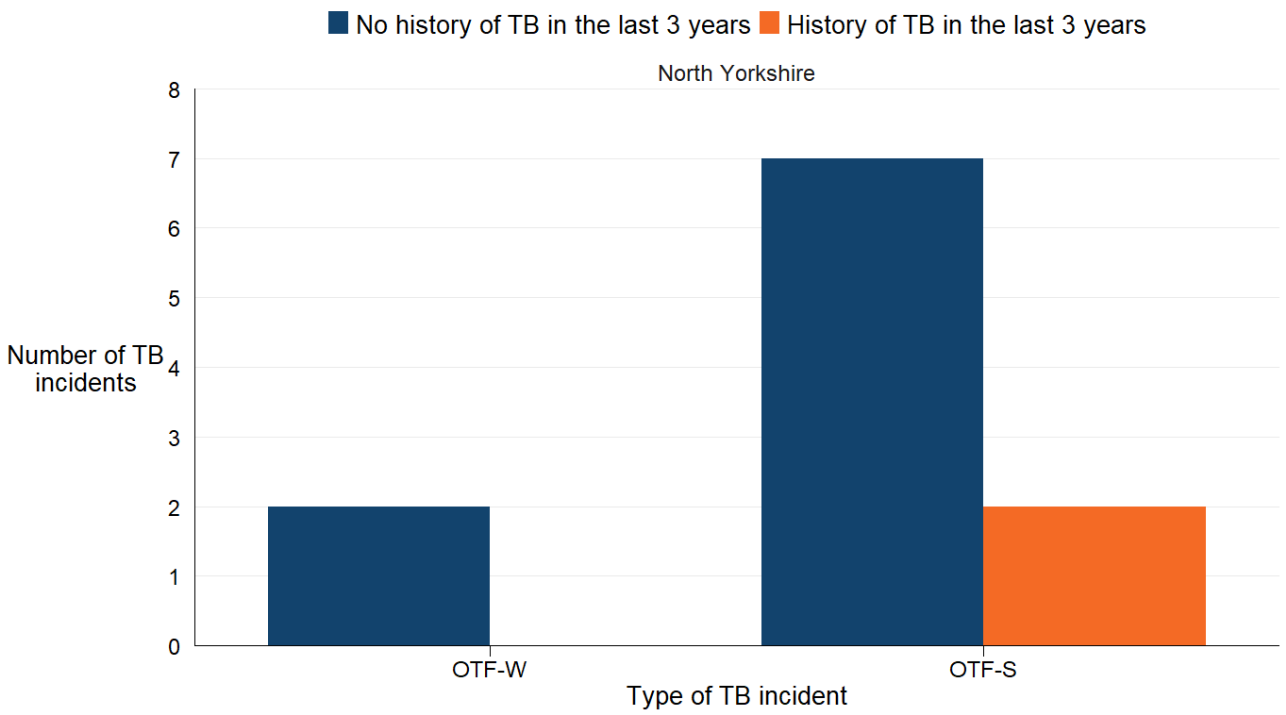


Figure 5a: Number of herds with a TB incident (by OTF-W and OTF-S) in North Yorkshire in 2024, with and without a history of any TB incident in the previous 3 years of the disclosing test.

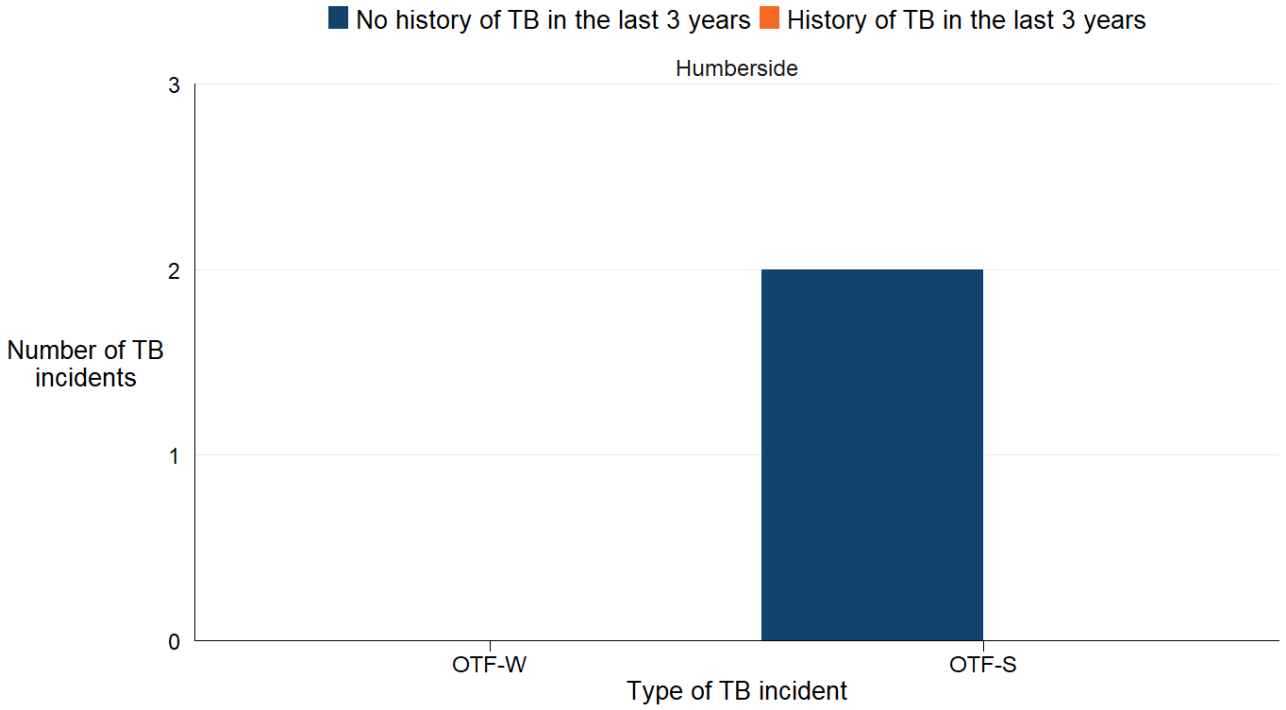


Figure 5b: Number of herds with a TB incident (by OTF-W and OTF-S) in Humberside in 2024, with and without a history of any TB incident in the previous 3 years of the disclosing test.

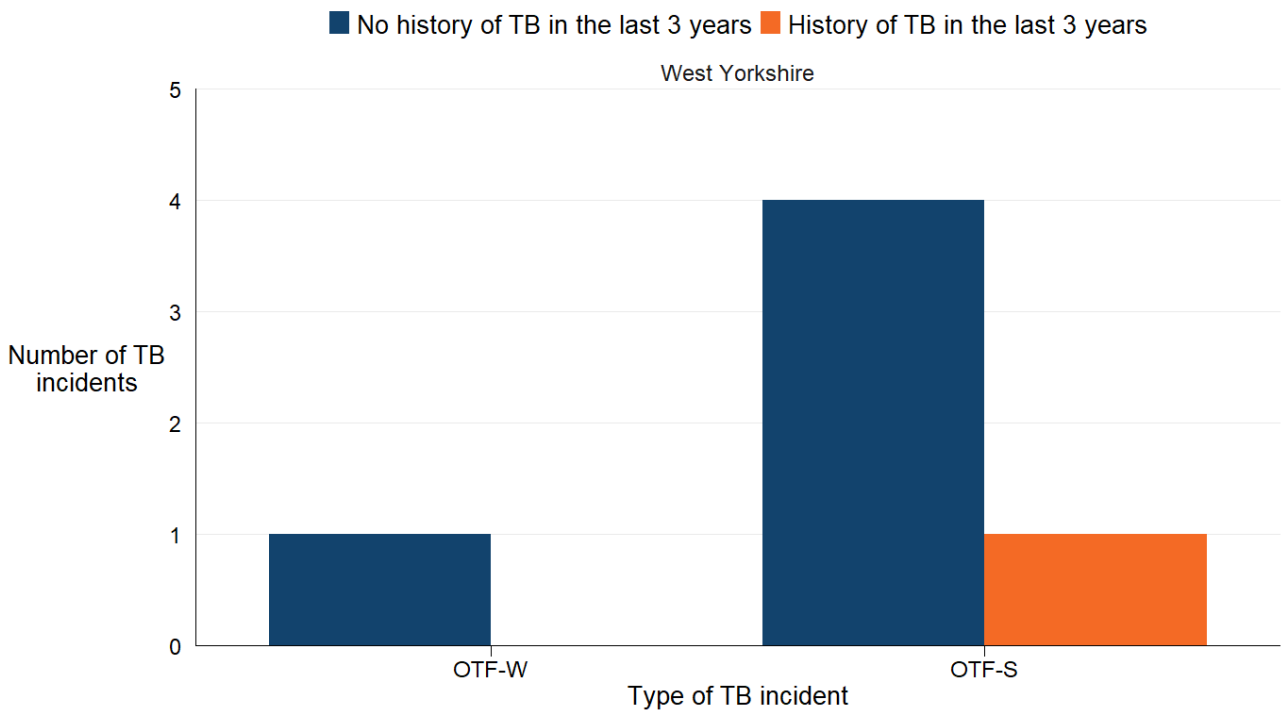


Figure 5c: Number of herds with a TB incident (by OTF-W and OTF-S) in West Yorkshire in 2024, with and without a history of any TB incident in the previous 3 years of the disclosing test.

Unusual TB incidents

There were 2 chronic cases (open for more than 365 days) in North Yorkshire. In one incident TB movement restrictions were maintained for longer than usual due to cattle identification issues. In the second incident, TB movement restrictions could not be lifted earlier due to combination of discrepancies with the Cattle Tracing System, more reactors identified on a check test and due to a delay in receiving the Tuberculosis: Notice Requiring Cleansing and Disinfection (BT5) form from the farmer.

TB incidents in other species

There is no statutory routine TB surveillance of non-bovine species, apart from Post-Mortem Examination (PME) of animals slaughtered for human consumption, or carcases submitted to veterinary laboratories for diagnostic investigation. Targeted TB testing takes place in non-bovine herds under TB movement restrictions due to laboratory-confirmed incidents of M. bovis infection, and in specific herds of camelids, goats and captive deer at an elevated risk of infection. Enhanced voluntary wildlife surveillance takes place in LRA hotspots, but not within the Edge Area. Outside of these initiatives, farmers and deer stalkers are able to submit wild deer carcases for private TB testing and the results of these findings are reported below.

There were no incidents of TB reported in non-bovine species in Yorkshire and Humberside in 2024.

Geographical distribution of TB incidents

Consistent with previous years, new TB incidents in Yorkshire and Humberside typically occurred in areas of a higher cattle density (Figure 6).

In 2024, 2 different WGS (Whole Genome Sequencing) clades of M. bovis (B3-11 and B6-11) were isolated from TB test reactor cattle slaughtered across Yorkshire and Humberside, compared to 8 in 2023.

North Yorkshire

In North Yorkshire, the 2 OTF-W incidents were located near Boroughbridge, in the centre of the county. This is approximately 10km to the south of a cluster described in this county in the 2023 TB Epidemiology Year End Report.

One of the OTF-W incidents was associated with M. bovis WGS clade B6-11. There had been no TB incidents around Boroughbridge since 2020, when spoligotype 17, which can be equivalent to clade B6-11, was detected in a herd experiencing an OTF-W incident. The homerange of B6-11 spans the west of England and into Wales.

The other OTF-W incident disclosed in this area was caused by clade B3-11. Incidents with this clade are sporadically detected every year in North Yorkshire. The homerange of clade B3-11 is large and spans much of Staffordshire, Derbyshire, Cheshire, north-east of Shropshire and parts of Greater Manchester, Leicestershire, Lincolnshire and Nottinghamshire. In 2023 there were 3 incidents attributable to B3-11 in the cluster 10km north of Boroughbridge. This cluster also contained incidents with 2 other clades (B6-51 and B6-62).

The OTF-S incidents disclosed in North Yorkshire were spread across the centre and east of the county, with one close to the border with Humberside.

Although the number of new incidents in North Yorkshire decreased markedly in 2024 compared to the preceding 6 years, the county is being closely monitored by APHA and is considered an area of concern due to the high infection pressure from purchased cattle. Stakeholder engagement is on-going in this area.

Humberside

In Humberside, there were 2 OTF-S incidents disclosed in 2024. One was approximately 3km northwest of Bubwith and 3.5km to the western border of North Yorkshire. There was one OTF-W incident in this area in 2017 but otherwise there have not been any other TB incidents in this area previously (going back to 2015). The other incident was in the east of the county approximately 4km to the south of Garton and 1.5km to the North Sea coast. There was one OTF-S incident 11km south of this in 2022 but otherwise there have not been any other TB incidents in this area previously (going back to 2015).

There were 2 B3-11 incidents in the north and south of this county each in 2023, but these were not closely genetically related.

South Yorkshire

There were no new herd incidents of TB in cattle in South Yorkshire in 2024.

West Yorkshire

The one OTF-W incident in West Yorkshire occurred in the south of the county (near Holmfirth) towards the border with South Yorkshire. M. bovis could not be identified in cattle removed from the affected herd. There have been 3 other OTF-W incidents in this area since 2021, all identified as clade B3-11. Two of these have been found to have isolates which are closely genetically related, and one was unrelated. Epidemiological links between the herds with closely related isolates have not been found. This area is being closely monitored.

There was a cluster of 4 OTF-S incidents in the west of this county. New OTF-S TB incidents typically occur in this area of West Yorkshire every year. The OTF-W incidents which have occurred over the years in this area and over the border in Greater Manchester have not provided strong evidence for locally spreading disease due to being geographically dispersed and/or genetically unrelated. Nevertheless, this area is also being closely monitored.

Finally, an isolated OTF-S incident occurred in the north of the region towards the border with North Yorkshire. This incident occurred in a herd which had an OTF-W incident in 2022 as a result of an imported animal from Ireland.

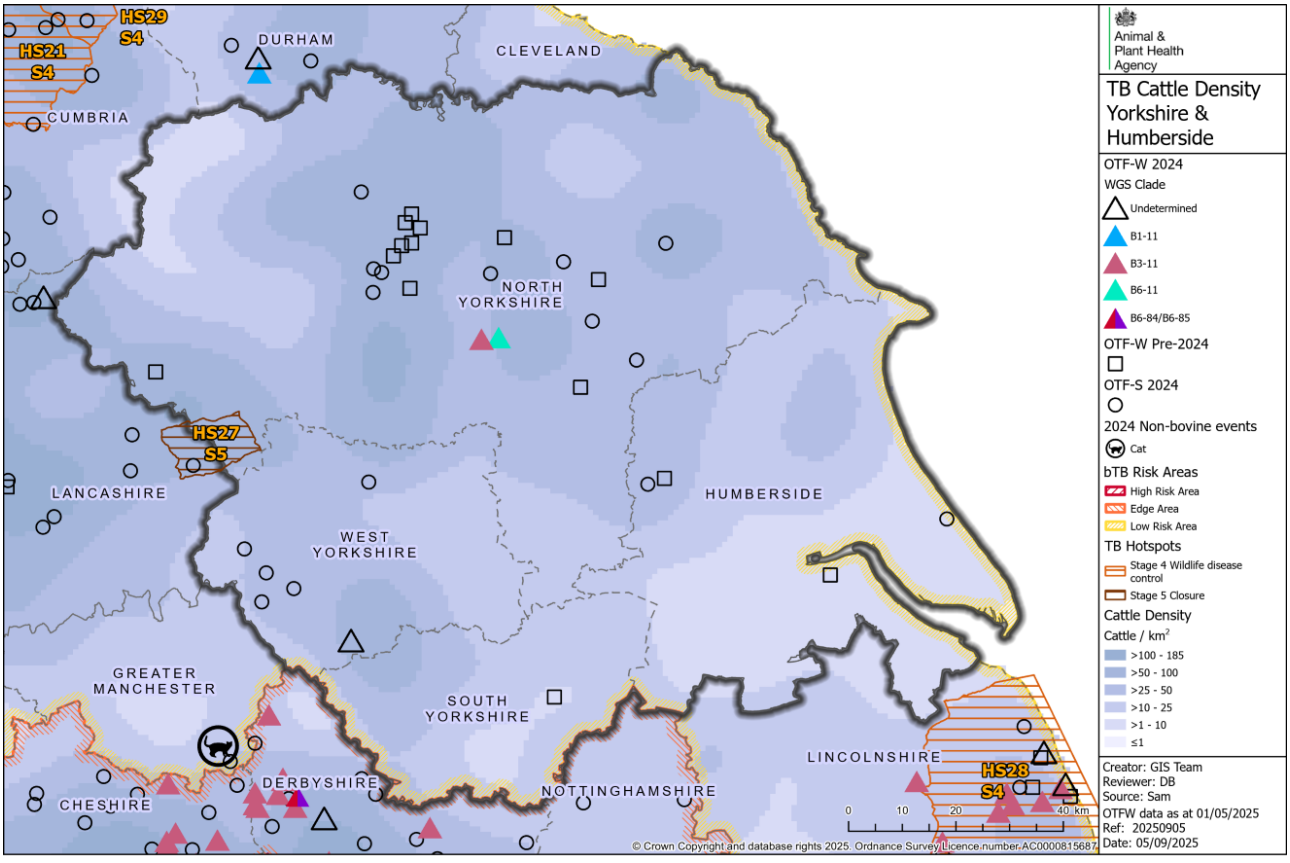


Figure 6: Location of cattle holdings in North Yorkshire, Humberside South Yorkshire, West Yorkshire with new TB incidents (OTF-W and OTF-S) in 2024, and cattle incident holdings with OTF-W incidents still ongoing at the beginning of 2024, overlaid on a cattle density map.

Figure 6 description: A map of North Yorkshire, Humberside, South Yorkshire, West Yorkshire and their adjoining areas showing the cattle density, the geographical location of

cattle holdings with new TB incidents (OTF-W and OTF-S) in 2024, and cattle incident holdings with OTF-W incidents still ongoing at the beginning of 2024. Dark blue areas represent higher cattle density and light blue represent lower cattle density. New OTF-W incidents detected in 2024 are shown as triangles and colour-coded based on the WGS clade that was detected in the incident. Blue represents clade B1-11, pink represents clade B3-11, light green represents clade B6-11, red represents B6-84 and purple represents B6-85. Transparent triangles represent incidents where the WGS clade was undetermined, and it was not possible to obtain WGS information or it was pending. OTF-S incidents in 2024 are shown as circles. Cattle incident holdings with OTF-W incidents still ongoing at the beginning of 2024 are shown as squares. The geographical location of TB hotspots is shown with hashed lines. The colour of the hotspot, along with the suffixes S4 and S5, indicates the stage of controls in place in 2024: dark orange is stage 4 (S4 is wildlife disease control), and brown is stage 5 (S5 is closure). The location of new TB incidents is described in the main text.

As shown in Figure 7 and Appendix 3 (Table 5), both OTF-W incidents in North Yorkshire in 2024 were attributed to inward movements of TB-infected cattle brought into the area.

The source of infection for the 2 OTF-W incidents in North Yorkshire was considered to be purchased infected cattle. As previously described, North Yorkshire is under particular infection pressure from undetected infected cattle brought into the county.

The culture negative OTF-W incident near Holmfirth in West Yorkshire was attributed to exposure to infected wildlife, in this case wild deer. However, there is significant uncertainty about this as although there is a herd of wild deer in the area, their infection status is unknown. Alternative risk pathways could not be identified.

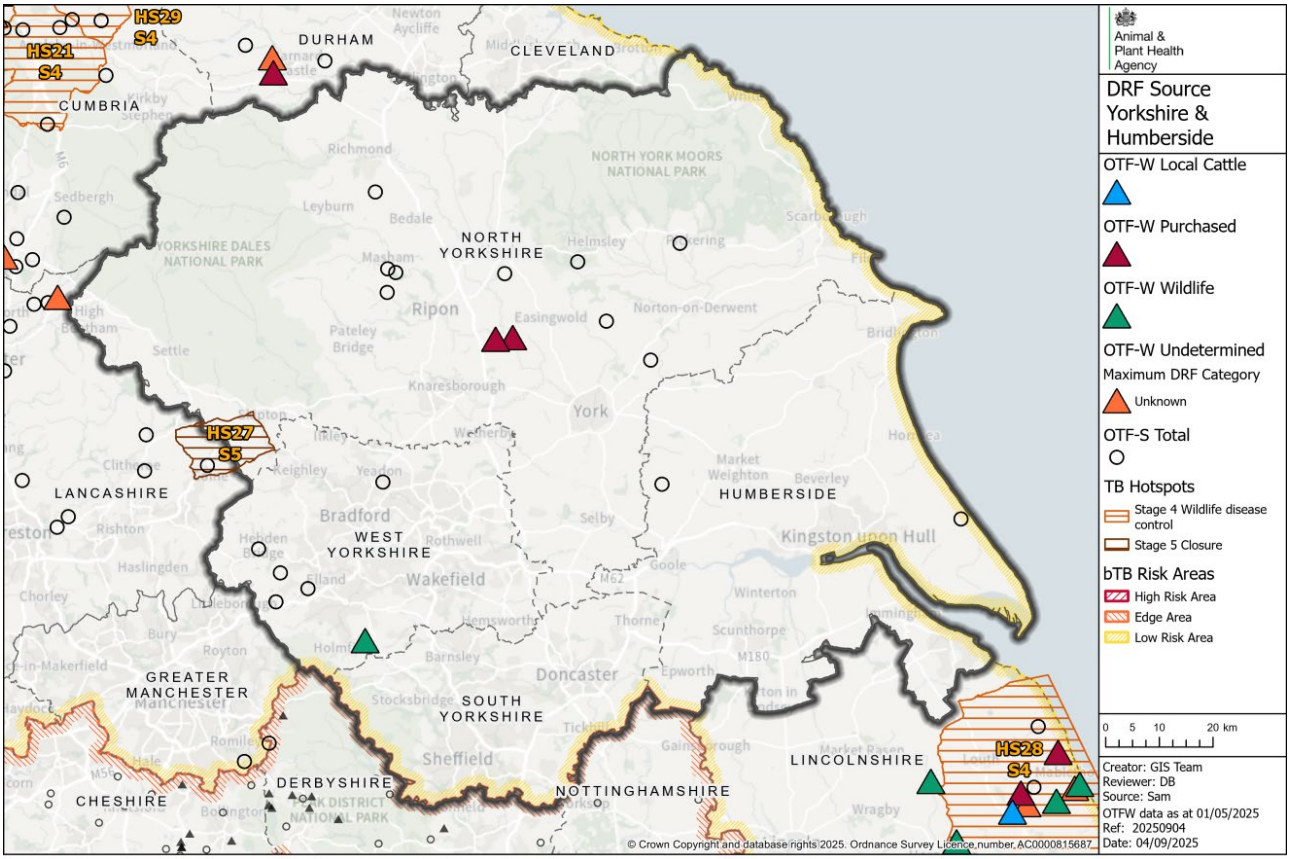


Figure 7: Map of the source of infection pathway recorded with the highest level of certainty, for OTF-W incidents, and the location of OTF-S incidents in North Yorkshire, Humberside, South Yorkshire, West Yorkshire which started in 2024.

Figure 7 description: A map of North Yorkshire, Humberside, South Yorkshire, and West Yorkshire and adjoining areas showing the geographical location of cattle holdings with new OTF-W incidents in 2024 and the most likely source of infection. OTF-W incidents are shown as triangles in different colours which represent the source of infection with the highest level of certainty. Blue represents local cattle, brown represents purchased cattle, green represents wildlife, and orange represents unknown. Unknown sources of infection reference where there is insufficient evidence to attribute the source of infection to a particular risk pathway, alternatively multiple risk pathways may be plausible, and the investigating veterinary officer may be unable to discern the most likely source. Local cattle refer to residual infection and contiguous cattle risk pathways. Purchased refers to cattle movement risk pathways. Wildlife refers to both badger and other wildlife risk pathways. Undetermined refers to incidents where a likely source of infection could not be ascertained. New OTF-S incidents in 2024 are shown as circles. The geographical location of TB hotspots is shown with hashed lines. The colour of the hotspot, along with the suffixes S4 and S5, indicates the stage of controls in place in 2024: dark orange is stage 4 (S4 is wildlife disease control), and brown is stage 5 (S5 is closure).

Figure 8 shows the hotspot areas and radial surveillance zones instigated by APHA around OTF-W incidents in this part of the LRA between 2022 and 2024.

In the centre of North Yorkshire, there was a cluster of incidents that have triggered radial zones over the past few years. The 2 new OTF-W incidents in 2024 triggered radial zones to the south of the predominant cluster and were still active at the end of the year. As previously described, one incident was associated with M. bovis clade B3-11 and the other one was associated with clade B6-11. There had been 3 OTF-W incidents in this area previously. One was disclosed in 2020 and also yielded clade B6-11, however it was not possible to determine genetic relatedness to the 2024 incident due to the earlier sample being contaminated. A 2019 OTF-W incident yielded clade B6-62, and a 2016 OTF-W incident was attributed to genotype 11:A (WGS clade B6-85). There has only been one OTF-S incident in this area since 2015 and there is currently no evidence of disease spreading locally.

Radial zones triggered by 2023 incidents formed a predominant cluster in North Yorkshire. Within this cluster, 3 were triggered by incidents with clade B3-11, one by an incident yielding clade B6-62 and one by an incident yielding B6-51. An earlier 2022 radial was triggered by an incident identified as clade B3-11. The 2021 radial zone to the north of the cluster and the 2020 radial zone in the centre of the cluster were also triggered by incidents yielding B3-11. The 2020 radial zone in the southwest of the cluster was triggered by an incident yielding B5-11. Despite there being several radial zones activated by clade B3-11, further investigation, including application of WGS, showed that these incidents were most likely to have been caused by purchase of infected cattle.

There was one radial zone pending in the south of West Yorkshire. This was triggered by a culture negative OTF-W incident. There were 2 active radial zones in this area, one triggered in 2022 and one in 2023. Both of these were triggered by incidents identified as M. bovis clade B3-11, but the isolates were not closely related to each other. The isolate from the 2023 incident was however closely related to an isolate from a 2021 incident.

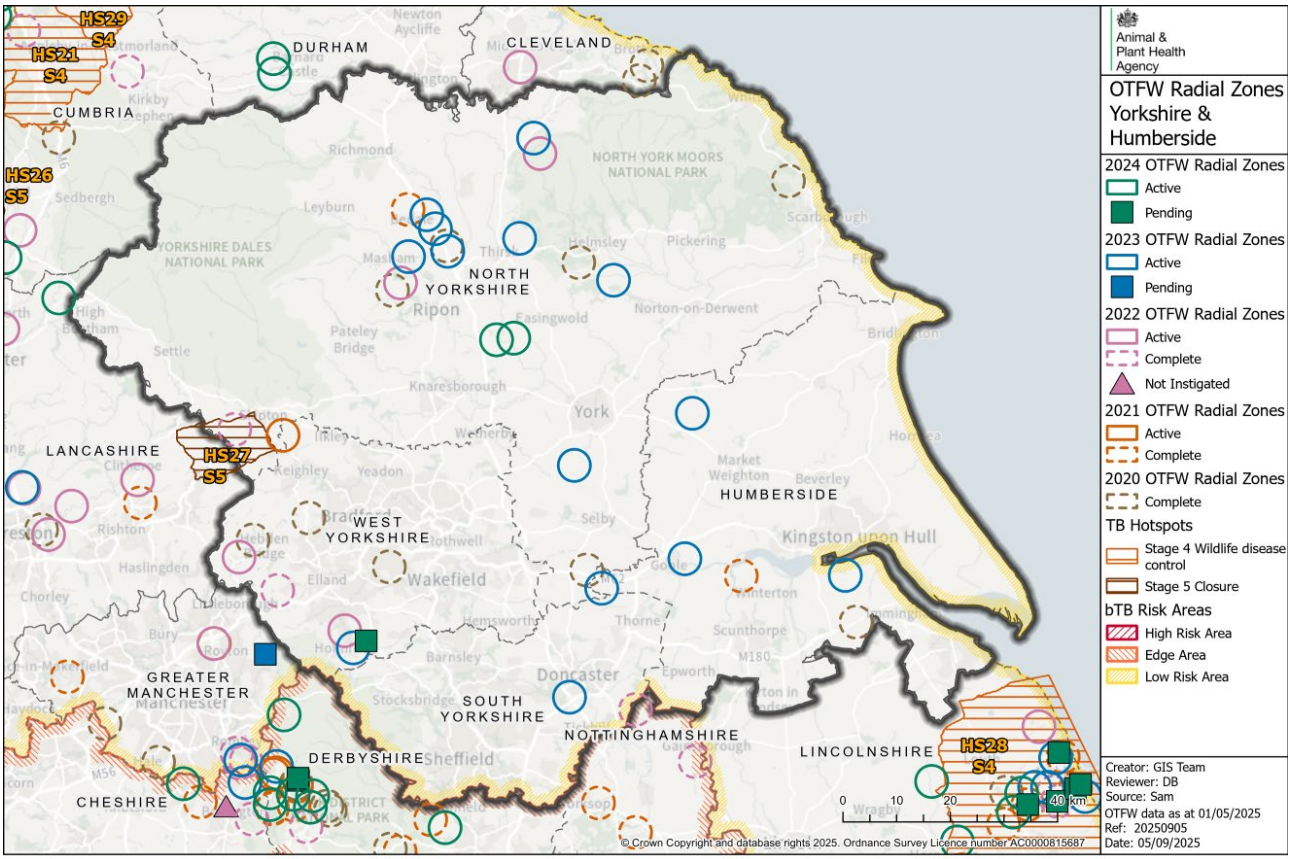


Figure 8: Hotspot areas and radial surveillance zones around OTF-W incidents that were active, completed or not instigated in North Yorkshire, Humberside, South Yorkshire, West Yorkshire during 2024, by year of initiation.

Figure 8 description: A map of North Yorkshire, Humberside, South Yorkshire, West Yorkshire and adjoining areas showing the geographical location of hotspots and radial surveillance zones around OTF-W incidents in 2024. The active radial zones are shown as solid line circles, and completed radial zones are shown as dotted line circles. The colour of the circles represents the year in which the radial zone was instigated: 2024 is green, 2023 is blue, 2022 is pink, 2021 is orange and 2020 is brown. The geographical location of TB hotspots is shown with hashed lines. The colour of the hotspot, along with the suffixes S4 and S5, indicates the stage of controls in place in 2024: dark orange is stage 4 (S4 is wildlife disease control), and brown is stage 5 (S5 is closure).

TB hotspots

Only one hotspot was active in this region of the LRA in 2024, Hotspot 27 (HS27).

The total number of incidents in each of the TB hotspots described in this report does not include suspected slaughterhouse cases of TB that proved negative on PCR testing and/or bacteriological culture. The number of incidents presented in this section may not reflect those shown on the maps in these reports. Incidents shown on the maps are located at the centre of their County Parish Holding number (CPH). Incidents reported in this section include any holdings with land inside of the hotspot boundary.

In this report the number of incidents per year in each Hotspot has been gathered using field veterinarian data. Previously, spatial GIS data was used to inform whether a holding was inside of a designated Hotspot. This change may create discrepancies between the number of incidents per year reported here, compared to previous reports.

Hotspots were previously referred to as ‘potential’ or ‘confirmed’, depending upon identification, or not, of infection in local wildlife populations. This changed in 2024, and hotspots are now designated according to 5 ‘stages’ of TB surveillance and controls covering cattle, and where relevant, wildlife (see the descriptions for the maps in Figures 6 to 8). Further details can be found on April 2025: TB hotspots in the Low Risk Area of England.

Hotspot 27

HS27 was located in the south-western corner of North Yorkshire and straddled the county boundary with Lancashire (Figures 6 to 8). It was set up in January 2020 following a 2017 OTF-W incident from which genotype 17:z (clade B6-23) of M. bovis had been isolated and 10 further incidents (all culture negative) up to the end of 2019.

During the reporting period, there were no new OTF-W incidents detected but there was one OTF-S incident in the Lancashire part of the hotspot (Figure 9).

An OTF-W incident was disclosed in 2022 in the North Yorkshire portion of the hotspot. This was caused by clade B6-11 and hence epidemiologically unrelated to the index OTF-W incident that triggered the declaration of this hotspot 2 years earlier.

In the Lancashire area of HS27 there have been 8 OTF-S incidents (one in 2017, 2021, 2022 and 2023, and 2 in 2018 and 2019) and 2 OTF-W incidents since 2017 (one in 2017 and one in 2022). In the North Yorkshire portion of HS27, there was one OTF-W incident (in 2017) and 6 OTF-S incidents (one in 2018, 3 in 2019, one in 2021 and one in 2024).Since its implementation only one wild deer carcase from this hotspot was submitted to APHA for examination, with negative culture results for M. bovis.

This hotspot was reviewed and closed in December 2024 due to the much-reduced herd incidence and absence of evidence of locally spreading disease.

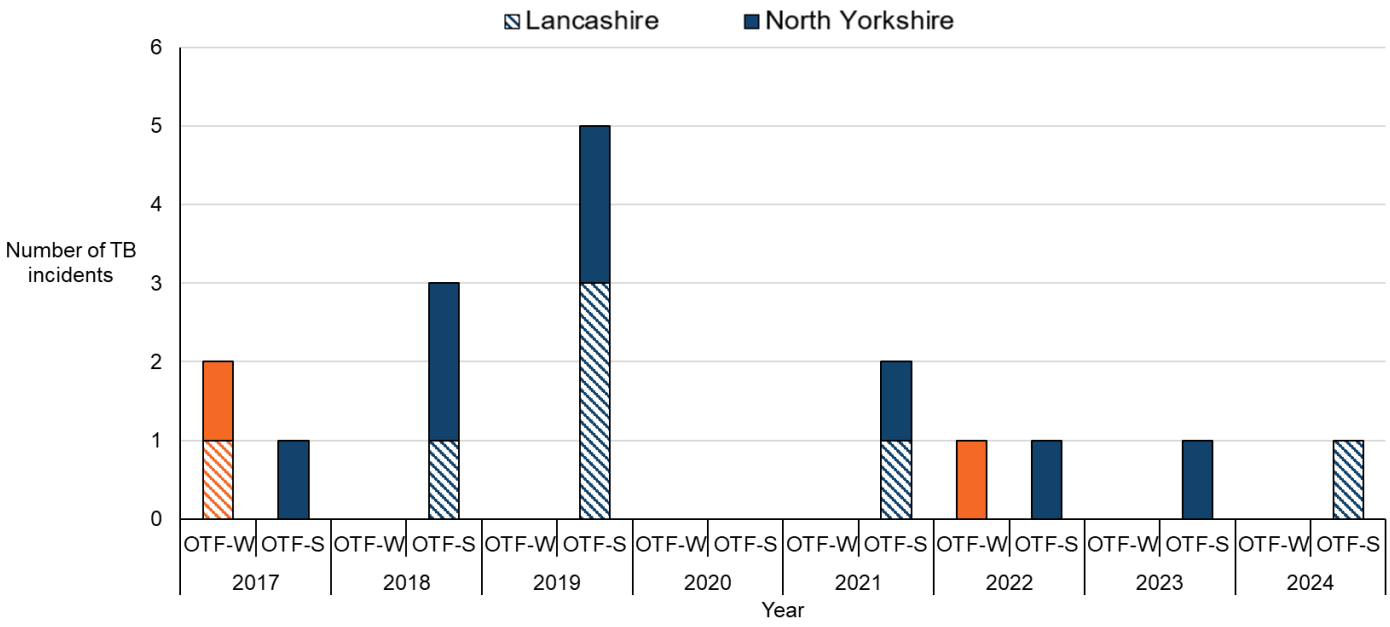


Figure 9: Annual number of new TB incidents in HS27, from 2017 to 2024. Incidents in the Lancashire area of HS27 are in bars with diagonal stripes and incidents in the North Yorkshire area are in solid bars. OTF-W incidents are shown as orange bars and OTF-S incidents as blue bars.

Main risk pathways and key drivers for TB infection

Evidence collected during APHA veterinary investigations into the source of infection within herds was used to inform this understanding. In 2024, 15 out of 19 (79%) new TB incidents in Yorkshire and Humberside received a preliminary or final APHA veterinary investigation to identify the source of infection. Not all Disease Report Form (DRF) investigations were carried out in 2024.

It can be challenging to retrospectively establish the route of infection for a TB incident herd. Ideally this investigation includes a thorough on-farm investigation and scrutiny of routinely collected data, such as cattle movement records, and the results of WGS where available. Up to 3 hazards and risk pathways were selected for each incident investigated. Each of these potential sources were given a score that reflects the likelihood of that pathway being the true one, based on the available evidence.

Details of the protocol used for these investigations, and the subsequent methodology used to calculate the weighted contribution of the different suspected sources of M. bovis infection, can be found in the explanatory supplement for the annual reports 2024.

The key drivers of the occurrence of TB in cattle in Yorkshire and Humberside during 2024 were considered to be:

- Movements of undetected infected cattle
- Exposure to other infected wildlife
- Exposure to infected badgers

The key driver behind the TB incidents detected in Yorkshire and Humberside during 2024 was the movement of undetected, infected cattle into this region of the LRA. This was the main risk pathway identified, resulting in a weighted contribution of 39%. This is lower than the equivalent findings in 2023 (49%), but higher than 2022 and 2021, when this risk pathway represented a weighted contribution of 31% and 28%, respectively.

Exposure to 'other' infected wildlife, in this case deer, had a weighted contribution of 17%. This was an increase compared to 2023 (8%), 2022 (5%) and 2021 (15%). However, there is significant uncertainty associated with this risk pathway as the infection status of most wild deer populations is unknown.

By contrast, exposure to infected badgers remained an uncommon risk pathway (7% compared to 12% in 2023, 10% in 2022 and 11% in 2021).

As in previous years, there was a substantial percentage of TB incidents in 2024 with an uncertain source of infection, with 26% of the herd incidents attributed to 'other or unknown source'. This is higher than 2023, when the source of TB infections was unknown in 20%, but lower than 2022 (27%). This category is added to those incidents in which there was high uncertainty around the selected pathways (view the explanatory supplement to the annual reports 2024 for methodology).

Forward look

The LRA has seen fluctuations in the number of new TB incidents in cattle for the last few years and this has been reflected across the Yorkshire and Humberside region, although there has been an increasing trend since 2015. The 19 new incidents in 2024 represented the lowest number of new TB incidents since before 2015. Nevertheless, a detailed review of North Yorkshire carried out in 2024 found that this county was under significant pressure from inward movements of undetected, infected cattle. In 2023, 5 different WGS clades were introduced and since 2015, 9 different clades have been introduced. This highlights the need for cattle keepers to exercise diligence in purchasing behaviour. Stakeholder engagement is ongoing in this area.

Considering the region more broadly, implementation of control measures beyond routine TB herd testing and slaughterhouse surveillance continues to be effective. Measures include temporarily enhanced TB surveillance of herds around farms affected by new OTF-W incidents (radial testing), mandatory pre- and post-movement skin testing of cattle entering the LRA to live and skin testing of bovines traced from OTF-W herds. Particular areas of the region have been identified for monitoring, including the cluster in central North Yorkshire, the Holmfirth area and the border area between West Yorkshire and Greater Manchester. Where evidence is supportive, these areas could be considered for enhanced surveillance or implementation of new TB hotspots.

All of these measures remain key tools to promptly disclose incidents and limit the potential for further spread. However, as alluded to above, keepers should exercise due diligence in purchasing behaviour and have a responsibility to ensure stringent biosecurity practices are implemented in farm management. All of these elements will be required to maintain the low-risk TB status in this region of the LRA.

Appendix 1: cattle industry demographics

Table 1: Number of cattle herds by size category in Yorkshire and Humberside as of 31 December 2024 (RADAR data on number of holdings in the report year)

Size of herds	Number of herds in Humberside	Number of herds in North Yorkshire	Number of herds in South Yorkshire	Number of herds in West Yorkshire
Undetermined	7	25	2	7
1 to 50	283	1,185	199	553
51 to 100	112	546	61	123
101 to 200	105	504	49	106
201 to 350	44	302	29	43
351 to 500	15	95	12	18
Greater than 501	10	131	6	12
Total number of herds	576	2,788	358	862
Mean herd size	92	130	86	72
Median herd size	50	64	40	27

Table 2: Number (and percentage of total) of animals by breed purpose in Yorkshire and Humberside as of 31 December 2024 (Sam data showing the number of herds flagged as active at the end of the report year)

Breed purpose	Number (and percentage of total) cattle in Humberside	Number (and percentage of total) cattle in North Yorkshire	Number (and percentage of total) cattle in South Yorkshire	Number (and percentage of total) cattle in West Yorkshire
Beef	45,218 (85%)	237,171 (65%)	22,512 (72%)	43,579 (70%)
Dairy	6,761 (12%)	116,931 (32%)	7,265 (23%)	16,060 (25%)
Dual purpose	1,083 (2%)	9,367 (2%)	1,100 (3%)	2,304 (3%)
Unknown	4 (0.01%)	262 (0.07%)	6 (0.02%)	10 (0.00%)
Total	53,066	363,731	30,883	61,953

Appendix 2: summary of headline cattle TB statistics

Table 3: Herd-level summary statistics for TB in cattle in Yorkshire and Humberside in 2024 (SAM data)

Herd-level statistics	Humberside	North Yorkshire	South Yorkshire	West Yorkshire
(a) Total number of cattle herds live on Sam at the end of the reporting period	717	3,388	439	1,064
(b) Total number of cattle herds subject to annual TB testing (or more frequent) at the end of the reporting period (any reason)	62	289	31	88
(c) Total number of whole herd skin tests carried out at any time in the period	176	895	102	262
(d) Total number of OTF cattle herds having TB whole-herd tests during the period for any reason	155	826	97	246
(e) Total number of OTF cattle herds at the end of the report period (herds not under any type of TB movement restrictions)	704	3,320	426	1,045
(f) Total number of cattle herds that were not under restrictions due to an ongoing TB incident at the end of the report period	714	3,380	439	1,061
(g.1) Total number of new OTF-S TB incidents detected in cattle herds during the report period	2	9	0	5

Herd-level statistics	Humberside	North Yorkshire	South Yorkshire	West Yorkshire
(g.2) Total number of new OTF-W TB incidents detected in cattle herds during the report period	0	2	0	1
(g.3) Total number of new TB incidents (OTF-W and OTF-S) detected in cattle herds during the report period	2	11	0	6
(h.1) Of the new OTF-W herd incidents, how many occurred in a holding affected by another OTF-W incident in the previous 3 years?	0	0	0	0
(h.2) Of the new OTF-W herd incidents, how many could be considered secondary to a primary incident based on current evidence?	0	1	0	0
(h.3) Of the new OTF-W herd incidents, how many were triggered by skin test reactors or twice-inconclusive reactors (2xIRs) at routine herd tests?	0	0	0	0
(h.4) Of the new OTF-W herd incidents, how many were triggered by skin test reactors or 2xIRs at other TB test types (such as forward and back-tracings, contiguous, check tests)?	0	2	0	1
(h.5) Of the new OTF-W herd incidents, how many were first detected through routine slaughterhouse TB surveillance?	0	0	0	0

Herd-level statistics	Humberside	North Yorkshire	South Yorkshire	West Yorkshire
(i.1) Number of new OTF-S incidents revealed by enhanced TB surveillance (radial testing) conducted around those OTF-W herds	0	3	0	2
(i.2) Number of new OTF-W incidents revealed by enhanced TB surveillance (radial testing) conducted around those OTF-W herds	0	1	0	1
(j) Number of OTF-W herds still open at the end of the period (including any ongoing OTF-W incidents that began in a previous reporting period)	1	5	0	1
(k) Number of OTF-W herds still open at the end of the period that were on a finishing unit	1	5	0	0
(l) New laboratory-confirmed incidents of M. bovis infection in non-bovine domestic species or captive deer detected during the report period (indicate host species involved)	0	0	0	0

Table 4: Animal-level summary statistics for TB in cattle in Yorkshire and Humberside in 2024

Animal-level statistics (cattle)	Humberside	North Yorkshire	South Yorkshire	West Yorkshire
(a) Total number of cattle tested with tuberculin skin tests or additional IFN-γ blood tests in the period (animal tests)	15,801	97,147	8,414	17,333
(b.1) Reactors detected by tuberculin skin tests during the year	7	16	0	7

Animal-level statistics (cattle)	Humberside	North Yorkshire	South Yorkshire	West Yorkshire
(b.2) Reactors detected by additional IFN-γ blood tests (skin-test negative or IR animals) during the year	0	7	0	0
(c) Reactors detected during year per incidents disclosed during year	3.5	2.1	0.00	1.2
(d) Reactors per 1,000 animal tests	0.4	0.2	0.0	0.4
(e.1) Additional animals slaughtered during the year for TB control reasons (dangerous contacts, including any first time IRs)	0	0	0	0
(e.2) Additional animals slaughtered during the year for TB control reasons (private slaughters)	0	4	0	0
(f) Slaughterhouse (SLH) cases (tuberculous carcases) reported by the Food Standards Agency (FSA) during routine meat inspection	0	8	0	1
(g) SLH cases confirmed by M. bovis PCR testing or bacteriological culture	0	1	0	0

Note (c) Reactors detected during year per incidents disclosed during year, reactors may be from incidents disclosed in earlier years, as any found through testing during the report year count in the table above.

Note (g) SLH cases confirmed by culture of M. bovis, not all cases reported are submitted for culture analysis. All cases reported are from any period prior to or during restrictions.

Appendix 3: suspected sources of M. bovis infection for all the new OTF-W and OTF-S incidents identified in the report period

In 2024, 15 out of 19 (79%) new TB incidents in Yorkshire and Humberside received a preliminary or final APHA veterinary investigation to identify the source of infection. Not all Disease Report Form (DRF) investigations were carried out in 2024.

Each TB incident could have up to 3 potential risk pathways identified. Each risk pathway is given a score that reflects the likelihood of that pathway bringing TB into the herd. The score is recorded as either:

- definite (score 8)
- most likely (score 6)
- likely (score 4)
- possible (score 1)

The sources for each incident are weighted by the certainty ascribed. Any combination of definite, most likely, likely, or possible can contribute towards the overall picture for possible routes of introduction into a herd. If the overall score for a herd is less than 6, then the score is made up to 6 using the ‘Other or unknown source’ option. Buffering up to 6 in this way helps to reflect the uncertainty in assessments where only ‘likely’ or ‘possible’ sources are identified.

Table 5 combines the data from multiple herds and provides the proportion of pathways in which each source was identified, weighted by the certainty that each source caused the introduction of TB. The output does not show the proportion of herds where each pathway was identified (this is skewed by the certainty calculation). WGS of M. bovis isolates can be a powerful tool in identifying a likely source of infection, however WGS clades are not determined for OTF-S herds. As a result of varying levels of uncertainty, only broad generalisations should be made from these data. A more detailed description of this methodology is provided in the explanatory supplement for the annual reports 2024.

Table 5: Suspected sources of M. bovis infection for the 15 incidents with a preliminary or a final veterinary assessment in Yorkshire and Humberside, in 2024

Source of infection	Possible (1)	Likely (4)	Most likely (6)	Definite (8)	Weighted contribution
Badgers	1	2	0	0	7.1%
Cattle movements	3	2	5	0	38.6%
Contiguous	2	0	0	0	2.1%
Residual cattle infection	1	0	0	0	1.1%
Domestic animals	0	0	0	0	0.0%
Non-specific reactor	3	1	0	0	6.0%
Fomites	2	0	0	0	2.2%
Other wildlife	1	3	1	0	17.3%
Other or unknown source	1	0	0	0	25.6%

Please note that each TB incident could have up to 3 potential pathways so totals may not equate to the number of actual incidents that have occurred.

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