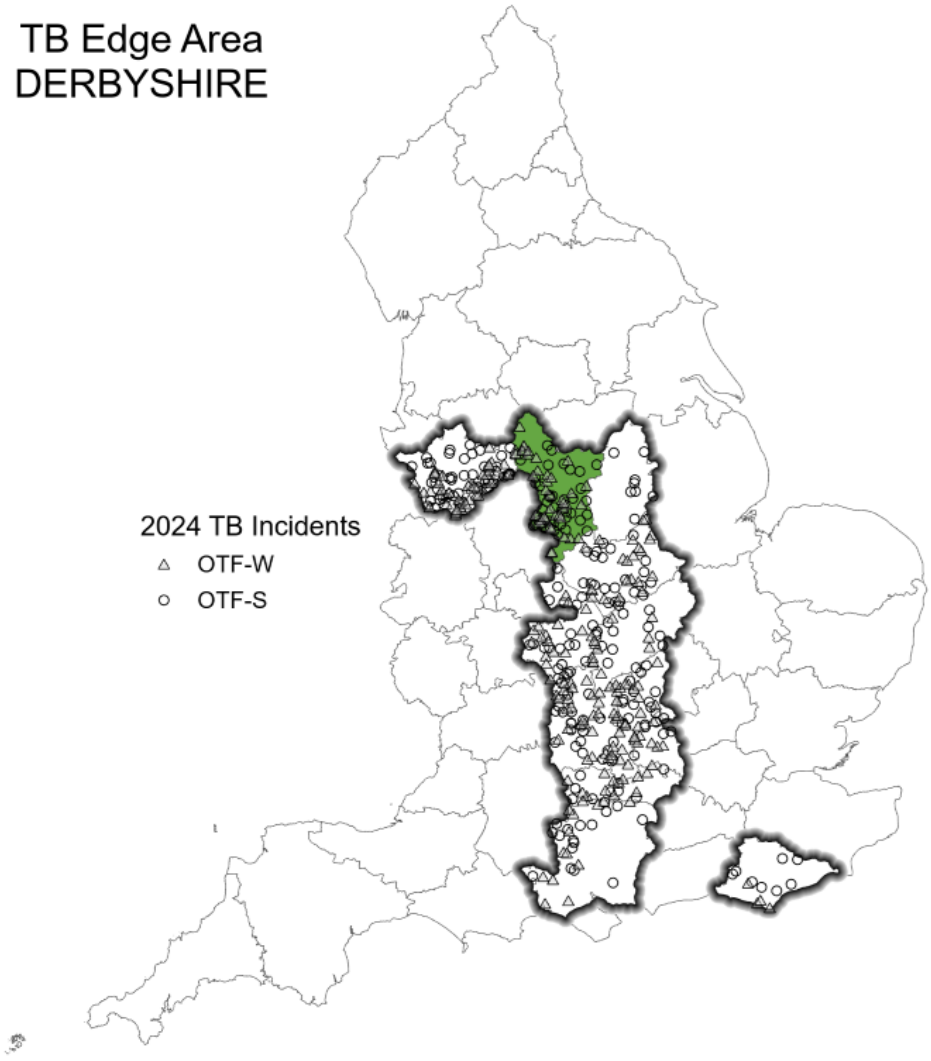
Animal &
Plant Health
Agency

# Year End Descriptive Epidemiology Report of Bovine TB in the Edge Area of England 2024: Derbyshire



# Contents

# Introduction

The Edge Area was originally established in 2013, along with the Low Risk Area (LRA) and High Risk Area (HRA) 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. The current aim is to obtain OTF status for the Edge Area as soon as possible.

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

This report describes the frequency and geographical distribution of TB in cattle herds Derbyshire, an Edge Area county, in 2024. It examines what factors are likely to be driving TB in this area, and the risks the disease in this county may pose to neighbouring areas.

It 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 and the scientific community.

# 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 This includes both 'Officially Tuberculosis-Free Status Withdrawn' (OTF-W) and 'Officially Tuberculosis-Free Status Suspended' (OTF-S) incidents.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, interferon gamma 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 interferon gamma test-positive animals), but without subsequent detection of TB lesions or positive PCR test (or culture) results in any of those animals. OTF-S incidents may be reclassified as OTF-W incidents following further testing and post-mortem examination of reactor cattle subsequently removed from the TB incident. This is particularly relevant for

incidents which occur towards the end of the reporting period and may cause discrepancies in the number of OTF-W or OTF-S incidents reported in the current and previous reports, Edge Area Year End Epidemiology reports or other official TB statistics.

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.

Furthermore, the number of TB incidents and designation of those incidents as OTF-W or OTF-S may differ in this report compared to other official TB statistics due to differences in the information available at the time datasets are accessed.

In Derbyshire there were 14 Approved Finishing Units (AFUs) active during (and at the end of) 2024. No new TB incidents were disclosed in AFUs in Derbyshire in 2024 and there were no ongoing incidents in AFUs at the end of the year. These have been excluded from the numbers presented in these reports due to the limited epidemiological impact of these incidents, with the exception of the incidence per 100 herd years at risk (HYR), which does include new TB incidents and time at risk contributed by AFUs.

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

# Cattle industry

Appendix 1 provides cattle industry demographics for Derbyshire. There were 1,392 cattle herds registered in Derbyshire at the end of the year. Small herds of up to 50 cattle were the most common in this county, representing 48% of all cattle businesses. The predominant cattle enterprises in Derbyshire were beef suckler and fattening herds, accounting for 56% of all the cattle kept on farms in this county.

There were 14 AFUs without grazing operating in Derbyshire in 2024, compared to 13 in 2023. There were no Exempt Finishing Units (EFUs) without grazing operating in Derbyshire in 2024, compared to one in 2023. In 2024, there was one livestock market in the county at Bakewell.

Derbyshire was originally divided between the HRA in the west, mid and south, and the Edge Area in the north and east of the county. The whole of Derbyshire was fully incorporated into the Edge Area in January 2018.

Herds in the original HRA part of the county currently undergo routine surveillance TB testing every 6 months by default, while herds in the original Edge Area of the county are tested annually. In 2024, 547 (34%) herds in the 6-monthly testing area were regarded as having a lower risk of contracting TB and thus were placed on annual TB testing under the earned recognition scheme in 2024.

Appendix 2 provides a summary of headline cattle TB statistics in Derbyshire.

# Number of new TB incidents

A total of 85 new TB incidents were disclosed across Derbyshire during 2024 (42 OTF-W and 43 OTF-S). This was a 10.4% increase compared to the 77 in 2023 (30 OTF-W and 47 OTF-S).

From 2015 to 2020 the number of OTF-W incidents fluctuated between 66 and 84, before marked declines in 2021 and 2022 to 63 and 30 new OTF-W incidents, respectively. The latter figure was the lowest number of OTF-W incidents recorded in the county over the last 10 years, and it was maintained in 2023 before increasing again to 42 in 2024.

The number of OTF-S incidents in the county has fluctuated more widely over the last decade, ranging between a minimum of 33 in 2019 to a maximum of 68 in 2020 (Figure 1).

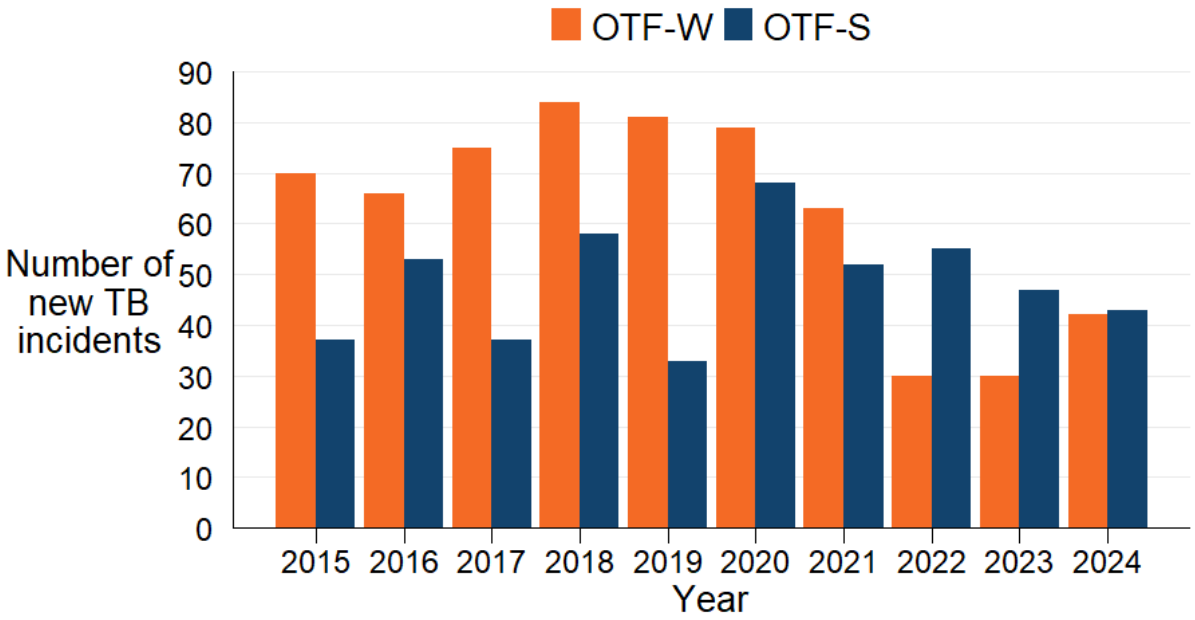



**Figure 1:** Annual number of new TB incidents in Derbyshire, from 2015 to 2024.

# Disclosing TB surveillance method

As in previous years, in 2024 most new TB incidents in Derbyshire were disclosed by routine whole-herd tuberculin skin testing (57), followed by 6-monthly post-incident targeted surveillance testing (6M, 14), slaughterhouse testing (5) and radial testing (5). This continues the constant trend recorded over the last decade of whole herd tests detecting most the incidents, followed by slaughterhouse surveillance, radial testing, pre-movement testing and check testing.

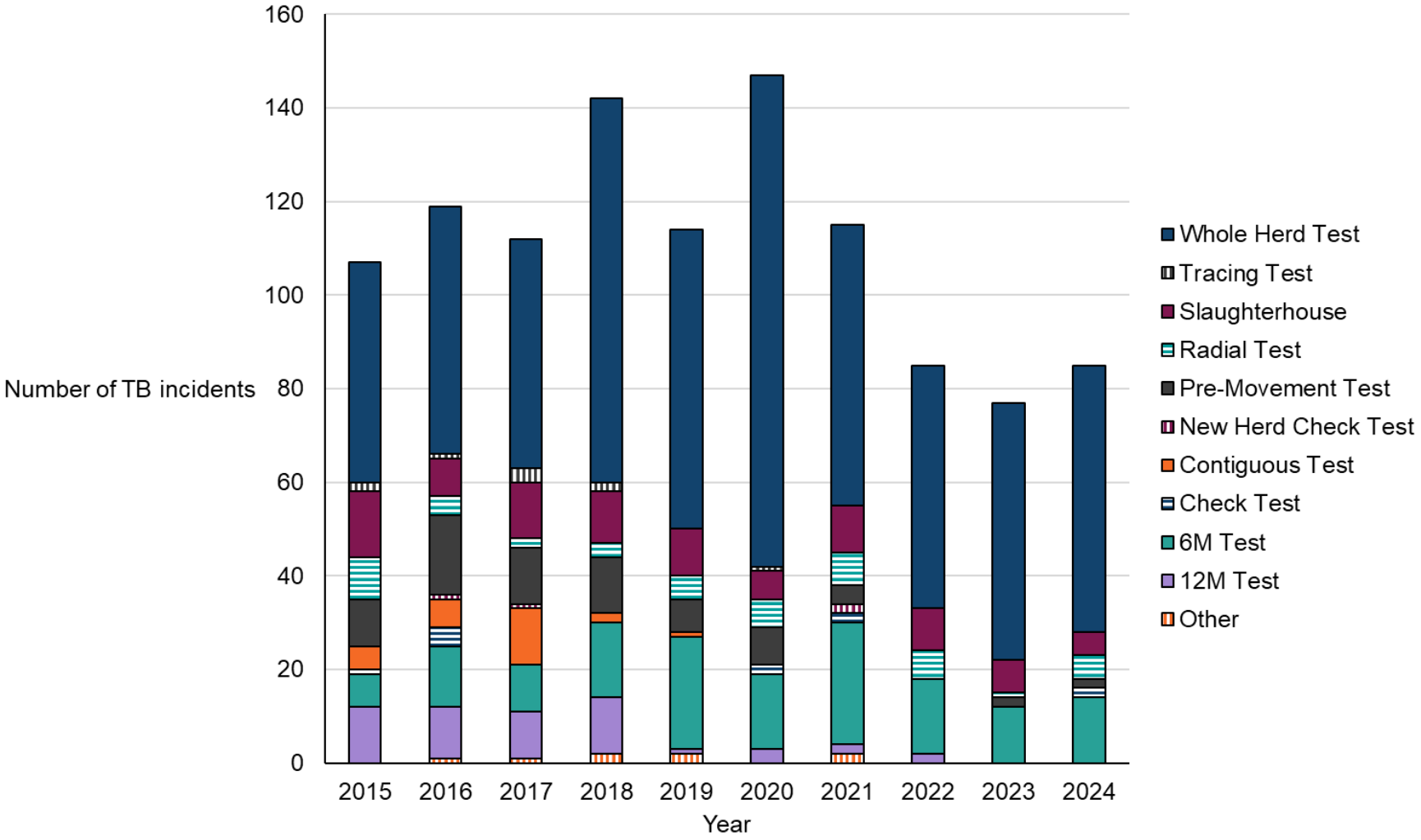



**Figure 2:** Number of new TB incidents (OTF-W and OTF-S) in Derbyshire in 2024, according to the surveillance methods that detected them. Incidents disclosed by 'Other' tests includes, but is not limited to, private testing, inconclusive reactor retests, and export tests.

# Duration of TB incidents

Of the 79 TB incidents that were resolved in Derbyshire in 2024, 39 started in 2024, 36 in 2023 and 4 in 2022.

Of these 79 incidents, 35 were OTF-W. Three were resolved within 101 to 150 days, 21 within 151 to 240 days and a further 10 within 241 to 550 days (Figure 3). The remaining OTF-W incident that ended in 2024 was persistent (where the affected herd was under movement restrictions for more than 550 days), having started in 2022 (Figure 3). Another persistent OTF-W incident was still open at the end of the year. The median duration of OTF-W incidents that ended in 2024 in Derbyshire was 190 days, interquartile range (IQR) 161 to 266, which is shorter than in 2023 (median 217, IQR 171 to 354).

The remaining 44 TB incidents that concluded in 2024 were OTF-S incidents, of which 1 was quickly resolved within 100 days, 11 within 101 to 150 days, 27 within 151 to 240 days and a further 5 within 241 to 550 days. There were no OTF-S persistent incidents ending in 2024. The median duration of OTF-S incidents was 168 days (IQR 149 to 204), which was shorter compared to 2023 (median 178, IQR 151 to 231).

The median duration of all incidents that ended in 2024 in Derbyshire was 181 days (IQR 157 to 222). This is shorter than the duration of incidents that closed in 2023, with a median of 195 days (IQR 158 to 250). This was also shorter than the median duration for the whole Edge Area, which was 186 days (IQR 159 to 260).

There were 48 TB incidents still ongoing at the end of 2024, including the one persistent OTF-W incident mentioned above.

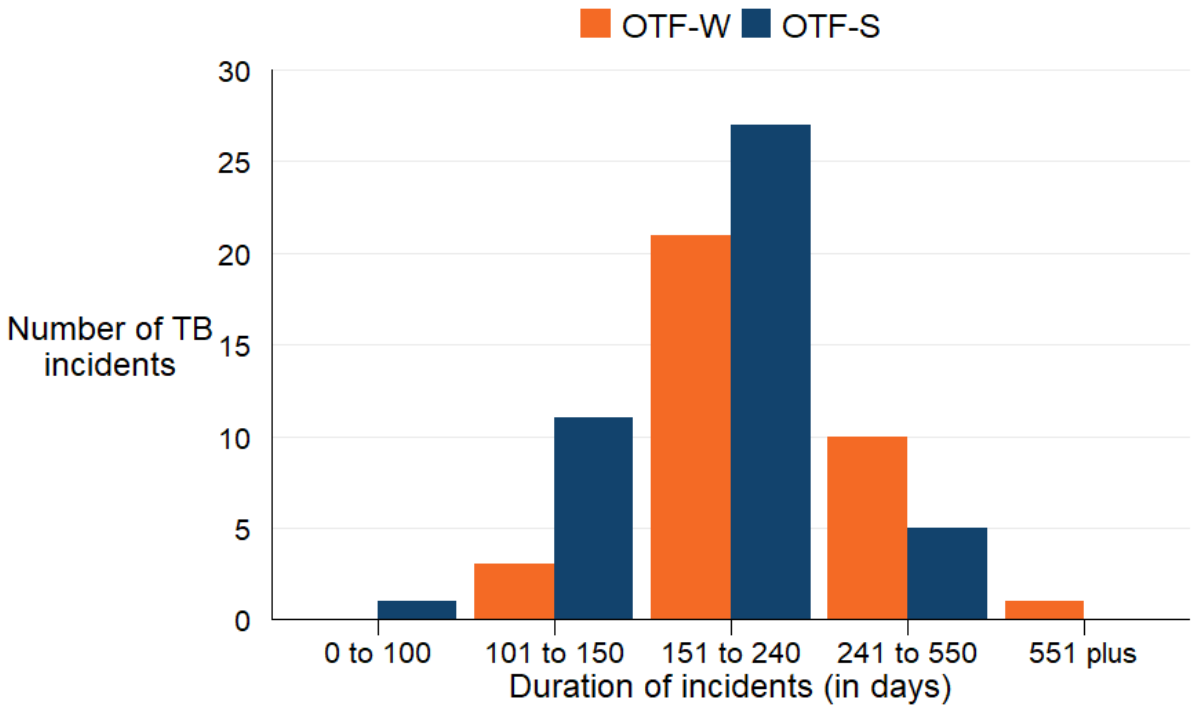



**Figure 3:** Duration of TB incidents (OTF-W and OTF-S) that ended in Derbyshire in 2024.

# Incidence of TB

In 2024 the herd incidence rate in Derbyshire was 6.4 new TB incidents per 100 herd years at risk (HYR), an increase compared to 5.9 incidents per 100 HYR recorded the previous year (Figure 4). This was below the overall rate for the whole of the Edge Area in 2024 (7.3) and it was the sixth lowest among the 11 Edge Area counties, after those of Nottinghamshire (2.7), East Sussex (2.7), Hampshire (4.6), Northamptonshire (5.4) and Leicestershire (5.6).

Between 2015 and 2020 the herd incidence rate in Derbyshire increased year on year, peaking at 10.6 incidents per 100 HYR in 2020 and decreased each year thereafter, until 2024.

In the Edge area overall the incidence rate increased from 6.6 incidents per 100 HYR in 2015 to a peak of 10.0 in 2020, before gradually declining to 7.3 in 2024, a small increase compared to 2023 (7.2).

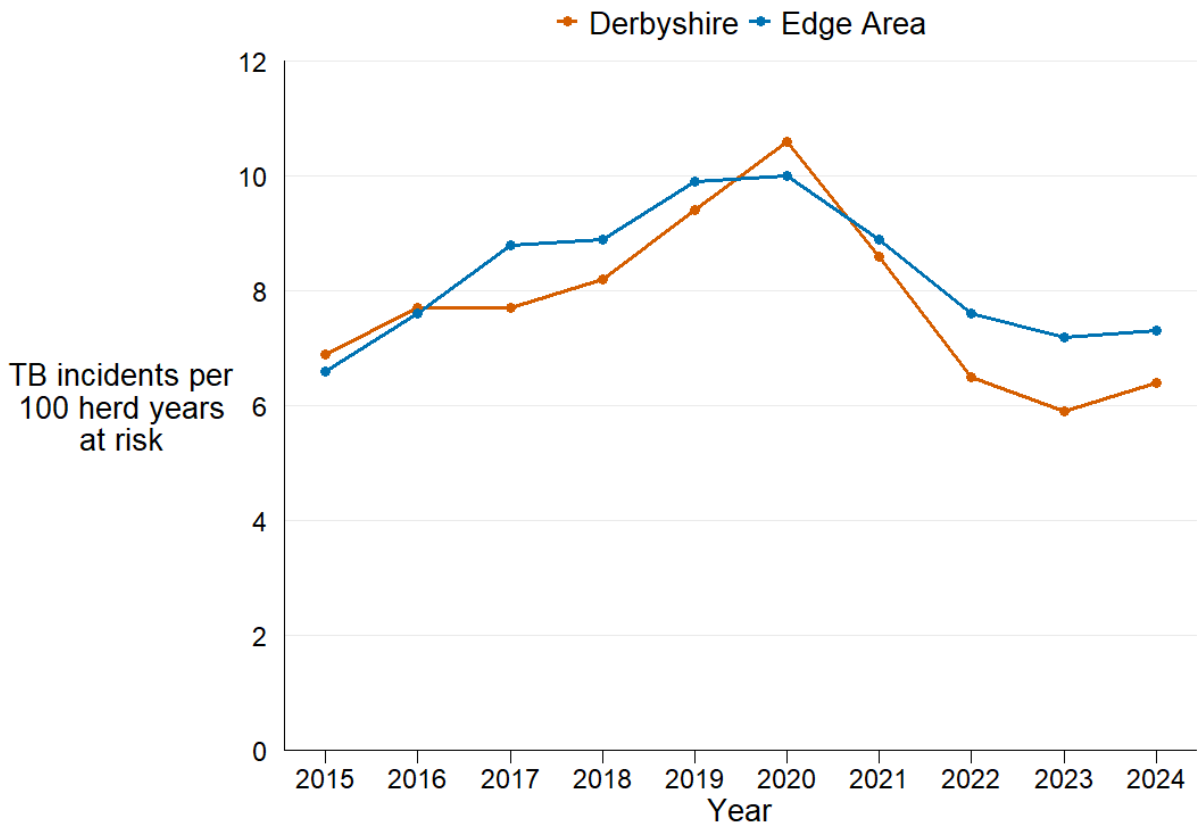



**Figure 4:** Annual incidence rate (per 100 herd-years at risk) for all new incidents (OTF-W and OTF-S) in Derbyshire and the Edge Area, from 2015 to 2024.

# Prevalence of TB

In 2024, the prevalence was 3.1%, the fifth lowest of the 11 counties in the Edge Area in 2024, but an increase from 2.6% in 2023. This was lower than the overall prevalence for the whole of the Edge Area in 2024 (4.0%) (Figure 5).

Over the last decade the prevalence in Derbyshire increased steadily from 2.7% in 2015 to a peak of 5.9% in 2020, before declining to a low of 2.6% in 2023. This follows a very similar trend to the overall herd prevalence for the Edge Area and the evolution of the herd incidence rate for this county (described in the previous section).

In the Edge area overall, the prevalence increased steadily between 3.2% in 2015 to 5.9% in 2018. This was followed by a gradual decrease to 3.6% in 2022. In 2023, the prevalence rose to 3.7%, increasing again to 4.0% in 2024.

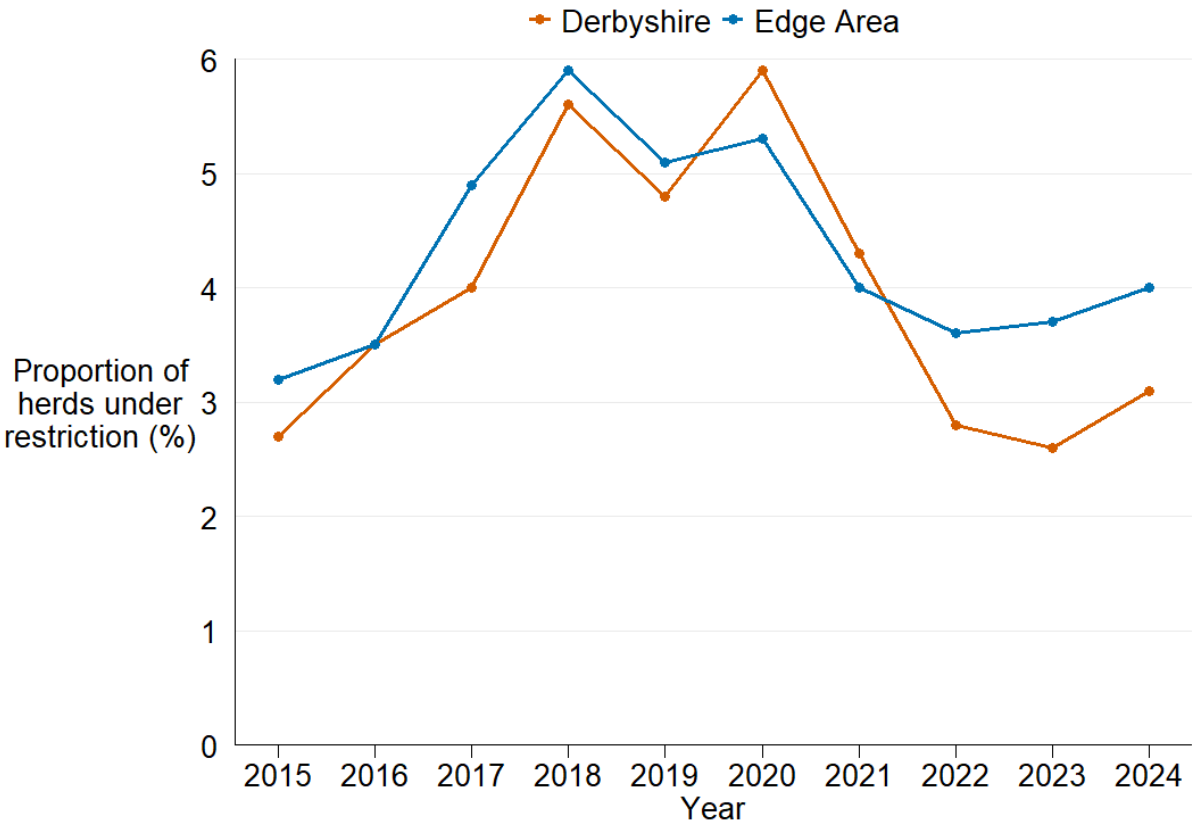



**Figure 5:** Annual end of year prevalence in Derbyshire and the Edge Area overall, from 2015 to 2024. This is the proportion of live herds under TB movement restrictions on the 31 December 2024.

## Skin test reactors and interferon gamma test positive animals removed

A total of 668 cattle were removed as TB test reactors from TB incidents in Derbyshire during 2024. Of those, 523 were skin test reactors and 145 were positive animals on the supplementary interferon gamma blood test (IFN-γ, Figure 6).

Compared to 2023, this was a 34% increase in the number of TB test-positive animals removed (499: 397 skin test reactors and 102 IFN-γ positive animals).

The number of skin test reactors recorded in 2024 was an increase compared to 2022 and 2023, and similar to 2021. However, it remained lower than the number of skin test reactors removed between 2017 and 2020.

The number of IFN-γ positive animals has gradually increased since 2022 but remained lower than the number detected between 2018 and 2021 (Figure 6).

The overall increase in skin test reactors compared to 2023 is possibly a reflection of the higher incidence and prevalence seen within the county in 2024. An explosive TB incident (described below), which occurred in 2024, is also likely to have contributed

to this increase. The overall increase in IFN-γ positive animals compared to 2022 and 2023 was likely driven by the higher number of new OTF-W incidents identified in 2024, which may have qualified for mandatory IFN-γ herd testing. The explosive TB incident mentioned above will also have contributed to this increase.

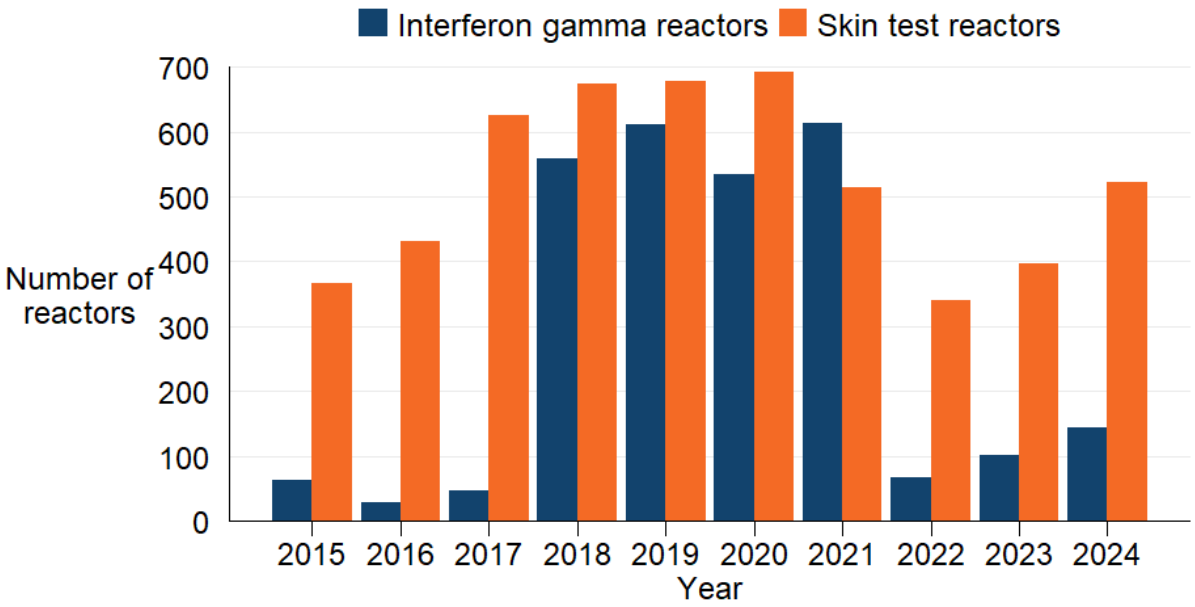



**Figure 6:** Number of skin test reactors and IFN-γ test positive cattle removed by APHA for TB control reasons in Derbyshire, from 2015 to 2024.

# Recurrent TB incidents

## Three-year recurrence

In Derbyshire, 25 of the 43 (58%) herds with a new OTF-S TB incident and 21 of the 42 (50%) with an OTF-W incident in 2024 had experienced another TB incident in the previous 3 years (Figure 7). This was the fourth highest percentage of recurrent herd incidents in 2024 reported in all 11 counties of the Edge Area (53%) and was higher than the Edge Area overall (47%).

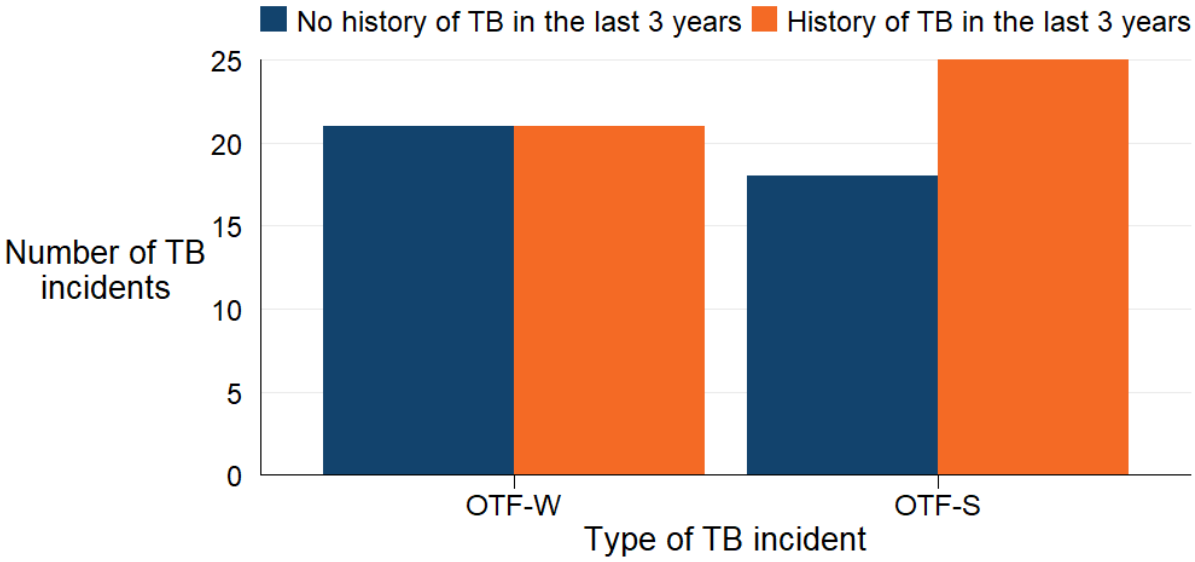



**Figure 7:** Number of herds with a TB incident (by OTF-W and OTF-S) in Derbyshire in 2024, with and without a history of any TB incident in the previous 3 years of the disclosing test.

# Unusual TB incidents

An explosive OTF-W TB incident was disclosed in a medium sized dairy herd near Parwich in the first quarter of 2024. After the initial disclosing skin test, subsequent short-interval herd skin tests continued to disclose a high number of reactors, with a high proportion of visible lesions (VLs) at Post-Mortem examination (PME). To increase testing sensitivity, supplementary blood testing (IFN-γ and IDEXX) was undertaken as part of the Head-to-Head Project. In total, 196 skin and blood test reactors were removed out of 402 cattle tested (representing 49% of the herd). The homerange of the clade of M. bovis (B3-11) isolated from the TB positive cattle encompasses the location of the affected holding. Due to the location of the farm, a history of very few low-risk purchases and the presence of wildlife, it was initially considered that exposure through infected local wildlife was the most probable risk pathway. However, analysis of the Whole Genome Sequencing (WGS) results revealed the TB isolates from this incident were more closely related to those from a previous incident that this herd sustained in 2021. Therefore, it is possible that residual infection played a role in the origin of this incident. At the time of writing this report, the TB movement restrictions on this herd had been lifted following 2 clear short interval skin tests in March and May 2025.

Another unusual OTF-W incident of note in Derbyshire was a persistent incident which was disclosed in 2023. In total, 47 skin test reactors and IFN-γ test positive animals were removed from the affected dairy farm. However, only 2 of these animals were found to have VLs at PME, both with negative culture results. This precluded determination of the TB clade of M. bovis and therefore no WGS results were available to support APHA investigations into the likely source of infection in this herd.

# 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 PCR and/or bacteriological culture positive incidents of M. bovis infection, and in specific herds of camelids, goats and captive deer at an elevated risk of infection (such as those co-located with or contiguous to cattle herds affected by OTF-W incidents). Enhanced voluntary wildlife surveillance takes place in LRA hotspots, but not within the Edge Area. Although no active surveillance of wild deer is in place, reporting of suspected TB lesions in wild deer and wildlife carcases is statutory and suspect carcases are inspected and tested by APHA carcases.

There were no incidents of TB reported in non-bovine species in Derbyshire in 2024.

# Geographical distribution of TB incidents

As in previous years, new TB incidents in Derbyshire in 2024 were concentrated in the original HRA portion in the south and west of the county adjoining Staffordshire (HRA) and Cheshire (Edge Area). This also mirrored the higher density of cattle holdings in that part of Derbyshire and corresponds to the portion of the county where herds are routinely tested for TB every 6 months by default (Figure 8).

As mentioned above, the incident rate in Derbyshire for 2024 was 6.4 incidents per 100 HYR (sixth lowest in Edge Area), in spite of being surrounded by HRA and Edge Area counties with much higher incidence rates, such as Staffordshire (10.5) and Cheshire (8.7).

Compared to 2023, there was a decrease in the number of OTF-W incidents located north of Ashbourne on the Staffordshire border and the north-west of Derby. A new area of concern has been identified in the south of Derby, where an upward trend of new TB incidents (OTF-S and OTF-W) was recorded in 2024.

In comparison to 2023, there was an increase in the number of OTF-W incidents located north of Buxton on the Cheshire border. Some of these incidents are thought to be associated with an ongoing area of concern in the Stockport area (Greater Manchester), where Hotspot 31 has been launched.

There were a greater variety of WGS clades of M. bovis identified in incident cattle herds in 2024 compared to 2023, including B6-11, B6-11/B6-14, B6-62 and B3-84/B6-85, in addition to the predominant clade B3-11. The geographical distribution of OTF-S incidents remained relatively similar to 2023. Most TB incidents that yielded isolates suitable for WGS analysis in 2024 were identified as clade B3-11 of M. bovis, which includes isolates of spoligotype 25 such as genotype 25: and has a homerange spanning much of Cheshire, Staffordshire and West Derbyshire, as well as north-east Shropshire and north Leicestershire. Most isolates of this clade in 2024

in Derbyshire were associated with a low or medium cattle movement risk as identified using the cattle movement algorithm (Figure 8).

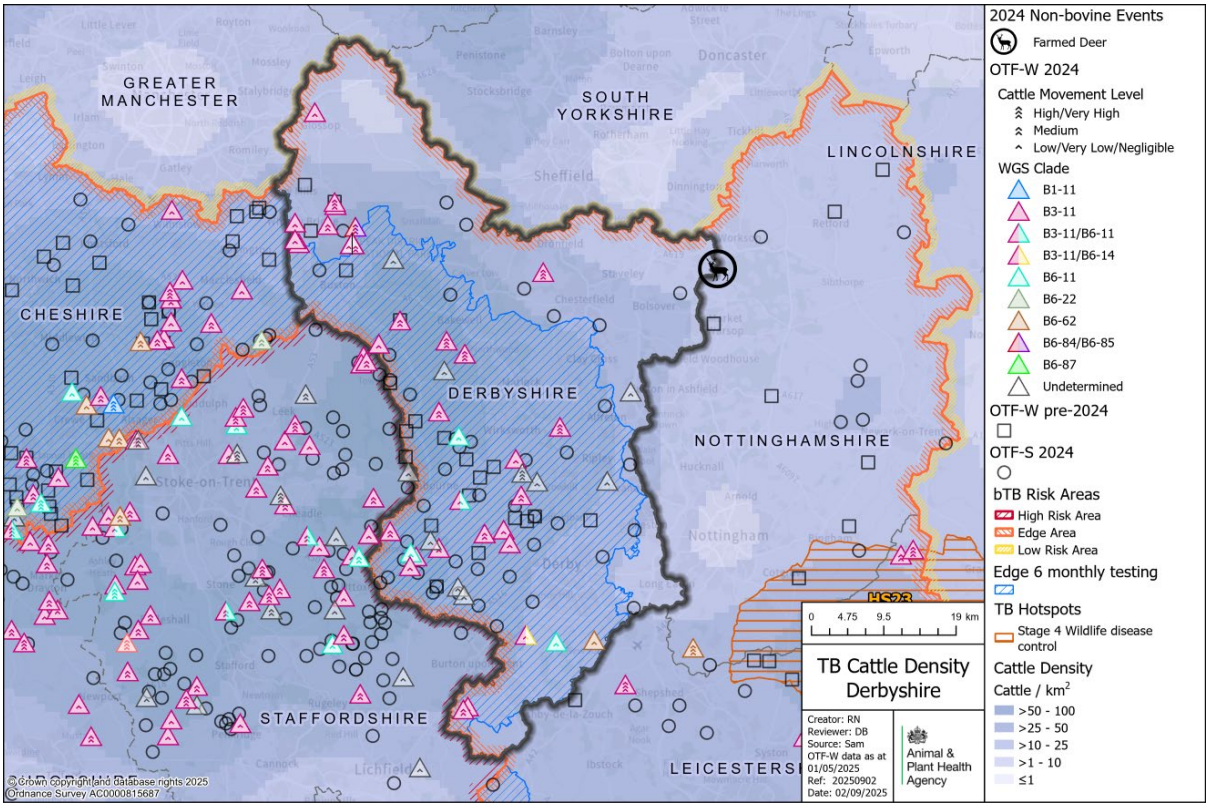



**Figure 8:** Location of cattle holdings in Derbyshire with new TB incidents (OTF-W and OTF-S) and OTF-W incidents still ongoing at the beginning of 2024, overlaid on a cattle density map.

**Figure 8 description:** Map of Derbyshire and adjoining areas showing the cattle density, the geographical locations of cattle holdings in Derbyshire 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. The 2024 OTF-W incidents are shown as triangles, coloured by WGS clade, and contain chevrons to show the cattle movement algorithm score allocated to the incident (low/medium/high-risk of cattle movements). Blue represents clade B1-11, pink represents clade B3-11, half pink and half turquoise represents co-infection with clades B3-11/B6-11, half pink and half yellow represents co-infection with clades B3-11/B6-14, turquoise represents clade B6-11, green represents clade B6-22, brown represents clade B6-62, half red and half purple represents co-infection with clades B6-84/B6-85, green represents clade B6-87. Transparent triangles represent incidents where the WGS clade was undetermined. OTF-S incidents are shown as circles.

# Main risk pathways and key drivers for TB infection

Not all Disease Report Form (DRF) veterinary investigations to identify the source of infection were carried out in 2024, with 48 out of 85 (56%) new TB incidents in Derbyshire receiving a preliminary or final investigation. The findings from these investigations are reported in Appendix 3.

New data driven methods to quantify the likelihood of risk pathways for TB incident herds have been developed by APHA, which are not dependent on the completion of a DRF and include the:

- cattle movement algorithm
- WGS local transmission of infection indicator

The methodology used can be found in the explanatory supplement for the annual reports 2024.

There is always a degree of uncertainty about the estimated true routes of TB infection into a herd. The absence of a local transmission event, or cattle movements associated with a high likelihood of infection does not completely negate these pathways. Nonetheless, the evidence from the cattle movement and WGS data can provide valuable insights into the possible risk pathways. Figure 9 provides the percentage of TB incident herds in which each risk pathway combination was identified. The spatial distribution of these categories is presented in Figure 10. Each risk pathway category is described in greater detail in the following text

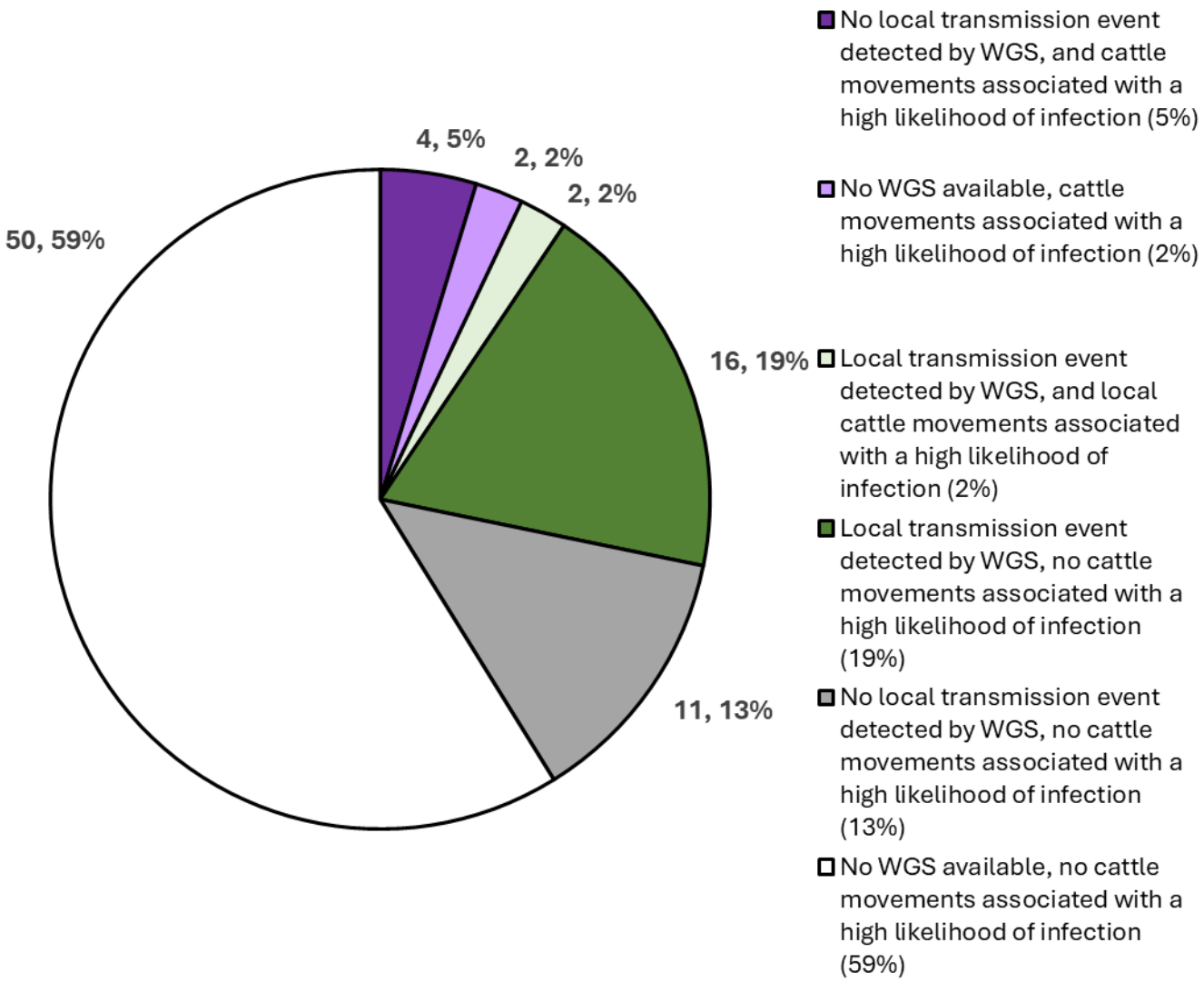



**Figure 9:** Pie chart showing the risk pathway combinations identified by the WGS local transmission of infection indicator and cattle movement algorithm for all 85 new TB incidents starting in Derbyshire in 2024. Numbers presented in each segment display the number of new TB incidents in 2024 in each segment and the percentage of the total new TB incidents in Derbyshire in 2024.

WGS data was available for 33 (39%) of all new TB incidents in Derbyshire. The WGS local transmission of infection indicator identified evidence of local transmission for 18 (21%) new TB incidents in 2024 (Figure 9).

A local transmission event is defined as evidence from WGS data which identified another M. bovis isolate within 3 single nucleotide polymorphisms (SNPs) away from another incident, which occurred within a 9km radius, and within the previous 4 years or following 6 months after incident confirmation.

There were 16 OTF-W incidents (19% of all new incidents in 2024, dark green symbols in Figures 9 and 10) for which a broad spectrum of local pathways cannot be ruled out, including:

- residual infection in the herd
- contiguous contact with infected cattle
- direct or indirect contact with potentially infected wildlife

This is because for these incidents:

- WGS data was available
- a local transmission event was identified without strong evidence of high risk cattle movements

There were 2 OTF-W incidents (2% of all new incidents in 2024, light green symbol in Figures 9 and 10) for which the source of infection may be attributed to the movement of undetected infected cattle from holdings within the local area (less than 25km), but other local infection pathways (as described above) cannot be ruled out.

This is because for these incidents:

- WGS data was available
- a local transmission event was identified
- with strong evidence of local high-risk cattle movements (within 25km)

There were 4 OTF-W incidents (5% of all new incidents in 2024, dark purple symbols in Figures 9 and 10) for which the movement of undetected infected cattle from outside the local area is the most likely source of infection, however local cattle movements cannot be ruled out.

This is because for these incidents:

- WGS data available
- a local transmission event was not identified
- there was evidence of local or non-local high risk cattle movements

There were 2 TB incidents (2% of all new incidents in 2024, light purple symbols in Figures 9 and 10) for which the source of infection is likely to be related to the movement of undetected, infected cattle from within or outside the local area.

This is because for these incidents:

- no WGS data available
- local and non-local high risk cattle movements were identified

WGS data was not available for 52 (61%) of all new TB incidents in Buckinghamshire, accounting for 9 OTF-W and 43 OTF-S incidents. This absence of genetic data limits our ability to identify if these incidents are likely to be linked to local transmission of disease. Nevertheless, in these instances, the cattle movement algorithm can still provide an indication on the presence/absence of cattle movements that could have played a part in disease transmission.

There were 11 OTF-W incidents (13% of all new incidents in 2024, grey symbols in Figures 9 and 10) for which the source of infection remains unclear.

This is because for these incidents:

- WGS data was available
- a local transmission event was not identified
- there was no evidence of local or non-local high risk cattle movements

There were 50 TB incidents (59% of all new incidents in 2024, white symbols in Figures 9 and 10) for which the source of infection remains unclear, but for which local pathways cannot be ruled out.

This is because for these incidents:

- no WGS data available
- no local or non-local high risk cattle movements were identified

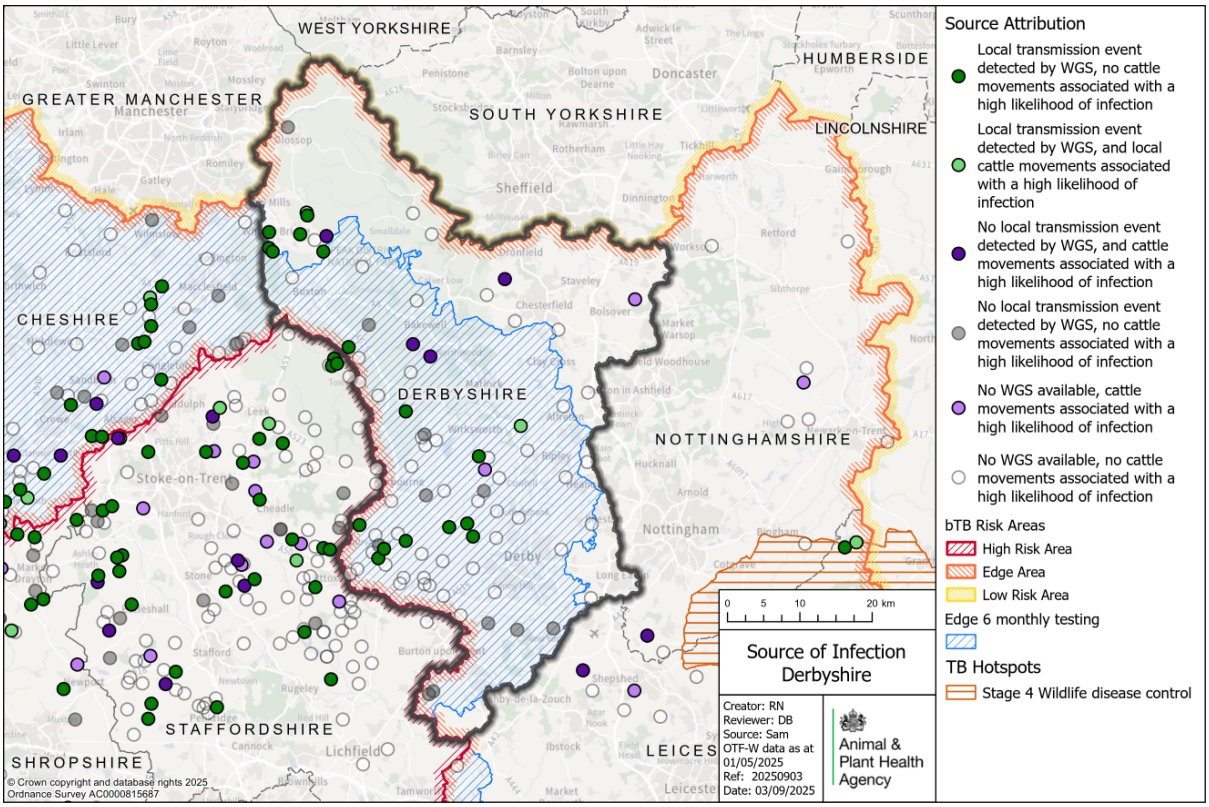



**Figure 10:** Map of the available evidence for risk pathways of TB infection into the herd, for all TB incidents (OTF-W and OTF-S) in Derbyshire that started in 2024.

**Figure 10 description:** Map of Derbyshire and adjoining areas showing the locations of the 85 new TB incidents, coloured by the risk pathway identified for the incident. Dark green are herds with a local transmission event was identified from WGS and no cattle movements with a high likelihood of infection were identified in the herd, light green represents incidents where local transmission event was identified from WGS and cattle movements with a high likelihood of infection were identified in the herd. Dark purple represents incidents where no local transmission event was identified from WGS and there were cattle movements identified with a high likelihood of infection in the herd. Light purple represents incidents with no WGS available and where there were cattle movements identified with a high likelihood of infection in the herd. Grey shows incidents where no local transmission event was identified from WGS and there were no cattle movements with a high likelihood of infection were identified in the herd either. White shows incidents with no WGS available and where there were no cattle movements with a high likelihood of infection were identified in the herd.

Genotyping was replaced with WGS of M. bovis isolates at APHA in 2021. All OTF-W incidents where the M. bovis isolate identified in the infected herd was within 3 SNPs of another isolate found in another herd in the previous 4 years and within 9km (local infection indicator) in Derbyshire in 2024 were caused by infection with clade B3-11 of M. bovis (Figure 11). As seen in previous years, this continues to be concentrated in the former HRA portion (south/central west) of the county, along the border with the HRA county of Staffordshire. In 2021 there was a single isolation of WGS clade B6-11 south of Derby, along the border with Leicestershire. Although there was

another incident in the south of Derbyshire in 2024 identified as clade B6-11, this did not meet the criteria to be considered indicative of local infection.

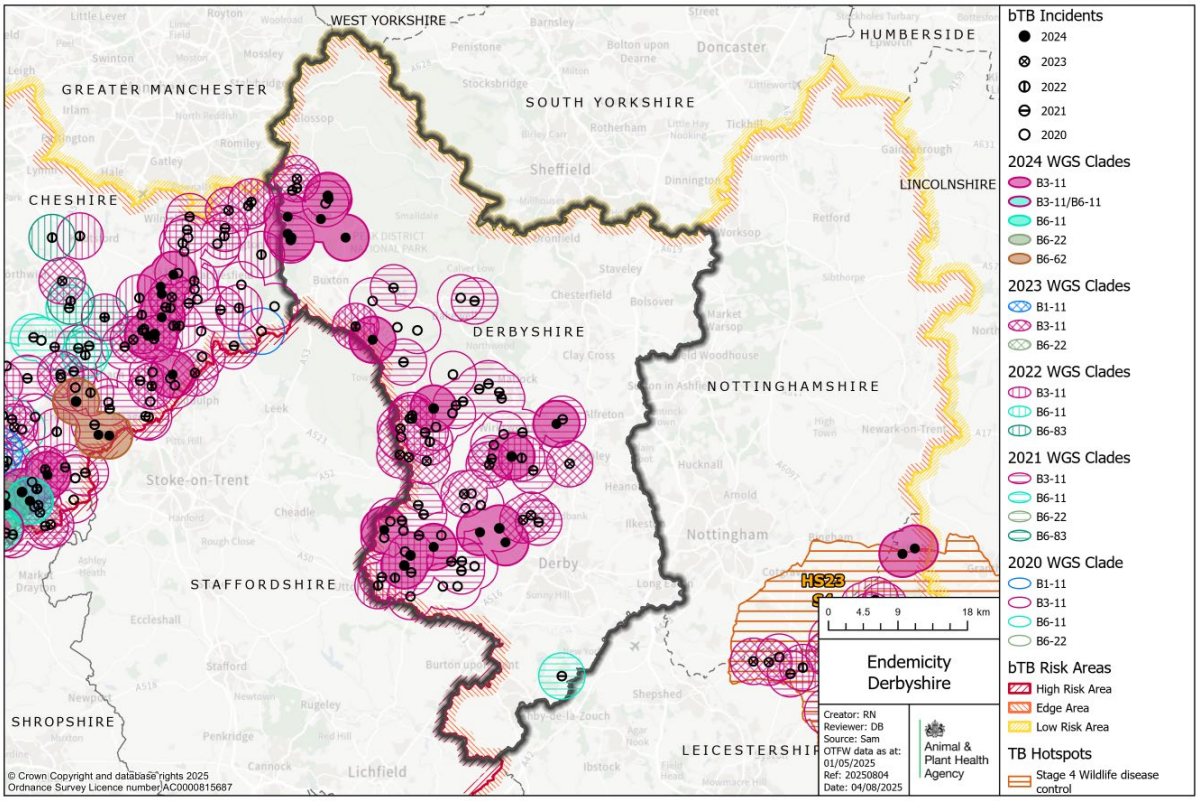



**Figure 11:** WGS clades of M. bovis detected in Derbyshire between 2020 and 2024, where the WGS clade identified in the infected herd was within 3 SNPs of another TB incident that was within 9km and occurred in the previous 4 years or 6-months after the incident of interest, with a 3km buffer zone around each incident.

**Figure 11 description:** Map of Derbyshire and adjoining areas showing the location of TB incidents with a WGS clade where a local transmission event was identified. Clades are shown as circles on the map with each clade represented by a different colour. The year from which the clade was identified is shown a solid colour (2024) or different types of hash (2020 to 2023).

# Forward look

Based on current information it is uncertain whether Derbyshire will achieve OTF status by 2038. Recurrent infection of cattle herds continues to a problem for this county.

Maintaining and improving upon the following measures will be vital to continue to address the most common risk pathways for TB incidents in cattle herds in Derbyshire:

- Badger TB control measures to reduce the risk of transmission to cattle, including the further expansion of badger vaccination against TB,
- 6-monthly or annual TB surveillance testing of cattle herds, depending on the area of Derbyshire and individual herd risk, to enable earlier detection of infected herds,
- discretionary use by APHA of the supplementary IFN-γ blood test in cattle herds with OTF-W incidents and unusual or problematic OTF-S incidents that do not automatically qualify for mandatory blood testing in the Edge Area,
- encouragement for livestock farmers to use the TB Advisory Service (which includes farm visits, badger sett surveys and bespoke biosecurity advice),
- increased awareness of good farm biosecurity practices through use of the TB Hub, APHA visits, TB Advisory Service, private vets, Farm Level Reports and WGS,
- increased awareness of the risk of unknowingly introducing TB into herds through incoming movements of undetected infected cattle, and promotion of the use of the ibTB online mapping tool as a decision support tool for cattle purchases, and
- reporting suspicion of TB in culled stalked deer, which is essential to help increase the understanding of M. bovis infection in potential wildlife reservoirs and the role they play in the transmission of TB. It remains a mandatory obligation that all wild deer carcases with suspect TB lesions are duly notified to the relevant authority. It would also be beneficial if further wildlife TB surveillance was introduced outside of TB Hotspots.

# Appendix 1: cattle industry demographics

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

| Size of herds | Number of herds |
|---|---|
| Undetermined | 10 |
| 1 to 50 | 668 |
| 51 to 100 | 239 |
| 101 to 200 | 224 |
| 201 to 350 | 135 |
| 351 to 500 | 69 |
| Greater than 501 | 47 |
| Total number of herds | 1,392 |
| Mean herd size | 116 |
| Median herd size | 54 |

**Table 2:** Number (and percentage of total) of animals by breed purpose in Derbyshire as of 31 December 2024

| Breed purpose | Number (and percentage of total) cattle |
|---|---|
| Beef | 91,283 (56%) |
| Dairy | 64,087 (39%) |
| Dual purpose | 6,392 (3%) |
| Unknown | 50 (0.03%) |
| Total | 161,812 |

# Appendix 2: summary of headline cattle TB statistics

**Table 3:** Herd-level summary statistics for TB in cattle in Derbyshire between 2022 and 2024 (SAM data)

| Herd-level statistics | 2022 | 2023 | 2024 |
|---|---|---|---|
| (a) Total number of cattle herds live on Sam at the end of the reporting period | 1,653 | 1,606 | 1,603 |
| (b) Total number of whole herd skin tests carried out at any time in the period | 2,130 | 2,012 | 2,051 |
| (c) Total number of OTF cattle herds having TB whole herd tests during the period for any reason | 1,400 | 1,378 | 1,378 |
| (d) Total number of OTF cattle herds at the end of the report period (herds not under any type of TB movement restrictions) | 1,545 | 1,514 | 1,488 |
| (e) Total number of cattle herds that were not under restrictions due to an ongoing TB incident at the end of the report period | 1,607 | 1,564 | 1,554 |
| (f.1) Total number of new OTF-S TB incidents detected in cattle herds during the report period | 55 | 47 | 43 |
| (f.2) Total number of new OTF-W TB incidents detected in cattle herds during the report period | 30 | 30 | 42 |
| (f.3) Total number of new TB incidents (OTF-W and OTF-S) detected in cattle herds during the report period | 85 | 77 | 85 |
| (g.1) Of the new OTF-W herd incidents, how many can be considered the result of movement, purchase or contact from or with an existing incident based on current evidence? | 5 | 3 | 3 |
| (g.2) Of the new OTF-W herd incidents, how many were triggered by skin test Reactors or twice-inconclusive reactors (2xIRs) at routine herd tests? | 12 | 19 | 29 |
| (g.3) 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 or check tests)? | 9 | 4 | 8 |
| (g.4) Of the new OTF-W herd incidents, how many were first detected through routine SLH TB surveillance? | 9 | 7 | 5 |

| Herd-level statistics | 2022 | 2023 | 2024 |
|---|---|---|---|
| (h.1) Number of new OTF-W incidents revealed by enhanced TB surveillance (radial testing) conducted around those OTF-W herds | 0 | 0 | 0 |
| (h.2) Number of new OTF-S incidents revealed by enhanced TB surveillance (radial testing) conducted around those OTF-W herds | 0 | 0 | 0 |
| (i) 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) | 22 | 21 | 28 |
| (j) New confirmed (positive M. bovis culture) incidents in non-bovine species detected during the report period (indicate host species involved) | 0 | 0 | 0 |
| (k.1) Number of grazing approved finishing units active at end of the period | 0 | 0 | 0 |
| (k.2) Number of non-grazing approved finishing units active at end of the period | 14 | 13 | 14 |
| (k.3) Number of grazing exempt finishing units active at end of the period | 1 | 1 | 0 |
| (k.4) Number of non-grazing exempt finishing units active at end of the period | 1 | 1 | 0 |

**Table 4:** Animal-level summary statistics for TB in cattle in Derbyshire between 2022 and 2024

| Animal-level statistics (cattle) | 2022 | 2023 | 2024 |
|---|---|---|---|
| (a) Total number of cattle tested with tuberculin skin tests or additional IFN-γ blood tests in the period (animal tests) | 297,646 | 284,034 | 287,448 |
| (b.1) Reactors detected by tuberculin skin tests during the year | 341 | 397 | 523 |
| (b.2) Reactors detected by additional IFN-γ blood tests (skin-test negative or IR animals) during the year | 67 | 102 | 145 |
| (c) Reactors detected during year per incidents disclosed during year | 4.8 | 6.5 | 7.9 |
| (d) Reactors per 1,000 animal tests | 1.4 | 1.8 | 2.3 |
| (e.1) Additional animals slaughtered during the year for TB control reasons (dangerous contacts, including any first time IRs) | 1 | 40 | 3 |
| (e.2) Additional animals slaughtered during the year for TB control reasons (private slaughters) | 7 | 7 | 2 |
| (f) Slaughterhouse (SLH) cases (tuberculous carcases) reported by the Food Standards Agency (FSA) during routine meat inspection | 19 | 9 | 16 |
| (g) SLH cases confirmed by M. bovis PCR testing or bacteriological culture | 13 | 7 | 5 |

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, 48 out of 85 (56%) new TB incidents in Derbyshire 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.

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.

**Table 5:** Suspected sources of M. bovis infection for the 48 incidents with a preliminary or a final veterinary assessment in Derbyshire, in 2024

| Source of infection | Possible (1) | Likely (4) | Most likely (6) | Definite (8) | Weighted contribution |
|---|---|---|---|---|---|
| Badgers | 13 | 35 | 24 | 0 | 58.9% |
| Cattle movements | 5 | 6 | 7 | 1 | 15.9% |
| Contiguous | 3 | 2 | 0 | 0 | 2.1% |
| Residual cattle infection | 2 | 2 | 8 | 0 | 10.4% |
| Domestic animals | 0 | 0 | 0 | 0 | 0.0% |
| Non-specific reactor | 0 | 0 | 0 | 0 | 0.0% |
| Fomites | 0 | 0 | 1 | 0 | 1.0% |
| Other wildlife | 23 | 6 | 1 | 0 | 10.3% |
| Other or unknown source | 1 | 0 | 0 | 0 | 1.5% |

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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