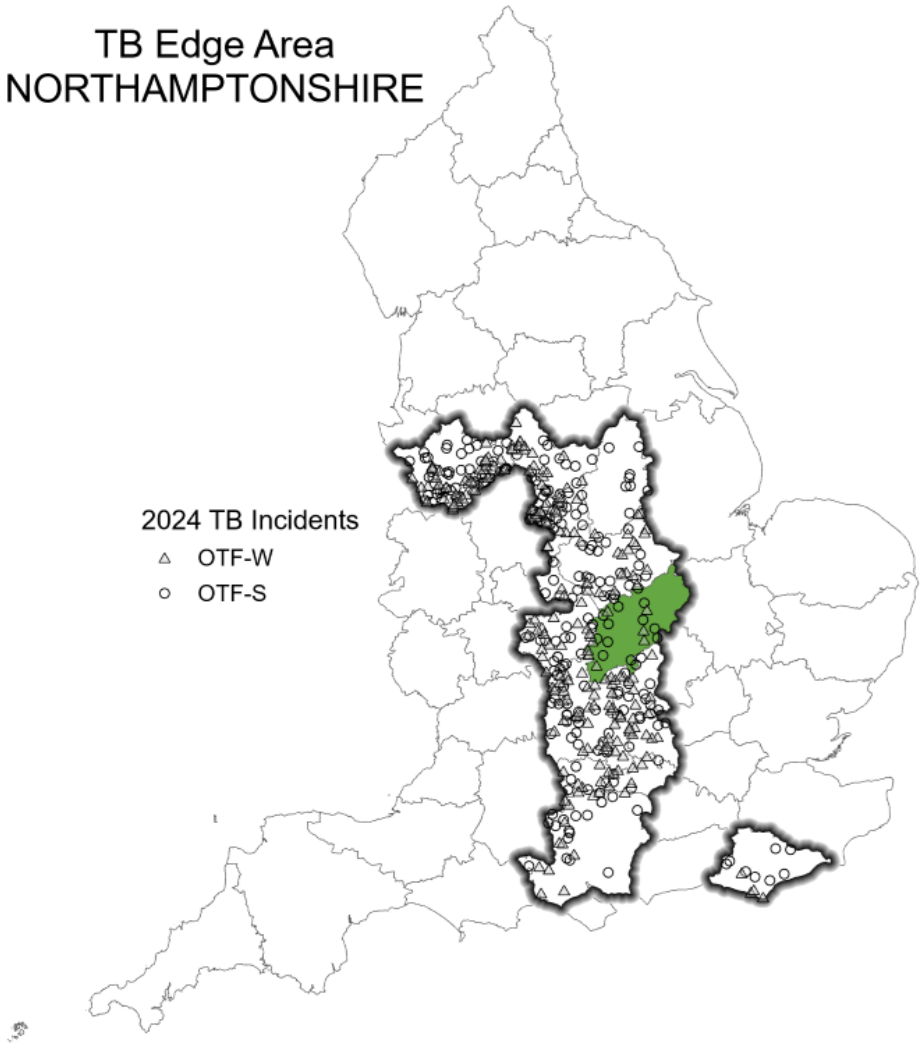
Animal &
Plant Health
Agency

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



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 Northamptonshire, 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 This includes both 'Officially Tuberculosis-Free Status Withdrawn' (OTF-W) and 'Officially Tuberculosis-Free Status Suspended' (OTF-S) incidents.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 (SLH) 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 Northamptonshire there were 11 Approved Finishing Units (AFUs) active during 2024, all of which were active at the end of the reporting period. None experienced a new TB incident, and 3 had an ongoing incident at the end of 2024. These have been excluded from the numbers presented in this report 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

Northamptonshire had a low herd and cattle density, with most cattle situated in the western half of the county. As of 31 December 2024, the county had 437 cattle herds, a 2% reduction from 2023 (446 herds). The total number of cattle in Northamptonshire also decreased marginally from 46,175 in 2023 to 45,634 in 2024.

The average herd size in 2024 was 104 cattle, with small holdings (fewer than 50 cattle) accounting for 46% of the herds. Beef animals predominated, representing 88% of the total cattle population in the county (Appendix 1).

There was a single livestock auction market operating in Northamptonshire (Thrapston), but some cattle were brought into the county from Rugby and Thame markets in the adjoining Edge Area counties of Warwickshire and Oxfordshire, respectively. Occasionally, cattle were sourced into Northamptonshire from livestock markets located in other counties within the Edge Area, and, on some occasions, from counties in the HRA.

There were 11 registered AFUs in Northamptonshire in 2024 (all without cattle grazing), an increase of one from 2023 (Appendix 2). There was one Exempt Finishing Units (EFUs) without grazing operating in Northamptonshire in 2024.

All cattle herds in Northamptonshire (except AFUs) are subject to annual (12-monthly) routine surveillance testing for TB.

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

Number of new TB incidents

A total of 23 new TB incidents were disclosed across Northamptonshire during 2024 (10 OTF-W and 13 OTF-S) (Figure 1). This was an 28% increase compared to 18 in 2023 (8 OTF-W and 10 OTF-S), which reversed the recent downward trend in the annual number of TB incidents in the county.

There was a steady increase in the number of new TB incidents from 16 in 2015 to a peak of 38 in 2020, declining again from 2021 to 18 in 2023.

The number of OTF-W and OTF-S incidents have followed a similar trend over the last decade, varying between 7 to 23 per year, and 8 to 18 per year, respectively.

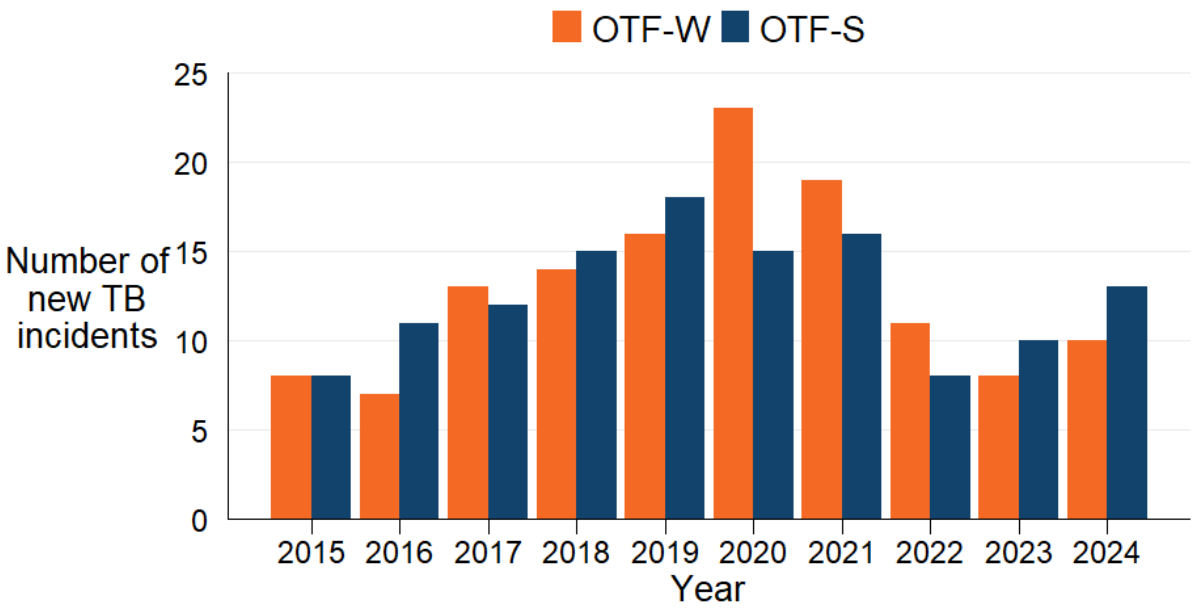


Figure 1: Annual number of new TB incidents in Northamptonshire, from 2015 to 2024.

Disclosing TB surveillance method

In 2024, most new incidents in Northamptonshire were disclosed by whole herd testing (13), followed by radial testing (5), slaughterhouse surveillance (2), 6-monthly post-incident targeted surveillance testing (6M, 2) and post-movement testing (1). Of the 12 incidents identified through whole herd testing, 4 were triggered by retests of inconclusive reactors (IR). Whole herd testing and radial testing also disclosed the greatest number of new TB incidents in 2023 (Figure 2).

Compared to 2023, there has been an increase in the number of incidents disclosed by both whole herd testing and slaughterhouse surveillance. The incidents reported

by whole herd testing rose from 9 in 2023 to 12 in 2024. Meanwhile, the incidents initiated by slaughterhouse surveillance doubled, from 1 in 2023 to 2 in 2024**,** although the numbers are very low.

Radial testing has consistently detected a considerable proportion of incidents each year (22% of incidents disclosed in 2024) since the adoption of this policy in the annual testing parts of the Edge Area in 2018.

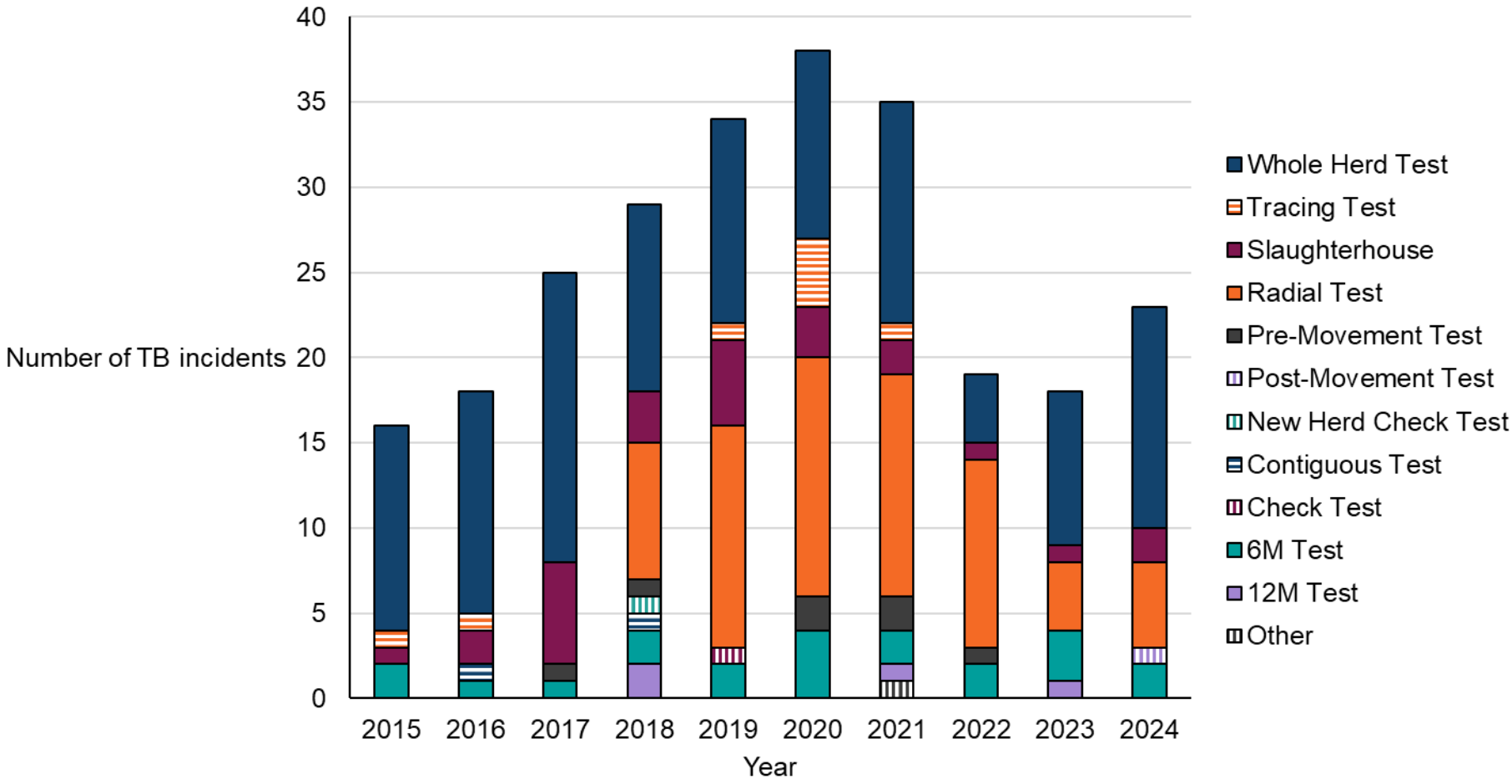


Figure 2: Number of new TB incidents (OTF-W and OTF-S) in Northamptonshire in 2024, according to the surveillance methods that detected them. Incidents disclosed by 'Other' tests includes, but is not limited to, private testing, inconclusive reactor retests, and export tests.

Duration of TB incidents

Of the 21 TB incidents that were resolved in Northamptonshire in 2024, 14 started in 2024 and 7 in 2023**.** Of those that closed in 2024, none were persistent incidents (where the affected herd was under movement restrictions for more than 550 days).

Of the 21 incidents resolved in 2024, 12 were OTF-W incidents. One of those was quickly resolved within 100 days, one within 101 to 150 days, 6 within 151 to 240 days and a further 4 within 241 to 550 days (Figure 3). The median duration of OTF-W incidents that ended in 2024 in Northamptonshire was 181 days, interquartile range (IQR) 160 to 254, which was shorter than in 2023 (median was equal to 306, IQR 251 to 339).

The remaining 9 TB incidents that ended in 2024 were OTF-S incidents, of which 2 were resolved within 101 to 150 days, 5 within 151 to 240 days and a further 2 within 241 to 550 days. The median duration of OTF-S incidents was 168 days (IQR 161 to 192), which was a decrease compared to 2023 (median was equal to 185, IQR 166 to 209).

The median duration of all incidents that ended in 2024 in Northamptonshire was 174 (IQR 160 to 243). This is shorter than the duration of incidents that closed in 2023, with a median of 208 days (IQR 168.5 to 277). For the whole Edge Area, the median duration of TB incidents that closed in 2024 was 186 days (IQR 159 to 260).

There were 16 TB incidents that were still open at the end of 2024, none of which were persistent.

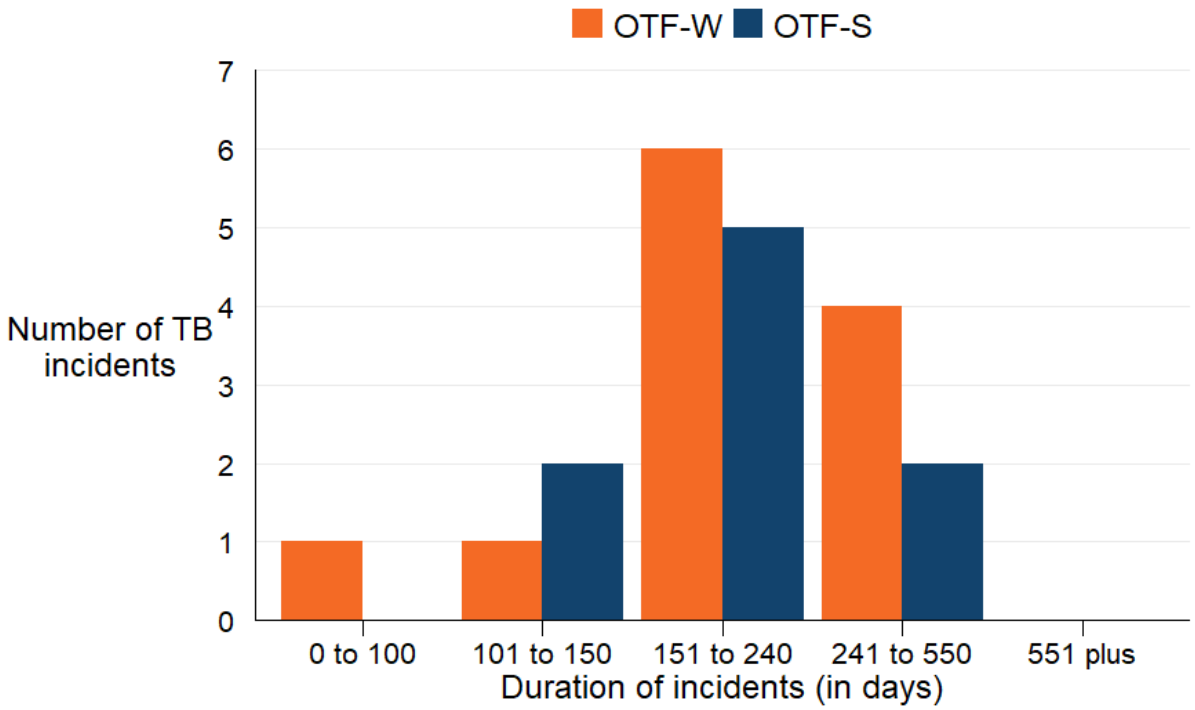


Figure 3: Duration of TB incidents (OTF-W and OTF-S) that closed in Northamptonshire in 2024.

Incidence of TB

The herd incidence of TB in Northamptonshire increased from 4.4 to 5.4 incidents per 100 herd years at risk (HYR) between 2023 and 2024. After a steady increase from 3.1 to 8.8 incidents per 100 HYR between 2015 and 2020, the incidence rate decreased sharply in 2021 and 2022 to 4.3 incidents per 100 HYR. However, an increase was observed in 2023 and 2024 (Figure 4).

Northamptonshire had the fourth lowest incidence rate out of the 11 counties in the Edge Area after Hampshire (4.6), Nottinghamshire (2.7) and East Sussex (2.7). This was below the overall rate for the whole of the Edge Area in 2024 (7.3), as shown in Figure 4.

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, which was a small increase compared to 2023 (7.2).

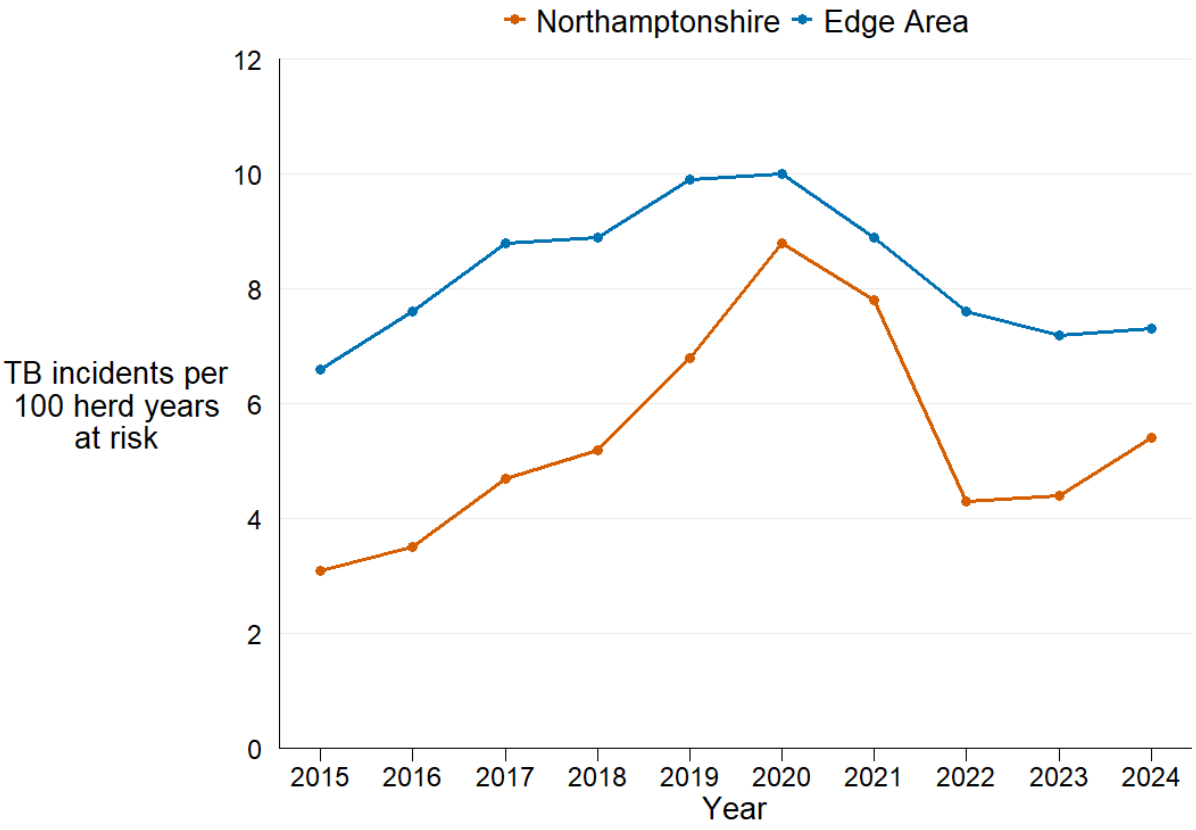


Figure 4: Annual incidence rate (per 100 herd-years at risk) for all new incidents (OTF-W and OTF-S) in Northamptonshire and the Edge Area, from 2015 to 2024.

Prevalence of TB

Northamptonshire had the joint second lowest end of year herd prevalence out of the 11 counties in the Edge Area in 2024 (2.3%). This was lower than the overall prevalence for the whole of the Edge Area in 2024 (4.0%) (Figure 5).

This was an increase from 1.9% in 2023. Overall, the herd prevalence of TB in the county increased from 1.4% in 2016 to 2020 4.1%, followed by a sharp decrease to 2.4% in 2021. Between 2022 and 2024 prevalence has remained relatively stable between 1.9% and 2.3%.

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.

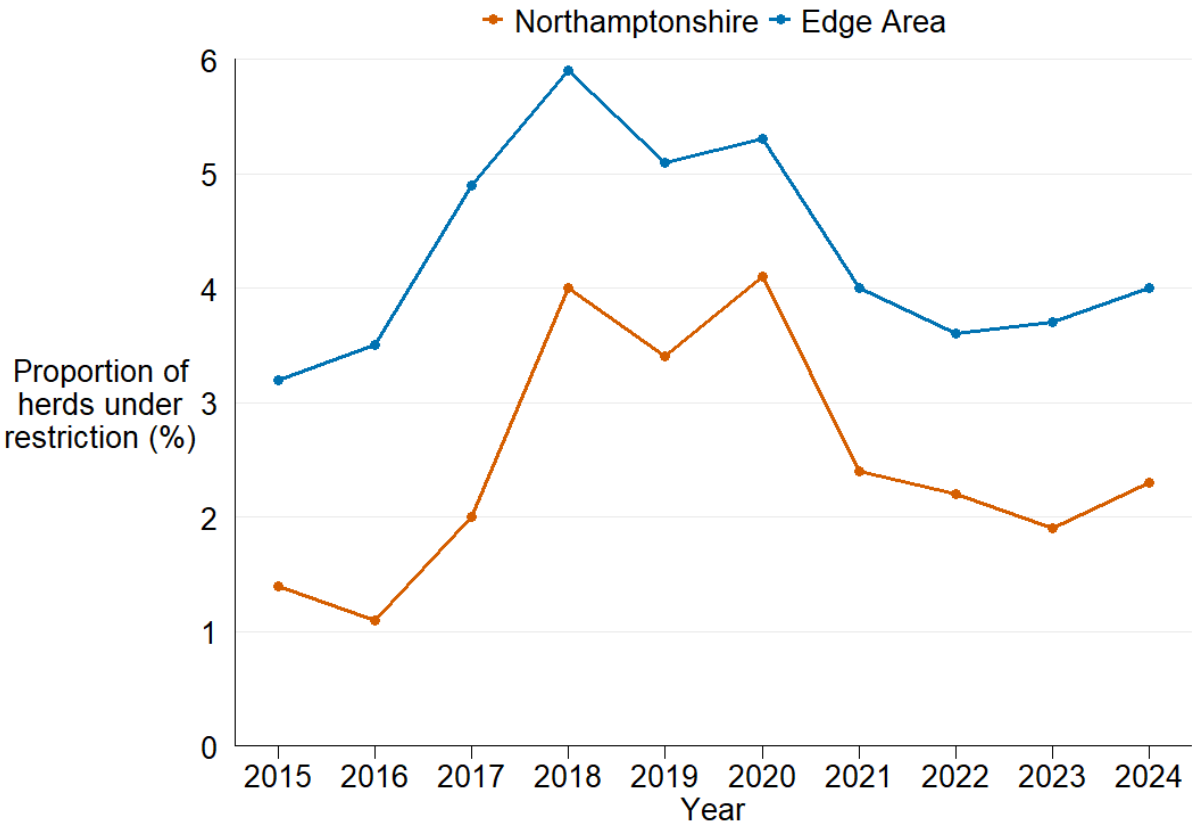


Figure 5: Annual end of year prevalence in Northamptonshire and the Edge area overall, from 2015 to 2024. This is the proportion of live herds under TB movement restrictions in the 31 December 2024.

Skin test reactors and interferon gamma test positive animals removed

A total of 143 cattle were removed as TB test reactors from TB incidents in Northamptonshire during 2024 (Figure 6). Of those, 69 were skin test reactors and 74 were positive animals on the supplementary interferon gamma (IFN-γ) blood test.

Compared to 2023 (116 skin test reactors and 35 IFN-γ positive animals), this was a 5% decrease in the number of animals removed. Over the last 10 years the number of IFN-γ positive animals peaked in 2019 at 171. The lowest number was recorded in 2022, with 65 IFN-γ test positive animals removed. Since then, the number recorded each year has increased.

Between 2016 and 2019, the annual number of skin test reactors was stable each year. The highest number was recorded in 2023 at 116 animals removed, before reducing again in 2024.

Although the number of incidents increased in 2024, fewer reactors were disclosed by the skin test compared to 2023, a decrease that can be attributed to the absence of explosive incidents in 2024. In contrast, the 2 explosive incidents registered in 2023 alone accounted for over 70 reactors, markedly increasing the number of animals removed.

The overall increase in IFN-γ positive animals compared to 2022 and 2023 was driven by several factors. One contributing factor is the reduction in IFN-γ tests carried out in 2022 and 2023 due to the large avian influenza outbreak which severely limited resources. In addition, the increase in OTF-W incidents in 2024 is likely to have increased the number of herds eligible for supplementary IFN-γ testing.

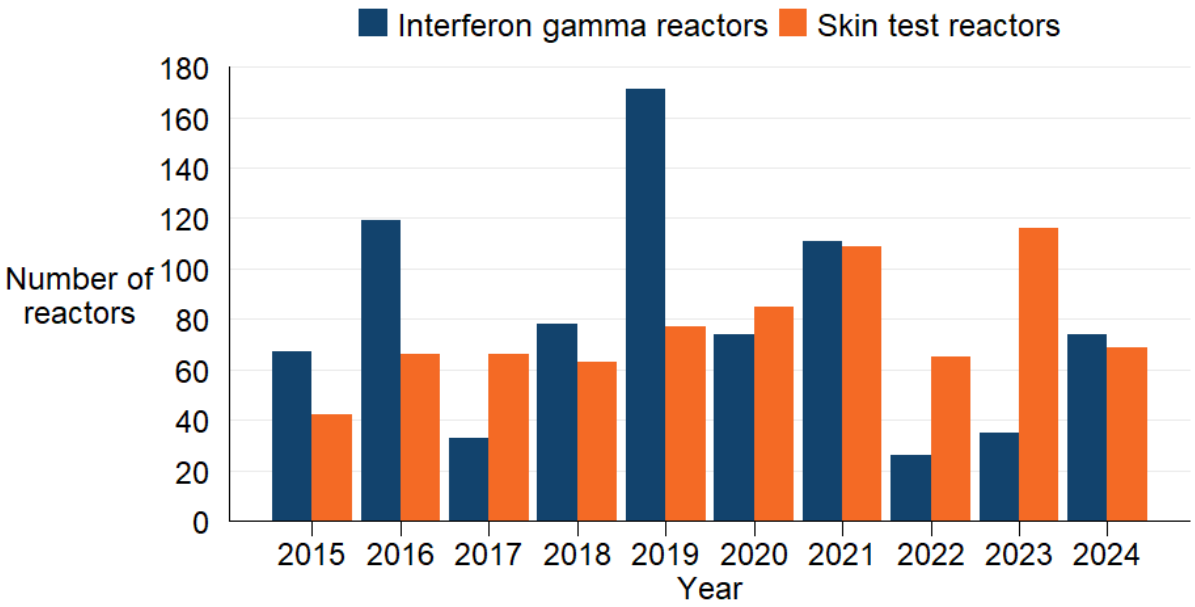


Figure 6: Number of skin test reactors and IFN-γ test positive cattle removed by APHA for TB control reasons in Northamptonshire, from 2015 to 2024.

Recurrent TB incidents

Three-year recurrence

In Northamptonshire, 2 of the 13 (15%) herds with a new OTF-S TB incident and 2 of the 10 (20%) with an OTF-W incident in 2024 had experienced another TB incident in the previous 3 years (Figure 7). This was an overall percentage of recurrent herd incidents of 17%, the second lowest in the counties of the Edge Area. This was lower than the percentage of recurrent incidents in the whole of the Edge Area (47%).

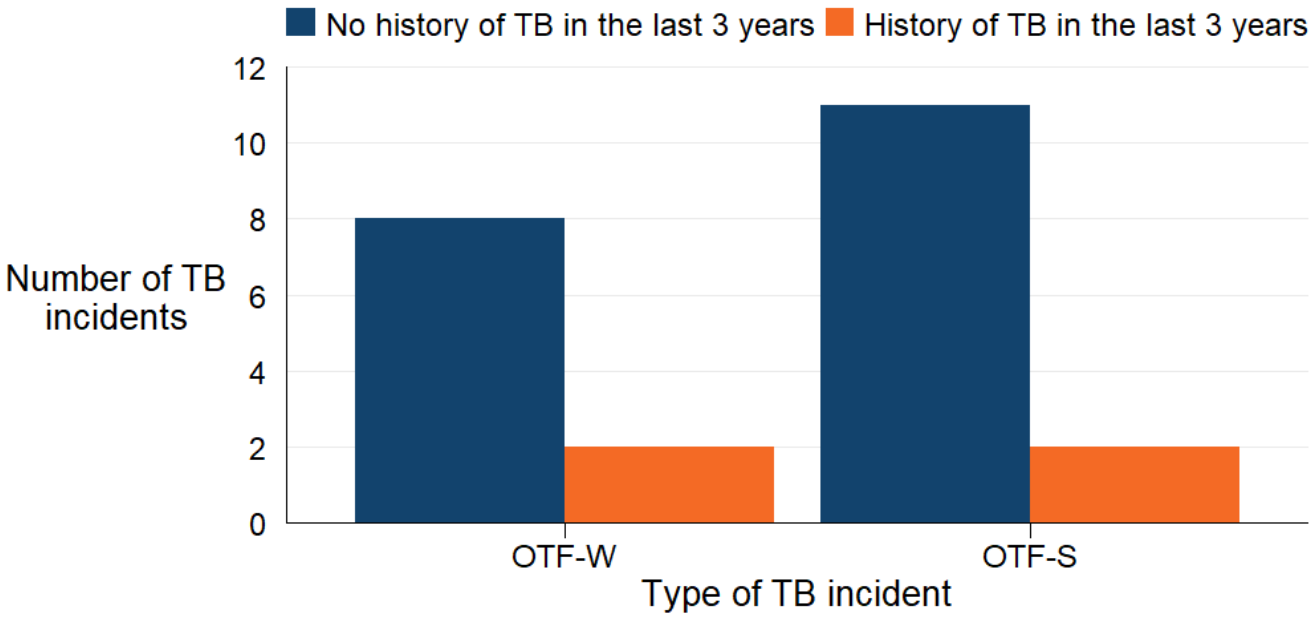


Figure 7: Number of herds with a TB incident (by OTF-W and OTF-S) in Northamptonshire in 2024, with and without a history of any TB incident in the previous 3 years of the disclosing test.

Unusual TB incidents

In 2024, the keepers of 2 herds affected by OTF-W breakdowns elected to voluntarily depopulate their holdings. The first incident only had a single reactor, but the herd keeper routinely depopulated the farm every winter.

The second TB incident was triggered by the identification of a substantial number of suspect TB lesions (16 animals) through routine post-mortem meat inspection (PMMI) at commercial slaughter of a batch of animals. Whole genome sequencing (WGS) clade B6-62 was later confirmed through laboratory testing. All the animals with lesions had been grazing together, separate from the rest of the herd. A skin check test in the remaining animals in the herd was completed with negative results before depopulation.

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 (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.

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

Geographical distribution of TB incidents

Most OTF-W incidents continued to be detected in the south-west of the county along the borders with the counties of Warwickshire and Oxfordshire, both of which were subject to 6-monthly TB testing, and where the cattle population was denser (Figure 8). In contrast, farms affected by OTF-S incidents were more evenly distributed throughout the county.

WGS data was available for 9 of the 10 OTF-W incidents detected in Northamptonshire in 2024. Unlike in 2023 (when all TB incidents with available WGS data were associated with clade B6-62 of M. bovis), in 2024 there were 2 different WGS clades recorded in cattle TB incidents in Northamptonshire, B6-62 and B6-85. There was also one incident with an undetermined clade.

Eight OTF-W incidents in 2024 were caused by WGS clade B6-62, a clade with a homerange that encompasses Northamptonshire. These incidents had cattle movement levels indicated from the cattle movement algorithm (CMA) which varied from low/very low to high/very high.

There was one incident caused by WGS clade B6-85, which has a homerange in the south-west of England, mainly in Devon and Somerset. This incident had a high/very high cattle movement level indicated from the CMA.

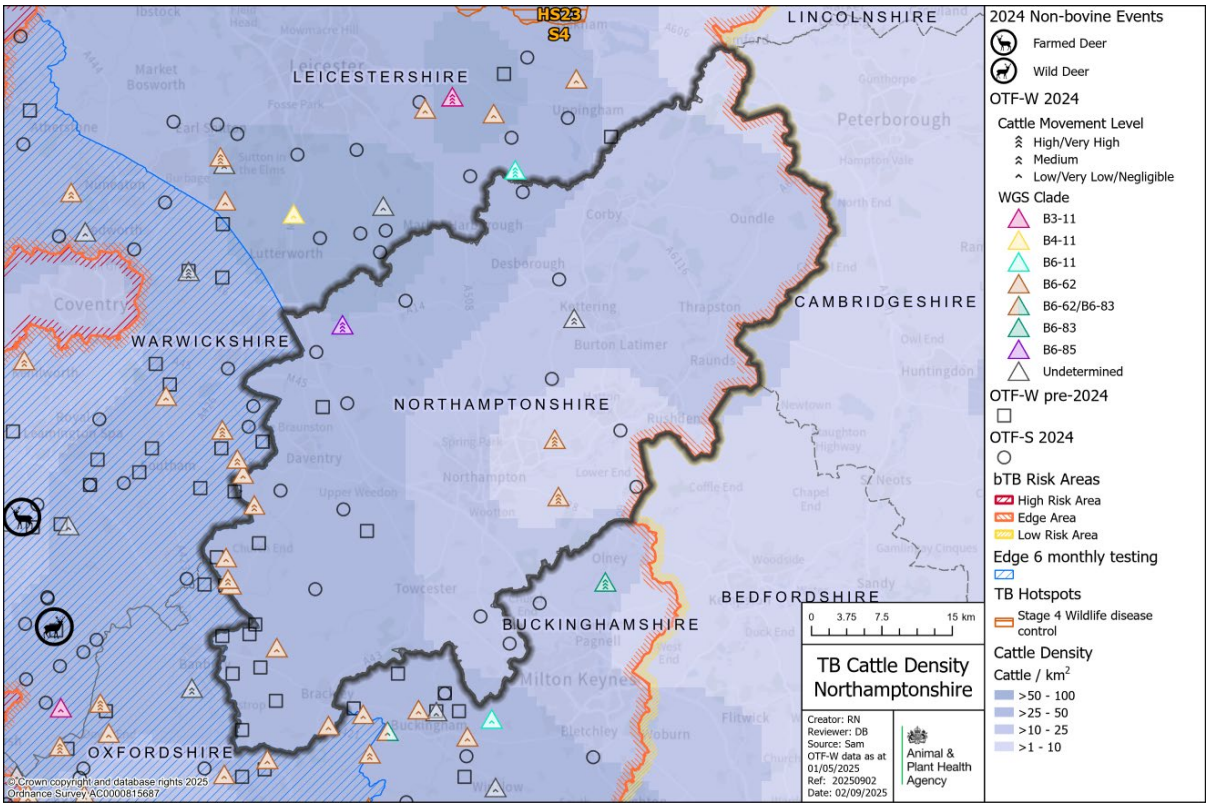


Figure 8: Location of cattle holdings in Northamptonshire and the adjoining areas with new TB incidents (OTF-W and OTF-S) in 2024 and cattle holdings with pre-2024 OTF-W incidents still ongoing at the beginning of 2024, overlaid on a cattle density map.

Figure 8 description: Map of Northamptonshire and the adjoining areas showing the cattle density, the geographical location of cattle holdings with new TB incidents (OTF-S and OTF-W) in 2024, and cattle incident holding with OTF-W incidents still ongoing at the beginning of 2024, shown as squares. 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). Pink represents clade B3-11, yellow represents B4-11, turquoise represents B6-11, brown represents B6-62, half brown and half green represents co-infection with clades B6-62 and B6-83, green represents B6-83 and purple represents B6-85. Transparent triangles represent incidents where the WGS clade was undetermined. OTF-S incidents in 2024 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 20 out of 23 (87%) new TB incidents in Northamptonshire receiving a preliminary or final investigation. The findings from these investigations are reported in Appendix 3.

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 top 3 possible drivers of the occurrence of TB in cattle in Northamptonshire during 2024 were:

- exposure to infected badgers
- other or unknown sources
- movements of undetected infected cattle

The most likely infection pathway for cattle herds in 2024 identified during APHA veterinary investigations was potential exposure to infected badgers, accounting for a weighted contribution of 36.6% (Appendix 3). This was lower than previous years (59.0% in 2023 and 80.1% in 2022).

Other or unknown sources had a higher weighted contribution of 34.9% in 2024 compared to 25.8% in 2023. This category is added to those incidents in which there was high uncertainty around the selected pathways as alluded to earlier in the report.

The movement of undetected, infected cattle into (and within) the county, had a weighted contribution of 13.9% (Appendix 3). This was higher than the previous 2 years (2.2% in 2023 and 0.0% in 2022), but similar to 2021 (13.0%).

Other infected wildlife (mostly wild deer) had a higher weighted contribution compared to the previous year, 6.7% in 2024 compared to 2.7 % in 2023, but was lower than 2022 (7.8%).

Exposure to fomites had a weighted contribution of 3.9%, compared to 2.7% in 2023.

Residual cattle infection had a weighted contribution of 3.2%, which has decreased from 4.7% in 2023 and 12.1% in 2022.

Contiguous cattle infection had a weighted contribution of 0.8%, which was an increase from 0.0% in both 2023 and 2022. Exposure to undetected infected contiguous cattle has been identified in certain incidents where cattle movements have not been found to be playing a role and where there is no known infection in wildlife.

It is not always possible for a veterinary investigation to be carried out for every new TB incident. Therefore, new data-driven methods to quantify the likelihood of risk pathways for TB infected herds have been developed by APHA, which 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 combined 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.

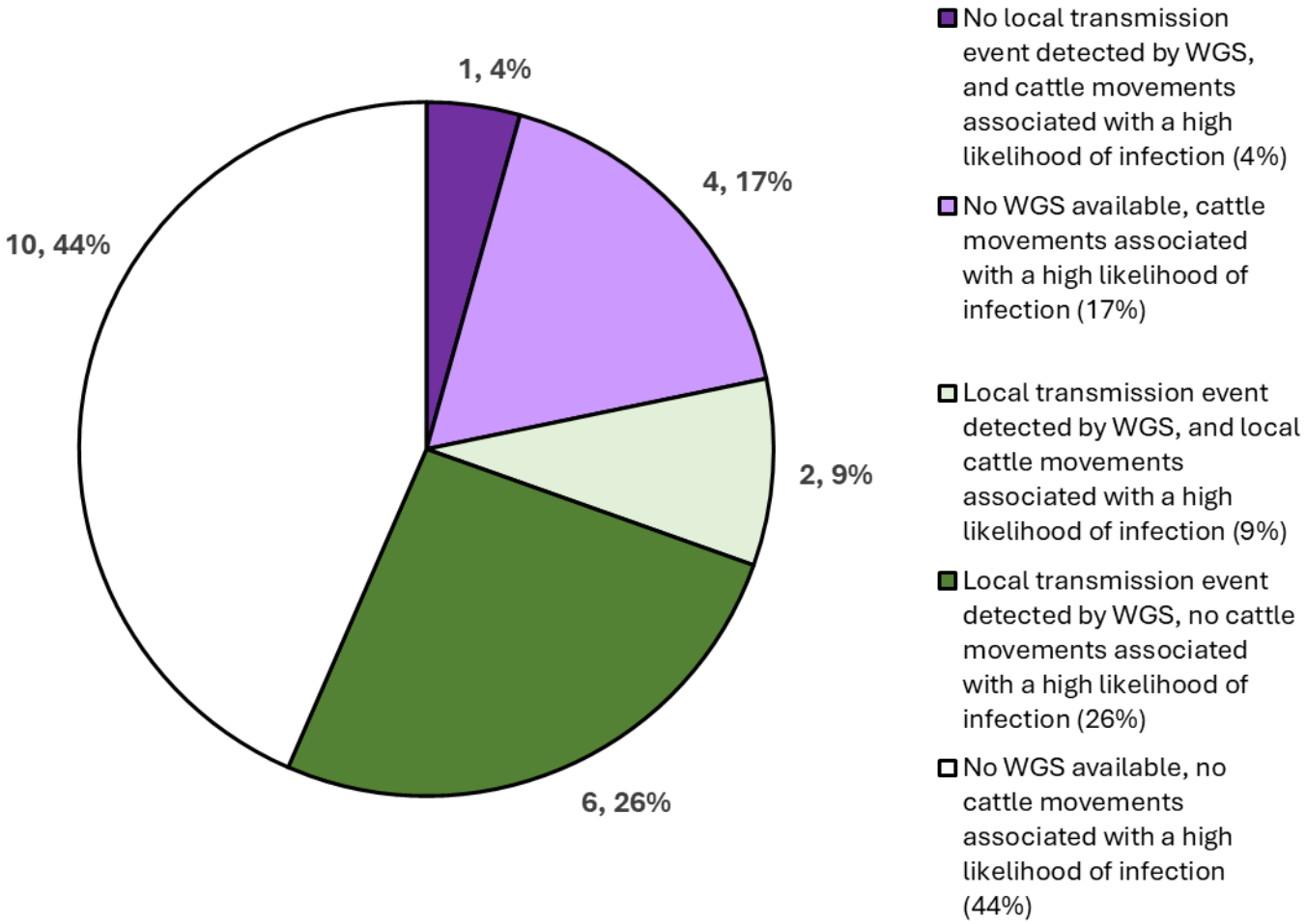


Figure 9: Pie chart showing the risk pathway combinations identified by the WGS local transmission of infection indicator and cattle movement algorithm for all 23 new TB incidents starting in Northamptonshire in 2024. Numbers presented in each segment display the number of new TB incidents in 2024 in each segment and the percentage of the total new TB incidents in Northamptonshire in 2024.

WGS data was available for 9 (39%) of all new TB incidents in Northamptonshire. The WGS local transmission of infection indicator identified evidence of local transmission for 8 (35%) 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 6 OTF-W incidents (26% of all new incidents, 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 (9% 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 was one OTF-W incident (4% 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 this incident:

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

There were 4 TB incidents (17% 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 14 (61%) of all new TB incidents in Northamptonshire, accounting for 1 OTF-W and 13 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 10 TB incidents (44% 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

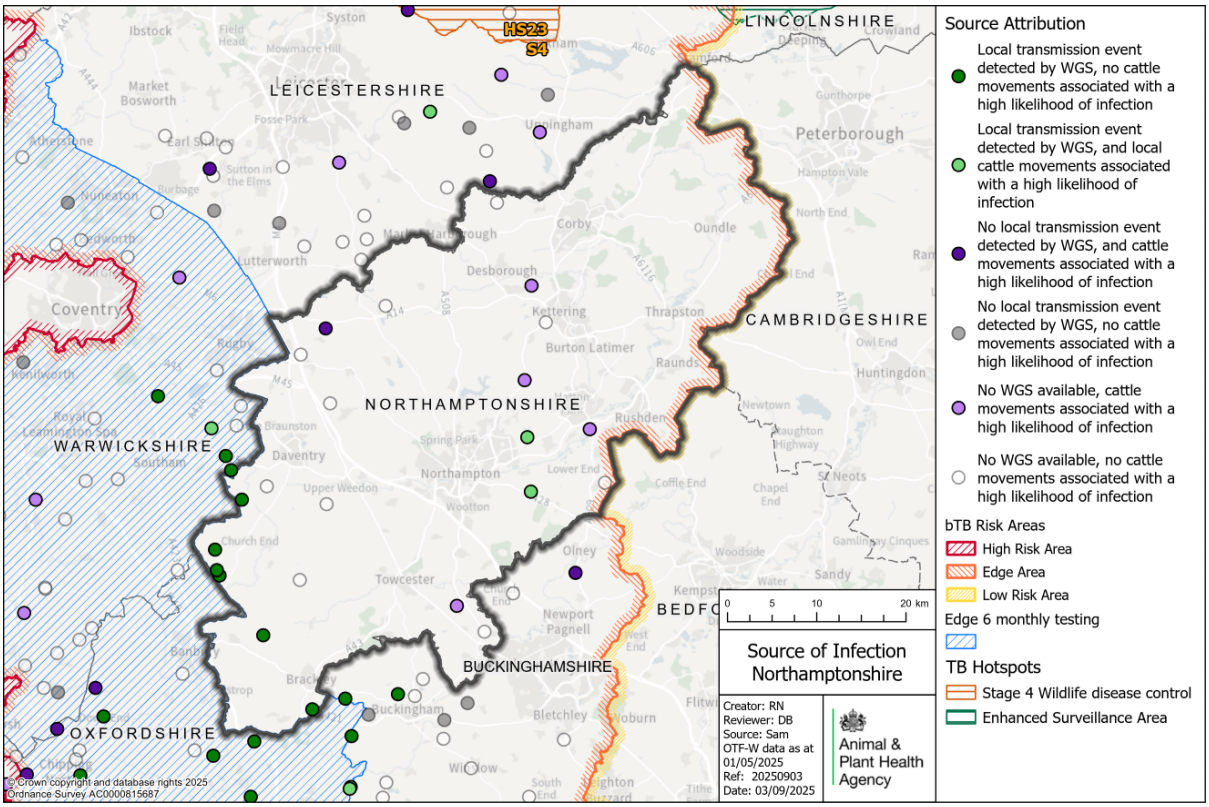


Figure 10: Map of the available evidence for risk pathways of TB infection into the herd, for all TB incidents (OTF-W and OTF-S) in Northamptonshire and adjoining areas, that started in 2024.

Figure 10 description: Map of Northamptonshire and the adjoining area showing the locations of the 23 new TB incidents in 2024, 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. The light green represents incidents where local transmission event was identified from WGS and local 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. 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.

WGS data of M. bovis isolates from OTF-W herds provides valuable information to identify the most likely source pathways for those incidents with higher certainty. From this data, it is apparent that TB has become endemic in the south-west of the county. The presence of WGS clade B6-62 (which includes genotype 10:a, reported in previous years) is expanding across the Warwickshire and Oxfordshire borders into Northamptonshire (Figure 11).

The first clear evidence of the geographic spread of TB in the south-west part of Northamptonshire was observed in 2016 in the Daventry parish. A cluster of OTF-W incidents was identified, possibly linked to infection spread from Warwickshire and Oxfordshire through infected wildlife and cattle movements. In 2017 and 2018 the Daventry cluster continued to persist and expand, suggesting that local wildlife had become a reservoir, sustaining the spread. The same picture continued throughout 2021, 2022 and 2023 and, although the number of incidents started to decrease, the south-west part of the county continued to be the most affected area, reinforcing the view that TB is endemic in this zone.

Similar to 2022 and 2023, the location of most new TB incidents in 2024 was in the south-west of the county, which is the area of HS2 railway construction. During on-farm investigations for incidents that started in 2023, disruption of badger setts caused by HS2 construction was identified as a possible factor influencing the spread of TB infection from wildlife. However, while such environmental disturbances may change badger movement patterns and increase the likelihood of contact with cattle, the evidence remains limited.

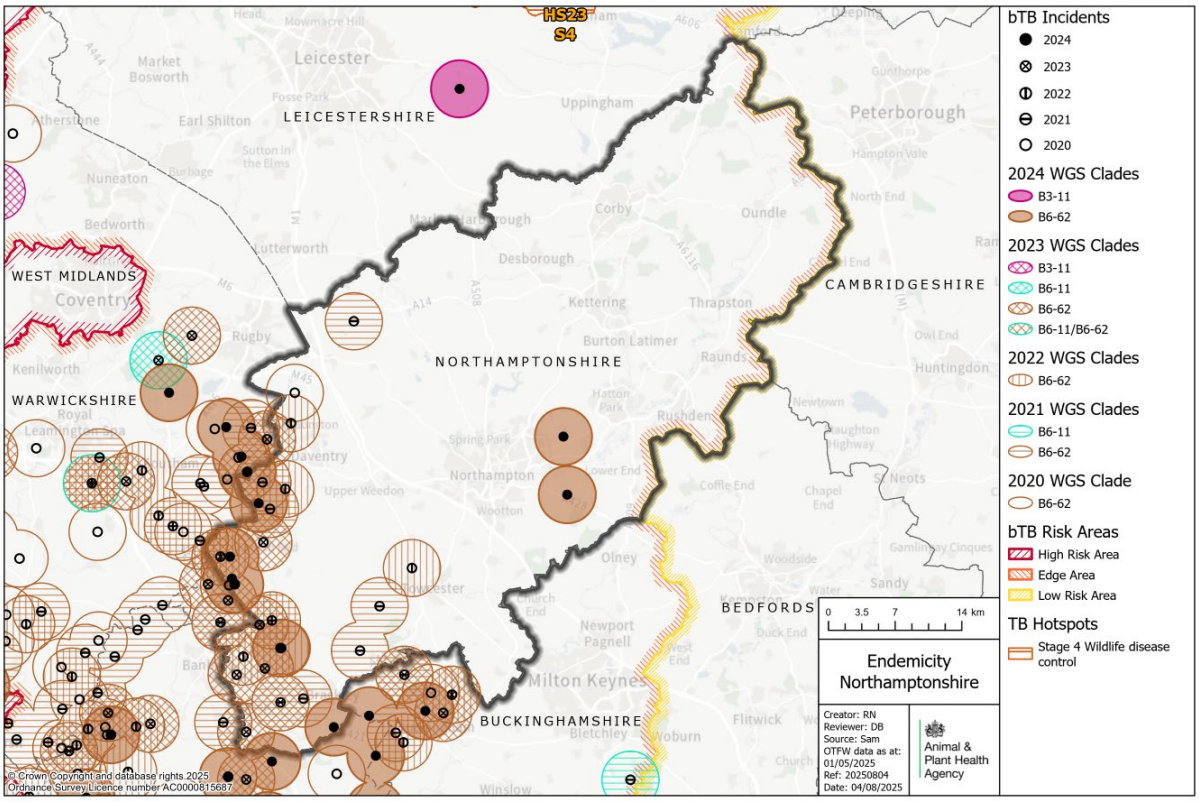


Figure 11: WGS clades of M. bovis detected in Northamptonshire and adjoining areas between 2020 and 2024, where the WGS identified in the infected herd was within 3 SNPs of another TB incident that was within 9km and occurred in the previous 4 years or 6 months after the incident of interest, with a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

Figure 11 description: Map of Northamptonshire 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

The future course of TB in Northamptonshire depends on how effectively disease control measures and farming practices are able to contain the current disease pressure, mostly from the adjoining counties of the Edge Area, and how well current and planned control efforts are integrated.

The presence of endemic areas within the county and in neighbouring counties (mainly Warwickshire and Oxfordshire), and the increase in incidents detected in Northamptonshire in 2024 are a major concern. As the bovine TB eradication strategy needs to continue to adapt to the epidemiological evidence, consideration could be given to possibly intensify disease control measures (for example, implement 6-monthly routine herd testing) in the areas of concern.

Changes in cattle demographics and farming practices will further influence the evolution of bovine TB in Northamptonshire. Farmer behaviour remains a critical part of this, not only in Northamptonshire but across the country. The success of any control strategy will be influenced also by the ability of the farmers to implement the recommended practices consistently (embracing risk-based trading practices, making more informed purchasing decisions and considering the disease status of the source herds).

It is challenging to predict the trajectory of the bovine TB situation in Northamptonshire over the next 2 to 3 years, as many factors can influence the spread of disease. It is encouraging to see that TB incidents had steadily declined over the previous last 5 years. However, there is growing evidence that TB is becoming established in the western part of the county. There was also an increase in the number of new herd incidents detected in 2024. A particular concern is the suspected presence of wildlife sources of infection in this area and the wider neighbouring Warwickshire, Leicestershire and Oxfordshire counties. Therefore, a cross-county strategy continues to be necessary to tackle bovine TB effectively.

Achieving the OTF status in Northamptonshire by 2038 is an ambitious objective but is not impossible. The success will depend on a collaborative effort between both government bodies and farming community. The government should continue to provide a clear policy direction, invest in scientific research and diagnostics and ensure that additional resources are readily available and responsive to local needs. Equally, the farming network should be actively engaged and committed to disease prevention. Farmers should use the available tools, such as the ibTB mapping platform, options for additional private testing of cattle, and participate in advisory services that offer practical and tailored evidence-based guidance, such as the national TB advisory service (TBAS).

Appendix 1: cattle industry demographics

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

Size of herds	Number of herds
Undetermined	8
1 to 50	199
51 to 100	95
101 to 200	72
201 to 350	37
351 to 500	13
Greater than 501	13
Total number of herds	437
Mean herd size	104
Median herd size	55

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

Breed purpose	Number (and percentage of total) cattle
Beef	40,395 (88%)
Dairy	4,376 (9%)
Dual purpose	835 (1%)
Unknown	28 (0.061%)
Total	45,634

Appendix 2: summary of headline cattle TB statistics

Table 3: Herd-level summary statistics for TB in cattle in Northamptonshire 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	551	525	524
(b) Total number of whole herd skin tests carried out at any time in the period	541	488	538
(c) Total number of OTF cattle herds having TB whole herd tests during the period for any reason	442	432	412
(d) Total number of OTF cattle herds at the end of the report period (herds not under any type of TB movement restrictions)	513	503	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	535	512	509
(f.1) Total number of new OTF-S TB incidents detected in cattle herds during the report period	8	10	13
(f.2) Total number of new OTF-W TB incidents detected in cattle herds during the report period	11	8	10
(f.3) Total number of new TB incidents (OTF-W and OTF-S) detected in cattle hards during the reported period	19	18	23
(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?	2	1	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?	2	5	4
(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	8	2	4

Herd-level statistics	2022	2023	2024
back-tracings, contiguous or check tests)?			
(g.4) Of the new OTF-W herd incidents, how many were first detected through routine slaughterhouse (SLH) TB surveillance?	1	1	2
(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)	11	11	9
(j) New confirmed (positive M. bovis culture) incidents in non-bovine species detected during the report period (indicate host species involved)	0	1 wild red deer (farmed)	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	13	10	11
(k.3) Number of grazing exempt finishing units active at end of the period	0	0	0
(k.4) Number of non-grazing exempt finishing units active at end of the period	1	1	1

Table 4: Animal-level summary statistics for TB in cattle in Northamptonshire 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)	61,858	56,093	70,303
(b.1) Reactors detected by tuberculin skin tests during the year	65	116	69
(b.2) Reactors detected by additional IFN-γ blood tests (skin-test negative or IR animals) during the year	26	35	74
(c) Reactors detected during year per incidents disclosed during year	4.8	8.4	6.2
(d) Reactors per 1,000 animal tests	1.5	2.7	2.0
(e.1) Additional animals slaughtered during the year for TB control reasons (dangerous contacts, including any first time IRs)	0	2	2
(e.2) Additional animals slaughtered during the year for TB control reasons (private slaughters)	1	1	5
(f) Slaughterhouse (SLH) cases (tuberculous carcases) reported by the Food Standards Agency (FSA) during routine meat inspection	8	5	24
(g) SLH cases confirmed by M. bovis PCR testing or bacteriological culture	6	3	20

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, 20 out of 23 (87%) new TB incidents in Northamptonshire 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 **20** incidents with a preliminary or a final veterinary assessment in Northamptonshire, in 2024

Source of infection	Possible (1)	Likely (4)	Most likely (6)	Definite (8)	Weighted contribution
Badgers	9	2	7	0	36.6%
Cattle movements	8	0	1	1	13.9%
Contiguous	1	0	0	0	0.8%
Residual cattle infection	4	0	0	0	3.2%
Domestic animals	0	0	0	0	0.0%
Non-specific reactor	0	0	0	0	0.0%
Fomites	5	0	0	0	3.9%
Other wildlife	7	1	0	0	6.7%
Other or unknown source	0	0	0	0	34.9%

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.

Data Protection:

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