Avian Influenza: H5 and H7 outbreak update report

21 July 2023

agriculture, land reform & rural development

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

Report compiled by:
Directorate: Animal Health

Please note: This report includes all information as available by close of business on 21 July 2023. *Avian Influenza update reports will from now on be issued on a fortnightly basis.*

1. Introduction and Background

Avian influenza is a highly contagious viral disease that affects several species of food producing birds, pet birds and wild birds. Occasionally other mammals, including humans, may also contract avian influenza. H5 and H7 avian influenza are classified into two categories according to the severity of disease it causes in poultry namely low pathogenic avian influenza (LPAI) and highly pathogenic avian influenza (HPAI). LPAI strains cause few or no clinical signs in poultry while HPAI strains may cause severe clinical signs and potentially high mortality rates among poultry. Both categories had to be reported to the World Organisation for Animal Health (WOAH, founded as OIE). This was reviewed and since 1 January 2022, only HPAI in poultry and birds other than poultry are reportable to the WOAH. LPAI has to be reported only when there is proof that natural transmission with severe consequences in humans occurred.

Poultry is defined by the WOAH as all domesticated birds, used for the production of meat or eggs for consumption, for the production of other commercial products, for restocking supplies of game, or for breeding these categories of birds, as well as fighting cocks used for any purpose. Backyard poultry is excluded from the WOAH definition of poultry only if the birds are kept in a single household, the products of which are used within the same household exclusively with no direct or indirect contact with poultry or poultry facilities (2021 OIE Terrestrial Animal Health Code).

Outbreaks of HPAI in poultry may result in trade bans on the export of poultry and poultry products. Reporting of HPAI outbreaks in non-poultry (e.g. wild birds, pet birds, birds kept as a hobby, backyard poultry as defined by the 2021 OIE Terrestrial Animal Health Code), to the WOAH do not have trade implications.

In South Africa, avian influenza of any subtype is a controlled animal disease in terms of the Animal Diseases Act, 1984 (Act No 35 of 1984). Any suspect or confirmed case of avian influenza of any subtype must be reported immediately to the responsible state veterinarian in terms of the Animal Diseases Act, 1984 (Act No 35 of 1984). Both passive and active surveillance for avian influenza are conducted across the country in order to detect any incursion of avian influenza. Passive and active surveillance in backyard and commercial chickens is continuing across the country. A number of backyard chicken holdings in all Provinces are included in the six monthly active surveillance. Active surveillance in commercial chickens is conducted every six months with monthly surveillance in NAI free compartments. Active surveillance in commercial ostriches is conducted six monthly with additional pre-movement, pre-slaughter and 28 days post-movement testing.

In 2017 the first case of Highly Pathogenic Avian Influenza (HPAI) was confirmed in commercial chickens in South Africa. This was confirmed as HPAI H5N8. No new HPAI outbreaks were reported in commercial and backyard chickens since June 2018 until the detection in April 2021 of a HPAI H5N1 in commercial chickens. A HPAI H5N2 was detected in October 2022 in chickens of a small scale farmer facility in KwaZulu-Natal Province in 2022. This is the first ever HPAI H5N2 in chickens in the country. HPAI H5N2 was detected in ostriches during 2004, 2006 and 2011.

Current H5 and H7 avian influenza outbreaks within the country are summarised in this report and are categorised according to pathogenicity (HPAI, LPAI or undefined). The HPAI outbreaks are discussed under point 2 and LPAI is discussed in point 3.

2. Highly pathogenic avian influenza (HPAI)

There has been a sudden upsurge in H5 PCR positive samples. N typing and sequencing is currently under way. A number of the H5 PCR positive samples are samples collected under an environmental research project for wild bird surveillance and originated from Gauteng, KwaZulu Natal and Mpumalanga Provinces. Samples from shorebirds from a number of locations within the Western Cape Province as well as samples from wild birds from a Nature Reserve were also confirmed to be HPAI H5 PCR positive. The second HPAI H5 outbreak in shorebirds from the Eastern Cape was confirmed – N typing and sequencing is in progress. There are shorebirds as well as a commercial chicken facility from KwaZulu-Natal Province that tested avian influenza matrix gene PCR positive – we are awaiting further diagnostics.

A total of four (n=4) HPAI H7 outbreaks were confirmed - three poultry locations in the Mpumalanga Province and one just across the border in Gauteng Province. Another location in the same local municipality in Mpumalanga experienced high mortalities – samples were submitted for diagnostics.

All HPAI suspect farms are immediately placed under quarantine and no movement of birds, eggs or products are allowed on, off or through these farms. Samples are collected for verification of the suspicion and back and forward tracing is implemented to detect any possible spread of disease. So far most of the affected properties have culled out the chickens and carcasses were disposed of by dumping at an approved hazardous dump site, incineration, rendering or composting on farm; or on farm burial where allowed by the Environmental Affairs Department. Eggs are either taken under veterinary supervision for pasteurisation, or moved after double fumigation or fogging.

Passive and active six monthly surveillance in the country is ongoing. Listed NAI free compartments are continuing with the monthly surveillance. In terms of the Animal Diseases Act, 1984 (Act No 35 of 1984) any suspect or confirmed outbreak of any avian influenza strain must be immediately reported to the responsible state veterinarian for immediate investigation.

If HPAI is suspected/detected in poultry, there is no scientific justification in placing a radius around the affected farms as a controlled/protection zone due to the mode of transmission, primarily by wild birds. However, all neighbouring farms are immediately visited, and all epidemiologically linked properties to an affected farm are immediately placed under quarantine until preliminary investigations can be conducted.

The recovery of country HPAI freedom may require additional surveillance over and above the current passive and active surveillance.

2.1 Overview of the new HPAI H5 event

In view of the sequencing data that became available in April 2023, indicating an introduction of a new strain of HPAI H5N1 in November 2022 in the Free State Province, it was decided to report any future HPAI H5 outbreaks as new events with the WOAH.

2.1.1 Overview of the new HPAI H5 poultry event

The last reported outbreak of HPAI H5 in commercial chickens in the Western Cape Province was during January 2022, while the last reported in the country was during September 2022. The index case of the new HPAI H5 poultry event has a start date of 18 April 2023 and was detected in poultry layers in the Swartland Local Municipality within the Western Cape Province. Seven outbreaks were reported in the Western Cape Province. The first outbreak outside of the Western Cape Province was detected in a commercial layer facility in the Mkhambathini Local Municipality in KwaZulu-Natal Province. A total of eight (n=8) outbreaks were reported to WOAH as part of the new HPAI H5 poultry event. The affected local municipalities in the Western Cape Province

are represented in Table 1 below. A commercial chicken farm in KwaZulu Natal Province tested H5 PCR positive and pathotyping, N typing and sequencing is underway.

Province	Local Municipality with total number of outbreaks within this Local Municipality	Details of outbreak
KwaZulu-Natal *0 out of 1 outbreak resolved*	Mkhambathini (n=1)	Commercial chicken layer farm
Western Cape *0 out of 7 outbreaks resolved*	City of Cape Town (n=2)	Commercial chicken layer farm
		Commercial chicken layer farm
	Drakenstein (n=2)	Commercial chicken layer farm
		Commercial chicken layer farm
	George (n=2)	Commercial chicken layer farm
		Commercial chicken layer farm
	Swartland (n=1)	Commercial chicken layer farm

TABLE 1: AFFECTED LOCAL MUNICIPALITY PER PROVINCE FOR HPAI H5

2.1.2 Spatial distribution of the new HPAI H5 poultry event

The spatial distribution of the reported HPAI H5 outbreaks in poultry is represented in Figure 1 below.

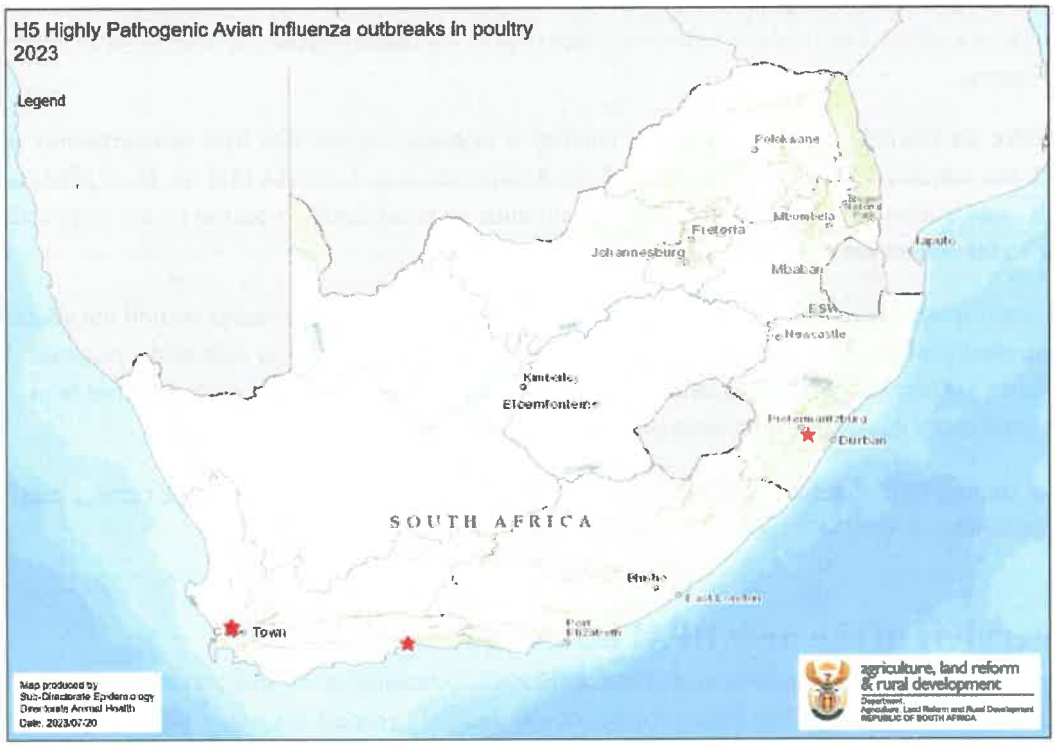

FIGURE 1: SPATIAL DISTRIBUTION OF HPAI H5 OUTBREAKS IN POULTRY

2.1.3 Overview of the new HPAI H5 non-poultry (wild bird) event

A new wave of H5 avian influenza introductions seems to have started in March 2023. Thirty one outbreaks (n=31) were reported to WOAH as part of the start of this new HPAI H5 event.

Fourteen (n=14) of these outbreaks are in the Western Cape Province. HPAI in wild birds in the Western Cape Province was last detected in November 2022. End of March 2023, samples were collected from shorebirds that were suspected to have HPAI or died and these samples tested positive for avian influenza. These samples

originated from shorebirds from Strand Beach and Blouberg Beach in the City of Cape Town Local Municipality. The sample from Blouberg Beach tested suspect positive for HPAI H5 on PCR and the sample from Strand Beach tested positive for HPAI H5 on PCR. Samples collected from shorebirds during May 2023 at Hout Bay, Simon's Town, Silverstroomstrand and Sea Point also located in the City of Cape Town Local Municipality tested positive for HPAI H5. Samples collected from Egyptian geese at a Nature Reserve in the Langeberg Local Municipality also tested HPAI H5 PCR positive. Sample collected from shorebirds from Lambert's Bay in Cederberg Local Municipality also tested HPAI H5 PCR positive. Further diagnostics to determine the N type and sequencing are underway. Samples collected from shorebirds in Velddrif located in the Bergrivier Local Municipality also tested HPAI H5 PCR positive. Racing pigeons from the City of Cape Town Local Municipality also tested HPAI H5 positive.

Two (n=2) outbreaks are in shorebirds in the Eastern Cape Province - one in Cape St Francis in the Kouga Local Municipality and one in Kini Bay in the Nelson Mandela Bay Local Municipality. One (n=1) outbreak is in backyard chickens in the Nelson Mandela Bay Local Municipality.

Fourteen (n=14) of these outbreaks were from environmental wild bird surveillance samples that tested H5 PCR positive. Sequencing is underway. These outbreaks are in the City of Tshwane Local Municipality in Gauteng Province (n=9); the Chief Albert Luthuli Local Municipality in Mpumalanga Province (n=1); and the Msunduzi, Mkhambathini and Richmond Local Municipalities in KwaZulu-Natal Province (n=4).

2.1.4 Spatial distribution of the new HPAI H5 non-poultry (wild bird) event

The spatial distribution of the reported HPAI H5 outbreaks in non-poultry is represented in Figure 2 below.

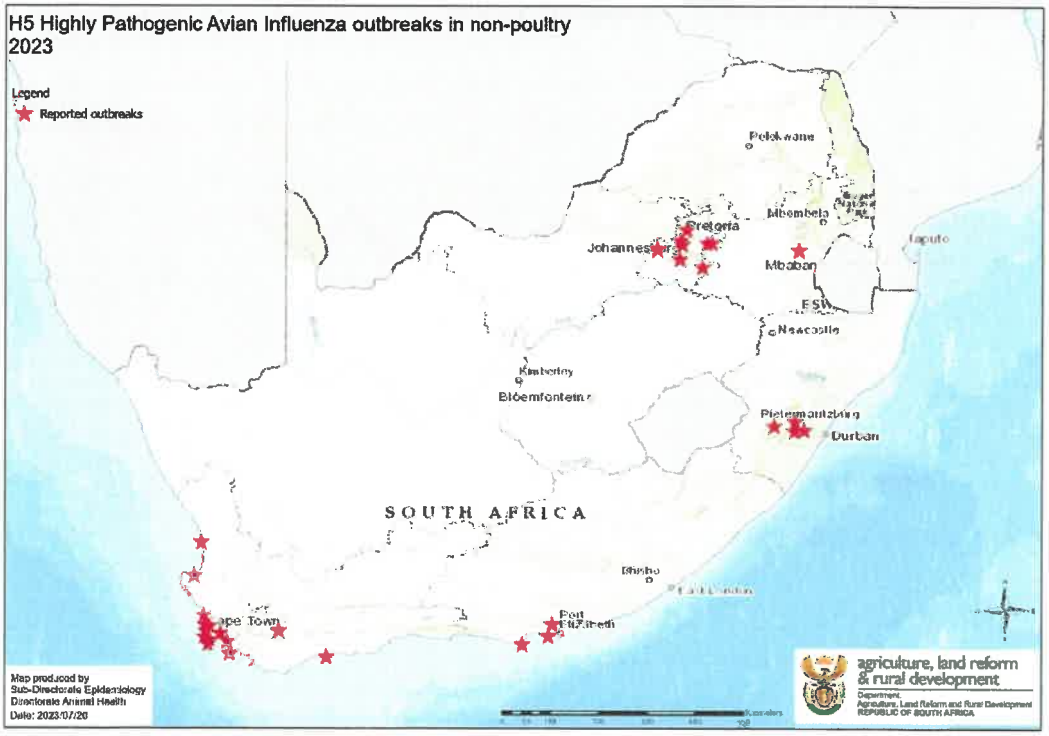

FIGURE 2: SPATIAL DISTRIBUTION OF HPAI H5 OUTBREAKS IN NON-POULTRY

2.1.5 Temporal distribution of the new HPAI H5 event

The temporal distribution per category (commercial chickens; small scale farmers/speculators; backyard poultry; commercial ostriches; and wild birds/hobbyists/zoos) per week since the start of the HPAI H5 events is represented in Figure 3 below.

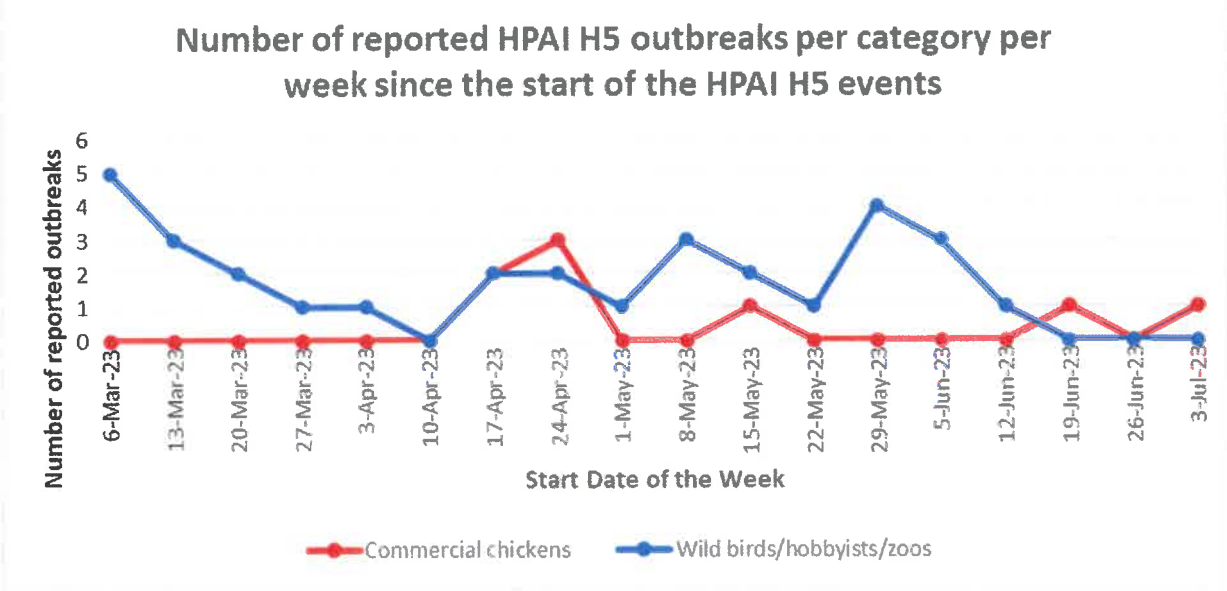

FIGURE 3: TEMPORAL DISTRIBUTION OF HPAI H5 OUTBREAKS PER CATEGORY PER WEEK

The temporal distribution of the HPAI H5 event in poultry is depicted in Figure 4 below, while the temporal distribution of the event in non-poultry is depicted in Figure 5 below.

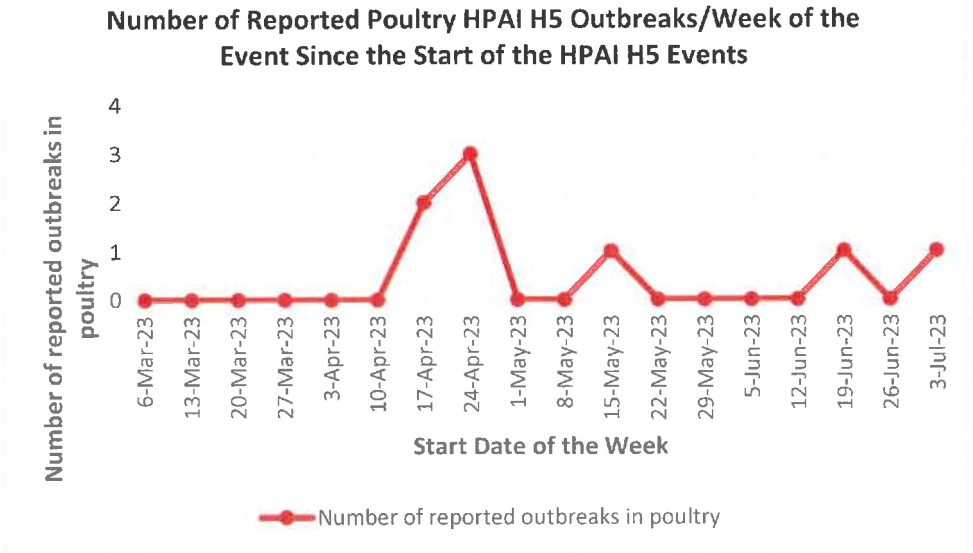

FIGURE 4: TEMPORAL DISTRIBUTION OF HPAI H5 EVENT IN POULTRY

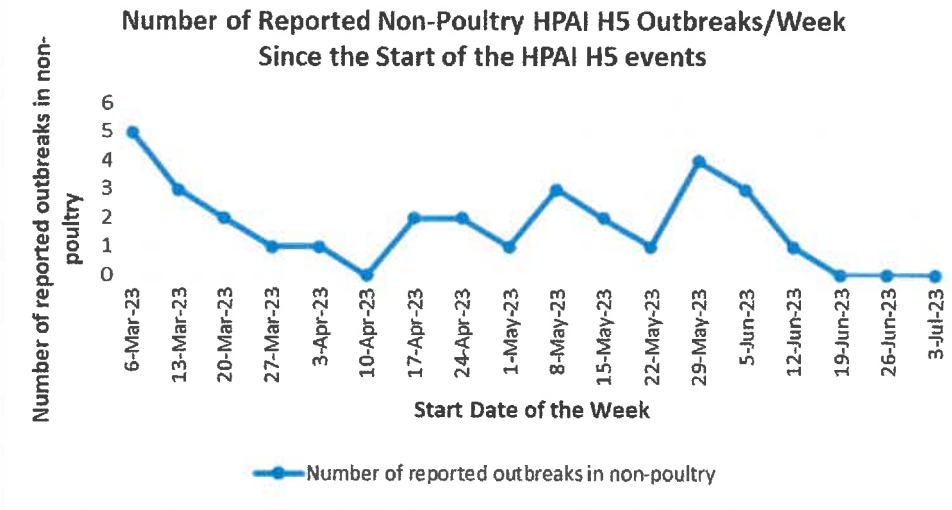

FIGURE 5: TEMPORAL DISTRIBUTION OF HPAI H5 EVENT IN NON-POULTRY

2.2 Overview of the new HPAI H7 event

The first ever HPAI H7 was detected in chickens in South Africa on samples collected in beginning of June 2023. Samples collected from a commercial layer facility and a nearby emerging farmer with both layers and multi-age broiler chickens were confirmed to be H7 PCR positive. A total of four (n=4) outbreaks were reported up to date. Three of these outbreaks are located in the Victor Khanye Local Municipality in the Mpumalanga Province - two were confirmed by sequencing to be HPAI H7, the third tested H7 PCR positive but could not be pathotyped. One of these outbreaks are located just across the border in Gauteng Province. Full genome sequencing is under way.

The sample from Gauteng Province yielded an HA0 cleavage-site sequence characteristic of HP H7. The sample yielded an HA sequence with less than 95% nucleotide identity to H7 viruses isolated in Egypt and Georgia. Sequencing of the NA gene yielded an N6 positive and an NA sequence with 97% nucleotide identity to a virus isolate obtained in Egypt and George. The region sequenced for the HA gene was 300bp and further sequencing is underway to determine a more detailed genetic relationship with other characteristic strains.

The affected local municipalities are represented in Table 2 below.

Province	**Local Municipality with total number of outbreaks within this Local Municipality**	**Details of outbreak**
Gauteng *0 out of 1 outbreak resolved*	Ekurhuleni (n=1)	Commercial chicken layer farm
Mpumalanga *0 out of 3 outbreaks resolved*	Victor Khanye (n=3)	Commercial chicken layer farm
		Commercial chicken layer farm
		Emerging farmer (layers and broilers)

TABLE 2: AFFECTED LOCAL MUNICIPALITY PER PROVINCE FOR HPAI H7

2.2.1 Spatial distribution of the new HPAI H7 poultry event

The spatial distribution of the reported HPAI H7 outbreaks in poultry is represented in Figure 6 below.

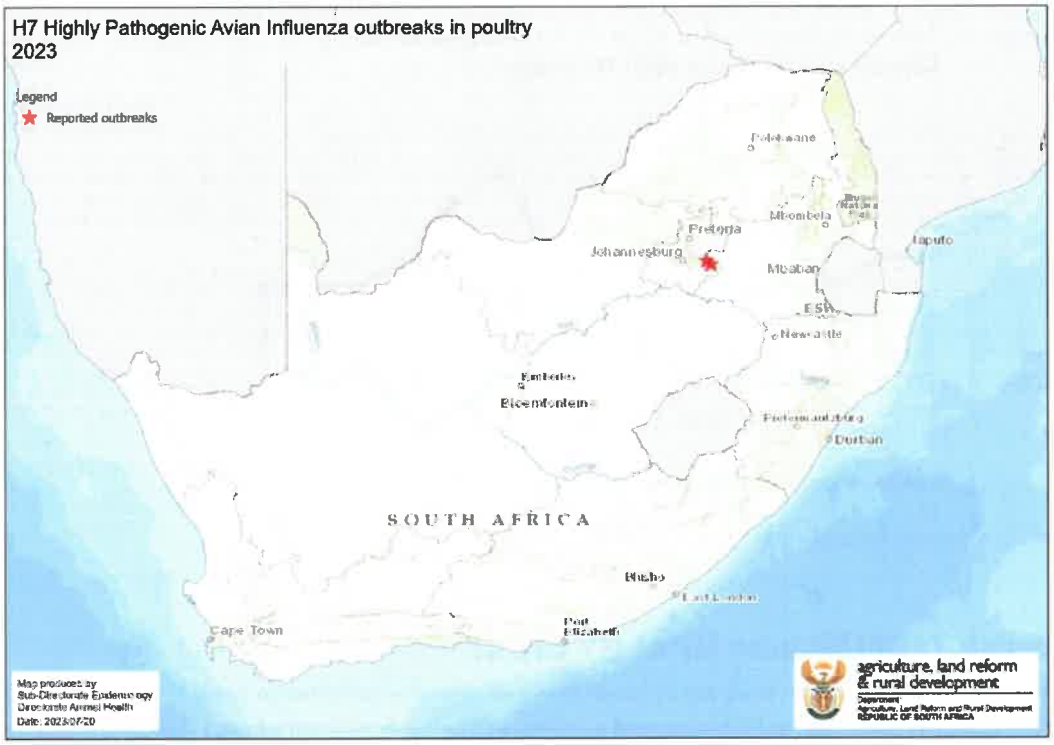

FIGURE 6: SPATIAL DISTRIBUTION OF HPAI H7 OUTBREAKS IN POULTRY

3. Low pathogenic avian influenza (LPAI)

In accordance with Chapter 1.3 of the OIE Terrestrial Animal Health Code, the "low pathogenic avian influenza (poultry)" disease code has been delisted. As of 1 January 2022 LPAI is only being reported to the WOAH as part of a country's six monthly surveillance.

Environmental wild bird surveillance samples that tested positive for LPAI H5 on PCR include: two locations in Gauteng Province during March 2023 and four locations during April 2023 in the Western Cape Province.

All LPAI strains however remain controlled animal diseases in terms of the Animal Diseases Act, 1984 (Act No 35 of 1984) and control measures and reporting will remain unaltered until reviewed.

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