

**Subject:** 19.4 2024/25 Mosquito Management Annual Report

## Summary

This annual report provides an overview of mosquito management activities undertaken during the 2024/25 season by the City, in partnership with the Peel Mosquito Management Group - PMMG (formally Peel Contiguous Local Authorities Group - CLAG) and the WA Department of Health (DoH).

Season 2024/25 brought an unexpected shift and intensification of tidal inundation and favourable environmental conditions for saltmarsh mosquitoes to reproduce.

As a result of this change, twenty-two (22) aerial larvicide treatments were undertaken between 1 July 2024 and 30 June 2025 with a record area of 7,763.5 hectares being treated across the Peel Region.

The City and PMMG worked throughout the season to minimise saltmarsh mosquito populations and the ongoing risk to the community from mosquito borne disease in the form of Ross River virus (RRV) and Barmah Forest virus (BFV). This required intensive field surveillance, aerial larvicide treatments and additional financial commitments by all parties.

Across the season, thirty-one (31) human cases of RRV were reported for Mandurah, compared to the twenty-four (24) reported during season 2023/24. A total of two (2) human cases of BFV were reported as opposed to five (5) in 2023/24. The prevalence of RRV and BFV in any given year is driven by a range of complex factors including environmental conditions, virus transmission cycles, and the abundance of adult mosquitoes.

Council is requested to note the activities of the PMMG in season 2024/25, recognising the high level of community interest there has been in this State and local government partnership.

## Disclosure of Interest

Nil

## Previous Relevant Documentation

- G.7/03/25 25 March 2025 Mid-Year Budget Review 2024/25: Additional funds approved to undertake additional treatments
- G. 6/10/24 22 October 2024 Mosquito Management Annual Report 2023/24
- G13/10/23 31 October 2023 Mosquito Management Annual Report 2022/23
- G.4/10/22 25 October 2022 Mosquito Management Annual Report 2021/22

## Background

Members of the PMMG/Peel CLAG include the WA Department of Health, City of Mandurah, Shire of Murray, City of Rockingham, and Shire of Waroona. This long running partnership has been delivering mosquito management across the Peel Region since it was first established in 1991. Officially known as the Peel CLAG, the group adopted the title of Peel Mosquito Management Group – PMMG some years ago to offer a more identifiable name to the community. For reporting purposes Peel CLAG is referenced within this report to reflect administrative and financial activities.

The purpose of this report is to provide a review of the events and outcomes in relation to the environmental drivers of mosquito breeding cycles, mosquito management operations and the prevalence of mosquito-borne disease that occurred during the 2024/25 season. The report also

includes information on adult mosquito abundance, community education initiatives, and the financial activities of the Peel CLAG during the season.

Saltmarsh mosquitoes present an enduring public health risk and nuisance to residents and visitors across the Peel region due to the extensive breeding habitat found within the fringing wetlands throughout the Peel-Harvey Estuary and its tributaries. Many of the City's residential suburbs and recreational facilities are well within the confirmed flight range of saltmarsh mosquitoes.

Mosquito management in the Peel Region is primarily undertaken through aerial (helicopter) larvicide treatments via the DoH contracted helicopter provider. This service and method of treatment is essential given the regional disease risk, extensive breeding habitat, time sensitivity, and prolific mosquito breeding cycles.

Helicopter application of larvicides specifically target the aquatic larval stages of the mosquitoes lifecycle. This technique successfully removes a high percentage of mosquito larvae that if untreated would emerge as adult mosquitoes and pose a far greater risk of disease transmission and further severe nuisance.

The success of each larvicide treatment can be influenced by a range of environmental related factors such as wind, tidal movement, water temperatures, mosquito larvae development times, habitat characteristics, and vegetation coverage.

## **Comment**

### Climate Influences

Climate drivers play a key role in influencing our regional and local environmental conditions, the intensity and duration of each season and the need for mosquito treatments.

Two key climate drivers, the El Niño Southern Oscillation (ENSO) and the Indian Ocean Dipole (IOD) have been demonstrated to play a role in the seasonal variations of our local environmental conditions and the intensity of mosquito reproduction and abundance.

Historically in the Peel Region, El Niño phases have been associated with seasons of lower mosquito abundance. Neutral phases generally provide moderate seasons whereas La Niña phases predictably bring the most challenging conditions for mosquito management in the Peel Region.

Ongoing changes in the difference between sea surface temperatures of the tropical western and eastern Indian Ocean are known as the Indian Ocean Dipole or IOD. The IOD also has three phases: Neutral, Positive and Negative. IOD events usually start around May or June, peak between August and October and then rapidly decay around the end of spring.

Throughout season 2024/25, the Australian Bureau of Meteorology (Bureau) ENSO and IOD monitoring reported the persistence of Neutral phases despite some weak La Niña-like signals presenting in late 2024. Other climate monitoring agencies such as the World Meteorological Organisation reported that a weak La Niña event did establish in December 2024 and lasted until March 2025. Despite the Bureau not formally declaring a La Niña at the time, upon review by the Bureau, the 2024/25 La Niña is now recorded as being of weak to moderate strength having formed in the tropical Pacific in September 2024, before decaying in March 2025.

The environmental drivers that presented during season 2024/25 certainly aligned with the conditions and treatment demand that the program historically only encounters when a La Niña event is influencing the broader climate.

Whilst the late development of the 2024/25 La Niña was unusual, this reinforces the complexity of climate patterns and predictive modelling. The Bureau has reviewed its climate modelling and reporting to reflect current climate conditions as opposed to historical data.

---

Figure 1 provides the Southern Oscillation Index (SOI) with Bureau declared historic La Niña events highlighted. This gives an indication of the state and intensity of ENSO events from an atmospheric perspective. The SOI is calculated using the pressure differences between Tahiti and Darwin. Sustained negative values of the SOI below -7 often indicate El Niño is active while sustained positive values above +7 are typical of a La Niña. The 2024/25 La Niña event was weaker than the prolonged 2020/2023 event which would suggest that other climate drivers were active during the 2024/25 season.

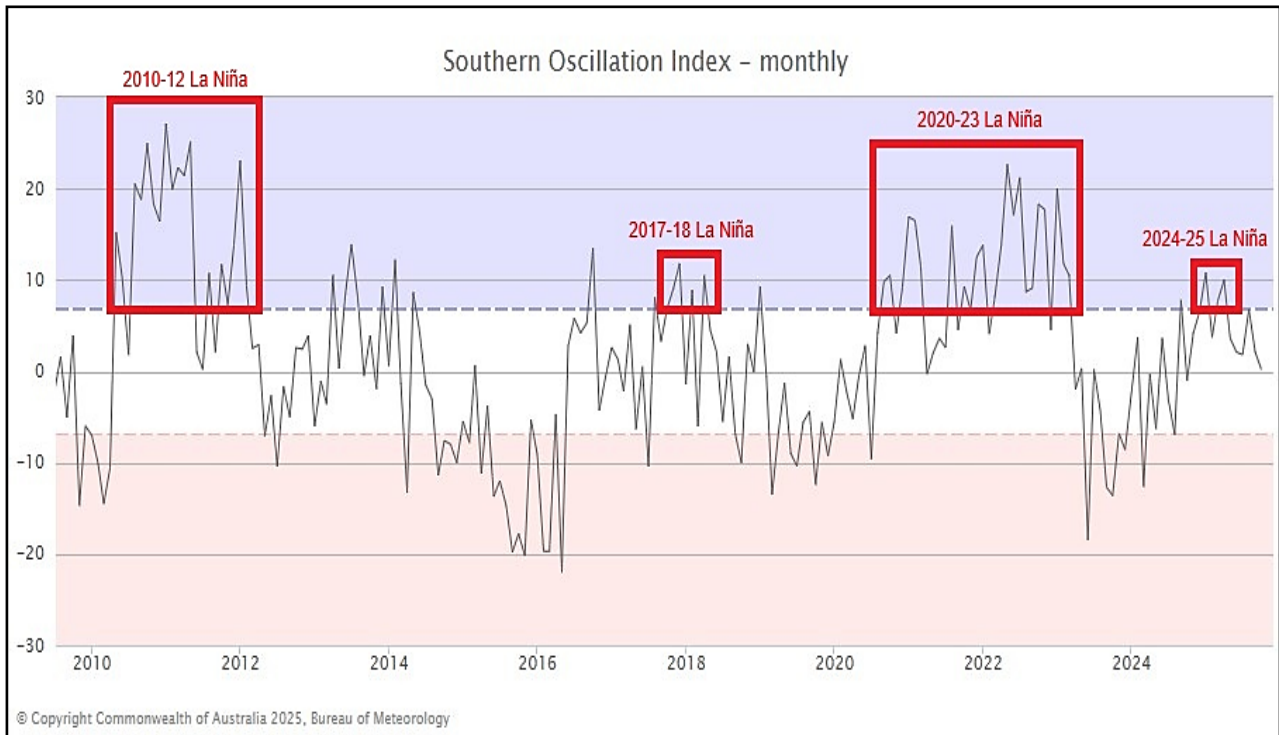


Figure 1 - Southern Oscillation Index (SOI) – monthly history with recent La Niña events indicated. Source – Australian Government Bureau of Meteorology/Climate/SOI

### Regional and Local Weather

Weather systems such as low and high-pressure systems, approaching cold fronts and wind forces, west coast troughs, tropical cyclones reaching the mid-west and rainfall inflow into regional river systems, either individually or as a combination can have significant impacts on local tide and water level behaviour within the Peel-Harvey Estuary.

Tropical cyclones (TC) in the western region were far more numerous than previous seasons with ten (10) systems reported. Of significance was TC Sean which formed off the Kimberley coast on the 17 January 2025 and tracked parallel with the Pilbara coast before shifting southwest. By 20 January 2025, TC Sean began to weaken, drift offshore and continue to track in a southerly direction as a decaying low-pressure system. Storm surge tides were recorded along the Pilbara and west coasts including the Peel Region with a 1.29m tide surge recorded at the Peel Inlet station on 23 January 2025. This tide was 0.64m above the predicted high tide of 0.65m. The resulting tidal inundation triggered the biggest larval hatching event for the season and the completion of the largest aerial larviciding treatment.

Figure 2 details the evolution and track of TC Sean, whilst Figure 3 shows the events effect on sea level and tide behaviour as recorded at the Peel Inlet tide station.

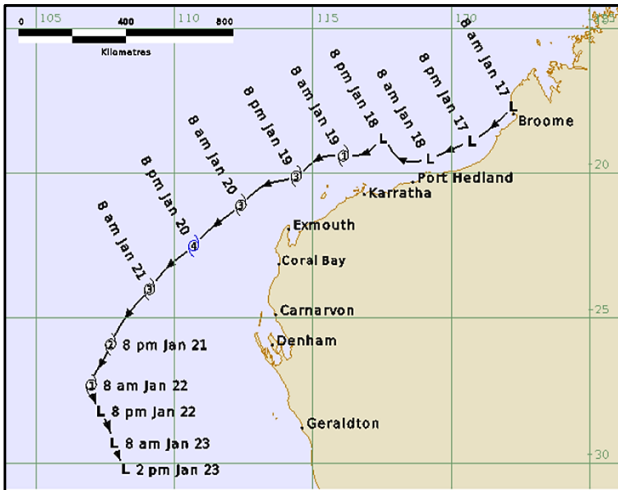


Figure 2 - TC Sean Track and Intensity  
 Source - Australian Government Bureau of Meteorology  
 Tropical cyclone reports

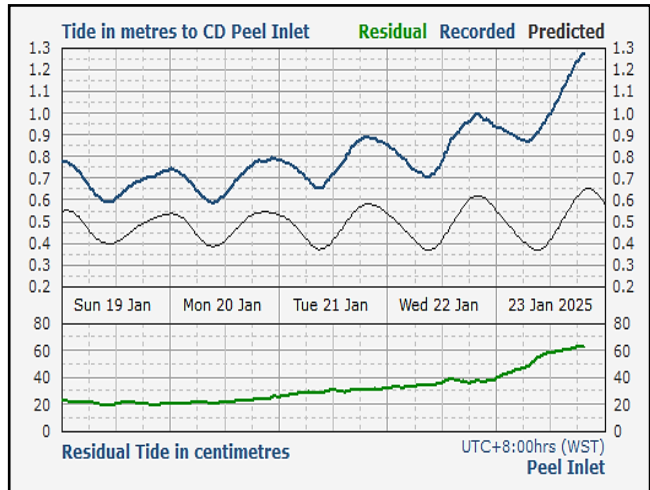


Figure 3 - Peel Inlet Tide Station  
 Source - Department of Transport WA  
 Coastal data and charts

Sea surface temperatures (SSTs) during season 2024/25 as noted in Figure 4 were recorded as being the warmest on record nationally with monthly SSTs the highest on record for areas of the Western Australian coastline during September, December, January, and March. These elevated SST's no doubt contributed to the global and regional weather patterns during season 2024/25.

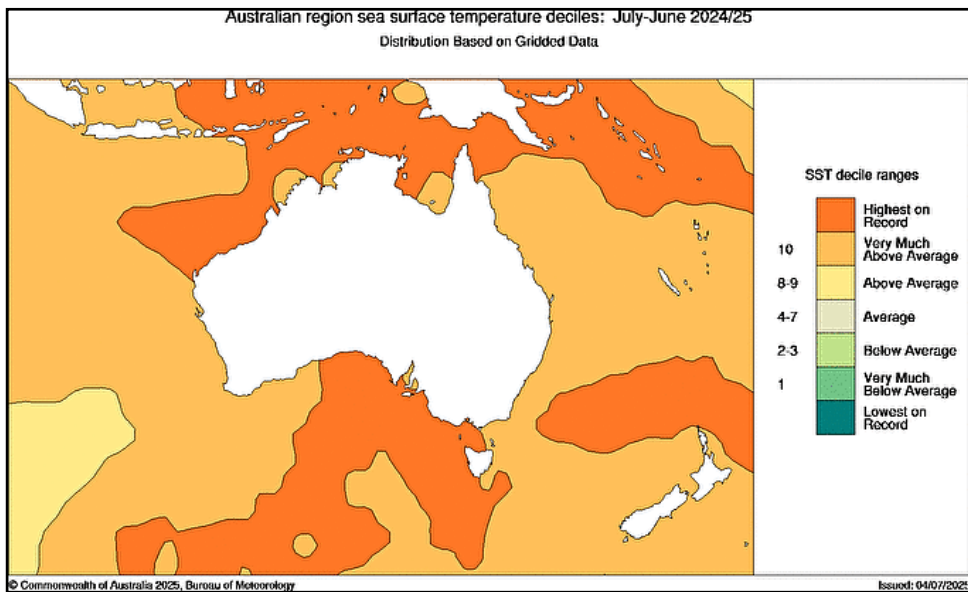


Figure 4 - 2024/25 Australian region sea surface temperatures compared to historical records.  
 Source - Australian Government Bureau of Meteorology/Financial year climate and water statement 2024/25.

Daytime temperatures across much of Australia were well above average, with southern and inland Western Australia and parts of the west coast recording their highest on record.

Air and water temperatures play a critical role in mosquito reproduction cycles through influencing the speed of larvae development. Sustained higher air and water temperatures support faster larval development timeframes that can see the adult mosquitoes emerging in as little as four (4) days following progression through the larvae stages. The monitoring of larval development is critical to ensure the successful timing of aerial treatments.

### Water Level Observations

The breeding cycles and seasonal abundance of saltmarsh mosquitoes in the Peel region are primarily driven by the frequency and intensity of water level changes and wetland flooding within the Peel-Harvey waterways.

Whilst forecast variations in tidal levels within the Peel-Harvey system are often less than 30cm, actual water levels fluctuate greatly from tide predictions. Tidal surges of 40cm above predicted peak heights are a regular occurrence within the Peel-Harvey estuary. These tides known as storm surge tides are not always linked with a storm front, rainfall event or even an obvious change in our local weather. Generally, local storm surges are generated by cold fronts crossing the southern west coast or low-pressure systems and surface troughs that extend down from northern Australia and establish over the west coast result in changes in mean sea levels.

Storm surges can inundate vast areas of breeding habitat and trigger the hatching of mosquito larvae in their billions. Hatching may occur as a single event or repeatedly over several days. The eggs of saltmarsh mosquitoes can remain in a dormant state over weeks, months and even years. This results in the build-up of egg bank loading over prolonged periods.

Season 2024/25 presented a level of tidal inundation not encountered during even the most intense seasons. Whilst the frequency of tides above the reference trigger height of 0.75m was on par with the most challenging seasons, it was the frequency of tides peaking at 0.90m and above that resulted in season 2024/25 being exceptionally demanding, both operationally and financially. Tides peaking at and above this height result in extensive inundation throughout the region including the flooding of areas that typically only flood during the winter months or a small number of times between Spring and Autumn during a moderate (average) season.

The extensive and persistent flooding provides female saltmarsh mosquitoes with more suitable habitat to deposit eggs and mosquito larvae with larger areas to disperse, forage and develop. Additionally, and unlike most other instances, the significant tide surges during the 2024/25 persisted over a number of days which prolonged wetland flooding and subsequently contributed to larger aerial treatments and higher larvicide consumption across the season. Of the twenty-two (22) aerial treatments completed, eighteen (18) were in response to tide peaks at or above 1.00m.

Figure 5 and 6, illustrate the increased frequency of tides peaking and persisting above 0.90m as recorded at the Mandurah Ocean Marina and Peel Inlet tide stations between October and May across seasons 2021/22 to 2024/25 noting that seasons 2021 – 2023 were also influenced by a La Niña climatic event.

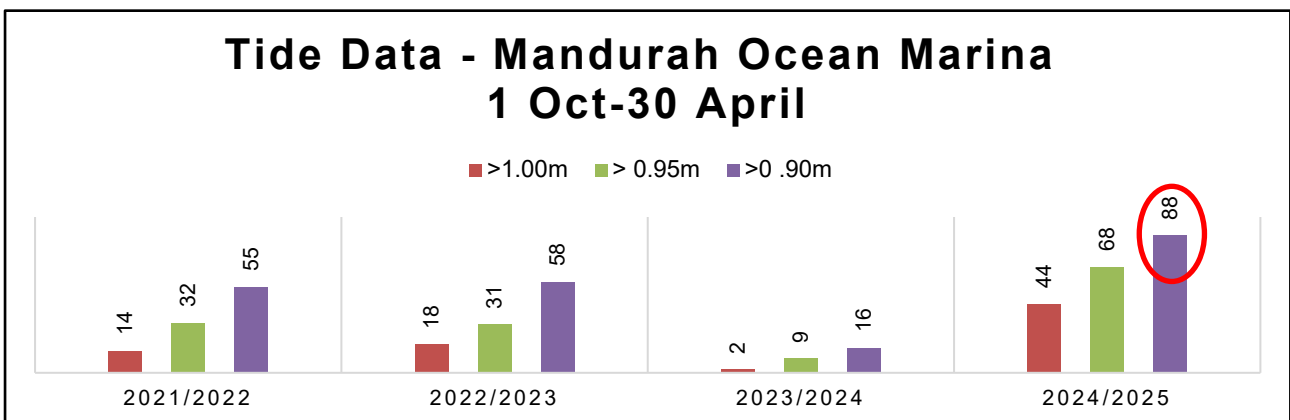


Figure 5 - Mandurah Ocean Marina tide data 2021/22 – 2024/25

Source - Department of Transport and Major Infrastructure - Coastal Data and Charts

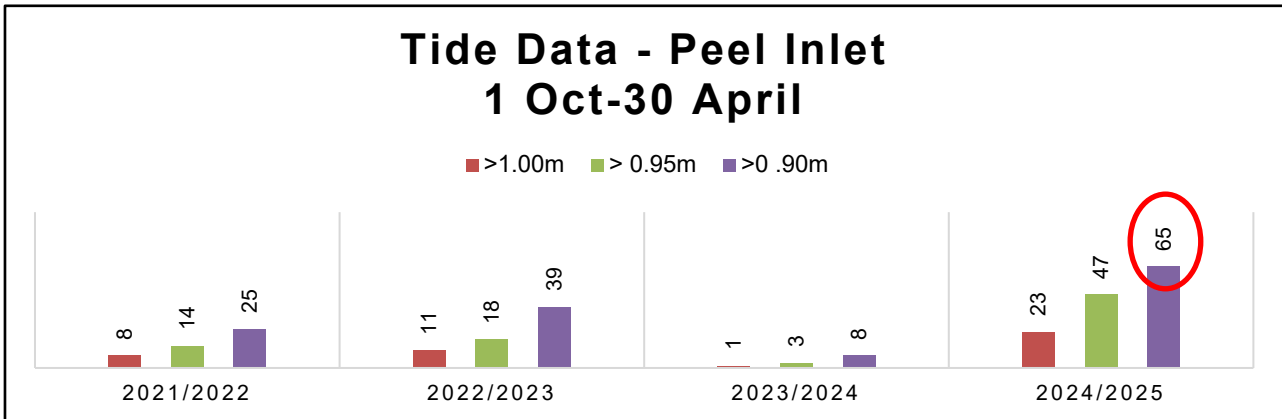


Figure 6 - Peel Inlet tide data 2021/22 – 2024/25

Source: Department of Transport and Major Infrastructure - Coastal Data and Charts



Figure 7 – Department of Transport and Major Infrastructure Peel Tide Station locations

Source: Department of Transport and Major Infrastructure - Coastal Data and Charts

### Aerial Larviciding

The aerial application of larvicides is the primary technique that the program employs to allow targeted, effective, and reliable reduction of saltmarsh mosquito populations on a broad scale. This technique is the most efficient method currently available and allows the rapid application of different larvicide formulations.

Aerial application also allows the larvicides to be applied to the region's saltmarsh mosquito breeding habitats in a manner that provides minimal environmental impact in comparison to on ground methods. The use of quad bikes or other types of all-terrain vehicles would be highly damaging and detrimental to the environmentally sensitive wetlands within the Peel-Harvey System.

In certain scenarios, there may only be a small window of one day for an effective aerial treatment to occur. In these situations, it is vital that accurate and timely field surveillance relating to water levels, larval densities and development rates occurs so that informed decisions regarding larvicide selection and the timing of the application can be made to achieve the highest reduction of mosquito populations. In addition to field surveillance, it is crucial the timing of the treatment also includes factors such as weather conditions and fluctuating water levels within 24 – 48 hrs of the application taking place.

The two active ingredients within the larvicides used are (S)-methoprene and *Bti* (*Bacillus thuringiensis israelensis*). These actives have been approved for use by the Australian Pesticides and Veterinary Medicines Authority and are used by mosquito control agencies worldwide. They are currently the most environmentally appropriate larvicide formulations available and are target specific. Both (S)-methoprene and *Bti* are certified for the management of mosquitoes in natural and urban environments and consistently provide high mortality rates to larval populations.

These formulations are selected based on the stage of mosquito larval progression and considerate of likely weather conditions, particularly where there may be dilution of the product through additional tidal inundation. *Bti* based products are more effective against early instar larvae and require shorter contact time for effectiveness, while (S) methoprene is more effective for later instar larvae when water levels are stable.

Twenty-two (22) aerial larvicide treatments were completed across the season covering a total of 7,763.5 hectares. The first aerial treatment for the season was completed on 2 and 3 August 2024 with the final treatment for the season completed on 9 May 2025. As a direct result of the intense tidal inundation and subsequent larval hatching events throughout the 2024/25 season, significantly larger aerial treatments were required on a consistent basis. As a measure of this increase, the average aerial treatment in season 2023/24 covered 216.2 hectares whereas season 2024/25 recorded an average area of 352.9 hectares, a 63% increase.

The environmentally driven demand for larger aerial treatments brought a major increase in workloads for the program's officers and the contracted helicopter pilots as well as requiring higher larvicide volumes to be used than budgeted. The larger aerial treatments typically required two or more days of suitable weather for effective application which brought its own set of challenges in the planning and successful execution of the aerial treatments.

The program faced its greatest challenges in January and March 2025 due to frequent tidal surges over 1.00m, ideal mosquito breeding conditions, and difficulties with aerial larviciding. An unprecedented total of 3,703 hectares was treated across ten (10) aerial treatments noting that a similar number of hectares (3,647) were treated across the entire 12 months of the 2023/24 season. The seasons largest aerial treatment of 665.7 hectares was completed within this period following a tide peak of 1.29m associated with TC Sean.

Figure 8 - offers a snapshot of the intensity of tides and aerial larvicide treatments throughout January and February 2025.

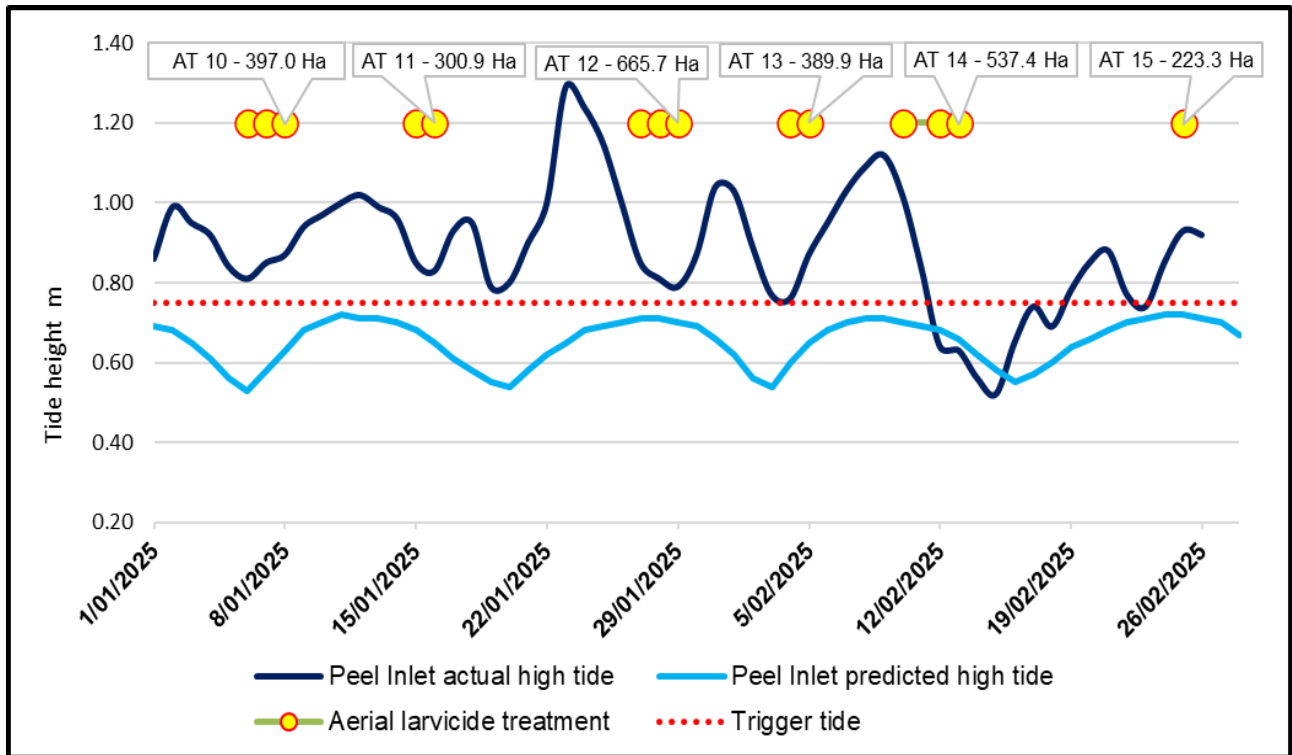


Figure 8 - Tide and aerial treatment information between January and February 2025  
 Note\* - Aerial Treatments (AT) can span multiple days but are considered as a single treatment.

Figure 9 provides a summary of the season’s aerial treatment activities by month when compared to season 2023/24

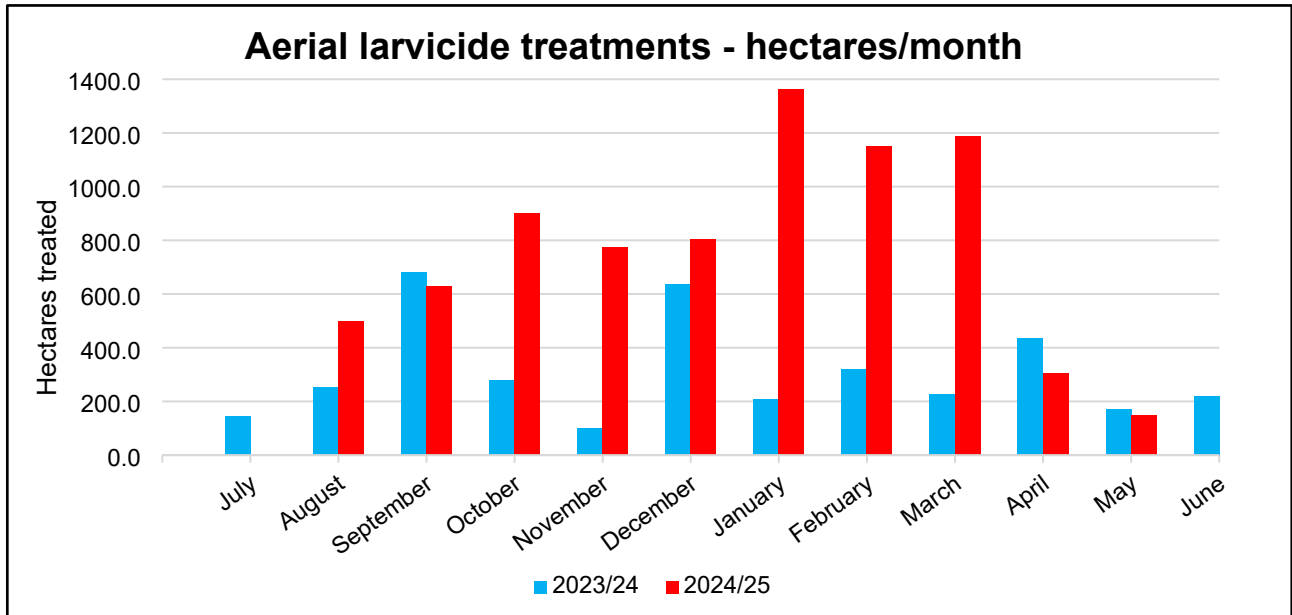


Figure 9 - Aerial larvicide treatments by month July 2023 – June 2025

The repeated hatching of multiple larval cohorts and rapid larval development times driven by supportive environmental conditions necessitated the increased use of the dual active larvicide VectoPrime® FG and due to its higher cost contributed to the increased expenditure during season 2024/25.

VectoPrime® FG contains both *Bti* and S-methoprene actives and is effective against a wider range of larval development stages which is often required where there are repeated tides triggering successive hatching.

As a result of a delay in the shipment of Barmac® BTI 200 GR from the US supplier in early 2025, additional supplies of VectoPrime® FG and Vectobac G® were sourced to ensure aerial larvicide treatments could be maintained through to the end of the 2024/25 season.

Vectobac G® is a *Bti* formulation that is of a larger granule size than Barmac® BTI 200GR and is less suited to the wind conditions and vegetation coverage than the Barmac® BTI 200GR and VectoPrime® FG.

Throughout the entire season, City officers remained focused on field surveillance to ensure aerial treatments were effective in reducing mosquito larvae populations and subsequent surges in adult mosquitoes.

Key outcomes of the season's aerial larviciding treatments were:

- 22 aerial larviciding treatments - 1 July 2024 to 30 June 2025
- 7,763.5 hectares treated
- 296.6 helicopter hours (145.4 in season 2023/24)
- average aerial treatment size - 352.9 hectares
- largest individual treatment - 665.7 hectares
- 35,442kg of Barmac® BTI 200GR applied
- 23,912kg of VectoPrime® FG applied
- 1,315kg of Vectobac G® applied
- 140kg of Prolink Prosand® applied

#### Adult Mosquito Surveillance

Adult mosquito surveillance trapping provides vital information on mosquito population levels, mosquito dispersal, species diversity, mosquito-borne disease detection, evidence of treatment success or failure along with assisting in providing proactive communications and advice to the community.

The City completed eighteen (18) adult trap runs in the 2024/25 year in unison with the DoH Medical Entomology surveillance program. A total of one hundred and seventy-nine (179) EVS (carbon dioxide baited) static traps were set, retrieved, and sampled by the City with 39,974 mosquitoes collected.

The DoH Medical Entomology team completed twenty-four (24) trap runs in the Peel Region using the same EVS traps at eight (8) locations.

Figure 10 details the results of the DoH 2024/25 trapping in the form of the average trap count and dominant mosquito species captured between June 2023 and June 2025.

As is the case in most seasons the prolific breeding of *Aedes camptorhynchus* during the winter and early spring months along with the restricted opportunities to undertake aerial larvicide treatments fuels an increased abundance of this species during spring.

Unstable winter weather conditions typically restrict the program’s ability to perform helicopter treatments during the winter months and any treatments that can be performed are opportunistic based on small windows of suitable weather and tide activity that align with presence of larval activity.

As highlighted within Figure 10, a significant surge in *Aedes camptorhynchus* populations presented in September 2024. The programs inability to complete more than one aerial larviciding treatment in August 2024, and the reduced impact on larval populations from the aerial larvicide treatment completed on the 13 September contributed to the rise in adult mosquito populations. The commencement of a new pilot in season 2024/25 brought a period of transition which included adapting to the unique nature of the program’s operation.

Of more impact on the City’s residents was the surge in *Aedes vigilax* populations between January and March 2025. This aggressive, all-day biting species results in higher nuisance impacts than *Aedes camptorhynchus*. The rise in mosquito populations during this period also aligned with the reported increase of Ross River virus cases across January and March 2025.

Overall and considering the intensity of season 2024/25 when compared to season 2023/24, the program was successful in supressing mosquito populations across much of the season.

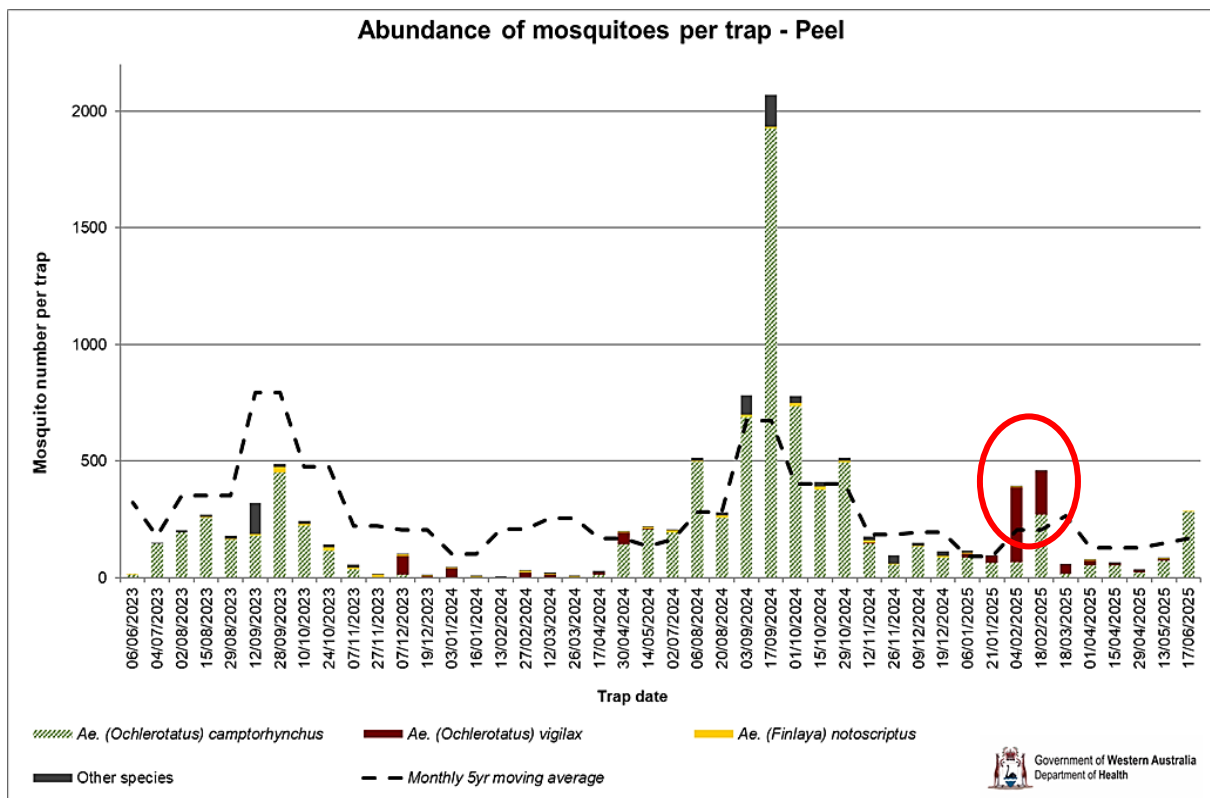


Figure 10 - WA Department of Health - Peel average trap abundance 2023/24 – 2024/25  
 Source: Medical Entomology Branch, WA Department of Health - Medical Entomology

Department of Health Southwest Arbovirus Surveillance – Ross River virus (RRV) and Barmah Forest virus (BFV)

Mosquito borne virus surveillance is undertaken by the DoH Medical Entomology unit with the aim of identifying viruses from pools of mosquitoes trapped from the eight (8) Peel region locations along with fifteen (15) other trap locations southwards from Australind to Busselton. Upon detection of virus and when deemed appropriate, the DoH notifies local governments and issues media statements to the public to warn and encourage residents and travellers to take precautions to avoid mosquito

bites. These isolations of virus can provide an early indication of the potential for increasing virus activity and potential human cases.

These warnings are also conveyed by the City and other members of the PMMG through social media platforms and other communication outlets.

During the 2024/25 season, the DoH southwest arbovirus surveillance program completed twenty-four (24) trapping rounds which resulted in an estimated 115,300 mosquitoes being collected. The Peel region recorded 1 positive detection of a mosquito carrying RRV in January 2025 and 1 positive detection of a mosquito carrying BFV February 2025. In total, there were 3 positive detections of mosquitos carrying RRV and 3 positive detections of mosquitos carrying BFV recorded for the Southwest region in 2024/25.

Notified mosquito-borne disease cases 2024/25

Human cases of mosquito borne disease are reported to the DoH Medical Entomology via General Practitioners (GPs) and laboratory diagnosis. Notifications are then passed on to local governments to allow follow up investigations to be performed.

As detailed in Figure 11 season 2024/25 recorded a minor increase in case numbers of RRV in Mandurah (31) when compared to season 2023/24 (24) and a similar increase in case numbers was recorded for the Peel region (71 in 2024/25 – 55 in 2023/24). Despite these increases, case numbers in Mandurah and the Peel region remained below the long term mean in all but two months of the season and reflected the same level of prevalence recorded across the state.

As is the case in most seasons the number of human cases of BFV were again much lower than RRV with two cases being reported across the season. Continuous improvement to operational aspects of the program and ongoing education and engagement with the community will be important in minimising cases of RRV and BFV within Mandurah, particularly in seasons that have challenging environmental conditions.

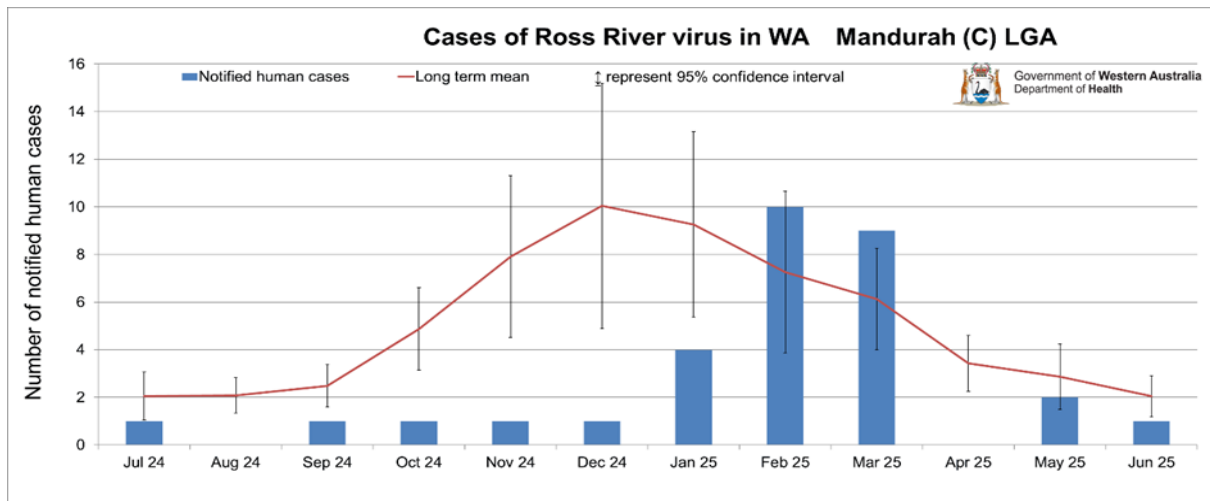


Figure 11 - Ross River virus Mandurah 2024/2025.  
Source: Medical Entomology Branch, WA Department of Health

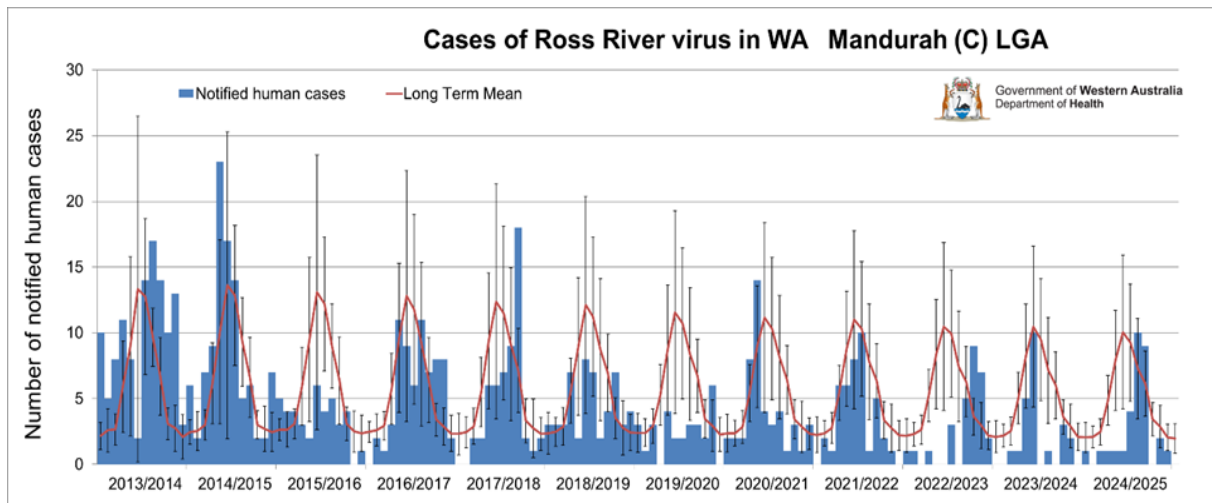


Figure 12 - Ross River virus Mandurah - July 2013 to June 2025  
 Source: Medical Entomology Branch, WA Department of Health

Mosquito-borne disease health impacts

Mosquito-borne disease caused by RRV and BFV are both non-fatal however they can be very debilitating and negatively impact the quality of life for those affected by either of the diseases.

These viruses can only be contracted through the exchange of a mosquitoes infected saliva which occurs during the blood feeding process i.e. mosquito bite. RRV and BFV cannot be caught through direct contact with another person or animal.

Common symptoms include:

- Joint Pain
- Muscle aches and pains
- Fever
- Lethargy or fatigue
- Rash
- Lymph node enlargements (RRV)
- Headaches (RRV)

Most people recover completely within 3 to 6 months, however, for some people symptoms may persist intermittently for a year or more.

During the 2024/25 season, the DoH released a series of new Fight the Bite video resources, including interviews with individuals impacted by mosquito-borne disease, detailing the importance of repellent use. The videos feature Sonia Blackaby who lost her husband to Murray Valley Encephalitis (MVE) in 2023 following a caravanning trip across Western Australia's far north and a City of Mandurah staff member who contracted Ross River virus in the states southwest.

Community Engagement

Despite the high workload across the season, City officers were still able to engage with community members at a variety of events including:

- National Tree Day, Halls Head - 28 July 2024.
- PHCC Wonder of our Wetlands, Coodanup Foreshore - 12 October 2024.
- National Children's week, Caterpillar Park - 22 October 2024.
- Music in the Burbs, Silver Sands - 2 November 2024.
- Music in the Burbs, Meadow Springs Quarry - 16 November 2024.

- Love our Lakes event, Meadow Springs - 12 April 2025.

The City also continued to maintain communications via various channels throughout the season to ensure residents were kept up to date on the program's activities and the important public health message of protection from mosquito bites and mosquito borne disease.

The City's Facebook platform kept followers up to date with aerial treatment notifications and personal protection messaging with sixteen (16) updates posted. The City's website home page was also used to provide advanced notice to community members of the timing of helicopter larvicide treatments.

Local radio messaging was also continued during the season with the timing of the 15 second radio ads aimed to align with school holidays and the peak in outdoor, recreational, sporting, and social activities.

97.3 Coast FM and 91.7 The Wave messaging was scheduled as follows:

- 21/09/2024 - 30/09/2024
- 15/10/2024 -19/10/2024
- 12/11/2024 - 16/11/2024
- 02/12/2024 - 06/12/2024
- 04/01/2025 - 06/01/2025
- 10/01/2025 - 15/01/2025

Across the 2024/25 season the City received 105 mosquito related complaints, with expected surges in complaints during September 2024 and the period between January and March 2025. Complaints included the impact of mosquito activity on public reserves, cemetery's, dog exercise areas, and school grounds.

The City's Customer Services team provided valuable first point of contact in responding and recording customer complaints and enquiries which allowed more detailed information to be provided to customers via officer follow up actions.

Community feedback will continue to be considered when reviewing current communication methods. This will ensure that the City shapes future messaging to empower and educate the community on effective mosquito management and personal protective measures to minimise disease and nuisance risk.

#### Outlook for season 2025/26

The Bureau's 11 November 2025 Southern hemisphere monitoring update stated the current negative IOD will weaken during November, with a return to neutral in December and is consistent with most international models assessed and the typical IOD life cycle and have little impact on the climate in the months ahead.

The El Niño–Southern Oscillation (ENSO) remains neutral, however there are signs a La Niña event may be developing with seas surface temperatures and atmospheric indicators reflecting La Niña thresholds. The Bureau's model currently predicts that tropical Pacific Ocean temperatures are likely to just meet La Niña levels during November and early summer, before returning to neutral

The Bureau's long-range forecast for December to February is suggesting minimum and maximum temperatures are likely be above average for the southwest of WA along with the rest of the country whilst rainfall is likely to be around average.

Whilst it is difficult to predict how these climate and weather drivers will influence the breeding cycles and abundance of salt marsh mosquitoes in the months ahead and into 2026, the program is expecting and has planned for another demanding season to ensure mosquito populations can be appropriately and effectively managed and importantly the ongoing risk from mosquito borne disease on our community is significantly decreased.

Following one of the wettest winters for many years, the program was able to take advantage of a number of favourable weather windows in late June and early September to commence aerial larvicide treatments for the 2025/26 season. To date the program has been able to complete six (6) successful aerial larvicide treatments.

### **Consultation**

Nil.

### **Statutory Environment**

Nil.

### **Policy Implications**

Nil.

### **Financial Implications**

Mosquito-borne diseases such as RRV and BFV result in costs via medical expenses and loss of earnings to those people that become infected. The number of cases in the City would greatly increase if there was no program in place to manage mosquito populations.

### Peel CLAG Financial Reporting

A total of \$398,116 in funding was initially budgeted for the 2024/25 season based on the expectation that season's events would bring a moderate increase in required larvicide use. However, as the season progressed and with a challenging second half of the season shaping, it was clear that the program would require additional funding in order to maintain aerial larvicide treatments on a similar scale and frequency as had been required in the first half.

In early February 2025, the Peel CLAG made a request to the DoH to approve the use of its CLAG reserve fund and provide additional financial support by matching the commitment by local governments members in contributing a further \$100,000. The DoH approved the \$100,000 in matched funding on 6 March 2025.

During this period, a further escalation in the need and scale of aerial larvicide treatments presented and resulted in larvicide supplies and available funding being rapidly depleted. In April 2025, the Peel CLAG provided the DoH with a formal letter updating the CLAG's financial activities including the accumulated overspend figure at the time of \$14,871.13. Also included in the letter was the advice that the local governments of the Peel CLAG had agreed to commit a further \$30,000 to offset the overspend and cater for any further larvicide procurement.

A request for the DoH to match this second round of additional funding as an obligation of the CLAG funding arrangement was also included. A response from the DoH declining further financial support was received on the 12 May 2025.

In addition to the allocation for larvicide costs, the City of Mandurah contributed an estimated \$275,000 in labour, vehicles, equipment, and resources for public education during the 2024/25 season. All costs associated with helicopter services are provided by the DoH across the southwest with the Peel Region being the primary user.

In total, the Peel CLAG members committed \$685,029 during season 2024/25 and expended the sum of \$648,511 on larvicide procurement. The balance of these funds and value of carry over stock has been carried forward into the 2025/26 budget calculation.

Table 1. Details the Peel CLAG’s revenue and City’s commitments for 2024/25

Description	2024/25 CLAG Budget	2024/25 Additional funding	Total 2024/25 funding
Department of Health	\$181,854	\$100,000	\$281,854
City of Mandurah	\$99,293	\$95,674	\$194,967
Shire of Murray	\$59,648	\$61,467	\$121,115
City of Rockingham	\$22,913	\$29,771	\$52,685
2023/24 Carryover funds	\$34,408	-	\$34,408
*Shire of Waroona (exc admin fee)	\$909	-	-
<b>Total</b>	<b>\$398,116</b>	<b>\$286,912</b>	<b>\$685,029</b>

Table 1 – Peel CLAG revenue breakdown – 2024/25 (Ex GST)

The proposed budget for 2025/26 is outlined in Table 2 noting that the figure of \$578,326.00 does not include the value of carryover larvicide stock.

The approved budget for 2025/26 was prepared with consideration of the Southern hemisphere outlook and long-range forecast and the anticipation a season of similar intensity in terms of the need for aerial larviciding treatments and supporting larvicide procurement costs.

The 2025/26 budget and carry over larvicide stock is expected to provide a treatment area of approximately 7,000 hectares.

<b>Total CLAG budget proposed for 2025/26</b>	<b>\$578,326</b>
<b>Larviciding Chemicals</b>	<b>\$578,326</b>
<b>Less carryover funds not spent in 24/25 (*exc Dept of Health 2025-26 contribution &amp; Shire of Waroona admin fee)</b>	<b>(\$37,427)</b>
<b>Total Required</b>	<b>\$540,889</b>
<b>CLAG member 2025/26 contribution breakdown</b>	
<b>Dept of Health 2025/26 Contribution (50% Larviciding Chemicals)</b>	<b>(\$289,164)</b>
<b>City of Mandurah</b>	<b>(\$137,447)</b>
<b>Shire of Murray</b>	<b>(\$82,569)</b>
<b>City of Rockingham</b>	<b>(\$31,719)</b>
<b>Total LG Contribution</b>	<b>(\$540,889)</b>

<b>*Shire of Waroona (Admin fee)</b>	<b>(\$909)</b>
<b>Reserve CLAG contribution for 25/26 to Trust Account (this amount is an additional contribution for all Peel CLAG members in addition to the amounts above – each local government has a percentage allocated based on breeding area and other criteria set out in the CLAG agreement)</b>	<b>(\$28,916)</b>

Table 2 - Proposed CLAG budget funding 2025/26 (ex GST)

### **Economic Implications**

Impacts of poor amenity and public health risks associated with mosquitoes have implications for the Regional economy if not effectively managed.

### **Environmental Implications**

The PMMG use the most suitable products to protect the local environment.

### **Risk Implications**

The reputational impact to Mandurah and the Peel region is difficult to assess, however the management of mosquitoes is a vital service in ensuring an acceptable level of amenity for residents and visitors.

A best practice mosquito management program across the Peel region adds significant value and protects the public health of thousands of residents and visitors. The risk of contracting mosquito borne virus varies based on a range of environmental factors. Having a consistent program that reduces mosquito populations and educates the public about risk is essential.

### Peel CLAG (Peel Mosquito Management Group - PMMG)

The effective administration of the Peel CLAG is essential to ensure the successful management of mosquitoes in the region. The group met on four occasions during the 2024/25 mosquito management season as well as attending regional meetings relating to mosquito management matters. The meetings facilitate ongoing collaboration between the PMMG members to continuously identify and implement improvements within the program.

Examples of key discussions during 2024/25 include:

- Operational updates
- Mosquito abundance, human case, and disease isolation updates
- Local government reports on mosquito breeding, treatments, and complaint investigation
- Climate and environmental condition updates
- Helicopter operations and application equipment updates
- CLAG funding updates
- Work Health and Safety
- Public engagement strategies
- Emerging technologies and research
- Proposed land developments

### Department of Health - Review of CLAG funding scheme update

As reported in the 2022/23 Annual Report, a review of the longstanding Contiguous Local Authority Group (CLAG) funding scheme was undertaken by the DoH to establish how the scheme is currently functioning and how future requirements will be managed on a State-wide level.

Based on the feedback from local governments involved in mosquito management across the State, the DoH formed twelve recommendations to investigate and action.

Whilst several of the twelve recommendations have been implemented formal DoH advice on implementation progress on key recommendations relating to funding flexibility and funding remains unclear.

In April 2025, the City's Mayor on behalf of the Peel CLAG members, wrote to the Minister for Health and Mental Health highlighting the longstanding collaboration between the State and Peel local governments, the significant health risks from mosquito borne disease that exists in the Peel region and the legitimate concerns the members have in relation to the current and future funding model. The letter also included a request to the Minister for:

- A formal update on the status of the CLAG Mosquito Management Program review.
- An update from DoH on the status of Recommendations 2 and 3, namely:
  - Exploring options for increased annual budget flexibility to reflect environmental variability.
  - Developing a business case for the 2025–26 Budget to secure an appropriate, scalable funding model.
- Confirmation of 50% cost-matching by DoH for larvicide procurement for the remainder of the 2024/25 season, as per the CLAG agreement.

The City received a response from the Minister in early August 2025, outlining the DoH's supportive role towards assisting local governments to reduce mosquito borne disease, stating the CLAG funding scheme now includes a network of 18 CLAGs encompassing 36 local governments. The letter also outlined that local governments have the responsibility to fund additional expenditure in unusually busy seasons and that the Peel CLAG has received a significant proportion of CLAG funding since 2019/20 and over \$1,000,000 in helicopter services and a similar amount in contractor retainer fees.

The City and participating Peel local governments have continually reinforced that a flexible DoH funding model is necessary given the unpredictable seasonal nature of the program. Through discussions and as an action from the Peel CLAG meeting on the 10 September 2025, the City has requested a meeting with DoH Finance representatives to explain the importance of a more adaptable funding model and the risks currently presenting to the program in its absence.

The historic significance of the construction of the Dawesville Channel cannot be understated. The Dawesville Channel increased tidal amplitude within the Peel-Harvey Estuary resulting in more intense inundation of salt marsh wetlands and subsequent mosquito breeding. This impact was well understood at the time and State Government commitments were made to ensure an effective mosquito management program was maintained despite the known increase in demand that would be generated.

### **Strategic Implications**

The following strategies from the City of Mandurah Strategic Community Plan 2024-2044 are relevant to this report:

#### Community:

- A healthy lifestyle and healthy community, with an emphasis on prevention

#### Leadership:

- Sound decisions based on evidence and meaningful engagement.

- Responsible, transparent, value for money delivery of well planned, sustainable, projects, programs, and services.
- A committed, innovative, effective, and values driven Council and workforce.

### **Conclusion**

Season 2024/25 brought environmental conditions and levels of mosquito breeding that tested the program and the resilience of the community with the treatments demonstrating the importance of a comprehensive mosquito management program.

The operational and financial input by the City and all members of the program including the highly skilled and experienced helicopter pilots was unprecedented and should not be underestimated in terms of the effort, resources and level of funding that is required to deliver an essential preventative public health service together with an equally as important lifestyle service that aligns with our communities and stakeholders expectations.

The events of season 2024/25 underscores the changing, unpredictability of the climate drivers, the capacity for saltmarsh mosquitoes to adapt and exploit seasonal environmental changes and the level of intervention and investment that will be required to deliver an effective mosquito management program.

### **Officer Recommendation**

#### **That Council:**

- 1. Receives the City of Mandurah Mosquito Management Program: 2024/25 Annual Report.**
- 2. Approves the communication of this report to following key stakeholders:**
  - **Department of Health;**
  - **The Minister for Health and local Parliamentary Representatives;**
  - **Peel Mosquito Management Group member local governments;**
  - **Peel Development Commission;**
  - **Department of Water Environment and Regulation; and**
  - **Mandurah Environmental Advisory Group.**
- 3. Notes the City's support for the ongoing delivery of the Department of Health Fight the Bite Campaign.**
- 4. Acknowledges the ongoing support provided by the Department of Health in the implementation of improvements in the Peel Mosquito Management Program.**
- 5. Acknowledges the importance of the State Government's ongoing commitment to the annual program, and in accordance with the Dawesville Channel Environmental Review and Management Program. (1998 – Ministerial Conditions and Proponents Commitments for the Peel Inlet and Harvey Estuary Management Strategy).**
- 6. Supports ongoing advocacy for an adaptable State Government funding approach recognising the unpredictable and seasonal nature of the mosquito breeding in the Peel Region.**

### **Attachments**

Nil