

# District Council of Elliston Community Plan



## Community Plan ECP01 Mosquito Management

Signature	
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*Refer to the last page of this document for the Document History Table*

# District Council of Elliston Community Plan

## ECP01 Mosquito Management

### 1. Introduction

The District Council of Elliston (Council) recognises that undertaking a mosquito control program is an important strategy to manage and minimise the public health effects and nuisance issues associated with mosquitoes.

The Mosquito Management Plan (MMP) is important to help reduce the risk of mosquito-borne diseases such as Ross River Virus.

Although Ross River virus (RRV) is not potentially fatal, this disease has an impact on the health and social wellbeing of the residents and visitors to our community.

Mosquito-borne Encephalitis (Ev), although rare, is potentially fatal and must be considered when planning effective mosquito control.

Mosquito control is currently focused in Elliston, a coastal town on the western side of Eyre Peninsula. With a small permanent population which increases three-fold during summer, Elliston is a popular holiday destination for people who enjoy the outdoors and its raw natural beauty. The Elliston township is surrounded by samphire saltmarsh and an inaccessible rocky ocean cliff line, with both environments renowned for breeding mosquitoes. Previous years have seen a spike in arbovirus infections being recorded particularly during the La Nina climate pattern. .

The Mosquito Management Plan has been developed to provide a strategic approach to mosquito management and surveillance recordings will provide important historical data.

It also provides a responsible balance between community concerns and the environment, and aims to improve public health. Whilst mosquitoes have the potential to carry serious disease and create nuisances, they are also an important component of a healthy ecosystem as a food source for frogs, birds, fish, bats and reptiles.

The Council is committed to undertaking mosquito surveillance and control in the area in partnership with SA Health, local health services and the community. Council also has a strong focus on educating property owners and providing knowledge to the community to stay mosquito safe.

### 2. Program objectives

The objectives of the MMP are to:

- To investigate and respond to concerns relating to mosquitoes.
- To educate and inform the community on effective mosquito control and protection practices.
- To identify and monitor mosquito breeding habitats within the District Council of Elliston.
- To monitor mosquito numbers and identify species of mosquitoes within the area, so as to enable effective control measures to be implemented and evaluated.
- To monitor and evaluate environmental conditions affecting mosquito breeding and adult mosquito numbers.
- To treat and or eliminate mosquito breeding habitats to minimise and control the impact on public health from mosquitoes, whilst minimising the impact on the environment.
- To review and evaluate current and alternative mosquito control measures
- To promote the importance of mosquito management to be included in the Regional Public Health Plan.

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#### **3. Strategic objectives**

The District Council of Elliston Strategic Management Plan 2021 – 2025 identifies the objectives and principal activities by aiming to:

- Provide transparent, strong and accountable leadership
- Promote community health and mental wellbeing
- Develop and maintain infrastructure services
- Protect and enhance our environment and natural resources
- Support economic development and tourism

#### **4. Statutory management and legislation**

Under the South Australian (SA) Public Health Act 2011, a Council is the local public health authority for its area and is responsible for the following functions:

- to take action to preserve, protect and promote public health within its area;
- to cooperate with other authorities involved in the administration of this Act;
- insofar as is reasonably practicable, to have adequate measures in place within its area to ensure that activities do not adversely affect public health;
- to identify risks to public health within its area;
- as necessary, to ensure that remedial action is taken to reduce or eliminate adverse impacts or risks to public health; and
- to provide, or support the provision of, educational information about public health and to provide or support activities within its area to preserve, protect or promote public health.

These responsibilities provide the legislative abilities for Council to undertake mosquito management within a risk based framework to ensure a cost effective and viable program to address significant risks to public health.

#### **5. Mosquito biology and ecology**

Mosquitoes are responsible for the transmission of many diseases throughout the human and animal populations of the world and belong to the family of flies called Culicidae. These biting insects have a complex life cycle; the immature stage is totally aquatic and the adult is terrestrial.

The mosquito life cycle is composed of four distinct stages of growth: egg, larva, pupa and adult. The initial stage of the life cycle begins when the adult female lays eggs. The eggs develop into an immature aquatic larval stage which requires four moults to reach the pupal stage. Once development is complete, the adult mosquito emerges from the pupa and the life cycle can replicate again.

Within Australia there are more than 300 different species of mosquito but only a small number are a major concern. Several important human diseases are transmitted throughout Australia by these insects. There are mosquito varieties that bite humans, as well as mammals or birds. Mosquitoes can vary at times of the day and seasons they prefer to bite. Different species have the ability to carry varying diseases but only the female mosquito will bite.

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#### 6. Breeding sites

Councils are responsible for management of breeding sites on land owned by, or under the care and control of Council.

The management of mosquitoes on private property is the responsibility of owners and residents. Backyard breeding of mosquitoes can contribute significantly to nuisance and disease risk in residential areas. SA Health's education campaign encourages residents to clean up and help identify potential backyard breeding sites.

The importance of mosquito trapping and surveillance is to determine which species are in the area and any diseases associated with them.

##### 6.1 Habitats

Different mosquito species seek different preferable habitats. Some species may seek fresh water, others may seek salty or stagnant water. As such, any water body has the potential to act as a mosquito breeding ground.

Mosquitoes often breed in puddles and water-holding containers found on private and public land such as old tyres, bathtubs, drums, fish ponds, animal water troughs, garden pots, pools, rainwater and septic tank openings and wells. The identification and removal of such potential breeding sites is an important practice to ensure mosquito populations do not grow to undesirable numbers.

##### 6.2 Wetlands

Man-made or artificial wetland systems are commonly constructed to control and treat stormwater and wastewater. These wetlands are often perceived to be mosquito breeding grounds.

While any water body has the potential to act as a breeding ground and provide habitat for mosquitoes, well designed and maintained wetland systems are generally not associated with an increase of mosquitoes. Healthy wetlands support a balanced ecosystem and encourage predators to keep mosquito numbers in check as part of the natural food chain process.

A wetland should have the following to maintain a healthy balanced ecosystem:

- Wetlands should be constructed in open areas subject to wind action. Wind produces surface waves that aid in the disruption of larval respiration/adult oviposition and reduces the growth of algae and plants that provide protection for both adults and larvae.
- Shallow water and dense vegetation is attractive to mosquitoes whereas deeper, open water bodies with steep margins free from vegetation are less appealing as a habitat source.
- Wetlands should be greater than 60cm in depth overall and with steep sides to discourage mosquito breeding. Increased water depth will also enable fish predator species to inhabit the area.

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- Maintaining good water movement through the wetland to promote low mosquito populations, e.g. still water is more attractive to mosquitoes and prevents water from becoming stagnant (certain species are attracted to stagnant/polluted water).
- The use of sprinkler systems which may inhibit or reduce adult oviposition and aeration systems to disturb the water surface making it unsuitable for larvae.
- Removal or the periodic control of excess vegetation will in many cases provide increased water movement, predator access for larval control and a reduction in shelter for both adults and larvae.
- Vegetation that will not vigorously invade the water body or the surrounding banks and requires minimal maintenance.
- Drains should be designed so that silt is prevented from building up and water is unable to pond.
- Any maintenance required to the wetland system including drainage systems should be undertaken in a manner that ensures further mosquito habitats are not created, e.g. wheel ruts.
- Regular surveillance and monitoring of the wetland and surrounding area to determine mosquito abundance and species type

#### 7. Nuisance/disease risk

RRv and Barmah Forest virus (**BFv**) are the two most common mosquito borne diseases in Australia. The two viruses have similar lifecycles and cause similar symptoms in people. In nature RRv and BFv pass back and forth between animals and mosquitoes. The only way humans can catch the diseases is through the bite of a virus-carrying mosquito. Other diseases carried by mosquitoes include Japanese Encephallitis, Dengue, Malaria, West Nile virus, Murray Valley Encephalitis (**MVE**), Sindbis and Kunjin (**KUN**).

As well as being a disease risk, mosquitoes can be a considerable nuisance. Some mosquitoes within the region are known to be aggressive biters, causing discomfort and pain to effected residents and visitors, which can impact significantly on their lifestyle. As nuisance mosquitoes are not a risk to public health, they are a lower priority for management and control.

Mosquito species identified in 2022 – 2023 surveillance trapping season included but are not limited to:

SPECIES	HABITAT PREFERENCE	DISPERSAL CAPABILITY FROM THE BREEDING SITE	BITING HABIT AND PERIOD	DISEASE CARRIER
<i>Aedes camptorhynchus</i>	<ul style="list-style-type: none"> <li>▪ Coastal or inland brackish water</li> <li>▪ Tidal salt marshes; especially sites with samphire</li> </ul>	Up to 3-5 km	Vicious; all times	Vector of RRv, MVE BFv and dog heartworm
<i>Aedes notoscriptus</i>	Clean water within the domestic environment; artificial containers such as:	About 0.4 km Prefer to stay around houses	Readily attack by day in shaded	Major domestic pest species. Vector of MVE

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	<ul style="list-style-type: none"> <li>▪ water ponds</li> <li>▪ bird baths</li> <li>▪ pet water bowls</li> <li>▪ gutters</li> <li>▪ pot plant drip trays</li> <li>▪ leaf axils</li> </ul>		areas but will also bite during early morning, evening and night.	RRv and dog heartworm
<i>Culex annulirostris</i>	Typically in freshwater swamps, lagoons, transient grassy pools and occasionally in large containers.	Up to 10 km	Most active from sunset for around 2 hours and again at dawn but to a lesser extent.	Vector of MVE, KUN, RRv and dog heartworm.
<i>Culex molestus</i>	Typically suburban sewage ponds, septic tanks, foul ground and container water and drainage pits. Breeds all year round and is cold tolerant	Limited	Attack readily at night.	Can be a serious domestic pest biter. Vector of MVE.
<i>Culex quinquefasciatus</i>	Near human habitation in man-made containers such as septic tanks, water tanks, wells, tyres, gutters and discarded containers.	Limited	Active in dawn, dusk and night	Can be a serious domestic pest biter

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Other mosquito species trapped but viewed as a lesser risk to human health included but not limited to:

- *Culex australicus* (commonly bites birds)
- *Culex globocoxitus* (rarely bites humans)
- *Ochlerotatus sagax* (generally only a pest after flooding)
- *Anopheles annulipes* (does not preferentially attack humans)

BFv was positively detected at 2 locations in the 2022-2023 season. The traps were located at the Lake Hamp area (LHA1) and CFS Shed (CFS1).

The area surrounding the trap locations were treated with larvae control and a public awareness alert was carried out. Consecutive months returned negative results at all trap locations.

#### 8. Hierarchy of Response for Mosquito Control

SA Health is the lead control agency in South Australia for human disease epidemics, including outbreaks of serious human arbovirus disease. Local councils are responsible for implementing mosquito surveillance and control programs on public land (including Crown land) within their council area for public health protection purposes.

BOM has predicted El Nino is highly likely with below medium rainfall and warmer temperatures for the up and coming mosquito season. A dry, hot spring and summer is a lower risk arbovirus environment but with warm temperatures still may trigger mosquito numbers. A Level 2 Hierarchy of Response is the current forecast for 2023 -24 Mosquito Management season but is subject to change.

At level 2 of the Hierarchy of Response (HoR) for mosquito control programs, SA Health's primary role is to support local council run mosquito surveillance and control programs. At level 3 of the HoR, SA Health's role is to coordinate and support local council mosquito control programs in targeted high risk locations. Below is an extract of the Hierarchy of Response from SA Health's SA Arbovirus Coordinated Control and Operations Plan.

Threat Level	Trigger Conditions/Indicators
Level 1 – Low	<p>Level 1 of the HoR is 'business as usual'. A level 1 response occurs when Health Protection Programs determines there is no indication of a high risk season and no additional surveillance or control measures are necessary to reduce the risk of human cases of infection.</p> <p>At a level 1 response, local councils make decisions on control needs and priorities with minimal guidance from SA Health. Assistance from the state government is limited to the provision of the mosquito management subsidy, technical advice, central data management, and assessment and feedback where deemed necessary.</p>

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Level 2 – Medium	<p>Level 2 is considered to be a heightened response. A level 2 response will be declared when Health Protection Programs determines indicators suggest there is/will be a high risk and additional mosquito surveillance and/or control measures are necessary to reduce the risk of human cases.</p> <p>At a level 2 response, local councils make decisions on control needs and priorities with a high level of coordination, guidance and assistance from SA Health. Priority will be to identify and treat mosquito breeding locations in areas where the risk of serious human arboviruses is high. Control efforts will focus on the highest priority areas and may include state government coordinated larviciding.</p>
Level 3 – High	<p>Level 3 is the highest level of response and will only be declared by Health Protection Programs following the notification of one or more human case of serious disease infection.</p> <p>At a level 3 response SA Health will coordinate and support local council mosquito control programs in targeted high risk locations.</p>

Mosquito control programs run by individual local councils are the primary means of achieving effective control of mosquitoes in high risk areas during levels 1 and 2 of the HoR. Local government mosquito control programs will be incorporated into a state coordinated response should the trigger conditions for level 3 of the HoR be met.

#### 9. Mosquito Monitoring and Surveillance

Mosquito surveillance plays an integral role in mosquito management and is undertaken to monitor mosquito populations in a given area. Surveillance allows pest and vector mosquito species to be identified and also provides a means to monitor abundance and fluctuations in populations over time.

Arbovirus presence and activity can be monitored through viral analysis of mosquito samples, providing an early warning system for virus presence and the need for the protection of public health. Mosquito surveillance is carried out through the warmer seasons, commencing in September and finishing in April each year.

##### 9.1 Mosquito Trapping

Mosquito surveillance is commonly undertaken in the form of adult “trapping” - often referred to as encephalitis vector surveillance (EVS) traps. Traps are baited with dry-ice which emits carbon dioxide into the surrounding atmosphere and fitted with a small battery operated light and fan. Adult mosquitoes are attracted to the carbon dioxide and light source and consequently fly towards the trap. The suction of the fan draws the mosquitoes into a catch container or net fitted to the trap from which they are unable to fly out of.

Traps are generally set late afternoon and collected early morning from pre-determined locations. The trapped mosquitoes are then packaged and transported to La Trobe University Bundoora, Victoria for identification and enumeration. It is important the mosquitoes are received at La Trobe within a 24hr period. Being in a remote area, transportation is challenging to meet the time frame required for testing. Mosquito trapping is carried out on a monthly basis. If a Level 2 HoR is in action, this may be increased to include additional surveillance and trapping times. Mosquito trapping is not to be mistaken as an eradication process. Mosquito trapping is for surveillance purposes only.



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Trap site locations mud map

Site Reference	Location and Details (Elliston)	Why this is a breeding site	Further Investigation/Comments
LHA1	Lake Hamp area	Saltmarsh area,	Monitor larvae and mosquito numbers activity, potential for briquet larvicide application. Previous positive arbovirus site
CFS1	Cnr Airstrip Rd and Flinders Highway	Saltmarsh area, stormwater outlet	Monitor larvae activity, potential for briquet larvicide application. Previous positive arbovirus site
WL1	Elliston Wetlands	Saltmarsh area, surrounding t-tree, stormwater outlet	Monitor larvae and mosquito numbers activity, potential for briquet larvicide application
EPC1	Elliston Caravan Park	Surrounding sand dune, overgrown vegetation	New site monitoring mosquito numbers. High volume tourist area
CTD1	Clifftop Drive	Saltmarsh area,	Monitor mosquito numbers

#### 9.2 Larval Sampling

Larval sampling is often undertaken as a component of a mosquito surveillance and control program. Larval surveillance enables aquatic breeding grounds to be identified and seasonal fluctuations in breeding determined.

Larvae are collected from their aquatic habitat using a ladle, tube or pipette. As with adult trapping, larvae are identified and counted to determine species composition and population density at any given time. Mosquito larvae can be more difficult to identify, often requiring higher magnification and greater expertise.

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The information obtained from larval sampling can be used to determine the optimal times for larvicide application. When used in conjunction with adult trapping, larval sampling can provide an effective means of determining the effectiveness of a control program.

If larval sampling indicates that larvicide control has been effective yet adult numbers are not declining, unidentified breeding grounds can be suspected, indicating that the area requires further surveying.

#### **9.3 Identification**

The identification of adult and larval mosquitoes relies on the microscopic examination of morphological characteristics referred to in a mosquito key. Adult mosquitoes are similar in appearance to other insects such as non-biting midges and crane flies. In adult identification, the following three characteristics can be applied to determine mosquito status:

1. Long proboscis protruding from the head which is several times longer than the actual head;
2. Only one pair of wings;
3. Scales present on the veins of the wing and a fringe of scales on the wing.

#### **9.4 Data Recording**

An integral component of any mosquito surveillance program is recording of the data collected. Information recorded from mosquito surveys can be used to determine the need for a control program, to plan and guide the control program and to later evaluate the effectiveness of the program.

Mosquito collection forms record the following information:

- Location
- Date
- Temperature
- Wind
- Rainfall
- Species type and abundance
- GPS location of trap

This information can then be used to compare climatic trends with species composition and abundance for specific areas. Data can be used for comparison from year to year.

## **10. Mosquito Management Control Options**

There are four key areas of focus to mosquito management that have been considered in the development of the MMP. These include public education and awareness, physical, biological and chemical control of mosquitoes and their breeding habitats.

Below is an overview of these four areas of control which underpin the MMP. The Seasonal Implementation Plan for Mosquito Control provides specific control measures based on the season risk classification, which is reviewed and updated annually.

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#### **10.1 Public Education and Awareness**

The public are a vital stakeholder for the MMP and have a responsibility to manage mosquitoes on their own property and apply personal protection when away from the home environment. SA Health's 'Fight the Bite' campaign provides media and online resources to promote mosquito control at home and personal protection measures to protect against nuisance and disease transmitting mosquitoes. Personal protection is the key to preventing the transmission of mosquito borne diseases. Persons can assist themselves and their families by:

- Wearing loose-fitting, light-coloured clothing covering as much as the body as possible
- Using an insect repellent containing DEET (diethyl toluamide) or picaridin on uncovered skin
- Protecting rest and sleep areas with mosquito nets
- Avoiding times of peak mosquito activity – some mosquito species will bite during the day but many are particularly active for two to three hours around sunrise and sunset

Households can help protect by:

- Ensuring pot plant drip trays are emptied at least once a week or are filled with sand
- Ensuring all windows and openings of houses, boats, caravans and tents are fitted with fine (1mm) insect screens
- Ensuring rainwater and septic tank openings, wells or other large water containers are covered with wire mesh no coarser than 1mm. Black water in septic tanks generally hold fats and oils which mosquito larvae are unable to breathe in.
- Ensuring vents on breather pipes on soakage's are sealed with the appropriate mesh.
- Appropriate disposal of rubbish: emptying, then covering or puncturing containers that may hold water
- Stocking ornamental ponds and other man-made water bodies with small Australian native fish to eat any wrigglers
- Appropriately disinfecting swimming pools and ensuring unused swimming pools are emptied
- Emptying wading pools at the end of each day
- Ensuring roof gutters are kept in good repair and that leaves and debris are removed regularly so that pools of water do not form
- Ensuring bird baths, stock troughs and pets' drinking water are emptied and refilled at least once a week

Council also responds to general enquiries and complaints from the public regarding mosquito management on private property and provide advice to assist the resident and property owner.

Councils will seek assistance from SA Health for the provision of printed resources during high risk seasons.

#### **10.2 Physical Control**

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Physical control measures are used to reduce the potential for mosquito breeding and harbourage by modifying the natural or built environment. Examples of physical control actions include:

- Reduction of emergent vegetation in known breeding sites;
- Filling in, or drainage of low lying land to reduce pooling;
- Slashing of vegetation which provides harbourage for adult mosquitoes;
- Cleaning up yards to remove water collecting containers;
- Ensuring rainwater and septic tanks are sealed or openings and vents are covered with mosquito proof screens.

#### **10.3 Biological Control**

Biological control occurs naturally in many water body ecosystems through natural predation. Removing mosquitoes from the environment in excess or widespread control of mosquito populations may disrupt established food chains in certain ecosystems. Adult mosquitoes have been identified as an important food source for natural predators such as birds, bats, dragonflies, lizards, frogs and spiders. Mosquito larvae also form an integral component of the wetland food chain, acting as a food source for damselfly and dragonfly nymphs, water striders, water fleas, and beetle larvae.

Mosquitoes feed on a variety of nectar producing flowers and are therefore important plant pollinators. Wildflowers and orchids are examples of plants that are pollinated by mosquitoes carrying pollen from flower to flower during feeding.

While mosquitoes are recognised as an important food source and pollination tool, many species are only available to fulfil these roles on a seasonal basis. Mosquitoes are typically abundant in warmer months and remain dormant or in low numbers during colder weather. Predators are therefore not reliant on mosquitoes as a food source year round, but rather as an opportunistic meal.

By maintaining a healthy ecosystem in our wetlands, and supporting an environment of flora and fauna suited to the area, mosquitoes numbers reduce to a natural balance.

Integrated mosquito management is aimed at reducing the number of mosquitoes in a specific area in an environmentally appropriate manner in order to decrease the risk of disease transmission to humans. It is neither feasible nor desirable to eliminate mosquitoes entirely from any ecosystem.

#### **10.4 Chemical Control**

Where chemical control is required it is preferred to treat mosquitoes as larvae while they are contained within an aquatic environment rather than as flying adults. Larvicides kill mosquito larvae and/or prevent the larvae developing into adult mosquitoes.

The most common larvicide used by Councils is an insect growth regulator that is absorbed by the larvae and prevents the larvae from emerging. Councils apply this product in accordance with the required application rates throughout the mosquito season. This product is available in liquid, sand and block form (briquets) and can provide ongoing control for up to 150 days under certain environmental conditions.

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Permanent briquet stations can be installed at known larvae sites to ensure continual control across the mosquito breeding season. Results from mosquito trapping will determine the best treatment to use.

#### **11. Environmental Impact Statements (EIS)**

An Environmental Impact Statement (EIS) documents a variety of information and provides an independent assessment of the potential physical, environmental, social and economic benefits and impacts of a proposed activity.

Mosquito control techniques have the potential to adversely impact on the immediate and surrounding environment. Best practice mosquito control incorporates an EIS prior to treatment, where the anticipated advantages and disadvantages associated with control can be analysed in respect to factors such as the environment, human health and wellbeing.

To the extent appropriate in the circumstances of the case, an environmental impact statement shall:

- State the objective of the proposed action;
- Analyse the need for the proposed action;
- Indicate the consequences of not taking the proposed action;
- Contain a description of the proposed action;
- Include information and technical data adequate to permit a careful assessment of the impact on the environment of the proposed action;
- Examine any feasible and prudent alternative to the proposed action;
- Describe the environment that is likely to be affected by the proposed action and by any feasible alternative to the proposed action;
- Assess the potential impact on the environment of the proposed action and of any feasible and prudent alternative to the proposed action, including, in particular, the primary, secondary, short-term, long-term, adverse and beneficial effects on the environment of the proposed action and of any feasible and prudent alternative to the proposed action;
- Outline the reasons for the choice of the proposed action;
- Describe, and assess the effectiveness of, any safeguards or standard for the protection of the environment intended to be adopted or applied in respect of the proposed action, including the means of implementing, and the monitoring arrangements to be adopted in respect of, such safeguards or standards; and
- Cite any sources of information relied upon and outline any consultations during, the preparation of the environmental impact statement.

#### **12. Mosquito Management - Ongoing Monitoring, Surveillance and Resources**

Monitoring and surveillance is a vital part of the MMP as it is used to determine the level of risk to public health and any required control actions, resources and timeframes for delivery. A summary

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of monitoring and surveillance options available to the Council include:

- Climatic forecasts
- Adult mosquito trapping and viral screening
- Larvae surveillance
- Notifiable Human Disease Data

Operating and implementing an effective MMP is dependent on ongoing human and operational resources. Resource requirements will fluctuate significantly depending on the severity of the mosquito breeding season, which is largely dependent on environmental and climatic conditions.

To ensure the management of mosquitoes, Councils allocate resources and an annual budget. This is supplemented by financial assistance from SA Health and is the lead Agency for mosquito control in the state and provides ongoing support and guidance to Councils.

#### **13. Training**

It is essential that personnel involved in the operational aspects of the MMP are suitably trained. Skills required to carry out the requirements of the MMP safely and effectively are:

- Basic mosquito ecology
- Principles of integrated mosquito management
- Surveillance/monitoring techniques
- Collection, recording and identification of mosquito samples
- Standard operating procedures for equipment
- Safe storage, handling and application of chemicals/larvicides in accordance with product labelling and MSDS
- Use of appropriate PPE in accordance with product labelling, MSDS (Material Safety Data Sheet) and environmental conditions
- Information technologies/geographical information systems

#### **14. Review and Reporting**

Good record keeping practices are crucial for the MMP and retention of knowledge within the organisation. The following list includes the minimum required records to be kept on Council's record management system:

- Records of complaints
- Disease summary
- Adult trapping results
- Larval survey results
- Chemical treatments
- Vector Control maps

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- Chemical product labels and MSDS
- Media releases
- Location of trap sites, larval breeding sites and permanent briquette stations

This MMP will be reviewed annually to assess effectiveness of the monitoring and surveillance program and the overall control program to allow for continuous improvement. An ongoing surveillance program will assess whether the mosquito populations are being reduced and if the control program is achieving reductions in mosquito borne disease.

#### 15. Associated Documents

[SA Health - Fight the Bite](#)

[SA Health - Monthly SA Arbovirus and mosquito reports SA](#)

[Health - Mosquito borne disease explained](#)

[South Australian Public Health Act 2011](#)

[South Australian Integrated Mosquito Management Resource Package 2006](#)

[Bureau of Meterology - El Niño and La Niña and their impacts on our climate and weather with](#)

[the new Understanding ENSO video](#)

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<b>DOCUMENT HISTORY</b>				
Version	Changes since last version	Approved by	Record No	Issue Date
1	Original	SMT	NGR223914	June 2022
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