



## **NOTICE OF MEETING**

### **COMMITTEE OF COUNCIL**

Members of the Committee of Council are advised that a meeting will be held in Council Chambers, Civic Building, 83 Mandurah Terrace, Mandurah on:

**Tuesday 16 January 2018  
at 5.30pm**

**MARK R NEWMAN**  
Chief Executive Officer  
9 January 2018

#### **COMMITTEE MEMBERS**

Mayor Williams  
Deputy Mayor Councillor Knight  
Councillor Wortley  
Councillor Jackson  
Councillor Lee  
Councillor Lynn Rodgers  
Councillor Shane Jones

Hon Councillor Riebeling  
Councillor Tahlia Jones  
Councillor Darcy  
Councillor Schumacher  
Councillor Peter Rogers  
Councillor Matt Rogers

## **AGENDA:**

- 1 OPENING OF MEETING AND ANNOUNCEMENT OF VISITORS**
- 2 ATTENDANCE AND APOLOGIES**
- 3 IMPORTANT NOTE:**

Members of the public are advised that the decisions of this Committee are referred to Council Meetings for consideration and cannot be implemented until approval by Council. Therefore, members of the public should not rely on any decisions of this Committee until Council has formally considered the resolutions agreed at this meeting.

**4 ANSWERS TO QUESTIONS TAKEN ON NOTICE**

Please refer to Attachment 4.1

**5 PUBLIC QUESTION TIME**

*Public Question Time provides an opportunity for members of the public to ask a question of Council. For more information regarding Public Question Time, please telephone 9550 3706 or visit the City's website [www.mandurah.wa.gov.au](http://www.mandurah.wa.gov.au).*

**6 PRESENTATIONS AND ANNOUNCEMENTS BY CHAIRMAN****7 DEPUTATIONS**

*Any person or group wishing to make a 5-minute Deputation to the Committee meeting regarding a matter listed on this agenda for consideration must first complete an application form. For more information about making a deputation, or to obtain an application form, please telephone 9550 3706 or visit the City's website [www.mandurah.wa.gov.au](http://www.mandurah.wa.gov.au).*

*NB: Persons making a deputation to this Committee meeting will not be permitted to make a further deputation on the same matter at the successive Council meeting, unless it is demonstrated there is new, relevant material which may impact upon the Council's understanding of the facts of the matter.*

**8 CONFIRMATION OF MINUTES: Tuesday 5 December 2017.**

*(NB: It is the Elected Members' responsibility to bring copies of the previous Minutes to the meeting if required).*

**9 DECLARATIONS OF FINANCIAL, PROXIMITY AND IMPARTIALITY INTERESTS****10 QUESTIONS FROM ELECTED MEMBERS WITHOUT DISCUSSION**

10.1 Questions of which due notice has been given

10.2 Questions of which notice has not been given – Cr Peter Rogers

**11 BUSINESS LEFT OVER FROM PREVIOUS MEETING**

**12     REPORTS:**

1	Mosquito Management Annual Report 2016-17	1 – 19
2	Proposed Road Closures – Yalgorup National Park	20 - 26
3	Excision Portion of Caddadup Reserve – Water Corporation	27 – 33
4	Crash Location Report: Estuary Road, Dawesville - Fatal Crash	34 – 41
5	Street Verge Tree – Request for Tree Removal – Caspian Way, Wannanup	42 – 46
6	Tender 19-2017: Mandurah Community Museum Courtroom Interpretation Design and Installation	47 - 49
7	Tender 21-2017: Irrigation Pumps, Water Systems Control & Bore Maintenance	50 - 52
8	Tender 22-2017: CCTV Installation and Maintenance	53 – 56

**13     LATE AND URGENT BUSINESS ITEMS****14     CONFIDENTIAL ITEMS****15     CLOSE OF MEETING**

<b>RESPONSE TO QUESTIONS TAKEN ON NOTICE AT THE COMMITTEE OF COUNCIL MEETING HELD ON TUESDAY 5 DECEMBER 2017</b>
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**CC.6/12/17      TOWN PLANNING SCHEME NO 3 AMENDMENT 138: ADDITIONAL USE  
(DOG KENNELS) LOT 1175 OLD COAST ROAD HERRON FINAL ADOPTION**

During the debate that ensued, and at the request of Councillors, the Manager Planning and Land Services provided clarification regarding complaints received regarding kennels that currently operate in the area, the size of the property and position of the Southern Mandurah Rural Structure Plan in terms of approval.

*The Manager Planning and Land Services advised that whilst he was unaware of any recent complaints received in connection with kennel operations in the area, he would take the question on notice in order to check records and provide an accurate response.*

*Response:*

*The City's records do not indicate any complaints in respect to existing operative kennels in operation in the area.*

*(This information was provided at the Council meeting on 19 December 2017).*

1. **SUBJECT:** 2016/17 Mosquito Management Annual Report  
**CONTACT OFFICER:** Tony Free  
**AUTHOR:** Scott Severn/Brendan Ingle  
**FILE NO:** 1547995

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## Summary

Mosquito management activities undertaken by the City, in conjunction with the Peel Mosquito Management Group (PMMG), increased significantly when compared to season 2015/16, resulting in a twofold increase in the number of broad scale aerial treatments required throughout the region. This increase in activity reflected predictions for the season made at the end of the 2015/16.

Following the exceptionally subdued 2015/16 season, the 2016/17 season was one of vast contrast and fundamentally linked to the change in regional and localised environmental conditions as a result of the shift from El Nino Southern Oscillation (ENSO) to ENSO Neutral.

Twenty one (21) aerial larviciding treatments were actioned over the period of July 2016 to June 2017, covering a total of 2627 hectares, a 263% increase on season 2015/16 and on par with seasons 2013 to 2015.

The PMMG continued to work and implement a number of improvements and refinements to helicopter application processes and equipment that has brought greater efficiency, accuracy, and quality control to aerial treatment operations over recent seasons.

The work and collaboration between the Department of Health (DoH), helicopter contractor and the PMMG continued to be at the forefront of broad scale mosquito management nationally. The program's success in managing mosquitoes effectively despite the more favourable mosquito breeding conditions in 2016/17 reflects the ongoing efforts to develop the program.

With regard to the outlook or 2017/18, as of July 2017, a shift in the Southern Oscillation Index (SOI) from El Niño values to Neutral and then La Niña is likely to have played some part in the demanding start to the first quarter of the 2017/18 season. This movement to a La Niña event may lead to more challenging seasons in the next 3 - 5 years with a return to a ENSO La Niña event of moderate to strong intensity.

This annual report provides an overview of the PMMG activities with a specific focus on the City of Mandurah during the 2016/17 season, and seeks Council endorsement of the recommendations of the report.

## Disclosure of Interest

Nil

## Previous Relevant Documentation

- G.21/10/16 25 October 2016 Mosquito Management Program 2015/16 Annual Report
- G.11/10/15 13 October 2015 Mosquito Management Program 2014/15: Annual Report
- G.32/10/14 28 October 2014 Mosquito Management Program 2013/14: Annual Report
- G.32/9/11 27 September 2011 Mosquito Management Annual Report 2010/11: Peer Review of City of Mandurah Mosquito Management Program
- G.37/3/11 22 March 2011 Council Resolved to invite a peer review of the City's Mosquito Management Program

## **Background**

The PMMG consisting of the City of Mandurah, Shire of Murray, City of Rockingham and the Shire of Waroona conducts mosquito management across the Peel Region, in partnership with the DoH. This annual report provides a review of the PMMG's activities during the 2016/17 season with a specific focus on the City of Mandurah.

The purpose of this report is to provide a review of mosquito management operations during the season, the environmental drivers of mosquito breeding cycles and the prevalence of mosquito borne disease. The report includes analysis of the season's environmental conditions, tidal events, aerial larviciding treatments and adult mosquito abundance.

Mosquitoes pose significant health and lifestyle impacts to millions of people worldwide. Within the Peel region, the greatest health risk and nuisance factor to residents and visitors is from saltmarsh mosquitoes. This risk and the challenge the mosquito management program faces, is amplified by the fact that the vast majority of the City's residential suburbs and recreation facilities are within the established flight range of saltmarsh mosquitoes in the Peel Region.

Mosquito management in the Peel Region requires a coordinated and collaborative approach and is undertaken in partnership with the DoH and the contracted helicopter provider. This alliance is essential given the regional disease risk, extensive breeding habitat (estimated to be up to 600Ha), prolific mosquito breeding cycles and urbanisation within the Peel Region.

The program's primary focus is to reduce mosquito-borne transmitted disease via the targeted reduction of mosquito populations, which in turn alleviates the impact of nuisance saltmarsh mosquitoes on City of Mandurah residents and the broader community.

Aerial larviciding treatments via helicopter are the PMMG's primary method for the reduction of saltmarsh mosquito larval populations. This technique has the ability to successfully remove a high percentage of mosquito larvae that would, if untreated, emerge as mature adult mosquitoes and pose the risk of disease transmission in the community.

The extent of larval and adult saltmarsh mosquito abundance at any given time is heavily influenced by environmental conditions prior to, during and following treatments.

Key events and statistics from the 2016/17 season are listed below:

- Reported cases of Ross River virus (RRV) across the State, Region and City:
  1. 1115 RRV cases recorded in WA compared to 504 in 2015/16.
  2. 331 RRV cases recorded in the Perth Metro.
  3. 150 RRV cases recorded in the Peel Region compared to 89 in 2015/16.
  4. 68 RRV cases recorded in Mandurah compared to 41 in 2015/16.
- 21 aerial larviciding treatments were undertaken between 1 July 2016 - 30 June 2017.
- A total of 2627 hectares were treated compared with 723.5 hectares in 2015/16 (rise of 263%).
- The average aerial treatment size for the 2016/17 season was 125 hectares compared to 80 hectares in 2015/16.
- October 2016 (267 hectares) and March 2017 (255.2 hectares) were the largest individual treatments completed.
- Four consecutive treatments were completed totalling 632 hectares in March 2017.
- The following larvicide chemicals and volumes were applied via helicopter:

- 5,760kg of Prolink® Prosand.
  - 510L Bti (TEKNAR® 1200SC)
  - 10,974kg of Bti Corn Cob Bti (Barmac® 200GR)
- 90 Prolink Briquettes installed to breeding sites within the City of Mandurah.
- Adult mosquito trapping by the DoH Medical Entomology averaged 103 mosquitoes per trap (24hrs) between July 2016 – June 2017 compared to 46 in 2015/16.
- 63 Geographic Information Systems (GIS) mapped complaints were recorded in comparison to four in 2015/16.
- Four community email updates were sent in November 2016 and February, March and June 2017, providing information on environmental conditions, aerial treatments, adult mosquito activity and disease alerts. General information including personal protective measures and travel advice were also released. These emails recorded excellent open rates.
- Multiple posts were provided on the City's Facebook and Twitter accounts particularly when aerial treatments were being undertaken.
- Fight the Bite public education campaign continued to be supported in the Peel region by the DoH and the PMMG that included the use of a range of media and merchandise.
- Continued work and refinement of the new aerial application GPS navigation system.
- Continued investigation and modification work to improve helicopter hopper dispersal performance was undertaken through calibration assessment.
- Attendance and presentation by the City's Senior Mosquito Operations Officer at the Mosquito Control Association of Australia Conference in September 2016 and the Environmental Health Australia State conference.
- Presentation on the City's Mosquito Management program to the visiting Malaysian Institute of Environmental Health in October 2016.
- Field assay of a new larvicide formulation to the Australian market was trialled in the Peel region in November 2016 in collaboration with Mr Jason Clark - Global Commercial Development Manager, Public Health and Forest Health Business Unit of Valent BioSciences Corporation, Illinois USA and Mr Darryl McGinn Managing Director Mosquito Consulting Services Pty Ltd.
- Successful public engagement events were provided by officers via the Children's Festival in October 2016, two Activate the Parks events in November 2016 and in support of Peel Harvey Catchment Council, Wonders of our Wetlands at Nairn's Birdhide Coodanup foreshore.
- Drone information session for City departments hosted in December 2016.
- Regular PMMG member meetings and LG breeding site familiarisation was undertaken to improve cross local government understanding of breeding conditions.

## **Comment**

Historically the ENSO - *El Niño Southern Oscillation Index* has been linked with and provided some indication of the intensity of a season's events in terms of local environmental conditions that are likely to drive mosquito breeding cycles. In the past El Niño events have coincided with seasons of lower mosquito abundance. Neutral seasons generally provide moderate conditions where La Niña seasons have seen the most challenging conditions for mosquito management in the Peel region.

Whilst the effects of these ENSO events are difficult to predict in terms of the nature and intensity of a particular season, local weather patterns and tide behaviour are clearly influenced by these and other climatic drivers that occur on a global scale.

The 2016/17 treatment season commenced with the Australian Bureau of Meteorology's July 2016 ENSO update reporting the ocean and atmospheric indicators were within thresholds of ENSO Neutral state. By November a number of indicators were suggesting the potential for La Niña developing, however Neutral thresholds remained firm until June 2017.

Unlike the 2015/16 season, tidal inundation events were much more frequent and intense. The regions saltmarsh wetlands received regular flooding and there were only short periods where breeding sites remained dry.

### Weather Influences

Environmental drivers of local weather patterns and conditions play an important role in the ability for saltmarsh mosquitoes to sustain their breeding cycles in the Peel Region. Whilst tidal amplitude within the Peel Harvey system is typically less than 30cm, tides can vary greatly from astronomical and historical predictors. Barometric tides see constant variation from predicted tide patterns and are driven by changes in atmospheric pressure associated with local and broader weather events.

Weather influences such 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 behaviour within the Peel Harvey Estuary. Tidal surges (Storm Surge) that are created as a result can inundate vast areas of breeding habitat and initiate the hatching of mosquito eggs in their millions over a single or number of days. The eggs of saltmarsh mosquitoes have the ability to remain in a dormant state over weeks, months and even years. This allows the build-up of egg bank loading over long periods and allows breeding cycles to be sustained endlessly.

During season 2016/17, maximum temperatures of average to below average were recorded through winter and spring 2016. This period also recorded below average rainfall across the South West Land Division (SWLD). Summer 2016/17 recorded near average temperatures however rainfall was significantly above average. Mandurah recorded 90mm for the month of February with 74.2mm recorded on the February 10.

This unseasonal rainfall in February was the only significant localised weather event associated with the tropical low that developed in the states north and impacted southwest Western Australia. Whilst the rainfall is likely to have initiated breeding of mosquitoes in general due to the rapid collection and pooling of water in urban environments, the impact on the programs activities was more closely linked with the activity of passing cold fronts influencing the sea levels and local tides following this event.

### South West Land Division - Seasonal Weather Summary 2016/ 2017 (Courtesy Australian Bureau of Meteorology)

Winter 2016 Jun - Aug	Rainfall Maximum temp: Minimum temp:	Below average rainfall Lower Southwest land division Close to average – lowest since 2010. Cooler than normal nights.
Spring 2016 Sept - Nov	Rainfall: Maximum temp : Minimum temp:	Below average – SWLD Mildest since 2008 - SWLD 0.8 °C below average coolest since 2005 for SWLD
Summer 2016/17 Dec - Feb	Rainfall:	Second wettest summer on record for SWLD (1954/55)



Maximum temp: Near average / Below average - SWLD  
Minimum temp: Near average / Below average - SWLD

Autumn 2017 Rainfall: Eleventh Driest on record – Driest Autumn since 2012  
(Driest April and May for 34 years SWLD)

March – May Maximum temp: Below average - SWLD  
Minimum temp: Near average

### Trigger Tide Comparison - 2011/12 - 2016/17

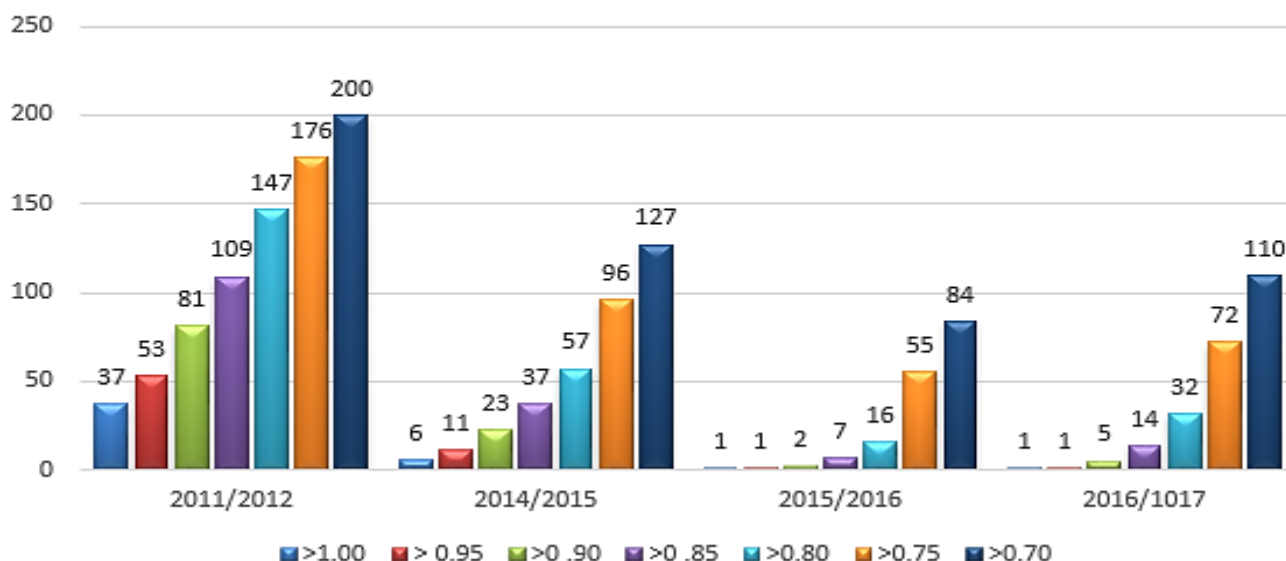


Figure 1 comparison of tidal activity between 1 September – 1 May from 2011 to 2017  
Data Courtesy Coastal Department of Transport's Coastal Data Centre.

### Tide Influences

The breeding cycles and seasonal abundance of saltmarsh mosquitoes in the Peel region are fundamentally linked and driven by the mean sea level fluctuations and the resulting tidal fluctuations that inundate the Peel Harvey Estuary saltmarsh wetlands.

Tide levels can vary greatly from predictions, with tidal surges of 40cm above predicted heights being a regular occurrence within the Peel Harvey Estuary. These tides known as storm surge tides, do not always accompany a storm front or rainfall and can occur in calm weather after being generated by weather events that may not have any direct impact on local conditions, such as tropical cyclones to the north or cold fronts and low pressure system activity.

In total there were 110 (inundation trigger) tide peaks above 0.70m recorded between 1 September 2016 and 1 May 2017. This resulted in a 31% increase when compared to the same period within season 2015/16. Of significance, the number of peak tides above 0.80m also increased some 50% for the same time frames.

Of the 72 tides recorded above 0.75m, 26 of the 72 occurred between 1 March and 30 April 2017 whilst 31 of the 72 occurred between 1 January and 30 April 2017. March 2017 recorded the highest average peak tide of 0.90m. This increase in storm surge events resulted in regular and repeated flooding to wetlands across the City and Peel Region.

This escalation in tidal activity and persistent inundation resulted in favourable conditions for egg bank replenishment, larval hatchings and the potential for significant adult mosquito emergence across the entire season.

The highest tide between the dates of 1 September through to 30 April occurred on 7 September being associated with the passing of low pressure systems to the states south. The Department of Transport (DoT) Mandurah Marina station registered a peak tide of 1.00m. This was also the highest recorded tide for the entire 2016/17 season with the lowest recorded tide at this station being recorded at 0.48m.

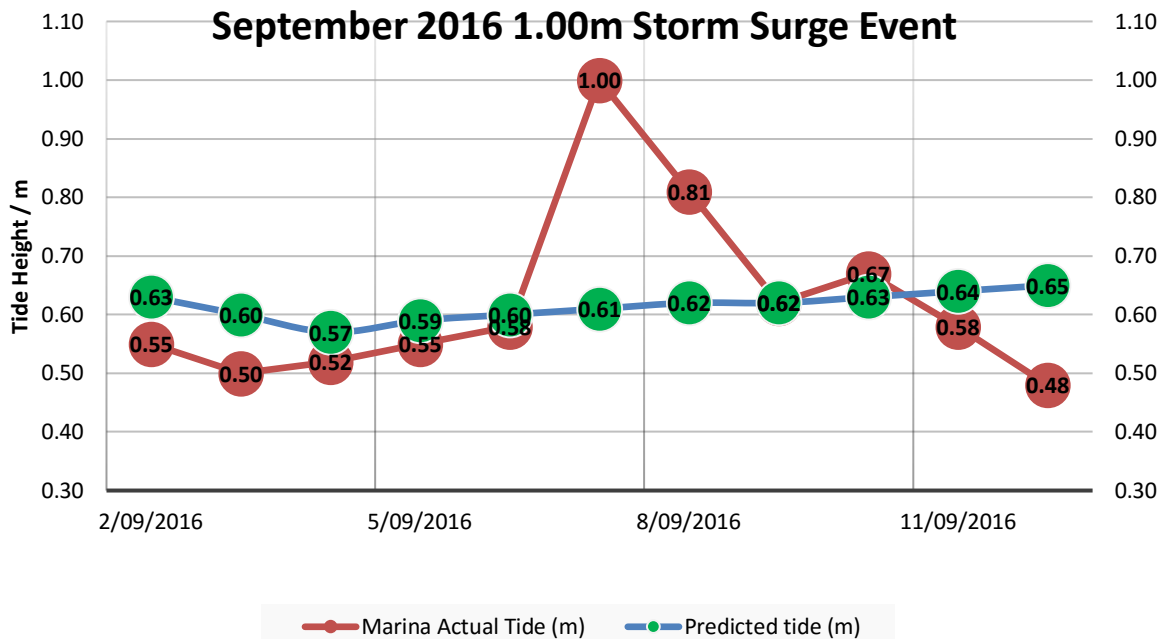


Figure 2 – Tide activity 2 – 11 September 2017 Mandurah Marine  
Data Courtesy Coastal Department of Transport's Coastal Data Centre

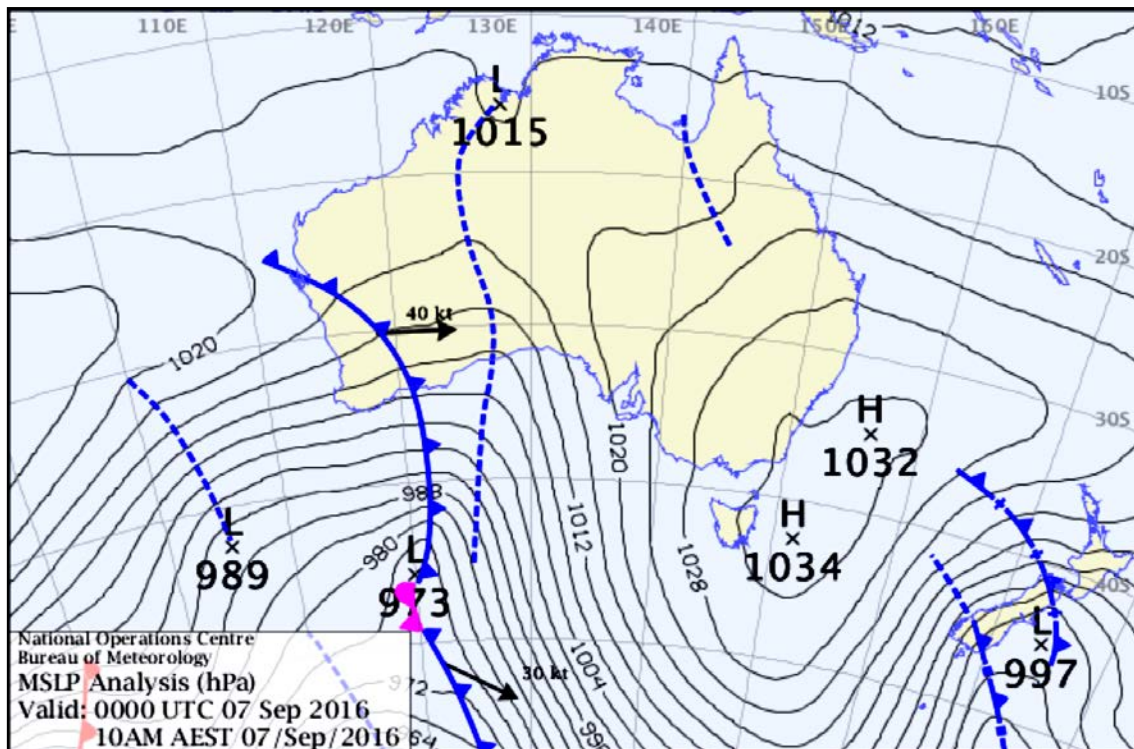


Figure 3 – Synoptic chart leading to 7 September 1.00m storm surge event.  
(Courtesy Australian Bureau of Meteorology)

### Season 2016/17 Aerial Larviciding

Aerial larviciding is the main technique that the program employs to achieve targeted and effective management of saltmarsh mosquito populations on a regional scale.

The application of both granule and liquid larvicide formulations is carried out via helicopter as this is the most effective broad scale method. The helicopter allows these treatments to be completed within the limited timeframes of the mosquito larvae development stages.

The speed of this technique provides the ability to effectively apply different larvicides in the best possible weather conditions, and be timed to have the best effect taking into account water levels and mosquito larvae development stages. Aerial larviciding allows application in an unobtrusive manner with minimal ongoing impact to wetland and saltmarsh habitats.

In some situations there may only be a window of one day for effective application to occur. Information gathering and decision making about which product will provide the greatest impact on mosquito populations, along with the crucial timing of the treatments are carefully considered during treatment preparation. A number of important factors such as weather conditions, fluctuating water levels, larval densities and developmental speed are considered when selecting the most suitable larvicide.

The two active ingredients of larvicides used, S - methoprene and *Bti*, (*Bacillus thuringiensis israelensis*) are the most environmentally appropriate and approved products available and are utilised by mosquito management programs world-wide. Both of these biolarvicides have been approved for use by the Australian Pesticides and Veterinary Medicines Authority and are certified for the management of mosquitoes in natural and urban environments.

Season 2016/17 required an increase in the program's operations to minimise the risk from mosquito borne disease and to preserve acceptable levels of mosquito activity in the community throughout the season. A total of 21 aerial treatments were undertaken which is the highest number of aerial treatments since season 2011/12.

The largest aerial treatment was completed on 17 October with 267 hectares targeted within a period of nine (9) hours of application via helicopter.

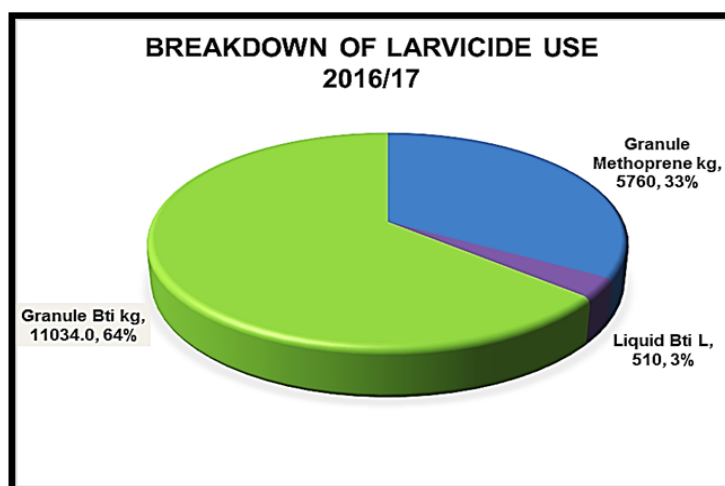
As in previous years, granular larvicides were predominately the most used formulation due their suitability for local breeding site and weather conditions.

The targeted use of these larvicides provided reliable high mortality rates and consistent reduction in larval populations.

Due to recent seasons of unusually limited tidal inundations and subsequent efficient mosquito management, the City recognises that the community's expectations for this to continue is likely to be high and understandable without knowing the complexities at play.

It is important that the City continues to manage effective communication to the community to ensure the unpredictable and challenging weather conditions that impact the effectiveness of the program are well conveyed and understood by the community.

*Figure 4 - Breakdown of larvicide by formulation.*



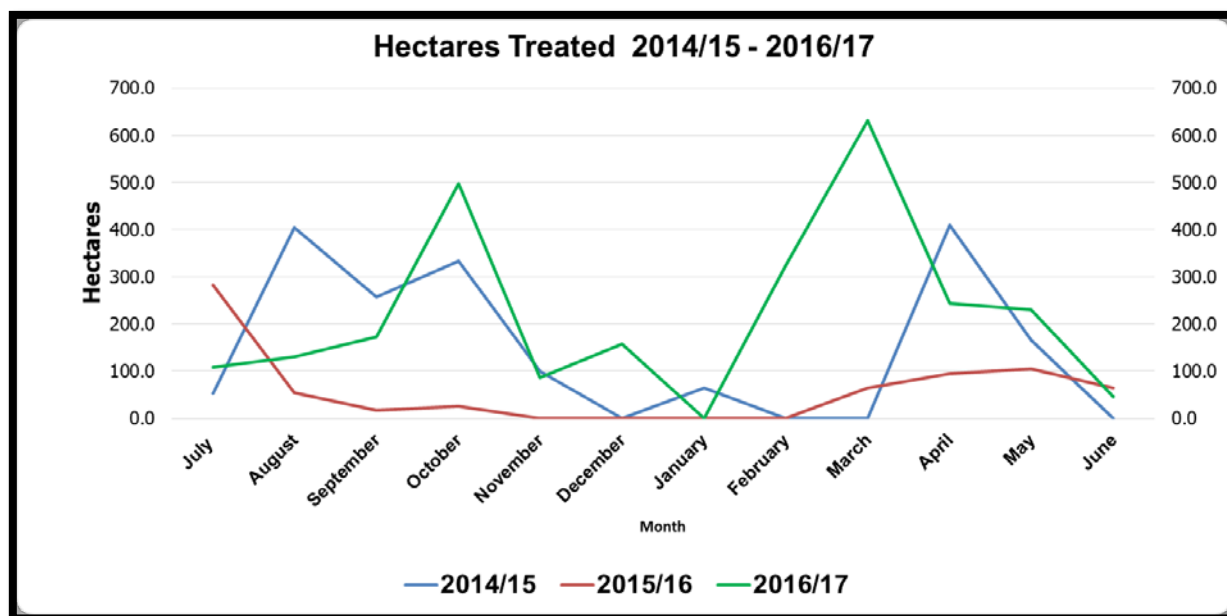


Figure 5 - Comparison of Hectares treated 2014/15 – 2016/17.

In terms of the total area treated during the 2016/17 season, the 2,627 hectares was only half of that completed in 2011/12, on par with seasons 2013 – 2015 and some 1,900 hectares more than season 2015/16. The PMMG commenced the 2016/17 season aerial treatment operations on 25 July and maintained treatments in all months except January 2017. Treatments came to an end on 20 June 2017.

The peak in workload came in February to April 2017 with 7 treatments totalling some 800 hectares with the seventh completed on 31 March. The success of this treatment was confirmed during post treatment assessment and the reduction in adult mosquito trap counts indicating a staggered but significant decline in mosquito abundance. The effective timing and delivery of the sixth treatment was critical given the surveillance results during pre-treatment inspections recorded mosquito larvae densities exceeding 4000 per square metre. A further aerial treatment was undertaken on 12 April being the 17<sup>th</sup> aerial treatment for the season.

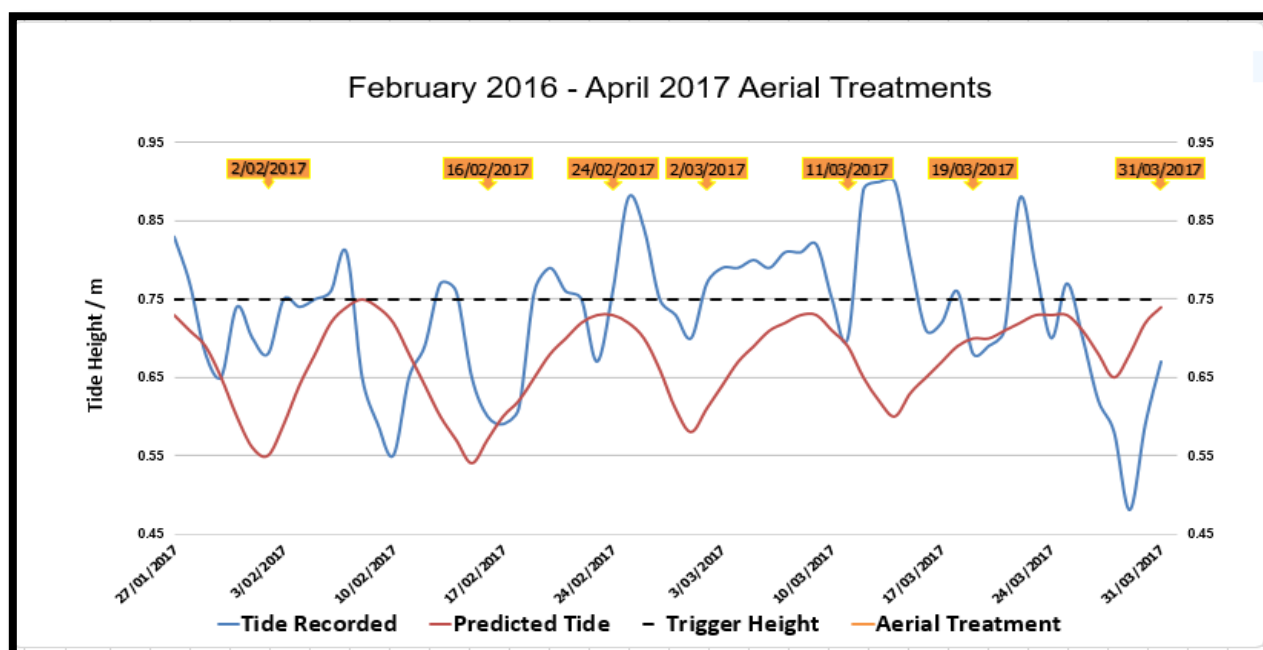


Figure 6 – Aerial treatments completed post tidal surges February 2016 - April 2017

### Helicopter Services

As discussed in previous annual reports the program's access to helicopter services during July 2016 and May/June 2017 provided the program with the ability to target *Aedes camptorhynchus* breeding leading into spring 2016 and winter and spring 2017.

The program identified the potential for extending the aerial treatment program into the autumn and winter months some years ago to reduce the seasonal spike of *Aedes camptorhynchus*. This species is the main driver of Ross River virus transmission and the species that has the history of being the most abundant for more months of the year when compared to summer spikes in *Aedes vigilax*.

The state governments Funding Initiative for Mosquito Management in Western Australia (FIMMWA), implemented in 2013, provided additional funding for the DoH to support the extension of the treatment season and the associated costs. Whilst the actual cost of the aerial treatments came at a minor cost, the stand by rate component of the contract between the DoH and the helicopter company added significant costs to extend the availability of helicopter services year round.

The City and PMMG has advocated for the continuation of the year round access to aerial treatments based on firm evidence that these treatments have had a significant impact on this species abundance in the peak months of September and October. In recognising the end of the FIMMWA funding scheme the City and PMMG met with the DoH and their helicopter provider in May 2017. The PMMG put forward its case for ongoing access to the helicopter treatments throughout the year and the importance of the DoH allocating the necessary funding.

The City and PMMG is hopeful that the DoH and the helicopter provider will seek an agreement that proves financially viable for both parties so that helicopter applications can be secured all year round.

### Aerial Application Equipment and Systems

As reported in the 2015/16 annual report, the City and PMMG members continued to work with the DoH and the helicopter contractor to refine the operation and accuracy of the larvicide application system.

The primary helicopter used by the PMMG and other SW programs during season 2016/17 successfully operated with a fully functioning application system comprising of the in house modifications to develop the hopper outlet vanes. The modifications now provide a much improved dispersal and accuracy of the larvicides utilised by the program. The same work to refine and optimise the second hopper system has also now been completed making both systems fully functional. This is important should the need to operate two helicopters simultaneously be required or if there is a problem with one of the hoppers for any reason.

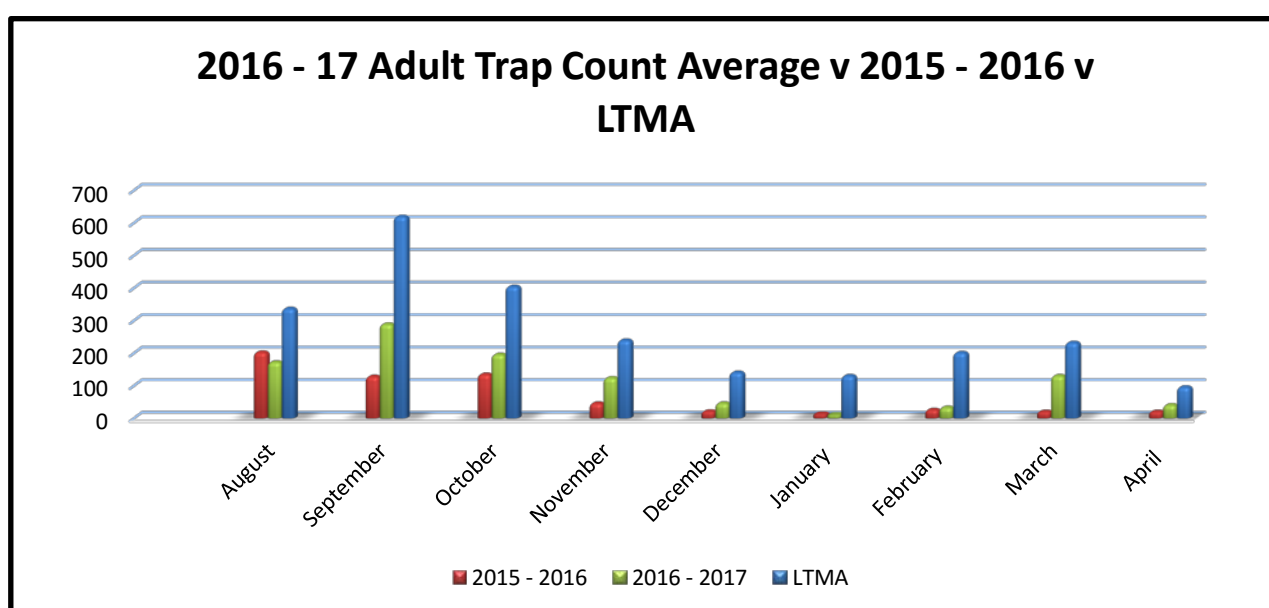
As a sign of the programs innovative approach and desire to be at the forefront of mosquito management in Australia, the Pasco County Mosquito Control in Florida USA that was visited by the Senior Mosquito Operations Officer in January 2015, recently invested the same redesigned hopper systems into their program.

The Pasco County Mosquito Control has been in place for 65 years and currently operates with budget of close to 7 million dollars. The City's program is being increasingly recognised as best practice within Australia and internationally.

### Mosquito and virus surveillance

As in previous years, the City of Mandurah and the DoH completed 24 adult mosquito trapping rounds throughout the season. A total of nine (9) carbon dioxide (CO<sub>2</sub>) static traps were utilised. Peel Region trapping data is vital to the mosquito management program as it monitors adult mosquito populations, allows species identification, mosquito borne disease detection and evidence of the success or failure of aerial treatments undertaken within the Peel region. Based on season results, the average single trap count was 103 mosquitoes on a fortnightly basis from 1 July 2016 – 30 June 2017.

In comparing season 2016/17 against 2015/16 and the long term monthly average in **Figure 7** below, mosquito abundance was higher than 2015/16 in most months, however, remained well below the long term monthly average across the entire season. This is a positive outcome given the significant differences between environmental conditions and operational demands of the two seasons. The increasing success of treatments in varying environmental conditions provides the program confidence moving forward however environmental drivers cannot be underestimated.



*Figure 7 - above details the 2016/17 monthly adult mosquito trap counts when compared to season 2015/16 and the monthly long term mean.*

As in most years, adult populations were recorded at their highest in September 2016 (8 Sept – 2769) and more than double when compared to early September 2015 (7 Sept – 1194).

By early December 2016 trap counts had reduced to less than 100 mosquitoes per trap and were on par with the same time in 2015. Trap counts then remained low and steady up until February when numbers increased and peaked in March before reducing again to levels on par with the same period in 2015.

The potential for and subsequent restriction of a sudden spike in abundance through February provides a clear and satisfying result for the program when considering the number of aerial treatments required during this intense period of tidal inundations and hatching events.



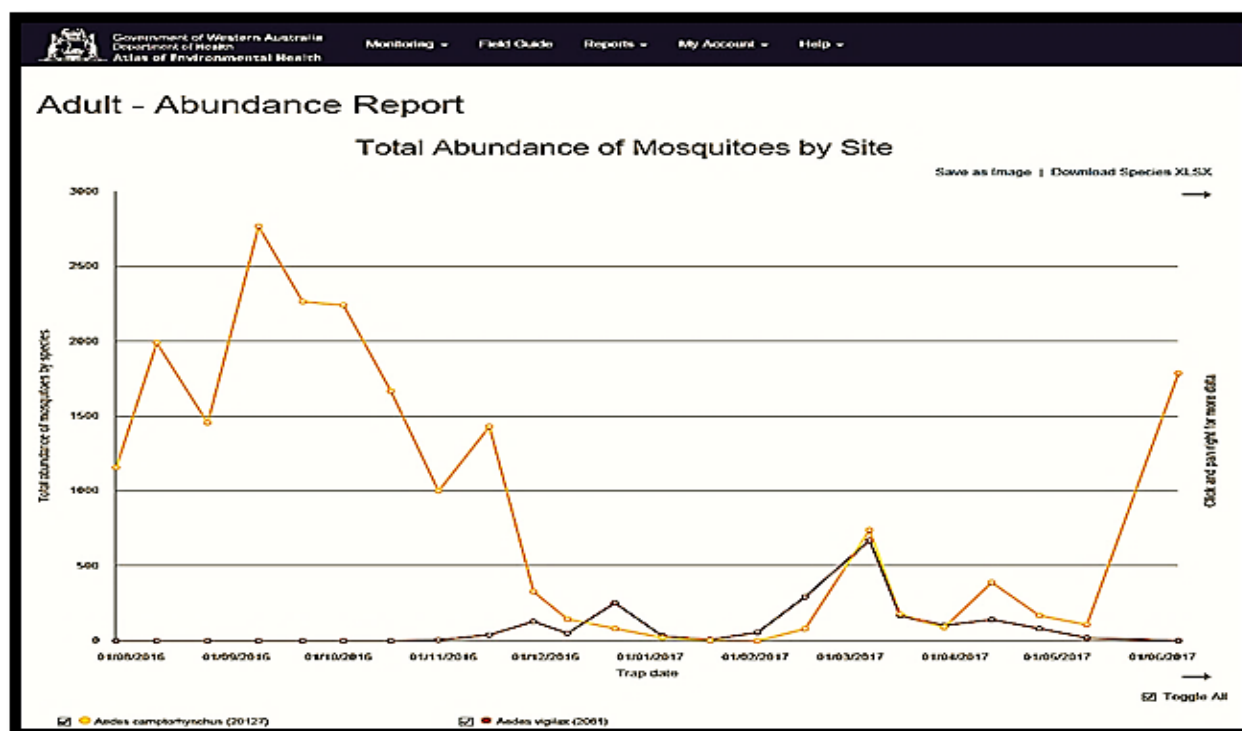


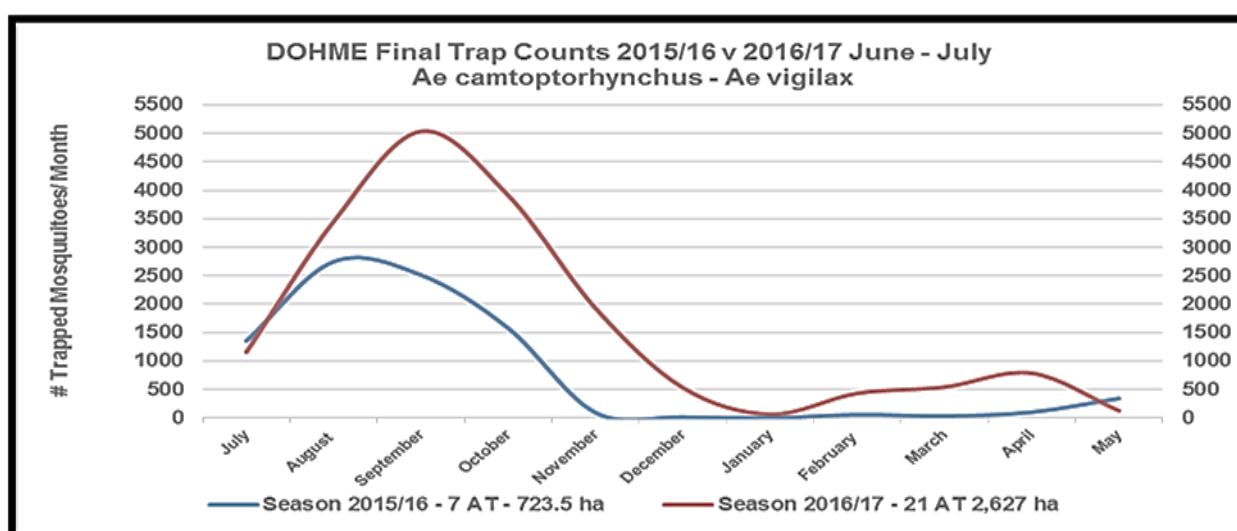
Figure 8 – Total abundance of the *Aedes camptorhynchus* and *Aedes vigilax* mosquito July 2016 – June 2017

**Figure 8** from the DoH Atlas illustrates the fluctuations and crossover of the *Aedes camptorhynchus* (yellow) active in the cooler months versus the summer breeding *Aedes vigilax* mosquito species during season 2016/17.

*Aedes vigilax* became active from mid-November, with a surge in abundance of both species occurring from mid-February and peaking in early March 2017. This was most likely driven by the succession of hatching events through February and early March that resulted in four (4) aerial treatments being undertaken in 5 weeks. During season 2015/16, between the dates of 1 July 2015 and June 30 2016, 12,947 saltmarsh mosquitoes (*Ae camp/vigilax*) were trapped by DoH Medial Entomology. Within 2016/17 for the same period, 22,691 saltmarsh mosquitoes were captured, some 75% more mosquitoes.

However, of the 12,947 captured during 2015/16, 9,000 were caught between July and November. In 2016/17 of the 22,691 captured 15,000 were also captured between July and November. This is illustrated within **Figure 9** below.

Figure 9 - Final trap counts 2015/16 v 2016/17 with aerial treatment and hectares noted



These findings underline the importance of maintaining aerial treatments throughout the entire year to enable the program to operate to its full potential.

This data would also indicate that even in seasons where environmental drivers have a dominating influence in terms of limiting mosquito breeding and abundance such as witnessed in season 2015/16, the persistent breeding of *Aedes camptorhynchus* within a few short months demonstrates the need for aerial treatments to be undertaken throughout the year and as required.

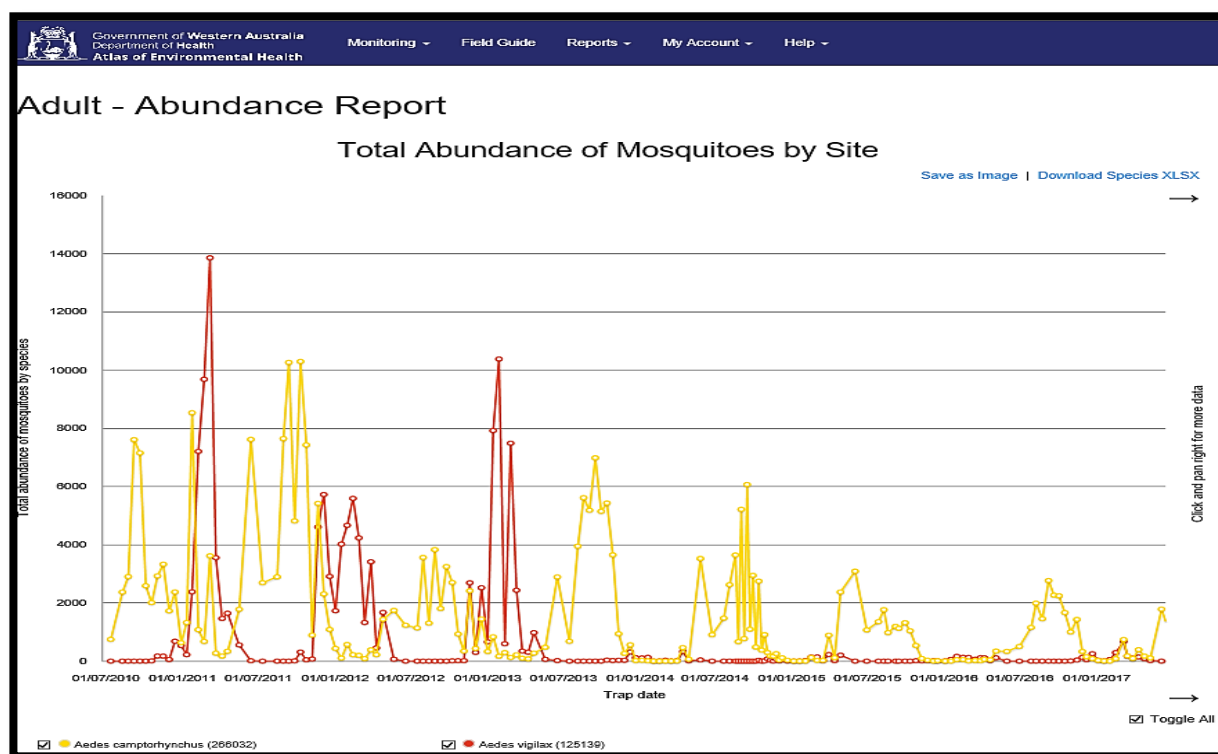


Figure 10 – Long term total abundance of the *Aedes camptorhynchus* and *Aedes vigilax* mosquitoes 2010 - 2017

**Figure 10** above extracted from the DoH's Health Atlas illustrates the long term fluctuations and intervention impacts by the program of the two key saltmarsh mosquito species since 2010 and confirms season 2015/16 as a unique season not experienced for many years. It also affirms that cycles of intense and less intense mosquito breeding patterns and adult abundance are a fundamental challenge in managing mosquitoes here in the Peel region as is the case in many other regions of Australia.

#### Virus surveillance – Ross River and Barmah Forrest virus

Mosquito Borne Virus surveillance is undertaken by the DoH Medical Entomology section with the aim of identifying arbovirus activity (viruses transmitted by mosquitoes).

Polymerase Chain Reaction (PCR) testing is utilised to isolate arbovirus from samples of mosquitoes that are trapped in the nine (9) Peel region traps along with 12 others traps extending southwards from Harvey to Busselton.

The detection of an arbovirus that poses a public health risk to the community allows the consideration and prediction of potential mosquito-borne virus outbreaks. Upon detection of arboviruses, the DoH notifies local governments and issues media statements and warnings to the general public to ensure residents and travellers take precautions to avoid mosquito bites. This involves both Ross River (RRV) and Barmah Forrest (BFV) state wide as well as Murray Valley encephalitis (MVE) and Kunjin virus that are typically active in the states northern half.



Whilst this surveillance provides important information and is undertaken in conjunction with the fortnightly trapping program, virus isolation is only conducted on a percentage of the mosquito populations so it cannot be a definitive pre-warning of risk and must be considered in conjunction with human case data.

During season 2016/17, two (2) virus isolations of RRV and two (2) virus isolations of BFV were detected in the Peel region. Eight (8) RRV isolations were detected in the Leschenault region.

The DoH released media statements to the public and local authorities in September, November 2016 and February 2017 warning of the expected increase in mosquito activity and the detection of RRV and BFV activity in local mosquito populations within the states south west.

#### Human cases of mosquito borne disease – notifiable and laboratory reported

Mosquito borne disease surveillance is undertaken state wide by the DoH via initial patient presentation to general practitioners and subsequent blood tests that return a positive diagnosis. Notifications are then forwarded to local government Environmental Health Officers who follow up case details. This information is then passed back to the Department's Mosquito Borne Disease Control Branch for data collation and analysis.

A complex range of environmental factors influence the prevalence of virus in any given year. Given the constant risk of mosquito borne disease, the program's efforts to significantly reduce mosquito populations is the primary intervention in regards to minimising interaction between mosquitoes and the public. A focus must also be maintained to educate the public as there are times when disease risk is elevated despite a lower abundance of adult mosquitoes. Season 2016/17 recorded a higher number of reported cases in Mandurah on previous years as was the case across the Peel region and the state.

The fact that cases of RRV continued to be reported within the Peel region during a season of moderately low mosquito abundance underpins the challenges faced by state and local government health agencies in physically reducing the risk of mosquito borne disease to the public. This applies at all times even when the environment drivers do not support mosquito breeding and when successful management is achieved.

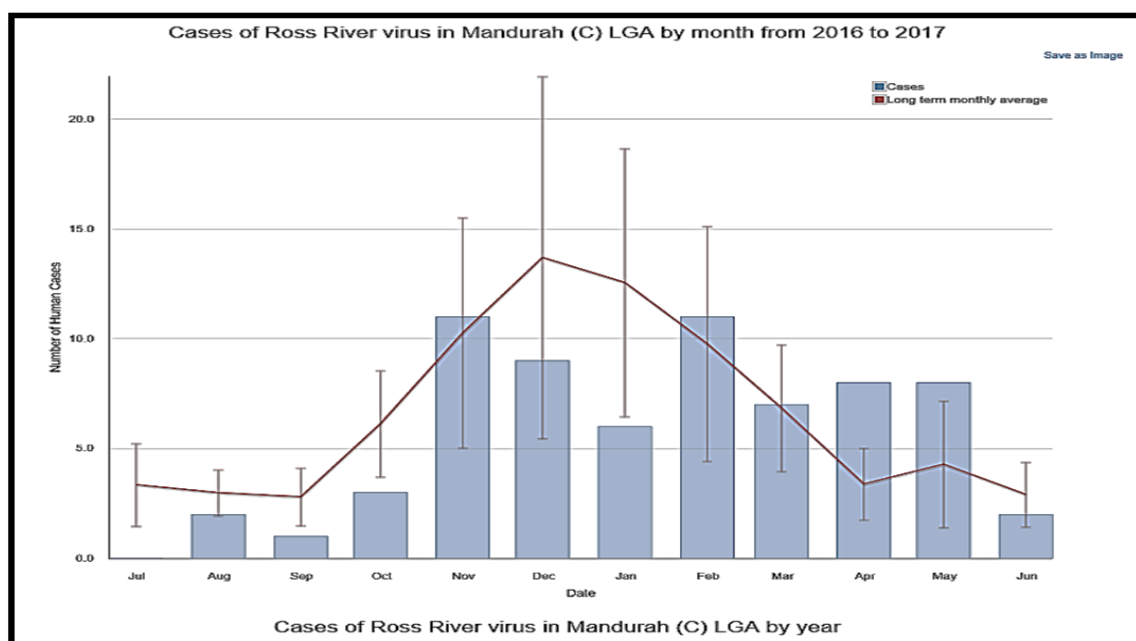


Figure 11 - outlines monthly case numbers of Ross River Virus reported in Mandurah during season 2016/17.  
(Courtesy Department of Health's Health Atlas)

2016/17 Ross River / Barmah Forrest Virus case statistics:

- Confirmed human cases across the State – 1115 RRV – 33 BFV
- Confirmed human cases across the Peel Region – 150 RRV – 4 BFV
- Confirmed human cases across Mandurah - 68 RRV – 3 BFV

### Community Engagement

Given the busy nature of the season, the City received considerable more feedback in the form of complaints with 63 registered from July 2016 – June 2017. Of these 63, more than 50% were recorded in April 2017 which is likely to be linked with a minor rise in mosquito abundance and favourable weather conditions for a surge in activity.

The City continued to utilise the email network database to provide subscribers with information on mosquito abundance, mosquito borne disease and mosquito management activities. The 450+ subscribers include residents, schools, sporting clubs and community organisations. Four detailed updates were provided in November 2016 and February, March and June 2017 with the timing of these emails felt appropriate and beneficial in terms of providing meaningful information.

The program also utilised social media outlets such as the City's Facebook page and Twitter account to provide updates on the programs activities such as posts timed with aerial treatments and reminders about personal protection.

A new venture for the program was the attendance by Officers at the 2016 Children's festival in October at which officers provided children and their parents the opportunity to learn more about the many features of mosquitoes, get hands on with microscopes and live samples, paint their very own pet rock and receive a range of useful information about the City's leading role in the PMMG. This was a huge success with a high volume of interested children and adults attending the stall across the entire day.

*Figure 12 - 2016 Children's Festival Display*







The City also continued to support the DoH Fight the Bite campaign within all of the season's community engagement outlets and will continue to do so in future seasons.

Fight the Bite and City branded promotional merchandise such as personal repellent, water bottles and informative brochures were distributed to stall visitors.

*Figure 13 - 2016  
Children's Festival*

Officers also provided similar information stands in November 2016 to support the City's My Park Grooves events in both Riverside Gardens and the Meadow Springs Quarry Park.



*Figure 14 & 15 - My Park Grooves  
2016 Quarry Park Meadow Springs.*



## Outlook for Season 2017/18

As of 5 December 2017, the Australian Bureau of Meteorology released the following ENSO information update;

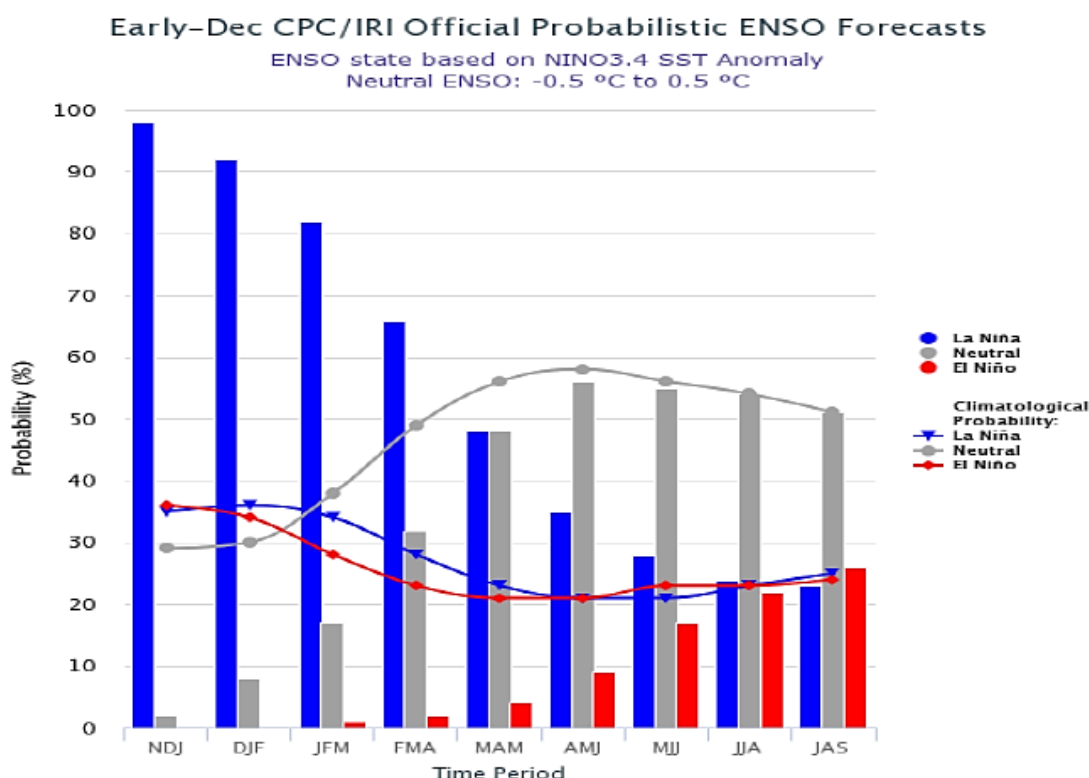
*“The Bureau’s ENSO Outlook has been raised to LA NIÑA, indicating that the tropical Pacific has reached La Niña levels. Climate models suggest this La Niña will be weak and short-lived, persisting until early southern autumn 2018. Climate models suggest this La Niña will be weak and short-lived, persisting until early southern autumn 2018”.*

The effects of this La Niña event developing over the last few months has been evident and resulted in more frequent tidal flooding of mosquito habitat with 11 aerial treatments being completed since July 2017, including two aerial treatment in excess of 400 hectares. A total of 2101 hectares have been treated.

The outlook for the remainder of season 2017/18 is indicating a return to neutral ENSO status come early 2018 which may mean a similar frequency and degree of tidal inundation, hatching events and the need for intervention by the program as experienced during the second half of 2016/17.

These global events can evolve and change quickly and although they are a useful guide, our local and regional environmental conditions have an even greater influence on the program’s operations and performance and accepting that conditions may not present as predicted is a fundamental aspect of monitoring these drivers and operating mosquito management programs.

Figure 16 - below provides an ENSO probabilistic forecast issues by the Climate Prediction Centre / National Centres for Environmental Protection USA



## Consultation

Nil

## Statutory Environment

Nil

## **Policy Implications**

Nil

## **Economic Implications**

Mosquito-borne diseases such as RRV and BFV are estimated to cost approximately \$5,000 per case in medical expenses and loss of earnings. The number of cases in the City would greatly increase if there was no program in place to manage mosquito numbers.

The cost on the reputation of Mandurah and the Peel Region is difficult to assess but the management of mosquitoes is an important function in ensuring an acceptable lifestyle for residents and visitors.

The administration of the PMMG is an essential part of the partnership that assists in managing mosquitoes in the region. The group met on four occasions during the 2016/17 mosquito management season as well as attending regional meetings relating to mosquito management matters.

These meetings were attended by local government officers and elected members from each PMMG local government as well as representatives from the DoH. The meetings allow open and informed discussion and are always positively focused.

These meetings allow for ongoing collaboration between the members and the implementation of improvements within the program. Examples of key discussions during 2016/17 included:

- Mosquito Borne Disease notification updates
- Mosquito abundance and disease isolation updates
- LG reports on mosquito breeding and treatments
- Environmental conditions
- Treatment updates
- Budget reviews
- Season events and outlooks
- FIMMWA Funding
- Public education strategies

In addition to the DoH contributions indicated in **Figure 17** the PMMG is also supported by the Department via the provision of all costs associated with the helicopter services. This service is provided throughout the state with the Peel Region being the primary user. Without this financial assistance the PMMG would require substantial increases in budget allocation.

Further to the allocation for larvicide costs, the City of Mandurah contributed an estimated \$265,000 in labour, vehicles, equipment and resources for public education during the course of the 2016/17 season. A total of \$186,137.91 was allocated for the procurement of larvicides by the PMMG during season 2016/17 inclusive of carryover funds from season 2015-16.

A total of \$122,824.16 was consumed with the balance of these funds being rolled over into the 2017/18 budget calculation. The following contributions to the 2016/17 budget were made by PMMG members.

Agency	2016/2017 Contribution
Department of Health	\$60,336.62
City of Mandurah	\$31,215.70
Shire of Murray	\$18,752.29
Shire of Waroona	\$1000.00
City of Rockingham	\$7,203.62
<b>Total Income for 2016/17</b>	<b>\$117,508.23</b>

Figure 17 - Peel Mosquito Management Group Larvicide / Operations Budget - 2016/17

#### Funding Initiative for mosquito management in Western Australia (FIMMWA)

The 2013/14 state budget provided \$4 million over 4 years to support management opportunities and competitive research into improving outcomes with regard to mosquito management. The proposal was for a funding scheme to be available from 2013 to 2017, on an annual basis.

In response to this commitment, the DoH established the Funding Initiative for Mosquito Management in Western Australia (FIMMWA). The City in association with the PMMG has continued to pursue a number of matters it believes could be addressed through the FIMMWA funding which have the potential to provide practical opportunities to improve the operations of the PMMG.

The PMMG was again successful in securing \$23,223.95 of FIMMWA funding that was awarded to improve operational and event equipment along with Fight the Bite educational resources. An important purchase made possible through the FIMMWA grant was the acquisition of the software package that interfaces with the helicopter GPS/ Navigation hardware. This software allows the configuration of aerial treatment files and verification of data following aerial treatments.

A key project activated via the 2015/16 FIMMWA grants was the installation a new tide gauge monitoring station installed in the lower reaches of the Serpentine river. After some complicated delays, the tide monitoring station is now in place and is undergoing a testing period to optimise wireless communications with the Department of Transports (DoT) Coastal Infrastructure division.

A positive outcome the cooperative engagement with the DoT, City and PMMG officers will be able to receive SMS text alerts when flooding trigger heights are reached from the various tide monitoring gauges within the Peel Harvey waterways. This will further enhance the programs ability to respond to hatching events, surveillance timing and aerial treatment planning.

As previously discussed, FIMMWA funding also provided the extension to aerial application of larvicides past the traditional end of April and extending through the months of May, June of season 2016/17. The aim of this extension was to minimise populations of saltmarsh mosquitoes over the winter months to reduce larval numbers and egg loading prior to Spring when typically untreated breeding has resulted in the abundance of the winter species.

#### **Strategic Implications**

The following strategies from the *City of Mandurah Strategic Community Plan 2013 – 2033* are relevant to this report:

##### Environment:

- Protect and ensure the health of the natural environment and waterways.
- Increase scientific understanding and knowledge of the marine and estuarine environment.

##### Social:

- Ensure the provision of quality health services and facilities.

## **Conclusion**

The 2016/17 season materialised largely in line with the environmental predictors. Tidal inundations and hatching events were frequent and had the potential to impose far higher mosquito abundance and disease risk in general and result in adverse spikes in mosquito activity particularly in February and March 2017. The successful completion of the twenty one (21) aerial treatments during the season was positive with mosquito numbers generally managed effectively.

Notified cases of mosquito borne disease were somewhat higher and could be considered to be fundamentally linked with the increase in mosquitoes experienced, however the drivers of the viruses and their detection are complex with many factors involved including a greater awareness in the community and more proactive testing by GP's.

*Note: Subject to Committee's consent, The City's Senior Mosquito Management Officer will make a presentation on this item at the meeting.*

## **RECOMMENDATION**

**That Council:**

1. **Receives the City of Mandurah Mosquito Management Program: 2016/17 Annual Report.**
2. **Approves the release of these reports to the following key stakeholders:**
  - **Residents of the City of Mandurah via access at Administration Centre and Library, "City Voice", website and media releases**
  - **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**
  - **Residents and Progress Associations**
  - **Mandurah Environmental Advisory Group**
3. **Notes the City's support for the Department of Health Fight the Bite Campaign.**
4. **Acknowledges the support provided by the Department of Health in the implementation of improvements in the Peel Mosquito Management Program.**
5. **Supports ongoing efforts to improve the aerial larviciding capacity of the mosquito management program.**
6. **Acknowledges the importance of the State Government's ongoing commitment to the annual programs, and in accordance with the Dawesville Channel Environmental Review and Management Programme.**

<b>2.</b>	<b>SUBJECT:</b>	Proposed Road Closures within Yalgorup National Park, Herron
	<b>CONTACT OFFICER/S:</b>	Ben Dreckow
	<b>AUTHOR:</b>	Lesley Petchell/Dianne Clayton
	<b>FILE NO:</b>	LE 16/00G

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## Summary

The City has been requested by the Department of Biodiversity Conservation and Attractions (Parks and Wildlife Service - DPaw) to close various unmade road reserves within the Yalgorup National Park. These roads have never been constructed or used by the public for access to the Park.

The State Government has purchased several large parcels of land that have been earmarked for amalgamation into Yalgorup National Park, road access to these parcels is no longer required. DPaw have contacted the City with a request for the formal closure of these unmade road parcels, which aligns with their Management Plan for the Yalgorup National Park.

A public consultation process for road closure has been undertaken with one submission being received and detailed within the body of this report.

In accordance with Section 58 of the *Land Administration Act 1997 (LAA)* Council is requested to approve the application to the Minister for Lands for the closure of the unmade road portions within the Yalgorup National Park, as detailed within this report.

## Disclosure of Interest

Nil



## Location



## Previous Relevant Documentation

Nil

## Background

The City has recognised the significance of the Yalgorup National Park inclusive of Lake Clifton and the other Yalgorup lakes as one of the most important environmental assets in the Mandurah and broader Peel Region. In November 2012, Council resolved to nominate the Park for National Heritage/World Heritage listing with officers instigating preliminary stakeholder engagement through the Yalgorup Community Engagement plan.

The area provides habitat for a range of threatened flora and fauna that are protected under both State and Federal environmental legislation including the thrombolites at Lake Clifton, Western Ringtail possums and the King Spider Orchid. Yalgorup is also one of the last significant stands of remnant Tuart forest endemic to the Swan Coastal Plain.

The area is a highly threatened environment and is heavily impacted upon by a number of factors such as groundwater abstraction from local residents, climate change impacts such as reduced rainfall and increasing temperatures, introduced species and off-road vehicle activity. The City has historically been a strong supporter of attempts to address the threats to this natural environment by other groups and agencies, as well as undertaking direct action itself.

In February 2017, the City was approached by the Department for Parks and Wildlife to support the closure of unmade roads within the park with the intention of alleviating any future plans that may lead to the roads being constructed and their usage. In 1995, a Management Plan for Yalgorup National Park was adopted by DPaW that proposed that the road reserves within the park be closed. This was also included as a recommendation of the Western Australian Planning Commission's Coastal and Lakelands Planning Strategy.

The road reserves were created many years ago for access to several larger pastoral properties. Actual roads were never built as they were not required to move cattle, however they did provide 'legal' access to properties ensuring they are not land locked (without road access).

The DPaW has been working for many years to purchase parcels of land which would enhance the size and quality of the Yalgorup National Park which has also alleviated the need to have a road network within it. By purchasing the adjoining private lots to the unmade road, they have effectively reduced the need for any private owners to require road access and therefore have now applied for the unmade roads to be formally closed and amalgamated into the Park.

## **Comment**

In accordance with the LAA s.58 the City has undertaken a 35 day advertising period by placing an advertisement in the Mandurah Mail on the 31 August 2017 and written to the three relevant landowners adjoining the road land.

DPaW have purchased several large lots of freehold land amounting to in excess of 998 hectares with the intention to cede to the Crown for amalgamation into the Yalgorup National Park. The purchase of Lots 2240, 2275, 4185, 2657, 3045 and 1000 were identified as part of the Yalgorup Management Plan 1995.

An integral part of the management strategy for the Park, the plan identified the action to close the now redundant parcels of road land which is no longer required for legal access to those lots purchased. The creation of Quail Road to the northern section of the park allowed for access to the freehold portions of land, of which some has been acquired for amalgamation into the park. DPaw has made a written request to the City to instigate the closure of the unmade roads as previously identified in the Management Plan for Yalgorup National Park.

Officers have also reviewed information from the Shire of Waroona whose boundary the southern portion of this unmade road also traverses.

The Shire of Waroona resolved at their meeting of 28 March 2017 as follows:

*That Council resolves to respond to the request form the Department of Parks and Wildlife to permanently close roads 228 and 13736 advising the Department and the City of Mandurah that Council does not support the proposed closure as it will compromise the potential for the establishment of formalised secondary access to and from Preston Beach town site for emergency purposes.*

The officer report to the Shire of Waroona Council contained the following information;

*"The roads in question are unconstructed roads and are not identified for construction in the short term. The closure of the roads would not result in the loss of primary access to any privately owned properties. However, closure of the road reserves would impede the potential for secondary access should Preston Beach develop further in the future.*

*The broader planning framework of State Planning Policies, Development Control Policies and strategic documents such as the Draft Sub-regional Planning Framework require the consideration of access in the planning for Preston Beach.*

*The draft structure plan for the extension of Preston Beach investigated the option of constructing an access to the north via Mandurah. The Preston Beach Townsite Strategy has not progressed to date and the potential for constructing an access to the south towards Myalup remains an alternative secondary egress option. Regardless, the draft nature of the strategy means that revisions, including the reconsideration of access to the north (Mandurah), could potentially occur prior to further progression of the Strategy.*

*Given the undecided status of the Preston Beach Townsite Expansion Strategy it would be premature to close the only road reserve which would provide access to the townsite from the north. It is not considered appropriate to close these roads while the future of the further development of the townsite remains unclear”.*

The position adopted by the Shire of Waroona is acknowledged however, at a practical level, the context of a road to the north remains problematic regardless of the decision on the road reserve. On balance officers are of the view that the access to the north to service Preston Beach is not particularly practical from a cost perspective, nor potentially safe in a bushfire emergency perspective.

However, should the state government, via the relevant planning, environmental and land agencies determine that further urban development is appropriate for Preston Beach, and that a northern access is required, it is not necessarily required in the same location as the existing road reserve, and may be via an alternative route through the various land parcels affected, The closure of these various road reserves does not impact a new access being reviewed in the future.

With regard to the current access situation, a special enquiry was conducted on the events of last years’ Waroona fires that reached Preston Beach town site when the fire crossed Forrest Highway. Led by local residents and a number of Bush Fire Brigades, people took shelter at the carpark adjacent to the beach where Marine Rescue activated boats to take residents off the beach to an evacuation centre in Bunbury.

In accordance with Section 58 of the *Land Administration Act 1997 (LAA)* Council is requested to approve the application to the Minister for Lands for the closure of the unmade road portions within the Yalgorup National Park, as detailed within this report.

## Consultation

Landowner (Lot 101 Quail Road, Herron)	No submission received
Landowner (Lot 100 Quail Road, Herron)	No submission received
Landowner (Lots 102 & 103 Quail Road)	No submission received

Advertised in Mandurah Mail from 31August 2017 to 6 October 2017, with one submission received as outlined in submission table as follows:

Owner / Address	Submission (Summarised comments)	Comment
1. Peel Preservation Group PO Box 1784, Mandurah	a. In favour of closures  b. Stop unregulated access to reserve by off road vehicles & damage caused by them on unformed roads  c. Protection of Reserve for future generations & disease & pest control	a. Acknowledges not previously used  b. Acknowledges damage caused by vehicles  c. Acknowledges risk to reserve by off road vehicles

## **Statutory Environment**

### *Land Administration Act 1997 – Section 58 – Closure of Roads*

Where a local government wishes a road in its district to be closed permanently, the local government may request the Minister to close the road. After first undertaking 35 days advertising in the local newspaper, and a resolve from Council.

## **Policy Implications**

Nil

## **Economic Implications**

All costs associated with the closure will be borne by Department of Parks and Wildlife

## **Strategic Implications**

The following strategy from the *City of Mandurah Strategic Community Plan 2013 – 2033* is relevant to this report:

### Environment:

- Protect and ensure the health of the natural environment and waterways.
- Encourage and enable our community to take ownership of our natural assets, and to adopt behaviours that assist in achieving our environmental targets.

## **Conclusion**

Whilst the roads were gazetted in order to facilitate the subdivision of the land to ensure access to large freehold parcels of pastoral land, they were never built nor used by adjoining landowners for access to their properties.

Now that the State government has purchased all the adjoining land parcels to the road reserves, that may have been affected by closure in the past, this is now not the case. The process for ceding the freehold purchased lots into the National Park has begun with the Strategic Assessment of Perth and Peel Regions initiative (SAPPR). The closure of the unmade roads provides for the future protection of the flora and fauna within the A class Conservation Reserve.

Therefore in accordance with Section 58 of the *Land Administration Act*, Council is requested to support the closure of the gazetted roads within the Yalgorup National Park, with the land to be amalgamated in into the Park.

### NOTE

- Refer ***Attachment 1 – Proposed Road Closures Yalgorup National Park***



## **RECOMMENDATION**

**That Council:**

1. **Request the Minister for Lands to approve the closure of the unmade portions of gazetted road reserves adjacent to Lake Clifton and surrounding lakes, and amalgamation into Crown Reserve 11710 which are marked 'A''C''D''E' & 'F' on attachment one pursuant to Section 58 of the *Land Administration Act 1997*.;**
2. **Request the Department of Parks and Wildlife to support the inclusion of the closed road land into Yalgorup National Park Reserve 11710;**
3. **Acknowledges that all costs associated with the closure will be borne by the Department of Parks and Wildlife.**





<div><div>City of <b>MANDURAH</b></div></div>		PROJECT :				DRAWN BY : P.W. 02/08/2017		NOT TO BE USED FOR CONSTRUCTION UNTIL SIGNED APPROVED.		<div></div>				NOTES: 1. HORIZONTAL DATUM IS PC94. 2. CADASTRAL BOUNDARIES DERIVED FROM LANDGATE INFORMATION, DIMENSIONS SUBJECT TO SURVEY BY LICENCE SURVEYOR	
		PROPOSED ROAD CLOSURE YALGORUP NATIONAL PARK				CHECKED BY : D.C. 03/08/2017									
						SURVEYED BY : N/A		APPROVED .....							
						JOB No. : S17-714		POSITION .....							
								DATE .....							
						DRAWING No. : 01		FILE PATH : C:\Survey Data\Mandurah\South\Auricad\S17-714\alignup.dwg							
CLIENT : D.C.														SCALE N.T.S. @A3	

<b>3.</b>	<b>SUBJECT:</b>	Proposed Excision Portion Reserve 2851 – Caddadup Reserve
	<b>CONTACT OFFICER/S:</b>	Ben Dreckow
	<b>AUTHOR:</b>	Lesley Petchell/Ben Dreckow/Brett Brenchley
	<b>FILE NO:</b>	Reserve 2851

### Summary

In May 2017, Council granted 'in principle' support to a request from the Water Corporation to excise approximately 3.2 hectares of land from Caddadup Reserve, for the purpose of expanding the public water supply to the City's southern corridor.

Council support was conditional upon the Water Corporation undertaking the relevant State and Federal environmental assessments for both an option to develop the additional infrastructure to the north and south of the existing water tank, in order to determine which land area would be the least impacted environmentally by the clearing required.

The Water Corporation returned to officers late in 2017 requesting that Council reconsider its position and grant unconditional approval for the excision of approximately 3.2 hectares of land from Reserve 2851 to the immediate south of existing Reserve 34542.

Notwithstanding this request, the Water Corporation confirm that no environmental assessments have commenced for either site, and none will be undertaken for the north option as this is not considered a viable option for the construction of a new tank. The Water Corporation's position is that, at this time, is to progress with the land tenure despite the lack of State or Federal environmental assessments or any other relevant approvals required.

In reviewing the project, officers identified that all of Reserve 2851 is reserved as Regional Open Space in the Peel Region Scheme (PRS), and any works within this reservation would require an amendment to the Scheme. This amendment will require the Western Australian Planning Commission (WAPC) to progress, which involves assessment by the Environmental Protection Authority as part of this process and ultimately a decision by the Minister for Planning Transport Lands to complete. It is considered appropriate that all statutory approvals and processes should be complete prior to any land tenure and excisions of reserves are undertaken. Water Corporation have the understanding that the process should be undertaken in the alternative manner.

Council is requested respond to the Water Corporation that environmental approvals and an amendment to the Peel Region Scheme are to be progressed prior to Council altering its in principle support with regard to land tenure associated with the water tank project.

### Disclosure of Interest

Nil



## Location



## Previous Relevant Documentation

- G.36/5/17 23 May 2017 Council resolved to grant in principle consent for the excision of land required by the Water Corporation for the purpose of a Water Supply at Caddadup Reserve. Based on the environmental assessments which are required to be carried out for both a north and south option to the existing tank. Once the assessments are received Council will consider the findings and look to support the excision of the land which has the least environmental impacts to the land.

## Background

In 2014, the Water Corporation commenced discussions with officers regarding the requirement for upgrades to the existing water supplies for the southern corridor.

The existing storage tank is a 25 mega litre steel tank, constructed in 1983. The tank supplies the Caddadup zone which includes areas from Halls Head to Parkridge. The existing tank has insufficient reserve storage and during a failure event would only hold storage for less than 10 hours, when 24-30 hours is considered standard.

The construction of a new tank is required to ensure future residential development to the southern corridor and would service a further 14,000 more homes in the Caddadup zone.

While officers acknowledge the need for the expansion of the water supply, concerns remain over the environmental impact the clearing will have over the area to the south, and in turn officers requested a northern option be considered.

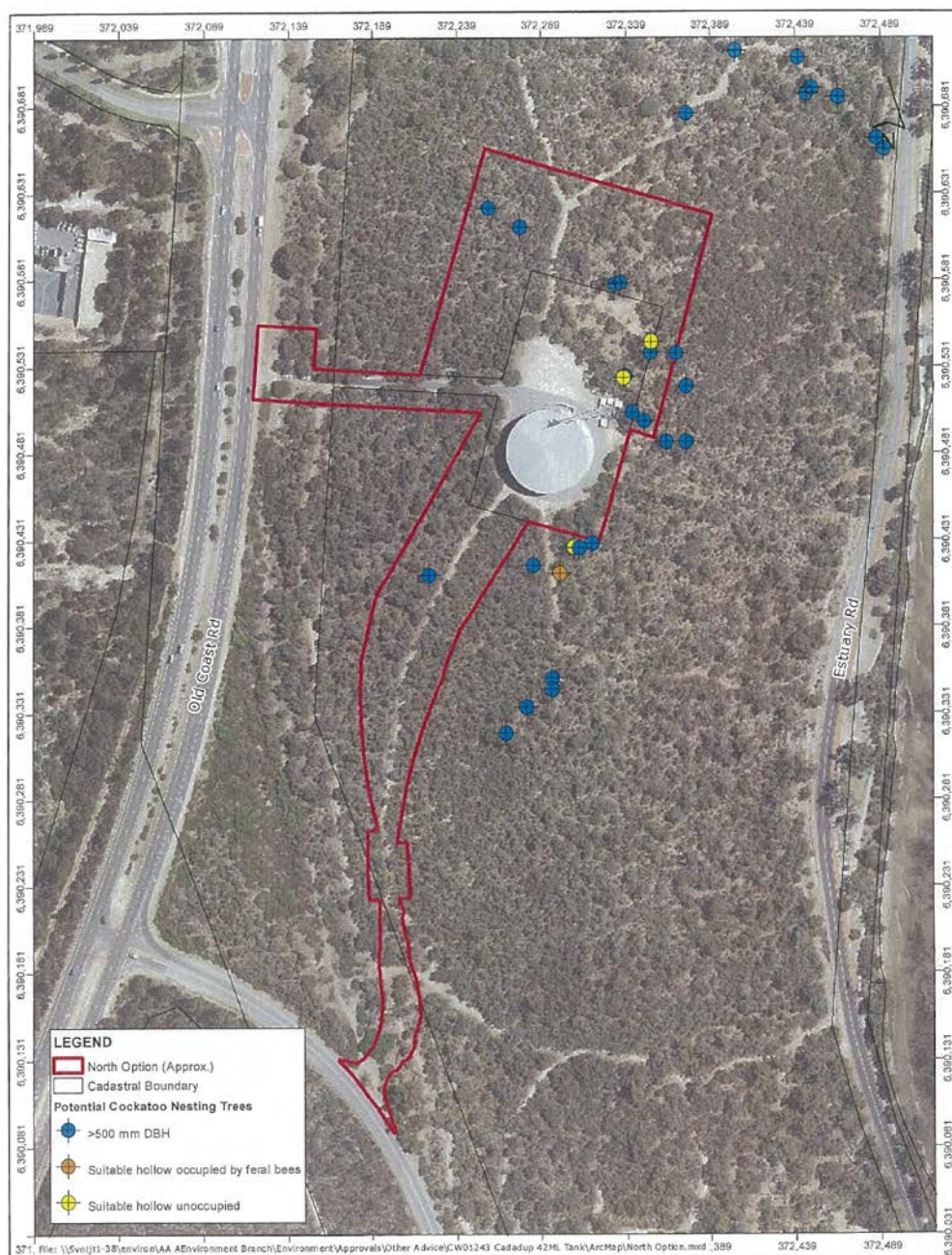


The north option is the preferred option for City officers, as it is considered to have the least amount of environmental impact and although the Water Corporation prepared a sketch for the site, they confirm that the site is not a viable option, as added costs to the construction would total \$5M. An overflow sump would also need to be removed, due to building constraints on site, through the construction phase, which is anticipated to take 2-3 years. The sump is used as a back-up should the existing tank overflow, therefore its removal is not an option the Water Corporation can consider.

The south option is the only option that the Water Corporation will consider, however officers have concerns that the environmental impacts are significantly greater than the northern option. For this reason officers requested that both options be environmentally assessed at the State and Federal levels, and the findings be returned to Council where all factors could be considered and an informed determination made.

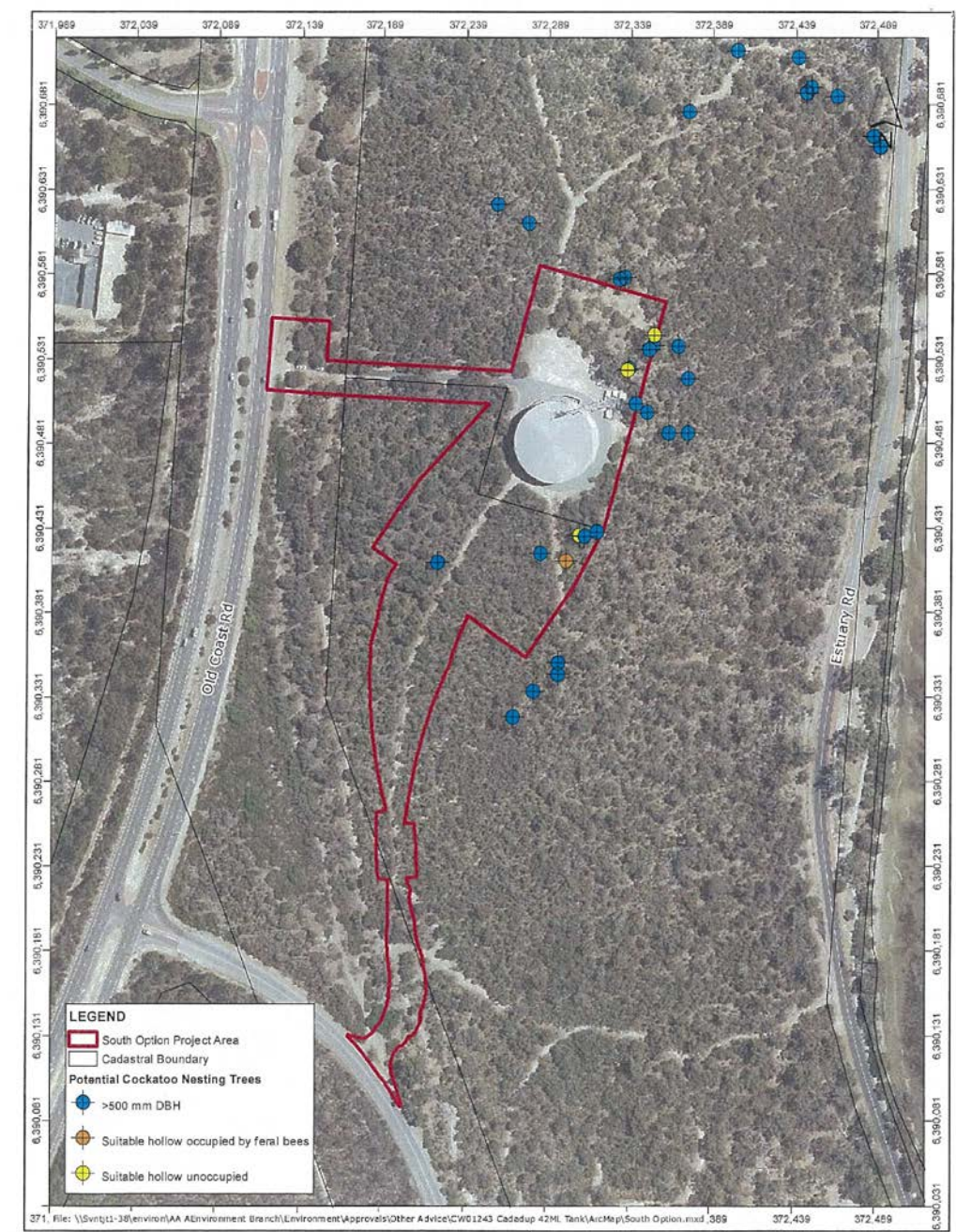
In plan form, the two options are as follows:

#### *North Option*





### South Option



### Comment

In May 2017, Council resolved to grant in principle consent for the excision of land required by the Water Corporation for the purpose of a Water Supply at Caddadup Reserve, subject to environmental assessments being carried out for both a north and south option to the existing tank. Once the assessments are completed, Council determined to consider the outcomes and review its support (or otherwise) based on the option that has the least environmental impacts to the land.

The Water Corporation have formally requested Council reconsider its position in relation to the requirement of undertaking environmental assessments over the land required for excision from Class A Reserve 2851 Caddadup, and request Council grant unconditional approval for the excision of approximately 3.2 hectares from the south option, as per their original request. Council's 'conditional' support does not allow the Department of Planning, Heritage and Lands to progress the excision in the form requested by the Water Corporation under the Land Administration Act 1997.

Officers however have outlined that statutory approvals should be sought *prior* to the progression of the land tenure.

At this stage, based on the attributes of the site, officers are of the view that the following environmental approvals would be required:

- Environmental Impact Assessment under the section 38 of the State's *Environmental Protection Act 1986*;
- Clearing Permit (for the clearing of native vegetation) under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*;
- Assessment and approval due to potential impact on Matters of National Environmental Significance under the *Federal Environment Protection and Biodiversity Conservation Act 1999*.

The Water Corporation advised that once the land tenure arrangements have been completed, then all relevant statutory approvals will be sought.

In reviewing the project further, Reserve 2851 is reserved as 'Regional Open Space' in the Peel Region Scheme (PRS). The existing Water Corporation site (Reserve 34542) is reserved as 'Public Purposes (Public Utility)'.

The purpose of land reserved for Regional Open Space in the Peel Region Scheme is:

*"to protect the natural environment, provide recreational and cultural opportunities, safeguard important landscapes and sites of cultural or historical significance and provide for public access."*

Under the provisions of the Peel Region Scheme, the Water Corporation's proposal would require development approval by the Western Australian Planning Commission, and in officers opinion, development of the nature proposed would be inconsistent with the PRS and therefore, prior to progressing, an Amendment to the PRS would be required to transfer the relevant land from Regional Open Space to Public Purposes reserve.

The process to amend the Peel Region Scheme includes the following steps is regulated by the Planning and Development Act 2005 and includes the following steps:

- WAPC resolves to amend the PRS and refers to the EPA;
- EPA determines level of environmental assessment
- Environmental Review prepared if required;
- WAPC submits amendment to the Minister for Planning for consent to advertise;
- Amendment is advertised (including to the relevant local government) for public comment;
- WAPC considered submissions and environmental conditions included if required;
- Approval by the Governor and considered by Parliament.

Gaining tenure of the site, will not relinquish the need to change the reservation under the PRS, or the parliamentary process that would allow the change to take effect under the Land Administration Act. Part of the parliamentary process would also require environmental assessments, which Council have previously asked for as part of its determination in supporting the excision of the land.

Therefore these State and Federal environmental assessments cannot be avoided, and once undertaken will determine the appropriate site for the new water supply. Furthermore the relevant environmental assessments will enable the City the opportunity to make a submission on the amendment and highlight the preferred location of the site based on its own assessment.

Council is therefore requested to support officers responding to the Water Corporation advising that support from the WAPC for an amendment to the Peel Region Scheme is required prior to any determination being made on the excision of the land from Reserve 2851.

## **MEAG Comment**

This item was considered by The Mandurah Environmental Advisory Group at its meeting on 12 May 2017 and the following recommendation was made:

*MEAG support the Officers recommendation and request that the City conduct an Environmental impact Assessment for both North and South options presented by the Water Corporation. The Environmental Impact Assessment should be provided as part of a City submission to relevant State and Federal departments when a call for public comment is made through the State and Federal environmental assessment processes.*

*The Environmental Impact Assessment should give particular focus towards:*

- *Geotechnical surveying*
- *Floristic surveys completed within the appropriate season for priority species. Particular importance should be given to the Caladenia genus eg. Spider orchids, cowslip orchids*
- *Presence of Western Ringtail Possums and ability of the reserve to continue providing adequate habitat for this species*
- *Removal of fencing and other barriers for wildlife access after construction works are complete.*

## **Consultation**

Water Corporation  
Department of Planning, Lands and Heritage

## **Statutory Environment**

*Land Administration Act 1997 (LAA) Section 42 – Class A reserve, creating, changing etc. If the excision exceeds 5% or 1ha whichever is less, for the purpose of public utility or services, the Minister must cause that proposal to be laid before each House of Parliament.*

*LAA Section 51 – Cancelling, changing etc reserves, Minister's powers as to: Subject to Section 42,43 and 45 the Minister may order cancel, change the purpose of or amend the boundaries of or the locations of lots comprising a Reserve.*

## **Policy Implications**

Nil

## **Risk Implications**

Should the project not proceed, there is a risk to the wider community with respect to water supply. As a result, the project is a high priority for the Water Corporation. Council's previous resolution to support the project in principle, subject to statutory approvals being progress should ensure all aspects of the project are reviewed by the relevant state government agencies.

## **Economic Implications**

Any costs associated with the excision including advertising, public consultation, survey and legal costs to be borne by the Water Corporation.

## **Strategic Implications**

The following strategies from the *City of Mandurah Strategic Community Plan 2017 – 2037* are relevant to this report:

Environment:

- Protect and ensure the health of our natural environment and waterways.

Organisational Excellence:

- Ensure the City has the capacity and capability to deliver appropriate services and facilities.

**Conclusion**

Officers acknowledge the upgrades to the water supply in the southern corridor are required however the impact on the environment is also considered a priority.

The Water Corporation's focus still remains steadfast on securing the land without consideration being given to the designation of the site being Regional Open Space under the Peel Region Scheme, or the environmental approvals required to progress the delivery of the infrastructure.

At this time officers are unable to recommend support for the excision of an approximate 3.2 hectares of land from Reserve 2851, as no environmental reporting has been submitted at either the State or Federal level.

**RECOMMENDATION**

**That Council**

1. **Reaffirms its resolution of 23 May 2017 in respect to a request from the Water Corporation to excise land from Reserve 2851 Old Coast Road, Dawesville which states:**
  1. ***Grants 'in principle' consent for the excision of land required by the Water Corporation for the purpose of a Water Supply from Class A Reserve 2851 Old Coast Road Dawesville conditional upon:***
    - 1.1 ***The relevant State and Commonwealth agencies undertaking a full environmental assessment of both site one (north) and site two (south) to determine the site least environmentally impacted by the proposed clearing and construction of the proposed new water tank;***
    - 1.2 ***Water Corporation to undertake the relevant public consultation required for the excision of land in accordance with S.51 of the Land Administration Act 1997, to the satisfaction of the Minister for Lands.***
  2. ***Approves the relevant authorities either State or Federal access to Reserve 2851 to enable the environmental impact assessments to be undertaken;***
  3. ***Acknowledges that a further report will be presented to Council for consideration upon completion of the State and Federal assessments.***
2. **In addition to the above, advises the Water Corporation that to facilitate development of any part of Reserve 2851 for public utilities, an Amendment to the Peel Region Scheme is required to be considered and initiated by the Western Australian Planning Commission and that the northern and southern options will need to be reviewed based on environmental, social and economic perspectives.**
3. **Once progress is made to amend the Peel Region Scheme, the administrative requirements relative to the land tenure and resolutions of Council, if required, to facilitate excision of Reserve 2851 can be reconsidered.**



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## Discussion



## **Previous Relevant Documentation**

Nil

## **Background**

Estuary Road in Dawesville is a two way undivided sealed road, separated by a centre line. It is classified as a Local Distributor Road under the MRWA road hierarchy and is sign posted with a 50 km/h speed limit in the relevant section. During an evening in December 2016, a vehicle carrying two occupants was involved in a single vehicle crash, where the vehicle failed to negotiate a slight right hand curve in the road, continued in a straight line, crossed to the incorrect side of the roadway and struck a large tree which is located less than one metre off the verge. The Police report indicates that alcohol and speed may have been possible contributing factors to the crash.

This crash tragically resulted in the deaths of both vehicle occupants.

In August 2017, Main Roads Western Australia officers undertook an investigation into the circumstances of the crash, the road environment one kilometre each side of the crash site and previous crash history within ten kilometres of the site.

The key objectives of the MRWA investigation was to determine if any road environment features;

- Contributed, or may have contributed to the cause of the crash or the severity;
- Contributed, or may have contributed to any crash patterns identified over the time period for which crashes were analysed;
- Represent a significant hazard to road users within the study area and;
- Make recommendations to reduce or eliminate any issues identified during the investigation.

Once completed, the investigation was provided to the City of Mandurah - the asset manager of Estuary Road, to assist in consideration and implementation of any appropriate remedial measures.

In relation to road environment issues that directly contributed to crash causation, MRWA investigation found none.

In relation to road environment issues that possibly contributed to crash causation, MRWA investigation found none.

In relation to road environment issues possibly contributed to the severity of the crash, MRWA investigation made the following findings;

### Trees located within the clear zone

A 1.4m diameter tree is located 1.2m from the edge of travelled way and is within the effective clear zone. The driver and passenger were fatally injured after colliding with this tree.

### Justification for the finding

The tree struck by the vehicle is 1.2m from the edge of the travelled way in the direction of travel, therefore placing it within the clear zone for this crash.

### Recommendation

Remove non-frangible items (tree) from the clear zone or provide suitable protection for errant vehicles in accordance with Austroads guidelines.

## **Comment**

The issue of non-frangible objects within recommended clear zones for a road environment is contentious. Under the State's 'Toward Zero' road safety strategy - Safe Systems Approach, road safety practitioners

should endeavour to provide road environments that are forgiving to drivers who make a mistake, regardless of the circumstances leading to the mistake being made.

Within the Austroads design guidelines that are widely accepted as best practice for road design in Australia, the recommended clear zone for a 50 km/h speed zoned road can range from 3 m to 4.5 m from the edge of the nearest travel lane, dependant on the road environment design speed and volume of traffic. By providing this area adjacent to a road, free of non-frangible objects, a driver that inadvertently leaves the road, should be able to stop or recover their vehicle without hitting an object that is likely to cause serious injury or death.

In practice however, this has been found to be difficult to achieve in all locations. Power poles, trees, bus stops and other road side furniture / objects are frequently found located within the clear zone of a local road.

Routes like Estuary Road which are located in semi-rural type environments, with adjacent parklands and reserves, will inevitably have a high abundance of trees adjacent to the road alignment in order to minimise the environmental impact of a road on the surrounding area.

It is also often found in newly developed residential areas where street trees are planted within verges that they are deemed to be located within the specified clear zone for the road environment. 'Liveable Neighbourhoods', a design guideline for urban development which has been adopted by the WA Planning Commission as policy, suggests that non-frangible street trees can be planted as close as 0.75 m from the road edge in some circumstances.

The justification for the locating of non-frangible elements within a road's clear zone is often that there are no other suitable alternative options that are practicable, economically viable or that due to a particular road environment typically found in built up areas, the assessed risk of a vehicle actually hitting the object is considered extremely low.



Within Estuary Road, the road environment is such that it cannot be considered typical. While sign posted at 50 km/h, the road is long and straight in sections, is only built up on the western side of the road and



has low traffic volumes. This can lead to driver behaviour that is considered inappropriate for the road and as such, can increase the risk of impact with road side objects significantly.

Recent traffic counts were undertaken within close proximity to the crash site and recorded the following information;

**All traffic**

Date	No. Days for Counts	Total Vehicles	Percentage of Vehicles Exceeding 50 km/h	Approx. No. Vehicles per Day	Average Speed over 50 km/h	Speed for 85% of Vehicles km/h
22/11/2017 - 30/11/2017	7	3953	52.44%	492	56.29	58.05

**Motor cycles only**

Date	No. Days for Counts	Total Motor Cycles	Percentage Motor Cycles Exceeding 50 km/h	Approx. No. Motor Cycles per Day	Average Speed over 50 km/h	Speed for 85% of Motor Cycles km/h
22/11/2017 - 30/11/2017	7	122	40.16%	16	64.44	61.87

**Highest recorded speeds during count;**

Car / Truck	85.1 km/h	Motor Cycle	119.2 km/h
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While it was not a motorcycle involved in the particular investigated crash, conversations with residents on site suggest that it is the speed of motorcycles that concerns them the most, hence the separation of motorcycle statistics as shown in the count data above.

When looking at the location of the investigated crash specifically, there is only a single tree (the one impacted) within several hundred metres in each direction that is located close to the road edge. The tree is also positioned on the outside of a bend and there is limited delineation along the road itself to alert a driver to the path of the road through the bend (no kerbing, guide posts etc).

It is therefore considered essential to support the recommendation from the MRWA crash investigation and either protect or remove the tree or significantly reduce the risk of vehicles impacting the tree.

The possible options are:

Protect the tree – Protection of the tree, and the occupants of an errant vehicle which could potentially impact the tree is best done through the installation of a properly designed crash barrier system that will help in absorbing the impact of a crash while also directing an errant vehicle away from objects / hazards within the verge area.



The most common crash barriers used in Western Australia are the steel W-beam barrier or the Brifen wire rope safety barrier. When correctly installed, both these barrier systems are designed to deflect when impacted – absorbing significant amounts of energy from the impact - while still retaining horizontal integrity and redirecting the vehicle away from hazards and back towards the correct path of travel.

The energy absorbing design feature of these barriers is, however problematic in this particular circumstance. Design notes for both barrier types suggest that each treatment be installed a minimum 200 mm (W beam) and 425 mm (wire rope) from the edge of the road pavement to avoid nuisance impacts to the barrier system.

The appropriate deflection distance of the barriers when struck, in order to absorb appropriate energy to protect the vehicle occupants, is 1200 mm (W beam) and 1650 mm (wire rope). As the tree is only 1200 mm from the edge of the road pavement, both barrier systems would be ineffective in this application and therefore will not provide the level of protection which is being sought.

Both barrier systems can be stiffened by placing a higher number of upright supports at closer spacing's, however by doing this the energy absorbing abilities are significantly diminished and protection for the occupants is compromised.

Initial investigations suggest that there is scope for modifications to the Estuary Road alignment which will allow the re-positioning of the carriageway away from the tree to create the required clear zone separation or at least provide sufficient clearance to allow for a barrier system to be installed. Local area traffic management elements could be incorporated into the changed road alignment to assist in the maintaining of appropriate road operating speeds. This level of proposal would require further detailed design, however initial concept investigation suggest that the estimated cost of shifting the road alignment, adjusting services, installing traffic calming on the approaches to suit the revised design speed and installing the required crash barrier to protect the tree would be approximately \$296,000.

Tree removal – Although undesirable environmentally, the removal of the tree will completely remove the risk of a vehicle striking the tree in the future. This proposal in itself will not however, reduce the risk of inappropriate driver behaviour or that of vehicles leaving the road at this location. Should this course of action be supported, it should be on the basis that the families of the deceased are consulted and support the removal of the tree. In addition, replacement trees should be planted in the vicinity as an offset for the loss of a mature tree.

The health of the tree has been assessed by a qualified arborist which has found that the tree is in a healthy condition and the tree is an asset to the surrounding area and community. The arborist recommends that all efforts should be exercised to assist with successful tree retention. The full report is attached for information.

Value of the tree estimated to be - \$75,000.      Estimated cost of removing the tree is - \$4,300.  
Total cost to the City - \$79,300.

Improved delineation of road environment – While not specifically suggested within the Main Roads crash report, the City's investigations have noted that there are limited elements within the road environment that alert a driver to the curve within Estuary Road, adjacent to the crash site. Curve advanced warning signs and guide posts or curve alignment markers (CAMs) would assist a driver in reading the road alignment ahead of them and should be considered as a first option in addition to any proposed measures. While the hazard of the tree in close proximity of the road edge would still remain, the risk of further collisions with the tree could be significantly reduced by the installation of additional signage.

This type of treatment has been used widely by MRWA, particularly I roads located in the south west of the State where roadside vegetation is close to the road. It may be noted that many examples exist in roads with posted speed zones of 110 km/hr.



As Estuary Road has a speed range of 50 km/hr, this type of treatment is considered to be most appropriate.



The City principally has to consider the recommendation made by Main Roads Western Australia. It may accept or reject the recommendation. Officers have examined a number of options that may address the crash. On balance after assessing the likely causal factors contributing to this incident and the environmental road conditions it is suggested that appropriate roadside delineation would be an effective intervention.

### **Consultation**

Main Roads Western Australia was consulted in respect to the information contained within their report and formal clearance was granted to use some of the report content in the preparation of this report.

## **Statutory Environment**

Before the removal of vegetation from a declared Environmental Sensitive Area, a clearing permit is a prerequisite, as issued by the Department of Water and Environmental Regulation as required under the clearing provisions of the *Environmental Protection Act 1986 Division 2 — clearing of native vegetation*.

## **Policy Implications**

All actions in relation to the verge trees will be in accordance with the Urban Tree Management policy.

## **Risk Implications**

The risk level of no action, when assessed against a risk matrix where the likelihood of a future crash occurring again, is considered 'Possible' and the consequence of said crash considered 'Severe'. This presents a risk level of 'Extreme'

The risk level of improved signage and delineation, when assessed against a risk matrix reduces the likelihood of a future crash occurring again to 'Rare' and the consequence of said crash considered 'Major'. This presents a risk level of 'Medium'

The risk level of improved signage and delineation in conjunction with tree protection or removal, when assessed against a risk matrix reduces the likelihood of a future crash occurring again to 'Rare' and the consequence of said crash considered 'Moderate'. This presents a risk level of 'Low'

## **Economic Implications**

- Estimated cost associated with protecting the tree - \$296,000
- Estimated cost should the tree be removed - \$89,300
- Estimated cost of installing delineation signage (normally funded by Main Roads WA) - \$10,000

## **Strategic Implications**

The following strategies from the *City of Mandurah Strategic Community Plan 2017 – 2037* are relevant to this report:

### Environment:

- Protect and ensure the health of our natural environment and waterways.

### Social:

- Help build the community's confidence in Mandurah as a safe and secure city.

## **Conclusion**

Given the severity of the crash that occurred late last year and the responsibility of the City to consider the Safe System approach to improve the safety of the road and roadsides in the vicinity of the crash location, the findings of the MRWA Crash Location report should be acknowledged by the City and remedial measures taken to provide a safer road environment for road users into the future.

A number of options to improve the safety of the vicinity of the crash site have been considered within this report. The removal of the impacted tree is the least preferred option and the cost of modifying the road alignment to allow for the proper installation of a crash barrier is substantial. It is recommended that Council approves the installation of road side delineation through the use of signs, guide posts and curve alignment markers which is consistent with actions taken by MRWA on many of its highways located in the south west of the State.

NOTE:

Copies of the ***Crash Location Report – Fatal Estuary Road (3.21 slk)*** and the ***Tree Assessment Report*** are available in the Councillors Lounge.

**RECOMMENDATION**

**That Council:**

1. **Notes the findings of the Main Roads Western Australia Crash Location Report – Fatal – Estuary Road – (3.21 slk).**
2. **Approves the installation of curve advanced warning signs, guide posts and curve alignment markers and advise Main Roads Western Australia that this is its response to the Corrective Action Report.**



**5 SUBJECT:** Street Verge Tree – Request for Tree Removal  
**CONTACT OFFICER/S:** Terry Blanchard  
**AUTHOR:** Keith Box  
**FILE NO:**

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### Summary

Officers received a request from the owners of 3 Caspian Drive, Wannanup to remove the street verge tree adjacent to their residence. This request was investigated and the outcome determined by officers is that the tree should remain.

Subsequently, the resident has requested an appeal to Council to overturn the officer's recommendation to retain the street verge tree. A number of reasons were offered challenging the officer's determination and are presented for Council's consideration. Officers remain unconvinced that there is an argument that would support the tree being removed.

Council is requested to resolve to retain this tree.

### Disclosure of Interest

Nil

### Location

3 Caspian Drive, Wannanup



### Previous Relevant Documentation

Nil

## Background

The City received a request from Red Ink Homes, to remove a mature *Agonis flexuosa* (Native Peppermint) tree from the verge during the new home construction. This request was made on behalf of the owners of 3 Caspian Drive, Wannanup.

After consideration of the request, the removal of the tree was rejected by officers under the Policy – Urban Tree Management POL-RDS 06 and the Tree Management Technical Guidelines-Operational.

The owners of 3 Caspian Drive, Wannanup, C & L Ashton have emailed the Council appealing the decision to retain the tree and request the decision be reconsidered.

The owners concerns include:

- Sight lines blocked by tree entering/exiting garage.
- Very loud creaking noises on windy nights.
- The size of the tree when mature.
- Tree blocking natural light from the front window.
- Tree roots growing under crossover or building slab.

## Comment

One objective of the City is to improve the quality of reserves, parks and street trees through the implementation of the Greening Mandurah Landscape Masterplan. Officers are committed to planning, planting, establishing and maintaining all verge trees and raising awareness of the value of trees in the urban landscape. Apart from the natural beauty of a tree lined street, it also offers cooling, shade and traffic calming, providing safe amenity to pedestrians, cyclists and residents.

Street trees are planted into new developments ahead of any building construction. This can cause conflict from time to time as housing design often does not take into account where street trees are provided and residents simply believe they can remove the tree.

Responding to the owners concerns:

- Road sight lines have been measured and assessed as being fully compliant with road standards.
- The tree has been inspected and is in a healthy condition. It does not meet the City's criteria for pruning or maintenance at this time.
- The *Agonis flexuosa* (Native Peppermint) is currently semi mature specimen approximately 5 metres tall with a 4.5 metre span. A fully mature tree would usually grow to less than 10 metres tall and a 7.5 metre span.
- Using Sun Path, at no time would this tree shade the front window of the new home.
- Verge tree roots will seek water. They have been known to cross driveways to seek water. Garden and verge landscaping can limit the root directions. Root barriers will also assist.

The property owner has offered to remove the tree at his/her own cost and would replace the *Agonis flexuosa* with a 'palm' tree.

In accordance with the City's Fees and Charges Schedule, the cost to be recovered by the City would be \$900.50 plus GST. This is based on a cost of \$500.50 to remove the tree plus \$400 for a 100 litre size replacement.

Landscape plans for each stage of Northport precinct of the Port Bouvard Estate were prepared by qualified Landscape Architects and subsequently received conditional approval by the City of Mandurah. Approval included specific street tree locations and tree type for all roads in the estate. Street tree selections for Northport were made to support a coastal maritime theme and cope with exposed coastal conditions such as strong salt laden winds and sandy soils.



The *Agonis flexuosa* (Native Peppermint), is well adapted as a street tree and a proven performer for that application. The City desires to maintain consistent street tree planting to support the intended coastal maritime theme. The property owner has suggested an alternative tree being an Alexander Palm (*Archontophoenix alexandrae*), which is a tall, slim growing palm, native of Queensland.

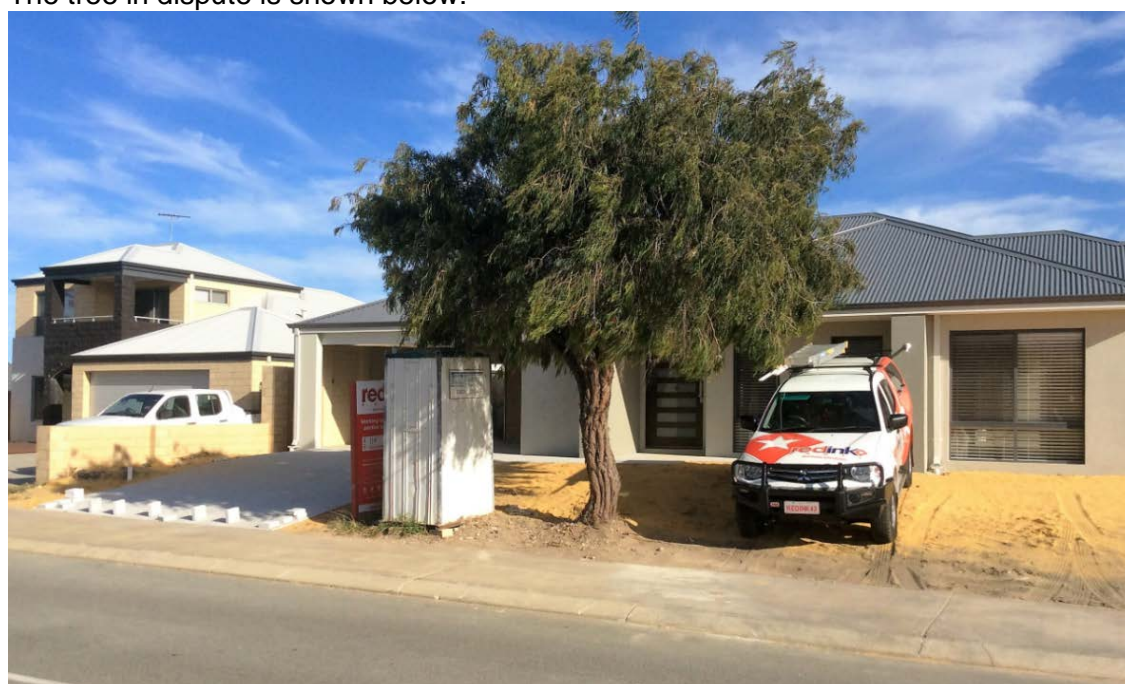


Alexander Palm (*Archontophoenix alexandrae*)

The Alexander Palm likes more water than most palms and will grow in full sun but does better in semi shade in our climate. The City does not use this palm for street tree applications and does not support its use as a street tree.

Street trees are selected so they ultimately provide a significant and useable amount of shade, are low maintenance, cope with site conditions and are predicable in growth habit. The *Agonis flexuosa* (Native Peppermint) is the appropriate choice for this location.

The tree in dispute is shown below:





The tree is shown in context with the building being substantially completed.

The tree is not impacted upon by the crossover and therefore it may be presumed that the issue is one of amenity and personal preference.

### **Statutory Environment**

Nil

### **Policy Implications**

Council adopted Policy, Urban Tree Management POL-RDS 06, states the intent of the City of Mandurah to protect, maintain and improve the tree population within the City.

The aim is to increase tree numbers through pre-active planting programs thus boosting tree canopies on verges and reserves throughout the City.

### **Risk Implications**

If the tree is removed, the City would be losing a beneficial community asset,

### **Economic Implications**

From an operational viewpoint there would be no cost to the City as:

1. Should the tree remain the status quo remains.
2. Should the tree be removed as per the request, then it would be at the owner's expense.

However, from a community amenity perspective an *Agonis flexuosa* (Native Peppermint) of this condition, would realise an asset value of \$7,682 using valuation formula used by the City's tree asset inventory Paperbark Technology.

## Strategic Implications

The following strategies from the *City of Mandurah Strategic Community Plan 2017 – 2037* are relevant to this report:

### Environment:

- Protect and ensure the health of our natural environment and waterways.
- Encourage and enable our community to take ownership of our natural assets, and to adopt behaviours that assist in achieving our environmental targets.

### Organisational Excellence:

- Ensure the City has the capacity and capability to deliver appropriate services and facilities.

## Conclusion

Officers received a request from the owners of 3 Caspian Drive, Wannanup to remove the *Agonis flexuosa* (Native Peppermint) street verge tree adjacent to their residence. Following an inspection and assessment of the tree, the outcome of the request was that the tree should remain as it does not meet the City's criteria for removal.

The resident has requested an appeal to Council to overturn the officer's recommendation to retain the street verge tree.

The tree is not impacted upon by the resident's crossover nor any other civil infrastructure. The verge frontage of the property is 24.5 metres. The tree is 11 metres from the western boundary and 3 metres from the paved crossover providing ample clearance for vehicle and pedestrian safety.

On the basis of preserving the street amenity as planned for the residential development, it is recommended that Council resolve to retain the tree.

## RECOMMENDATION

### That Council:

1. **Acknowledges the resident's appeal to overturn the City officer's recommendation to retain the *Agonis flexuosa* (Native Peppermint) street verge tree adjacent to 3 Caspian Drive, Wannanup.**
2. **Resolve to retain the *Agonis flexuosa* (Native Peppermint) street verge tree adjacent to 3 Caspian Drive, Wannanup.**



**6 SUBJECT:** Tender 19-2017 Mandurah Community Courtroom Interpretation, Design and Installation.  
**CONTACT OFFICER/S:** John Hughes / Natasha Pulford  
**AUTHOR:** Nicholas Reynolds / Erin Johnson  
**FILE NO:** F0000124857

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### Summary

The City of Mandurah (City) invited tenders for the Mandurah Community Museum Courtroom Interpretation Design and Installation on 16 September 2017.

The 2017/18 phase of the implementation of the Mandurah Community Museum's (MCM) interpretation plan will encompass the redevelopment of the old courtroom within the building. This area has been identified as both the 'Industry Gallery', and the space within the Museum where the story of Mandurah's European settlement and economic development will be told. The space's previous use as a courtroom will also be interpreted for Museum visitors. This interpretation will take the form of text, displays of objects and interactive multimedia elements combined with modern, unified design to produce a professional display space that complements the similar work done during previous years in other areas of the Museum.

Council approval is sought to select Creative Spaces as a suitable tenderer for Mandurah Community Museum Courtroom Interpretation Design and Installation.

### Disclosure of Interest

Nil.

### Previous Relevant Documentation

Nil.

### Background

To provide the services a tender for the Mandurah Community Museum Courtroom Interpretation Design and Installation was advertised in the 16 September 2017 edition of the 'West Australian' newspaper and in a notice which was displayed on the Administration Centre and library notice boards.

The Mandurah locality was originally known as Mandjoogoordap which translates as "meeting place of the heart". At the Museum visitors can get in touch with the heart of Mandurah. The over-riding theme for Interpretation at the MCM is "Mandurah-Meeting Place of the Heart". This theme is derived not only from the indigenous origins of Mandurah's name, but for a number of other reasons:

- From its beginnings Mandurah has represented a meeting place for people, to gain sustenance, respite and reinvigoration. This continues today.
- Mandurah is a meeting place for water, where rivers, estuaries and the ocean meet. Water plays a significant role in providing the sustenance, respite and reinvigoration mentioned above, and water's role in the lives of the people of Mandurah is a key influence in interpreting what Mandurah is about.

The intended works involves the implementation of the recommendations from the Mandurah Community Museum Interpretation plan which was produced with the assistance of a Lotterywest grant in 2009. This plan outlines how the Museum's spaces, objects, and stories can be best organised and presented in order to present a professional Museum to the public. The City has been working in the years since 2009 to implement this plan.

In 2017/18 the intention is to implement the recommendations regarding the redevelopment of the old Mandurah Magistrate's Courtroom. This is identified in the interpretation plan as the Industry Gallery.

In this area the European settlement of Mandurah and the industries which enabled settlers to make a living in their new land such as agriculture and fish canning will be interpreted. Work to be undertaken will include display design, interior design of museum spaces, fabrication of displays boards, interactive electronic displays, display cabinets, object supports, display lighting, furniture and possible soundscapes.

This will:

- Create a sense of unity across the spaces within the museum
- Cement the museum in its role as a key collection manager and manager of community engagement with City's unique heritage.
- Provide a framework for development of the collection
- Interpret the history of the building as well as history of Mandurah and tie these two histories together to make an informative and enjoyable experience for the visitor within the context of the spaces and the building.

## Comment

Whilst the City has worked extensively with Perth-based design studio Creative Spaces over the years to improve the exhibition spaces at the Mandurah Community Museum it was considered important to test the market for other providers. Due to the number of potential industry respondents being unknown the officers elected to conduct a formal RFT process even though the anticipated expenditure was below the tender threshold.

The tender closed at 2:00pm on Tuesday, 10 October 2017. One submission was received from:

1.	Creative Spaces	North Perth
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The following weighted qualitative criteria were used to assess and rank each tender submission:

Skills and Experience	35%
Methodology	30%
Price	35%

An evaluation panel, comprising of officers from the People and Communities and Works and Services individually reviewed the tender and mutually assessed it against the weighted qualitative criteria submitted. A member of the City's Governance and Tenders section coordinated and observed the assessment of the qualitative evaluation process and can reasonably assure that the probity and procedural aspects relating to the evaluation were compliant.

On completion of the assessment of the qualitative criteria, the price was entered into the Evaluation Matrix as shown in the **Confidential Attachment** by a member of the City's Governance and Tender's section who then carried out a final analysis of the qualitative and price score in order to determine that the tender represented value for money for the City. As a result, the tendered submission from Creative Spaces was considered a suitable tenderer.

## Consultation

A site inspection was held on Thursday, 21 September 2017 at 3 Pinjarra Road, Mandurah WA 6210 and was attended by Creative Spaces.

A reference check has been undertaken with nominated referees where it was confirmed that the tenderer is considered capable of carrying out the Contract.

## Statutory Environment

The requirements of Part 4 of the *Local Government (Functions & General) Regulations 1996* have been complied with.

## Policy Implications

Policy POL-CPM 02 – *Purchasing of Goods or Services has been complied with.*

Policy POL-CPM 01 – *“Buy Local” Regional Price Preference policy has been complied with.*

## Risk Implications

Nil.

## Economic Implications

The tendered contract sum falls within the approved 2017/2018 project budget.

For further details refer to the ***Confidential Attachment***.

## Strategic Implications

The following strategies from the *City of Mandurah Strategic Community Plan 2013 – 2033* are relevant to this report:

### Social:

- Provide a range of social, retail, recreational and entertainment experiences for the City's residents and visitors.

### Economic:

- Develop a strong and sustainable tourism industry.

### Infrastructure:

- Facilitate the provision of multi-purpose facilities and infrastructure that meets the needs of a growing population.

### Identity:

- Become known as a city and destination for events, arts, heritage and culture.

### Organisational Excellence:

- Deliver excellent governance and financial management.

## Conclusion

The City received one tender for the Mandurah Community Museum Courtroom Interpretation Design and Installation which was assessed against both qualitative criteria and price. The result was that the submission from Creative Spaces represented value for money for the City and it is therefore recommended that the City selects Creative Spaces as a suitable tenderer.

### NOTE:

- Refer to ***Confidential Attachment***

## RECOMMENDATION

**That Council accepts Creative Spaces as suitable tenderer for Tender T19-2017 for the Mandurah Community Museum Courtroom Interpretation Design and Installation at a cost of \$76,401.40 (exclusive of GST).**

**7 SUBJECT:** Tender Number 21-2017 Irrigation Pump, Water Control Systems and Bore Maintenance  
**CONTACT OFFICER/S:** Matthew Hall/Natasha Pulford  
**AUTHOR:** Cameron Tuck/Erin Johnson  
**FILE NO:** F0000133323

## Summary

The City of Mandurah (City) invited tenders for the Irrigation Pump, Water Control Systems and Bore Maintenance on 21 October 2017.

Council approval is sought to select All Pumps and Waterboring, Mandurah as the preferred tenderer for Irrigation Pump, Water Control Systems and Bore Maintenance for a three (3) year term with one twelve month option period.

## Disclosure of Interest

Nil

## Previous Relevant Documentation

G40/5/13      28/05/2013: That Council awards All Pumps and Waterboring the contract under Tender 01-2013 for the Irrigation Pump, Water Control Systems Maintenance and Bore Maintenance for a period of three (3) years with one (1) option to extend for a further one year commencing from 1 June 2013 with a schedule of rates.

## Background

The City tenders for the described services in order to maintain and undertake repairs to existing irrigation pumps, equipment and control systems that service the City's irrigated parks and streetscapes. Services will include the installation of new equipment but excludes drilling of new bores.

A Request for Tender (RFT) was advertised in the 21 October 2017 edition of the 'West Australian' newspaper and in a notice which was displayed on City Administration Centre and Library notice boards.

The RFT sought the provision of the required services for a three (3) year term with an option to extend for a further one (1) year period.

## Comment

The tender closed at 2:00pm on 14 November 2017. Submissions were received from the following:

1.	Mandurah Pump Shop	Mandurah
2.	Total Eden	Malaga
3.	Western Irrigation Pty Ltd	Bibra Lakes
4.	All Pumps and Waterboring	Mandurah

The following weighted qualitative criteria were used to assess and rank each tendered submission:

Relevant Experience	25%
Key Personnel and Resources	20%
Safe Working Methodology	15%
Price	40%

To ensure that pricing did not influence the overall outcome, pricing was not provided to the evaluation panel until the assessment of the qualitative criteria was completed.



An evaluation panel, comprising of officers from Operation Services City Parks, individually assessed each tender against the weighted qualitative criteria submitted by each tenderer.

A member of the City's Governance and Tenders section coordinated and observed the tender evaluation process and is satisfied that the probity and procedural aspects relating to the evaluation were compliant.

On completion of the assessment of the qualitative criteria, prices submitted were entered into the Evaluation Matrix as shown in the **Confidential Attachment** by a member of the City's Governance and Tender's section who then carried out a final analysis taking into account competitiveness and combined qualitative and price ranking in order to determine the tender which represented best overall value for money for the City.

As a result, the tendered submission from All Pumps and Waterboring was considered to be the most advantageous tender. A financial assessment was undertaken on All Pumps and Waterboring where they are considered to be capable of carrying out the Contract and are therefore recommended as the preferred tenderer.

### **Consultation**

Nil

### **Statutory Environment**

The requirements of Part 4 of the *Local Government (Functions & General) Regulations 1996* have been complied with.

### **Policy Implications**

Policy POL-CPM 02 – *Purchasing of Goods or Services has been complied with.*

Policy POL-CPM 01 – *"Buy Local" Regional Price Preference policy has been complied with.*

### **Risk Implications**

The evaluation outcome identified that the City may need to put in place additional contract management practices for Safety. Please refer to the **Confidential Attachment**.

### **Economic Implications**

The price basis for the contract is a schedule of rates of fixed prices subject to annual CPI adjustment. Provision has been made in the current financial budget for the goods and services to an amount of \$204,545 (excl. GST). The schedule of rates shows no increase in costs over the previous tender.

### **Strategic Implications**

The following strategies from the *City of Mandurah Strategic Community Plan 2017 – 2037* are relevant to this report:

#### Infrastructure:

- Facilitate the provision of multi-purpose facilities and infrastructure that meets the needs of a growing population.

#### Organisational Excellence:

- Ensure the City has the capacity and capability to deliver services and facilities that meet community expectations.
- Deliver excellent governance and financial management.

## **Conclusion**

The City received four tenders which were assessed against both qualitative criteria and price. The result was that the submission from All Pumps and Waterboring represented overall best value for money from the tendered submissions and it is therefore recommended that the City selects All Pumps and Waterboring as the preferred tenderer.

NOTE:

- Refer ***Confidential Attachment***

## **RECOMMENDATION**

**That Council accepts All Pumps and Waterboring as the preferred tenderer for Tender T21-2017 for Irrigation Pump, Water Control Systems and Bore Maintenance.**

<b>8</b>	<b>SUBJECT:</b>	Tender Number 22-2017 CCTV Installation and Maintenance Services
	<b>CONTACT OFFICER/S:</b>	Simon Hudson/Natasha Pulford
	<b>AUTHOR:</b>	Derek Lynch/Vicki Lawrence
	<b>FILE NO:</b>	F0000130997

### Summary

The City of Mandurah (City) invited tenders for Closed Circuit Television (CCTV) Installation and Maintenance Services on 21 October 2017.

The City uses CCTV to investigate incidents both externally and internally and has the capacity to be a preventative tool by acting as a deterrent against crime. The City currently owns and maintains 158 CCTV cameras mounted on or in buildings and on poles and other infrastructure. This tender covers maintenance, cleaning, firmware, installation and connection, and related services of the CCTV.

Council approval is sought to select Spyker Technologies Pty Ltd as the preferred tenderer for CCTV Installation and Maintenance Services for a three (3) year term with one twelve month option period.

### Disclosure of Interest

Nil

### Previous Relevant Documentation

Nil

### Background

The City of Mandurah's Crime Prevention Framework and its 20 year Strategic Plan identifies one imperative that is to "Help build our community's confidence in Mandurah as a safe and secure City".

Subsequently, the City has invited tenders to continue the roll out of CCTV across Mandurah.

The current contract for CCTV Installation and Maintenance Services was awarded to Spyker Technology Services Pty Ltd following a competitive process through WALGA. Upon expiry, the City chose to tender the works to the open market, as there is potentially a number of local suppliers who are able to complete the works.

The Request for Tender (RFT) for CCTV Installation and Maintenance Services was advertised in the 21 October 2017 edition of the 'West Australian' newspaper and on the 26 October 2017 edition of the 'Mandurah Mail' newspaper and in a notice which was displayed on the Administration Centre and Library notice boards.

The RFT sought the provision of the required services for a three (3) year term with an option to extend for a further one (1) year period.

### Comment

The tender closed at 2:00pm on Tuesday 21 November. Submissions were received from the following:

1.	ARA Security Services Pty Ltd	Balcatta
2.	Downer EDI Engineering Power Pty Ltd	North Ryde (NSW)
3.	Mandurah Industrial Guards Pty Ltd	Parklands
4.	Intervid International	Wangara
5.	Spartan Security and Data	Erskine

6.	Spyker Technologies Pty Ltd	Halls Head
7.	Zenien Pty Ltd	Canning Vale

The following weighted qualitative criteria were used to assess and rank each tender submission:

Demonstrated Organisational Excellence	15%
Supervision and Resources	35%
Price	50%

To ensure that pricing did not influence the overall outcome, it was not provided to the evaluation panel until the assessment of the qualitative criteria was completed.

An evaluation panel, comprising of officers from the Infrastructure Management, Facilities Management, Community Safety and ICT individually assessed each tender against the weighted qualitative criteria submitted by each tenderer.

A member of the City's Governance and Tenders section coordinated and observed the qualitative evaluation process and is satisfied that the probity and procedural aspects relating to the evaluation were compliant.

On completion of the evaluation of the qualitative criteria, prices submitted were entered into the Evaluation Matrix as shown in the **Confidential Attachment** by a member of the City's Governance and Tender's section who then carried out a final analysis taking into account competitiveness and combined qualitative and price ranking in order to determine the tender which represented best overall value for money for the City.

A financial assessment and reference checks have been undertaken with nominated referees and the preferred tenderer is considered to be capable of carrying out the contract.

As a result, the tendered submission from Spyker Technologies Pty Ltd was considered to be the most advantageous tender and is therefore recommended as the preferred tenderer.

## Consultation

A non-mandatory tender briefing was held on 31 October 2017 in the Tuckey Room 83 Mandurah Terrace, Mandurah WA 6210 and was attended by:

- ARA Security Services Pty Ltd
- Spartan Security and Data
- Mandurah Industrial Guards Pty Ltd
- Hills
- Spyker Technologies Pty Ltd
- Cerberus Technologies
- Downer EDI Engineering Power Pty Ltd

## Statutory Environment

The requirements of Part 4 of the *Local Government (Functions & General) Regulations 1996* have been complied with.

## Policy Implications

Policy POL-CPM 02 – *Purchasing of Goods or Services has been complied with.*

Policy POL-CPM 01 – *"Buy Local" Regional Price Preference policy has been complied with.*



## Risk Implications

The key risks associated with this contract are:

Risk	Likelihood	Consequence	Mitigation
Loss of CCTV coverage through inadequate maintenance	Possible	High	Thorough evaluation of tender submissions and active management of contract.
Maintenance of the network doesn't keep up with the expansion of the network	Possible	Low	Programmed maintenance and active management of contract.

## Economic Implications

The price basis for the contract is fixed for the term of the contract. The new contract does not allow for rise or fall, i.e. there is no CPI adjustment to the rates. Provision has been made in various cost codes across the City's current financial budget. The City spends approximately \$80,000 per annum on maintenance of its CCTV assets, based on previous years' expenditure. New installations are subject to successful grant funding applications. The table below highlights recent years' grant funded projects undertaken;

Year	Project Title	Funding Body	Total Grant
2011	Safer Suburbs Program 2010-11 to 2012-13 – Business Partnership Project	Federal Attorney General's Department	\$ 80,000
2013	NBN CCTV	Department of Broadband	\$ 412,500
2013	Taxi Security Scheme	Federal Attorney General's Department	\$ 130,000
2014	Safer Streets; Phase 1 (Western Foreshore)	Federal Attorney General's Department	\$ 250,000
2016	Safer Streets Phase 2 (Western Foreshore)	Federal Attorney General's Department	\$ 150,000
2017	Fibre for Eastern Foreshore and new cameras	State CCTV Fund	\$ 350,000
<b>Total Cost</b>			<b>\$1,372,500</b>

Officers will continue to investigate additional funding opportunities for further new installations to improve the City's CCTV coverage. Future capital expenditure in new installations will be dependent on the receipt of grant funding.

Acceptance of the recommended tenderer would result in a net saving of approximately \$27,000 per annum on the existing arrangement.

## Strategic Implications

The following strategies from the *City of Mandurah Strategic Community Plan 2017 – 2037* are relevant to this report:

### Social:

- Help build the community's confidence in Mandurah as a safe and secure City.

### Organisational Excellence:

- Ensure the City has the capacity and capability to deliver services and facilities that meet community expectations.

## **Conclusion**

The City received seven tenders which were assessed against both qualitative criteria and price. The result was that the submission from Spyker Technologies Pty Ltd represented overall best value for money for the City and is therefore recommended as the preferred tenderer.

### **NOTE:**

- Refer ***Confidential Attachment***.

## **RECOMMENDATION**

**That Council accepts Spyker Technologies Pty Ltd as the preferred tenderer for Tender 22-2017 for CCTV Installation and Maintenance.**