

CLIMATE CHANGE IN WESTERN AUSTRALIA

ISSUES PAPER – SEPTEMBER 2019

Submission by City of Mandurah

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Climate Change in Western Australia

Introduction

The City of Mandurah is pleased to provide a submission to the State Government on the recently released *Climate Change in Western Australia* issues paper. The City has a long and proud history of action in our attempt to address the issues presented by climate change and acknowledges that even greater action is urgently required.

The issues paper discusses a wide range of problems that the City is already experiencing increased difficulty in managing, such as increased risk of bushfire, coastal erosion threatening key community assets and securing and protecting water resources. This demonstrates that climate change related issues are being experienced today and further delay in providing an adequate address to climate change will only make it harder to deal with these issues in the future.

The City is also actively exploring and investing in a number of opportunities that help address this global problem. Implementing Waste to Energy, acquiring bushland for conservation and funding research and development of adaptive fire management techniques are some of the many examples of why the City considers itself to be a leader in addressing climate change.

General comments

The Intergovernmental Panel on Climate Change (IPCC) fifth assessment of climate change represents the most comprehensive and rigorous compilation of science on the issue of climate change. The fifth assessment and subsequent special reports from the IPCC, depict a situation whereby an urgent and increased level of action is required if humanity is to successfully limit the impacts of climate change below a 1.5°C average global temperature increase. Temperatures above this threshold are estimated to have wide ranging and devastating impacts on the livelihoods of the next generations. Western Australia is considered one of the places in the world where these climate impacts will be felt most severely. The City advocates an evidence based approach for all situations. We urge the State Government to acknowledge the evidence collated by the IPCC, particularly the urgency and magnitude of action required, and use this evidence as a basis for future decision making.

A continuous, consistent and adequate approach to addressing climate change has so far been lacking at both the state and federal level. The City has learnt through experience that a critical element to effectively addressing climate change is to demonstrate commitment and intent that extends beyond an individual term of office. The City has been signatory to a number of climate change related pledges and commitments including the Cities for Climate Protection program, the Compact of Mayors and the Local Government Climate Change Declaration developed by WALGA. Such commitment has been critical in demonstrating the leadership required to ensure climate change remains a focus beyond the short term and better enable longer term initiatives and programs to create momentum rather than be abandoned after an initial phase.

To successfully limit the impacts of climate change, it is clear that all tiers of government and sectors of the community have a role to play. Where the City has been most successful in addressing climate change related issues is where it has formed partnerships with other stakeholders. This includes:

- partnership with eight other local governments to form the Peron Naturaliste Partnership addressing coastal climate change issues at a regional level,
- collaboration with Western Power to implement a community battery bank and demonstrate the potential of state managed micro-grids,
- partnership with Murdoch University, DFES and DBCA to undertake research and development on improved techniques to manage fuel loads and biodiversity in peri-urban and urban communities through a proposed Australian Research Council project.

The City sees more opportunity to partner with State Government to address climate change related issues which are described further in this submission.

The State Government has an opportunity to show strong leadership in addressing climate change via commitment and partnership. This is becoming increasingly important as the climate change issue becomes more sensationalised and divisive amongst our community. The City encourages the State Government to consider making and leading commitments such as the State of Victoria's Take 2 pledge, a platform that allows Victorian citizens, businesses, local governments, community groups and educational bodies to work collaboratively on climate change related issues with their State Government.

Recommendations:

- 1. That the State Government consider making a commitment to address climate change that reflects the urgency required as demonstrated by the evidence provided in the IPCC fifth assessment**
- 2. That the State Government consider implementing a platform such as the Take 2 pledge created by the State of Victoria to facilitate better partnerships between local government, private entities, educational facilities, community groups and individuals when addressing issues related to climate change**

Transforming Energy Generation

The electricity sector presents some of the more immediate and effective ways to mitigate climate change via decarbonisation of the industry. The sector is positioned well to make these changes compared with other sectors like agriculture, where decarbonisation proves more challenging. The history of the City's carbon profile also reflects this situation with investment in reducing emissions largely being directed towards renewable energy and energy efficiency projects such as solar photovoltaic installations, LED lighting retrofits and geothermal pool heating. This situation is also reflected in our community with Mandurah having one of the highest rates per household of solar power installations in the nation. Emission reduction targets should reflect this situation and as the state moves towards a net zero emission future by 2050, it should aim to have a net zero emission electricity sector much sooner.

One of the more immediate challenges Western Australia faces is the capability of the existing distribution network to cater for new technologies that assist in decarbonising the electricity sector. Associated regulatory processes also need urgent review to ensure outdated processes do not impede the implementation of viable and proven new clean energy projects.

For example, the City has partnered with Western Power to help demonstrate the potential of storage options via a community powerbank in Meadow Springs. This project presents a practical demonstration of how energy storage technology can be structured within the distribution network to complement the network rather than conflict with it. The City is partnering with Western Power again to install a larger community powerbank in Falcon and supports an expanded roll-out of this project across Mandurah as it will reduce the need for unsightly and expensive substation upgrades to address peak loading issues.

Entities, like the City of Mandurah, that manage multiple facilities on adjacent titles are in a position to emulate such projects and ease pressure of peak loading but currently electricity is not permitted to be transmitted physically across neighbouring lots and cannot be traded under current tariff structures. If these barriers were removed, such entities and other community initiatives could maximise the benefits of renewable energy production and energy efficient initiatives and be better placed to support the State Government decarbonise the electricity sector.

The City acknowledges that the State Government has brought in a number of changes already to cater for new energy efficient technologies such as the LED streetlight tariff. Electricity consumption via streetlighting represents the City's largest source of carbon emissions. The new tariff provides

economic validity to the City investing in retrofitting current streetlights with LEDs. However, as the majority of streetlight assets are owned by Western Power, local governments are not in a position to retrofit with LEDs without considerable support. In order to make informed decisions to invest in LED streetlights, local governments require Western Power to provide costs for installation and timeframes for when they can complete works. Until this is provided the LED streetlight tariffs remain largely inaccessible to Local Governments. The City also believes that electricity supply for its streetlighting should be contestable, allowing local governments to negotiate better pricing via competition in the market place.

Opportunities to decarbonise its electricity demand using new innovative technologies are frequently being presented and identified by the City. For example, the City is currently investigating the feasibility of providing heating, ventilation and air cooling services (HVAC) via a shared plant room to three of its largest consuming facilities in the Mandurah cultural precinct. However, navigating through the suite of regulations and approvals required to develop and implement such technologies can be cumbersome and at times contradictory. This can sometimes determine whether initiatives are pursued or not. In the interest of fast-tracking a decarbonised electricity sector, the State Government could assist by providing a single body that provides guidance when entities such as the City are testing the feasibility of new technologies. This body would also be ideally placed to identify where current regulations are proving to become an obstacle to the implementation of and energy efficiency projects and thus better enable policy reform and regulatory review.

Recommendations:

- 1. That the State Government consider removing land tenure and tariff structure barriers preventing electricity to be transmitted and traded across neighbouring lots.**
- 2. That the State Government (via Western Power), as a matter of priority, develop and issue clear costings and increase capabilities for retrofitting streetlights with LED technology under the recently introduced tariffs and consider making electricity supply for streetlights contestable.**
- 3. That the State Government consider developing a single body to provide guidance on regulatory requirements for entities developing and testing the feasibility of medium and large-scale renewable and energy efficiency projects.**

Industry Innovation/Regional Prosperity

The City believes one of the more effective ways to foster clean industries and technologies in Western Australia is to promote public and private sector investment. Current examples of incentivising industry investment include the *Renewable Hydrogen Strategy*, the *Future Battery Industries Strategy* and the *Energy Transformation Strategy*, whereby the State Government offers seed funding to stimulate private sector investment in emerging clean energy sectors in Western Australia.

Agri-innovation precincts also provide opportunities to promote regional prosperity, address food security and revolutionise carbon-intensive and climate sensitive agricultural practices. Agricultural industries such as aquaculture and aquaponics offer significant potential for communities to not only become less carbon-intensive but also adapt to a climate that is making current agricultural practices less economically and environmentally viable.

Development of such industries offer great opportunities to regions struggling with high rates of unemployment and low economic growth. The City, through its economic development partnership with the Shire of Murray, 'Mandurah and Murray: a Shared Economic Future', is seeking to attract emerging and innovative industries to the Peel region to be located in the 1000 hectare Peel Business Park (Transform Peel), including an Agri-Innovation precinct. The business park is conveniently located within an hour of the Perth CBD and has established population centres in close proximity that can provide a ready workforce for these industries.

The State Government can play a significant role in helping attract innovative and emerging industries to the Peel region and Transform Peel, providing an opportunity to showcase and support WA industry innovation, coupled with a commitment to addressing climate change in regional Western Australia.

Recommendations:

- 1. That the State Government, via the Mandurah/Murray economic development partnership, supports and promotes Mandurah and Murray's endeavours to attract innovative and emerging industries to the Peel Region and Transform Peel.**

Future Mobility

The future of transport in Western Australia presents a number of exciting opportunities and challenges to the State and local governments that are further complicated by a changing climate and growing population. The City advocates for the development of strategic centres around the Perth and Peel regions that are complemented with the provision of an integrated movement network with strategies to ensure that all forms of transport are catered for. The domination of private vehicle use in our transport mix needs to be addressed as urban density increases and more effort is required to ensure public transport and cycling become more utilised means of transport.

The City believes Mandurah presents a number of advantages for the State Government if it were to be established as a strategic centre. These advantages include:

- Being focussed in a relatively compact location with the urban form and grid pattern street network providing a great base to adapt to change
- Is sufficient distance from the Perth CBD so as not to be overshadowed
- Has access to a large pool of labour and population base
- Has the required amenity via its estuary, canals, beaches and Mandurah Ocean Marina

To complement the development of strategic centres across the Perth and Peel regions, the City believes that high frequency street based transit systems, such as trackless trams, will present a fitting solution to transport needs as urban density increases. For the Mandurah strategic centre, a system would ideally service the central Mandurah area with connections to the Peel Health campus, Halls Head Town Centre, Halls Head beach precinct and along Mandurah Terrace north of Peel street).

Private vehicles will still play a key role in the transport mix. The City sees a role for state and local governments to support provision of essential infrastructure for future vehicles using non-carbon sources for fuel like electric vehicles and hydrogen fuel cells. Provision of this infrastructure will help give potential buyers of these vehicles the confidence to purchase and in turn reduce emissions from the transport sector. One element of the role for government is to advocate for and support development of a national standard for electric vehicle charging infrastructure. There are several non-compatible arrangements currently available and being utilised for charging stations, which creates a barrier for consumers who become uncertain about the ability to charge an electric vehicle model at public charging stations.

Recommendations:

- 1. That the State Government consider investment in Mandurah with the intent to establish it as a strategic centre for the Perth and Peel regions.**
- 2. That the State Government consider development of a high frequency street based transit system servicing the Mandurah area including connections to key nodes in the surrounding area.**
- 3. That the State Government support and advocate for the federal government to develop national standardisation for Electric Vehicle charging infrastructure.**

Waste Reduction

The City has been actively investigating new solutions to the issue of waste management and associated greenhouse gas emissions primarily through its membership in the Rivers Regional Council whose membership consists of six local government authorities. Rivers Regional Council have partnered with a further two other local government areas, private industry and private investment firms to deliver a Waste to Energy facility in Kwinana, expected to become fully operational by the end of 2021. The City believes this \$675 million project has the ability to demonstrate a viable solution to the waste related issues raised in the *Climate Change in Western Australia* issues paper that is able to be implemented within the urgent timeframe required.

A full business case for the Waste to Energy project demonstrating feasibility has been produced and all required environmental approvals have been granted. In summary the major benefits this individual project are expected to deliver include:

- 400,000 tonnes of waste to be diverted from landfill
- Reduction of 400,000 tonnes of carbon dioxide emissions per year
- 36MW of baseload energy provided
- 800 jobs created during construction of the facility and 60 ongoing positions created once the facility is operational

The City is concerned that the State Governments target to ensure a three-bin system is provided by all Perth and Peel local governments will significantly threaten the viability of the Waste to Energy project. Contracts have been signed by the eight local governments committing post-recycling waste streams to the Waste to Energy project for a period of 20 years. The viability of the project relies on this guaranteed provision of waste (feedstock) into the plant.

Furthermore, the City has significant doubts as to whether a three-bin system does actually provide a viable solution to the climate change/waste management related issues that are resolved by Waste to Energy. These concerns include:

- Emissions that will be generated by providing the three-bin system outside of the composting of waste. For instance, a third truck will be required to collect and transport waste in the third bin. The emissions resulting from burning fuel from the truck will be significant. The waste material collected is also likely to require cleaning and sorting processes to avoid producing a contaminated compost product. These processes will be an additional source of emissions.
- The three-bin system will produce a large quantity of compost material. However, the demand for such a quantity of this product is uncertain. Without any certainty for the destination of this product, the three-bin system is at risk of becoming an expensive and largely ineffective waste treatment option. It stands to reason that compost unable to be used will instead be destined for the Waste to Energy plant, resulting in inefficient use of transporting and processing resources
- The Waste to Energy project is estimated to increase the annual household charge by approximately \$75 per annum. This is comparative to the landfill levy applied to using landfill premises in the metropolitan region. The City expects the cost of employing a three-bin system to cost each household approximately \$80 per annum. However, unlike waste to energy, this cost will be additional to current costs related to waste, not in replacement of.

It is the City's recommendation that the state not move pre-emptively by mandating all Perth and Peel local governments provide a three-bin system until an adequate business case has been developed. That business case should ideally demonstrate clear advantages to composting over Waste to Energy before ranking it as a preferred approach.

However, the City considers Waste to Energy to represent the immediate and effective solution to waste related issues and believes this should be reflected in the State Waste Strategy. With regard to climate change, the City agrees that development of a circular economy is critical and that this is

ultimately measured by consumption of raw materials. The power that can be generated by Waste to Energy will significantly reduce the demand for raw materials like coal and gas currently relied upon to produce electricity, the consumption of which is the primary cause of climate change. Thus Waste to Energy should also be considered as a demonstration of circular economy.

Recommendations:

- 1. That the State develops a comprehensive business case to demonstrate clear benefits of the three-bin system over Waste to Energy before mandating Perth and Peel local governments provide this service.**
- 2. That the State consider Waste to Energy as the most ready and effective action currently available to address climate change/waste management issues and acknowledge this in the State Waste Strategy**

Safe and Healthy Communities

The Peel Community Development Group publications *Peel Away the Mask* and *Peel Away the Mask II* provide a comprehensive statistical analysis that outlines the concerning extent to which the Mandurah community and broader Peel community are experiencing social disadvantage. In relevance to climate change, it is the socially disadvantaged that will experience the most impact amongst our community and so the City believes it is of utmost importance to ensure efforts to address climate change are focused on protecting vulnerable demographics. The City acknowledges the benefits currently experienced through partnership with State Government via the Peel Mosquito Management Group and the push to create urban canopy strategies and curb urban heat island effects (discussed further under Liveable communities).

The Disaster Recovery Funding Arrangements Western Australia (DRFAWA) provide funding assistance to local governments for essential public assets that have been damaged in an eligible disaster. Current arrangements do not allow for 'betterment' of an asset whilst undergoing repairs of a disaster and DRFAWA will only fund the cost of reinstating the asset to its original form. However, climate change will exacerbate and increase the incidence and likelihood of natural disasters and as such infrastructure there is a need for infrastructure to be upgraded in order to increase its resiliency.

Recommendations:

- 1. That the State Government allow for betterment of assets under the Disaster Recovery Funding Arrangements Western Australia so that adaptation measures can be incorporated.**

Water Security

Securing sustainable water resources to provide essential services to communities is becoming more and more difficult for local government authorities to realise as the climate continues to become drier and demand for water increases.

Demands for water are typically overcoming the capacity of traditional sources accessed by local government and so the need to secure alternative sources in order to provide essential community services is mounting. This is most evident in newly developed urban spaces where the requirement to create important community infrastructure that consumes large quantities of water, such as green playing fields, is constrained by a lack of available water.

For communities positioned on the Swan Coastal Plain where geology is characterised by deep sandy soils with large aquifers, water recycling through managed aquifer recharge presents a method of water recycling that is generally accepted by communities and is relatively cost effective as an alternative resource. Managed aquifer recharge involves the primary and secondary treatment of wastewater before infiltrating the water into a superficial aquifer and allowing natural processes to treat the water further so that it can be abstracted at a later date when it is fit-for-purpose and suitable for most irrigation purposes. Managed aquifer recharge also has the associated benefits of

preventing saline intrusion from coastal waterbodies and adjacent saline aquifers into the freshwater aquifer by maintaining and improving the aquifers freshwater lens. It can also be used to ensure access to the water table by vegetation and groundwater dependent wetlands and so helps protect the urban canopy and biodiversity.

The City has been involved in the implementation of two relatively small-scale managed aquifer recharge projects, including the award-winning Ocean Road Managed Aquifer Recharge scheme in Dawesville. At this site, treated wastewater from the Caddadup Wastewater Treatment Plant is infiltrated into the superficial aquifer and has allowed sustainable groundwater abstraction to occur in the order of 120 ML per annum. This extra water provision has allowed for the irrigation of the 2 hectare Ocean Road Active Reserve as well as the 1 hectare grounds of two nearby primary schools. The project was approximately 25% of the cost of providing a tertiary water treatment plant and provides water at a quarter of the cost of potable scheme water.

In Mandurah's northern suburbs there is an opportunity to realise the benefits of managed aquifer recharge even further. Approximately 200 hectares of public open space is irrigated primarily from sources of groundwater and with the rapidly growing suburbs of Lakelands and Madora Bay, the pressure on this water source is increasing. The nearby Gordon Road Wastewater Treatment Plant currently provides wastewater for a small-scale managed aquifer recharge scheme at around 88 ML per annum. Yet the plant treats enough wastewater to easily provide water (currently 3.8 Gegalitres per annum) for all of North Mandurah's irrigation needs if this managed aquifer recharge scheme was expanded.

The City has commissioned a study to demonstrate the feasibility of managed aquifer recharge at this scale and is currently preparing configuration and design of a North Mandurah Wastewater Reuse Scheme. It is anticipated that a scheme of this scale will require significant capital investment. Current estimates are in the order of \$12 million. A number of statutory approvals and agreements will also be required to provide appropriate governance of this new water resource. Thus the City requires partnership with the State Government in order to successfully implement this large-scale managed aquifer recharge scheme and realise another opportunity to address the issues presented by climate change

Recommendation:

- 1. That the State Governments formally partner with the City to deliver the North Mandurah Wastewater Re-use project, including provision of required statutory approvals and permits and contribution of capital funding**

Liveable Towns and Cities

In Mandurah, increasing heat island effect is the most immediate impact of Climate Change affecting liveability. Rising temperatures are exacerbated by current rate of permanent tree canopy loss and increasing impermeable-surface area. In particular, research has confirmed a greater vulnerability of the aged, already sick and low socio-economic demographic, without mobility or access to 'green spaces' which otherwise offer a reprieve and alternative to cost-prohibitive air-conditioning or water use.

The City of Mandurah sought baseline data to characterise and detect changes in Canopy Cover and Land Surface Temperature (LST) between 2007 and 2016, using Remote Sensing techniques such as Thermal Imagery. Results showed temperatures are uniquely moderated in Mandurah by surrounding water bodies, yet the community is already experiencing urban heat island effect within some localities. For example, a recently developed suburb with no real opportunity for vegetation replacement, had a LST of close to 50°C in 2016. Whereas results showed a trend of ~0.5°C fall in LST for every 10% increase in canopy cover (up to 60%), favouring older suburbs with larger blocks accommodating mature trees.

The City has long had a solutions-based approach to retaining and enhancing Mandurah's urban forest. Examples include:

- Preserving trees on private property via a Significant Tree Register and provisions with the Town Planning Scheme for particular 'Tree Preservation Areas'
- Street Tree Audit and development of Locality Street Tree Masterplan to better inform the existing annual street tree planting and community street tree request programs
- Annual planting into parks and reserves, including with school groups and communities
- Plant giveaways for households and/or water-wise verge makeover program
- Supporting research partnerships on Urban Tree Health and similar

As a result, *total average* canopy cover in Mandurah has increased by 5.7% to 19%, however this is expected to reverse. As density within cities and suburbs increases, opportunities for the retention or replacement of vegetation become more limited. For example, within Central Mandurah there is only 9.5% canopy cover remaining, almost half (47.9%) of which is located within private property. Central Mandurah has been identified for infill development and it is anticipated that that significant loss to canopy cover will result. Smaller outdoor living areas and limited communal landscaping means there is no ability to replace this loss.

There is an increasing reliance on public spaces to provide canopy cover. However, Public Open Space now needs to cater for passive and active recreation, vegetation and habitat retention, drainage and infrastructure provision. The 10% open space requirement is outdated and disproportionate to the increasing demands on these spaces. Similarly, road reserve widths have been decreasing yet still need to provide for infrastructure and services, footpaths, road pavement and lighting. Increasingly, verges are unable to support even a small tree.

The key limitation for Local Governments is that there is no legislation supporting the Urban Forest Strategies or equivalent that they are currently being encouraged to develop; and tree retention on private property is not in any way endorsed at a state level. Mandurah's 'Tree Preservation' provisions have proven difficult to enforce and it is not uncommon for the City's development conditions to be appealed and ultimately overturned in SAT.

Recommendations:

- 1. That the State Government develops legislative provisions for tree retention (including on private property where appropriate) and urban forest strategies.**
- 2. That the State Government reviews and increases the minimum Public Open Space requirements, particularly in high density or in-fill development precincts.**

Resilient Infrastructure and Businesses

The coastline of Mandurah has been identified as one of the most vulnerable coastlines in the country with regard to coastal impacts related to climate change and sea level rise. The City has commissioned various studies independently and through the Peron Naturaliste Partnership to better quantify the risks it is presented with because of sea level rise and to identify the best approaches to mitigate these risks.

One of the limitations of these studies and coastal management in Mandurah has been the uncertainty around ownership of coastal assets and associated legal liability. The Productivity Commission inquiry into Barriers to Effective Climate Change Adaptation (2013) identified this uncertainty as a clear barrier. It also highlighted the advantages of applying a consistent approach to mitigating coastal risks across jurisdictions. These include increased cost-effectiveness and reduced potential of obligations deriving from federal, state and local government legislation and regulations to be conflicting.

The Western Australian legislature does not provide local government with an indemnity if it acts 'in good faith' when considering developments in coastal areas. The New South Wales legislature has taken action to protect local government with Section 733 of the *Local Government Act 1993 (NSW)* 'Exemption from liability—flood liable land, land subject to risk of bush fire and land in coastal zone'

limiting the liability of local governments in respect of damage caused by bush fire, flooding, or damage to land in coastal zones.

The State Government has recently addressed some of the uncertainty around public and private responsibilities via the WA Coastal Zone Strategy (2017) and the Coastal Hazard Risk Management Adaptation Plan or CHRMAP Guidelines (2019). But further clarification around the legal liability of councils with respect to climate change adaptation matters and the processes required to manage that liability is sought.

Local governments are devoting significant resources to development and implementation of CHRMAP's and the City is currently developing a CHRMAP for its coastline, focusing on Mandurah's northern beaches, identified as a hotspot for coastal vulnerability. Funding has been received from the State Government to help develop this CHRMAP, however additional funding support will likely be required in order to implement it. The State Government's level of investment in coastal management and protection is significantly less than other states and is not commensurate with the risks being faced along our coastline. The existing Coastal Adaptation and Protection grants (Department of Transport), Coastal Management Plan Assistance Program and CoastWest grants (Western Australian Planning Commission), which had funding totalling \$1.6 million in 2019, has been oversubscribed for a number of years.

The State Government should consider combining these programs into one and raising the total capacity of total funding to ensure adequate and ongoing resourcing is available for local governments to develop and implement CHRMAP's. An example of such a program is the Queensland Government's QCoast 2100 program. QCoast 2100 provides funding, tools and technical support to enable all Queensland coastal local governments to progress the preparation of plans and strategies to address climate change related coastal hazard risks over the long-term.

Unlike other states such as New South Wales, South Australia, Victoria and Queensland there is currently no coastal management legislation in Western Australia. Statutory guidance is provided via SPP 2.6, however, a Coastal Management Act would establish a strategic framework and define and establish the principles, objectives and actions, including roles and responsibilities for integrated coastal zone management. The adoption of such legislation would support a consistent and coordinated approach to the development and implementation of CHRMAPs, which has been and continues to be an issue in Western Australia.

Recommendations:

- 1. That the State Government consider amending Part 9, Division 4 of the Local Government Act 1995 (Protection from liability) to limit the liability of local governments with regard to flooding, erosion and other related consequences of climate change in coastal areas.**
- 2. That the State Government consider combining existing coastal management funding programs and increasing total funding available to local governments for coastal management.**
- 3. That the State Government considers developing specific coastal management legislation that supports the principles of integrated coastal zone management.**

Protecting Biodiversity

Mandurah is located within the Swan Coastal plain and South West Biodiversity Hotspot, defined as 'where exceptional concentrations of endemic species are undergoing exceptional loss of habitat'. Locally, multiple Threatened Ecological Communities, Declared Rare Flora and Threatened [fauna] Species occur, as listed under state and federal legislation. Some of these species are 'critically endangered', the highest conservation classification in Australia. There are also a number of species considered locally extinct or on the brink of local extinction.

Climate change will increasingly exacerbate the existing threats to Mandurah's biodiversity that can be categorised as pertaining to either matters of 'land use and development planning' or 'environmental management'. Key examples include fragmentation or loss of suitable habitat to clearing for urban development; changes to groundwater use and landscape hydrology; changing and inappropriate fire regimes; and increasing key threatening processes such as weed and disease introduction, or predation and damage caused by pest animals.

The City of Mandurah is committed to protecting biodiversity at a local level by closely managing more than 1000ha in natural reserves and via a number of strategic mechanisms, such as a Bushland Buyback Scheme. Introduced in 2003, an annual budget is set aside for the City to have funds available to purchase remnant vegetation that meets a criteria and is otherwise at risk of loss through development. So far, the City has purchased four sites of high conservation value and is almost halfway to its target of 150ha in bushland purchases. The City invests in the protection of these local environmental assets with a maintenance budget over \$1 million per annum.

The City believes the most important greatest environmental asset in the Peel region is the Peel-Yalgorup wetland system. In 1990, the 26,000 hectare site was designated a 'wetland of international importance' under the Ramsar Convention on Wetlands. Since that time, sustained high rates of population growth have placed increasing pressure on the Peel-Yalgorup System.

In response, the City of Mandurah has sought the implementation of a State-resourced governance structure for the Peel-Yalgorup Wetland System. A key role of this structure would be to purchase and rehabilitate undeveloped and degraded fringing areas surrounding the estuarine water bodies, including grazing land, tributaries and adjoining wetlands. In addition there are many Unallocated Crown Land (UCL) land parcels fringing the estuary, put aside originally to form part of the Peel Regional Park concept originating in the 1990s, that have had limited management. These UCL parcels should be converted into conservation reserves and be complemented with appropriate resourcing for land management to halt ongoing degradation.

At the 2013 State Election, the State Government pledged to create a 'Peel-Harvey Estuary Management Committee', which was to incorporate the Departments of Planning, Water, Environment, and Agriculture.

In December 2015, the draft Strategic Assessment for the Perth and Peel (SAPPR) was released for public comment. Following feedback received and the change in government it is being comprehensively reviewed. However in Draft Action Plan H: Conservation Plan, a commitment to the establishment of the Peel Regional Park and marine management area was indicated. Funding of associated priority conservation programs would provide improved protection and management of the Peel-Harvey estuary and broader Peel-Yalgorup wetland system.

According to the plan, the Peel Regional Park will consist of a network of land based reserves under the CALM Act, areas reserved as Regional Open Space under the Peel Region Scheme and a marine management area over the Peel-Harvey estuary and its tributaries. The park will include approximately 7,800 hectares of land surrounding the Peel Inlet and Harvey Estuary, as well as a marine management area of approximately 14,100 hectares over the estuary and waterways themselves.

To improve alignment between the Peel Regional Park and Peel-Yalgorup Ramsar site boundary it is proposed that State agencies will work with the Commonwealth Department of Environment to extend the Ramsar site boundary to include the Serpentine River and associated wetlands of Goegrup and Black lakes.

The City supported the SAPPR in principle, in particular, proactive consideration of how significant environmental and heritage values and matters of national significance (MNES) can best be protected while accommodating sustainable development and the needs of a growing city. The state government suspended the work to allow for a critical review and it has not since been re-activated. As a result, case-by-case assessment of development (largely proponent-led), fails to consider

cumulative impact on remaining biodiversity; and opportunities for strategic land acquisition are being missed.

Recommendations:

- 1. That the State Government supports and uphold the establishment and resourcing of the Peel Regional Park as described in the Draft Strategic Assessment for the Perth and Peel.**
- 2. That the State Government creates a clear governance structure for Peel waterways management.**
- 3. That the State Government reinvests in the SAPPR or similar to identify key values to be retained in order to protect remaining vital biodiversity**

Strengthening Adaptive Capacity

The City identifies an urgent need to strengthen Western Australia's adaptive capacity. The impacts of climate change are apparent to the City today and this is not an issue that we only need to be prepared for in the future. Lowered annual rainfall, more extreme heat events and more intense coastal erosion and inundation have required the City to adapt to a changing climate already. As mentioned previously, the City has been most successful in these endeavours when they are done via partnership with different government entities and our community.

Perhaps the best example of this is the Peron Naturaliste Partnership (PNP), a now incorporated body whose membership consists of nine local governments that manage coastal and estuarine foreshore areas from Point Peron to Cape Naturaliste. The partnership was initially in response to a federal government assessment of coastal climate change risk that identified the coast between Rockingham and Busselton as one of the most threatened coastlines in Australia. Since that time the partnership has become a highly credible example of regional collaboration on coastal climate change issues, well regarded across the country. The partnership has helped attract over \$1 million in external funding for coastal management projects, has won numerous national awards and via advocacy, has made significant contributions to the development of state and federal policies related to coastal management, including State Planning Policy (SPP) 2.6 and the development of Coastal Hazard Risk Management Adaptation Plan (CHRMAP) guidelines.

There are other examples of such partnerships occurring in Western Australia, however, most have formed because of an initial grant for a project and then typically dissolve after the project has been finalised. The success of the PNP has been largely due to continued membership contributions in order to maintain basic operations and ensure PNP continues to be ideally placed to support adaptive capacity for its community. The State Government can help strengthen Western Australia's adaptive capacity by supporting partnerships such as the PNP with funding designed to increase their capacity beyond delivery of an initial project.

Recommendation:

- 1. That the State Government consider providing financial support to relevant partnerships addressing climate change impacts, in order for partnerships to develop momentum and persist beyond delivery of an initial project.**

Conclusion

The issues related to climate change present the greatest challenge to the City of Mandurah and the functions it performs. Whilst the City is proud of its achievements in this space to date, it acknowledges that even greater achievements are required before it could be considered that these issues are effectively addressed.

The City appreciates a single entity cannot address climate change effectively in isolation and is encouraged by the renewed interest at the state level. To this end, the City seeks further discussion with State Government on the points raised in this submission. Enquiries should be directed to:

ceo@mandurah.wa.gov.au

or

Attn: Chief Executive Officer
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