Biodiversity Management Plan 2016 - 2020

This Plan has been prepared by Council staff with valued input from the business sector, community groups, local schools, NGOs, Elected Members and State Government agencies. The research phase was assisted by SEED Consulting Services Pty Ltd.

The City of Port Adelaide Enfield acknowledges that we are in the traditional country of the Kaurna people of the Adelaide Plains. We recognise and respect their cultural heritage, beliefs and relationship with the land. We acknowledge they are of continuing importance to the Kaurna people living today.

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Executive Summary

The purpose of the Biodiversity Management Plan 2016 - 2020 is to address the locally significant biodiversity challenges faced by the City of Port Adelaide Enfield (PAE) and to provide a management platform for the maintenance, restoration and enhancement of biodiversity at the local, and in some cases regional scale. The Plan focuses on indigenous vegetation and native animal protection, reserve and street tree enhancement, and specific ecosystem and habitat restoration, where PAE Council can play a role.

Local Government is uniquely positioned to take a leading role in biodiversity management, which can have positive implications for natural resources regionally. The value of biodiversity influences natural and human processes in nearby regions. Accordingly, the Plan includes actions for Council to collaborate with educational organisations, Local, State and Federal Government agencies, and community groups, to deliver projects that address issues identified through the community consultation and scientific research that has been undertaken to develop this Plan.

The Plan is a 4 year Plan that is designed to provide a variety of "best practice" biodiversity conservation management directions, including community programs and support that work together toward improving the status of natural resources within the Council area. The Management Plan includes the major priorities and strategies to be addressed over the 4 year period, and the Plan's activities are linked to Council's long term financial planning process.

The key Biodiversity Management Plan strategies are:-

- Monitor, map and analyse biodiversity condition to inform decision making
- Manage Council's public open spaces to maintain, restore and enhance biodiversity value
- Develop partnerships to respond to changes in land use development and climate change

The Management Plan targets are:

Target 1: *Bushland Condition Monitoring* ***(****BCM) - Biodiversity ecosystem ratings for terrestrial, riparian and coastal sites are maintained or improved from current 2015 levels.*

Target 2: *Improvement in conservation prospects for native flora and fauna (coastal, terrestrial and aquatic) from current levels.*

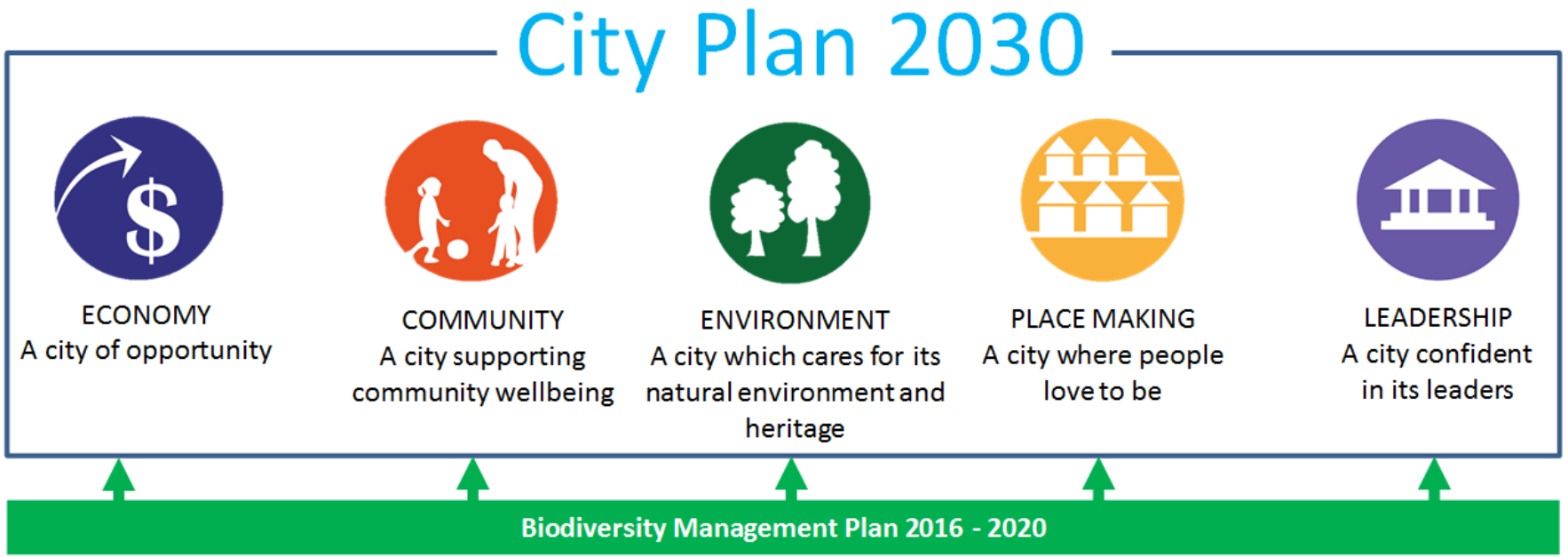
Target 3: *Increase participation in community natural resources management activities by 50% from current levels.*

The overall Environment Strategy for the City of Port Adelaide Enfield recommended that the City's Biodiversity Management Plan be reviewed and updated, to provide strategic and organisational direction in regards to Council's approach to biodiversity management, and to build on the previous Biodiversity Management Plan 2009 - 2014 where relevant.

The Plan aims to meet the requirements of the relevant goals and objectives of the **Council's City Plan 2030.**

Biodiversity Management Plan 2016 - 2020

"Work in partnership to improve Biodiversity value across the City"



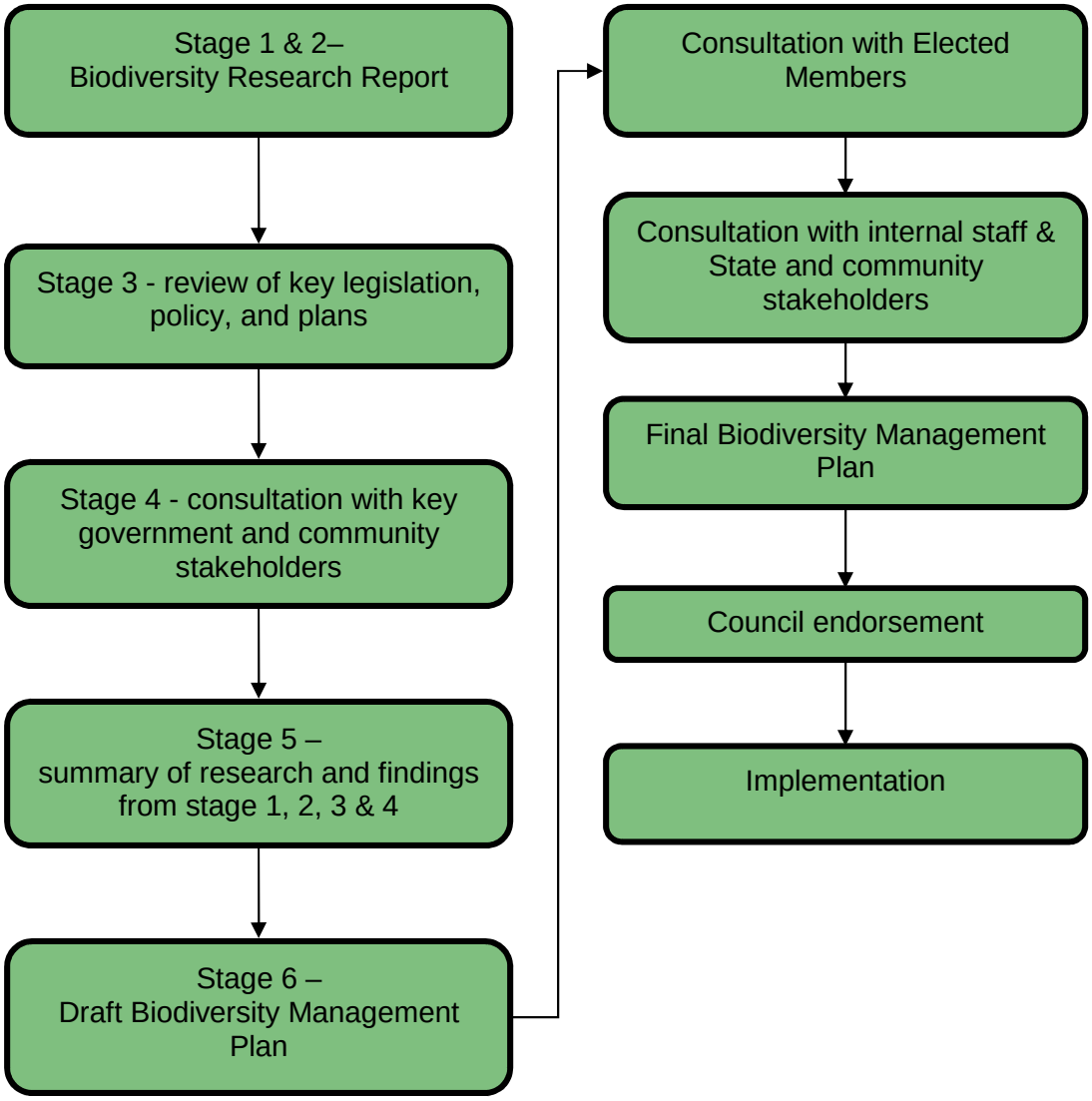
STRATEGIES

Monitor, map and analyse biodiversity condition to inform decision making

Manage Council's public open space to maintain, restore and enhance biodiversity value

Develop partnerships to respond to changes in land use development and climate change

The process for the preparation of the Biodiversity Management Plan



Some of the key recommendations from the biodiversity research include:

- Incorporating measurable targets in Plan strategies, and implementing an adaptive monitoring and evaluation strategy to assess the Plan's progress;
- Ensuring consistency in monitoring of existing Bushland Condition Monitoring sites (BCM) and adding additional sites, as well as expanded survey approaches;
- Monitoring climate change variables;

- Improving metadata and creating additional, spatial datasets to facilitate decision-making, and to track actions and outcomes; and

- Addressing key threatening processes.

Some of the key recommendations from the Biodiversity Management Plan consultation process included the following:-

- A priority focus should be on communicating, networking and sharing knowledge and activities to help promote and achieve biodiversity management actions across multiple organisations and organisational boundaries.

- Establish clear and open communication links with agencies and developers involved in major development projects, in order to work together to reduce impacts on biodiversity as a result of the development works and ongoing use and maintenance of the infrastructure.

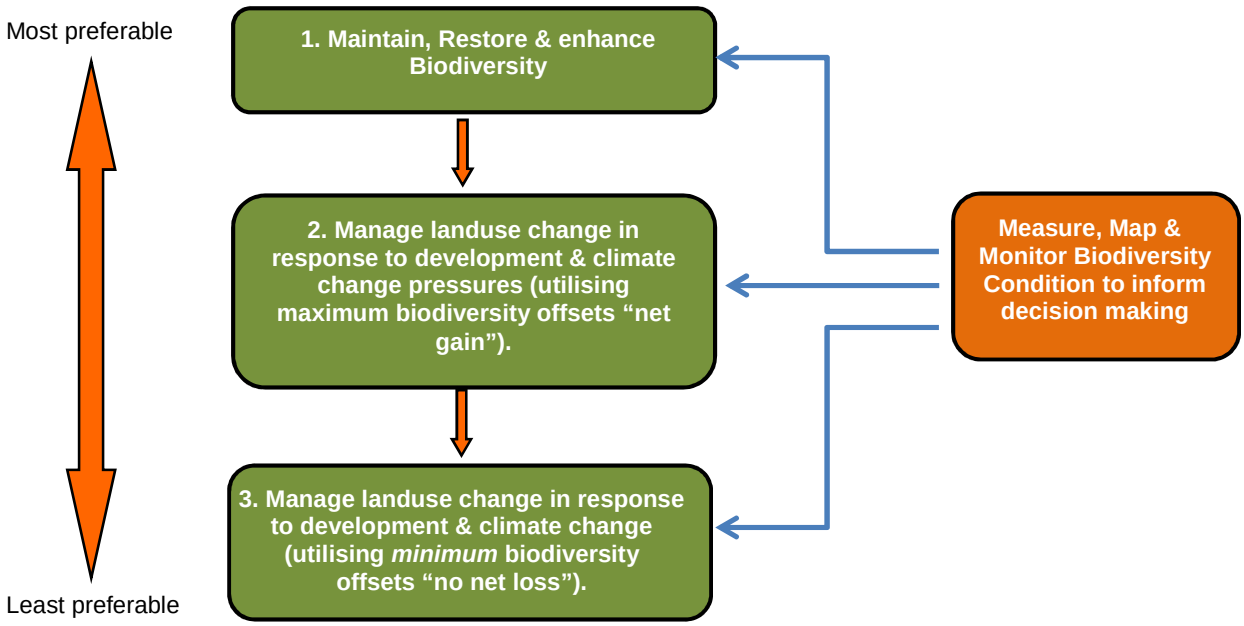
- Additional monitoring sites should be considered in the CPAE's existing BCM monitoring sites program. Doing so will assist in building a more comprehensive understanding of the current biodiversity and monitoring the success of management actions.

- All Biodiversity management actions should carefully consider the impacts of actions on ecosystems occurring adjacent to the CPAE region, and in the broader landscape and seascape. In particular, the impacts of terrestrial and aquatic management actions on the biodiversity of adjacent marine and island areas (e.g. Inner Port River, Barker Inlet, Outer Harbor, Torrens Island and Gulf St Vincent).

- In addition to the BCM sites, it is recommended that other possible avenues for future research could include; vegetation re-establishment and retreat opportunities for coastal and estuarine vegetation communities; "living shorelines" as an option for addressing levee bank stabilisation (especially at and near Mutton Cove); and monitoring of threatened coastal and migratory bird and other species along sand dunes and in wetland areas.

Biodiversity Management Priorities

The below mitigation hierarchy diagram indicates the preferred approaches to Biodiversity Management, scaled from 'most' to 'least' preferred options to minimise the City's biodiversity degradation and restore value.



The Biodiversity Management Mitigation Hierarchy (BMMH) is focused on describing the 'most favourable' to 'least favourable' approaches to biodiversity management in the City.

Note: In Management Option 2. A 'net gain' means that biodiversity gains exceed a specific set of biodiversity losses.

In Management Option 3. (least preferred) Biodiversity offset 'no net loss' is defined as the point where biodiversity gains from targeted conservation activities match the losses of biodiversity due to the impacts of a specific development project, so that there is no net reduction overall in the type, amount and condition (or quality) of biodiversity over space and time.

The BMMH approach is commonly used in the USA, and the similar approach in Australia is often known as "environment or biodiversity offsets". The SA State Government Biodiversity Offset policies (DPTI 2015) are valuable reference documents, and any guidelines that Council develop in relation to offsets will consider how they can best integrate with these policies. It is understood that in many biodiversity management decision-making cases, Council will have no other option but to select the least preferable hierarchy approach due to various

constraints, however all other mitigation approaches should be considered before a decision is finalised.

Each decision-making approach indicated in the above hierarchy is important in its own right, and needs to be administered in the most efficient manner in liaison with other stakeholders. Therefore, this Plan has consolidated these four different approaches into three key biodiversity management strategies. Each strategy provides an overall context, strategic purpose and an action plan that indicate:

- Biodiversity activities that support the City's Environment Strategy
- Tasks and associated responsibility, stakeholders, budget and timeframe required to undertake the tasks.

Each budget will be incorporated into Council's financial business planning processes, where required.

Figure 1: Re-vegetation project undertaken at Dry Creek Reserve, City of Port Adelaide Enfield.

Outcome: Work in partnership to improve Biodiversity value across the City

Strategy 1:
To monitor, map and analyse biodiversity conditions to inform decision making

"Effective biodiversity monitoring is critical to evaluate, learn from, and ultimately improve conservation practice. Well-conceived, designed and implemented monitoring of biodiversity should: (i) deliver information on trends in key aspects of biodiversity (e.g. population changes); (ii) provide early warning of problems that might otherwise be difficult or expensive to reverse; (iii) generate quantifiable evidence of conservation successes (e.g. species recovery following management) and conservation failures; (iv) highlight ways to make management more effective; and (v) provide information on return on conservation investment" (Lindenmayer D. 2012).

One of Australia's Biodiversity Conservation Strategy 2010-2030 priorities is to measure biodiversity results through improving and sharing knowledge, delivering conservation initiatives efficiently, and implementing robust national monitoring, reporting and evaluation. The *Adelaide and Mount Lofty Ranges Natural Resources Strategic Plan* (AMLR NRM Board) acknowledges Monitoring, Evaluation, Reporting and Improvement (MERI) as a key element of the regional Strategic Plan, which identifies Local Government as a partner in the region to help address the NRM Plan's key drivers, including climate change, land management and change, economic impacts, and knowledge and capacity.

The City of Port Adelaide Enfield aim is to continue to enhance the long-term monitoring framework that was setup as part of the previous Biodiversity Management Plan. Council's aim for this Plan is to monitor the progress of our biodiversity programs, and map and analyse biodiversity asset values across Council. Council, in partnership with the State Government agencies, non-government and community groups, will be responsible for monitoring open space habitats in the City of Port Adelaide Enfield. The key elements that are included under **Strategy 1** are:-

- Utilising the Bushland Condition Monitoring (BCM) Framework.
- Undertaking regular Bushland Condition Monitoring at 2 or 3 additional sites within the Council area.
- Establishing a monitoring program that will record numbers of key fauna species, such as birds and reptiles.

- Establishing a monitoring program that will monitor biodiversity trends associated with Climate Change impacts (such as temperature).

- Utilising the i-Tree mapping methodology to assess tree values and help undertake better planning for reserves and streetscapes (refer to Biodiversity Management Plan Background Report).

- Utilising the GIS Geodatabase and upgrade when required.

- Identifying strategic opportunities for **sharing monitoring** results with other Councils, community organisations and State Government Agencies.

Monitoring will inform the overall investment in land and revegetation management and weed and pest control projects, that will provide Council with a reliable and meaningful baseline data set that will be used as a 'yard stick' to measure future progress. Monitoring results will also inform the review of the site-specific management plans.

Figure 2: *Pelecanus conspicillatus* Australian Pelican, City of Port Adelaide Enfield.

Outcome: Work in partnership to improve Biodiversity value across the City

Strategy 2: Manage Council's public open spaces to maintain, restore and enhance biodiversity value

Australia has an extraordinary diversity of plant and animal life which makes up our unique environment. Their survival is critical in supporting our future economic prosperity, productive capacity, and attractiveness as a tourist destination – as well as the core ecological sustainability that is integral to human systems. These species mark Australia's identity from any other country, but unfortunately many important species are disappearing at a rapid rate.

Australia's Biodiversity Conservation Strategy (Commonwealth) 'priorities for action' identifies three national priorities for action to assist in managing the decline in Australia's biodiversity. Below are two of the three management priorities:-

(1) Engaging all Australians in biodiversity conservation by:-
- 'Mainstreaming' biodiversity
- Increasing indigenous engagement
- Enhancing strategic investments and partnerships

(2) Building ecosystem resilience in a changing climate by:-
- Protecting diversity
- Maintaining and re-establishing ecosystem functions
- Reducing threats to biodiversity

The Adelaide and Mt. Lofty Ranges Natural Resources Management Board (AMLR NRM) is a primary State Government agency that takes a lead role in maintaining, restoring and enhancing urban biodiversity in metropolitan Adelaide. The AMLR NRM takes the lead role in coordination of urban forest conservation planning and action on public and private land across metropolitan Adelaide, including:-

- Identifying areas of high conservation significance and planning for protection work;
- Implementing on-ground restoration projects e.g. the Million Trees Program;
- Providing education, training and resources to improve biodiversity conservation practices; and
- Raising awareness and understanding of the importance of biodiversity.

The Regional NRM Plan takes a 'landscape' approach to biodiversity, and considers social and economic influences on the management of the AMLR

region's natural resources. It also provides more detail at a sub-regional level and identifies specific priorities for action within each sub-region. The priorities that are indicated in the NRM sub-regional plan that relate to the City of Port Adelaide Enfield are:

- Develop corridors to join green spaces and provide links between hills and coast, and along the length of the coast
- Take action to address historic impacts, manage current threats, and facilitate population increases to reverse species and ecological community declines
- Connect communities to their environment (both local and more remote)
- Manage the allocation and use of water resources to provide water for the environment and for sustainable use by industry (quantity)
- Reduce the impact of runoff from stormwater and priority watercourses on aquatic health, the coast and marine environment
- Develop an understanding of the connections between economics and the environment
- Encourage increased demand, and supply of, alternative water sources for fit-for-purpose uses (stormwater and recycled water)
- Facilitate integrated climate change adaptation of urban communities
- Protect urban watercourses for aquatic health and urban biodiversity outcomes (quality)
- Monitor for, and control, pests that have not yet become established in the region, or in the Metropolitan Adelaide subregion

Refer to the AMLR NRM Regional Report Part 2 for further information. (Available on the NRM Board's website).

The City of Port Adelaide Enfield's **Strategy 2** is to restore and rehabilitate landscapes to enhance our biodiversity, and the indigenous plant species that occur across all vegetation associations within the Council boundary. The Council contains a number of flora species classified as 'rare' in the Southern Lofty Region such as *Acacia cupularis* (Coast Umbrella Bush) and *Scaevola crassifolium* (Cushion Fan flower).The Barker Inlet and Port Adelaide River Estuary is the largest tidal inlet in Gulf St. Vincent and is highly significant to the State in ecological, cultural and economic terms. The Barker Inlet is comprised of the coastal estuary of the Port Adelaide River, and contains two islands (Torrens

Island and Garden Island). The Port waterways consist of the Port Adelaide River, North Arm, North Arm Creek, Angus Inlet and Barker Inlet.

The Barker Inlet and St Kilda wetlands have been identified as Wetlands of National Importance and encompass the coastal waters, fringing mangroves, tidal creeks and adjoining wetlands, and decommissioned salt fields from St Kilda to Outer Harbor. The sea grass and mangrove ecosystems of the Gulf St Vincent are of enormous ecological and economic importance, providing a basis for much of the region's commercial and regional fisheries. Mangroves play a vital role in storing carbon from the atmosphere and mangroves - including shallow water sea grasses - support a variety of juvenile fish and crustacean species.

Also the coastal and mangrove/estuary landscapes provide critically important habitats for local, migratory and wading birds that use the habitat for foraging, roosting and breeding. Many of these species are listed as 'significant' not only under State and Federal legislation, but also under a range of International agreements (see reference in *Biodiversity Management Plan – Background Report,* which contains a list of species and information on migratory birds)

There are significant opportunities for Council to extend and enhance natural vegetation areas, especially around existing remnant vegetation areas in the below areas and sites:

Significant open space area	**Management responsibility**
Dry Creek	City of Port Adelaide Enfield and City of Salisbury
River Torrens Linear Park	SA Water, AMLR NRM, and adjoining Councils
Folland Park (& buffer zone along cemetery)	City of Port Adelaide Enfield
Roy Amer Reserve	City of Port Adelaide Enfield
Barker Inlet Stormwater Wetlands	Renewal SA ; DPTI
Barker Inlet, Port River & Islands	DEWNR, DPTI, AMLR NRM; Renewal SA
Mangrove Park, New Port	City of Port Adelaide Enfield
Biodiversity Park, Osborne	Renewal SA
Largs Bay dunes	City of Port Adelaide Enfield ; DEWNR (Coast Protection Board (CPB)
North Haven dunes	City of Port Adelaide Enfield ; DEWNR (CPB)
R.B. Connolly Reserve	City of Port Adelaide Enfield
Semaphore south dunes	City of Port Adelaide Enfield ; DEWNR (CPB)
Taperoo dunes	City of Port Adelaide Enfield
Magazine Creek Stormwater Wetlands	City of Port Adelaide Enfield
Mutton Cove Conservation Reserve	DEWNR
Outer Harbour sites (North Mutton Cove)	DEWNR, Renewal SA
Range Stormwater Wetlands	City of Port Adelaide Enfield

Careful strategic planning is required in land use change and development activities, where alternative measures to enhance biodiversity could be possible,

such as the acquiring of additional land for open space and biodiversity enhancement purposes. Council, in partnership with State Government and non-government agencies, will contribute to maintaining, restoring and enhancing open space habitats in the City of Port Adelaide Enfield. The key themes that are included in Strategy 2 are:

- Developing biodiversity management programs and weed and pest maintenance schedules that strive to create landscapes more prepared for, and resilient to, climate change impacts.

- Increasing the capacity of revegetation projects across all Council-managed biodiversity areas and monitoring their success.

- Collaborating and liaising with community groups, non-government groups and government agencies as required in the development of biodiversity management programs.

Outcome: Work in partnership to improve Biodiversity value across the City

Strategy 3:
Develop partnerships in response to changes in land use, development, and climate change

"Climate change creates new challenges for biodiversity conservation. Species ranges and ecological dynamics are already responding to recent climate shifts, and current reserves will not continue to support all species they were designed to protect. These problems are exacerbated by other global changes" (Biological Conservation, 2009).

The City of Port Adelaide Enfield has a mix of naturally diverse landscapes consisting of mangrove and samphire, coastal dune systems along the coast, and inland areas consisting of dryer terrestrial landscapes. The Gillman area, including Range and Magazine Creek Wetlands, contains large areas of samphire, and is one of the most significant biodiversity value areas in the Adelaide region. These natural ecosystems are interspersed with abutting industrial and residential development that in many cases exacerbates the impacts of climate change on the surrounding biodiversity. All species will exhibit varied sensitivities to different climate hazards, depending on their physiological sensitivities, habitat requirements, and movement abilities. For example, sea level rise will result in a loss of dune habitats and with it, a loss of dependent flora and fauna species. The loss of mangrove or wetland communities will have significant implications for the diversity of flora and fauna species that requires these habitats for breeding and foraging, including some of the international migratory bird species (URPS, 2014).
Biodiversity in urban areas is also under extreme pressure due to development encroaching on the City's natural ecosystems. More than ever, there is a greater demand for our open spaces to provide a range of recreational, environmental and social benefits, partly due to increasing population and greater density of built form. Therefore, it is more important than ever to accommodate for changes in land use, particularly as they impact on biodiversity value. Undertaking adaptive contingency planning is essential to accommodate for changes, such as working with developers and DPTI to guide the establishment of efficient biodiversity offset projects.

"Natural resources have come under tremendous pressure and, in some cases, extreme threat from over-consumption and the encroachment of residential and industrial activities. The urban form needs to be more compact to avoid sprawl and the unnecessary expansion of residential and commercial activity into lands of environmental significance" (The 30 year Plan for Greater Adelaide).

The State Government has identified that plants, animals and micro-organisms will be especially affected by climate change as they have more difficulty adapting to large-scale rapid changes in climate, and experience increased competition with invasive species that proliferate and cause greater impacts due to climate change. Flowering and fruiting times have already changed in response to climate change, including year to year variation that creates the potential for misalignment with pollinators and grazers (AdaptWest Consultation Paper, 2015).

Adaptwest is a partner project between the Cities of Port Adelaide Enfield, Charles Sturt and West Torrens, the South Australian Government, and the Australian Government to develop a Regional Climate Change Action Plan for Western Adelaide. The Adaptwest project consists of three main tasks:

- **Preparing the evidence base** – Identifying regional values and key decisions with potential to be impacted by climate change, and gathering information to better understand these values, decisions and impacts;

- **Undertaking the integrated Vulnerability Assessment (IVA)** – Assessing the exposure, sensitivity and adaptive capacity of the region to understand vulnerabilities and opportunities presented by climate change; and

- **Preparing the Adaptation Plan** – Identifying priority areas of focus and adaptation options, developing adaptation pathway maps and determining key actions, roles and responsibilities, and implementation costs.

More information can be found on the Council website in regards to the AdaptWest coastal management, environment and open space research, which focuses on the assessment of the exposure, sensitivity and adaptive capacity of the region under climate change scenarios.

Figure 3: - Mixed *Halosarcia spp., Sclerostegia spp., Atriplex paludosa ssp., Sarcocornia app.* Low shrubland, Mutton Cove Recreational Reserve, City of Port Adelaide Enfield.

STRATEGY AND ACTIVITY TABLES

Strategy 1: To monitor, map and analyse biodiversity condition to inform decision making

Target 3: *Increase participation in community natural resources management activities by 50%.*

Activities	Tasks	Lead Department - (responsibility)	Support Department	Stakeholders	Budget	Timeframe
1.1 **i-tree Program -** Incorporate measuring, mapping and spatial vegetation analysis techniques when classifying asset and ecological values of biodiversity areas.	1.1.1 Review and update biodiversity geodatabase including i-tree canopy assessment results for future planning purposes.	City Development Manager	Parks & Gardens Manager Corporate Information Manager		Internal personnel	2017-2018
	1.1.2 Develop a monitoring and evaluation plan (with tree 2020 canopy target) to assist in the effective delivery of i-tree methodology to measure the ecological and asset value of trees.	City Development Manager	Parks & Gardens Manager Corporate Information Manager (GIS)	Local Neighbouring Councils Volunteer groups	Internal personnel	2016-2017
	1.1.3 Preparation of i-tree program: - Identify focus areas for increased canopy cover via i-tree assessment process. - Undertake i-tree eco assessment for particular zones within Councils region.	City Development Manager	Parks & Gardens Manager	Local Neighbouring Councils Non-government organisations Volunteer groups	$20,000/yr (New budget initiative for City Development)	2017-2020

Strategy 1: To monitor, map and analyse biodiversity condition to inform decision making

Activities	Tasks	Lead Department - (responsibility)	Support Department	Stakeholders	Budget	Timeframe
1.2 **Bushland Condition Monitoring** Incorporate measuring, mapping and spatial vegetation analysis techniques when classifying asset and ecological values of biodiversity areas.	1.2.1 Bushland Condition Monitoring - develop a monitoring and evaluation plan to assist in the effective delivery of BCM on going seasonal monitoring/data collection, fauna and climate change surveying at existing and new sites with the aim to inform better decision making for biodiversity management	City Development Manager	Parks & Gardens Manager	Non-government organisations Community groups	Internal Personnel	2016-2017
	1.2.2 Establish on-going seasonal monitoring/ data collection to improve knowledge of biodiversity using BCM monitoring framework	Parks & Gardens Manager	City Development Manager	Community organisations	$30,000/yr (Continue existing budget within Tech. Services)	2016-2020
	1.2.3 Report on monitoring results and changes to biodiversity, and share this information with relevant State, Local Government and community bodies (via PAE website)	City Development Manager	Parks & Gardens Manager IT (GIS) Communications	DEWNR AMLR NRM Local Councils Community organisations	Internal Personnel	2016-2020

Strategy 1: To monitor, map and analyse biodiversity condition to inform decision making

Activities	Tasks	Lead Department - (responsibility)	Support Department	Stakeholders	Budget	Timeframe
1.2 **Bushland Condition Monitoring** Incorporate measuring, mapping and spatial vegetation analysis techniques when classifying asset and ecological values of biodiversity areas.	1.2.4 Incorporate biodiversity asset layers in the intranet-mapping framework for all staff to be able to access.	City Development Manager	Parks & Gardens Manager Corporate Information Manager (GIS)		Internal Personnel	2016-2020
	1.2.5 Provide a publicly accessible register allowing residents to register areas of significant urban biodiversity	City Development Manager	Parks & Gardens Manager	Community groups	Internal Personnel	2016-2020
1.3 **Climate Change** - Incorporate measuring, mapping and spatial vegetation analysis techniques when classifying asset and ecological values of biodiversity areas.	1.3.1 Establish on-going climate change monitoring/data collection to gain an understanding of the local micro-climate temperature trends and its relationship with biodiversity value, geographical location and urban form	City Development Manager	Parks & Gardens Manager	DEWNR AMLR NRM Community organisations	(AdaptWest Plan budget)	2017-2020
	1.3.2 Refer to the regional Climate Change Adaptation Plan, pathways and current local climate data to inform key decision adaptation options (i.e. Understanding when thresholds are triggered).	City Development Manager	Parks & Gardens Manager	DEWNR AMLR NRM	Internal Personnel	2017-2020

Strategy 2: Manage Council's public open spaces to maintain, restore and enhance biodiversity value

Target 1: *BCM Biodiversity ecosystem ratings for (terrestrial, riparian and coastal sites) are maintained or improved from current 2015 levels.*

Target 2: *Improvement in conservation prospects for native flora and fauna (coastal, terrestrial and aquatic) from current levels.*

Target 3: *Increase participation in community natural resources management activities by 50%.*

Activities	**Tasks**	**Lead Department - (responsibility)**	**Support Department**	**Stakeholder**	**Budget**	**Timeframe**
2.1 **Restore and enhance biodiversity values** of key open space areas.	2.1.1 Prepare program/schedule for a review of site-specific Biodiversity Management Plans	City Development Manager	Parks & Gardens Manager	AMLR NRM	Internal personnel	2016-2017
	2.1.2 Develop and review site-specific biodiversity management plans for key sites in the City with the aim to improve biodiversity value and structure (provide current plans on website)	Parks & Gardens Manager	City Development Manager	AMLR NRM Non-government organisations Community groups	$20,000 (continue existing budget within Tech Services)	2016-2020
	2.1.3 Review and update Biodiversity Management Plan 2016 – 2020 (provide current plan on PAE website)	City Development Manager	Parks & Gardens Manager	DEWNR AMLR NRM DPTI Community organisations	$20,000	2019-2020

Strategy 2: Manage Council's public open space to maintain, restore & enhance biodiversity value

Activities	Tasks	Lead Department-(responsibility)	Support Department	Stakeholder	Budget	Timeframe
2.1 **Restore and enhance biodiversity values** of key open space areas.	2.1.4 Investigate the possibility of establishing a staff Biodiversity Group to assist with the delivery of the Biodiversity Management Plan and meet on a regular basis.	City Development Manager	Parks & Gardens Manager		Internal personnel	2016-2017
2.2 **Participate and engage with Government and community** on biodiversity matters	2.2.1 Participate directly in the State Government's development planning and policy processes, and make recommendations and advocate for change where appropriate.	City Development Manager	Parks & Gardens Manager	DPTI DSD	Internal personnel	2016-2020
	2.2.2 Council to seek biodiversity grant funding where required to value add to community/Council biodiversity projects. Council to accommodate a	City Development Manager	Parks & Gardens Manager	AMLR NRM Community organisations	Internal personnel	2016-2020
	2.2.3 Green Army Team to assist in delivering the *Conservation of Fleurieu Estuaries, wetlands and Coastal Dunes Project.*	City Development Manager	Parks & Gardens Manager	AMLR NRM Commonwealth Government	$20,000 (continue existing budget within Tech Services)	2016-2017

Strategy 2: Manage Council's public open space to maintain, restore & enhance biodiversity value

Activities	Tasks	Lead Department- (responsibility)	Support Department	Stakeholder	Budget	Timeframe
	2.2.4 Liaise with key neighbouring landholders (local, State Government agencies and community groups) to collaborate on the implementation of management plans, align and coordinate relevant weed and planting programs, and work together to achieve regional biodiversity improvement outcomes.	City Development Manager	Parks & Gardens Manager	Local Councils AMLR NRM Community groups	Internal personnel	2016-2020

Strategy 2: Manage Council's public open space to maintain, restore & enhance biodiversity value

Activities	Tasks	Lead Department- (responsibility)	Support Department	Stakeholder	Budget	Timeframe
2.2 **Participate and engage with Government and community** on biodiversity matters	2.2.4 Work with educators and education institutions to: - Develop citizen science type programs which encourage involvement of universities and local secondary schools - Establishment of environment education programs with local schools with a focus of connecting in-class learning with "real-world" field trips and learning (e.g. field trips to local biodiversity sites).	City Development Manager	Parks & Gardens Manager	DEWNR AMLR NRM NRM Education Local schools primary and high schools Local tertiary institutions Community organisations	$10,000 (first year for scoping out project)	2016-2020
	2.2.5 Collaborate with community groups and share relevant knowledge and biodiversity management strategies on an annual basis	City Development Manager	Parks & Gardens Manager	AMLR NRM Community organisations	Internal personnel	2016-2020

Strategy 2: Manage Council's public open space to maintain, restore & enhance biodiversity value

Activities	Tasks	Lead Department - (responsibility)	Support Department	Stakeholders	Budget	Timeframe
2.3 **Prevent open space biodiversity threats**	2.3.1 Review and update Customer Services Standard Operating Procedures for pest and weeds management	Parks & Gardens Manager	City Development Manager		Internal personnel	2016-2020 (As required)
	2.3.2 Identify and map priority weeds and develop weed management programs as per legislative requirements – including 'proclaimed species' under the Natural Resources Management Act 2004.	Parks & Gardens Manager	City Development Manager	AMLR NRM	Internal personnel	2016 - 2020
	2.3.3 Implement animal and pest management control programs e.g. fox, cats and dogs.	Parks & Gardens Manager	City Development Manager	DEWNR AMLR NRM	Internal personnel	2016 - 2020
	2.3.4 Undertake management and monitoring activities of: species along sand dunes and in wetland areas (e.g. Red-capped plovers *Charadrius ruficapillus,* at Taperoo and Osborne)	City Development Manager	Parks & Gardens Manager	Non-government organisations Bird Life Australia DEWNR AMLR NRM	$3000/yr. (continue existing budget within Tech. Services)	2017-2018

Strategy 2: Manage Council's public open space to maintain, restore & enhance biodiversity value

Activities	Tasks	Lead Department - (responsibility)	Support Department	Stakeholders	Budget	Timeframe
2.3 **Prevent open space biodiversity threats**	2.3.5 Prevent disturbance to designated 'natural areas' via controlling the impacts of rubbish dumping and unmanaged access by motor bikes, 4wds, pedestrians, dogs and push bikes through the application of appropriate techniques (including erecting fences, signage and other infrastructure)	Parks & Gardens Manager	City Development Manager Community and Environmental Health Manager	DEWNR AMLR NRM Renewal SA EPA Community volunteer groups	Internal personnel and resources	On-going
2.4 **Ensure alignment with Council's other strategic plans**	2.4.1 Ensure that information regarding Aboriginal knowledge and aspirations, including the Kaurna Heritage survey is included in Council's biodiversity management planning implement project with the aboriginal people	City Development Manager	Parks & Gardens Manager Community Development Manager	DEWNR Community organisations	Internal personnel	2016-2020
	2.4.2 Via regular reviews of Council's Open Space Plan consolidate and enhance landscape linkages to improve landscape connectivity and reduce habitat fragmentation by identifying priority sites for conservation.	City Development Manager	Parks & Gardens Manager	DEWNR DPTI	Internal personnel	2016-2020

Strategy 2: Manage Council's public open space to maintain, restore & enhance biodiversity value

Activities	Tasks	Lead Department - (responsibility)	Support Department	Stakeholder	Budget	Timeframe
2.4 **Ensure alignment with Council's other strategic plans**	2.4.3 Support the development of the Adelaide International Bird Sanctuary and Management Planning process.	City Development Manager		DEWNR Community organisations	Internal personnel	2016-2020
	2.4.4 Support the review of the Adelaide Dolphin Sanctuary Management	City Development Manager	Parks & Gardens Manager	DEWNR	Internal personnel	2016-2020
	2.4.5 Ensure that Council's stormwater management planning considers opportunities to enhance biodiversity value	Works construction Manager	City Development Manager	EPA Stormwater Management Authority	Internal personnel	2016-2020

Strategy 3: Develop partnerships to respond to changes in landuse development and climate change

Target 3: *Increase participation in community natural resources management activities by 50%.*

Activities	Tasks	Lead Department - (responsibility)	Support Department	Stakeholder	Budget	Timeframe
3.1 Improve biodiversity outcomes through **effective development and land use planning**	3.1.1 Review Council's Landscape Guidelines to encourage developers to benefit from incorporating biodiversity aims and projects in the development of vacant areas, and protecting existing endemic vegetation.	City Development Manager	Parks & Gardens Manager	Renewal SA Other relevant State Government agencies Community organisations	$20,000 (new budget initiative to be considered in 2017/18)	2017-2018
	3.1.2 Liaise with State Government and advocate to review the PAE Development Plan to maximise biodiversity provisions - advocating rezoning sensitive habitat areas to a conservation zone or coastal zone (where applicable).	City Development Manager	Parks & Gardens Manager	DEWNR DPTI	Internal personnel	2016-2017
	3.1.3 Council to develop a tree replacement guideline and biodiversity offset program in liaison with State Government, for developers to utilise to replace loss of biodiversity by “net gain” actions	City Development Manager	Parks & Gardens Manager	DPTI Renewal SA	$25,000 (new budget initiative to be considered in 2017/18)	2018-2019

Strategy 3: Develop partnerships to respond to changes in landuse development and climate change

Activities	Tasks	Lead Department (responsibility)	Support Department	Stakeholder	Budget	Timeframe
3.2 Improve biodiversity outcomes through effective **climate change planning and policy implementation**	3.2.1 Support the recommendations of the Climate Change Adaptation Plan in relation to the SA Government Commission research with support from State Government for: • Vegetation re-establishment and retreat opportunities for coastal and estuarine vegetation communities. • "Living shorelines" for addressing levee coastal threats including Mutton Cove bank stabilisation, sea level rise and biodiversity and vegetation objectives.	City Development Manager	Parks & Gardens Manager	Universities DEWNR including Coast Protection Board DPTI Renewal SA (major coastal land owner) Community organisations	Internal personnel	2017-2018

Strategy 3: Develop partnerships to respond to changes in landuse development and climate change

Activities	Tasks	Lead Department - (responsibility)	Support Department	Stakeholders	Budget	Timeframe
3.2 Improve biodiversity outcomes through effective **development and climate change planning and policy implementation**	3.2.2 Council to advocate for the implementation of the AdaptWest Region Climate Change Adaptation Plan for improved State Government planning and development policy in response to implications of climate change and sea level rise to local biodiversity.	City Development Manager	Manager Parks & Gardens	AdaptWest Region Councils DPTI AMLR NRM DEWNR	TBA	2016-2020
	3.2.3 Council review of biodiversity plan to reflect and incorporate findings of Climate Change Adaptation Plan	City Development Manager		AdaptWest Region Councils DPTI AMLR NRM DEWNR	TBA	2017-2018

Figure 4: - *Tursiops aduncus* Bottlenosed Dolphin, Port River, City of Port Adelaide Enfield

References

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Abbreviations

AMLR NRM Board	-	Adelaide and Mount Lofty Ranges National Resources Management Board
DEWNR		Department of Environment, Water and Natural Resources
DPTI	-	Department of Planning, Transport and Infrastructure
NGO	-	Non-Government Organisation
BMMH	-	Biodiversity Management Mitigation Hierarchy
CPAE	-	City of Port Adelaide Enfield
MERI Plan	-	Monitoring, Evaluation, Reporting and Improvement

Glossary of terms

Biodiversity means the variability among living organisms from all sources (including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part) and includes diversity within and between species and the diversity of ecosystems.

Degradation means any significant decline in the quality of natural resources or natural integrity of a place or the viability of an ecosystem, caused directly or indirectly by human activities.

Enhancement means the introduction of additional organisms, genotypes, species or elements of habitat or geodiversity to those that naturally exist in a place.

Ecosystem means a dynamic complex of organisms and their non-living environment, interacting as a functional unit.

Estuary means an estuary is a semi-enclosed coastal body of water with one or more freshwater rivers or streams flowing into it, and with a free connection to the open sea.

Geodatabase means short for geographic database, is the core geographic information model to organize GIS data into thematic layers and spatial representations. The geodatabase is a comprehensive series of application logic and tools for accessing and managing GIS data.

Habitat means the structural environments where an organism lives for all or part of its life, including environments once occupied (continuously, periodically or occasionally) by an organism or group of organisms, and into which organisms of that kind have the potential to be reinstated.

Indigenous (or local native) species means a species that occurs at a place within its historically known natural range, and that forms part of the natural biodiversity of a place.

Maintenance means the continuous protective care of the biodiversity and geodiversity of a place.

Monitoring means ongoing review, evaluation and assessment to detect changes in the natural integrity of a place, with reference to a baseline condition.

Protection means taking care of a place by managing impacts to ensure that natural significance is retained.

DRAFT Biodiversity Management Plan - Summary of final consultation comments

The Council provided a two week final consultation period from the 11th May to the 25th May 2016 to provide comment on the Draft Biodiversity Management Plan. On the 19th May 2016 Council provided a presentation on the Draft Plan at the Port Adelaide Environment Forum, where they also had an opportunity to provide comment on the Plan. Below includes a summary of the main comments indicated by the Adelaide Mt.Lofty Rangers NRM, Port Adelaide Residents Environment Protection Group and Port Adelaide Environment Forum:

The below table includes Consultation comments and associated replied comments from the City of Port Adelaide Enfield:

Stakeholder comments	PAE reply comments
It is recommended that tangible targets are embedded to enable monitoring and evaluation. This will support progress towards achieving the stated objectives of the draft Plan.	Have included targets: **Target 1:** BCM Biodiversity ecosystem ratings for (terrestrial, riparian and coastal sites) are maintained or improved from current 2015 levels. **Target 2:** Improvement in conservation prospects for native flora and fauna (coastal, terrestrial and aquatic) from current levels. **Target 3:** Increase participation in community natural resources management activities by 80% from current levels.
It is recommended that the draft Plan acknowledge the State Government's Water for Good Plan and Water Sensitive Urban Design (WSUD) policy. This will provide Council with the opportunity to fully incorporate WSUD and green infrastructure objectives that incorporate positive biodiversity outcomes.	The Water for Good Plan and WSUD policy has been referenced in Biodiversity Plan-Background Report (pg.31)
As the City of Port Adelaide Enfield is in the Metropolitan Adelaide subregion, the draft Plan should consider and align with the subregion's key priorities.	The Plan has included AMLR NRM Sub-regional priorities (pg.4)
Include the 'Torrens Island Biodiversity Action Plan September 2013' and 'Metropolitan and Northern Coastal Action Plan 2013 Caton et al' in Plan.	The Plan has referenced the associated Plans in Background Report (pg.31)
Council should share; Site-specific management plans, Monitoring reports, climate change monitoring data, biodiversity registers to the community via a dedicated webpage.	The Plan has indicated that all information will be included on PAE webpage or another appropriate website (strategy 1.2.3, 1.1.2).

Stakeholder comments	PAE Comments
Involve volunteer groups in i-tree programs by collecting on-ground information.	Volunteer groups included as a stakeholder in i-tree program (strategy 1.1.2, 1.1.3).
It is recommended as a minimum that the Council should list all areas of recognised biodiversity, Management responsibility and other relevant information would be a welcome addition.	Council has provided a list of biodiversity management sites (pg.15)
It is Recommended that Council include activity in the Plan to develop a publicly accessible register allowing residents to register areas of significant urban biodiversity.	Council has provided task in Strategy 1. (pg.22, 1.2.5)
Include Community groups in Plan as Stakeholders with community engagement activities, reviewing management plans and monitoring programs	The Plan has been updated to include community stakeholders in all of the relevant activities.
It is recommended that the Plan be revised when the Climate Change Adaptation Plan is finalised.	Included a task under Strategy 3, 3.2.3 Council review of biodiversity plan to reflect and incorporate findings of Climate Change Adaptation Plan
Council consider forming a biodiversity liaison group with local community groups and agencies to share knowledge and assist in revising management plans.	Included in task 2.2.4, 2.2.5, 2.1.2 and 2.1.3 under Strategy 2.
Recommend to develop a publicly available significant tree removal register, allowing the approved removal of significant trees and their location to be tracked over time.	Council has considered the recommendation of a publicly available register and has determined that an internal tree register should be developed as a first priority.
2.3.4 (pg.23) Council is encouraged to incorporate management activities as well as monitoring. Additionally AMLR NRM and Birdlife Australia should be listed as Stakeholders.	Have updated accordingly
The draft Plan does not highlight the significant role mangrove habitat provides as a fish nursery and important feeding ground to the resident dolphin population. It is recommended that this is included under Strategy 2.	Have updated accordingly
In 2.3.4 (pg.28) Red-Capped plovers are neither a threatened nor a migratory species	Have updated accordingly
In 2.1.3 (pg.24) Spending $20K a year to update the plan seems like planning for planning's sake.	The $20K budget will be allocated at the end of a four year period to review the Plan rather than annually.
Pg.9 "Biodiversity Management Priorities" this section is confusing.	The layout has been changed to identify the priorities more clearly
Pg.4-5. Executive summary should include the three management plan strategies.	Have updated accordingly