



2019 – 2024

ENVIRONMENTAL MANAGEMENT PLAN





ACKNOWLEDGEMENT OF COUNTRY

The Victor Harbor Council acknowledges and respects the Ngarrindjeri and Ramindjeri people as the traditional custodians of our beautiful lands and surrounding waters

In implementing this Plan, the Victor Harbor Council will have regard to the Ngarrindjeri Vision for Country as expressed in the 2007 Ngarrindjeri Nation Yarlumar-Ruwe (Sea Country) Plan¹:

‘Our Lands, Our Waters, Our People, All Living Things are connected. We implore people to respect our Ruwe (Country) as it was created in the Kaldowinyeri (the Creation). We long for sparkling, clean waters, healthy land and people and all living things. We long for the YarlumarRuwe (Sea Country) of our ancestors. Our vision is all people Caring, Sharing, Knowing and Respecting the lands, waters, and all living things’.

We acknowledge the support of local Ngarrindjeri and Ramindjeri Elders for their input to this Plan.

¹ Ngarrindjeri Tendi, Ngarrindjeri Heritage Committee, Ngarrindjeri Native Title Management Committee (2006). NGARRINDJERI NATION YARLUWAR-RUWE PLAN -Caring for Ngarrindjeri Sea Country and Culture.

city of
Victor Harbor



**Healthy
Environs**

REPORT – CITY OF VICTOR HARBOR ENVIRONMENTAL MANAGEMENT PLAN 2019–2024

LEAD CONSULTANT

Healthy Environs Pty Ltd

PREPARED FOR

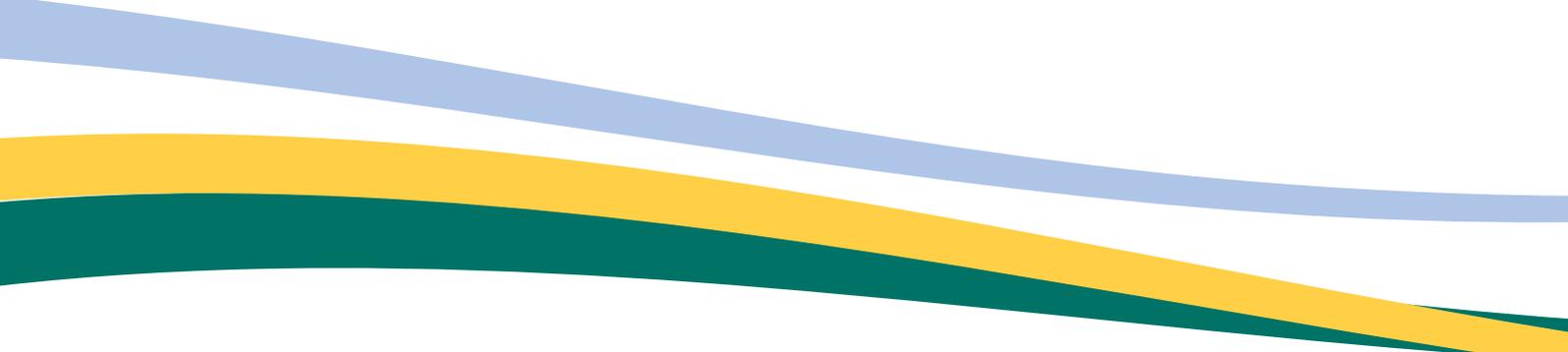
City of Victor Harbor

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MESSAGE FROM THE MAYOR

The Victor Harbor Environmental Management Plan will shape our environmental programs over the next five years. This plan builds upon our previous environmental achievements and focusses our priorities.

Council has consulted broadly on the development of the Plan and our actions have been informed through the community's priorities, values and concerns for our environment.

In developing the Environmental Management Plan, we've adopted a holistic approach and have recognised the importance of a healthy environment to many assets of Victor Harbor: local biodiversity, the prosperity of our local economy, the character of our town and the health of our community.

Victor Harbor is an area appreciated by many South Australians. It's essential that everyone, our local residents, business operators and tourists to the region, look after our clean and green environment. We can achieve better results by working together and I look forward to working with our community and stakeholder organisations to implement this Plan.

Dr Moira Jenkins
Mayor

1. INTRODUCTION

The City of Victor Harbor's Environmental Management Plan (EMP) will position Council to meet its environmental responsibilities and the needs of the community for the period 2019 - 2024. The Plan builds upon the achievements since the development of the last EMP in 2010 and sets the directions for Council's role in protecting and enhancing the local environment.

1.1 COUNCIL'S SPHERE OF INFLUENCE IN ENVIRONMENTAL MANAGEMENT

There are numerous environmental projects taking place in the Council area through various agencies including State Government, the Adelaide and Mount Lofty Ranges Natural Resource Management Board (soon to be the Landscape Management Board) and various community and volunteer groups. The focus of this Plan is on Council's sphere influence in enhancing the environment and how Council can best support the efforts of other agencies and community groups. There are a range of National, State and regional policy agendas and strategies which shape the focus of environmental management in the region.

The Environmental Management Plan adopts a 'whole of Council' approach and encompasses responsibilities across the organisation for environmental action. Strategies focus on priorities over 5 years (2019-2024) and will be reviewed and reported to Council annually as part of each budget review.

1.2 DEVELOPING THE PLAN

The process of developing the Plan has involved a review of Council achievements to date, research into the local state of the environment and consultation with community members.



To inform the EMP, Council (with the support of Healthy Environs) developed a State of Environment Report (Part A Supplementary Report) detailing research into the key attributes and pressures on the local environment. The State of the Environment Report consolidates information from a range of recent environmental research studies, programs and strategies, as well as relevant Council operational data.

The State of the Environment Report was used as background information to consulting with the local community on their values and priority issues of concern relating to the local environment.

During the period of 11th February to the 15th March 2019, the Environmental Management Plan Project Team undertook community and stakeholder consultation to present the State of the Environment Report and to explore:

- What people value about the local environment.
- The environmental management priorities for the region.
- Opportunities to protect or improve the environment.

The community engagement period involved:

1. Online engagement using Council's community engagement hub 'your say' (with 17 online surveys received).
2. Information and feedback forms at key Council venues (with seven submissions received).
3. A community feedback board at the Victor Harbor Community Hub
4. Presentations and workshops with 1) Council's Elected Members; and 2) the South Coast Regional Youth Advisory Group on the 18th February 2019.
5. Stakeholder Meetings with the following groups:
 - Victor Harbor Coastcare Landcare representatives - 18 February 2019
 - Inman River Catchment Group representatives- 18 February 2019
 - Department of Environment and Water - Senior Ranger – 18 February 2019
 - South Coast Environment Centre - Coordinator - 13 March 2019
 - Department of Water, Land Biodiversity and Conservation - Staff Representatives Willunga Office– 8 April 2019
 - Fleurieu Waste Management Authority, Executive Officer – phone meeting 9 April 2019

The feedback from the community and stakeholder consultation phase was reviewed, with common themes noted, to inform six overall pathways towards sustainability in the EMP:

1. Natural Landscapes
2. Coastal City Character
3. Clean Coast and Waterways
4. Climate Action
5. Less Wasteful
6. Working Together

For each pathway, the Plan highlights the common values, achievements and issues, highlighted through the consultation.

'WE NEED TO BE FORWARD THINKING, INNOVATIVE AND PROACTIVE IN OUR APPROACH TO ENVIRONMENTAL MANAGEMENT'.

– ELECTED MEMBER WORKSHOP DISCUSSION

2. BACKGROUND AND CONTEXT

2.1 TOWARDS SUSTAINABILITY

Living more sustainably means that people everywhere can enjoy a good quality of life within their fair share of the Earth's resources. Protecting the environment is essential for preserving biological diversity and providing a better quality of life for people. Also important is the principle of intergenerational equity; the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

The rising cost of fresh food and electricity and lack of access to affordable, energy efficient housing and transport poses many health and social problems. Experience of emergency events is that the most vulnerable are the most affected. Building resilience in a changing climate goes beyond planning for extreme events, to recognising that some groups are more affected than others by everyday costs such as energy, water and food.

Several people have switched to energy efficient lighting, have installed solar panels to create renewable energy, are actively reusing and conserving water as well as walking and cycling instead of car trips. Many local residents and school children are already actively involved in programs to help the environment.

By getting involved in environmental projects, people are connected, active and share new skills.

The City of Victor Harbor has a unique coastal and rural environment that supports diverse recreation activities which are good for our physical and mental wellbeing. These include open spaces and trails along the Inman River and Hindmarsh River and larger natural open spaces.

Connection to land and the natural environment is highly significant for the Ngarrindjeri and Ramindjeri peoples. The natural environment provides inspiration for heritage, cultural and artistic activities and is celebrated through the

location of outdoor events. Native plants and animals and their habitats contribute to a sense of cultural identity and spiritual enrichment¹.

This Plan provides opportunities to enable the community to develop and grow at the same time as reducing our negative impacts. Through local action we can find ways to help make it easy, attractive, and affordable for people to lead healthy lives and improve the quality of life for everyone, affordably and fairly, while living within the limits of what the planet can provide.



¹ Healthy Environs (2018). City of Victor Harbor - Environmental Management Plan. Part A State of the Environment.

2.2 A SNAPSHOT OF THE COUNCIL AREA

The coastal City of Victor Harbor is located on South Australia's Fleurieu Peninsula, about 80 kilometres south of the Adelaide CBD. It is the largest population centre in the Fleurieu region and serves as the major district centre for the Southern Fleurieu. Covering around 38,510 hectares, the City of Victor Harbor enjoys a high standard of living and has a lot to offer residents and visitors alike².

THE ORIGINAL INHABITANTS OF THE VICTOR HARBOR AREA WERE THE NGARRINDJERI AND RAMINDJERI ABORIGINAL PEOPLE.

The City of Victor Harbor is bounded by the District Council of Yankalilla area in the north and west, the Alexandrina Council area in the east, and the Southern Ocean (Encounter Bay) in the south.

Victor Harbor has experienced strong population growth over recent decades and is expected to continue to experience average annual population growth over the next 15 years of around 2.4%, compared to 0.9% for South Australia. The population was estimated to be 15,600 in 2016 and is expected to grow to 21,200 by 2031. This has implications for the provision of adequate services, infrastructure and protecting the environment, heritage, lifestyle and sense of community. Similarly, high levels of population growth in neighbouring councils has implications for Victor Harbor as the regional service centre³.

Around 37% of the population was aged 65+ in 2016, compared to 18% for South Australia. Consequently, Victor Harbor is one of the "oldest" communities in Australia. This is expected to increase to more than 39% in 2031. Approximately 28% of households are lone person households

(ABS 2016), although some areas of central Victor Harbor are as high as 55%. While population growth continues to primarily be in the older age groups, population projections show smaller increases in all age groups and types of households including one parent families and couples with children².

In Victor Harbor, the median household weekly income is 28% below the State average (ABS 2016). The SEIFA7 Index of Disadvantage for Victor Harbor is 961, which is in the middle grouping of regional councils in South Australia.

The natural environment, including the coastal and marine areas, rivers, natural vegetation, clean air and mild climate, have been identified by the community as things that make Victor Harbor a great place to live¹.

The Council area is home to many valuable natural assets and iconic features including Rosetta Head (The Bluff) and Granite Island, as well as infrastructure which showcases the scenic views, such as the Encounter Bikeway along the coast. The natural features are loved by locals and visitors alike. Victor is a key tourism destination and attracts many visitors especially over summer when the population can double.

Many Council programs and services would not be provided without the support of community volunteers. The Council is fortunate to have around 500 volunteers who come from all walks of life - retirees, business people, community leaders and students. There is a huge variety of volunteering roles which can be flexible according to availability, skills and interests.

The Council supports a number of community groups involved in environmental projects and conducts various community education and awareness programs including interpretive signage in priority locations.

² Community Plan

³ City of Victor Harbor. Community Plan 2036 and Strategic Directions 2016-2020. Adopted December 2016.



227 HECTARES OF NATURAL OPEN SPACE

1,330 NATIVE FLORA SPECIES

245 NATIVE FAUNA SPECIES

28 LISTED MIGRATORY BIRDS KNOWN OR POTENTIALLY OCCUR

2.5-4

PERCENT POPULATION GROWTH PER ANNUM

17,235 KL

OF RECYCLED WATER USED FOR IRRIGATION (2017/18)

47

NATURAL RESERVES UNDER COUNCIL CARE

234

REGIONALLY SIGNIFICANT PLANT SPECIES IDENTIFIED WITHIN COUNCIL RESERVES AND ROADSIDES.

27000



LOCAL NATIVE PLANTS PLANTED BY THE COUNCIL OVER THE LAST FIVE YEARS

71.5%

USE THEIR CAR TO TRAVEL TO WORK

AT LEAST

40%

OF KERBSIDE WASTE DIVERTED FROM LANDFILL AND RECYCLED



68

ROADSIDE VEGETATION MARKER SITES

POTENTIAL TO RECYCLE A FURTHER

71%

OF WASTE BIN CONTENTS



2948.02 HA (0.08%) OF VEGETATION WITHIN THE CITY OF VICTOR HARBOR IS FORMALLY PROTECTED FOR CONSERVATION

88 LOCAL HERITAGE PLACES
26 STATE HERITAGE PLACES
50 LOCAL HERITAGE INCENTIVE GRANTS PROVIDED (2006 - 2018)

3

ESTUARY HABITATS – THE HINDMARSH RIVER, THE INMAN RIVER AND WAITPINGA CREEK

4

OFFSHORE ISLANDS WITHIN ENCOUNTER BAY: GRANITE ISLAND, WEST ISLAND, SEAL ISLAND AND WRIGHT ISLAND



APPROX.

500

VOLUNTEERS

7

BUSH FOR LIFE SITES

SWAMPS OF THE FLEURIEU PENINSULA ARE LISTED AS CRITICALLY ENDANGERED ECOLOGICAL COMMUNITIES



2.3 COUNCIL'S CORPORATE PLANNING FRAMEWORK

The Senior Management Team and staff at the City of Victor Harbor work for and on behalf of the community, and implement the policies and directions set by Council Members.

The Chief Executive Officer has an executive team of three Directors in the areas of Corporate and Community Services, Environment and Infrastructure Services and Development.

Council's 2018/19 \$35.5 million budget aims to balance community needs against the rising costs of living by delivering a range of services and infrastructure projects while minimising rate increases. The budget includes a capital works program worth \$8.1 million, and operating expenditure of \$27.4 million⁴.

While Council derives its principal powers from the Local Government Act 1999, there are more than 50 Acts of Parliament which also assign roles and responsibilities to local government.

Council has Key Planned Activities to be undertaken to contribute towards achieving the five broad objectives identified in council's Community Plan 2036⁵:

- Healthy environments
- Attractive lifestyle and inclusive community
- Thriving local economy
- Services and infrastructure supporting the community
- An innovative Council empowering the community

⁴ City of Victor Harbor. Annual Business Plan 2018/19.

⁵ City of Victor Harbor. Annual Business Plan 2018/19.

3. PATHWAYS TOWARDS SUSTAINABILITY

3.1 NATURAL LANDSCAPES

Victor Harbor is rich in rural landscapes and biodiversity. The area has two significant water courses, as well as estuaries, wetlands, significant remnant vegetation, coastal beaches, cliffs and islands.

Diverse and healthy habitats are necessary to support biodiversity. Biodiversity is also essential to humans, the air we breathe, the water we drink and the food we eat all depend on it. Connecting to natural environments is also good for our mental and physical health.

Connection to land is important to our traditional custodians, the Ngarrindjeri and Ramindjeri people, and there is opportunity to build awareness of the Aboriginal history of the land. It's not only Council and Government agencies that help protect natural areas.

Many community groups, volunteers, farmers and property owners remove weeds and plant natives, as well as build nesting boxes for birds, keep records of sightings and protect their newborn. Many are not aware of the extent of natural areas and sensitive sites where work has been done to restore native habitats. Building awareness and understanding is important.

Sustainable development is essential to protect Victor Harbor's rural environment and the agribusiness sector which is vital to local prosperity and the local economy.

FIGURE 2 - EXAMPLES OF COMMUNITY GROUPS SUPPORTING OUR NATURAL LANDSCAPES

The success of work, particularly weed control, requires a coordinated approach by the government and the community. There are a number of laws enforced by Council and other Government agencies which also help to protect natural resources.



NATURAL LANDSCAPES – WHAT THE COMMUNITY VALUES

Residents love the access they have to natural areas and sites with thriving native plants, birds and other animals, including:

- Coastal and river walking trails and bike paths including the Encounter Bikeway.
- Walking and socialising in Conservation Areas and Parks.
- Swimming in the Southern Ocean and enjoying marine life.

The diversity of natural features is also highly valued: These include:

- The Bluff (Rosetta Head).
- Granite Island with the causeway and horse drawn tram and the colony of fairy penguins.
- Hindmarsh River estuary
- The Fleurieu Swamps
- Glacier Rock (Selwyn's Rock) at Inman Valley
- Hindmarsh Falls
- Rolling green hills and farmlands
- Five offshore islands

NATURAL LANDSCAPES – ISSUES AND ACHIEVEMENTS TO DATE

Issues Raised

- Must protect threatened flora and fauna species and ecological communities.
- Threat of pest plants and animals (rabbits, foxes and feral cats) as well as people to threatened flora and fauna.
- Need to protect hooded plover nesting areas by educating people and patrolling off the leash dogs.
- Wright Island- need to maintain woody weed removal and plant local flora to encourage return of sea birds and penguins.
- The impact of over abundant species and their impact on other species and land management.
- Limited awareness of what has been achieved by restoration work and where.
- Need to protect volunteer work sites.

Achievements to Date

- Extensive work continues across the area by Council, NRM and community groups.
- Restoration of the important parts of the original Estuary of the Hindmarsh River where it meets the ocean.
- Installation of boardwalks and fencing to protect sensitive replanted and nesting sites.
- Clearing weeds and replanting on roadsides - 68 Roadside Vegetation Marker sites where weeds are removed and remnant vegetation is protected (60km of roadside).
- Support for a number of planting and weed removal groups.
- Supporting 'Bush for Life' sites in partnership with Trees for Life.
- Working with farmers via the Agribusiness Group.
- A Rural Living Handbook has been developed which guides land owners on maintaining rural property.

PICTURE THIS.....A VISION FOR NATURAL LANDSCAPES

- Natural areas are thriving and are easily accessible to residents and visitors.
- The community's connection to nature is strong through ease of access and awareness of the value of nature.
- Residents and visitors respect natural areas and help ensure they are protected.
- Our rural environment supports sustainable agriculture - foxes and rabbits are under control.
- Clean and green farming practices.

ACTION PLAN FOR NATURAL LANDSCAPES

ACTION	RESOURCES AND COUNCIL SECTION	YEAR	BUDGET
3.1.1 Biodiversity and natural assets plan - Undertake a field review to categorise the conservation significance of Council reserves and determine priorities for rehabilitation, revegetation and bushfire management (note: there are 47 natural reserves under Council care and control).	Property, Environment and Recreation	2020/21	\$20,000
3.1.2 Develop a works schedule for Council reserve maintenance and enhancement to align with the priorities of the Biodiversity and Natural Assets Plan.	Operations	2021/22	In-House
3.1.3 Development of a Master Plan to enhance biodiversity, recreational value (walking trails) and access of the Section 696 Reserve. Recommendation 'Sustainable Victor Project Officer' Section 3.6.	Property, Environment and Recreation	2021/22	\$30,000
3.1.4 Support and strengthen the capacity of environmental volunteer groups through: <ul style="list-style-type: none"> Marketing local conservation volunteering opportunities (through a list of local groups) Developing a map of volunteer project sites Supporting interpretive signage at priority sites Develop a communications strategy to showcase community projects through Council's social media and community news Promoting community events 	Property, Environment and Recreation	2020/21	In-House
3.1.5 Work with the Landscapes Board to educate rural landowners on sustainable and environmentally responsible land management practices.	Planning Activation	2019/20	In-House
3.1.6 Provide weed control and native vegetation awareness training for Council works staff.	Operations and Property, Environment & Recreation	2020/21	\$5,000
3.1.7 Develop Council's plant herbarium into a format suitable for the public.	Property, Environment & Recreation	2022/23	In-House



A BOARDWALK HAS BEEN INSTALLED AT THE HINDMARSH ESTUARY TO PROVIDE EASY ACCESS AND TO PROTECT REVEGETATION WORKS BY THE LOCAL VICTOR HARBOR COASTCARE GROUP.



SECTION 696 IS SA WATER OWNED LAND ADJACENT TO THE INMAN RIVER. IT'S AN AREA MANY LOCALS ENJOY FOR WALKING. LOCAL COMMUNITY GROUPS HAVE BEEN WORKING WITH COUNCIL TO UNDERTAKE REVEGETATION WITH LOCAL INDIGENOUS PLANTINGS AT THE SITE.

3.2 COASTAL CITY CHARACTER

Many aspects work together to create the feel and character of Victor Harbor:

- The views the coastline, cliffines, beaches and ocean views
- The iconic natural features
- The historic road bridge to Granite Island
- The surrounding farmlands and bushlands
- The beauty and feeling of space and quietness
- The quiet and the people
- Open spaces, green parks
- Ease of getting around
- The people, culture and heritage

COASTAL CITY CHARACTER – WHAT THE COMMUNITY VALUES

“VAST OPENNESS OF ROLLING HILLS FALLING INTO A STUNNING COASTLINE”.

“THE FLEURIEU IS A TRULY WONDERFUL PART OF SA”.

Locals value the look and feel of Victor and want the character of the area to be protected and considered when making improvements, planning tourism or approving new developments.

People value the City of Victor Harbor for:

- It's beauty!
- The space- not over crowded.
- The beach and beautiful scenic landscapes.
- The beautiful natural environment -coastal, rural, reserves and rivers.

- The quiet and the people.
- The lack of traffic .
- No graffiti.

Victor Harbor is rich in green open spaces which are accessible to residential areas. Parks are valued for recreation as well as providing spaces for low impact leisure and nature connection. The community seeks a balance between parks for tourists and multiple uses and 'pretty shady parks for reflection'.

A walkable and accessible urban environment would help to mitigate traffic, improve community health and promote connections with key green assets in the Council area.

COASTAL CITY CHARACTER – ISSUES AND ACHIEVEMENTS TO DATE

Issues Raised

- Importance of sustainable development which protects the town setting, landscapes and 'areas of outstanding beauty'.
- Balancing density of housing whilst preserving different styles of housing, openness and buildings that are sensitive to local streetscape.
- Managing population growth and impact of tourism on environmental assets and City character.
- Maintaining green landscapes in times of drought.
- Visual pollution including:
 - handmade and pop up signs; barrage of signs at boat ramp Kent Reserve; light pollution from bright streetlights
 - Urban development which considers flood risk and projected sea level rise
 - Aboriginal heritage acknowledgement of key areas or assets could be more prevalent



Achievements to Date

- Policies developed as part of the Urban Management Strategy Plan for inclusion in proposed amendments to the Development Plan.
- The Mainstreet Precinct upgrades for the Victor Harbor's Town Centre promote vibrant public spaces and celebrates the town's character. Victor Harbor's Mainstreet Precinct Upgrade was acknowledged as the 'Best Public Space and Streetscape Design' at the Mainstreet SA Awards.
- Coastal protection works including sandbag groins, rock protection, re-vegetation, concrete blocks supporting dunes.
- Council is using recycled water to irrigate parks and sporting fields.
- The Railway Tce stormwater and urban development project supports water sensitive urban design and stormwater reuse.
- Regional Public Transport Study is currently in progress with Regional Development Australia.

PICTURE THIS.....A VISION FOR COASTAL CITY CHARACTER

- Iconic views particularly as you enter the town.
- Rural and urban landscapes, town character, beauty.
- Respect for cultural and Aboriginal heritage.
- Diversity of land uses including agriculture and bushland.

ACTION PLAN FOR COASTAL CITY CHARACTER

ACTION		RESOURCES AND COUNCIL SECTION	YEAR	BUDGET
3.2.1	Review the Urban Growth Strategy	Community & Development	2020/21	\$20,000
3.2.2	Manage urban growth in line with the objectives of the Urban Growth management Strategy through continued integration into: Development Plan amendments, Council strategies, governance and decision making.	Community & Development	2021/22	In-House
3.2.3	Engage in the Planning, Development and Infrastructure Act 2016 reforms including the Planning and Design Code and Design Standard elements which support the objectives of the Victor Harbor Urban Growth Strategy.	Community & Development	2021/22	\$50,000
3.2.4	Incorporate water sensitive urban design into the stormwater management strategy	Infrastructure	2020/21	In-House
3.2.5	Support water sensitive urban design in local development and Council infrastructure planning. Support training for relevant staff.	Community & Development and Environment & Infrastructure	2019/20	In-House
3.2.6	Implement the City of Victor Harbor's Tree Management Strategy, adopt the recommended pro-active tree risk management approach and establish a cross function tree management team.	Operations and Property Environment & Recreation	2021/22	As per Tree Management strategy
3.2.7	Advocate for a regional study to locate and support recognition of places of Aboriginal heritage in conjunction with MPAC, neighbouring Councils and the Landscape Board.	Environment & Infrastructure	Ongoing	In-House
3.2.8	Promote sustainability awareness through showcasing examples of sustainable housing design and water sensitive urban design.	Environment & Infrastructure	2020/21	In-House
3.2.9	Maintain, promote and monitor Council grants programs which promote arts, culture and heritage.	Community & Development	Ongoing	In-House
3.2.10	Introduce sustainable garden awards to recognise sustainable landscapes in Victor Harbor (Council could partner with a local community group to promote this initiative).	Property Environment & Recreation	2022/23	In-House
3.2.11	Promote access to areas of local significance through marketing, signage and potential use of technology (wayfinding).	Community & Development	Ongoing	In-House
3.2.12	Support the Department of Transport and Infrastructure's project to repair the Granite Island Causeway and showcase it's heritage	Community & Development	2019/20	In-House



PEOPLE VALUE THE VIEWS AS YOU ENTER THE VICTOR HARBOR TOWNSHIP



THE VICTOR HARBOR MAINSTREET PRECINCT MASTER PLAN INCORPORATES WATER SENSITIVE URBAN DESIGN AND RAINWATER HARVESTING FOR GARDEN WATERING IN THE PRECINCT. THE ADELAIDE AND MOUNT LOFTY RANGES NATURAL RESOURCES MANAGEMENT BOARD HAS APPROVED A GRANT FOR THE RAILWAY TERRACE STORMWATER AND URBAN DESIGN PROJECT.

3.3 CLEAN COAST AND WATERWAYS

The City of Victor Harbor area is well known for its clean coastal environment.

The marine environment surrounding the Council falls within the Encounter Marine Park (gazetted in 2009 as South Australia's first proposed representative Marine Protected Area). The area covers 2,400m² of coast and ocean between the Fleurieu Peninsula and Kangaroo Island.

The coast has great significance to the local Aboriginal peoples the Ramindjeri, and their dreaming stories incorporate the creation of the Bluff, the islands, the rivers and estuaries.

The Inman and Hindmarsh Rivers and a number of smaller waterways flow to the coast where they enter the marine environment. Here there are significant estuaries with both the Inman and Hindmarsh estuaries listed on the Register of the National Estate.

The coastal environment is under pressure from a range of threatening processes. These include urban development, feral plants and animals, increasing recreation use and the impacts of rising sea levels and climate change.

CLEAN COAST AND WATERWAYS – WHAT THE COMMUNITY VALUES

"I value the great Southern Ocean and all the benefits it brings"

People value Victor Harbor's clean, pristine coastline and clear waters. Locals highlighted that they value the:

- Clean beaches
- Water, ocean, rivers and lakes.
- Victor is clean and thriving with life
- Pristine waters that are rubbish free.
- Beach and beautiful scenic landscapes
- Marine life
- Encounter Lakes

WHAT IS SPECIAL ABOUT THE COAST OF VICTOR HARBOR?

Rare plants such as the swamp paper-bark in the Hindmarsh Estuary. One of the richest diversities of sea grasses and seaweeds in the world.

Southern Right Whales come to breed in our waters.

Natural geological features such as The Bluff, Granite Island and spectacular cliffs and bays.

The leafy sea dragon which is unique to the area. Victor Harbor's marine environment provides its habitat and breeding ground.

Unique marine and coastal features such as rocky shorelines, reefs and two river estuaries.

Dolphins, seals, fairy penguins and rare coastal birds.

Source: Victor Harbor Coastcare Brochure

CLEAN COAST AND WATERWAYS – ISSUES AND ACHIEVEMENTS TO DATE

Issues Raised

- The need for more enforcement against people who litter.
- Illegal dumping on the Hindmarsh and Inman Valley River Banks
- The need to protect the coast from pollution.
- Volunteer groups can't access Wright Island to undertake restoration works.
- Mixed views on 'drilling in the bight' – keeping the coast oil free versus mining this natural resource for the benefit of all South Australians. Council needs to consider its position.
- There is a need to protect marine life from human interference.

- River water flow and quality needs to be maintained to stop the flow of pollutants to the ocean.
- Need to use more block walls to defend the dunes
- Allow the rivers to flow to the ocean without harmful pollutants and lack of water from damming up stream.
- There is a need for wetland zones or stormwater treatment to catch rainwater before it enters the drainage system
- The degradation of the Granite Island Causeway is of concern
- More wetlands are needed to provide for wetland plant and animal communities

Achievements to Date

- Victor Harbor Coastcare is a pro-active community group who work in close collaboration with the Council to improve the coastal environment from The Bluff to Hayborough (just east of the Hindmarsh River). Victor Harbor Coastcare will soon celebrate their 20 Year Anniversary
- Council responded to 16 litter related complaints and 32 wastewater related matters under the Local Nuisance and Litter Control Act ...
- Catchment clean up/restoration works are taking place in the Inman and Hindmarsh catchments

PICTURE THIS.....A VISION FOR CLEAN COAST AND WATERWAYS

- Our coastal and river waters are free of litter and pollutants
- Coastal conservation areas are well known to the wider community and tourists
- Our coastal birds and marine species are thriving and protected from harm



HOODED PLOVERS (THINORNIS RUBRICOLLIS) ARE SMALL- TO MEDIUM-SIZED COASTAL SHOREBIRDS WITH A DISTINCTIVE BLACK HOOD AND THROAT. LISTED AS VULNERABLE NATIONALLY, THERE ARE LESS THAN 800 OF THESE BIRDS IN SOUTH AUSTRALIA AND ONLY 7000 IN AUSTRALIA. RECENT SURVEYS CONDUCTED ON THE FLEURIEU FOUND ONLY 27 BREEDING PAIRS. THE SOUTH COAST ENVIRONMENT CENTRE IN VICTOR HARBOR SUPPORTS THE HOODED PLOVER CONSERVATION PROJECT.

- PHOTO BY LANCE GRAY

ACTION PLAN FOR CLEAN COAST AND WATERWAYS

ACTION	RESOURCES AND COUNCIL SECTION	YEAR	BUDGET
3.3.1	Support and promote the works of the Victor Harbor Coast Care, the South Coast Environment Centre and other environmental community groups involved in coastal protection and education.	Property, Environment and Recreation	Ongoing In-House
3.3.2	Work with the NRM Board and the South Coast Environment Centre to develop education for dog owners on the protection of Hooded Plovers and their breeding site. Include education for dog owners as part of Council's dog registration process.	Public Safety and Regulatory	2021/22 In-House
3.3.3	Educate tourists about environmental and coastal assets in the region in partnership with neighbouring Councils and Tourism SA – Explore education through the development of a wayfinding and tourism signage strategy through a partnership with neighbouring Councils and Tourism SA.	Planning Activation	2021/22 \$50,000
3.3.4	Promote stormwater detention/retention and pollution management through Council infrastructure planning and controls on private developments to improve the quality of stormwater entering local watercourses.	Infrastructure	2020/21 In-House
3.3.5	Continue to enforce the provisions of the Local Nuisance and Litter Control Act in relation to litter abatement and discharge to waterways (under the Environment Protection Water Quality Policy) 2015.	Public Safety and Regulatory	2019/20 In-House
3.3.6	Advocate for weed control and vegetation protection works at Wright Island.	Property Environment & Recreation	2021/22 In-House
3.3.7	Work with the Department of Environment (National Parks South Australia) to educate the wider community on the assets, sanctuary zones, protected marine species protection and responsible environmental protection within the Encounter Bay Marine Park.	Property Environment & Recreation	Ongoing In-House
3.3.8	Develop a schedule of works to enhance the river environment, improve accessibility and walking trails of the Inman and Hindmarsh river catchments.	Operations	2020/21 \$10,000 Ongoing

3.4 CLIMATE ACTION

Climate change, from the growing accumulation of greenhouse gases in the atmosphere, is projected to have long-term impacts locally. Climate adaptation studies for the region highlight that the area's climate will become warmer and drier with rising sea levels, increasing heatwaves, storm surges and increased bushfire risk. Mitigating and adapting to the impacts of climate change are environmental directions of Council's Community Plan.

The main greenhouse gases released by human activity are carbon dioxide, methane and nitrous oxide, measured together as carbon dioxide equivalent (CO₂e). These are released by burning fossil fuels (coal, oil and natural gas), organic waste decay in landfills, and agricultural and industrial activity. Population growth is one of the biggest drivers of rising greenhouse gases, therefore community emissions in the district are predicted to grow along with population over the next 30 years.

Since the 1950s, South Australia has experienced nearly 1°C of warming and a reduction in average rainfall. The Adelaide Hills and Fleurieu Peninsula region is likely to experience an increase in extreme heat (the number of days over 35°C or 40°C) in the future. In Victor Harbor by 2050, the number of days over 35°C will increase from 7 to 10 or 10.5 and by 2070 will increase to 11 or 14.

Council has an important role in both mitigating the impacts of climate change and ensuring resilience to changing climate conditions. At a local level there is opportunity to conserve energy and reduce emissions by encouraging more efficient buildings, less organic waste to landfill, and encouraging the use of renewable energy and active transport. Council plays a critical role in climate change adaptation through its infrastructure planning, programs and service delivery.

Community initiated action to reduce energy use in households and businesses is essential to lowering the region's contribution to climate change. Community led approaches to local energy (as well as water systems and food supply) would also help build self-reliance and resilience to the impacts of a warming climate. Community energy could also place downward pressure on energy prices for residential and commercial customers whilst facilitating the uptake of renewable energy.

CLIMATE ACTION – WHAT THE COMMUNITY VALUES

The community want to see:

- Solar panels on all homes and battery storage
- Community owned power
- Coastal defence work against storms and rising sea levels
- More use of block walls to defend the dunes
- A study into the expected sea levels
- Action and plans to cope with flooding & rising sea levels
- Long term strategy to cope with climate change
- Renewable power that's cost effective
- Development considers the impact of flooding and low-lying areas along the Esplanade are protected

CLIMATE ACTION – ISSUES AND ACHIEVEMENTS TO DATE

Issues Raised

- It's projected that the area's climate will become warmer and drier with rising sea levels, increasing heatwaves, storm surges and increased bushfire risk
- There's concern about poor planning for sea-level rise
- There's no consistent corporate energy use and greenhouse gas emissions monitoring

Achievements to Date

- Victor Harbor has installed 3 car battery stations in the region as part of the Electric Highway project.
- Council has partnered with Adelaide Hills, Mount Barker, Alexandrina, Victor Harbor, Yankalilla and Kangaroo Island Councils to undertake regional climate change adaptation planning (Resilient Hills and Coasts)
- Between 2009 and 2011 Council's solar panel purchase program assisted 4,000 households to become generators of renewable energy.
- Other current initiatives include:
 - Council is integrating smaller and lower emission vehicles into its fleet to reduce CO2 emissions and fuel costs.
 - Council is undertaking energy efficiency initiatives through its streetlighting, and building assets.

PICTURE THIS.....A VISION FOR CLIMATE ACTION

- Solar panels on all homes and battery storage
- Community owner power
- Long term strategy and plans to cope with climate change, flooding & rising sea levels
- Renewable power that's cost effective
- Development is suitable for changing climate conditions



BETWEEN 2009 AND 2011 COUNCIL'S SOLAR PANEL PURCHASE PROGRAM ASSISTED 4,000 HOUSEHOLDS TO BECOME GENERATORS OF RENEWABLE ENERGY.

CLIMATE ACTION PLAN

ACTION	RESOURCES AND COUNCIL SECTION	YEAR	BUDGET
3.4.1	Expand the solar panel purchase program to promote the installation of small-scale renewable energy systems such as solar panels and solar water heaters across local households.	Planning Activation	Ongoing In-House
3.4.2	Implement the Community Energy Program in collaboration with the Resilient Hills and Coast Energy Foundation (involving the council areas of Adelaide Hills, Mount Barker, Alexandrina, Victor Harbor, Yankalilla and Kangaroo Island).	Planning Activation	2019/20 2020/21 2021/22 \$25,000 \$25,000 \$25,000
3.4.3	Promote active communities and reduce reliance on vehicle travel through innovations in car free transport, improving bicycle networks and walking infrastructure and implementing the Victor Harbor Pedestrian Strategy.	Environment & Infrastructure	2019/20 Ongoing Various as per Strategies and Asset Management Plan
3.4.4	Work with Regional Development Australia to maintain the Electric Highway project to support alternative energy powered vehicles.	City Activation and Planning	2020/21 In-House
3.4.5	Lobby the state government to provide improved local and regional public transport.	Governance and Finance	2019/20 Ongoing In-House
3.4.6	Establish a corporate and community data tracking system to measure energy use, greenhouse gas emissions and abatement actions such as solar installations.	Environment & Infrastructure	2020/21 Consultant \$10,000 In-House
3.4.7	Undertake sub-regional planning and action, based on the Regional Climate Change Adaptation Plan (1.3.2) and integrate climate adaptation considerations into Council's development, operational and asset planning.	Property Environment & Recreation	2020/21 In-House
3.4.8	Participate in the 'Where we build – What we build' project with the Southern and Hills LGA – a project to provide evidence for and encourage the development of climate-ready and disaster resilient homes and residential development.	Property Environment & Recreation	2019/20 In-House
3.4.9	Engage in the Planning, Development and Infrastructure Act 2016 reforms including the Planning and Design Code and Design Standard elements which support climate mitigation and adaptation.	Property Environment & Recreation	2019/20 In-House

3.5 LESS WASTEFUL

Our planet has a limited amount of resources available for human use. The way we use energy, water and materials impacts on our natural environment, depleting resources, creating waste and generating greenhouse gas emissions. Council should strive to be energy and water efficient while reducing waste to landfill.

Victor Harbor's waste is now collected by Fleurieu Region Waste Authority and is disposed of at the Southern Waste Disposal Depot at Pedler Creek. Waste collection services approximately 6,000 tenements per week. A green organics and recycling service for urban households was introduced in 2006, and a monthly co-mingled recycling service commenced in 2007. A three-bin domestic collection service is in place for urban areas and there is a two-bin system in rural areas in the region. Services aim to encourage and support source segregation of recyclables. FRWA also provides public litter bin collections, event bin provision and collection, and the provision of community information and education.

Waste and recycling depots within the Fleurieu Region, receive waste such as e-waste, mobile phones, fluorescent tubes and light bulbs, X Ray films, batteries, oil, paint, drums and chemical containers, chemical waste or asbestos. The National Computer and Television Scheme, Mobile Muster or ChemClear are examples of programs organised to promote recycling of pollutant waste. Another key recycling program is the processing of inert construction and demolition material into valuable crushed rock. Charities and private businesses on the Fleurieu operate other recycling and salvage services.

The Victor Harbor Wastewater Treatment Plant, commissioned in 2005, treats sewage to a 'Class A' reuse standard which is the highest quality of recycled water and is safe for a number of uses including irrigation of gardens and crops, livestock drinking water, toilet flushing, car washing and other uses. The Class A reuse standard has greatly reduced the discharge of harmful nutrients into the Inman River and Encounter Bay's marine environment.

Through the Victor Harbor reuse scheme treated wastewater is reused by Council to irrigate Council reserves, sporting fields and ovals as well as the cemetery. Irrigated facilities include Victor Harbor Oval, Encounter Bay Recreation Ground, Civic Centre and Barker Reserve. The recycled water pipeline (5 kilometres) which was commissioned in 2011 enabled the supply of recycled water to be extended to irrigate the oval at Investigator College as well as the grounds of the Victor Harbor Holiday and Cabin Park.

WHAT THE COMMUNITY VALUES - THEMES FROM THE CONSULTATION

Locals are in support of initiatives to reduce, recycle and reuse waste through:

- Public education
- Community composting
- Less waste from local events
- Banning plastics
- Using recycled and repurposed materials in local products: road surfaces, boardwalks, benches and tables
- More local food swap carts
- Reliable recycling, waste and hard rubbish collection
- Responsible waste disposal
- Considering advanced technologies (waste to energy)

The community also highlighted the importance of greening the area and looking after trees in times of drought, through Council's irrigation scheme.

The community values

- Careful management of waste
- The recycling and green organics collection
- Pro-active action by Council
- Local clean-up days
- Green landscapes through effective irrigation

LESS WASTEFUL – ISSUES AND ACHIEVEMENTS TO DATE

Issues Rasied

- A kerbside bin audit in 2017 showed that 71% of average waste bin contents can still be recycled, about 44% of this is organic material which could go in the green organics bin.
- There is no hard rubbish collection.
- Public place recycling has had limited success due to incorrect items being put in the recycling bins.

Achievements to date

- Reducing waste to landfill - over the last 4 years, the total waste generated in the City of Victor Harbor showed a slight downward trend of 0.47%
- In 2017/18 the council diverted atleast 40% from landfill - 2,409 tonnes of material was diverted comprising about half green waste and kerbside recyclables.
- The Bin Tagging Program, which commenced in 2018, where bins are checked and tagged based on their content, has generated positive changes.
- In 2017/18, Council used 17,235 kL of recycled wastewater for irrigation.

PICTURE THIS.....A VISION FOR LESS WASTE

- Our coastal and river waters are free of litter and pollutants
- Coastal conservation areas are well known to the wider community and tourists
- Our coastal birds and marine species are thriving and protected from harm



GREEN ORGANICS COLLECTED FROM HOUSEHOLDS IS PROCESSED INTO VALUABLE MULCH AT THE REGIONAL WASTE AND RECYCLING DEPOTS.

ACTION PLAN FOR LESS WASTE

ACTION		RESOURCES AND COUNCIL SECTION	YEAR	BUDGET
3.5.1	Work with the FRWA to transition to fortnightly kerbside collection of all three waste types from 1 July 2019, aiming to increase kerbside recycling capacity and reduce the waste which goes to landfill.	Environment & Infrastructure	2019/20	2019/20 Operating Budget
3.5.2	Make all Council events Less Waste Events through working with the FRWA, providing training to relevant staff on the FRWA Less Waste Guidelines and showcasing examples of good practice, recruiting 'less waste' event volunteers and monitoring event waste data.	Planning Activation	2020/21	In-House
3.5.3	Support community and business education on waste minimisation and recycling with the FRWA.	Environment & Infrastructure	2021/22	In-House
3.5.4	Integrate environmental criteria into Council's procurement processes to support: sustainable features, less waste, purchase of recycled content products.	Governance and Finance	2020/21	In-House
3.5.5	Showcase the use of recycled content product in the provision of public infrastructure projects and assets.	Environment & Infrastructure	2020/21	In-House
3.5.6	Expand the Victor Harbor Recycled Water Plan to additional irrigation sites and to increase reuse to the target level of 23,500 KL.	Property, Environment & Recreation	2020/21	To be determined
3.5.7	Support community and business projects to reduce food waste such as: - The Openlight (Toc H) Community Garden - The Victor Veggie Swap market - Public water bottle refill stations	Environment & Infrastructure	2022/23	In-House

3.6 WORKING TOGETHER

There are lots of different groups involved in protecting and enhancing the local environment. The community can achieve more through working together. Council, residents, communities, government agencies, educational bodies, not-for-profit organisations and businesses all have a role to play.

To achieve significant change, Council will continue to work in partnership and help build the capacity of volunteer groups. This is a complex challenge that will require a mixture of approaches. Council also needs to use its finite resources strategically, to be most effective.

FIGURE 3 - PARTNERSHIPS FOR ENVIRONMENTAL MANAGEMENT



COLLABORATIVE EFFORT – WESTERN PYGMY POSSUMS ARE ONE OF THE TINIEST POSSUMS IN AUSTRALIA. NEST BOXES HAVE BEEN INSTALLED TO COLLECT DATA ABOUT THE SPECIES THAT WILL HELP PROTECT THEM. IN VICTOR, VARIOUS GROUPS ARE INVOLVED. THE LOCAL MEN'S SHED MAKE THE BOXES WHICH ARE INSTALLED BY LOCAL CONSERVATION GROUPS.

IMAGE THE WESTERN PYGMY POSSUM – PETER WATTON (BUSH FOR LIFE OPERATIONS MANAGER).



WORKING TOGETHER WITH THE INMAN RIVER CATCHMENT AND LANDCARE GROUP.

WORKING TOGETHER – WHAT THE COMMUNITY VALUES

Consultation with the community reflected that many groups are playing an active role in environmental management and there's opportunity to strengthen capacity for community action.

The community values the:

- Friendly connected and co-operative community
- Unique people and their hard work together
- Wisdom
- Number of volunteers working to improve our natural environment.
- Ngarrindjeri and Ramindjeri input and recognition
- Community groups and the collaborative effort across them
- School programs

Council recognises that Victor 'can be a lighthouse for what to do' and can act as an 'enabler' of community initiatives. Council also acknowledges that strong relationships with State and Federal Government Departments are essential.

PICTURE THIS.....A VISION FOR WORKING TOGETHER

- Environmental groups have a streamlined avenue for Council support
- Community group volunteering projects are well known to locals
- Ngarrindjeri and Ramindjeri input is at the forefront
- Duplication of effort is minimised

ACTION PLAN FOR WORKING TOGETHER

ACTION		RESOURCES AND COUNCIL SECTION	YEAR	BUDGET
3.6.1	Develop a register of nature conservation and environmental volunteering opportunities in the region and promote on Council's website, at Council venues and through the South Coast Environment Centre.	Property Environment and Recreation	2020/21	In-House
3.6.2	Promote nature conservation and environmental grant opportunities (or develop a Council environmental grants scheme).	Property Environment and Recreation	2022/23	In-House
3.6.3	Develop a policy position on engagement with the Ngarrindjeri and Ramindjeri community and provide cultural awareness training to relevant staff.	Governance and Finance	2019/20	In-House
3.6.4	Investigate a potential new role of 'Sustainable Victor Coordinator / Projects Officer' to: facilitate communication across Council and external agencies in the implementation of this Plan; coordinate corporate environmental improvements; and to promote environmental volunteering, projects and events.	Property, Environment & Recreation	2020/21	For future council budget consideration

4. SUPPORTING STRATEGIES AND POLICIES

Protecting and enhancing the local environment is supported through legislation and various local, regional and State plans and policies. Council is committed to effective working relationships with our neighbouring Councils, regional associations and the State Government, to facilitate progress against policy directions and the enforcement of legislation which benefits the environment.

TABLE 1 – SUPPORTING STRATEGIES, PLANS AND LEGISLATION

	LOCAL	REGIONAL	STATE	LEGISLATION
NATURAL LANDSCAPES	Tree Management Strategy	Adelaide and Mount Lofty Ranges NRM Board Regional Plan	Managing Our Landscapes – Conversations for Change (Landscape Reform Discussion Paper)	Environment Protection and Biodiversity Conservation Act 1999
COASTAL CITY CHARACTER	City of Victor Harbor Development Plan and DPAs	SA Hills and Fleurieu Peninsula Regional Public Transport Study	30 Year Plan for Greater Adelaide – 2017 Update	Planning Development and Infrastructure Act 2016
	Urban Growth Management Strategy 2008-2030		South Australian Tourism Plan 2020	Environment Protection Act 1993
	Victor Harbor Main Street Precinct Master Plan			
	Tree Management Strategy			

	LOCAL	REGIONAL	STATE	LEGISLATION
CLEAN COAST AND WATERWAYS	City of Victor Harbor Recycled Water Management Plan	Southern Fleurieu Coastal Action Plan	SA Boating Facilities Strategic Plan	Coast Protection Act 1972 Environment Protection Act 1993 Local Nuisance and Litter Control Act 2011
CLIMATE ACTION		Resilient Hills and Coasts: Climate Change Adaptation Plan	30 Year Plan for Greater Adelaide – 2017 Update	
LESS WASTEFUL		Fleurieu Regional Waste Authority Charter and Strategic Plan Fleurieu Regional Waste Authority – Waste Less Events Guidelines	South Australia’s Waste Strategy 2015-2020	Environment Protection Act 1993 Zero Waste Act 2004
ALL	City of Victor Harbor Community Plan 2036 City of Victor Harbor Strategic Directions 2016-2020	Wellbeing in our Community – Regional Public Health Plan for the Southern and Hills LGA Regional Youth Strategy Southern Fleurieu Regional Recreation, Sport and Open Space Strategy		

5. GLOSSARY

BIODIVERSITY

Biodiversity is the variety of all life forms on earth - the different plants, animals and micro-organisms and the land, marine and freshwater ecosystems (or habitats) of which they are a part. Species depend on their habitat for survival and that habitat depends on the dynamic complex of plants, animals, fungi, and micro-organisms that are present. Biodiversity is most often used in relation to plants and animals which are native to an area, but it also underpins human life and the resources upon which we depend. A highly diverse and complex system is a sign of health and to maintain and regulate atmosphere, climate, fresh water, soil formation, cycling of nutrients and disposal of wastes. It also provides us with materials we use in our daily lives and the natural recreation areas and natural beauty we love and enjoy.

ESTUARY

An estuary is a partially enclosed coastal body of brackish water with one or more rivers or streams flowing into it, and with a free connection to the open sea

FLEURIEU PENINSULA SWAMPS

The Swamps of the Fleurieu Peninsula are localised wetlands occurring in high rainfall areas in the local catchment areas of Tookayerta, Hindmarsh, Parawa, Myponga, Yankalilla, Onkparinga, Currency Creek and Finniss. They are densely vegetated and occur adjacent to waterlogged soils around low-lying creeks and flats. The Swamps are typified by their reedy or healthy vegetation growing on peat, silt, peat silt, or black clay soils

COMMUNITY ENERGY

In simple terms, community energy is a group of people coming together to generate, own, manage, or reduce consumption of energy. Every community energy initiative is different and developed for different reasons - from tackling climate change to generating local job. Community energy is relatively new to Australia. There are now over 100 community energy groups in Australia, with over 70 projects, and local governments are increasingly getting involved.



CLIMATE CHANGE

A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

CLIMATE CHANGE ADAPTATION

Climate change adaptation helps individuals, communities, organisations and natural systems to deal with those consequences of climate change that cannot be avoided. It involves taking practical actions to manage risks from climate impacts, protect communities and strengthen the resilience of the economy. Adaptation can involve gradual transformation with many small steps over time, or major transformation with rapid change.

ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'.

CATCHMENT

A catchment is an area where water is collected by the natural landscape. In a catchment, rainwater run-off will eventually flow to a creek, river, dam, lake, ocean, or into a groundwater system.

WATER SENSITIVE URBAN DESIGN

Water-sensitive urban design (WSUD) promotes the sustainable use and re-use of water in urban and buildings. This type of design integrates the total water cycle and water from all sources – including rainwater, storm water, groundwater, mains water and waste water – into urban development and building processes.

WSUD measures and tools can be applied to residential, commercial and industrial developments and buildings. They range from the storage, treatment and use of runoff to water-efficient landscaping. WSUD can help communities achieve greater water sustainability and become more pleasant places to live and work.



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