Issues Paper: The environmental elements of sustainability

A precursor to the Environmental Sustainability Strategy.

Introduction

Introduction

The Shire of Augusta Margaret River has a strong commitment to protecting the environmental values on which the region's lifestyle, tourism and economy are based. The Shire's Corporate Business Plan 2015-2019 identifies preparation of an Environmental Sustainability Strategy (ESS) for initiation in the 2015-16 financial year.

The purpose of the ESS is to provide a strategic framework for planning projects, improving business structures and allocating resources towards environmental management and sustainability as described in the objectives below.

This document is not the Environmental Sustainability Strategy. It is an issues paper which provides a base level of information which will assist the Shire and the community to make recommendations about environmental projects and programmes to be set out in a future ESS.

Successful preparation of the ESS depends on substantial input from the community. This issues paper is intended to open lines of enquiry and engagement with the community such that the resultant ESS (which will be subject to further public consultation once in draft form) can be truly reflective of community aspirations.

The document is structured in such a way so as to explain and explore:

- The natural and social environment we live in
- The major environmental issues we face
- What role the Shire currently plays in addressing the issues
- What projects have/will we undertake and how much do they cost?
- How we measure success - do we have a target, are we meeting it?

We urge you to read the document and make a submission. Your comments will act as an important input into establishing a suite of agreed recommendations in the final ESS.

Objectives

The Objectives of a future Environmental Sustainability Strategy will be to:

- Achieve a better understanding of the wide range of initiatives which the Shire currently participates in, aimed at maintaining or improving the quality and sustainability of the natural environment and wise resource use.
- Review the effectiveness of the Shire's business processes and structures in managing environmental aspects of sustainability.
- Make recommendations regarding the prioritisation of projects requiring Council funding.
- Recommend adjustment to Council's business framework where necessary to ensure projects are targeted at meeting agreed environmental / sustainability KPI's, in a way that can be readily measured.

Context and scope

The Shire operates within a complex network of Government agencies, organisations, community groups, private landholders and volunteers who contribute to managing and protecting the environment. Since 2007, a Sustainability Advisory Committee has drawn together individuals with relevant interest and expertise to advise Council on sustainability issues. In 2015 the Shire signed a Memorandum of Understanding (MOU) with Curtin University Sustainability Policy (CUSP) Institute for partnership projects which include research, public seminars and community workshops. The Shire also has an MOU with each of the the Cape to Cape Catchment Group and the Lower Blackwood LCDC.

The scope of the Strategy includes all the activities through which the Shire meets its environmental obligations including:

- managing its business operations e.g. waste disposal, operating offices and facilities;
- managing Reserves vested in the Shire and other areas (e.g. street verges) for which it has responsibility;
- implementing specific projects e.g. the Local Energy Action Plan (LEAP);
- conducting projects in partnership with other bodies e.g. CUSP;
- contributing funds to organisations/projects to achieve Council objectives e.g. the Cape to Cape Catchments Group.

Our environment

Natural

The Shire of Augusta Margaret River is 237 000 ha in size. The northern Shire boundary is 250 kilometres from Perth and extends in a southerly direction for approximately 60 kilometres and 62 kilometres from the west coast to the eastern boundary of our neighbour, the Shire of Nannup. The Shire has an extensive coastline with 138 kilometres of beaches, bays and rocky points.

Over 60 per cent of native vegetation cover is retained including 82 246 ha of State Forest and 18 815 ha within reservations including Scott National Park. The Leeuwin-Naturaliste National Park includes the Boranup Karri Forest between Caves Road and the coast where karri trees reach 60 metres in height and dominate the landscape. Vegetation forms part of a wider corridor referred to as the 'Gondwana Link', where concerted efforts are being made to restore cleared land across 1,000km of south western Australia.

The Shire forms part of the Southwest Australia Ecoregion (SWAE), which has global significance given its high levels of natural diversity, particularly for plants. The SWAE is one of 34 internationally recognised biodiversity hotspots and is the only one in Australia. This listing recognises both the high species diversity of the south west, making it irreplaceable, and the retention of 30 per cent or less of the original natural vegetation, meaning it is threatened.

We are fortunate in the Shire to have a higher (than in the wider south west) retention of natural ecosystems that are largely intact and where native species and communities associated with these ecosystems are well represented. A high diversity of plant and animal species, many of which are endemic (not found elsewhere), makes our Margaret River Region one of the recognised Australian priority 'hotspot' areas for biodiversity conservation. It is estimated that within the Shire there are:

- 6 Threatened Ecological Communities;
- 57 Vegetation complexes including 20 that are endemic to the Shire and a significant number which are threatened or poorly reserved;
- 69 Declared Rare and Priority Flora species; and
- 28 Declared Threatened Fauna species including the Brush-tailed Phascogale and Western Ringtail Possum.

A number of endangered species are endemic to the Shire, for example the Margaret River Hairy Marron and Burrowing Crayfish, White-bellied Frog and Cape Leeuwin Freshwater Snail. The cave systems support aquatic invertebrates found only in Western Australia and threatened cave communities.

Three true river systems (Margaret River, Blackwood River and Scott River) and 18 creek systems provide water for agriculture and the environment. The waterways, apart from the Blackwood, have not been affected by salinity like many others in Australia. Hence they have immense natural values and are home to a diverse range of flora and fauna. These streams are important habitat for fresh water fishes such as Balston's pygmy perch and the western mud minnow. Many wetland systems have also been cleared and modified by drainage. Those remaining therefore have significant value, including Cape Leeuwin wetlands, Lake Davies, Devils Pool and the Margaret River swamps.

Many pressures are placing our natural environment at risk. A review of our current actions is critical to ensuring that protection is in place not only our precious biodiversity but also our landscapes, lifestyles, tourism, recreation and the businesses that depend on them.

Human

The population of the Shire has risen steadily at 3.4 per cent per annum since 1991 and as at 2014 was estimated to be 13 608 persons. It is variously predicted that the population will continue to increase to between 16 500 and 21 000 persons by 2031.

The Augusta Margaret River community typically reside in three-bedroom detached homes on freehold residential alotments of between 500 m2 and 800 m2. The average household size is 2.5 persons per dwelling. In order to accommodate the anticipated population growth within this form and density of development, 3 200 residential lots will be needed over the next 16 years to 2031, requiring approximately 410ha of 'raw' land to be developed into new residential subdivisions.

Naturally, an increase in population leads to the generation of increased amounts of household waste, water use, carbon emissions from transport and electricity use and increased pressure on the natural environment. On average, each new household will, over the course of one year, produce 14 tonnes of greenhouse gas emmisions use 288 000 litres of water and produce 3.3 tonnes of waste.

As the Shire grows to meet the expectations of a larger community, so too will its corporate consumption and waste generation if not otherwise addressed.

A generally accepted way of measuring the human impact on the natural environment is 'ecological footprinting'. The ecological footprint is a measure of the total amount of land required to supply all the resources a person's lifestyle demands. This includes land disturbance related to agriculture and other activities, as well as a component to account for greenhouse gas emissions (World Wide Fund for Nature 2006). It is calculated that Australia's ecological footprint is on average 6.45 ha per person, making it one of the highest in the world. Contrary to popular conception, the main factor influencing the size of our ecological footprint is the embodied energy and water in the food and goods which we consume.

There are immense human resources residing in the Shire with the knowledge and passion for protection and enhancement of the natural environment. The Shire partners with a number of groups and committed individuals who work together to achieve common environmental objectives. The Shire's project partners include:

- Cape to Cape Catchment Group
- Curtin University Sustainability Policy Institute
- Transition Margaret River
- Sustainability Advisory Committee
- Margaret River Regional Environment Centre
- Lower Blackwood LCDC
- Margaret River Coastal Residents Asscoiation
- Friends of the Hardy Inlet

Defining environmental sustainability

Defining environmental sustainability

The term 'Sustainability' as it is currently used derives from 'sustainable development' a term used to explain a development paradigm defined by the World Commission on Environment and Development in 1987 as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

Despite being often used, the concept of sustainability has remained elusive and has taken on different emphasis dependant on which 'pillar of sustainability', the user seeks to reinforce.

In recent times, climate change emerged as the most pressing of issues impacting upon 'sustainability and therefore has become a proxy for sustainable development with any actions aimed at mitigating against climate change considered to be inherently 'sustainable'.

In 2015, the United Nations adopted Sustainable Development Goals for the period to 2030. The goals assist in achieving an understanding of what sustainable development and sustainability 'look like'. As they relate to the environmental elements of sustainability, the goals are:

Goal 6.
Ensure availability and sustainable management of water and sanitation for all

Goal 7.
Ensure access to affordable, reliable, sustainable and modern energy for all

Goal 12.
Ensure sustainable consumption and production patterns

Goal 13.
Take urgent action to combat climate change and its impacts

Goal 14.
Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Goal 15.
Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

The Shire of Augusta Margaret River's Vision has sustainability at its core and can be summed up in three words – Natural, Connected and Prosperous. Our vision requires an intergenerational approach and an integration of the triple bottom line in all that we do as a local government. Our vision drives the long term Community Strategic Plan which drives the four year Corporate Plan which is in turn is informed by a variety of key strategic documents including a future Environmental Sustainability Strategy.

This Issues Paper and the future ESS focus on the environmental aspects of sustainability. In this context sustainable practices, policies, behaviours and development are those which have a positive impact on the natural environment. Presently, the Shire's endeavours aimed at achieving positive environmental outcomes can be categorised into the following areas:

- Addressing climate change
- Coastal protection
- Biodiversity protection
- Waste Management
- Water conservation.

In accordance with the *Local Government Act 1995*, the Shire is required to "use its best endeavours to meet the needs of current and future generations through an integration of environmental protection, social advancement and economic prosperity".

Economic sustainability and social (equity) issues will be further explored by the Shire in separate documents, however in considering the environmental 'pillar' it is recognised that there is an opportunity for synergy between all areas of sustainability. For example a life-cycle approach to waste management which includes a 'buy local' policy contributes to environmental goals as well as social (e.g.supporting local business) and economic (cost savings).

Our environmental priorities – Addressing climate change

Australia's climate has warmed by 0.9°C since 1910, and the frequency of extreme weather has changed, with more extreme heat and fewer cool extremes. Warming in Australia is consistent with warming observed across the globe in recent decades. Evidence that the Earth's climate continues to warm is unequivocal. Multiple lines of evidence indicate that it is extremely likely that the dominant cause of recent warming is human-induced greenhouse gas emissions and not natural climate variability.

Life on Earth depends on the presence of greenhouse gases in the atmosphere to insulate our planet's surface against the chill of space; without them the Earth's average climate would be about 33°C cooler.

The atmospheric concentrations of some greenhouse gases are being affected directly by human activities namely release of carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), ozone (O3), and synthetic gases such as chlorofluorocarbons (CFCs) and hydrofluorocarbons (HFCs). Water vapour is also a major greenhouse gas, but its concentration in the atmosphere is not influenced directly by human activities.

Excess greenhouse gases in the atmosphere have the effect of trapping heat around the earth and hence creating 'the greenhouse effect', which has corresponding impacts for both land and sea temperatures.

The majority of carbon emission's emanating from within the Shire are derived from the business sector. Of the emissions produced by the corporate activities of the Shire, most emissions are generated from the Davis Road waste facility.

A change in climate has impacts far more significant than levels of personal comfort. In addition to rising average temperatures, climate change is expected to continue to generate a range of other impacts including:

- changes in rainfall patterns
- greater variability and unpredictability in weather patterns
- more extreme weather events
- more frequent and more severe disasters such as fires, floods and storms
- rising sea levels and increased storm surges
- acidification of oceans.

Strong international, national and local actions are needed to reduce greenhouse gas emissions and mitigate climate change. Local Government has a role in showing leadership in lowering its own greenhouse gas emissions and in facilitating business and community initiatives, for example renewable energy, energy conservation and regenerative agricultural practices.

However, even with strong international action to reduce greenhouse gas emissions, some level of climate change is now unavoidable due to greenhouse gases already in the atmosphere. This means that adaptation strategies must form a significant component of our response. This will be addressed through a Climate Change Response Plan, currently under preparation. Opportunities for community input will be offered during development of the Plan.

Our actions

Case study – Local Energy Action Plan (LEAP)

The LEAP was first adopted in 2010, and has since been reviewed and updated (2014). Since inception, its implementation has delivered the following projects:

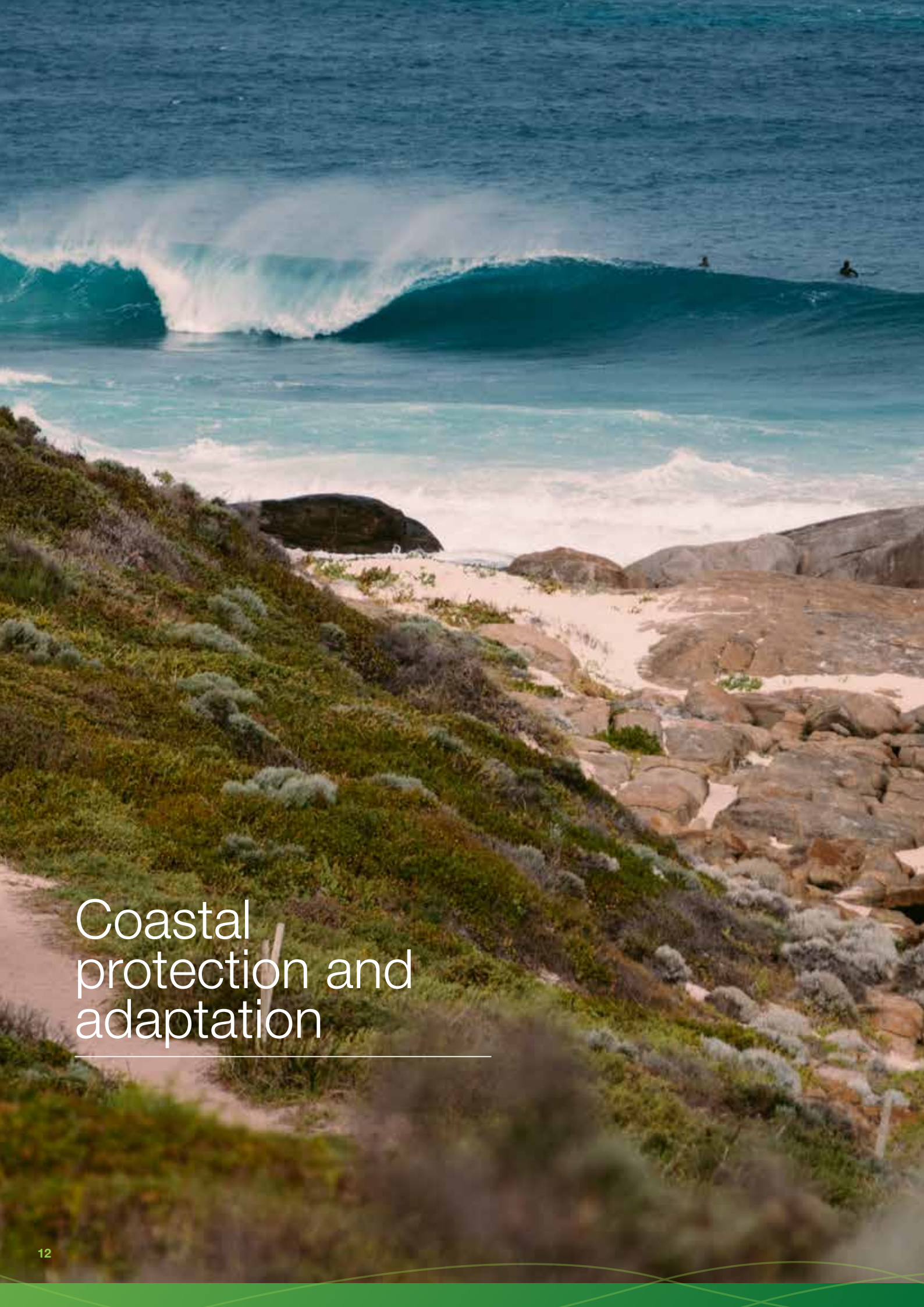
- 44 kW of solar photovoltaic cells installed on Shire buildings
- Heat pumps for low energy water heating at Flinders and Turner Caravan Park
- Low energy LED lighting replacement at the Margaret River Recreation Centre
- Tree planting to offset 550 tonnes of CO2 p/yr
- Independent measurement of Shire's CO2 emissions on a quarterly basis
- Electric Vehicle charging stations at Margaret River and Augusta
- Renewable energy education seminars with local community

Addressing climate change

Our strategy

What is it?	Climate Change
What causes it?	Human-induced greenhouse gas emissions
Related United Nations Sustainable Development Goal	Goal 13. Take urgent action to combat climate change and its impacts.
How does it impact us?	Reduced rainfall with higher evaporation and reduced runoff into rivers Warmer climate with more hot days More frequent extreme weather events More frequent and intense bushfires Loss of biodiversity Sea level rise with changes in storms and storm surges causing coastal flooding and erosion, infrastructure damage Climate refugees – increased population growth
What influence can we have?	Climate Change is a global process resulting from emission sources throughout the planet. Carbon emissions created in the Shire equate to 0.18% of those produced in the State, however it is expected that all levels of Government provide strong leadership and take responsible actions to reduce emissions and on ground action can make local ecosystems more resilient to impacts of climate change
Current Target	Reduce corporate (Shire) carbon emissions by 30% below 2006/2007 levels by 2020. Reduce community carbon emissions by 20% below 2006/2007 levels by 2020.
Current KPI's	1.2 The Shire has a planned response to climate change
What are we currently doing about it?	LEAP is a comprehensive programme which has the objective of continuously reducing the Shire's greenhouse gas emissions and incorporates initiatives across Council, business sector and community energy use. The Shire supports investigation into a community initiated renewable energy project.

Indices guiding future policy/funding commitments		
What are the costs?	**Low**	Each year, the Shire spends approximately $887,000 on energy (fuel/electricity) resulting in the emission of 3000 tonnes of CO2. The cost per tonne of carbon reduction for different established reduction methods are as follows: $39 - solar PV installation $40 - green power $19 – offsets from tree planting Note – the Federal Governments Emissions Reduction Fund has reduced carbon emissions at an average cost of $13.965 per tonne across 144 projects.
Planned Expenditure	**Low**	In 2015-16 the Shire intends to spend $62000 or 10% of its total environmental expenditure on reducing carbon emissions.
Expenditure required to meet current targets	**Med.**	The growth in corporate and community emissions since 2007 has steadily increased the size of the challenge.
Capacity to monitor and report on implementation of KPI's	**Low.**	Measurable KPI's should be developed which reflect LEAP goals.
Level of community support		Your views on the Shire's current and future strategies relating to this topic are sought.



Coastal protection and adaptation

Our environmental priorities - Coastal protection and adaptation

Rising sea levels together with increased extreme weather events, storm surges and changing wave patterns are causing coastal erosion, inundation and flooding in many places around Australia.

Sea level rise is caused by the expansion of oceans as they warm, the addition of water to the ocean from melting glaciers, ice caps and ice sheets, and changes in the level of seabeds relative to land.

Rates of sea level rise are not uniform around the globe and vary from year to year. Since 1993, the rates of sea level rise in waters to the north and northwest of Australia have been 7 mm to 11 mm per year (two to three times the global average). Rates of sea level rise on the central east and southern coasts of the continent are generally similar to the global average. These variations are at least in part a result of natural variability. However, they highlight that the impacts of sea level rise are likely to be experienced differently at various points around the Australian coastline.

The issue is of particular relevance to the Shire of Augusta-Margaret River which borders both the west and south coasts and includes approximately 138 km of coastline under a mixture of private and public tenure. The coastal foreshore areas are a major focus for recreation and low impact tourism enterprises, and include a number of coastal settlements. Given the high importance of the coastal foreshore reserves and beaches to the permanent and tourist populations, supporting local businesses both directly and indirectly, it is of significant importance to manage the coastal foreshore reserves and infrastructure.

Our actions

Case study – Coastal Hazard Risk Management and Adaptation Planning (CHRMAP)

The CHRMP is phase one of an overarching Climate Change Response Plan to be prepared by the Shire. The CHRMAP is being prepared to provide strategic guidance on management and adaptation in areas exposed to coastal processes within the key coastal settlements identified by the Shire. These settlements are Augusta, Hamelin Bay, Molloy Island, Prevelly, Gnarabup and Gracetown.

The need for a CHRMP was emphasised during the storm events of 2014 which destroyed some of the Shire's key recreation infrastructure along the Prevelly/ Gnarabup coastline. Most development is located well above the current mean high water level. Others which are identified as being at risk will be the major focus of the CHRMP.

The report follows a process outlined in the State Coastal Planning Policy of risk identification, risk analysis and risk evaluation in order to make recommendations for risk management and adaptation. Two stakeholder consultation workshops were undertaken as part of this process, and stakeholder input incorporated.

Our strategy

What is it?	Coastal erosion and flooding
What is it?	Rising water levels due to expansion of warming oceans and melting glaciers and polar ice, extreme weather events, storm surges and changing wave patterns
Related United Nations Sustainable Development Goal	Goal 13. Take urgent action to combat climate change and its impacts
How does it impact us?	Potential loss of or damage to public infrastructure Potential loss of or damage to private properties Potential loss of or damage to beaches and foreshore reserves Damage to habitats and biodiversity Flood and inundation of low-lying coastal areas
What influence can we have?	Whilst we cannot stop storm surges or sea level rise, we can plan ahead of time to protect private and public assets or to locate infrastructure in less vulnerable areas.
Current Target	The Shire's current focus is upon understanding and quantifying the nature and extent of the issue. The CHRMAP will assist in informing future targets.
Current KPI's	Nil
What are we currently doing about it?	The CHRMAP is being prepared to identify the potential consequences of rising sea levels and coastal erosion/inundation on near-shore environments and infrastructure. It is however only the first step in a wider Climate Change Response Plan. Detailed investigations and modelling of coastal processes are being undertaken by the Shire at Gnarabup and Prevelly, identified by the CHRMAP as a high priority.

Indices guiding future policy/funding commitments		
What are the costs?	**Low**	The recommended design, coastal studies and works to mitigate the identified risk have an estimated cost of under $1.2 million which is low relative to the value of assets protected. It is estimated that $158 million worth of Shire and community infrastructure is potentially exposed to coastal processes within a 100-year planning period.
Planned Expenditure	**Low**	In 2015-16 the Shire intends to spend $119,000 or 19% of its total environmental expenditure on climate adaptation.
Expenditure required to meet current targets	**Low**	$1.2 million
Capacity to monitor and report on implementation of KPI's	**N/A**	KPI's should be developed to measure progress in this area.
Level of community support		*Your views on the Shire's current and future strategies relating to this topic are sought.*

Biodiversity Protection

Our environmental priorities – Biodiversity protection

Globally, the loss of habitat area through clearing is the primary cause of declines in species and populations. In WA the historical and continuing removal of vegetation both through clearing and a raft of degrading forces are recognised as a major threat to biodiversity.

In addition to the direct loss of habitat resulting from clearing and degradation of native vegetation, clearing also results in the fragmentation of the landscape meaning that remaining habitat is less viable as it is often isolated within small or unconnected remnants.

Although the Shire contains relatively extensive areas of native vegetation on both public and private lands, loss of biodiversity is a key. A strong development culture and agricultural expansion are considered to have been the primary driver of clearing in the south west between 1945 and 1982. More recently, urban development, extractive industries and expanding wine and plantation industries have been associated with pockets of native vegetation clearing.

There are four broad environmental corridors identified in the Shire that encompass and link large areas of existing vegetation being the Margaret River, Witchcliffe, Forest Grove and Blackwood Corridors.

Riparian (occurring along waterways) vegetation is particularly important in that it provides multiple benefits such as erosion control, habitat for terrestrial (land based) and aquatic species, shade which maintains the temperature of water at suitable levels and extracts nutrients therefore filtering water.

Climate change, declining rainfall and the frequency and severity of bushfires pose a significant threat to biodiversity, and these factors are addressed elsewhere in this document. Other degrading factors identified for remnant vegetation and communities are weeds, pests and diseases.

Weeds

Environmental weeds are often fast growing, pioneer plants that can rapidly invade and dominate sites following disturbance. The ability of environmental weeds to out compete native plants for available nutrients, water, space and sunlight represents a significant risk to many native flora and fauna species. They have the ability to not only dominate ecosystems, but also to simplify them (through the loss of species) and transform ecosystems by changing nutrient cycles, vegetation structure or fire regimes. Environmental weeds are widely recognised as one of the most significant threats to biodiversity in the south west region. There are a large number of significant weeds which are present in the Shire, with recent prioritisation work identifying seven emerging weeds and six established weeds as highest priority.

Pests

Feral or introduced animal species come in all forms with varied and widespread impacts. Feral predators such as foxes and cats prey upon native species, potentially causing regional extinctions and seriously threatening the survival of others (Molloy et al 2007). Other species such as rabbits and pigs consume and damage vegetation or soil structure and prevent regeneration. European honey bees invade tree hollows denying critical habitat to native birds and mammals (Low 2001). Introduced fish and crustaceans have the potential to outcompete native equivalents, dominating, modifying and simplifying aquatic ecosystems.

The priority for pest animal control is prevention because once established it is often impossible to completely eradicate high risk species. If established, management must aim to limit damage to native species and maintain threatened species at sustainable levels. It is worth noting that many Australian natives (e.g. kookaburra, lorikeet, smooth marron) and even locally native species (western grey kangaroos) have the potential to impact on biodiversity (Molloy et al 2007).

Plant disease

Plant diseases have significant potential to impact upon biodiversity in the Shire. The most significant is Phytophthora dieback. Phytophthora dieback is an introduced disease that is a major threat to the biodiversity of southwest WA. It kills up to 40 per cent of all native plants and occurs in areas receiving 400 mm of rainfall per year or more. The movement of infected soil, plant material or water containing its spores, particularly under warm, moist conditions, will spread the disease into uninfected areas. Other significant risks to the Shire's biodiversity include Marri canker a native fungal disease that can eventually cause ringbarking and tree death.

Myrtle Rust, although not yet present in southern Western Australia, could have significant impacts on the Myrtaceae family which includes all Eucalypts, bottlebrushes, paperbarks and Peppermint trees. The fungus was first detected in New South Wales in 2010 and has since become established in that state as well as Queensland and Victoria.

Our actions

Case study – Witchcliffe Management Plan

The Shire of Augusta-Margaret River manages over 3,000 ha of reserves and each year prepares a management plan for one of these reserves. The purpose of reserve management plan is to determine management requirements for the reserve and to guide future allocation of limited funds and resources. Reserves are selected based on their environmental values (i.e. biodiversity) and social values (i.e. recreational use). Reserves recognised with high environmental values have been identified in the Shire of Augusta Margaret River Reserve Assessment and Prioritisation report (2006- 2012.

Reserve 29166 and surrounding smaller reserves form a 47 ha land parcel located along the Wadandi Track centrally within the Witchcliffe Village. The Shire has recently commissioned a management plan for the Witchcliffe Reserves which undertakes a study of their attributes and makes recommendations as to management actions which can be implemented to maintain the quality of the reserve and its natural, habitat, and passive recreation values.

Our strategy

What is it?	**Loss of biodiversity**
What causes it?	Diseases Fire and fire management Climate change Clearing of vegetation Weeds Pests/feral animals
Related United Nations Sustainable Development Goal	Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
How does it impact us?	Diminished environmental values and aesthetic/landscape quality. Reduced quality of open spaces and natural areas for recreation Reduced enjoyment by local residents and visitors – the region's biodiversity and landscapes underpin recreation, lifestyles, tourism and our local economy
What influence can we have?	Management of Reserves is a core function of the Shire. Removal of vegetation can be influenced by sensible planning, another core function of the Shire. Many residents provide volunteer time to assist with on ground works. Local land care groups are knowledgeable and committed. There are currently 2188 ha of natural areas under the Shire's control.

Current Target	The Shire currently develops one management plan per year. Ideally – all natural areas should have a management plan which is actively being implemented. Presently 350ha of Shire managed natural areas have a management plan in place. A target is required to guide preparation and implementation of future management plans – for example x hectares per annum.
Current KPI's	1 Improvement in the management and quality of the environment. 1.4 Increased areas of environmental significance are protected through zoning and/or conservation covenant
What are we currently doing about it?	Preparation and implementation of reserve management plans Fire management Weed control Strategic land use planning which avoids or minimises impacts on significant vegetated areas. Environmental stewardship project. Phytophthora dieback project Ringtail Possum project Funding CCG projects and education Climate Change Response Plan

Indices guiding future policy/funding commitments		
What are the costs?	**Low**	Preparing a typical management plan costs in the order of $15,000. Implementation costs range from $2000 - $10,000 p/a
Planned Expenditure	**High**	In 2015-16 the Shire intends to spend $145,000 or 24% of its total environmental expenditure on biodiversity enhancement.
Expenditure required to meet current targets	**Low**	The cost to implement management plans for all natural areas across the Shire is approximately $50,000 per annum excluding the cost of management plan development.
Capacity to monitor and report on implementation of KPI's	**Low**	Mechanisms to protect vegetation are now well established within the planning framework. KPI's should be modified so as to be measurable with a focus on extent of areas under active management.
Level of community support		*Your views on the Shire's current and future strategies relating to this topic are sought.*

Our environmental priorities –

Waste management

Contrary to popular conception is the reality that the majority of our environmental impacts are caused by the items we 'consume' and not those which receive the most attention such as water and electrictiy use. In fact, if every Australian household switched to renewable energy and stopped driving their cars tomorrow, total household emissions would decline by only about 18%. The emissions generated from producing the food we eat and the goods we purchase are together more than four times the emissions from our own personal use of electricity.

Australians spend at least $10.5 billion each year on things they don't use, including about $5.3 billion per year on wasted food. In Augusta Margaret River each household sends (on average) 3.3 tonnes of waste to landfill each year equating to 15 000 tonnes of domestic waste received, plus an additional 6000 tonnes of commercial waste.

The Shire, in setting a positive example has the opportunity to reduce its corporate waste. A Corporate Waste Reduction Strategy is identified for completion in the 2016/17 financial year.

As well as being a signficant source of the Shire's greenhouse gas emmissions, the Davis Road waste facility is also rapidly becoming unable to sustain its current high level of demand with its closure and construction of a new facility likely to cost $25 million.

The waste hierachy advocated by the WA Waste Authority identifies avoidance as the most preferred form of waste management. This highlights the need for behviour change in terms of our approach to purchasing, and requires us to preference goods which have less (or no) packaging and thus create less waste. Disposal is identified as the least preferable and most expensive option.

The Shire, in setting a positive example has the opportunity to reduce its corporate waste. A Corporate Waste Reduction Strategy is identified for completion in the 2016/17 financial year.

Case Study – Living Smart Program

Living Smart is a behaviour change program which provides participants with the skills and knowledge to take action in their own homes to improve their quality of life and reduce their environmental impact. The Shire funds the provision of the Living Smart course which is delivered by trained Living Smart facilitators. The course consists of seven workshops and a field trip all aimed at reducing electricity, waste, transport and water use in households.

Living Smart has the capacity to inform and encourage residents about the benefits of and methods for reducing and manageing household waste. The Shire's intent is to continue to host a Living Smart course every year.

Our actions

Waste management

Our strategy

What is the issue?	Waste and over-consumption
What causes it?	Use of single-use plastics, foam, polystyrene etc that are not biodegradable or take years to break up Purchasing habits Capacity to recycle Waste management practices Lifestyle habits
Related United Nations Sustainable Development Goal	Goal 12. Ensure sustainable consumption and production patterns
How does it impact us?	Contributes to greenhouse gas emissions. The Shire's landfill facilities create four times as many emissions as those attributable to corporate energy use. Landfill produces leachate which can pollute groundwater Plastic and other litter on beaches and foreshores degrades environment and impacts wildlife
What influence can we have?	Influence on Shire's purchasing and waste management practices The potential for all residents/businesses to change their behaviours is high however the Shire's capacity to influence behaviours is moderate.
Current Target	As reflected in KPI's. Corporate waste and consumption targets to be established through a corporate waste reduction strategy.
Current KPI's	2. Increase in % of waste diverted from landfill 1.2 Provision of viable waste service for the Shire for the next 25 years and reduction in per person volume of waste being put to landfill.
What are we currently doing about it?	Promoting behaviour change Preparing a Corporate Waste Management Plan Recycling – 19% of household waste deposited at the Davis Road facility is recycled.

Indices guiding future policy/funding commitments		
What are the costs?	**Low**	Behaviour change provides a low cost potential solution resulting in reduced waste to landfill.
Planned Expenditure	**Med.**	In 2015-16 the Shire intends to spend $110,000 or 18% of its total environmental expenditure on waste education and management. The cost to responsibly close the Shire's Davis Road landfill site and procure and develop a new site is estimated to cost $25 million.
Expenditure required to meet current targets	**Unknown**	Community based behaviour change programmes would typically be low cost. The cost of implementing a (yet to be developed) Corporate Waste Reduction Strategy are as yet unknown.
Capacity to monitor and report on implementation of KPI's	**Med.**	KPI's could be expanded and made more specific to aid in monitoring progress.
Level of community support		*Your views on the Shire's current and future strategies relating to this topic are sought.*

Water quality and conservation

Our environmental priorities – Water quality and conservation

It is now well established that rainfall in the south west of Western Australia has decreased as a result of climate change. This has been happening since the 1970s and has greatly reduced stream flows into dams and lowered regional groundwater levels. Observations confirm that some 'permanent' streams stop flowing for considerable periods and that groundwater levels have dropped up to 11m in some forested areas and even further in urban areas.

Based on work completed by the Commonwealth Scientific Investigation and Research Organisation (CSIRO) and the Bureau of Meteorology, this trend is expected to continue over the next 50 years. This will have a significant effect on water availability for all sectors, including households, business and industry, local government, mining and agriculture, as well as the environment.

Declining rainfall has a magnified effect on streamflow as it is mainly the excess water that isn't retained on the land that supplements the flows. Figures from the Water Corporation show that average streamflow dropped by 48 per cent after the mid 1970s and has dropped a total of 76 per cent since 2001. This has worrying implications for the water supply for natural environments, communities, farming and other industries.

Our actions

Case Study – Waste Water Recycling Project

In 2009 the Augusta Margaret River Shire commenced the process of undertaking a major water recycling project to reduce the pressures caused by climate change on the Margaret River and increase environmental flows and river health.

Community parks, two schools and sporting fields in Margaret River were previously irrigated with water pumped from the Margaret River. Today, irrigation water is sourced from a treatment plant which converts waste water into class 'c' water suitable for use in parks and gardens. The project saves approximately 270 000 Kl of water each year. Presently, 73 per cent of water used by the Shire for all purposes is recycled.

The Shire's intention is to continue to extend the irrigation infrastructure to allow for newly created parks and gardens to be watered with recycled water.

Our strategy

What is the issue?	Declining water availability / quality for water supply and the environment
What causes it?	Decreasing rainfall / aquifer recharge (climate change) Urban and agricultural (nutrient and chemical) runoff Increased groundwater and surface extraction
Related United Nations Sustainable Development Goal	Goal 6. Ensure availability and sustainable management of water and sanitation for all
How does it impact us?	Restrictions on household (garden) use Increased risk to agricultural producers Increased cost to taxpayers in providing alternative water sources. Environmental degradation resulting from greater aquifer extraction
What influence can we have?	Our choices can directly impact on the amount of water we use in the home and throughout the community. Best practice catchment management can improve water quality.
Our Target?	A definitive target should be developed and reflected in future KPI's.
Current KPI's	1.1 Improvement in quality of waterways
What are we currently doing about it?	Waste water recycling project and other water saving initiatives within Shire buildings. The Shire's water use is monitored by an independent auditor.

Indices guiding future policy/funding commitments		
What are the costs?	**Low**	Each year the Shire spends approximately $250,000 on water. The average cost of water from all sources is $2.43 kl. Recycled waste water is provided free of cost (excluding infrastructure)
Planned Expenditure	**Med.**	In 2015-16 the Shire intends to spend $100,000 or 16% of its total environmental expenditure on reducing potable water use.
Expenditure required to meet current targets	**Unknown**	A target needs to be developed to inform the extent of future spending needed in this area.
Capacity to monitor and report on implementation of KPI's	**Low**	Current KPI does not have a target or metric it can be measured against.
Level of community support		*Your views on the Shire's current and future strategies relating to this topic are sought.*

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