

1 Introduction

The role of goals and objectives is to focus planning, influence monitoring and evaluation and support implementation of effective adaptive management systems.

The overall objective of the strategy is intended to reflect underlying values of the range of stakeholders of the region. Stakeholder values typically reflect the underlying ecosystem services that are derived from the management and exploitation of the natural and modified environs of the region.

Properly valuing ecosystem services is essential to maintaining the structure and function of socio-ecological systems. Undervaluing ecosystem services typically leads to patterns of unsustainable resource use resulting in environmental degradation. Accumulated impacts of undervaluing ecosystem services typically result in species extinction, pollution of water ways and declining soil health resulting in associated socio-economic impacts. A detailed valuation of ecosystem services is presented in Section XX.

2 Values & Objectives

Mission Statement:

To assist the wheatbelt community effectively and efficiently manage the range of natural resources within the region on which they rely upon for their livelihoods, health and wellbeing; and to maintain the underlying structural and functional integrity of those natural resources for future generations.

Objectives of the strategy are intended to reflect underlying stakeholder values within the region.

Key values and associated objectives are presented In Table 1.

Table 1. Values and Objectives

<i>Values</i>	<i>Objective</i>
<i>Economic Values</i>	<p>Maintain a strong and resilient economy to protect and enhance the productivity and wellbeing of the community.</p> <p>Assist industries within the region to thrive (overcome current and future adversity).</p>
<i>Preservation of the natural resource base</i>	<p>Protect the soil, water and biodiversity resources of the region from degradation for future generations.</p> <p>Enhance soil health within the region.</p> <p>Maintain / improve environmental flows and water quality, including effective management of water resources and security of supply.</p> <p>Preserve the structural and functional integrity of biodiversity within the region, in the face of multiple overlapping stressors.</p> <p>Support effective and environmentally sensitive management of mineral resources within the region.</p>
<i>Feeding the Nation</i>	<p>Assist the agricultural industry remain strong by improving and developing appropriate farming systems for the new century.</p>
<i>Utilitarian values</i>	<p>Protect the unique and wonderful natural diversity of the region, including preserving the biodiversity, ecosystems and landscapes of the region.</p>
<i>Natural and cultural heritage values</i>	<p>Protect and preserve natural, cultural and historic values of the region.</p>
<i>Aesthetic Lifestyle Sense of Place</i>	<p>Maintain sense of place and ascetic values of the region.</p>

2.1 Economic Value

The strength of local communities with the Avon River basin reflects the performance of the local economy, impacting population trends and access to services. The GDP of the Avon River Basin is approximately \$6.6 million (3.4% of WA GDP), with approximately 50% of the regional economy generated via agriculture, 30% from mining and the remainder associated with retail, manufacturing, services etc. A strong local economy is essential to maintain vibrant and resilient communities and is a critical factor influencing the capacity of the region to effectively manage of natural resources.

2.2 Preservation of the Resource Base

The preservation of the underlying resource base within the region for future generations is a commonly held value, both by the local and broader community. Many landholders have an overriding desire to leave the country in a better condition than they found it, to look after the land that has supported them and their families for generations.

2.3 Feeding the Nation

The concept that the farming community is responsible for "*feeding the nation*" is an important and commonly held value within the local and broader community. This value is central to the identity of the region and the way the broader community identify with the regional community.

2.4 Utilitarian values

Utilitarian values of the region include the landscapes, ecosystems and underlying gene pool contained within biodiversity, soil fertility and the complex cycles and interactions that occurred within all organisms and physical resources of the region. Utilitarian values are associated with maintaining the capacity and integrity of the region for the "greater good".

2.5 Natural & cultural heritage value

Heritage values incorporate the natural, cultural and historic values of the region, including the natural systems and the connection people have to the land, and in particular the aboriginal connection to the land and its natural attributes. Cultural values also relate to the important European history of the region.

2.6 Aesthetic lifestyle values – a sense of place.

Aesthetic lifestyle values, otherwise known as a "*sense of place*" have a very strong resonance with local inhabitants of the region. People who live in the region do so because it is home, providing their sense of place, and is a strong underlying motivation for the local community.

3 Hypothesis & Goals

In addition to the broader objective of the strategy outlined above and series of more specific objective (referred to as goals) are presented. These goals are based on a series of hypothesis intended to reflect the major drivers influencing natural resource management within the region.

3.1 Soil health

3.1.1 Underlying Hypothesis

- *Effective management of soil health is essential to maintaining a strong and vibrant agricultural industry and visa-versa.*
- *Good soil health is a function of the physical, chemical and biological attributes of the soil.*
- *Soil acidity is the most widespread and represents an underlying chemical constraint presenting a fundamental barrier to improved soil health within the region.*
- *Other physio-chemical attributes including nutrition, subsoil compaction, soil structure, water repellence, erosion, salinity and low levels of organic matter and reliance on chemicals coincide to impact soil health within the region.*
- *Agricultural practice is a key driver impacting a range of natural resources within the region including soil, aquatic and biodiversity health.*
- *Healthy waterways and native vegetation is essential to health agricultural systems.*

3.1.2 Goals

Protect and enhance soil health within the region through:

- *Arrest and overcome the range of soil degradation processes occurring within the region including soil acidification, nutrition, compaction, erosion, repellence, and soil structure decline.*
- *Improve farm management skills, including increasing the adoption of soil testing / monitoring and the integration of information into decision making processes.*
- *Work with industry to identify potential on-site and off-site impacts associated with current and emerging farm management practice to minimise potential impacts on natural resources within the region.*
- *Work with industry, including agencies, grower groups and landholders and financial and R&D organisation to improve farm management and business decisions to improve the physio-chemical and biological function of soils within the region.*
- *Work with industry to better manage saline land through increased adoption of saltland pastures.*

3.2 Aquatic health

3.2.1 Underlying Hypothesis

- *Regional aquatic health is strongly influenced by urban, agricultural and industry management practice, including drainage and stormwater management.*
- *Aquatic health is strongly linked to management of water resources within the region.*
- *Fertiliser and grazing management practice are key drivers impacting aquatic health within the region.*
- *Healthy riparian zones are essential to protecting the aquatic health of the region.*
- *Urban and peri-urban development, particularly in the Avon Arc will have significant influence over aquatic health of the Avon River.*
- *Well informed and effective local government planning is essential to achieving improved aquatic health outcomes.*
- *Sediment loads within the Avon River are likely to be a key driver for downstream aquatic health (in particular the Swan – Canning Estuary).*

3.2.2 Goals

Protect and enhance the aquatic health of the region through:

- *Protect and enhance water resources within the region in an environmentally sensitive and responsible manner whilst protecting and enhancing environmental flows within the region.*
- *Enhance riparian vegetation communities throughout the region to improve biodiversity and aquatic health.*
- *Work with local government, industry and relevant agencies to improve planning for landuse change within the region, including water sensitive design of urban and peri-urban developments.*
- *Work with industry to identify potential on-site and off-site impacts associated with current and emerging management practice to minimise potential impacts on aquatic environments.*
- *Work with stakeholders to reduce sediment and nutrient loads to aquatic environments and implement programs to better manage sediments and nutrient loads to aquatic environments, including the Avon River.*
- *Develop and implement more effective nutrient and sediment management programs, through improve knowledge of nutrient pathways.*

3.3 Biodiversity health

3.3.1 Underlying Hypothesis

- *The biodiversity of the region is spectacular but generally undervalued.*
- *Great Western Woodland has enormous underlying value and represents an opportunity to further focus attention on the massive biodiversity resources of the region.*
- *Fragmentation of the complex biodiversity within much of the region has been extremely detrimental to ecosystems and landscapes of the agricultural zone of the region. Better understanding of the effectiveness and efficacy of corridors is essential to improving landscape connectivity.*
- *Native vegetation requires active management of fire regimes, grazing, exotic predators, weeds etc.*
- *Effective fire management is essential to the future health of native vegetation and will require a whole of landscape and whole of community response.*
- *Effective fire management is in part impacted by a relatively poor understanding of fire history and lack of strategic planning and access to resources.*
- *Exotic predators are a primary stressor on biodiversity within the region and require a whole of community response to management.*
- *Effective ecosystem management requires managing the range of overlapping stressors impacting biodiversity health within the region. Single focus programs will be limited in their capacity to achieve ecosystem health outcomes.*

3.3.2 Goals

Protect and enhance the biodiversity health of the region through:

- *Protect and enhance the structure and function of native vegetation at landscape and ecosystem scales.*
- *Increase areas of perennial and native vegetation within the region, to better reflect natural systems.*
- *Improve connectivity of native vegetation systems through increase landscape permeability and establishment of strategic corridors.*
- *Promote, support and implement active management of native vegetation throughout the region through more appropriate fire regimes, improved predator control, improved weed management and more appropriate grazing regimes.*
- *Better engage the local and broader community in understanding the underlying beauty and values of the region, by promoting the uniqueness and value of the regions biodiversity including the Great Western Woodland.*
- *Work with partners and stakeholders to help protect and enhance the values of the Great Western Woodlands.*

3.4 Community health

3.4.1 Underlying Hypothesis

- *Decline of rural communities expressed through declining population, reduced access to services and increasing mental health problems is largely reflective of economic difficulties impacting agriculture.*
- *The key driver influencing the profitability of agriculture is seasonal rainfall variations, exacerbated by adverse economic condition. Previous rural economic crisis have resulted from a coincidence of a series of poor seasons and adverse world economic conditions.*
- *Predictions are for declining growing season rainfall and continuing decline in terms of trade.*
- *Increasing farm debt is influencing the capacity of landholders to invest in natural resource management and development and adoption of new and innovative techniques.*
- *Farm advisers and financial institutions are having increased influence within the agricultural industry.*
- *Effective planning is important in protecting quality of life within the region.*
- *Aging population and population decline is principally due to farm amalgamations influencing outmigration of youth from the region.*

3.4.2 Goals

Protect and enhance the community health of the region through:

- *Assist the agricultural industry develop and implement profitable and environmentally sensitive and resilient farming systems.*
- *Engaging industry, farm adviser and financial institutions to better understand the natural resource management impacts of farm and business management decisions.*
- *Work with industry to develop and implement farming systems that are more resilient to increased variations in seasonal rainfall.*
- *Promote the sense of place and quality of life issues stemming from management and protection of natural resources within the region.*
- *Assist agencies, local government and industry in undertaking effective landuse planning to protect and enhance the unique natural resource values of the region.*
- *Work with industry to overcome labour market constraints, and aging demographics of the region.*

4 2005 Strategy

The Wheatbelt NRM 2005 Regional Strategy involved extensive community consultation resulted in the development of series of NRM goals and objectives for the region, however they were principally aimed at directing investment principally from the NHT and NAP programs, and in some instances tend to reflect philosophies of relevant State Government Agencies involved in the development of the strategy.

The goals and objective of the 2005 strategy tended to reflect the underlying asset – threat model used in the strategy development, but also mix up themes (biodiversity and soil health) with assets (Avon River) and threats (salinity) in stating goals.

The aspirational goals from the 2005 Regional Strategy are summarised in Table 2.

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Table 2 Goals – 2005 Avon Regional Strategy (ACC 2005)

Theme	2005 Resource Condition Goal Statements	Statement of progress
Biodiversity.	<p><i>All native species that naturally occur in the Avon region persist in viable populations.</i></p> <p><i>Maintain the extent and integrity (structure and composition) of all natural ecological communities that occur in the Avon region.</i></p> <p><i>Maintain or increase the extent and integrity of all terrestrial and aquatic ecosystems.</i></p> <p><i>The Avon River Basin contains a connected and functional network of vegetation that represents the natural diversity of the region (landscapes, ecosystems, communities and species) and supports regional-scale ecological functions (networks of connected populations, migratory and dispersal capability, movements and re-colonisation in response to extreme events, movements of pollinators and seed dispersers, options for changes in distribution and abundance in response to climate change, maintenance of evolutionary potential etc.)</i></p>	<p><i>5 flora sp. Extinct. 121 rare flora. 2 mammal spp. extinct. 3 bird spp. endangered and many under threat</i></p> <p><i>Kwongan health and other ecosystems and landscape units under impending threats – urgent appropriate management is required.</i></p> <p><i>Much of the regions biodiversity is not actively managed and continues to be impacted by a range of pervasive and overlapping stressors including inappropriate fire regimes, exotic predators, inappropriate grazing, weeds, increasing aridity and increasing temperatures.</i></p> <p><i>Loss of paddock trees associated with broad scale adoption of controlled traffic threatens to increase fragmentation of the landscape.</i></p> <p><i>Revegetation of XXX ha of native vegetation has resulted in XXX effective connectivity.</i></p> <p><i>XXX km of fencing of native vegetation has reduced grazing pressure to XX ha of native vegetation.</i></p> <p><i>Fire management strategy for the region was developed, providing a basis for development programs to improve fire management within the region.</i></p>
Avon River Swan Canning Estuary.	<p><i>The community takes ownership of the restoration of the natural functions of the Avon River and its floodplain for the long-term benefit of all.</i></p>	<p><i>Fencing of 98% of the Avon River, sediment management of river pools and minor implementation of stormwater management works may have improved water quality within the river.</i></p>

<p>Tributaries.</p>	<p><i>Locally identified priority sections of major and minor tributaries are improving to provide social and ecological benefits.</i></p>	<p><i>Areas of tributaries most impacted by land management practice have been identified (foreshore assessment plans), however limitation in investment have restricted implementation of works.</i></p>
<p>Surface water.</p>	<p><i>Local communities have minimal water deficits, dependence on reticulated water is decreasing and, in the Avon Arc, provisions of water for environmental requirements is adequate. Local area flooding and inundation is minimised.</i></p>	<p><i>Local communities continue to be impacted by water deficits, exacerbated by the impacts of increase climate variability particularly since 2000.</i></p> <p><i>Environmental flow report completed however implementation is limited by lack of investment in water management within the region by both state and commonwealth governments and a stalled local economy.</i></p>
<p>Groundwater.</p>	<p><i>Groundwater resources with potential for water supply or production use are identified and managed in a sustainable way.</i></p> <p><i>Rising regional groundwater aquifers are well understood with the impacts of increasing salinity and flooding having minimal impacts on land, water, biodiversity, infrastructure and other community assets, as a result of considered and well-informed decisions that have broad community support.</i></p> <p><i>The impacts of the abstraction, injection and disposal of groundwater resources are understood and managed in a sustainable way.</i></p>	<p><i>Groundwater resources effectively identified and recommendations developed for their sustainable use. However, most groundwater resources in the region are unproclaimed and therefore there is no basis to enforce sustainable management.</i></p> <p><i>Rising groundwater aquifers are not well understood. Salinity and water logging continues to have significant impact over a range of natural resources within the region.</i></p> <p><i>Disposal of groundwater resources within the region (agricultural groundwater drainage) continues to be undertaken in a largely unregulated manner.</i></p>
<p>Soil condition.</p>	<p><i>Soil health and productivity is significantly improved through the management of top and sub-soil acidity, soil compaction, soil structure decline, waterlogging, water erosion and wind erosion.</i></p>	<p><i>Soil health has probably declined. Soil acidity impacts 80% of top soil and 50% of subsoil within the region. A relatively small percentage (>10%) of landholders lime to recommendations and less than 40% of the required lime is being administer to soils of the region.</i></p> <p><i>Revegetation of (xx ha) alleys has resulted in protection of XX ha of</i></p>

		<p>land from severe wind erosion.</p> <p>Adoption of controlled traffic has resulted in the removal of paddock trees and contour banks have exposed XX ha of land to increased wind and water erosion.</p>
Dryland salinity.	<p>The extent of impact of surface and groundwater salinity on productive agricultural land is contained and, where possible, reduced. Land that is salt-affected is used productively or to enhance conservation values.</p>	<p>Salinity is not being contained and appears to continue to develop, albeit at a reduced rate as a result of a series of low rainfall years.</p> <p>Planting of XXX ha of saltland pastures has resulted in increased productivity of saline land and reduced saline runoff.</p>
Bio-security (plant and animal pests and diseases).	<p>Cooperative action undertaken by local communities across landscapes is effectively controlling or has eradicated plant and animal pests as well as diseases across the region. Additional biosecurity threats are contained or avoided.</p>	<p>Strategies for the management of pest plant and animals within the region were developed. Effective implementation of strategies has been hampered by a lack of external investment opportunities.</p>
Heritage and culture.	<p>Known water heritage and cultural values are maintained and enhanced by 2025.</p>	