

Regional NRM Planning for Climate Change – Project Scoping

Project Overall Aim

To update SWCC's Regional NRM Strategy to include climate change information and data that will inform and assist all stakeholders in NRM decision-making and investment planning.

To ensure that the Strategy reflects the aspirations and priorities of the NRM/Landcare communities, through transparent processes and continued consultation.

Develop a publically accessible and user friendly interface (spatial) for the communities to review the results of the strategy update and to inform their own future NRM decision making processes.

Project Overview

The Carbon Farming Initiative (CFI) is an Australian Government legislated offset scheme that allows farmers and land managers to earn carbon credits by storing carbon or from reducing greenhouse emissions through changes to agricultural and land management practices. As part of this scheme, proponents need to consider Regional NRM plans to ensure carbon sequestration and abatement projects have a positive net impact and to ensure they comply with all Federal, State and Local Government, water, planning and environmental requirements.

Funding was provided by the Australian Government across two streams:

Stream 1:

In recognition that there are varying capacities for NRM organisations to plan for the uncertainties of climate change and identify areas of the landscape suitable for biodiverse carbon plantings, Stream 1 provides funding to the regions to update their NRM Plans to identify where tree plantings could potentially be suited to the landscape without causing adverse impacts. This will be achieved by taking into consideration priority agricultural land, hydrology and biodiversity (SWCC termed biosequestration risk mapping).

In addition to the above output, SWCC has secured further funding to undertake Salinity Risk Mapping. The Commonwealth Department of Agriculture, Forestry and Fisheries recently released Salinity Guidelines. Regulation 3.37(3) specifies that only native species can be planted under the CFI except where salinity is an issue in areas with rainfall greater than 600mm. The 600mm figure is yet to be confirmed by the Commonwealth, and it's location in light of a changing climate.

Stream 2:

Stream 2 provides funding to external bodies to provide NRM Regions with primary data to enable them to identify where in the landscape climate change adaptation and mitigation should be undertaken. This will be done by producing spatial layers of climate change projections for biodiversity and agriculture and through facilitating decision-making using the mapped information.

Stream 2 is delivered as two elements:

Element 1: will be undertaken by the Bureau of Meteorology and CSIRO who will deliver climate change projections for all of Australia, based on new modelling and down-scaled to be suitable for use at a Regional level.

Element 2: in SWCC's case, will be undertaken by the Centre of Excellence in NRM (CENRM) who will utilise the information provided by Element 1 to assist Regions through the provision of spatial layers and decision support.

Updating SWCC's Regional NRM Strategy

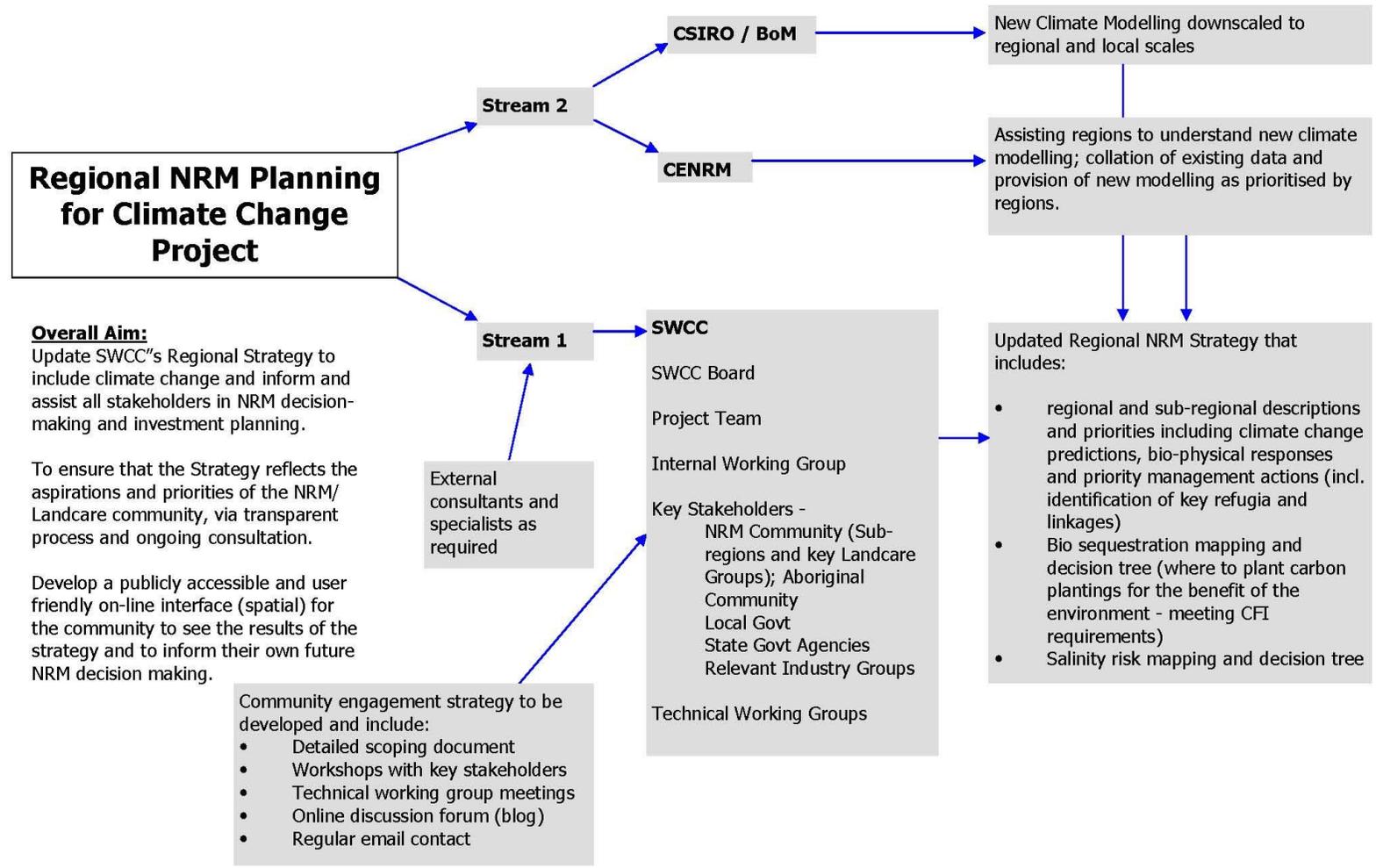
SWCC has only recently undertaken a review and update of its regional strategy, *South West Regional NRM Strategy, July 2012*. The strategy uses an asset-based approach to detail significant environmental (and social) assets in the South West NRM Region as determined by relevant experts and planning processes, and is based on known and accepted science in conjunction with broad scale community* consultation. SWCC is also investigating the use of a systems based approach to be used in conjunction with the existing assets based approach.

Climate Change was a known factor in the development of the current strategy and its consideration is embedded in the proposed objectives and management actions for many of the assets considered. Stream 1 funding provides the Region with the opportunity to revisit these objectives and management actions in light of available climate change data as provided through Stream 2 and in consultation with key stakeholders.

* Throughout this document, the term community is used to describe the NRM/Landcare community network, not the broader South West community. It is the aim that they will in turn consult with their local communities and represent their interests as part of the consultation.

The broader community will also be engaged through this process.

PROJECT OVERVIEW:



Overall Aim:

Update SWCC's Regional Strategy to include climate change and inform and assist all stakeholders in NRM decision-making and investment planning.

To ensure that the Strategy reflects the aspirations and priorities of the NRM/Landcare community, via transparent process and ongoing consultation.

Develop a publicly accessible and user friendly on-line interface (spatial) for the community to see the results of the strategy and to inform their own future NRM decision making.

Review of Climate Change Information to date

The Centre of Excellence in Natural Resource Management (CENRM) have released a report titled, "Climate change impacts and adaptation in the Southern & South western flatlands cluster: review of existing Knowledge" (June 2013).

Below is a summary of information relevant to the SWCC Region, taken from this report.

The SWCC Region occurs in one of five Mediterranean climate regions in the world which are characterised by cool winters and hot summers with seasonal rainfall in winter and high levels of endemism and diversity (notably vascular plants). The Mediterranean climate region is projected to be among the most significantly affected by anthropogenic climate change.

Generally as a result of climate change, southern Australia is expected to experience reduced rainfall, elevated temperatures and increased intensity and frequency of extreme weather events, changes which are already happening.

In south western Australia, strong gradients exist for both rainfall and temperature, with annual rainfall decreasing west to east and average temperatures increasing north to south (Indian Ocean Climate Initiative, 2020). It is predicted that by 2030 average temperatures across southern Australia will have increased by 0.5°C to 1 - 1.5°C based on low or high warming scenarios respectively. These estimates intensify to 1°C to 4°C increase by 2070 based on the respective scenarios (Suppiah *et al.*, 2007). Concerning rainfall, by 2030 decreases of 0-0.5% to 5-10% are predicted under a low warming scenario and decreases of 5-10% is expected with a 10-30% decrease predicted for the south western corner. By 2070 the low and high warming scenarios have relatively converged, and a decrease of 30-40% is expected in the south west corner.

The CENRM report concluded that it is reasonable to expect that the reduced rainfall and increasing temperatures predicted for southern Australia will significantly impact on the distribution of species. In general, there are four aspects of species biology and ecology which are expected to respond to climate change, these being physiology, distribution, phenology and adaptation (Hughes, 2000). Changes are expected to operate at the individual and species levels which will result in changes observed at the assemblage and community levels.

With the four main threats to Australia's biodiversity associated with climate change being addition of new species to a region (indigenous and exotic), altered hydrology patterns, increased fires and altered land use patterns (Hennesey, 2010), the south west is likely to be greatly affected. As the landscape has experienced some of the most intense agriculture related clearing and resultant natural habitat fragmentation across the continent (Yates *et al.*, 2012), the predicted impacts to the biodiversity of the south western Australia are likely to be exacerbated due to a lack of high elevation refugia and the southern coastline further restricting species ability to migrate to suitable climates (Yates *et al.*, 2010).

In an agricultural context, increased temperature can increase plant growth and lower the occurrence of frosts (Stokes and Howden, 2010) although in south western Australia the increase in temperature is coupled with a decrease in precipitation which will result in lower quality crops. Increased temperatures are also likely to provide conditions more amenable to pests, again reducing crop productivity and/or quality (Stokes and Howden, 2010).

Community Engagement and Consultation

Community consultation will be vital in updating the strategy. Previous consultation with the community informed SWCC in identifying regional and local environmental and social assets, and associated threats. As part of establishing an appropriate consultation process, a review of previous consultation for the current strategy has been undertaken.

Review of Previous Consultation

Positive aspects of the previous approach:

There were a number of aspects of the consultation that were positively received by the community and will be replicated where possible as part of this approach. They included:

- Consultation sessions were taken out to the sub-regional areas in an effort to make it more accessible;
- A number of consultation tools were used to gain feedback including: Community workshops, online survey, interviews with specialists, direct feedback from the community and stakeholder workshops; and
- Consultation sessions focused on a 'bottom-up' approach which was appreciated by participants.

Criticisms of the previous approach and usefulness of strategy:

SWCC is aware that the previous community engagement approach employed to advise the Strategy did not entirely meet the NRM Community's expectations or reflect their aspirations and acknowledges a number of community concerns. They included:

- The short time frame for the consultation;
- Context behind the approach wasn't provided;
- A clear process wasn't provided to show how input was included and used to prioritise investment;
- A lack of ownership of information provided was felt by the sub-regions and other NRM groups that took part in the consultation; and
- The strategy didn't reflect local priorities well enough.

Proposed Community Engagement and Consultation Approach

In order to address these criticisms and ensure that the positive aspects are replicated, the review of the Strategy will involve ongoing and transparent community consultation and regular progress updates, to ensure it is developing in a way that reflects community aspirations and priorities, while being truly strategic.

Initial consultation for the Climate Change project has commenced and will be undertaken through existing NRM forums such as the Regional Coordination Team Meetings, Association meetings and Community NRM Advisory Committee meetings.

The intent of this initial consultation is to raise awareness of SWCC's NRM Strategy update in line with climate change and importantly, to seek feedback from our stakeholders on how they would prefer to be consulted and what mechanisms for communication are best suited for them.

SWCC has developed a Climate Change Community Engagement Strategy that will link to our existing Community Engagement Strategy. The Strategy outlines our key stakeholder groups, how SWCC will engage, why and when. This document was completed by the end of October 2013. It will be reviewed and updated by February 2014. Consultant Wendy Dymond has been engaged to facilitate our community engagement and a series of community workshops in March 2014.

The table below outlines how SWCC proposes to engage with each of the stakeholder group.

Who	Why	What	How	When
<p>Sub-regional groups: Peel Harvey Blackwood Geocatch Capes to Capes Warren & Leschenault</p> <p>Local NRM Community – friends of groups, LCDC, groups including: Wagin/WW, Lower Blackwood, Katanning, Dumbleyung, S/J, WWF & Private Landholders</p>	<p>Inform them about the climate change project and predictions via sub- regional groups and key Landcare groups</p>	<p>Consult about the process for engagement and climate change response and management action priorities – what data do you want?, what do you want to know?, linkages, species, species selection for rehabilitation and agro-forestry, etc</p>	<p>A Community Engagement Strategy will be developed</p> <p>Email, community forums and meetings</p> <p>Online Forum</p> <p>Draft NRM Plan circulated</p>	<p>Consultation at key phases of implementation</p>
<p>Local Government/ WALGA</p>	<p>Inform them about the Climate Change Project</p> <p>Inform them about the Regional NRM Strategic planning process</p>	<p>Consult and develop synergies with existing Local Government Climate Change projects</p>	<p>A Community Engagement Strategy will be developed</p> <p>Email, community forums and meetings</p> <p>Draft NRM Plan circulated</p>	<p>Consultation at key phases of implementation</p>
<p>State Gov't Agencies – Dept. of Agriculture & Food WA, Dept. of Environment and Conservation, Planning, Dept. of Water, Office of Climate Change, Green Australia, State NRM Office Greening Australia</p>	<p>Inform and liaise with the relevant Agencies</p> <p>Inform them about the Regional NRM Strategic planning process</p>	<p>Consult with the appropriate Agency staff through technical working groups and their attendance on Stream 1 Teleconferences to provide relevant data requirements and technical support</p>	<p>A Community Engagement Strategy will be developed</p> <p>Email, community forums and meetings</p> <p>Draft NRM Plan circulated</p>	<p>Consultation at key phases of implementation</p>
<p>Australian Government</p>	<p>Inform them about the progress of the Climate Change Project</p> <p>Inform them about the Regional NRM Strategic planning process of updating the Strategy in line with Climate Change</p>	<p>Consult with the Australian Government Facilitators to ensure National priorities and research data is identified</p>	<p>A Community Engagement Strategy will be developed</p> <p>Email, community forums and meetings</p> <p>Draft NRM Plan circulated</p>	<p>Consultation at key phases of implementation</p>

Who	Why	What	How	When
Traditional Owners SWALSC	Inform them about the Climate Change Project Inform them about the Regional NRM Strategic planning process	Consult with Traditional owners about Climate Change response and priorities	A Community Engagement Strategy will be developed Email, community forums and meetings Draft NRM Plan circulated	Consultation at key phases of implementation
Academic/ Scientific Institutions Stream 2 CENRM , UWA, CSIRO, BoM	Inform them about the Regional NRM data requirements and ongoing communication	Consult about regional data requirements with Stream 2 Project Teams through Stream 1 & 2 Teleconferences and Workshops	A Community Engagement Strategy will be developed Email, community forums and meetings Draft NRM Plan circulated	Consultation at key phases of implementation
Cross Regional Working Groups	Inform them about existing Climate Change Project communication to date	Stream1 Cross Regional Working Group Meeting Teleconferences To assist cross regional communication and consistency of data sets and information produced.	A Community Engagement Strategy will be developed Email, community forums and meetings Draft NRM Plan circulated	Consultation at key phases of implementation
Private Industry & Associated Industry Groups (Carbon companies - Appropriate companies TBC) Australian Forest Growers	Inform them about the Climate Change project Inform them about the Regional NRM Strategic planning process	Consult about biosequestration data layer required to produce a map highlighting where carbon plantings fit in the landscape through Technical Working Groups	A Community Engagement Strategy will be developed Email, community forums and meetings Draft NRM Plan circulated	Consultation at key phases of implementation
SWCC Board	Inform them about the Climate Change project Inform them about the Regional NRM Strategic planning process	SWCC Board Meetings	A Community Engagement Strategy will be developed	Consultation at key phases of implementation
SWCC Internal Advisory Group	Inform them about the Climate Change project Inform them about the Regional NRM Strategic planning process	Internal Advisory Group Meetings	A Community Engagement Strategy will be developed	Consultation at key phases of implementation
SWCC Association	Inform them about the Climate Change project Inform them about the Regional NRM	Association Meetings	A Community Engagement Strategy will be developed	Consultation at key phases of implementation

Who	Why	What	How	When
	Strategic planning process			
SWCC NRM Advisory Committee	Inform them about the Climate Change project Inform them about the Regional NRM Strategic planning process	NRM Advisory Committee Meetings	A Community Engagement Strategy will be developed	Consultation at key phases of implementation
SWCC Regional Coordination Team	Inform them about the Climate Change project Inform them about the Regional NRM Strategic planning process	RCT Meetings	A Community Engagement Strategy will be developed Linked to Subregions above	Consultation at key phases of implementation
SWCC Project Technical Advisory Committees Salinity Working Group Biosequestration Working Group		Working Group Meetings	A Community Engagement Strategy will be developed	Consultation at key phases of implementation
SWCC Staff	Inform them about the Climate Change project Inform them about the Regional NRM Strategic planning process	Internal Working Group Meetings & Staff Meeting	A Community Engagement Strategy will be developed	Consultation at key phases of implementation

Key Reporting Dates

- Oct 13-Jan 14 *Form Salinity Risk Mapping Working Group*
- Sept 13-Jan 14 *Form Biosequestration Working Group*
- Nov 13-Jan 14 Implemented Community Engagement and Communication Strategy and *commence initial consultation*
- January 2014 Salinity Risk map (SWCC and South Coast Regions) spatial layer developed including decision-support tree and methodology
- January 2014 *Ongoing consultation with key stakeholders as outlined in the Climate Change Community Engagement Strategy.*
- January 2014 Commence development of Spatial Platform-Basic Shell
- January – March 2014 *Community consultation* for Biosequestration Risk Mapping Mapping will occur through the Biosequestration Technical Working Group and subsequent Subregional Workshops.

March 2014	<i>Subregional Workshops to review assets at a Regional, Subregional and local levels using maps and determine what data SWCC should be collecting</i>
March 2014	Biosequestration mapping finalised including decision-support tree
May 2014	NRM Strategy objectives and priorities updated in light of available data and results of <i>community consultation</i> (first draft)*
September 2014	NRM Strategy objectives and priorities updated in light of available data and results of <i>community consultation</i> (second draft)*
September 2014	Release of online spatial platform
September 2014	<i>Advertised consultation period</i>
June 2015	Finalisation of NRM Strategy Update incorporating feedback from <i>advertised consultation period and broader community feedback</i>
February 2015	<i>Targeted training sessions</i>

* CENRM will be providing existing and new data as it becomes available from July 2013 to September 2014 and this will be incorporated into consultation processes and Strategy update as it becomes available.

Key Technical Components of the Project

In preparing the project funding application for the Australian Government, particular technical components of the project were detailed in order to meet their funding requirements. Since the engagement of CENRM (Stream 2 Element 2), SWCC has given some thought and discussion to the needs of the Region and the Strategy update with regards to biodiversity and agricultural datasets and modelling.

Below is an outline of the key technical components of the project to date.

Salinity Risk Mapping

SWCC has engaged the services of DAFWA to collate existing regional scale salinity data to determine where CFI plantings most likely could have a positive or negative impact in the landscape for the SWCC and South Coast Regions (ignoring the isohyet as this stage).

The final product will be in the form of a spatial map, a decision support tree and outline of the methodology used taking into consideration recovery catchments, water sources, aquifers and the set of rules the proponent may need to address if planting in specific areas.

A Technical Working Group has been formed and comprises the following people:

- Paul Raper (DAFWA)
- DoW Representative (Liaison with DoW through DAFWA)
- Leonie Offer (SWCC Climate Change Project Manager)
- Kaylene Parker (South Coast NRM Climate Change Project Manager)

It is anticipated that SWCC and South Coast NRM will receive draft products from DAFWA in January 2014. Feedback from the Technical Working Group will be provided to DAFWA to be incorporated into the final products by end of January 2014.

Biosequestration Risk Mapping

This component of the project is to meet the requirements of the Australian Government to update Regional Strategies to identify where tree plantings could fit into the landscape without causing adverse impacts to biodiversity or agricultural assets. The spatial map and decision-support tree associated with it will provide clarity to CFI proponents when considering whether their carbon emission abatement projects adhere to Regional NRM plans and do not have unintended impacts by taking into consideration priority agricultural land, hydrology and biodiversity.

The proposed process in completing this component of the project is to form a Technical Working Group and undertake a facilitated process using a decision support tool (Multi-Criteria Analysis Shell for Spatial (MCAS-S) Decision Support). Spatial data layers will be sourced through CENRM and additional sources as required.

Datasets such as those below will be sourced where available and considered by the Technical Working Group:

- High quality agricultural land (using available Land Capability mapping, Local Planning Schemes – Agricultural land zonings);
- Sustainable Agriculture Report Card results (condition and trends in salinity, soil erosion etc.);
- Hydrology (underlying aquifers, ground-water dependent ecosystems, Ramsar sites and wetlands);
- Biodiversity – key refugia, regional linkages, priority remnant vegetation, threatened species and community - known and potential locations, conservation reserves and land tenure; and
- Agroforestry – key species (to be identified by working group) and their physiological responses to climate change.

Decisions will be made around how these datasets will be used (accuracy, scale and value) and will be weighted within MCAS-S to assist in producing a spatial risk map. A decision support tree will also be developed by the Technical Working Group.

The Technical Working Group is proposed to include:

- Steve Blyth (SWCC Board and Nursery Manager)
- Richard Moore (Australia Forest Growers Association)
- Paul Raper (Dept. of Agriculture and Food WA)
- Jamie Bowyer (Dept. of Agriculture and Food WA)
- Kim Williams (Dept. of Parks and Wildlife)
- Peter White (Dept. of Parks and Wildlife)
- Mark Sewell (Warren Catchment Council)
- Mick Quartermaine (Blackwood Basin Group)
- Renata Zelinova (WALGA)
- Dan Wildy (Rural Fares)
- Dale Miles (Greening Australia)
- Ian Dumbrell (FPC)
- Cathie Derrington (Dept. of Water)
- Steve Ewings (SWCC Sustainable Agriculture Program Manager)
- Mike Christensen (SWCC Environment Program Manager)
- Leonie Offer (SWCC Project Manager)

It is anticipated that the Technical Working Group will be established by February 2014 with draft outputs expected in early 2014. Community consultation will also occur, with finalisation of the spatial map and decision support tree expected prior to inclusion within SWCC's NRM Regional Strategy first draft in May 2014.

Biodiversity modelling

SWCC has been in discussions with the CENRM and the other Regions (NACC, Wheatbelt NRM, South Coast NRM and Perth NRM) about key data requirements in updating our Regional Strategies with climate change predictions.

The CENRM have been engaged to provide the regions with existing climate change data as well as to provide newly modelled data using updated climate scenarios. Their capacity to service all the regions is limited and requires the regions to identify their priority data needs; with a focus being on biodiversity and agriculture. It is important to still note other data needs, as further data can be sourced from elsewhere as resources allow, or as data becomes available in the future.

The report "Climate change impacts and adaptation in the Southern & South western flatlands cluster: review of existing Knowledge" (June 2013) noted that very little data for the region exists and that that does exist varies in scale, timelines, scenarios and climate models used. Data that does exist and that will be provided as spatial datasets to SWCC by CENRM in the near future includes:

- Banksia (Fitzpatrick et al. 2008 and Yates et al., 2010)
- Quokka (Gibson et al., 2010)
- Mites (Hill et al., 2012)
- Freshwater fish, crayfish and turtles (James et al., 2013)
- Mammals, birds, amphibians and reptiles (Reside et al., 2013).

Proposed priority data requirements in order for SWCC to update its Strategy and undertake the biosequestration mapping component of the project include;

- Key refugia sites;
- Assessment of effectiveness, viability and prioritisation of regional linkages across all of SWCC;
- Threatened species distribution modelling (individual species and grouped);
- Key species and surrogate species distribution modelling (individual species and grouped); and
- Physiological thresholds for particular agroforestry species to assist in determining capacity of species to flourish.

These data layers, if available, should allow SWCC to address particular questions within the updated Strategy as directed through community consultation processes. Questions may include:

- Where in the landscape should we prioritise investment focusing on key refugia for:
 - a) particular species (threatened or key species), or
 - b) a suite of species or community?
- Where are our key regional ecological linkages that should be a priority for management actions such as revegetation, buffering and connection of remnants to enable adaptation to climate change?

The CENRM will be able to service the Regions needs up until September 2014 and feedback on the above data priorities and key planning questions from stakeholders is welcomed.

Spatial Platform

A key outcome of the project is to develop a publically accessible and user friendly interface (spatial) for the community to see the results of the strategy update and to inform their own future NRM decision making.

It is envisioned that the spatial platform will enable users to view up to date data layers produced through this Regional Strategy update as well as relevant background layers and aerials.

More details will be forthcoming and feedback on what user preferences and expectations is welcomed.

Thank you.