BYERA HADLEY TRAVELING SCHOLARSHIP

Architects Registration Board NSW

# fleecing the land

*Assessment of the Integration of Sustainable Development within a Regional context*

The role of Architectural and Design disciplines in addressing the imbalance of current regional Development practices by creating symbiotic environments, with consideration for the maintenance of available resources and utilising renewable energy sources.

FINAL REPORT August 2011

# Preface

At the completion of the Byera Hadley Traveling scholarship, I am attempting to provide a summary of my findings over the past two years of research and travel experience. The first component of the scholarship entailed the travel, which was done in two legs. The second component, the research which was integrated between the travel legs, and was followed by reflection and writing. How, in a precise form, can I describe what I have gained and did I achieve what I set out to find.

On commencement of my research about Regional Sustainability, I assumed that there would be significant differences in the approach that one would have to take in a regional setting. I initially had perceived the role of practitioners as quite clearly different but having completed my research my perception has been altered.

I have been asked the simple question, "Did you find what you thought you would? " and upon reflection would have say that the outcomes were not as apparent as it seemed. The context and the density of regional areas are very different to urban areas, yet the issues are the same. The approach has to do with the scope of the problems.

A move to the country presented the practical application of the research gained, how does a practitioner make a difference? Having been exposed to a variety of experiences, information and examples of part of this research has made me reflect on how my role as a practitioner will evolve.

Recently I have been nominated in my capacity as an architect, to be a committee member of the Natural Resources Management (NRM) Advisory Committee of Cowra Shire Council. The committee initially was more broadly labeled Sustainability and NRM, formed from a local futures planning exercise of which NRM was a sub category.

The committee is made up of a diverse range of members, predominantly from the agricultural sector with an interest in preservation and restoration of the environment. Current projects relate to bush regeneration, habitat maintenance and reforestation utilising local endemic species based on previous planting success. Members from the Lachlan Catchment Management Authority and the NSW Innovation and Industry (formerly DPI) also contribute to a broad input with regards to regional environmental and industry strategies.

My involvement is to present a different perspective and to raise aspects in relation to the built environment within the context of resources management, specifically energy supply and use, water supply and efficiency and waste resources.

Initially I have been swamped by the enormity of the issues, as one identifies what possibilities one can participate as a practitioner. What has become interesting is the evolution of one's role becomes broader as I have become confident in participating in discussion in areas where ones skills in design and planning play a significant role.

What I am beginning to contribute and hope to expand upon in the future, is raising the awareness of Sustainable Development in the regional context. Promoting climatically appropriate buildings, other aspects such as energy efficiency and awareness of alternative energy resources. Also by highlighting specific aspects of impacts on the environment and appropriate use of material resources, I hope I can contribute towards creating sustainable rural and regional communities

As the role of the architect, as with other disciplines within the built environment, has become more specialised, the focus has been more on the form or the physical building itself. Architectural responses are generally have become more prosaic, and in some cases with less regards to its greater context. Aspects to do with landscape, planning, structural detailing, interiors and fitout, environmental and lighting systems, energy and water management systems often become the directed responsibility of other consultants. In a regional context perhaps the limited access to such consultants requires a more holistic attitude to design detailing and resolution.

As part of presenting the findings of my research, I was requested to make a preliminary presentation was made at public forum held by the Architects Registration Board NSW titled " Sustainable Development in Regional Areas " in Orange, NSW in October 2009. The presentation was more focused on the findings with regards to NSW and also outlined the approaches to sustainable development. In essence the presentation formed the direction for the final report.

Through this report, I am able hopefully to share some of the possibilities I believe can contribute to integrating sustainable development practices within regional communities.

# Contents

# Introduction

From extended drought to deluges of unseasonal rainfall, from eutrophication of river systems to dry land Salinity, from species loss to non- native species dominance, temperature extremes to changing rainfall patterns. Regional Australia is faced with increasing pressures of growth, failing infrastructure, and weather occurrences including climate change.

The current relationship between the natural and built environments will require significant review and unsustainable development practices will contribute further to long term environmental decline.

*Ian Waldie_Getty Images*

## "Fleecing the land"

This intentionally provocative title was selected as a reflection on my association with the Lachlan catchment, which I first visited some twenty years ago. Later owning a property on the banks of the river Lachlan and eventually a move to the country commenced an exploration of the issue of Regional Sustainability.

The title, " Fleecing the Land" was a response to the significant drought that was occurring in regional NSW, with most parts of the Lachlan catchment experiencing their seventh year of drought.
My observations were that parts of the country were being seriously degraded, and it was as if the land had been "fleeced". This was also reflected in other aspects of regional environmental, economic and resources management.

A particular example of which I observed was the stocking rates (number of animals per hectare). Despite the drought, this had remained high and despite the inability of the land to provide sufficient nu-

trients. This was particularly my observation with sheep flocks, which was exacerbated by the low value of stock at the market place.

Another example I observed was the water management of the significant irrigation dam, Wyangala Dam, which is located in the upper catchment of the Lachlan River. In the early stages of the drought, despite predicted diminishing rainfall and declining capacity of the dam, water was still being sold to meet allocations to the water license holders. The procedure continued until there was a crisis in terms of capacity to meet basis water requirements for the regional towns of the catchment.

This exploration actually began before I decided to put the application together to apply for the Byera Hadley Traveling Scholarship. Having been an advocate for ESD in my practice over the past 15 years, we have been highlighting the principles of sustainable development in the built environment but more particularly in an urban context. Now practicing in a regional context, how might I go about applying those principles and whether emphasis on specific aspects of those principles would change due to the location?

I wanted to explore what architectural practices or skills, more specifically education based problem solving, could contribute to what I still believe are not sustainable practices.

Since the commencement of this scholarship and research when the Architects Registration Board awarded me this scholarship at the end of 2007, the playing field has changed. Whilst terms such as "green" or " eco" were familiar in the public realm, the smaller regional communities predominantly viewed these terms in a conservative and often negative manner. Sustainability was a term being used within academic, research and governmental institutions but only in a limited sense within the wider regional community. I suspect this had to do with establishing an appropriate reference point for the use of the word sustainability in the regional context. As my research progressed, Climate Change became a more significantly used term, as issues related to the environment highlighted by the ongoing drought, dramatically increased awareness and the use of the term sustainability.

Initially I used the term Regional Sustainability, but as the research progressed, I soon established that the definition was to broad to achieve a defined perspective for practitioners. Sustainable development was more the capacity in which I was able to constructively explore some possible roles.

With this report, I by no means have attempted to provide an outlined solution to the direction to be taken, but provide a reflective perspective of the issues identified and the opportunities that present themselves.

This is a response based on considered observation and experience, initially as an outsider and now as a resident. I stress "resident" as opposed to local, " local" being a pecuniary term for one having lived there for twenty years or more or in some extreme cases life.

This perspective takes the architect and design practitioners out of the usual comfort zone within the Built Environment and re-engage familiar territory of Strategic and Urban planning, Master Planning as well as Architecture of Landscapes; Physical, Cultural, Social and Environmental.

## Sustainability- context and definition

"To sustain biological existence for humankind and nature, now and in the future".

The above definition is how I would, in a very broad sense, define sustainability.

When you embark on research about Sustainability or have elected to make a presentation on the subject, one is often asked what you mean by Sustainability. In the following section I have attempted to provide a personal understanding of definition although a clear or universally accepted definition does not exist.

On commencing the research, I defined sustainability as a holistic approach where current practices are reviewed and where the natural state of available resources are maintained and appropriate resources utilised with consideration for future generations. This is how the subtitle to my research was established and which was reflective on my university education and architectural training that centred on Ecologically Sustainable Design or Development.

*"Sustainability is a word that can mean almost anything to anyone".* *Flannery ( 2008)*

This is as suggested in the opening paragraphs of Dr Tim Flannery's "Now or Never _ A Sustainable Future for Australia ". He humourously alludes to the broad appreciation of the term and the current state of abuse of the word by a variety of sectors, in order to espouse environmental credentials.

He goes on to say, *"Whether used by cosmetic advertisers or fruit sellers, it is bandied about as if it was an essence of virtue".* He also claims *"the word is so recent that his spellcheck did not recognise it".*

*Flannery ( 2008)*

In the current climate, it is increasing important to establish the framework in which one uses the term sustainability. It is a word that is more increasingly used in different sectors, whether it is from an ecological or environmental management perspective or an economic based or resource management perspective, and therefore the need for an appropriate definition becomes more apparent.

Sustainability is studied and researched over a very wide range of disciplines whether it has a scientific or systems approach or a philosophical one, each with its own approach and perspective. It is also managed on many different levels within organisational structures, in different contexts, environmental, social and economic.

It also varies in scale, whether it is on a micro level such as a dwelling or object, or on a macro level such as a region or catchment.

Lastly it is important to consider the time or date when sustainability is defined as the perspective of the term will be effected by when the definition actually is made. Sustainability would appear as a term in flux, forever changing, depending on disciplines, contexts, scale and time, thus requiring perspectives to be continually modified and adapted.

Another definition obtained from a more common resource, the dictionary, where it is defined as....

*"relating to or being a method of harvesting or using a resource,*
*so that the resource is not depleted or permanently changed"* *( Webster Dictionary)*

The resource referred to here, is a source of supply or support- i.e. that it can be physical or non-physical. It is this definition that is more common reflective of resource Management or Natural Resources Management.

In re-evaluating I would suggest an appropriate definition would be, that sustainability requires the interconnection between a varies of disciplines and fields, including architecture and design, in an integrated approach that needs to be constantly evaluated

## Regional Sustainability- context and research

*"Every place has its own topography, soil composition, vegetation and climate."* ( McHarg, "Design with Nature " 1969)

One logically could extend that notion that every place has its own demographic profile, economic conditions and local culture or specific housing typology.

At the outset of the research, I assumed Regional Sustainability would relate obviously to regional issues but thought they would be primarily environmental considerations driven but agricultural interest.

The objective of the research was to obtain a perspective of sustainability in a regional context by sampling two specific regional areas. By drawing a comparison and emphasising contradictions within the two contexts with regard to the uptake of sustainability, I hoped to try and establish what are the key factors shaping regional sustainable development.

As part of the research for this scholarship, a Comparative Case Study was completed of two selected regions, the Lachlan catchment (Cowra NSW) and the Berg catchment ( Swartland, Western Cape)

The reason I wanted to define the research to a regional context and as to why these specific catchments were selected is two fold.

Firstly, I was familiar with the location of the two catchments. The Berg River catchment I hadn't visited for many years but was aware of significant changes that had occurred in the regional predominantly due to significant political and social changes that had occurred on a national level in South Africa.

The Lachlan River catchment with which I had more recently become familiar and a relocation to Cowra, NSW increased my need to have a better understanding of the social and economic fabric of the regional community.

Both catchments share a similar climate and similar agricultural production. Geographically, they also do not have significant metropolitan or developments within the actual catchment although both are in close proximity to significant urban centres, within 100 kms in both cases.

It should be noted that the selection of the two locations was established with consideration of the geographical boundaries rather than the institutional boundaries, i.e. that defined by the catchment of their respective rivers.

Secondly , in terms of scale and complexity of comparative study, I made the assumption that success and advancements in terms of sustainable practices or on the other hand failures on regional scale , would possibly be more easily identifiable than those on a larger national scale.

Case studies and examples of regional or community based sustainable initiatives would be more easily compared without the complexities of state or national impacts or policy.

A framework for a comparative case study was created which was based around both broad and specific questions about issues of sustainability. These provisional questions had been drafted prior to visiting the respective catchments

*Broad*
*To what extent has sustainability and in particular, sustainable development and practices been taken up in a regional context?*

*What is the current status of the relationship between society and the environment?*

*Is this relationship evolving and to what extent are current practices sustainable?*

*Specific*
*How can the relationship between society, natural resources and regional development be re- evaluated so that progression of the one is not at the expense of the other?*

*How do conventional approaches to development and conventional technologies continue to limit possibilities for sustainable practices ?*

*What are the alternatives and how can design disciplines contribute to the re-evaluation of these practices?*

These questions were posed to the respective stakeholders or used as a benchmark to evaluate the information researched. As I ventured further into researching the two catchments, it became more apparent as to the varying definition of the term sustainability, as I mentioned in the above section *Fleecing the Land* , there was a need to alter the subject to encompass Sustainable Development.

*Amended questions*
*In the Regional context, what is the definition of sustainability and in particular sustainable development ?*

*To what extent are current practices sustainable ?*

This new line of questions created greater emphasis on regional development, as well as sustainable practices within that context.

The research was based on stakeholders and comparable groups which had been identified, as listed below. Information was obtain through various processes, either by interview, group discussion or attending organisations and or referring to published documents.

Land owners
Commercial and Industry
Agriculture
Education and Research
Other " sustainable" institutions
Regional and Local governments
Regional NGOs and Agencies (Catchment authorities)
Service providers (Water/ Energy)
Infrastructure.

The comparative study looked at those broad issues identified as specifically relating to regional areas. Those that aspects that highlighted particular local or regional concerns that were identified, I have responded with specific case studies or examples from both catchments visited.

Factors that are applicable to all sustainable development, but certainly key issues in regional areas, relate to Biodiversity, Water, Energy and Waste. The maintenance or management of these aspects is typically referred to as Resource Management or more specifically Natural Resource Management. In the comparative study of the two catchments, these aspects have been examined.

I would suggest that Sustainability or more specifically a framework for Sustainable Development in the regional context, which it en-couches aspects of Natural Resource Management , has other significant aspects that require considering and this is dealt with in the following section.

## Sustainable Development- distinction and synopsis

*"Sustainability is the objective. Sustainable Development is the strategic process of change over time to meet that objective."* *AtKisson (2008)*

I was fortunate enough as part of this scholarship to attend a Master class in Sustainable development in Stockholm, Sweden convened by The AtKisson Group.

Alan AtKisson has been a long term advocate for Sustainable Development, consulting to Business and Government on a Global level. He is probably most well known for a community initiative, *Sustainable Seattle*, but in his extensive work he has also consulted with councils in Australia, in how to effect sustainable development. Further on in the report we look specifically at the methodology and systems he utilises in his consultancy.

In the quotation above, AtKisson draws the distinction between Sustainability and Sustainable Development that being the ' how we get there' as opposed to ' where we want to get to '.

As mentioned previously, the subtitle to my research was reflective of my university education and architectural training that centred on Ecologically Sustainable Design or Development.

Having been an advocate for ESD in my practice over the past 15 years, we have been highlighting the principles of sustainable development in the built environment. In my practice, we have provided a definition for the client as well as a table that describes the principles involved with ESD. It also includes practical steps for consideration in the design process.

The table is self-explanatory and commences with the initial design stages and proceeds through the design process. It provides an outline to the process undertaken by an architect or design practitioner. The intension is to raise issues during the design process so that they may be integrated to the outcome rather than attempting to add them to the later stages of design.

Some ideas for creating a matrix were explored and these where reflective of this initial table that I formulated in practice and drew upon other models and tools I was exposed to as part of this research.

As part of the master class run by the AtKisson Group, we looked at models which are further described in the later section (CASE Study # 2). We were also exposed to research undertaken by the Baltic University, an amalgamation of 174 universities of the 14 countries located around Baltic Sea.

I have utilised the basis of these other models to formulate the Strategic Framework following.

Dr Mark Diesendorf (2003) is Director of Sustainability Centre Pty. Ltd. and Institute of Environmental Studies UNSW. He suggests that...

*"Sustainable Development comprises types of economic and social development which protect and enhance the natural environment and social equity."* *Diesendorf (2003)*

He describes Sustainable development as an approach that is holistic and ethical so that trade offs between environment and economy and society do not occur.

In order to appreciate the evolution Sustainable development I have provide brief synopsis of the term.

*"Sustainable development is development that seeks to meet the needs of the present without compromising the ability of future generations to met their own needs. "*

This is probably the most common definition citied within the Built Environment disciplines and is found within the Bruntland Report " Our Common Future" findings of the World Commission on Environment and Development, 1987

Some five years later the Rio Summit was convened in 1992, where the UN conference on Environment and Development created a framework named Agenda 21. The intention of the framework was to promote development without compromising the environment.

After a significant passage of time, Ten years later in 2002, the World Summit on Sustainable Development was held in Johannesberg , South Africa. It was here that ESD (Education for Sustainable Development) a key concept was formulated for the promotion of Sustainable development through Education.

It should be noted that the use of "ESD" in Australia Context has a different definition and commonly is referred to as Ecological Sustainable Development and some circumstances design.

2005 commenced the UN Decade of ESD, which runs to 2014. Noting that we are already three quarters of the way through that decade, whilst a great deal has been achieved, it would appear that the level of education still required, has yet to disperse to all sectors of the world community.

UNESCO, an adjunct organisation of the UN, promoting Education, Science and Culture has likened sustainable development to a chair with four legs - economic, social, cultural and ecological. Development is a Single reality, in so much that these four elements must be in balance. (see below).

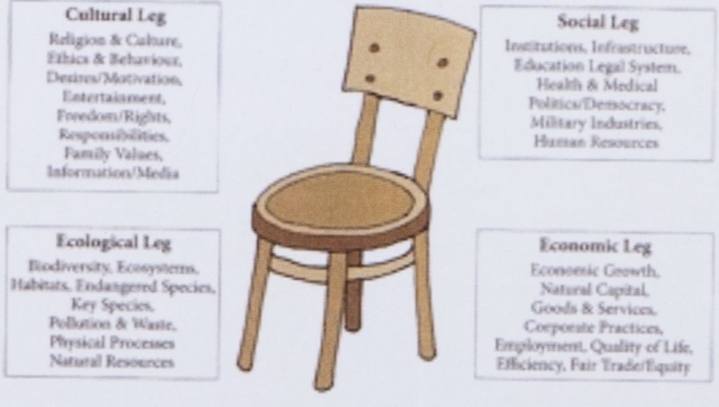



*Figure 2. The Chair of Sustainable Development.*

*Jutvik and Liepina Baltic University , ( 2009)*

This concept was developed by Macer ( 2004) and embraced by Francesco di Castri , a key member of the secretariat as a metaphor of how UNESCO can contribute to sustainable development, particularly in Pacific island countries.

All the different aspects have to be integrated and in order for the chair to remain even and balanced, such that there has to be equal emphasis on each leg.

# CASE STUDY No 1
# Berg River- Swartland, Western Cape, South Africa

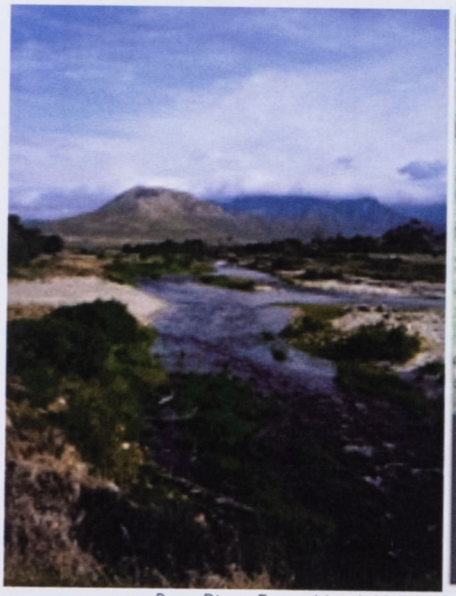
## THE CATCHMENT

The Berg River in Western Cape, South Africa, starts from its source near Franschhoek in the Drakenstein Mountains to the Southeast of the Swartland. It includes the towns of Paarl and Malmesbury to the West, traveling through the Swartland before reaching the Atlantic Ocean to the north at Hopefield.

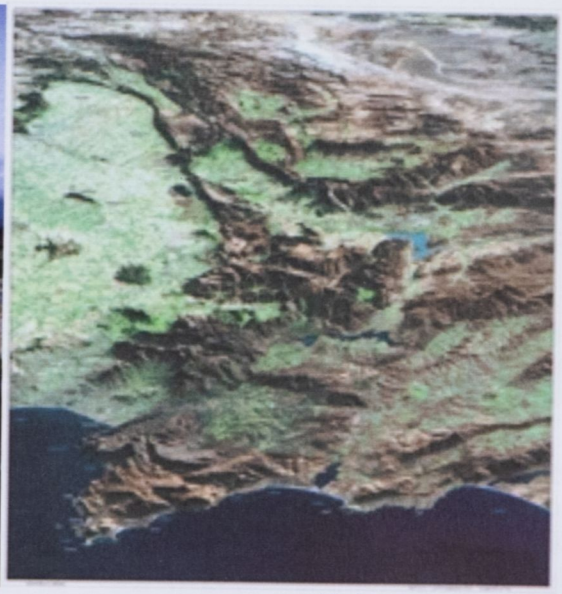
I visited the Berg river catchment and the Swartland, Western Cape in January 2008 and where I identified and contacted the comparable stakeholders within the catchment, as listed previously.

As an initial overview, it would appear that within the Construction, Agricultural and Governance sectors, there was a general interest in relation to sustainability and there was advancement in the uptake of sustainable issues. Documents reviewed at the Cape Gateway, a government information portal for the public indicated to governmental agencies adhering to sustainability guidelines. In contrast to this some parties I contacted, particularly within the construction and design industry indicated that not sufficient has been undertaken by government agencies in particular.

Integration of the sustainable practices into policies of government was evident but apparently a slow process as emphasis on socio- economic issues related to housing, infrastructure and basic resources, such as water and power, took preference over environmental consideration. That said major civil projects such as the Berg River Dam, which I visited, had significant environmental considerations and sustainable credentials to meet long-term sustainable objectives.



*Berg River, Franschhoek Valley*
*Gower 2008*



*3D Catchment image*
*www.saexplorer.co.za*

## SOCIO- ECONOMIC CONTEXT

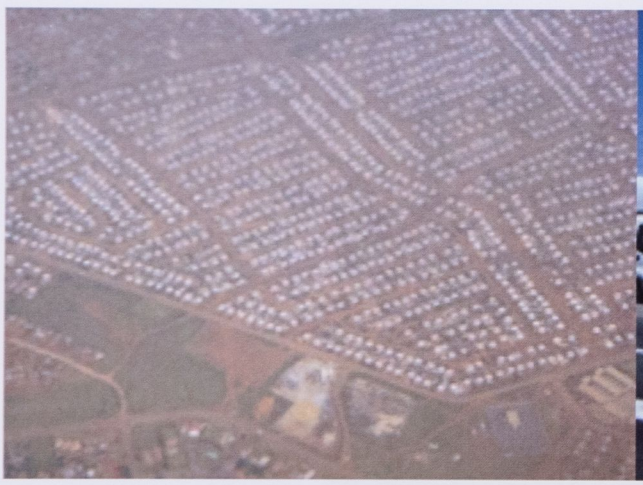
Significant population growth within the urban areas of the Western Cape, such as Cape Town, Stellenbosch and Paarl, has occurred significantly in the past fifteen years, this being partially due to the significant change in government in 1994. Statistics South Africa indicated over 11 % increase in population to the Western Cape during 2000- 2010 although the country's population increased by approximately 9 %. People from traditional backgrounds and the regional areas with limited income are seeking employment opportunities within agriculture and small industry. There is a large influx of people from the Eastern Cape into region. During the apartheid era, repressive labour and migratory laws restrained this influx.

Within the Berg River catchment, counter to the influx of people seeking work in the larger urban centres is a trend of urban dwellers relocating to smaller regional centres. Population in small village communities has marginally increased against the previous declining rates.

Historically, due to limited access during apartheid era, the Swartland Region was a pillar for Afrikaner heritage. It is the birthplace of Jan Smuts, the first Afrikaner Statesman and also the Malan family who held various ministerial positions of Nationalist Government, including DF Malan one of the early Apartheid era Prime Ministers. It is one of a few of the places within post apartheid South Africa where the Nationalist party is still a registered party.

Development that is occurring within these new relocated communities is commonly of an informal nature. Due to significant poverty within these communities and with inappropriate infrastructure, these informal developments occurring with government agencies casting a blind eye, not typically aligned with sustainable development principles

Large squatter camps are commonplace surrounding urban development even within the smaller towns of the Swartland. Images occur of recycling and reuse of waste materials resources is massive but countered by the significant degradation on environment. Firewood is common used as fuel, local vegetation targeted for construction and fuel. Wood fire pollution is significant as well as a health hazard. Limited waste management resources overloaded due to inadequate provision for these new communities



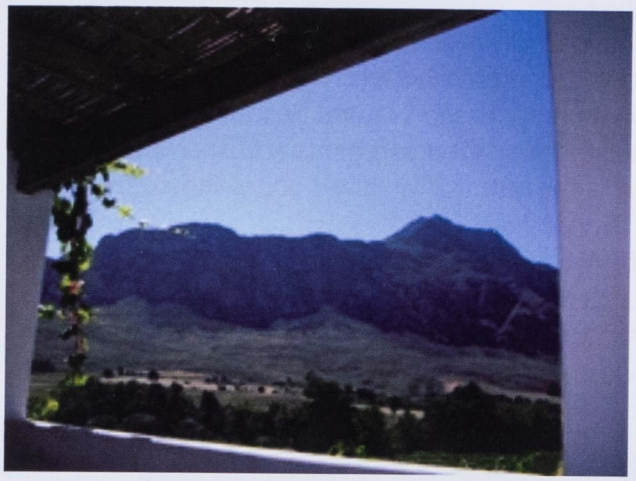
*Guateng township_ aerial*

*Epping squatter camp*
*Gower 2008*

As part of the restructuring of the " New South Africa" various industries, in particular those that are labour intensive, are undertaking significant Socially Responsible action and Corporate Investment Programs. Effectively these actions and programs exist to bring about some equitable balance to the

discriminatory nature of the employment under apartheid and a willingness to address the ills of the past.

Within the viticulture industry of the Berg River catchment, one of the significant examples I came across was Boschendal Estate , a significant wine making property in the Stellenbosch / Franschhoek region. As part of the corporate investment program, the company was in the process of ceding land and dwellings to their labour force. They were also establishing schools and outreach programs. This was acknowledgment of community involvement as crucial to the labour intensiveness of the industry and possibly the past employment conditions of the industry.



*Tweejongezellen_ Krone cellar*
*Gower 2008*

## GOVERNMENT AGENCIES and CATCHMENT AUTHORITIES

I visited the Cape Gateway government information service in January 2008 , which is a facility of the regional government of the Western Cape, for the public. Although this was located in Cape Town, the Berg River Catchment falls within the jurisdiction of the Western Cape

I researched various government initiatives with particular interest in Sustainable Development Initiatives. I previewed the reports of the various departments, both publications and annual reports, specifically looking at the Departments of Agricultural, Economic Development and Tourism , Environmental Affairs and Development Planning as well Social Services and Cultural Development.

Of particular interest what was referred to as the development of "*Building Conservation Economy*" as identified in the Strategic Plan for CAPE NATURE, the environmental agency responsible for biodiversity conservation.

One of its strategies is to forge a Conservation economy, *"an economy in which key principles and practices of biodiversity conservation have been integrated into all forms of economic activity."*

(*Cape Nature 2008*)

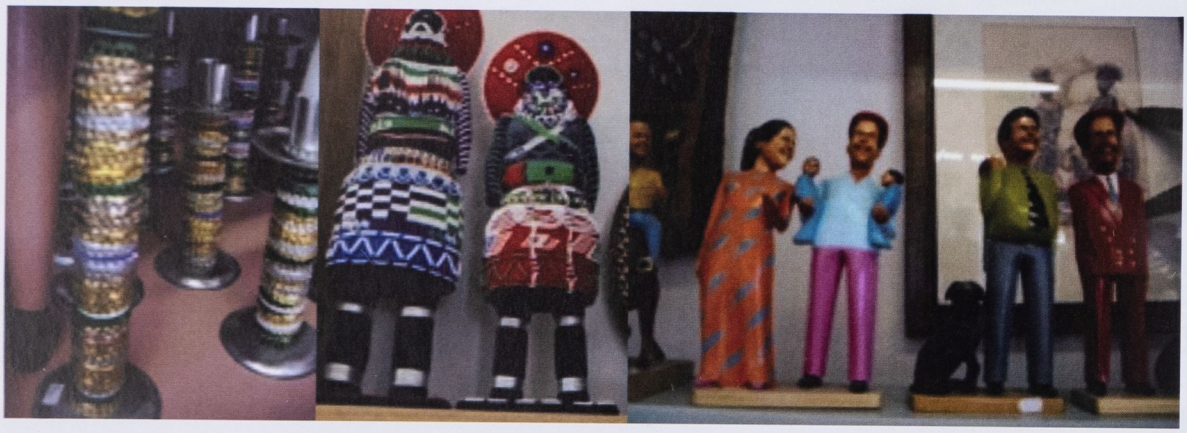
The organisation was encouraging through its programs socio- economic projects and developments that invigorated grass roots , indigenous culture and helped to establish potential markets.
An example was *Siyabulela* , a Medicinal Plant Nursery at Witfontein on the NW coast of Western Cape, where Traditional healers were growing indigenous plants for traditional medicine.

This example identifies how Conservation, Tourism and Socio Economic development can co-exist for mutual benefit, ensuring a potential labour opportunity balanced with environmental and social considerations.

Priority for Strategic Planning for CAPE Nature was to address Climate Change and identifying the need for the protection of Biomes ( areas of significance for biodiversity). Also critical was the management of Water Resources. Some of the Public Works Programs, which potentially provided buildings for Tourism, also included some Architectural and construction possibilities, such as addressing water conservation and harvesting

It also identified that Socio Economic Development could be interlinked with Sustainable Biodiversity Conservation. By establishing opportunities, where Community Based Natural Resources Management (CBNRM) could occur in conjunction with Local Economic Developments (LED) and where the outcomes were mutually beneficial.

An example of this was located at Driftsands, on the NW coast where activities and forums were conducted by an organisation called C.A.P. E. which undertook programs that dealt with Invasive Alien management and regimes for Fire management. As part of a creative output, sculpture was created ,using the exotic timber , and developing a small industry for crafters. Traditionally the use of dwindling endemic resource was of concern for biodiversity.



*Craft and Arts based Trade_Cape Town* *Gower 2008*

Other examples were Landscape SCALE conservation and Wildlife Management programs where training of local inhabitants to contribute towards biodiversity maintenance whilst providing employment opportunities. These conducted in conjunction with Youth Development Program (NYSP), looking at educational and employment opportunities for school leavers.

Under the Sustainable Development Implementation Plan (SDIP) new projects where identified. Firstly to provide a Spatial Development Framework with consideration for the Biosphere Reserves and review Coastal Zone Planning as well as provide an Integrated Energy Strategy

This also provided an outline, which also dealt with guidelines for Local Authorities to implement sustainable development.

Within the summaries of the respective reports were assessments of the various programs performance-

These typically covered aspects such as :
Assessment of Performance- establishing a list of indicators
Strategic Dashboard- key indicators defining tangible change
Geographic Distribution- locating areas of impact
Individual Performance Management- assessment of personnel or staff and management
Annual Report- budgetary assessment of each ministry or department

Most typical Assessments of Sustainability took into consideration socio-economic and environmental aspects or Triple Bottom Line evaluation.

The question which was highlighted through this research was :
"Are there other aspects with which strategies can be modelled or which are relevant to a specific field?"
"Are there methods for modelling such strategies and their outcomes?"

Aspects, which explore possible models and strategies, are explored later in the section of *Re-evaluation.*

*Allesverloeren_ Riebeek Wes*
*Gower 2008*

## ENERGY, WATER and WASTE RESOURCES

Energy and distribution in South Africa is a national issue where the national grid is stretched to capacity and requiring significant upgrade. Grid planning provision for the base-load did not account for the surge in energy requirement as transition from the post apartheid era. Domestic requirements are outstripping the available resource. This is an example emphasising the conflicting first world / third world nature of South Africa, where infrastructure is highly developed in parts of the country and in other parts it is lacking in resource and amenity.

Water storage had been impacted by significant drought where during typical Cape Winters where dams in the catchment are usually restored. With some of the catchment dams such as "Voelvlei" they are planning the interconnection of dams to increase security of the resource.

Water Research Commission WRC

As part of the Berg River Water Project, a 130 million Megalitre dam was constructed and completed in 2007, drawing on the resources of the Berg River at Franschhoek at the beginning of the catchment.

The process initiated 1989, when the national Department of Water Affairs and the City of Cape Town council undertook analysis of the Western Cape systems, looking at water resources available to the city, other local authorities and agriculture.

The project is an example of intergovernmental cooperation between the government agencies and their appointed management body, TCTA which formed to expedite the project.

To assist with the management of water to urban areas of the greater Cape Town metropolis and a variety of irrigated crops, a water pipeline has been built to inter connect the catchment for drought mitigation and urban resources.

Environmental and sustainable initiatives where implemented to meet local engagement and employment opportunities. This was achieved by local community empowerment by sourcing local skills and services

The dam has a particular feature, which is the ability to mimic natural floods necessary to negate ecological habitat and preserving the associated environmental reserve surrounding the dam.

## Agriculture

Agricultural Research Council ARC - Environmental Technology

In researching, I identified the combined role of Agriculture/ Horticulture and in particular Viticulture in creating opportunities, tourism and the food and wine industry.

It was evident that this was embedded within the agriculture infrastructure particularly the Wheat belt of the Swartland and where significant viticulture also occurred.

*Franschhoek Valley_ source of Berg River* *Gower 2008*

## HERITAGE and VERNACULAR

The Berg River Catchment is and area of significant cultural and social history . It was settled in mid 1600's, 1652 but the Dutch East Indies Company ( compare with settlement in the Lachlan valley in the late 1800's )

There is significant European cultural influence from the Dutch and later French Huguenots. Franschhoek, which literally means French Corner, was founded in 1688 by the Huguenots; Calvinist protestants who for their religious convictions fled prosecution in France. Prevalent in the architecture was the creation of style Cape Dutch further developments with Cape influence. For example within the village of Tulbagh which was destroyed by an earthquake , a whole process of identification and documentation program was undertaken as part of restoration of the heritage architecture.

*Cape Dutch vernacular_Groot Constansia* *Gower 2008*

## CULTURE and PLACE MAKING

Culturally I experienced the Swartland to be very vibrant in particularly within the visual and performing arts. This is possibly due to the Western Cape being more of a cultural melting pot, stemming back to the European influences layered with indigenous and Malay culture. It is not typical of what one would associate with a typical African cultural experience and which one would experience if you travelled further north and east into Southern Africa.

With the influx of traditionally rurally based black African (Xhosa) and a significant influx of migrants from Central and west Africa there is a very strong sense of being in Africa. But this is overlaid with Cape Malay and Afrikaner flavours along with European influences dating back to Dutch and French Huguenot settlement in late 16th and early 19th century respectively.

One of my experiences that emphasised this was at the Afrika Centre, Spier near Stellenbosch where the design of a temporary exhibition space for a significant national Contemporary Art exhibition is housed in temporary purpose built structure in a magnificent setting of a local vineyard.

A lightweight tensile structure makes up the roof form and shipping containers are used as walling to define space and make provision for display of the works.

The extract below highlights the interdisciplinary collaboration from various sectors of the arts, design and education where a particular project such an exhibition utilises the potential for cultural collaboration. A synergeous partnership between the arts, architecture, culture and viticulture.


*Contemporary Art Exhibition_ Spier Gower 2008*

## EDUCATION and RESEARCH

I made contact with the Sustainability Institute, Stellenbosch that is integrated with the Stellenbosch University.

I also may contact with University of Cape Town, although not strictly within the catchment is a significant institution. I was interested to establish the integration of principles sustainability within curriculum and teachings of the School of Architecture.

## PRACTITIONERS _ ARCHITECTS and DESIGNERS

During my travels, I was invited to facilitate a workshop / seminar for a local group of design practitioners seeking to advance the uptake of green building practice and the issue of the environment. They also wanted to structure the sharing of knowledge on an informal level.

A one day seminar was convened titled " the Riebeek Initiative" and from the outcomes of the workshop goals where put in place. The group was formalised and links were made with respective educational, trade and industry bodies. Probably the most significant outcome was impetus of the group was possibly instrumental in the finalisation of "Ecospecifier" being set up in South Africa.- see detailed notes in Appendices

## The Africa Centre

Based in South Africa, the Africa Centre is both a physical entity and an ongoing philosophical process. In time it will emerge as a multi-sited, multiple-usage space where the visual, intellectual and performance cultures of Africa, South and North are celebrated, studied and brought to life for diverse audiences in innovative ways.
This site documents our current projects, approach to arts and cultural practice, arts and cultural events in Africa, links to other organizations, and a forum for discussion. [+]

## Southbank

The Africa Centre currently does not own or operate any permanent infrastructure but operates its programs in a wide variety of places. Ultimately, the Africa Centre will construct a core infrastructure within and supported by a residential community, which will be known as the Southbank. [+]

## Southbank Project

The Africa Centre currently does not own or operate any permanent infrastructure but operates its programs in a wide variety of places. Ultimately, the Africa Centre will construct a core infrastructure within and supported by a residential community, which will be known as the Southbank. The Southbank, located on the Spier Estate, will represent a radical, new way of living and working. It will embrace social equity, environmental conservation, creative freedom and the rich history of African heritage and culture as its tenants.

## Collaborations

One of the core objectives of the Africa Centre is to develop collaborative links, support, and facilitate exchanges with a network of African arts and cultural practitioners.

One of our major, long term collaborative relationships is with the African Centre for Cities based at the University of Cape Town. Specifically, the Africa Centre's funding and collaborative efforts will be in one core research project - Culture and the City.

## Artists in Residency

The Africa Centre operates a small artist in residency program where, for the last three years, Third World Bunfight (a performance art company) is provided with housing, office and rehearsal space, and funding for their basic expenses.

*The Afrika Centre--*www.africacentre.net

*Contemporary Art Exhibition_ Spier*

# CASE STUDY No 2
# Lachlan River - Central West NSW, Australia

## THE CATCHMENT

"The Lachlan River Valley, in the central western NSW, starts from the river's source near Crookwell in the East to its seasonal confluence with the Murrimbigee River near Ivanhoe and Oxley in the west, traveling on its path to the north near Parkes and Condobolin and as far south as West Wyalong. Agriculture in the valley is as diverse as the landscape." Lachlan Catchment Management Authority.

During mid -2008 and early- 2009, I visited the respective parts of the Lachlan River catchment, identifying potential stakeholders and as part of the research following up these respective contact and departments.

*Lachlan skies_ Wyangala*

I also reviewed various regional strategies formulated by respective department to identifying the level of integration of Sustainability into policy. The initial examination suggested that policy was limited in terms of strategy for implementation particularly within regional NSW and policy was predominantly generally defined by tourism, conservation, industry and agriculture. Strategies tended to be geared for economic development with consideration for natural and built resources.

Guidelines and strategies for the incorporation into policy and implementation were identified yet my interpretation would suggest that were yet not imbedded in practice.

## SOCIO- ECONOMIC CONTEXT

The Central West is home to indigenous aboriginals and also to several ethnic and cultural traditions, predominantly European, Mediterranean, and Asian

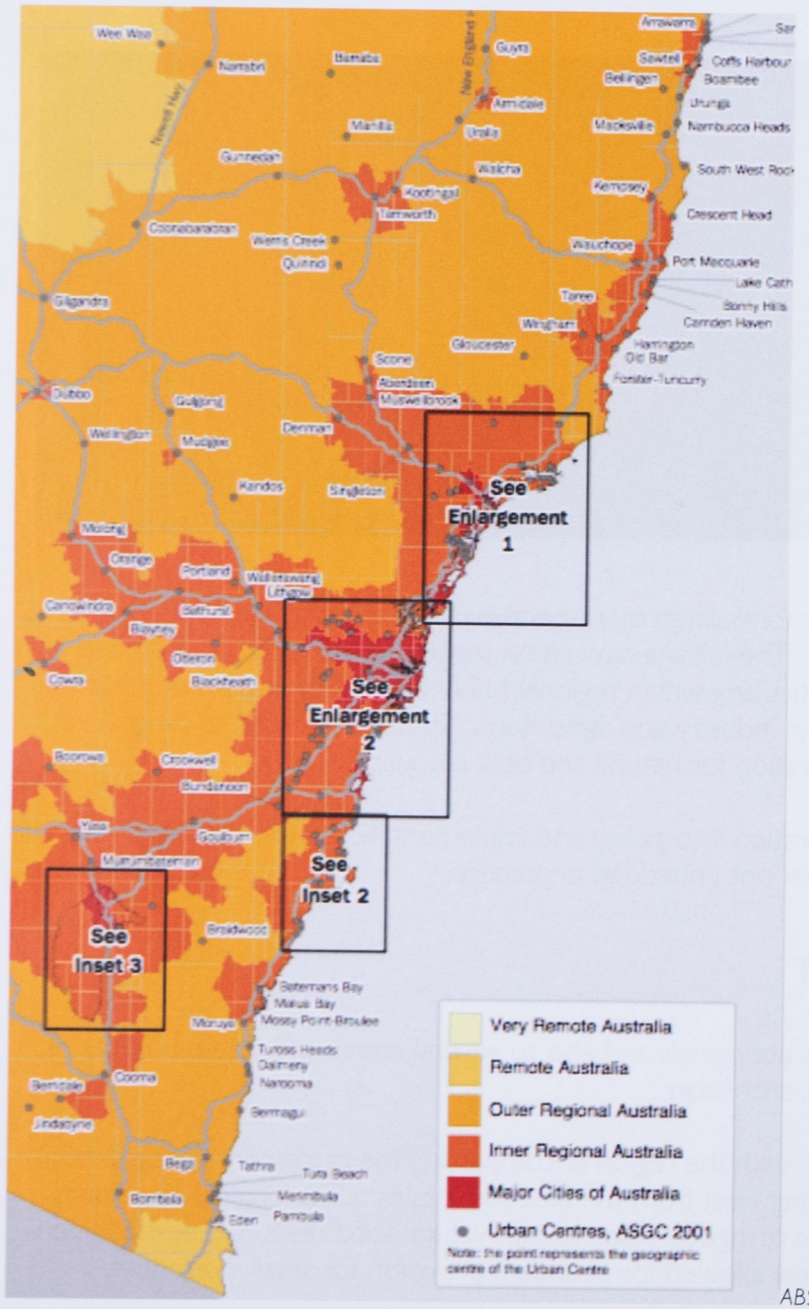
The Wiradjuri Nation, is often associated with the region encompassing the catchment of the central west and the Lachlan, a vast area stretching west from the Blue Mountains. The original inhabitants of the land obviously had an innate sense of a good place to be. Natural food resources and additional provision of the river system would have allowed for abundant provision for small indigenous communities.

## Regional growth

Regional Australia is part of the country that significantly contributed to the growth of the nation particularly from the turn of the previous century to the 1950/60's with expansion of the wool industry. This growth was often referred to as "living off the sheep's back."

## Population

Space or lack of Density, depending on one's perspective, as indicated on this density map from NECC, draws attention to the infrastructure required for percentage of population. Another consideration would be the per capita emissions for regional areas as opposed to urban densities due to the location of industry and utilisation of transportation. This aspect should be seen to highlight the cost consideration not as a social comment on the interrelation of Urban and Regional areas.




*ABS . Census Paper 03/01 .*
*ASGC Remoteness Classification:*

## Agriculture

Although historically agriculture has a relatively short non- indigenous association with the land, often initially with euro- centric approaches to farming methods, and later adapting to other introduced models of farming.

Subsequent agricultural growth saw diversification into mixed-use farming and subsequently more recent specialisation in single crop broad acre farming.

## Mining

Mining also economically, historically and culturally played and significant role in the development of the regional areas.. Historically, many locations in the Central West, since the Gold Rush in 1860's areas such as Lambing Flats, near Young and Eugowra, north of Cowra, Since then the scale of mining has significantly increased, such as Cadia gold and copper mine near Blayney, have contributed to the increase of impact on environment aspects of the catchment

## Biodiversity

Biodiversity is the variety of all life comprising individual species as well as that among species;

Biodiversity is not static but constantly changing and is increased by genetic change and evolution and reduced by processes such as habitat destruction, population decline, and extinction.

Healthy biodiversity is indicated by diversity in the ecosystems and new development can have significant impact on EcoSystems and Biodiversity.

In February this year I attended the NSW Climate Summit in Sydney convened by the NSW Conservation Council. A paper presented by Terrestorologist Peter Smith from DECC (NSW). He described the potential impacts of Climate Change on Regional NSW particularly the South West region , the food bowl of Australia.

He indicated dire consequence of climatic variation on the region particularly in relation to significant reduction in Rainfall, in particular seasonal winter rainfall. He predicts that significant habitat adaption in response to reduce rainfall and CO2 increase , decreasing woodland to reverting to grasslands and impacts of this on biodiversity.

This scenario was based on the 2007 global data modelling and he indicated that the variations from the 2008 modelling that had just been released, were a significant increase on the predicted forecasting based on the previous years modelling.

The analogy he drew was that predicted rising sea level previously forecast for 2050 could be brought forward to 2020. This would be a significant issue for Urban development on our coastal areas.

For regional areas the issue has significant consequences for water supply in the South West region and impacts on Agriculture.

## GOVERNMENT AGENCIES and CATCHMENT AUTHORITIES

I reviewed Regional Strategies formulated by Planning NSW, identifying the level of integration of Sustainability in to policy. This initial examination suggested that policy was limited in terms of strategy for implementation for Western Region NSW and policy was predominantly generally defined by tourism, conservation, industry and agriculture. Strategies tended to be geared for economic development with consideration for natural and built resources.

The Department of Environment and Climate Change and Department of Energy, Water and Sustainability are the two NSW departments that deal with specific strategies for environmental consideration. (These are how the ministerial departments were named at the time of the research and we acknowledge that amalgamations and re shuffling has occurred.)

Clearer policy definition and Strategies for Sustainability and Sustainable Development exists within State department for Local Government (DLG) and as well the Regional Organisations of Councils (ROC). As indicated before the guidelines and strategies for the incorporation into policy and implementation were identified yet my interpretation would suggest that were yet not imbedded in practice.

### Regional Communities Consultative Council

In 1996, the New South Wales Government established the Regional Communities Consultative Council to make sure that the Government is informed on the issues and concerns facing country people in NSW.

The role of the RCCC is to:

- advise on the broader impact of specific government initiatives, policies and services on rural and regional communities
- advise on opportunities for government initiatives which advance the social, economic and environmental development of rural and regional NSW
- advise on regional communities' access to information on government initiatives, services and programs being delivered to rural and regional NSW and
- advocate changes which improve the quality of life for rural and regional communities.

The overarching theme of the RCCC is the sustainability of rural communities. The Council pursues this theme through:

- Community consultations
- Advice to Government as part of the policy development process
- Undertaking issue-specific projects and
- Responding to contentious and emerging issues which are important to regional and rural people.

In this way, the RCCC helps the Government to work with country communities to respond to and resolve local issues.

## Natural Resource Management

Thirteen Catchment Management Authorities (CMAs) have been established across NSW. One of the key functions of the CMAs is the development of Catchment Management Plans that includes management targets and actions that will assist in achieving the state wide Natural Resource Management targets.

Natural Resource Management (NRM) is the management of natural assets including vegetation, land, water and soil in a manner consistent with the principles of ecologically sustainable development.

The CMAs also play a key role in the implementation of the Native Vegetation Act 2003 that seeks to protect the biodiversity values of native vegetation and the important roles native vegetation plays in maintaining water quality, preventing salinity and land degradation.

# ENERGY, WATER and WASTE RESOURCES

Significant issues for Regional Development relate to the resource supply and management of Energy Water and Waste

| | |
|---|---|
| Water | efficiency, harvesting recycling and reuse |
| Energy | efficiency and power generation and related emissions |
| Waste | reduction, recycling and reuse |

## Energy

Australia is still living in the Coal Age and will need to stem the reliance on coal power energy. The Networks aging infrastructure is required to be upgraded and a NSW levy to meet the costs of up grade will result in current delivery costs or rates to consumer increase by 30 % in some cases higher. Indicators all point to significant increase in rates.

*Sandia National Laboratories*
*www.scandia.gov/news/resourses/releases/2007/trough*

The scale of the national network, stretching from far North Queensland to South Australia produces transmission losses across national grid. This is approximately 3 % for high voltage lines and significantly increases with voltage drops. Whilst the national loss is not significant regional smaller network create a significant waste of resource.

*( Diesendorf 2007)*

The cost of provision of stand-alone buildings in more remote cases, is a significant cost borne by the owner. Alternatives such as distributed energy and stand-alone power needs to be developed and supported by State and National Agencies.

It should be noted that energy costs in regional areas are commonly 20 - 30 % higher than those in urban areas.

## Water

Water is a severely undervalued resource in Australia despite being the driest continent on earth. The current cost in particular of urban water is not reflective of the value, and potentially increases community reliance on the provision of resource. DECC NSW Climatic indicators are particularly dire for South Western NSW with the significant reduction of precipitation predicted.

*Nic Moir SMH 2005*

## Waste

Unfortunately Waste Management is where most attention has been particularly focused in regional area. Whilst significant gains have been made in terms of resource reuse and recycling as well as infrastructure has being established, this has been the primary focus for environmental policy. Predominant regional local council environmental management responsibilities lie in waste resource and recovery., in particular as observed in respective local council documents within the Lachlan Catchment.

*Chris Jordan*
*www.chrisjordan.com*

## INFRASTRUCTURE

There has not been significant Public works investment, State or Federal in regional infrastructure for the past two decades, although as mentioned under energy that infrastructure upgrade is currently proposed.
Services within existing towns are in decline and transportation has seen declining use or abandonment of rail network . This has created greater reliance on road networks which in turn has had great impact on road quality and maintenance and safety.

## IDENTIFIED PROJECTS and CASE STUDIES

These case studies have been selected to show the type of projects to which design practitioners can utilise their broad based skills. They demonstrate the variety in which design skills can contribute, from a conceptual aspect to actual project implementation. They reflect on the broad aspect of sustainable communities, with themes related to Biodiversity, Resources, Built Environment and Culture.

### CLEAN - Cowra Low Emissions Action Network

CLEAN is a community based initiative looking to inform householders on the potential to reduce their environmental footprint

I was involved in participating and advising on implementation of a Solar Community Network, and due to my interest and experience with photovoltaic systems, providing technical inputs and assessments of proposed systems. Initially 55 households subscribed and currently nearly 100 households have been connected to the grid.


*Montgolfier Building_ Canowindra* *Gower 2009*

### Layers , Lenses and Landscapes

A research grant titled *Layers Lenses Landscapes- Rural appreciation of place* undertook an recording and documentation of the oral history of Woolshed at Riverslea Station, near Cowra. Dr Nancy Marshal et al. of the Faculty of the Built Environment, UNSW undertook the research over an eighteen-month period concluding with an exhibition of the results.

As liaison and co-ordinator for The CORRIDOR Project, I was involved in design and curating of the prospective exhibition based around the findings of LLL research.

*Layers Lenses and Landscapes_Woolshed, Riverslea Station* *Gower 2009*

## Residential Sustainability Audits

As part of services offered in architectural practice, I have been undertaking assessment of sustainable development and living in proposed and existing dwellings. Assessments are made of the consideration for Siting and Orientation Construction Materiality, and Systems including of energy , water and waste components.

These were undertaken within the Cowra area and provided isight in to the existing limited appreciation for sustainable consideration in existing and proposed dwelling. Appearing was interest for improving efficiency , predominantly driven by increasing energy costs.

*Industrial agricultural buildings_ Cowra* *Gower 2008*

## Landcare

Exploring the Integration of land stewardship program with the land management program for the CORRIDOR project which involves the local indigenous community.

It involves the Ferals removal program undertaking the elimination of willows, carp and blackberry within the river system.

(This was reflective of the Invasive Alien Management C.A.P.E. as undertaken in the Western Cape, South Africa)

## Wyanagla Dam

Located thirty kilometres southeast of Cowra at the confluence of the Lachlan and Abercrombie rivers, Wyangala Dam was built, initially in 1933 and enlarged in 1971, as an irrigation dam for the agricultural and rural communities downstream. It highlights the issue of water management and how this impacts on regional communities.

Issue arise from the delivery of supply were there are huge inefficiency and losses. Environmental flows of the Lachlan as part of the Murray Darling basin where traditionally it flows in to the Cubong swamp. Typically flood would link the Lachlan to the Murrimbigee.

As this has been built as an Irrigation Dams, issues arise from the creation of licenses and amount of allocations made. In drought periods, there is significant competition for allocation of available water. Security of resource is also an issue for towns down river. It also has an impact on the quality of the water.

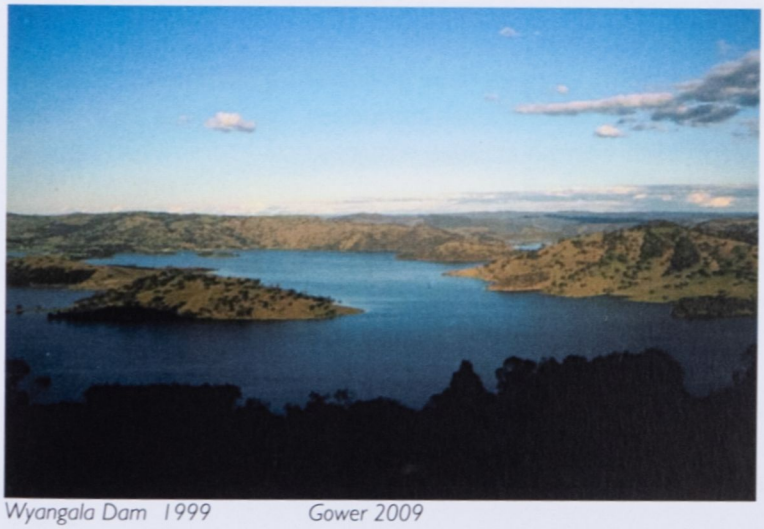
With a capacity of 122 000 million megalitres, at the time of writing, Wyangala Dam is just over 6 %, this is going into the irrigation season. Six years of drought have contributed to the significant lower water levels but is compounded by possible over subscribed water allocations.

**Critical stage**

**Falling dam levels pressure new yearly water allocations**

*Cowra Guardian* *24th June 2009*

Just over ten years ago, 1999 the dam was 96 % full , a capacity twice the size of Sydney harbour. This perhaps highlights the need and greater capacity for systems within resource management.



*Wyangala Dam 1999* *Gower 2009*

# Re-evaluation

*To what extent are current practices in regional development sustainable?*

- Observations and Indicators suggest that we have to re-evaluate current development practices.
- Have to identify and acknowledge the current development is not sustainable.
- We need to address the causes not treat the symptoms.
- We have to acknowledge that climate change and adaption will have a significant impact on whether our communities will remain sustainable.
- We have to work with nature and co-ordinate directions to achieve sustainability.
- We have to be innovative in methods we use, design and implement.
- We should embrace the challenges that Regional/ Rural Australia has met before.
- and create communities that are exemplars of sustainable development.

In order to achieve sustainable development there is a need to put structure or frameworks in place so that key areas for Sustainability can be identified and classified under aspects of process for change. This is represented in the table on the following page.

In explaining this table, essentially this is framework for Strategic Planning and is formulated in order to progress a move towards more sustainable communities. It initiates from two projects undertaken by the Baltic University Urban Forum and was published by the Baltic University Press..

Research of various models or tools to assist with sustainable development, all start with a measure or guide as to how the community or region is performing. These are commonly defined by using indicators to determine current status and to be able to determine any change that occurs.

The first column refers to the broad aspects of sustainability. These are often referred to as pillars of sustainability. In most typical definitions there are three or four aspects, those being Ecological, Economic and Social aspects with Culture or Well- Being often considered as the fourth.

Current research and modelling such as that undertaken by the Baltic University Urban Forum identifies further aspects or 'resources' for consideration. For example the common ecological aspect is broken down into two resource aspects namely the "Physical" i.e. Energy Waste Water and " Systems" i.e. the collective ecological systems or ecosystems and Landscapes.

The second column identifies key aspects, which have to be addressed in order for sustainable development to be achievable. It is critical to understand the interrelationship so that a holistic approach can be achieved. Imbalance of one dimension will affect the performance of the whole.

The third column identifies the process required in order to achieve sustainable communities

The process beyond this would be the formulation of indicators for Regional and Municipal Management.

| Sustainability resources | Key Areas for Sustainable Development | Process |
|---|---|---|
| Ecological | Eco systems | Natural Resource Management |
| | | Urban rural cooperation |
| | Natural Landscapes | Natural Resource Management |
| | | Urban rural cooperation |
| | Agricultural Landscapes | NRM/ Land Stewardship/Land Management |
| Physical | Soil | Soil management |
| | Water | Water management |
| | Air | Emissions monitoring / management |
| | Energy | Energy management |
| | Waste | Waste management |
| Economic | Roads/rail/air infrastructure | Transport and Infrastructure Planning |
| | Built Environment | Urban and Regional Green structures |
| | Tools/ skills | Information and education |
| | Services- Professional/ informal | Rebuilding the town, brown fields |
| Organisational | Governance/ Infrastructure | Local/ State and Federal |
| | Laws | LEPS DCPS EAP |
| | Ethics | Human Rights/ Laws of Natural State |
| | Groups | Community/ Business/ Corporation |
| Social | Health | Transport and Infrastructure Planning |
| | Aged Population | Transport and Infrastructure Planning |
| | Youth | Information and education |
| | Community Co-operation | Rebuilding the town, brown fields |
| Cultural/ Historical | Community arts | Urban and Regional Green culture |
| | Cultural Events | Urban and Regional Green culture |

## *Sustainability Framework for Sustainable Communities*

*Compiled from "Sustainability Indicator Project" and "Basic Patterns of Sustainability" Baltic University Urban Forum and Baltic University Press.*

| Aspect of Process | Acc | Integration |
|---|---|---|
| REGIONAL RESOURCES SUPPLY | RRS | |
| REGIONAL ENVIRONMENTAL PLANNING | REP | |
| SOCIO- ECONOMIC DEVELOPMENT | SED | |
| INTEGRATED SUSTAINABLE DEVELOPMENT | ISD | |

# Role of Architects and Practitioners

## OVERVIEW

Based on the framework established in the table of previous section as compiled from my reading of work undertaken by the Baltic University Urban Group, how do architects and design practitioners contribute to a re-evaluation of current sustainable development practices ?
Where do they intervene in this process and what role do they play in shaping sustainable development practices in regional communities?

As part of this Research, in exploring the socio-economic background of the Lachlan and Berg river catchments, identifying stakeholders as listed earlier, and identifying possible actions of social responsibility within the region; some possible opportunities for design practitioners are identified. Some opportunities are more within the typical capacity as designers of the built environment but also includes education and involvement in community initiatives and also a role as a change advocate and facilitator.

Regional and Shire councils responsible for smaller towns and villages will need to take into consideration the developmental issue, or in some case diminishing, of towns and villages. Rather than increasing density only within towns, look at sustainable levels for maintaining town.

I significantly believe that the influx of people from the city to regional areas will increase, particular those in professional or skilled trade capacity as requirement and opportunity in these areas increase. In Boorowa, in the Upper Lachlan catchment for example, which experienced in recent years post 2004, influx of people from Canberra, looking for an alternative to city living.

Regional communities offers an immediate connection to the rural countryside and landscape compared to the majority of the urban city communities which have lost their proximity to this landscape. Appreciation of the reliance of urban communities on Regional communities for food and mineral commodities is diminishing. As the food and Commodities supply chains get more complex the appreciation of origin of resource is further blurred. Connection between production and growing and distances to markets are increased.

On revisiting and re-reading Alexander Ishikawa and Silverstein et al "A Pattern Language " who refer to the community of 7000 as ideal where all members of the community have a voice.
This would be applicable to the communities such as Cowra (population approx. 10 000 ) but also for the larger centres such as Orange, Bathurst and Young there would have to be a re-evaluation of how the community was structured and operated.

Other infrastructure components such as rail and transportation, industry including agriculture need to be in place in order for sustainable communities to prosper. As Colin Ward who wrote in *"Organisations of Anarchy"* in 1966, "Importance of a structured rail link, distributed industrial activity are important criteria for stable social structure". In many regional and rural communities, the decline and or removal of such infrastructure, has lead to the demised of many of the community. This has also been compounded by in some cases of unsustainable farming practices, which in turn have been exacerbated by significant drought. The uptake and resurgence of diversified and holistic farming practices supported by such groups as Catchment Management Authorities and Landcare.

The question that keeps coming up is how architecture fits into this whole picture of sustainable development in relation to government policy, land use, supply and demand of land, water issues etc.?
How does the structure of governance relate to architecture and design and can we participate in more complex issues such as Land Use planning and Water Resource Management?
Can we as stakeholder in planning and development lead by example and set higher criteria?
Do we require a re- evaluation of current system and structure of governance?
What contribution can design practitioners make to the discussion?

In South Africa, I came across examples of greater Regional Centres, primarily base on Geographic, climatic regions. This allowed for a greater ability of governments to address the environmental, economic concerns. In term of an Australian context, I would suggest that the Catchment Authorities and other regional authorities could play a largely instrumental role in regional Sustainable Development.

Recent forums of Local Government and directives from the Local Government and Shires association indicate that discussions are occurring to change the current structures of governance, looking at possible amalgamation into super councils, particularly in Regional areas, Alliances already exist between some of the smaller councils where combining resources is a necessity to reduce costs , as is the case with Blayney, Carbonne Wellington Shires in the Central West. If these amalgamations occur, and are along the lines of the South African examples, this may give greater capacity for these newly formed regional governments to implement strategies for Sustainable development within their respective communities.

## OUTCOMES- PRELIMINARY

Identification of opportunities for design practitioners

Use of Broad based architectural Skills

Analytical and Problem solving

Planning

Community initiatives and Education

Role as a change advocate and facilitator.

In the following section , based on my research, observation and current participation , I have looked at where design practitioners can contribute to sustainable development in regional communities..

## AUDITING

An increasing important component in creating energy, water waste efficient environments, is assessing how buildings, both existing and proposed can be more resource efficient. This requires a valuation or auditing of the building in order to determine appropriate levels of intervention.

Measurement
Modeling of New and Existing buildings
Utilising numerous available Tools
Life Cycle Analysis

### Tools for Assessment

Below is a list of tools or assessment frameworks that I was made aware of as part of this research. They offer practitioners different methods to integrate sustainable practices within their own organisations or to structure within the clients project or brief.
Some of these I have examined in more detail and one I have had the opportunity to experience directly as I attended a master class with Alan AtKisson.

Global Reporting Initiative (GRI)- minimum standards, predominantly used by large companies , organisations and government agencies.

Triple Bottom Line (TBL) overarching framework based on classic core sustainability domains.

Corporate Social Responsibility (CSR_ now commonly CR)-

The Natural Step (TNS) _ two essential elements
Systems conditions for sustainability and planning methodology or actions steps.

Balanced Scorecard- widely used management tool integrating organisational performance based on financial,, client, internal process and education.

The Ecological Footprint a methodology for measuring the aggregated performance of human consumption and waste against the ability of nature/ the earth to provide at that current rate . Sustainability management is currently being integrated into process.

ISIS methodology (ISIS) as described in Participatory Case Study No 2.

## INVESTMENT IN SUSTAINABLE DEVELOPMENT

As an architect one needs to be familiar with Investment and opportunities and grasp concepts in relation to :

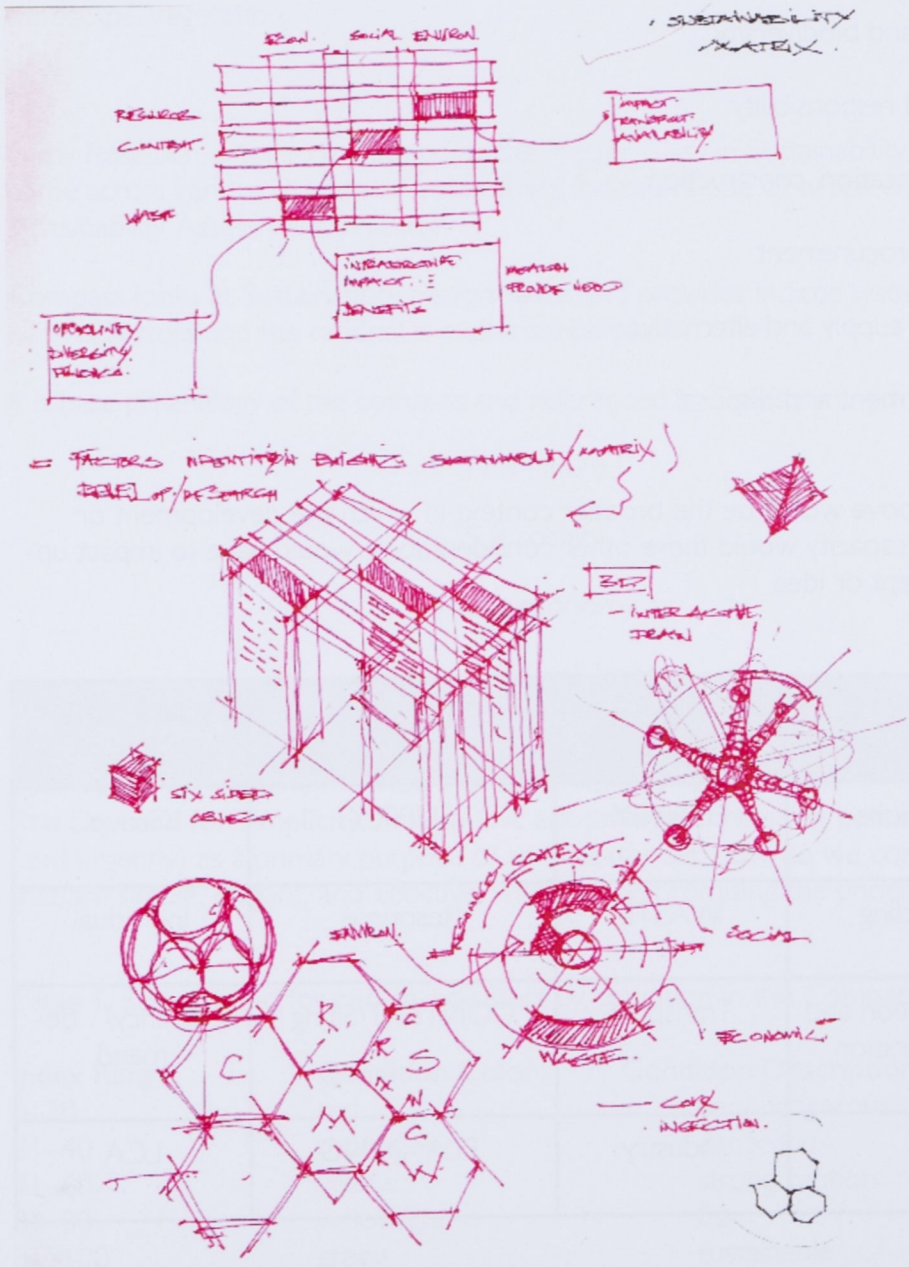
Market Based benefit of Sustainable Development
Construction Savings from appropriate construction methods and material selection
Operational Savings from resource efficient buildings
Social and Public Value of Sustainable Buildings.

## MODELLING

As part of my research, I explored different models or tools that are available to practitioners for assessment of Ecological Sustainable Development and implementation. At the out set of this project, I proposed a model for Assessment of sustainable development or a model for Sustainability

It would be the development of the assessment tool that is reflective of the regional environment and broad principle involved in Ecologically Sustainable Development and Design.

As part of this I researched various existing model, in particular looking at valuation process.
I part of the finding I have undertaken the development of 3D assessment, which models a particular project or proposal. This stemmed from my involvement with Waverley Council Sustainability Committee and where comments regarding emissions modelling for Urban communities was discussed.



*Sketch for 3D Model for Sustainability Matrix_ Dec 2007*

The sketches above indicate the preliminary exploration of this notion and possibilities for the development of a Sustainable Development Matrix.

The proposal explored the use of a three dimensional matrix where the complexity of a scenario could be inputted and the interrelationships of respective aspects could be considered in relation to one another.

## Outline of Sustainable Development Matrix

*taking inconsideration the respective sectors of sustainability and sustainable development.*

| | ECONOMIC | SOCIAL | ENVIRONMENTAL |
|---|---|---|---|
| Principles- | consideration and implementation | | |
| Place- | context , site and biodiversity | | |
| Process- | evaluation and responsibility | | |
| Selection- | materials , fabrication, construction | | |
| Method- | solution and procurement | | |
| Resources- | energy, water, supply and alternatives | | |
| Waste- | recycling, treatment and disposal | | |

Interposed with these aspects above would be the broader context in which the development or project was occurring and what capacity would these other considerations would have to impact upon the sustainability of the concept or idea.

| NATURAL ENVIRONMENT | | INFRA-STRUCTURE | | BUILT FORM |
|---|---|---|---|---|
| AIR (white) | Emissions | ENERGY | SUPPLY | Group |
| WATER (blue) | Recycling | WASTE | Resource | Individual |
| BIODIVERSITY (green) | Conservation and Regeneration | Transport | CONTEXT/Siting | Efficiency/ demand |
| | | Industry | PLANNING | LCA |

Other Design principles which are more typical of consideration of incorporation into built form go into greater detail.

Orientation

Solar Access

Ventilation/ Cross Ventilation

Thermal Mass

Insulation

Glazing

Shading

Landscape Vegetation

Embodied Energy/ Material Selection

Indoor Environmental Quality ( Lighting / Air/ VOC)

Operation

Consumption/ Emissions/ Waste

Social Amenity

In my Research, prior to my attending the Master Class in Sustainability in Stockholm , Sweden, I had come across various models of sustainability indicators one of which was Alan AtKisson's Compass Sustainability Assessment Indicator.

Compass looks at Sustainability performance and provides Indices system for assessment of Sustainability Indicators and the rational is explained below.

It is base on analogy of the compass and referenced to Daly's pyramid- 4 layers where

- N is nature

  S is society

  E is economy

  W is well being

"**Growing Complexity**. As our understanding of the complexity of sustainability grows, how do we manage the mountains of data required to monitor it?
**The Demand for Simplicity**. Since public education and resulting political action are seen increasingly (and urgently) as a primary purpose of an indicator set, how do we construct presentation schemes that are simple, elegant, and effective, without compromising the underlying complexity?"

Table 1. System used for coding indicators by condition in the Compass Index reporting format.

| Index Range | Condition Color | Condition Description |
|---|---|---|
| 0–20 | red | very dangerous |
| 21–40 | red/yellow | dangerous |
| 41–60 | yellow | strong caution |
| 61–80 | yellow/green | fair |
| 81–100 | green | sustainable |

## SUSTAINABILITY EDUCATION

There is a possibility for involvement with primary and secondary schools such as assisting with National School Solar Program retrofitting. This may entail some interactive contribution to curriculum-based course particularly within Science and Environmental structures of schooling. Efficiency audits form part of these project and schools also are required by the Department of Education to provide a Sustainability evaluation.

There are possibilities to explore partnerships with tertiary education, in providing elective course options. For example, I am currently involved in co-ordinating and facilitating The CORRIDOR Project, Riverslea Station, on the Lachlan River, NSW.

*Gower 2009*

*UNSW Planning Elective_Woolshed, Riverslea Station*

The redundant rural infrastructure is being reinvigorated to be utilised as a place "*essentially for education, and to explore and develop alternative methodologies and research, in a constantly evolving environment.*"

*Founding Statement The CORRIDOR Project 2005*

Also identified was that within regional areas, there are limited possibilities for Continuing Professional Development programs and opportunities exist for peer workshops where topics could focus on sustainability and sustainable development.

## SUSTAINABLE GOVERNANCE

Architects can participate on council policy making such as Development Control Plan formulation and demonstrate sustainable development practices within Councils for the integration of sustainable building initiatives throughout all development within the DCP's

Practitioners can participate in Local Government Environmental Sustainability Advisory Committee or in environmental management groups such as SSROC and SCCG to establish consistent responses to regional development and environmental issues.

For example, I previously sat as a member of the Waverley Council ( in Sydney ) Environmental Sustainability Advisory Committee where the committee participated in workshops addressing issues to assist council's environmental wing in formulating the Environmental Action Plan and to integrate and embed sustainability in to the policies, business and activities of council.

Assisting councils to demonstrate sustainable development practices during refurbishment and construction of all Council buildings and infrastructure assets is another possible role as well as drafting funding applications for Urban Sustainability Program such as the NSW Environmental Trust

## HERITAGE and VERNACULAR

This refers to Local or Regional style or building typology that has been evolved as a response to environmental and resources availability. The involvement of practitioners in the identification of Vernacular and Heritage buildings is necessary in identifying contribution to the cultural resource of a region or community.

*Cape Dutch vernacular_Groot Constansia , Tulbagh and Boschendal, Western Cape*

## ADAPTIVE REUSE

Within the built environment, this is a term used to describe the transformation of an existing building or space where the use of existing building fabric and related material embodied energy is consider for adaption to new uses. Apart from the economic and environmental considerations, aspects of their contribution to community identity and culture are often significant, particularly in smaller towns where places of cultural significance may have been lost.

## CULTURE and PLACE MAKING

As part of The Corridor Project Recently this involved in presenting the findings of a research project titled Layers Lenses Landscapes- Rural appreciation of place in conjunction with Faculty of the Built Environment at UNSW_ Marshal et al. The findings presented responses of locals interviewed about their relationship to the site of the Woolshed at Riverslea Station.

An exhibition displaying representations of the Riverslea property's sense of place, combining photography, sculpture, multimedia, painting, soundscape, drawing, and written responses to the site.

*Layers Lenses and Landscapes_Woolshed, Riverslea Station*

## SOCIO- ECONOMIC PROJECTS and DEVELOPMENTS

Opportunities exist for involvement of practitioners in Socio- economic projects and developments such as the invigoration of grass roots and indigenous culture and potential market.

## "BUILDING CONSERVATION ECONOMY"

Conservation economy- an economy in which key principles and practices of biodiversity conservation have been integrated into all forms of economic activity."

As part of this research it was identified of the combined role of Agriculture/ Horticulture and in particular Viticulture in creating opportunities, tourism and the food and wine industry.

# Summation

*What is the relationship of all this to architecture and building?*

At the commencement of the research, I initially perceived the role as quite clear.
but the picture changed. I was asked the question "did you find what you thought you would?"

As practitioners , I would suggest there is a need to adopt a more holistic approach and ecological appreciation to building and development, being aware of the implications beyond the immediate, considerate of the edifice in greater context. This is not to demeanour the celebration of architecture but to suggest a more extensive role in returning to a role of master planning.

From the research undertaken, it establishes that whilst there are changes in attitudes occurring, and even during the process of the writing of the paper, rural areas tend to be slow adaptors to change. This may have been exacerbated by the persistence of the drought, including the increasing pressure of rising energy and water costs. Despite prevailing attitudes of non-engagement, there are sectors of the community that are embracing change and open to being to ideas of sustainable development even though it may be economically driven.

It also I believe, establishes that land use practices need to be addressed, across all sectors and opportunity presents itself for architects and design practitioners to contribute to a review of the current practices in regional areas and promote sustainable development.

Sustainability is about systems and understanding interrelationships. To ensure that some systems do not undergo degradation at the expense of others, and that all parts of the system are maintained or improved, these interrelationship need to examined and understood.

I would suggest the design process, inherent to architectural and design skills and education, involve a consideration for the complexity in creating a solution. A well-designed product responds to need whilst considering the implications of production and use. In order to achieve Sustainable Development, solutions for a development need to consider the implications beyond the immediate project.

I came across this a career summary of the description of a Designer of the built environment from UCT (Cape Town, South Africa) , one of the institution at which I studied. It seemed to encapsulate most of the aspects I hope I have covered in this report.

*" A career in the design of the built environment involves creative, technical, theoretical and managerial work to meet society's need for shelter and accommodation.*
*These needs span from the large scale of cities and regions, to the intermediate scale of buildings and parks, and to the small scale of rooms and furniture - all of which need to be designed and built.*
*Designers work with many other technical specialists, often in large multi-disciplinary teams, to turn conceptual ideas into built reality.*
*This process of design work takes many factors into account, including the needs of users, environmental sustainability, functional requirements, legal frameworks and financial constraints.*
*Designers have the creative ability to synthesise these complex requirements in coherent and expressive form."*

*Website_Faculty of Built Environment _University of Cape Town*

Promoting Sustainable Development in regional communities.

By raising awareness of the impacts of development and the use of material resources on the environment as well as promoting resource efficiency and awareness of energy alternative in regional communities.

Contribute to creating sustainable healthy rural and regional Communities.

By designing and building sustainable developments would indirectly educate and inform community of possible advantages. Although this is happening in the larger institutional buildings and regional cities , potential within smaller communities is limited.

There is a necessity for architects and design practitioners to be involved in a lot more comprehensive way, possibly on a more "grassroots " community level in raising awareness

During the process of writing this paper I have been involved in two particular projects that highlight the possibilities for design practitioners contributing to change within regional communities.

Firstly The CORRIDOR project, as described earlier in the paper is at the completion of construction stage. The next phase involves the strategic development, where the partnerships with respective institutions, organisations and individuals is established. These relationships have been developed during the process of the project and now the facilities are ready to be utilised this second phase of the project commenced. Much like the construction phase, this will need to undertake a process of design, establishing a brief based on inputs for the stakeholders, the community and the clients.

The second example was a regional conference titled *Energise Central NSW*, looking at the potential for sustainable fuels and energy production within regional communities.

As convener of the conference , I was involved in the initial formulation of the project concept, through the development process, through to the implementation of the actual conference and trade expo. The process was not dissimilar to that of a design project, designing the structure and potential inputs from appropriate speakers and organisations.

Due to the success and positive responses from the community and council , it is likely that a project will be realised in the form of creating a regional energy hub, utilising the resource streams available in the community. The potential to establish a regional industry- based network that provides employment, local markets for energy crops and long term possibilities for renewable energy production and secure fuel and energy prices , would be a major achievement in enabling a sustainable regional community.

In concluding this research and discovery, I would propose that architecture and design disciplines do have a role in readdressing the imbalance of current practices in regional area, which with consideration for the maintenance of available resources and utilising renewable energy sources, can be achieved by creating symbiotic environments that provide cultural and functional and creative forms.

# Appendices

## ORIGINAL QUESTIONS

A framework for a comparative case study has been created based around broad and specific questions about issues of sustainability. Provisional questions have been drafted.

*Broad*
*To what extent has sustainability and in particular, sustainable development and practices been taken up in a regional context?*
*What is the current status of the relationship between society and nature and is this relationship evolving?*
*To what extent are current practices sustainable ?*

*Specific*
*How can the relationship between society, regional development and natural resources re- evaluated so that progression of the one is not at the expense of the other?*
*How do conventional approaches to development and conventional technologies continue to limit possibilities for sustainable practices ?*
*What are the alternatives and how can design disciplines contribute to the re-evaluation of these practices?*

*Amended questions*
*In the Regional context, what is the definition of sustainability and in particular sustainable development ?*
*To what extent are current practices sustainable ?*

*Additional questions*

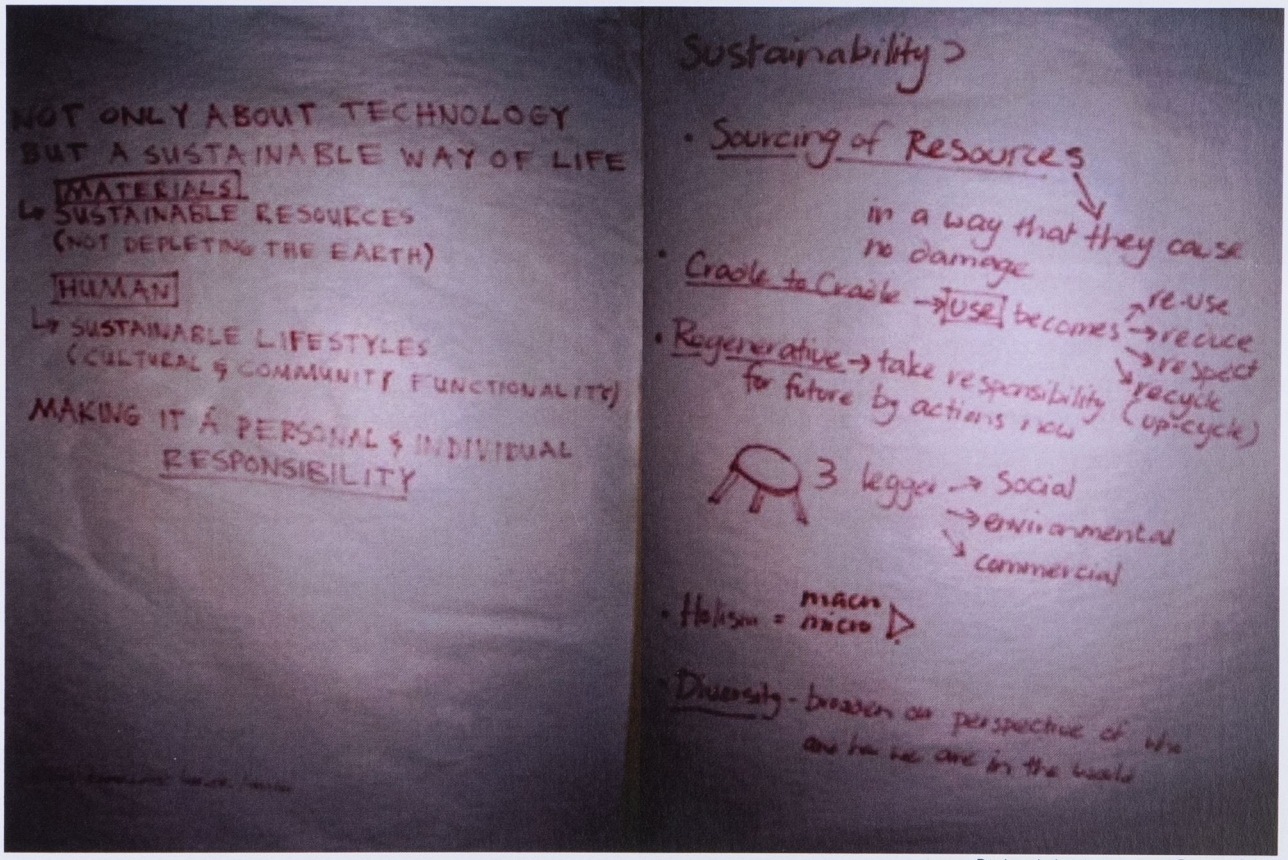
*Typical Assessment of Sustainability takes into consideration socio-economic and environmental aspects or Triple Bottom Line evaluation.*
*Are there other aspects with which strategies can be modeled or which are relevant to a specific field?*

# Participatory Study No 1
# RIEBEEK Initiative Workshop January 2008

Role as facilitator

A workshop held to develop the possibility of the formation of a group looking in to the use of sustainable materials in Architecture and building with the view to forming a resource database for the sharing of information.

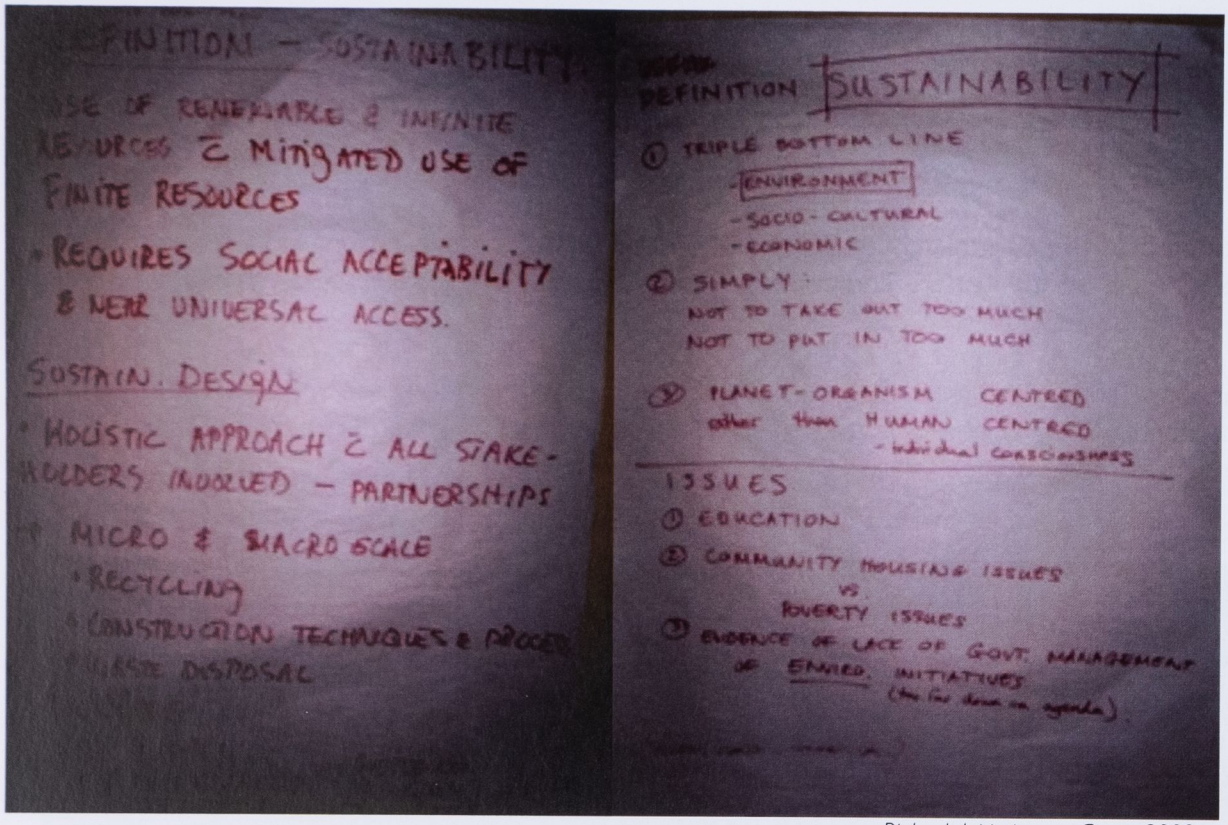
This was attended by Architects, Building designers and technologist, Engineers, Educationalists, Heritage consultants, Property developers, interested local residents, farmers and community association representatives of the Riebeek Valley.




*Riebeek Initiative Gower 2008*

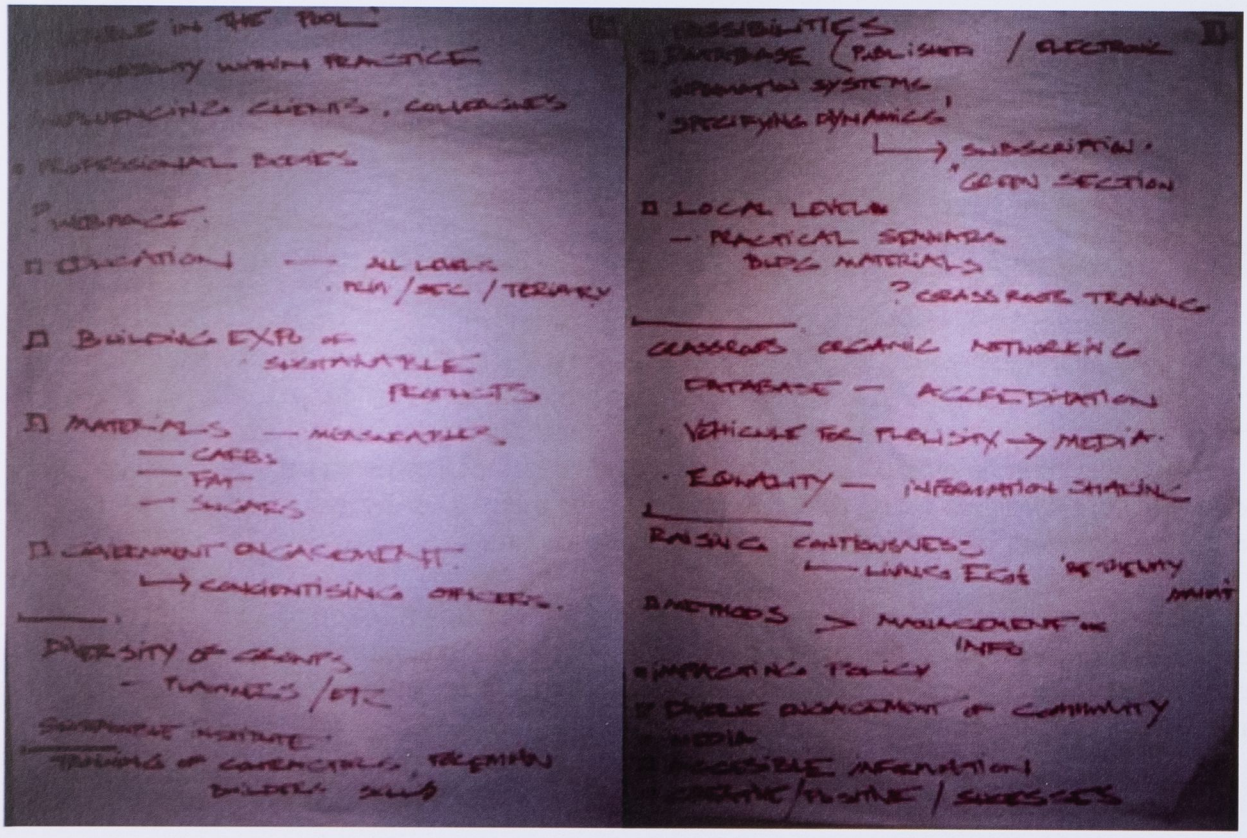
The initiative was the impetus of a local architectural building designer, who in his role designing local building, believed there was a need for the creation of a resource for the sharing of information, particularly in relation to building materials and construction methodologies. The initial concept was for a more ambitious conference over a couple of days bringing together interested parties as well as guest speakers who were specialists in the field. I had initially been asked to provide an Australian perspective on the development of sustainability in the built environment.

Due to illness of the protagonist of the initiative, the program was down scaled to a workshop where interested parties would discuss the potential of the initiative in a more informal manner. Due to my interest in sustainability and in my professional capacity as an architect, I was invited to act as role of facilitator.




*Riebeek Initiative Gower 2008*

At the outset of the workshop, due to the broad range of attendants, issues for discussion ranged from the broad to the specific, from building design and architecture to specific community issues. We attempted to understand the extent of what outcome the group wished to gain through attending the workshop, and so the group was broken down into a series of small groups in order to establish the some objectives for the group. A series of questions and topics set to establish the areas of interest.



The first task set was to establish the meaning or understanding of the term "sustainability" in the context of the group. As it communicates different meaning within different audiences, it was felt it was important to establish some framework for the group.

1- Understanding of the term Sustainability
2- Issues both general and specific that are pertinent to green or sustainable buildings

The response established an understanding of the initiative position- refer to images for response.

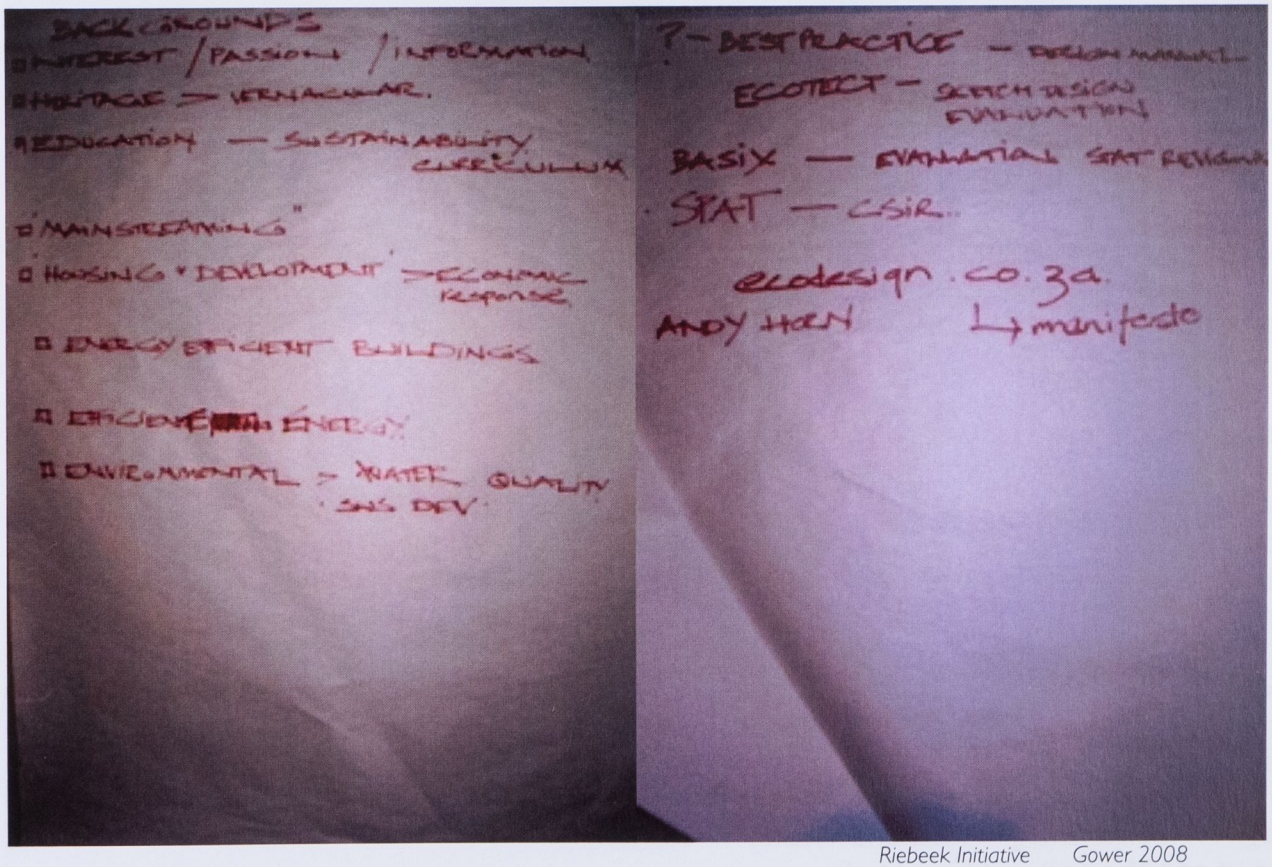
Next component was to establish objectives for the initiative and how the group may form working groups in order to create a framework for the collection of information and the formulation of a database.

The response of the group was that it needed to establish who the contributors may be and who the audience may be.

On the one hand it would be a useful tool for the membership but it could be used to develop presentations to Local government/ authorities possibly for example in the assistance of Application assessment etc.

A suggestion was raised to promote the development of the initiative by possibly seeking collaboration/ partnership with the University, Institute and possibly seek funding for the development of the initiative.

The group identify possible industry groups such as CSIR , SACA, and the Design Institute-

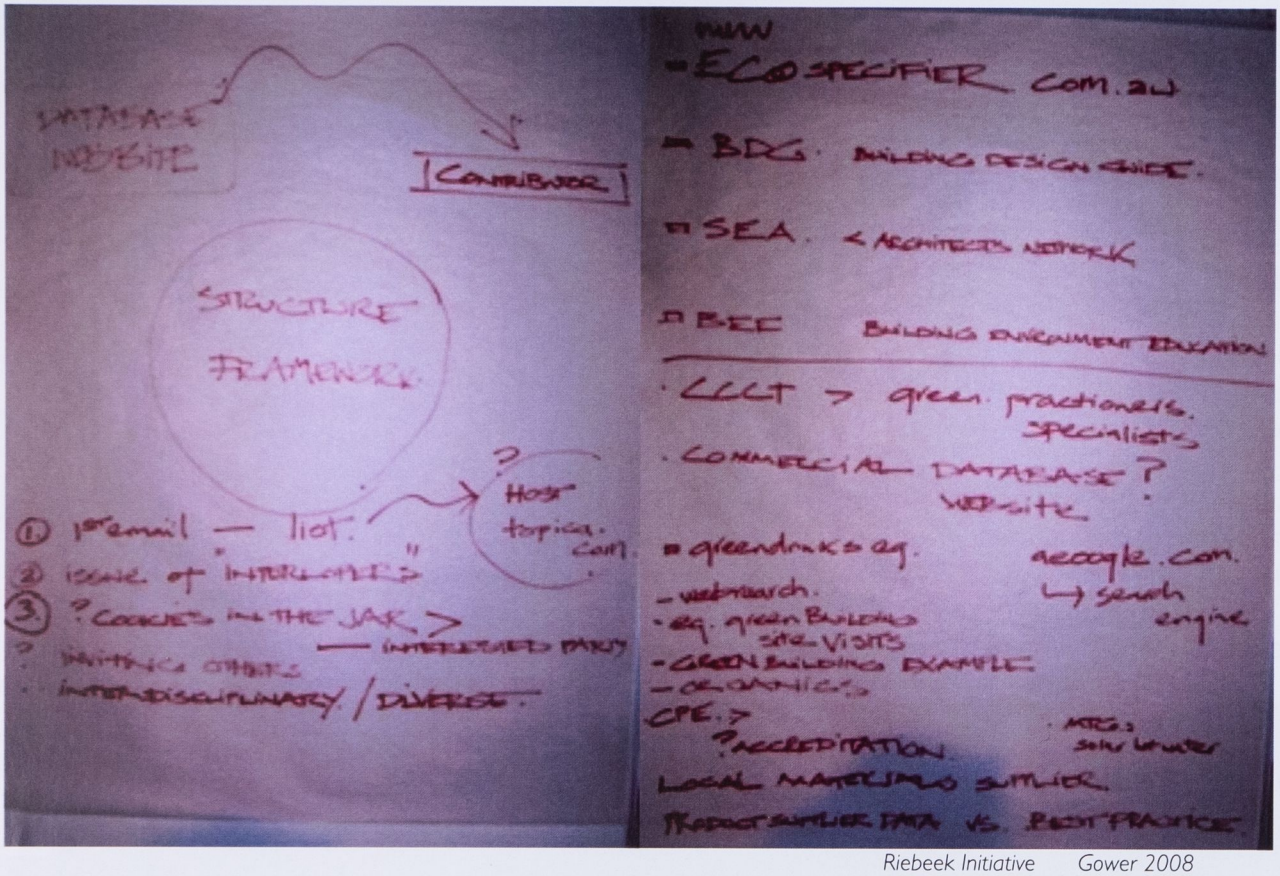



*Riebeek Initiative Gower 2008*

Also explored was the use of the internet as a framework for the database. Some the the suggestions would be the structure it as defined below

WEBMASTER FRAMEWORK/ STRUCTURE CONTRIBUTORS

Categories
Research




*Riebeek Initiative Gower 2008*

I provided a overview of the Australian perspective with the intent of providing some case studies which from my experience and perspective had assisted with the distribution of information. The examples where thought to be relevant to the South African context and how the Initiative may formulate a direction.

This perspective looked at three models of relevance.

*Eco- specifier*
Database Collaboration of Education Researcher and Practitioners/ Institutional
Further developments in a regional context where the Dubai branch its regional appropriateness was being developed.

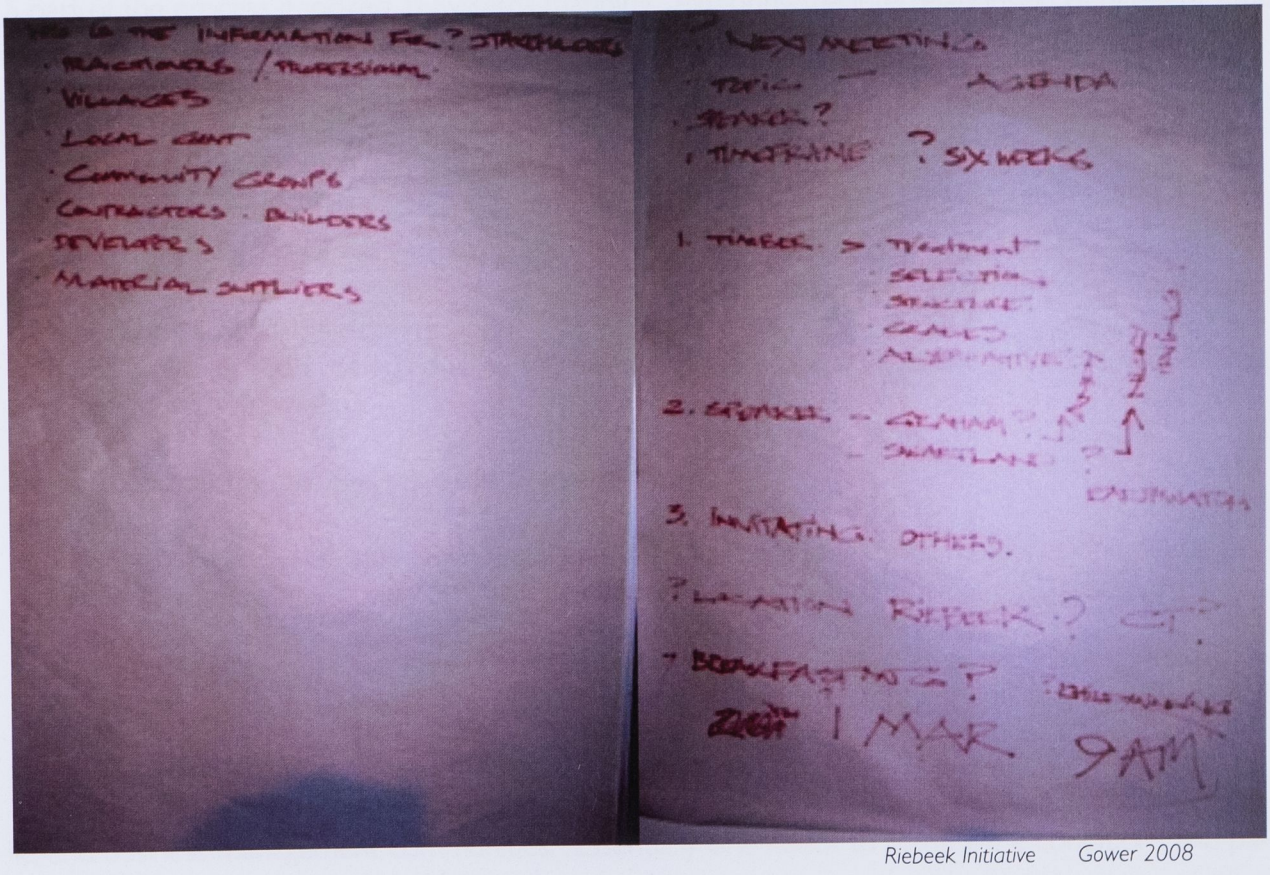
*Building Design Guide BDG*
Compendium of Resources in Sustainable Development practices.
This subject matter covered
General Planning/ Codes/ Building Professions
Design Principles/ Energy Water and Wastes
Product and Materials and Case Studies

SEA Local / REGIONAL network of Architects
Which had set up an email discussion group - request and responses made by posting questions
Regular monthly meetings held- Continuing Education-CPE
Topics becoming more relevant to issues of sustainability and efficiency "green buildings"
Process of formulating/ collating a database of information

Outcomes of the Initiative

The initiative has established regular meeting with the support of the University of Cape Town. The local specification company has established a connection with Eco-specifier Australia to formulate a contextual appropriate database- establish extent of development ( Now that this has been implemented this reminds me to contact David Baggs in relation to my royalties for the recommendation.)

Some of the Definitions raised within the workshop as a glossary:
Ecologically Sustainable Development ESD
Energy Efficient/ Low Energy
Passive Solar Design
Vernacular
Eco- Friendly
Sustainable Architecture
Green Buildings
Carbon Neutral
Zero Footprint
Embodied Energy
Triple Bottom Line




*Riebeek Initiative Gower 2008*

# Participatory Study No 2
# ISIS Academy, Stockholm, Sweden

## ISIS Methodology
## Application and systems analysis

The second leg of my travel was to do an intensive course in Sustainable Development, undertaken at the ISIS academy, run by Alan AtKisson , one of the founder of *Sustainable Seattle* and his associates of the Atkisson Group.

I come back to Alan AtKisson 's definition of Sustainable Development , that it is a process that requires a strategic and holistic approach which is impacted by change and requires re-evaluation over time.

I was looking at it as a model for developing a toolkit for design practitioners. A simplistic assessment was that it was a process not dissimilar to that undertaken as part of the design process.

| | | |
|---|---|---|
| Indicators - | Brief | An initial stage where qualitative and quantative scope of the project is established |
| Systems | Spatial planning | The interrelationship of different aspects are defined. |
| Innovation | Concept/ masterplan | The idea is defined. |
| Strategy | Detailed design | How the concept or innovation can be realised. |

S part of the process it looked at Systems mapping , exploring the interrelationship of different situational causes and effects that had a impact on the whole system.

## Applied methodology

I want to go into a little detail to describe a particular methodology that Atkisson , uses the ISIS methodology (ISIS referring to indicators/ systems/ innovation/ Strategy) to attain collaboration and consensus for Sustainable development,
ISIS uses a suite of tools , referred to as *"Accelerator"* to facilitate assessment and implement strategies for identified system change.

## Measures to achieve Sustainable Development

In order to achieve Sustainable development, Atkisson proposes a lists of measures one needs to appreciate. The following is a very simplistic overview of the methodology .

Firstly, one needs to understand what Sustainability means or establish an appropriate contextual definition. According to AtKisson, that is "The ability of a system to keep working and evolving over the long term."

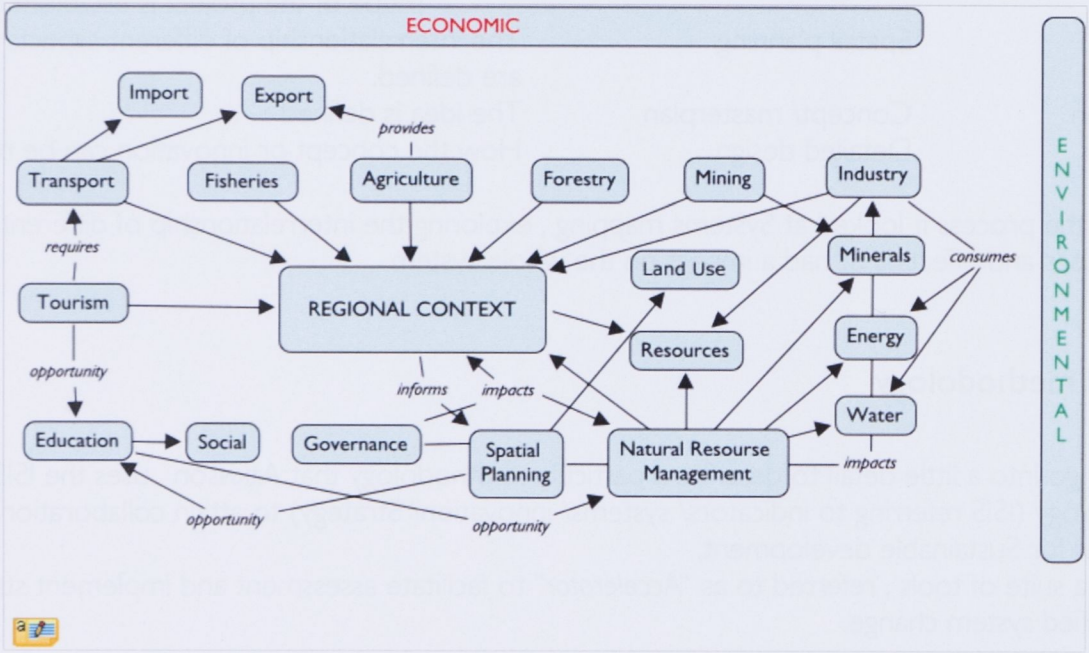
To maintain the sustainability of a system there are various strategies proposed by scientific, economic, and business management communities. Essentially one needs to identify the conditions and parameters for the system to be maintained.

Secondly one needs to understand the concept of a System. He describes a systems " a collection of elements that are linked together in a web of cause and effect relationships."

There are countless systems both in a natural state and a man made state. In order to have effective Sustainable development, we need to have an understanding of the interrelationships of these components of the systems, which is achievable by applying Systems Thinking. This is essentially a mental model.

We can use this capacity to integrate care for our environment, prosper economic development, engender social health and foster human well being.

Below this Systems model defines the relative sectors and their interrelation in a Regional Context. Key factors that may vary in emphasis to Urban Context are those related to NRM, Agriculture and Mining




*System Model for Regional Context* *Gower 2009*

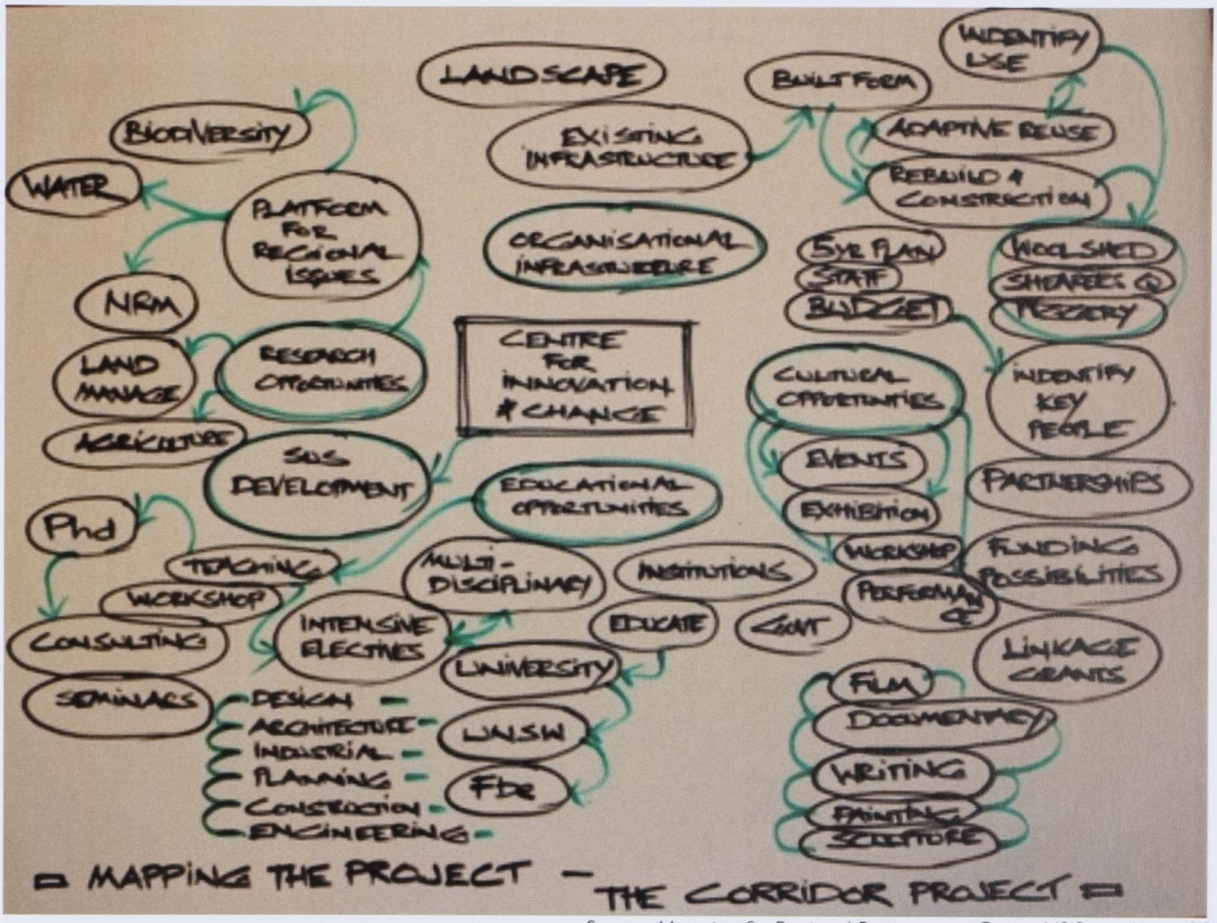
Continuing with AtKisson's methodology, we need to distinguish between Development and Growth. that is "Development is change over time. Growth is expansion over time."

Growth can be a form of development but one needs to be apply the understanding of what is sustainable or unsustainable in order to achieve Sustainable Development.

Thirdly, one needs to acquire comprehensive information in relation to the system one is assessing. One needs to establish the key elements, structures and processes of how the particular system works , as well as understand the critical trends of the systems.

Sustainability indicators or set of indicators , provide information in relation to a system, for example: a river system.

This System mapping process , as indicated below , identifies the interrelationship of components or aspects for a proposed project.

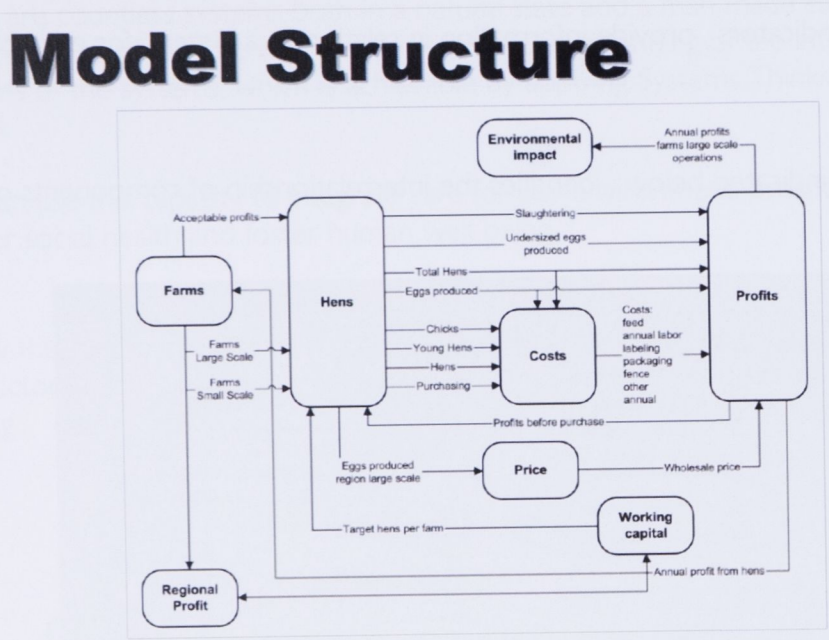



*System Mapping for Regional Project Gower / ISIS academy 2009*

This demonstrated the need to understand how the system works or the systems dynamics, and to identify the critical cause and effect relationships.

It may highlight that several factors that may drive change in positive or negative directions and allows one to identify possible points of intervention.

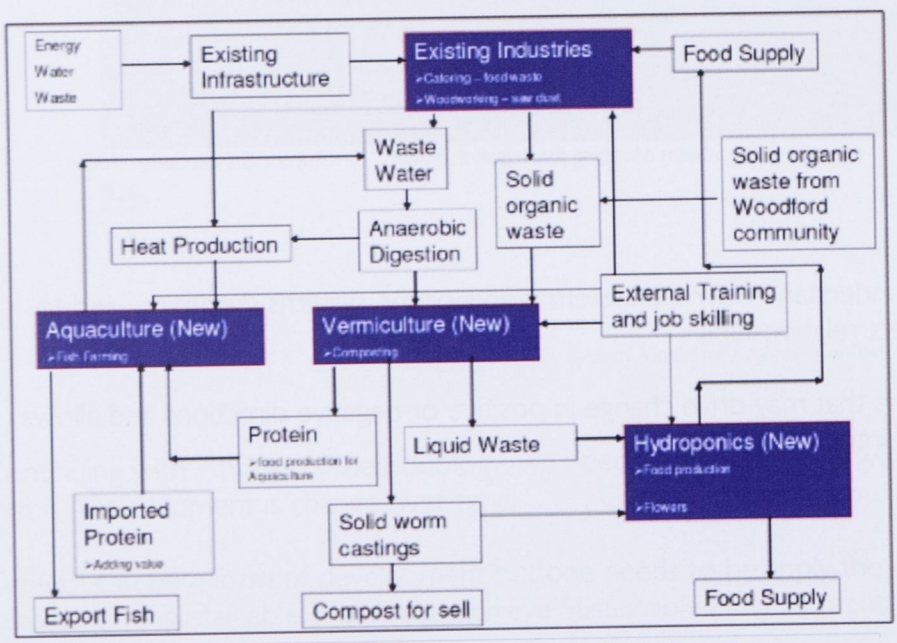
This systems model defines the interrelationship of factors in a Poultry farm, looking at the production of eggs and chicken meat. It assesses the impacts of economic outcomes on environment. (Although a fairly complex model but does not resolve which came first.)




*System Model for Regional Example_ Piotr Magnuszewski, Centre for Systems Solutions*

One needs to Identify specific changes whether they are Interventions or Innovations. These may involve selecting specific actions or set of actions to introduce the change identified. These may include goals, policies, projects, technologies,

This systems map explores the possible alternatives for use of organic waste from a correctional centre into a skills training and educational opportunity for the interns.

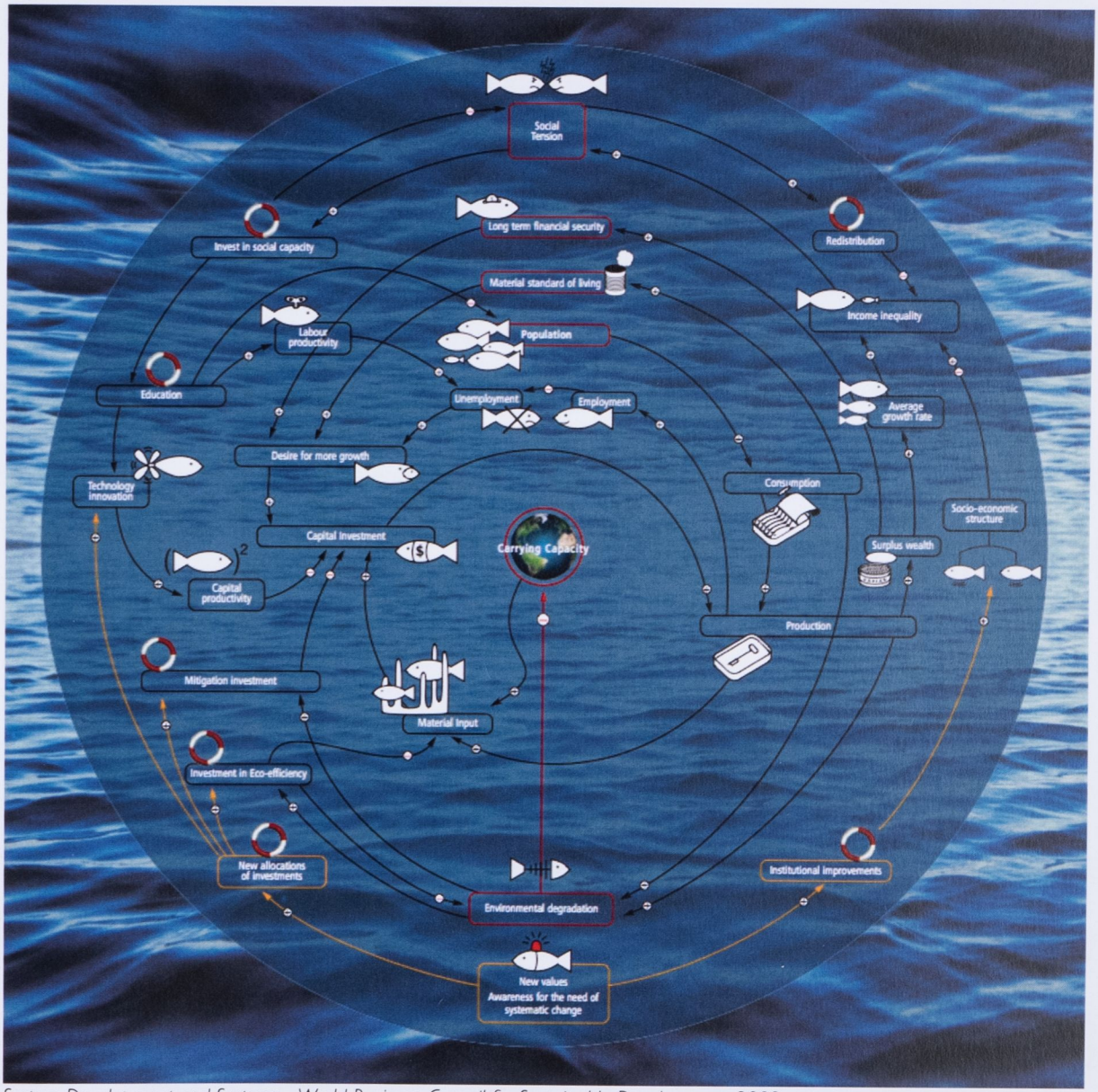



*System Map for Correctional Centre, Woodford, QLD Australia 2003_AtKisson Group*

Lastly , one needs to identify Strategies on how to implement change. Once the change is successfully executed , it is necessary to undertake monitoring of the system and to ensure adaption is maintained.

Sustainability requires a holistic approach,, which is also impacted by change over time.

This systems map explores some very complex interrelationship for the offshore fishing industry. The capacity of the ocean is assessed in terms of economical investment and productivity, social benefits and employment, with environmental considerations of degradation and stock loss.

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