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Is there a role for Environmental Management Systems in communities and if so can systems produce sustainable outcomes?

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Abstract

Modern business utilises Environmental Management Systems (EMS) to help understand environmental risks and manage environmental impacts.

There is a growing understanding amongst environmental professionals that if a truly sustainable future is achievable then change must not only occur within industry or large organisations but also communities. This will mean not only adopting sustainable development but changing consumptive patterns of behaviour that have been ingrained over generations.

The broad research question posed by this dissertation is;

“Is there a role for Environmental Management Systems in communities and if so can systems produce sustainable outcomes”

This dissertation is intended to provide information on the types of Environmental Management Systems (EMS), an assessment of their relative merits and guidance on implementing a community based EMS. This is designed to help communities not only make decisions about what EMS to use but a method for reviewing their progress and any gaps in the activities they are undertaking.

It was decided that exploring a number of objectives would help to answer the broad research question these were;

1. Identify Environmental Management Systems potentially suitable for communities.
2. Identify Communities utilising Environmental Management System's both globally and within New Zealand.
3. Critically analyse the present state of Environmental Management Systems for communities including reviewing current research.
4. Analyse system critics as a cautionary review to see if any lessons can be learnt for system designers.
5. Identify critical factors to be included in community based Environmental Management Systems.
6. Develop a framework for the development of an effective Community Environmental Management System.

7. Develop a checklist for communities to review their environmental systems against.
8. Discuss the outcomes with practitioners of community based EMS.

Each objective was explored using a mixture of literature review, documenting key elements of the research and drawing conclusions based on this. In the case of reviewing the available EMS this was supplemented by utilising a SWOT analysis to look at the Strengths, Weaknesses, Opportunities and Threats for each of the EMS identified.

The results of the research into environmental management system use and performance included in this dissertation were then used to develop a system review checklist (appendix 2). This is based on factors identified in the research as important considerations for community based systems. This is designed so that communities can use it as a system development tool or as a review tool for systems that are already in place.

The research into factors that create good systems also provided a list of broad system conditions that should be included as part of any system design. Inclusion of these elements should help to create an effective CEMS. They are;

1. Ensure systems are outcome based and are driven from that outcome and have a charismatic champion, community cause or combined vision.
2. Make sure system review is just that; a full review of the system elements including inputs, outcomes, process and the people involved to see that they still fit the purpose and that the purpose is still valid.
3. Ensure teams are kept as small as possible and innovation is developed through allowing individual thinking and input.
4. Deconstruct the system at regular intervals to allow rebuilding it as a more focused unit.
5. Ensure that the elements of self criticism and evaluation are effective.
6. Be careful not to over structuralise or professionalise.
7. Ensure the structure has the ability to recognise and foster innovation.
8. If the community's intent is to be ensured, new members need to be inducted and socialised into the structure.
9. Language and structures need to ensure input from all.

It was initially decided at the beginning of this research that the factors that community's need to consider would be separated into must have or "critical factors" and nice to have items called "factors" this proved difficult to do as in some cases the elements required by individual communities may vary. During the research for this dissertation it became apparent the development of CEMS is a very complex and variable activity. Community's need to ensure that each of the factors contained in the checklist (appendix 2) have been considered and the 9 system conditions above are included, but some may have more relevance depending on the demographics, EMS history and cultural aspects of the community.

1 Introduction

The research topic chosen was;

“Is there a role for Environmental Management Systems in communities and if so can systems produce sustainable outcomes”

This question is important because systems have historically been useful in delivering environmental performance within business and private sector organisations and are increasingly being used by communities to add some structure to their environmental programs.

The research employed to explore this question utilised 8 objectives designed to help understand the types and dynamics of EMS. These were chosen because they were seen as a logical step wise process to answering the overall research question. The structure of the report was designed to have each question as a stand alone section and as such the methods and results are also organised by objective.

This was intentionally done to ensure that if a community wanted to review a particular objective on its own that this was an easy process to perform. For example the community may only be interested in reviewing the type of EMS available and as such if they look at section 3.1 they will be able to review all of the information in one section.

The decision by a community of the type of EMS is a difficult one. This is due in part to the number of potential options available but also because of the complex nature of communities. A number of frameworks exist to help including; The Natural Step, ISO14001, Enviro-mark[®]NZ and Green Globe 21. These systems are distinct in their own way.

- The Natural step is a strategic framework to allow organisations to evaluate environmental policy via four system elements designed to deliver sustainability. The system elements were developed by scientists and environmental experts and are seen as indicators of sustainable practice.
- ISO14001 is an international framework that offers organisations internationally recognized accreditation to a specific set of criteria.
- Enviro-mark[®]NZ offers certification to an equivalent ISO14001 level via a five step process and includes New Zealand health and safety legislative compliance.
- Green Globe is an EMS for the Tourism industry and utilises a benchmarking process to help track environmental performance.

Section 3.1 and 3.2 of this dissertation cover the available EMS options and a literature review of communities utilising EMS to get an idea of the types of EMS and relative uptake in relation to community based programs. The author then moves on to critically analyse this information using a SWOT analysis (Section 3.3). The analysis sets out to review Strengths, Weaknesses, Opportunities and Threats for each of the EMS identified. A literature review of the performance of community based EMS follows the SWOT analysis and is designed to complement it. These sections are designed to be a resource for communities to help them make a decision on what environmental management system to use. This is achieved by outlining what is available and the experience of communities' utilising various forms of EMS.

The author explores the lessons to be found in the writing of system critics (Objective 4, section 3.4). This is included because analysis of system critics is seen as a good way of ensuring balance in the research. This also ensures that any lessons to be learnt for system design from those opposed to their development are learnt.

In Section 3.5 the author reviews research papers on community based environmental management systems in an attempt to identify critical factors that need to be included in community based systems. The findings and critical factors are included as questions in the review checklist (appendix 2) or in some cases the findings are included as items in the discussion where a number of themes are brought together, i.e., broad system conditions. This format was used as it seemed the most efficient given the amount of information to collate.

Section 3.6 undertakes to develop a framework for the development of an effective CEMS, This is undertaken by considering the research that was performed in earlier sections and trying to create a simplified model.

Section 3.7 undertakes to document a review checklist (appendix 2) based on the critical factors identified during the literature reviews performed in earlier sections of the dissertation. This is designed to complement the simplified model and act as a road map or review tool for community based systems.

The applicability of the developed checklist is reviewed as part of section 3.8 where it was discussed with practitioners of community based EMS namely the Project Lyttelton Group.

The format of this dissertation is such that some key findings are left until the discussion to be collated. The review of findings of this research should also include

the checklist (appendix 2) as a number of the research findings are listed as review questions.

1.1 Aims and objectives

The aims of this research are to give the reader and researcher a broad understanding of community based environmental management, not only how it is working but exploring some of the critical factors that need to be considered when developing community based systems.

The broad research question is

“Is there a role for Environmental Management Systems in communities and if so can systems produce sustainable outcomes?”

The objectives of this research are to;

1. Identify Environmental Management Systems potentially suitable for communities.
2. Identify Communities utilising Environmental Management System's both globally and within New Zealand.
3. Critically analyse the present state of Environmental Management Systems for communities including reviewing current research.
4. Analyse system critics as a cautionary review to see if any lessons can be learnt for system designers.
5. Identify critical factors to be included in community based Environmental Management Systems.
6. Develop a framework for the development of an effective Community Environmental Management System.
7. Develop a checklist for communities to review their environmental systems against.
8. Discuss the outcomes with practitioners of community based EMS.

1.2 Definitions

1.2.1 What is an EMS

An Environmental Management System (EMS) is a systematic tool or framework to enable an organisation or in this case community to manage its environmental impacts. An EMS helps to integrate environmental issues and responsibilities into an organisations every day activities.

The broad process of environmental management within a formal EMS involves a mix of,

- 1) Risk evaluation tools to help with planning.
- 2) Project management tools to help track and complete projects.
- 3) Visioning and evaluation processes to check that you are achieving what you set out to do.
- 4) And review tools to ensure that the programme is heading in the direction that is needed.

This process is repeated to ensure continual improvement.

The definition and development of Community based Environmental Management Systems (CEMS) is the focus of this dissertation.

1.2.2 What is a community

Community is defined by the New Zealand Oxford Paperback dictionary as the following

Community (n)

1. A body of people living in one place or country and considered as a whole
2. A group with common interests or origins.

Grayson (2001) outlines a more global view of communities and separates the Idea into three main themes,

- Communities of geography based on physical location.
- Communities of Identity defined by groups of common heritage race or creed.
- Communities of interest that are related through a common concern belief or need.

For the purposes of this dissertation the term community refers to all of the above definitions. It is important for the communities developing EMS to clearly define their community boundaries including the population demographics, overall scope of the environmental management system and a clear idea of the stakeholders in the community.

1.2.3 Other relevant definitions

The following definitions are included to help clarify statements in this dissertation and outline what is meant by the author when using these words.

Critical factors: are elements of a system or community processes that must be considered as part of a successful Community Environmental Management System (CEMS). They are defined by the research as those elements that have been identified as being important to ensure the effective implementation of environmental management goals.

Effective: the term effective is defined by the achievement of the stated goals and milestones related to community environmental management. Although not all projects using a community environmental management system will be so far reaching as to encompass a coordinated set of projects towards sustainability they will however be taking small steps towards the overall goal of sustainability.

Sustainability: The definition of sustainability that underpins this report is the Brundtland definition from 1987, i.e, development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This should however be prefaced by the statement that it is up the communities concerned to define sustainability as part of the development of any Community Environmental Management System.

Stakeholders: Is defined as anyone who could reasonably have an interest in what occurs in the community.

2 Lincoln Envirotown and Project Lyttelton as Case Studies.

This research is significant as the context for development of EMS for Communities is different than a business EMS because,

- Links between individuals in the community may not be plainly evident.
- A common purpose that the community wishes to be engaged in may not be forthcoming.
- It is literally the place people live and as such there is a significant emotional component to development of policy or vision statements.
- Communities' sustainable development projects are often undertaken by small groups or individuals. These individuals may have the passion and drive to complete projects or engage others but they may not be aware of what the whole community wants.

To help with the applicability of the results of this research the author undertook to observe and help the Lincoln Envirotown Trust (LET) develop a Community Sustainability Action Plan and review the need for a CEMS.

The Lincoln Township is a small rural township of approximately 3500 people situated on the Canterbury plains. The Lincoln Envirotown Trust has developed a vision of "Taking responsibility for a sustainable future". The township is physically separated from the nearest city by 22 km of farm land and is characterised by its rural feel and its status as a place of learning. A significant amount of the township is dominated by Lincoln University and a number of Crown Research Institutes (for example Landcare Research and Crop and Food Research).

Because of this strong research focus the community's past attempts to develop sustainable management practices have had a more theoretical approach and a number of reports on the state of sustainability and progress by the community exist. The Community has undertaken two significant attempts at developing a plan for the future. The latest of these involved an Appreciative Inquiry (AI) as outlined by Cooperider *et al.* (1987) to develop some shared visions for the community and to develop a community sustainability action plan. The developed plan was designed to outline the steps being taken towards sustainability.

The Lincoln Envirotown Trust expressed a wish to understand if a formalised EMS would be suitable to use for their community. It is hoped the results of this research could be used to help LET make this decision.

This dissertation also draws from the experience the author has had being involved in the Project Lyttelton group. This volunteer organisation has the Vision of “Lyttelton - portal to Canterbury’s historic past, a vibrant sustainable community creating a living future”. This group has also used an “Appreciative Inquiry” based process to inquire into what the community holds as important and how they see the future. The AI process was used as a way to develop common understanding and combined vision.

Lyttelton is a township also of approximately 3500 people and is geographically bounded by the port hills and separated from the nearest City (Christchurch) by the port hills and a tunnel. The programme undertaken by Lyttelton is less structured than the Lincoln model but in some ways is more effective as there are a number of projects being run by the community to minimise waste and ensure sustainability. The programme has not received a large amount of research and has developed based on the enthusiasm and drive of a number of committed individuals in the community.

There is a good background of community records such as meeting minutes and of communication through newsletters, a web site and articles in the local papers.

The project Lyttelton program fits a more unstructured but progressive model and in the opinion of the author seems to get projects completed with apparent ease.

The Lincoln community has undertaken more community consultation and as such should have a better idea on what the whole community wants. The Lyttelton group uses a more organic approach relying on the premise that if a need emerges and a champion is identified then the project therefore has community buy in.

Involvement with these groups was undertaken to ensure that this research is practically based. It is hoped the research topic, dissertation and review checklist are used as guidance documents for communities looking at undertaking CEMS.

It is hoped the research will form part of the resources used to help the Lincoln Envirotown Trust to develop a CEMS for the Lincoln Community and for the Project Lyttelton group to review their system to ensure all critical factors are considered.

As outlined in subsequent chapters both the Lincoln Enviro-town and the Project Lyttelton sustainability programme can be characterised as Vision led sustainability programmes.

Note: Cooperider *et al.* (1987) developed the research method of Appreciative Inquiry (referred to above) as a type of grounded research that uses a questioning exercise designed to help with vision development and identification of commonly held values. In a community context It utilises targeted questions like “what do you love about your community?” to draw out common values from the community and build projects designed on what the community holds as important.

In a formalised CEMS appreciative inquiry inclusion helps to define the vision or wants of the community as a way of focusing any CEMS activities on the items that the community holds up as important.

Cooperider *et al.* (1987) Proposes that the appreciative inquiry process is distinct from other forms of grounded research in that the focus of it is on positive affirming activities as opposed to a problem solving approach of traditional grounded research which is seen as negative and less likely to produce transformational or self generative change .

More information is available at <http://appreciativeinquiry.case.edu/>

3 Methods and Results

The following methods are proposed to answer the overall research question and are defined under the same headings as the project objectives.

Note: The methods section of this dissertation is included under each objective heading. This was done intentionally to allow the reader to read, assess and follow through each section separately if required.

3.1 Identify available Environmental Management Systems potentially suitable for communities

3.1.1 Methods

The identification of available EMS for consideration by communities was undertaken utilising a mix of literature review of community based research and internet web sites, this dissertation writer's background as an environmental consultant, and marketing materials provided by service providers. The system elements for each of the identified EMS were documented from a mixture of the authors own copies of the ISO14001, Enviro-mark and Green globe standards and training and web based materials for the natural step and vision or issue led sustainability programs. These were supplemented by a literature review of research materials outlining communities' experiences of utilising CEMS

3.1.2 Results

The following EMS systems are available to communities,

- 1) The Natural Step
- 2) ISO 14000
- 3) Enviro-mark
- 4) Green Globe 21
- 5) Vision or issue lead sustainability programs
- 6) Hybrid systems

Note: A more comprehensive outline of what is involved in each EMS is included in Appendix 1.

James *et al* (2004) outlines **The Natural Step (TNS)** which is an international strategic planning tool that allows organisations and communities to focus their planning on four system elements.

These are

- 1) In a sustainable society, nature is not subject to systematically increasing concentrations of substances extracted from the earth's crust.
- 2) In a sustainable society, nature is not systematically increasing concentrations of substances produced by society.
- 3) In a sustainable society, nature is not subject to systematically increasing degradation by physical means.
- 4) In a sustainable society, human needs are met world wide.

The four elements have been agreed to by a collection of scientists and environmental experts as world system conditions that ensure the sustainability of the planet.

A Natural Step based EMS using the four system conditions will help focus a community on being more sustainable and therefore lead to a more sustainable planet.

ISO14001 The following summary of ISO14001 is taken from the authors own copy of the ISO14001 standard.

ISO 14001 is an internationally recognized framework and standard that outlines a number of areas that organisations or groups need to consider when developing an EMS (<http://www.iso.org/iso/home.htm>).

The elements include an environmental policy to focus the environmental programme on agreed outcomes. The development of planning which includes, understanding the aspects of the organisation that cause environmental impacts, legal considerations and a programme of action to minimise environmental risk.

Implementation strategy's and operation control documentation are also included to ensure that changes become part of the way the people operate, that they are trained and have the competence to make appropriate decisions based on environmental protection. There is also a requirement to define responsibilities for each element of the environmental programme.

Communication processes are also required as is system documentation to ensure that the programme of action and elements of the EMS are recorded.

There is also a requirement to ensure documents are tracked so that you know you have the most up to date information.

The consideration of what to do if it all goes wrong and managing the impacts of emergency situations also help to manage risks of failure and the risks when it fails. There is a requirement to monitor progress and develop environmental indicators to ensure that the programme is working. Retention of records, review of direction and progress is included to ensure the programme stays on track.

The following is a summary of the Enviro-mark standards is taken from the authors own copy of the five standards.

Enviro-Mark@NZ Is a step wise Health and Safety and Environmental management tool

The certification process has five levels

- **Bronze** level includes compliance with specific Health Safety and Environmental Legislation.
- **Silver** level involves the development of commitment including documenting an environmental policy and consideration of environmental impacts.
- **Gold** level involves the development of a continual improvement programme and emergency preparedness.
- **Platinum** level requires the organisation to develop competence by documenting structure and responsibilities. Developing training and communication programs are also requirements.
- **Diamond** level ensures that the organisations are at the level of ISO14001. This level includes control of documentation, records, audits and reviews.

This system contains all of the elements of ISO14001 but utilises a step wise approach. (www.enviro-mark.co.nz)

The following summary of the Green globe Community Destination standard is taken from the authors own copy of the standard.

Green Globe 21 is a globally recognised benchmarking and certification program for sustainable tourism and communities. It is designed around the Agenda 21 protocols developed as part of the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 and is focused on travel, tourism companies and communities.

Note: The next CEMS types, Vision or issue led sustainability programmes and

Hybrid systems are suggested by the author as definitions to explain less formalised in the case of vision led sustainability programmes or combination systems in the case of hybrid systems.

Vision or issue led sustainability programs are sustainable development or environmental management programs based on a vision or identified charismatic champion. Issue led programme are characterised by the development of projects based on a specific cause that doesn't necessarily have a large amount of documented system attached to the process.

Hybrid systems are defined by the author as development of an EMS for a community that learns from the experience of other systems but is designed by its nature to be reflective of what is important to the community. The community only develops systems or documented procedures when and where they add benefit to the community or help to guide or provide information to the community. It is a derivative and adaptive process with a broad project management structure based on a, plan, do, check, review cycle.

3.2 Identify Communities utilising Environmental Management System both globally and within New Zealand

3.2.1 Methods

Identifying communities using CEMS involved researching web sites and reports on sustainability programmes and also reviewing two books.

The books were;

- James S & Lahti T 2004 "*The Natural Step for Communities How Cities and Towns can Change to Sustainable Practices*" New Society Publishers Canada and,
- Velasquez J, Yashiro M, Yoshimura S, Ono I (2005) *Innovative Communities People-centred Approaches to Environmental management in the Asia-Pacific region* United Nations University Press

A number of internet searches looking for international peer reviewed reports on environmental management systems for communities were also undertaken and web sites for communities that use EMS were also reviewed.

3.2.2 Results

The following results outline the community's using environmental management to achieve sustainable outcomes.

The Natural Step

A large number of communities and organisations are using The Natural Step framework. These include Whistler and Canmore which are both towns in Canada and a large number of Swedish towns and city municipalities outlined in James *et al.* (2004). The process is well documented and it is one of the most widely used frameworks for communities.

ISO14001

A number of web sites and sources of information exist on utilizing ISO14001 for communities but very few have examples of how this process worked or what lessons have been learnt from implementation. The USEPA web site offers some guidance and Bartow county (a county in the state of Georgia) has utilized the ISO 14001 framework for its EMS development. (www.bartowga.org)

The Enviro-Mark®NZ

There are no communities utilising Enviro-Mark®NZ as the basis for an EMS.

Green Globe 21

As outlined on the international Green globe web site (www.greenglobe.org) there are a number of communities utilizing this standard including,

- Kaikoura in New Zealand,
- Victoria and Tasmania in Australia,
- Community's in Iceland,
- Community's in Bali,
- And community's in Mexico.

Vision or Issue led

Examples of this include,

- Kinsale a small seaside town in Ireland who have undertaken to use the peak oil movement and permaculture ideals to drive sustainability goals in the community as outlined in Arthur E (2006)
- Arthur E (2006) also refers to the Hampden community in North Otago who are using a vision of a "more secure, self reliant and vibrant community, better prepared to sustain the effects of a decline in fossil fuel availability and

meet the essential needs of future generations” as a statement to drive sustainability.

- The examples outlined in the book Velasquez J, Yashiro M, Yoshimura S, Ono I (2005) *Innovative Communities People-centred Approaches to Environmental management in the Asia-Pacific region* United Nations University Press
- are all vision led programmes these include river and mangrove conservation and sustainable tourism planning through to waste and water management projects
- The Lincoln Enviro-town trust sustainability program.
- The Project Lyttelton group sustainability program.
- Sustainable land use in Central Queensland as outlined in Donovan *et al.* (2005).

Examples of communities using a hybrid system

Because of the development of this concept in this report there is no information as to any communities using a hybrid system however a number of the references refer to communities developing a system that fits the community. It is suggested as a way forward by this dissertation.

3.3 Critically analyse the present state of Environmental Management Systems for communities including reviewing current research

3.3.1 Methods

The method used by the author to critically analyse each EMS and its applicability to a community was utilising SWOT analysis.

Swot analysis was developed at Stanford Research Institute in the 1960's as a method to understand why business planning had failed. SWOT analysis is a useful exercise to perform before planning as an attempt to understand the proposed activities. It utilises a conceptual framework that involves reviewing the strengths, weaknesses, opportunities and threats to a proposed course of action.

Note: The weakness of a SWOT analysis is that you need to be very careful about the decisions you make and ensure that you can justify the decisions you make.

Sometimes items can both be strengths and weaknesses, for instance a low cost system can be perceived as a strength. But if your budget is low this may also be a

weakness as some organisations would view a low cost system or process as not being able to deliver outcomes, i.e., cost is intimately linked with perceived benefit. Another feature of SWOT analysis is to ensure if you are comparing a number of different courses of action and they all have some of the same elements then these will cancel each other out. Documentation of these common elements may not be needed to help make the decision of the best course of action.

The reason SWOT analysis was chosen for this research was that it was easy to use and understand and could be repeated by communities considering documenting a CEMS. This would also ensure so that any contextual differences or bias by the author could be removed by communities repeating the SWOT for their proposed action.

A SWOT analysis of the available systems is used to add some context for those wishing to understand the strengths weaknesses, opportunities and threats of the available EMS. As mentioned above any common elements were not documented and care was taken to make choices that represented the true strengths, weaknesses, opportunities and threats.

Following this a review of current literature on community and business based environmental management programmes and organisational change was undertaken to see if there were any lessons for practitioners of CEMS.

3.3.2 Results

A SWOT analysis has been used to evaluate each readily available EMS in turn.

3.3.3 Table 1: SWOT the Natural Step

<p>Strengths</p> <ul style="list-style-type: none"> • It has International recognition. • The broad framework is well defined. • It is a direct way to decide if an activity is sustainable. • It could be certified if this is seen as important. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • It is hard to explain to the public as the gap between where we are now and the four system conditions is daunting for communities or individuals to understand. • The framework is largely strategic with very little in the way of specific procedures or process required other than considering the system elements. • There is a need to undertake significant community training.
<p>Opportunities</p> <ul style="list-style-type: none"> • A number of other communities have followed this framework. • Once the system elements and background science are understood then the framework is relatively easy to apply to decision making. • Knowledge and support are available in New Zealand. 	<p>Threats</p> <ul style="list-style-type: none"> • There is a cost involved for training and consultancy provided by The Natural Step this may be prohibitive to community based organisations. • In New Zealand the framework is relatively unknown. • A number of organisations have utilized the tools i.e. Christchurch City Council (NZ) and Christchurch Polytechnic but they haven't had the gains that were expected.

3.3.4 Table 2: SWOT ISO14001

<p>Strengths</p> <ul style="list-style-type: none"> • It has International recognition. • It has been used in large numbers of organisations and a few communities. • It could be certified if this is seen as important. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Its main focus has been for Business. • Very documentation orientated and as such this may put people off. • A lot of prescriptive elements. • People need training to understand the requirements. • It needs dedicated resource to support the program.
<p>Opportunities</p> <ul style="list-style-type: none"> • A small number of other communities have followed this framework. • The tools and resources are readily available. 	<p>Threats</p> <ul style="list-style-type: none"> • You need to have a large ongoing input to keep it active. • Audit requirements once certificated are costly for a medium risk, medium sized business approximately \$3000 per annum for an audit (this is likely to be higher for a community due to its complex nature). • The EMS would take a large amount of work to implement.

3.3.5 Table 3: SWOT Enviro-Mark® NZ

<p>Strengths</p> <ul style="list-style-type: none"> • Has some international recognition. • Landcare Research who runs Enviro-mark has a good background in sustainability and actively research in this area. • It is step wise process which suits staged development and celebration. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • A lot of prescriptive elements. • Hard to see how Health and Safety systems could be developed for the community. • Systems and tools are business focused. • There needs to be someone dedicated to drive the system. • You would need a standard written if certification is important.
<p>Opportunities</p> <ul style="list-style-type: none"> • To develop a community standard based on the Enviro-mark standard. • Landcare Research may be interested in helping to develop this. 	<p>Threats</p> <ul style="list-style-type: none"> • No road map to follow as no communities have used the standard. • Audit requirements once certificated are costly for a medium risk, medium sized business approximately \$1500 per annum for an audit (this is likely to be higher for a community due to its complex nature).

3.3.6 Table 4: SWOT Green Globe 21

<p>Strengths</p> <ul style="list-style-type: none"> • It has international recognition. • It has a specific community based program and has been trialled in a lot of different communities. • There are lots of case studies to draw on. • It could be certified if this is seen as important. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • It is a little hard to explain to the public. • It is extremely difficult to gain as it has a lot of prescriptive elements. • The benchmarking requirements are very prescriptive. • It is tourism based and would need to be adapted for other communities. • There are costs involved to audit and benchmark.
<p>Opportunities</p> <ul style="list-style-type: none"> • A number of other communities have followed this framework. • Local communities can be used as a template as there are examples in New Zealand. 	<p>Threats</p> <ul style="list-style-type: none"> • The costs of auditing. • The costs of implementing and maintaining. • The ongoing yearly cost for certification.

3.3.7 Table 5: SWOT Vision or issue led sustainability programs

<p>Strengths</p> <ul style="list-style-type: none"> • Some international recognition although they may not be specifically called vision or issue led. • If the vision is strong enough can engage the public without too much ongoing input. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • A little hard to explain to the public and you need to get them on board for it to work. • Recording the progress without a formalised framework to support the benefits would be difficult. • The vision can fade if not developed and communicated well.
<p>Opportunities</p> <ul style="list-style-type: none"> • A number of other communities have followed this framework. • Not as documentation heavy as the others. 	<p>Threats</p> <ul style="list-style-type: none"> • It is based on vision or a visionary and if they lose enthusiasm or reputation then the program fails. • It cannot be certified if needed. • A lack of framework can mean information is not recorded or the program can go off track if conflicting interests or strong personalities are involved.

3.3.8 Table 6: SWOT A Hybrid system

<p>Strengths</p> <ul style="list-style-type: none"> • Has direct applicability to the community that it is being written for. • People like systems that are developed by them. • Developed from values the community holds dear. • Can be developed on simple principles that can be understood by the whole community. • Can be developed to be adaptable and fit with current thinking. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • It needs to be tried to see if it works. • It needs ongoing communication with the community. • It needs some resource to interact with community. • You need to spend time talking to the community to draw out their values and document a clear vision that the community can own. • You need to create simple mechanisms for communication and recording progress. • You would need a standard written if certification is important.
<p>Opportunities</p> <ul style="list-style-type: none"> • It could act like a road map for others if framework is broad enough. • Community's often state that a system developed by the community is what they want. 	<p>Threats</p> <ul style="list-style-type: none"> • You need to gain buy in for the program. • You need to have clear communication. • You need to review the process on a regular basis to ensure that the community's needs are met.

Current literature on community based programmes

Note: not all of the information contained in the research is evaluated here and the ideas or themes covered may have been mentioned in more than one reference.

The Canmore community in Canada have developed a sustainability programme based on the Natural Step. As part of this the community outlined a series of indicators developed to monitor their progress these are separated into four main areas,

- 1) Demographic Indicators
- 2) Social Indicators
- 3) Economic indicators, and
- 4) Environmental indicators

Under each of the broad topic headings the community developed indicators of system health to monitor their progress, for example under the demographics heading the community is monitoring things such as the number of people, age structure and length of residency. The overall monitoring program utilises a process of identifying key indicators, developing some baseline data and then deciding on thresholds above or below which the community deems the indicator to be negative. The results of this monitoring are collated and reported on an annual basis and are available to the public. This idea is extremely useful as the indicators if chosen appropriately can monitor progress towards sustainability.

Part of development of a CEMS also included a visioning exercise where discussions were held to discuss suitable futures. These were documented in a series of statements which envisioned the community at its best in the year 2015. This is similar to the Appreciative Inquiry process as used by the Lincoln and Lyttelton communities. This envisioning process is a very useful technique for removing people from their immediate concerns and helping to create a future vision to which the community can subscribe.

The Canmore community also developed a process to ensure that anyone in the community could undertake a project. This involved guidance on reviewing potential ideas and a submission process to ensure that the planning group and council

reviewed potential projects and signed them off as sustainable and of sufficient benefit to the community. This is an interesting idea and could be useful to include in CEMS i.e. help with funding and support for projects, however care would be needed to ensure that this doesn't add to much structure and slow the process down or eliminate sectors of the community from undertaking projects. The process designed by Canmore requires access to computers and the delivery of reports which may be beyond some sectors of the community. Systems developed need to be multi levelled and aimed at all sectors. The Canmore program could be improved by having a low level support process which helps people to undertake projects without the need to physically write the report themselves or apply online.

Arthur (2006) reviewed the current best practice examples of communities journeying towards sustainability in New Zealand, Canada and Ireland and outlines five differing communities' experiences. The author also interviews proponents of these programmes to see if any lessons can be learnt by community's undertaking sustainability projects.

The Whistler community in Canada utilises TNS framework and developed a number of visions. These are included in a document called "charting a course for the future" this included a visioning process and a train the trainer's course which helps to develop internal system champions. The four system elements of the TNS framework also allowed the community to focus on outcomes.

The system developed also allowed for a simple implementation strategy based on four items

- 1) Awareness
- 2) Baseline mapping
- 3) Brainstorming visions and solutions, and
- 4) Creating an action plan

One of the advantages of these systems is the simplicity of this overview which allows for accessibility to the systems. This was further explored by the development of focus areas which included broad topics such as energy, transport and learning. These are useful as they are simple and very little extra information is required other than the heading for you to understand what the community is focused on.

Community ownership is also seen as important and a combined vision was developed by including and creating agreements with organisations involved in the

community. Another feature of the Whistler experience is the use of earlier adopters as path finders for the program. This was good for showing subsequent organisations how to go through the process. The use of a group of people from the pathfinders to help train the trainers was also beneficial.

Utilising strong leadership is seen as a critical factor in the success of the Whistler sustainability path. One of the ways this leadership was supported was by utilising influential individuals in the community or high profile individuals from outside the community to help rehearse the internal champions.

A feature worth considering from the Whistler example is the multiple level system resources which included,

- 1) presentations
- 2) facilitation and coaching
- 3) guidance documents
- 4) metrics ideas to help with collection of data
- 5) on-line resources or toolkits

Community representation was high in Whistler and this is also seen as important. This shows the proponents of the system and those undertaking projects that they indeed have the community's sign off and agreement for the path the community is taking. Communication is an important factor and the community used external expertise to help with social marketing. Social marketing is an important element to ensure buy in to the systems proposed.

The Kinsale community in Ireland developed a sustainability process based on one overriding issue. The issue chosen was "peak oil" and from this platform a number of sustainability focused projects were undertaken.

The lessons from the Kinsale experience included,

- The importance of gaining community input.
- The advantages of using brainstorming techniques after viewing educational material to identify areas of interest or concern to the community.
- The fact that sometimes a strong idea based on a specific piece of narrowly defined information may not create a sustainable process. There is a need to ensure that the program takes a broad focus and has a systematic element to it to ensure that the process doesn't lose direction.

- A narrowly focused program may suffer from a lack of support as the public may not agree with the specific issue i.e. Peak oil but they would be involved if it was focused on another topic or a range of topics that they have a personal interest in.
- The system should be fluid and easy to understand so that individuals know what is needed and don't get frustrated with complexity or a process that can't be adapted or changed.

This report also outlines the need to ensure that you have multiple champions for a program so that when one or two individuals leave an area or lose focus the program doesn't falter.

The experience of the Hampden-Moeraki-Waianakaura Energy Future Forum based on the North Otago coast is a useful example of community engagement. The initial agenda was focused on energy strategies and the threat of peak oil. The organisers aimed to get the whole community involved in a 12 Km radius (approximately 350 people). Strategies employed included selling tickets to the initial meeting, getting a known celebrity to talk and focusing on a hot topic i.e. peak oil.

The process was designed to let the community set the agenda and a conscious effort was made to start a new group as this helps to avoid any politics or historical issues.

Waitakere city is another vision led process. Calling itself an eco city they have created a document called "green point" which outlines the community's sustainability vision and this has been incorporated into the local council community plan and district plans. The main lessons from this project included utilising a charrette planning process which helped to minimise time taken to develop plans. The charrette process follows the idea that small teams can sometimes come up with ideas and action items more quickly than a large group. Social marketing is also seen as important to ensure that you coach the public on issues or a technical aspect of environmental impacts so that decision making is made with appropriate understanding.

Note: The Charette process outlined in Arthur (2006) refers to a process that can be used for planning a large project which involves an initial meeting where all of the stakeholders briefly outline their point of view. This is followed by a series of meetings with the public and specialist groups to discuss and get feedback on the

proposed activity and consider the information from the first meeting. The process culminates in a meeting where alternatives and plans are presented back to the initial group for further discussion and development.

The Wanaka sustainable tourism project is distinct in that it employed a full time manager and had significant funding to drive the process. The implementation team identified communication as a key element and used a speaker series and weekly column in the newspaper to raise the profile of program. The community also utilised early adopters of sustainable practice to show what could be done. An example of this was the Sustainable house day where 250 people visited 8 homes to learn about sustainable features. Each person that visited the homes received an information kit on sustainable housing. This type of interaction and training were seen as extremely important and included workshops to help tourism operators and web based resources on sustainable building. Design information specific to the Wanaka area ensured relevance to the community, i.e., climate, social and economic factors.

The Wanaka sustainable tourism programme utilised the TNS framework and stated that it worked well at a holistic level. It helped focus the community on strategic aims they decided not to state they were adopting the TNS framework as this was seen as adopting a doctrine which may have met with some resistance. The community utilised some of TNS principles and developed an idea of what they would like the community to look like in one hundred years to ensure they know where they are heading.

Donavan *et al.* (2005) outlines the development of an ISO 14001 based EMS in Central Queensland for the protection and development of sustainable land use. The project identified the use of E-learning techniques as a useful tool to help develop the systems and overcome the barrier of distance and access to expertise.

The development of the E-learning system was based on a needs analysis and the resultant learning platform included video, web based information, teleconferences and residential inductions.

This reference highlights the need to ensure that you have a multi level approach to learning and that the training platform and processes take into account the specific differences between community's demographics and access to technology. The community utilised face to face meetings as a tool and this was seen as important to

supplement any E-based learning resource with direct intervention and input from facilitators with EMS background.

The format of the training enabled participants to plan it themselves and the timeframes over which they undertook it. The specifics of the training undertaken were decided by the participants this meant they learnt what they needed to. The participative nature ensured that the outcomes wanted by the community were understood and projects undertaken were in the appropriate direction.

The effectiveness of this process in achieving sustainable outcomes is seen to be good with the authors suggesting that the process helped to increase management effectiveness and increase knowledge of the environment. The systems developed were robust as they were audited to the international standard ISO14001.

Harding (2004) has developed some useful guidance for businesses and system proponents as he outlines the core factors to consider when undertaking any change process. A CEMS is by its nature is a change process and as such there are lessons to learn from this material. Harding (2004) outlines four key factors needed for change to occur these are;

- 1) Pressure for change
- 2) A clear, shared vision
- 3) Capacity for change
- 4) Action

Neglecting any one of these factors will affect the change process and stop a community achieving sustainable outcomes. For example care must be taken to ensure that you have identified what is the “pressure for change” and why you are undertaking a change process. Within a community framework there needs to be a shared understanding that present activity’s and structures within the community are not sustainable and that there is a need to act now.

NSF International (1998) documents the experience of developing CEMS for the community of An Arbour in the US. This project was set up in an attempt to manage a specific environmental risk and as such is characterised as a vision or issue led EMS. The project set out to answer the question of “Would an EMS be an effective means to meet specific water quality objectives in a particular watershed” Initially the programme failed and this has provided some good lessons for proponents of CEMS and their developers.

The stated reasons for the failure were centred on five main areas,

- 1) There was only passive management support and although the organisations involved didn't disagree with the pilot programmes they showed their enthusiasm by not providing appropriate resources for the project.
- 2) Expectations of the programmes were low and there was an understanding that the program was not going to provide significant benefits.
- 3) The time it took to realise benefits was unexpectedly long.
- 4) Cultural change was required and this wasn't accepted by some organisations.
- 5) Formalising of systems met with some resistance, the question was being asked by the organisation as to why they needed an EMS. In some cases the project champion chosen lacked the skill set to effectively champion the programme at all levels of the organisation.

NSF International (1998) also included the suggestion that a community should develop the systems at their own pace. I would suggest a cautionary note within this if a community has no targets or stretch goals then achievement of goals may not happen. The paper also outlines some good guidance on ensuring that you review the systems already in place and not reinvent the wheel, the idea that you build on what you already have in place is a good philosophy. I would suggest however that a review process should be put in place to ensure that the systems support the development and achievement of project CEMS outcomes.

The paper suggests identifying local resource to use as a system input and discusses the unique problems of identifying motivating factors for community based systems. Motivations are important as these differ from standard business drivers, i.e. market forces within standard business versus the public's need within a CEMS

Barrett *et al.* (2006) explores environmental management in 15 businesses that undertook the Target Zero Enviro-mark 2 programme in Christchurch from 2004 to 2006 and asks the following questions

- Whether the programme has met their needs and expectations?
- Did they get any marketing advantage from having a certified EMS?
- And have environmental considerations become part of their business model and decision making?

The review was based on case studies of three of the businesses involved and the following outcomes were reported,

- The program helped to show they were responsible.
- Customers are now asking and are interested in companies that differentiate themselves by having an EMS.
- The system provided confidence of legislative compliance.
- One of the organisations managed to remove 50% of its solid waste from its business and recycle 80 to 100 tonnes of customer's product.
- Reduction of energy use also occurred in most organisations.
- Over 50% of the organisations involved identified a need to obtain resource consent.

The report also outlined some suggestion for Improvements these included,

- More input and sponsorship by government is needed to ensure that organisation uptake EMS.
- Tax benefits or grants should be looked at.
- Working alongside trade organisations helps with support and resources.
- There is a need to make systems simple as they work better.

O'Connell *et al.* (2004) discusses development of EMS in the wine industry and although this is not specifically community based the lessons are relevant to communities. The report outlines that over 60% of the wine industry has some form of EMS. The sector is not only interesting from this perspective but also that a number of types of EMS feature, BioGro, ISO14001, Sustainable Wine New Zealand and The Natural Step are all being used. The adoption of EMS in the Wine industry does pose the question does widespread adoption of EMS in sectors help to develop capacity and the performance of these sectors. Sector based programmes exist in the wine industry, plastics industry and printing industries and these sectors seem to be performing well. This may indicate an advantage for development of EMS supported by sector bodies and with sector specific resources. This could be a useful way forward for communities if a community based set of resources were available in NZ.

Upham (2000) suggests TNS framework is useful for developing an understanding in sustainability and having some criteria for assessing projects against. The author outlines there is some issues with the subjectivity of some of the criteria and the difficulty of measuring the background and net change from projects. Upham (2000) suggests that TNS is based on good science and that it should help organisations to head towards sustainability but it would be difficult to assess this incontrovertibly.

James *et al.* (2004) outlines the experience of implementing sustainability programmes in eco municipalities in Sweden, businesses using the natural step guidance for visioning and undertaking sustainable development (in North America, Japan and Europe) and US communities using the Swamp Yankee approach for planning sustainable development in the United states. This book offers some ideas on the critical factors involved in sustainable development.

One of the critical factors identified is working to develop the right culture in the community, i.e., developing the philosophy of “now is good” and utilising the hot new topics of the day to help drive improvements is seen as important. There is a need to develop the understanding and tools to capture the attention of the community and hold its focus. The book suggests that the ways the ideas are introduced are as important as the process itself and that a participatory approach is extremely important to help introduce and integrate the community in the change process.

Multiple ways of introducing topics are also suggested and being aware that sometimes even the best ideas meet with opposition. The approaches suggested as useful within the section of the book on eco municipalities in Sweden is a democratic one. There is a need for education and strong visions to ensure the process is heading in the right direction and everyone knows what is going on. The education systems need to focus on shifting the world view of the people involved and ensure living habits are changed. Change that means that everyone views sustainability as the way they do things. There is a suggestion that you introduce the concept of sustainability in a way that creates the most engagement and participation. It also suggests that there is no package solution and CEMS must be developed by the community for the community.

The businesses using TNS guidance for visioning and undertaking sustainable development in North America, Japan, Europe and the US utilised a process much like Appreciative Inquiry i.e. asking what the community loves about the community.

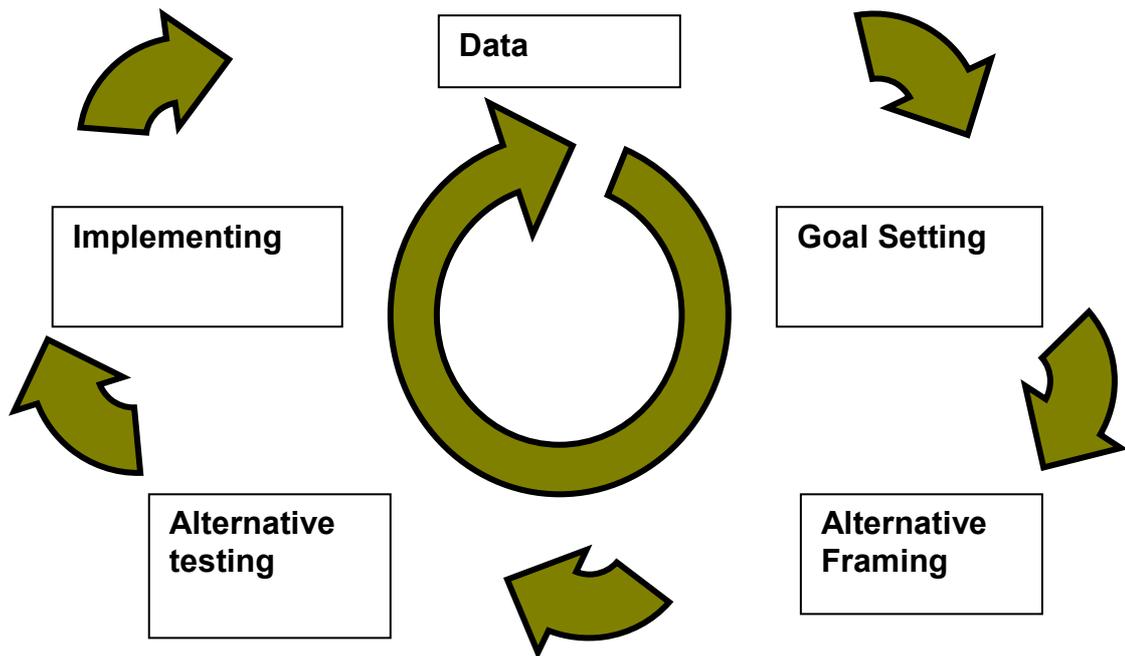
This seeks to find clear understanding about what the community holds as important and relevant and calls these principles “fundamental principles of indisputable relevance”. The process then undertakes to ask for help in achieving the outcomes and advice on how to apply the principles developed. The businesses also used “back casting” a process included in the TNS framework where you endeavour to think about what a sustainable future looks like and what steps you could take today to help you to get there.

The broad process followed by the organisations is one of raising awareness, discussing the four system conditions and how they relate to the project, review present conditions, brainstorm alternatives and create an action plan.

Communities using the Swamp Yankee (see Diagram 1 pg 35) approach for planning sustainable development in the United States also have a similar approach i.e. a democratic bottom up style approach. And while this is similar to TNS in a lot of ways it differs by not offering too much of a framework except the development of a clear vision.

It is based on the philosophy that people govern themselves and have a community defined vision of a desired future. James *et al.* (2004) also suggests that there is a need to include a full range of community interests, values, perspectives, focus and to plan in cycles not just a linear path.

Diagram 1: The Swamp Yankee improvement loop



Note: This is an alternate to the plan, do, check, review cycle found in the ISO14001 framework.

3.4 Analyse system critics as a cautionary review to see if any lessons can be learnt from their review of systems.

3.4.1 Methods

The review of system critic literature was undertaken to determine if the detractors have some lessons for the system designer.

Saul (1992) and Dakin (1995) were read with a view to exploring the limitations of system design. During reading these references notes were taken on the various areas in which system development and leadership were discussed.

In Saul (1992) the 500 years of history discussed during the book and the development of the concept of “Age of Reason” provided the bulk of information and this has been supplemented with the other reading. The notes were then reviewed to look for common themes and these are presented in the context of system development. The outcomes of this could be used for system design or for research in the future to gain some more insight into system limitations.

3.4.2 Results

The main premise of Saul (1992) is the development of what he calls the “Age of Reason”. This is inherent in human nature and surfaces as a propensity to professionalise and add structure.

The act of developing reason and structure can take on a life of its own and as outlined by Saul can produce outcomes not intended by the initial developers. This is exemplified by the development of the American and international arms trade. The international arms trade was developed as a way of selling off old and obsolete weapons and to ensure the research and development costs of new weapons were paid. This snowballed to the full scale industry we see today, where it is the largest single item of international trade with greater than 900 billion in sales worldwide. This in itself is interesting as the sales of weapons are at an all time high during a time when no major war exists. Also interesting is the amount countries spend on military research and development, the US in 1998 spent 70% of it's GDP on military related research as compared to 1% in Japan, this shows that if the measure of this systems output is economic success then less spending on military research and development should equate to a better economy.

The initial development of the arms trade was made with “good reason” but has resulted in outcomes that were not intended in the inception. Saul goes on to develop this idea to say that society itself has become self justifying and does not have any elements of self criticism or effective evaluation.

The development of macro systems within international affairs has some lessons for industry and leaders of organisations or communities. One of the major lessons to be learnt from this research is that for leaders to effectively use a systemised approach then they need to ensure the systems and their own leadership is objective enough and able to change quickly as new information and outcomes for these systems are found and needed. System developers including developers of CEMS need to be careful that any process undertaken produces outcomes that are wanted and indeed provide benefit.

The lesson of ensuring systems are relevant is also exemplified by the glorification and development of the system during the Spanish inquisition, the premise of the systems produced during this era in history were that if someone was accused of a crime against the system that these assumptions of guilt were held up as fact and the

use of reason and development of process was designed to prove that fact. The notaries developed documented evidence, and this detail of every conversation and step of the process was used as a means to an end to prove the original assumption. The system was indeed glorified as a methodology and this process effectively removed objectivity and fact from the process. This is used by Saul (1992) to flag two limitations of systemisation, the apparent lack of objectivity and the self-perpetuation of the system once it develops.

Saul outlines the development within the Age of Reason of two new types of Leader, one the technocrat and two the Hero. The technocrat who is someone with a mixture of skill, strength and power and utilizes this for the development of themselves and the systems they represent. The technocrat does this usually without the overview that is needed for objectivity and common sense within the system development and design. They are characterised by a specialisation in knowledge and hence have a well-developed narrow focus.

The Hero on the other hand is an individual who has a clear and defined vision who can lead not through skill, strength and stealth as the technocrat but through charismatic and outcome focused leadership.

The lessons in this for community leadership are that if the basis of a community or leader is a belief in the system or structure (lead by a technocrat) then it is possible for the community to lose focus.

If however the community is led by a Hero then with this basic belief in the community outcomes it is left up to people within the community to develop the structures that work for the stated outcomes, this develops buy-in to the process by these individuals and doesn't place as much focus on the systems required to get there. This also enables these systems to become more fluid and the outcomes of the system to adapt as the community outcomes and requirements of the individuals within it change.

Another limitation of the systemised professional approach is related to the size of the organisation or community. The larger the group, the more likely that integrated systems exist. It is also more likely that these are restrictive to quick and efficient change in the face of changing information and outcome requirements. The lessons for leadership here are that the ability for organisations or community's to recognise new and innovative ways of development are needed.

This need is so that opportunities or innovative individuals are not lost. This dynamic is outlined by Saul (1992) as another trap of systems. Once fully entrenched they are hard to remove and those that do not follow the systems are punished for it. General

Eric Dorman Smith led 40,000 men to victory over 134,000 Italians in Egypt in 1940, his approach did not fit with the formalised training and suggested war practices of the Staff development system of the military machine of the time and involved deconstructing the local British forces that existed to create a more mobile fluid unit. This outraged his superiors who engineered his removal from service.

This deconstructionalist approach first suggested by the military strategist Sun Tzu in his little book of military instruction in 500 BC outlined the ability for army to be created in small manoeuvrable units which had the ability to respond like “water”.

This fitted the purpose as Sun Tzu explained it as war has no form and changes like a fluid therefore the philosophy of fighting a war should be congruent with this.

The lesson for leaders is much the same - smaller groups and smaller structures may produce better results. This is also outlined in Dakin (1995) where groups of similar taxonomy were given a task to come up with new ideas one using group brainstorming techniques the other left to individuals whose results were then pooled and the ideas presented. The outcome of this was that the smaller individual group structure produced not only a larger number of ideas but more innovative ideas than the interacting group.

The inertia that is required to move large structure and process within organisations may be linked to the individual’s ability to embrace change or just that large structures take on a climate and culture of their own, much like the Spanish inquisition these systems are constructed from a position of correctness and they are built backwards from this assumption. An example of this inertia is outlined by Saul, in the 1980’s when the Dutch wanted to change to unleaded petrol as their old limestone buildings were crumbling and they were concerned about their citizens’ health, the inertia of the EEC was brought down at full force. The EEC believed it would create an unfair trade barrier, by ignoring the science and instead concentrating on their system outcomes, (the stuff of the true technocrat) they made a decision which fitted their ends but sacrificed people and the environment. This is one of many examples of the system becoming determinant over the outcome.

It is important that information and systems must be accessible to all so that the elitism of reason and systems is not allowed to develop. The language used must therefore be simple and the mechanisms easily understood an example of this is outlined by Saul (1992) in relation to the Catholic Church whose predominant language was Latin, this rendered the understanding inaccessible to most and indeed when this was changed a number of those that had been involved felt that

that had been cheated when they actually understood the teachings without the obscurity of ritual and the language barrier.

3.5 Identify critical factors to be included in a community based Environmental Management Systems

3.5.1 Methods

A literature review was performed to identify any common themes or stated critical factors to be included in a CEMS. The literature review covered Community, industrial and sector based EMS systems.

A review was also performed on organisational change and behaviour literature to determine if any lessons could be learnt.

For a definition of critical factors see Section 1.2.3: Other relevant definitions

3.5.2 Results

The PCE (2001) outlines some key features of successful local CEMS and the fallacy of developing one system for all types of environmental management. The complexity and individual differences of community mean that each system needs to be customised to each individual community. The systems developed need to adapt to the diverse differences in communities including socio economic, cultural and biophysical contexts of the communities concerned.

This report also outlines the need to ensure that any developed system has integrated management, inclusion of all stakeholders and management of external relationships. The process should also ensure that it is based on clear environmental outcomes and that these outcomes and the process are monitored to ensure that the results are consistent, based on fact and documented.

The infusion of expert knowledge is also encouraged as others outside the community may have more information on specific areas i.e. ecosystem status. This infusion of knowledge and ideas helps to build capacity in the community and ensure that the outcomes that are planned and achieved are based on sound science and sustainability. Cross functional relationships are also indicated as a way of helping to minimize the complexity and ensure that conflicting needs within the community are

managed. This basically means that where common interests are found then those groups should be combined to ensure that all outcomes are considered as part of the process. For example waste management strategy development should involve land use and land development stakeholders.

Caelho *et al.* (2001) is a case study based on the experiences of implementing ISO14001 based programmes with seven manufacturing company's in the State of Minas Gerais, in Brazil. This paper outlines the virtues of developing integrated systems and the need for clear evaluation and performance criteria. They also develop the idea of ensuring that you have champions at all levels of the organisation (Community) to ensure that the views of a large number of people are included from all departments (sectors)

This report outlines the use of ISO 14001 as the framework but argues that the systems can become too large if following this system approach. Systems were in some cases developed by consultants or by one person in the organisation and therefore the fit to the organisational outcomes and relevance were lacking. This indicates that there is a real need for a community to develop the systems for themselves and include multiple stakeholders in the development to ensure relevance and applicability.

The systemized approach and adherence to specific standards in this case ISO 14001 caused some confusion in the organisations concerned and there was a need to train those involved. Guides were developed to help the organisation understand what was required. This also adds weight to the argument that systems should be simple and in areas where complexity is needed then guidance and simplified materials ensure that the whole community can engage in the process.

There is also good guidance within this reference on ensuring that you have an objective performance evaluation methodology. The methodology should include clear targets and good milestones to ensure that you know when you are on track. Simplification of the targets is also useful. Small projects or indicators of performance can be combined into more generic objectives to ensure the system is less complex and easier for all to understand.

Harding (2004) outlines the need to create a shared vision involving a representative cross section of the community and not just a small subset of extremists who could jeopardise the long term viability of programmes because of their personal agendas, the word "shared" is extremely important.

The document outlines some key elements for development and continued reinforcement of a shared vision;

- 1) **Pride** or positive reinforcement of the process.
- 2) **Happiness**, ensuring that the mechanisms exist to help happiness flourish.
- 3) **Responsibility**, giving individuals responsibility for each facet of the process.
- 4) **Success**, what the community defines as success and ensuring you have monitoring and measuring to know when you get there.
- 5) **Recognition**, a very important process to ensure that those that have input into the CEMS and projects are recognised.
- 6) **Security**, care is needed when undertaking any change process. People get concerned that they may be negatively affected by the change. There is a need to ensure that this is managed as part of the CEMS.
- 7) **Money**, Money is not only an important motivator it is also essential for helping support a CEMS. Sufficient funding and ongoing support needs to be found to ensure the ongoing viability of CEMS development and subsequent projects that help support sustainability.

Harding (2004) outlines the need to develop capacity for change. There is a need to ensure that the community is well informed and trained to understand not only the systems that are being developed but also what they can do to support sustainability. Identification of community based expertise and community sustainability champions is very important to not only help to disseminate information but also give the process relevance to the community.

The guide suggests action is critical to the change process; this is usually defined in standard EMS by the continuous improvement cycle of plan, do, check, review. The completion of the projects and activities related to CEMS need to be coordinated and outcome focused to ensure that the actions taken are consistent with the outcomes decided as part of the shared vision development process.

Andrew *et al.* (2007) discusses the development of an Environmental Stewardship System (ESS) which incorporates an environmental management system and natural resources management (NRM) process in the Murray Darling Harbour Basin in Australia. The project was based on developing a voluntary process for farmers to adopt to ensure protection of the local environment and outlined the essential elements as,

- Being focused on environmental outcomes.

- Operating at multiple levels i.e. farm catchments and regional levels to ensure all outcomes are achieved.
- The creating and tracking of standards to ensure sustainable outcomes.
- Using risk assessment to focus on the highest risk processes.
- Promote continual improvement to ensure longevity.
- Ensure traceability through auditing.
- Defining of roles and responsibilities at all levels i.e. farm, catchments, authorities, industry and all stakeholder groups.
- Using second or third party recognition of individual progress and celebrating the gains was useful to show others it can be done.

The report also outlines the importance of ensuring that the systems developed consider the wider contexts of the community and ensure that these are integrated into planning. For this to happen in this case farm scale needs to consider catchments scale which needs to consider regional and national strategies and rules. The report suggests that by considering these factors funding from multiple agencies could be available if you can show you are achieving multiple outcomes with the one program. Cost benefit analysis is also seen as an important tool to ensure that the projects not only have sustainability outcomes but that they stack up financially. The report also outlines the need to seed the group with external ideas and expertise as these may not reside inside the group.

Drury (2000) outlines the findings of a brief survey of councils implementing an EMS to find out how useful they found them for management of water and waste. Findings outlined that councils found the EMS process useful for creating discipline and the audit process was useful at identifying any management issues. There were clear advantages to documenting the process and evaluation of projects this helped to clarify the trade off between financial costs and environmental protection. The use of purchasing policy's that included environmental performance helped to ensure that suppliers understood the requirements.

Factors for success identified by the councils surveyed included,

- Utilising the most experienced personal.
- Ensuring you have top management commitment including direct involvement when appropriate.

- Ensure that the programmes are adequately resourced.
- Gaining representation from all areas of the organisation.
- Involve those using the procedures in their development i.e. field operators writing field manuals.
- Create a Budget for the EMS.
- Find internal champions and support them.

There was an identified need to have feedback loops in the system without feedback and monitoring it is very difficult to measure the change.

Stone (2005) documents experiences from a 2 year cleaner production program run in NZ and exploring if it brought about long term change. The review identified key areas of organisational change that need to be considered, these are commitment, leadership, support, communication, involvement and programme design.

The report outlines some of the issues associated with implementing new projects within organisations and these identified limitations to the uptake of the systems give us some guidance. Some of the items identified as project killers were, a lack of time spent, lack of commitment to the program outcomes, a lack of leadership and internal support. There was a general lack of communication at all levels of the organisations and when extra resource was required or the projects specific timeframe was over then extra staff time was not provided. In some cases the identified blockage to progress was simply that the project did not align with the organisations culture and aims.

The review identifies that cost savings or outcome focus may not always guarantee management support. This is most likely due to the complexity of the issues and conflicts of interests within the organisation. The organisation needed to have capacity for change. This is an important factor, i.e., the project champions may not have had the experience to undertake the facilitation of a project of this type or the organisation may not have had the resources.

External drivers are important in ensuring the success of the projects. If the need for change is identified externally it will be viewed with more importance than if it is identified by individuals within an organisation. When individuals are trying to drive a process within organisations there are conflicts to development due to internal

politics and organisational culture. Within a CEMS this indicates the need to have processes to ensure that conflicts are identified and managed. These conflicts can occur in a number of areas including organisational values, inappropriate goals and inadequate attention to change management and iterative learning approaches. External influences as identified earlier can have a positive effect on project importance but equally they can derail a project. Identifying and responding to external influences is critical as is ensuring you have a review mechanism to ensure that any influences support the program aims.

There is an extremely important section in the paper Stone (2005) on single loop and double loop learning theory. The use of Double loop learning is an iterative process, involving critical questioning, testing, practicing and reflecting. Double loop processes help us to understand how the community learns and helps us to build capacity by learning to learn and learning how to learn together. This paper suggests for systems to work they need to be developing new traditions but premises this with the idea that the context is decisive i.e. the community context needs to line up with any vision for outcomes to be effective. The needs of the community as well as its structure, human relations, external environmental politics and culture all have to line up for it to work. Commitment to project outcomes requires the internalisation of a value system based on sustainable development or sustainability principles. This requires information and development of a learning community.

Stone (2005) Outlines the importance of enabling technology's for project champions and how you need to ensure that champions have the necessary skills to act as leaders. The paper suggests champions act as "a caretaker guiding cultural values rather than acting to control and define the purpose for others"

The provision of education programs is important these help to overcome inertia to programme ideas. The guides provided for cleaner production programmes have some lessons for communities as there is significant guidance on organisational change. The lessons on change could be transposed to identify a need for some guidance on change processes in the community. The development of training materials could include,

- Human relations and interaction
- Community context
- Community politics

- Culture change.

This document also outlines the need for the CEMS to be compatible with what has occurred in the past and build on the successes. By acknowledging what has gone on in the past and integrating the lessons from the past a program can move more quickly and achieve more. By accessing the past then this creates buy in from those involved in the past and also allows the community to feel included. This paper also raises the question of customisation of cleaner production programs to the culture of the organisation. This reinforces the idea that development of CEMS needs to be customised to the community. That is, the CEMS needs to be balanced with the culture concerns and activities of the existing community and guiding it through a change process. The paper suggests that for short term incremental change you need a goal focused approach but for transformational change you need to have a strong vision.

Allen (2002) develops concepts of what motivates change in human beings in situations where multi stakeholder partnerships, groups and teams are present. This is very relevant to community based systems and includes the following,

- It is important that people get together to develop a shared understanding of the problem and the potential solutions. When people participate in a planning process they are likely to buy into the changes.
- Change is a development process that takes time and individuals may have different expectations.
- Participation is not a one off event it is an ongoing process that takes time, resources, understanding and perseverance. This includes the building of relationships and developing social capital. It also involves having a clear idea of the stakeholders and undertaking participation as an ongoing process that includes monitoring of outcomes and education.
- One of the challenges is to develop participatory and systems based monitoring and evaluative process that allow for ongoing learning, correction, and adjustment by all parties concerned.
- The process needs to be suited to the community and the way that groups work together, maintain relationships and achieve agreed outcomes.

Allen (2002) suggests transformational change requires group cultural change that spreads to others. There is a need to foster social units that help with the

participatory process. Because people interpret new information through their own paradigm or mind map you therefore need to acknowledge this and temper any new information forwarded in a way that they understand. A learning organisation or community build collaborative relationships in order to tap into knowledge and capacity's that may not exist in the implementation team this helps develop a learning community. The paper outlines some useful frameworks for behaviour change based on the premise of experiential change i.e. learning changes you and equally change requires learning.

Allen (2002 page 14) outlines a good model for behaviour change,

Behaviour change = Knowing what to do + Enabling environment + imperative

This indicates that it is not as simple as people knowing what to do but the social context within the community is important for change to take place. For example fostering an enabling environment helps to ensure that if people wish to undertake the change that it is supported. Equally important is identifying the drivers for change i.e. the imperative. By having a clear idea of why you are undertaking change you can then use this information for social marketing and ensuring that you get involvement from the community. To affect change the change has to be important to the individual. Behaviour change is different for every person and all people move through stages of change at differing rates. A critical factor for success is to enhance people's capacity to modify their environment and drive change. This is achieved by creating an enabling environment. Part of the development of an enabling environment is to insure that people have places and events in which to socialise, the need to include mechanisms for people to come together and meet to create the understanding and develop the new culture and future history is important.

Horn *et al* (2003) is largely business based but outlines some good material on creating a supportive environment for organisational change. The principles outlined can equally be used to help look at community based processes. Training is seen as a critical factor for success of environmental systems and the paper proposes the focus for training that supports effective environmental systems are as follows,

A Guiding world view

- Or how the social ecological and economic global context fit into the picture.

Applied philosophy

- Understanding sustainability processes and how each individual fits into this, this includes knowing what systems you are using i.e. training on the CEMS.

Social processes

- Understanding how these work and how communication is undertaken.
- This also includes building capacity, engaging others, building networks, engaging stakeholders and developing transparent and fair change processes.

Ideas and action plans

- A process for developing ideas and how to achieve sustainable practices including feedback loops to help modify plans.
- Monitoring, evaluation, recording and communicating of information along the way.

Another important element identified Horn (2003) is ensuring that there is effective governance. The paper also outlines that any learning approaches or mechanisms that are developed should have marketing in mind to help to popularise the learning needed and the outcomes wanted. This could be utilised by community practitioners as a type of rehearsal for community champions of the CEMS. There is a view developed that if an organisation has an internal focus it can develop and achieve outcomes but these are low hanging fruit and not necessarily large long term change but if the organisation looks externally and has information and external drivers it is more likely to achieve larger and long term change.

Olander *et al.* (1995) develops the premise that consumer behaviour is a key element for development of sustainability programmes. This is useful for any CEMS development as there needs to be material or training supplied by the program to help modify consumer behaviour. The acquisition of products and services and disposal of waste are significant environmental impacts for communities. The responsibility for raising the awareness of minimisation or controls of the impacts of these activity's are largely in the consumers hands. One of the interesting premises of the report outlines the adoption of programmes and outcomes and the "experience effect" i.e. to help develop systems and process people are sometimes sceptical until

they have experienced the outcomes of a programme. By experiencing the benefits or participating in the process people tend to have a positive attitude to the change.

Peet *et al.* (2006) sets out to stocktake sustainability in New Zealand and reviews what is being done and the results including, scientific, economic, social and environmental factors. The paper is seen as a pilot report and outlines some of the factors seen as important by the authors to include in system development or sustainability monitoring. The developing ethical statements and rules of behaviour or visions are seen as extremely important as is development of achievable milestones. The report also outlines a very interesting way of looking at systemised approaches (or technological approaches) to environmental performance.

The report suggests that complex systems such as governments and large institutions (communities) are more like frogs than bicycles. You can take a bicycle to bits, clean it and service it and then put it back together and it will work. This does not hold true for a frog. This is explained by the premise that frogs are interrelated to the environment and dependant on environmental factors. Bicycles are independent and as such do not need a connection with the environment.

This in some cases helps the argument that the development of systems need to be in sympathy with the external environment and in some case a more organic approach may work where a technical approach will not. The technical approach may be deficient as unless the system used matched the culture structure and understandings of the community it is developed for it will fill the criteria of a bicycle not a frog.

This report outlines the need to develop complex adaptive systems (CAS) as a response. These need to be adaptive, change over time and in sympathy with the environment. The idea of complex adaptive systems is useful although this should be premised with the proviso that a simplified version needs to be developed that is easy to explain so that this can be used for social marketing of the system developed. The idea of a frog is useful if we think about environmental management in the community as it is something most people can relate to and you do not need to know how a frog is built to know what steps to take to feed it, look after it or to know if it is healthy.

This report also outlines some general principles that need to be considered when developing sustainability programmes. These include,

- Identifying an overarching goal or vision.
- Adopting an ethical framework.
- Identify and develop sufficient knowledge about the sector and subsystems within the community.
- Identify what is viable for the sector and how does it contribute to the viability of the total system i.e. local, regional and national structures.
- Defining good indicators of sustainability.

M^c Shane *et al* (2003) suggest there are six organisational and team environmental elements that need to be considered when looking at team effectiveness. These are useful to review community systems against:

1. **Reward systems:** Teams are more likely to work effectively and assign time to tasks if the rewards are clearly defined.
2. **Communication systems:** Enough information needs to be provided in directions, reporting and feedback, to allow the team to function well. Too much information can swamp the team and render it dysfunctional.
3. **Physical space:** The team needs to be able to interact effectively and if the members are not located in the same physical space meetings need to be more frequent to accomplish the coordinated team goals.
4. **Organisational environment:** The environment sets the team up for failure if few resources are provided so tasks cannot be achieved. If there is a high demand for the teams' output this creates a feeling of success and the team is more likely to perform well. Competitive environments can also increase team effectiveness.
5. **Organisational structure:** Teams work well when they are supported by the organisation. If the assigned team champion feels that the organisation is not fully supportive, effectiveness will suffer. With few layers of management and a high level of autonomy within an organisation, the team is more likely to succeed.
6. **Organisational leadership:** It is extremely important for top management to provide policy, resourcing and rewards to the team, giving it direction, mentoring, problem solving and pace setting.

It is important to ensure that all of these elements are considered when implementing environmental management systems.

James and Lahti (2004) outlines some critical steps for change and suggests that for change to occur you need concrete action that occurs over a period of time and is institutionalised into the way the community behaves. Identifying champions or fire souls as they call them is also important. The book suggests getting whole plan endorsement from the community and stakeholders. To ensure the project keeps going and is institutionalised in the community it should be integrated into community structures, i.e., regulation and municipal planning. This may mean the establishment of coordinating agencies.

Velasquez *et al.* (2005) suggests that there is a natural tendency for humans to resist change and with the development of community processes the social complexity of the issues being addressed are large. The problem with multiple stakeholder partnership is an issue of participation. Affecting change in a community requires changes in individuals, organisations and the way societies operate. Because of the diverse set of interests, opinions, knowledge and experience this requires people to understand others opinion and situation for any resolution to be achieved. The Diversity and complexity of interests involved in communities allows for innovation but is also its biggest threat as conflicting interests and resistance to change are a threat to innovation. The paper suggests that a key enabling factor for sustainable management success is productive and creative resolution of conflicts i.e. allow all to have their say and decisions to be made. Another key success factor identified is the encouragement of innovation this is seen as scaling up innovation at the individual and organisational level to the community level by making innovative initiatives mainstream. The use of local culture knowledge and indigenous systems is extremely important to ensure buy in and inclusive involvement i.e. neighbourhood associations and village assemblies. The authors of the book suggest that community innovation is a cultural process and involves a change in people's consciousness.

Consideration of external change factors need to be considered especially if funding or programme initiatives could be affected by political instability or policy changes.

McCallum *et al.* (2007) outline the increasing focus on communities as a causal factor in sustainable development. The paper uses six case studies having core themes of social capital, social construction of nature and sustainability.

The paper develops the idea that collective social structures, interpretations of nature and ideas about biophysical change are variable and may be complex in nature. It is common for the idea of what the community is to expand or change over time and

indeed the developers of CEMS need to determine exactly who the community is and who the contributors to the process need to be.

The development of ideas in this report are based on grounded theory, this is characterised by developing the method and process as the evaluation programme rolls out. The theory is not based on a defined procedure at the beginning but is based on what happens and has a number of feedback processes so the system and development can be adaptive.

The development of new theories by comparison of emerging data is seen as a core tenant by this paper as a key factor for sustainable development.

A cautionary note in the paper outlines that care is needed to be aware that group goals may not be achieved due to internal dynamics and group conflict of interest. This may be because strong individuals with a vested interest in alternative outcomes caused the group to via off course. When groups interacted with outside agencies this provided more resources for the group and outcomes were positively influenced by this. Physical management activities were also enhanced by creating ties with external agencies so that those activities that required specific skill sets like fund raising did not detract from the work that needs to get done. There is an understanding that the groups could then focus more on the hands on management rather than worrying about side issues such as funding

Within the area of social construction of nature defined by McCallum *et al.* (2007) there is an understanding that depending on their understanding and specific wants, needs and experiences in the community that the drivers to belong to a group differ. The understanding of what individuals want can be markedly different the example used is anglers and farmer who's idea of what should be available and what constitutes an environmental impact on a river can be markedly different. The idea that the context is decisive in this process is extremely important and any CEMS development should make allowances for negotiation of outcomes for projects that centre on elements of the environment that are contentious.

Within the sustainability sphere discussed by McCallum *et al.* (2007) there is also some lessons for system and project developers in the "reality of expectation". Some community members may want the areas of interest in the community to stay the same or be put back to the way they were 100 years ago. Given the development and the wants and needs of other parties who wish to be involved in a community this may mean that this is not possible. This conflict needs to be acknowledged and

managed by any developed process. Finally this report outlines that the traditional idea of a community working towards a common vision shared by all those involved is flawed and the process is much more complicated.

Craig (2004) discusses sustainability and sustainable development in the New Zealand context and discusses the lack of a common framework or understanding and the role of science in helping to define and solve the problems associated with sustainability.

This paper argues the point for simplicity and also the need for complex systems underlying the simplicity. I think what this paper alludes to is the need for simplicity to help all to understand the decisions that are needed while having enough technical and complexity to allow for the targeting of the programme in an appropriate direction.

All people have perceptions and understanding about how the world works and their own ideas about how society functions these paradigms and factors need to be included in any systems developed. This is as opposed to the scientific paradigm where testing repeatability and modelling are required and there is only acceptance once agreement is met. As people begin to understand the true cost of the resources used and change from conventional economics to a biosphere based economy where resources are charged based on their true cost (we are seeing that emerge with carbon and water) then more science is going to be needed to develop models to measure the true cost of ecosystem services.

Pinter *et al.* (2005) outlines the need to develop a set of indicators for sustainable development that are universal and universally accepted. The paper suggests the development of a framework for economic and environmental indicators that allows these to be developed over time as an evolutionary process. The proposal is an evolutionary development model which ensures the key tenants of learning and adjustment included in iterative development programmes are used.

The literature clearly outlines that some common themes and lessons for system developers. The factors identified in this research are utilised in section 4.7 to help develop the list of system review questions and evaluated further in the discussion Chapter 5, where a list of broad system criteria is developed.

3.6 Develop a framework for the development of an effective Environmental Management System for communities

3.6.1 Methods

The method used for developing the following conceptual framework was to consider the research materials on each environmental management system outlined in chapter 4 and any formalised conceptual models of environmental management such as the plan, do, check, review diagrams contained in ISO14001 or the Swamp Yankee approach outlined in diagram 1.

Based on this information the dissertation writer distilled the CEMS elements of the identified available EMS (chapter 3) into broad topics. From this list of broad topics a diagram was produced.

This conceptual model is developed as a simplified framework that could be used to present the idea of a CEMS to the community and for communities to use to initially explain the CEMS and help to start the process of developing their own framework.

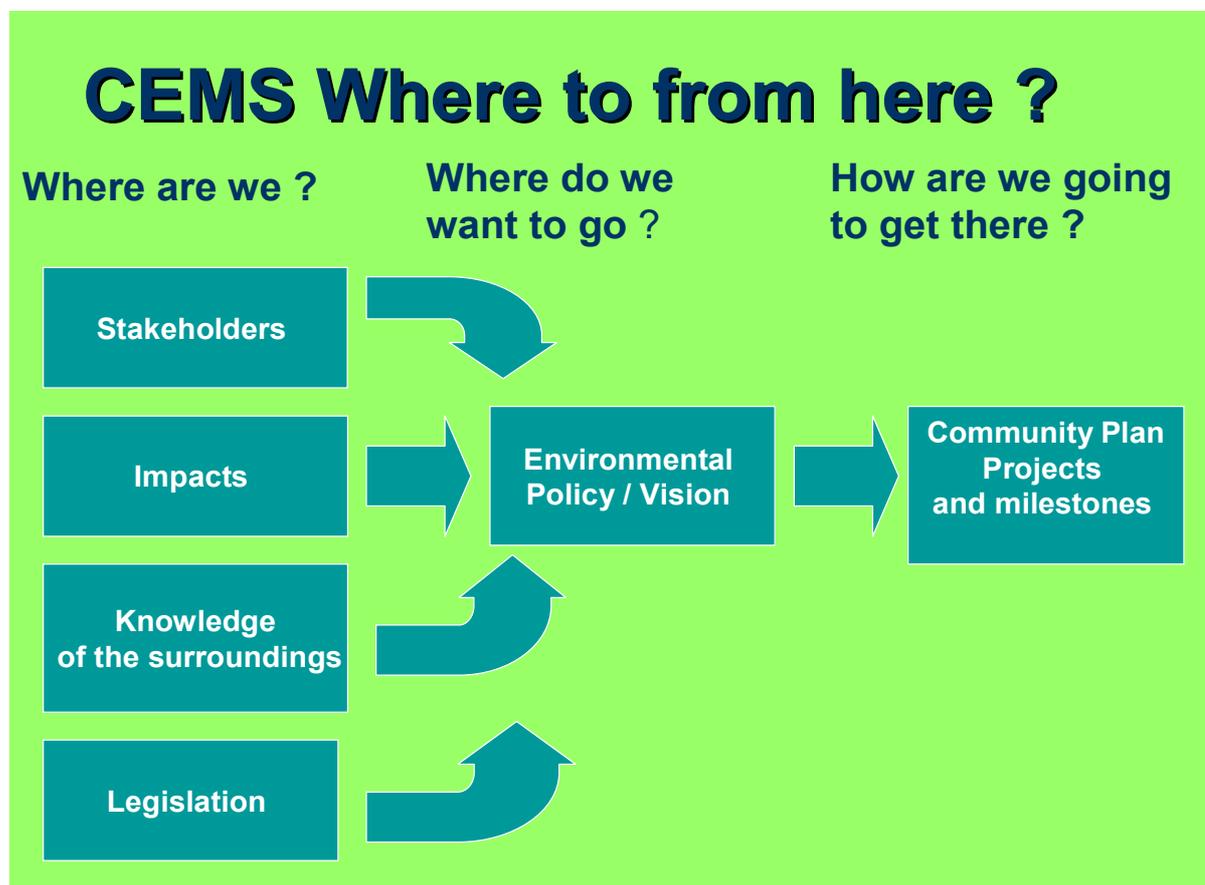
3.6.2 Results

It is clear from research such as Allen (2002) that behaviour change and development of an effective CEMS is contingent on knowing what to do. Stone (2005) develops the idea that formalised environmental systems for use by community's work best when they have been developed by the community.

As such definition of a specific framework would not be beneficial unless the community had a specific need to be certified to a standard or a particular interest in a specific standard, i.e., TNS or ISO14001. In fact the research Arthur (2006) and the authors own experience in consultation with communities suggests there is a reluctance to develop a predetermined system and be seen to adopt someone else's doctrine.

With this in mind the following overview diagram (diagram 2) has been developed to outline a broad process a community could follow to start systemised thinking. This is very simple and designed to help to explain the complex nature of a CEMS in a simple way. This model could be used to undertake marketing of the concept and to start discussion on gathering information, i.e., who are the stakeholders of the community and what are the environmental impacts

Diagram 2: A Broad model of a Community Environmental Management System



This broad model approach could be supplemented with the improvement cycle outlined within some common systems, i.e., Plan, Do, Check and Review. This would help to formalise an improvement programme. Care is needed however because as the community starts to talk to it's members and stakeholders and starts to gather data on it's environmental impacts and develop ideas on where it would like to see it's environmental performance, a suitable emergent process will develop. The process used to develop an environmental policy or vision and resultant action plan may take the form of a Charrette as outlined by Arthur (2006) or be based on an Appreciative Inquiry process as undertaken by the Lincoln and Lyttelton Communities and proposed by Cooperider *et al.* (1987). The actual process should be decided by the community for the community.

The broad framework and process is designed to be cyclic with review of each step of the programme on a regular basis (at least annually).

The review would undertake to ask the three focus questions as a framework for design,

- 1) Where are we?
- 2) Where do we want to go
- 3) How are we going to get there?

The checklist developed in the next section could be used to supplement the programme and ask more specific questions to help develop a robust and functioning CEMS

3.7 Develop a review checklist for communities to review their environmental systems against.

3.7.1 Methods

The method used to develop the checklist (see appendix 2) was to review the research undertaken in section 3.5 to identify critical factors and the common system elements identified by reviewing the contents of the identified environmental management systems in section 3.1. Based on this a list of questions were developed. These are designed to prompt communities to evaluate the systems or processes that exist in the community to see if any gaps are identified. It is recommended that any gaps are evaluated and systems put in place if they are needed. However care is needed to ensure systems are not developed for systems sake but only if a benefit to the community is identified.

3.7.2 Results

Using the research and standard system models a series of questions have been developed (see appendix 2). The questions developed are a distillation of the themes and critical factors identified by this research to include in a CEMS. The questions are designed to be used by CEMS developers or communities that are looking for ways to improve their sustainability programmes. The method of use and how the community provides evidence of having considered questions is left to the community to decide. This is to ensure that communities develop the systems themselves i.e. the methods or details of how you would undertake a stakeholder review need to be developed by the community. The checklist is designed to help emergent processes and could be used as a full review of systems or just as a mechanism to seed ideas on specific topics.

3.8 Discuss the outcomes with practitioners of community based EMS

3.8.1 Methods

To determine applicability usability and help to identify gaps the checklist developed as a tool for communities to review their sustainability or community management systems was shown to members of the Project Lyttelton group at a morning tea meeting.

The timing of this dissertation did not allow for the Lincoln Envirotown Trust to review the checklist as key members were away during the completion of this dissertation.

3.8.2 Results

Feedback from the Project Lyttelton group was positive and the discussion on a number of questions identified areas that could be strengthened and other areas in which the group were performing well.

General feedback suggested that the checklist would be useful to raise the level of thinking and one member thought that just having the questions on the table when discussing specific topics would assist to seed ideas.

The use of the checklist as a formal process was seen to be a lot of work for a small community group. The Project Lyttelton group thought it would be frustrating to complete and document each question.

There was the general understanding that the community was undertaking a lot of the activities suggested in the checklist but not formally and not documented.

This is reflective of the Project Lyttelton group as they have a philosophy based on emergent theory i.e. having clear visions or ethos developed through appreciative enquiry. There is a belief that by contact with members of the group the uninitiated will pick up on the vision and run with it.

For a larger more complex group the feedback is like to be different.

4 Discussion

The Literature review in this report focused on CEMS and sustainable development programmes, organisational change research articles published on CEMS and their performance. The review also undertook to explore the philosophy of system critics as a way of understanding system limitations.

The SWOT analysis performed to critically analyse the commonly available systems showed that a hybrid system would provide the most options for CEMS as they are adaptable and based on the best elements of the other systems. A Hybrid system has direct applicability to the community as it is developed by them. It is however reliant on extremely good communication processes to ensure that it is delivering what is needed.

The systems reviewed as part of this research all have their own distinct advantages:

1. TNS is a good strategic planning tool with strengths in understanding and focusing on sustainability and contains useful tools such as back casting.
2. ISO14001 main strengths lie in the documentation and auditing focus and the continual improvement loop, i.e., plan, do, check, review.

3. Enviro-mark has some advantages because it contains health and safety compliance and has a step wise approach to the ISO14001 elements.
4. Vision or issue led programmes have an advantage as they are adaptable and focus on areas of need. This of course is a disadvantage as well as they may not address areas of most need.
5. Hybrid systems have an advantage over the rest as they rely on taking lessons from each of the others. As they are developed by the community for the community they are adaptable and fit the specific cultural aspects and demographics of the community.

The research outlined other advantages and lessons from utilising the commonly available systems for CEMS. Arthur (2006) outlined a number of key points in a review of communities journeying towards sustainability including the need to develop strong visions that engage and involve a representative cross section of the community. Training is a key element to ensure that individuals understand not only the environment and the risks but how they fit in and can help. The training of individuals needs to focus on development of internal champions. The reference also outlines the need for systems to be simple, have community ownership and a combined vision.

Strong leadership and the use of earlier adopters as path finders are useful concepts. The provision of multiple level system resources is important. System resources can include presentations, facilitation and coaching, Guidance documents, metrics to help with the collection of data and on line toolkits.

The Kinsale example shows us that if sustainability is based on one concept or idea, i.e., peak oil then this may not create a sustainable process. A more integrated programme works best and the system needs to be fluid and easily understood.

The Hampden – Moeraki –Waianakaura Energy future forum example shows that letting the community set the agenda works best.

Waitakere city's example outlines that small teams help to develop innovative ideas and minimise the time taken to complete projects.

Wanaka Sustainable Tourism project shows that having dedicated resource for the project helps, as does having a long term view with their 100 year plan. The back casting and forecasting outlined in the TNS framework are useful for this. The

development of design information specific to the community ensured the relevance of the guidance.

Donavan *et al.* (2005) outlines the use of E-learning as a useful tool for training and overcoming the barrier of distance as long as this is supplemented with other forms of communication such as face to face meetings. There is a need to ensure that any training process matches the demographics of the community i.e. access to technology and levels of education. The ability for individuals to set their own pace when learning was seen as an advantage

Harding (2004) outlines the importance of the understanding that implementing a CEMS is a change process and as such you need to understand four key elements of change and ensure that these are well understood and managed these are,

- 1) Pressure for change
- 2) A clear shared vision
- 3) Capacity for change
- 4) Action

For change to occur there needs to be a shared understanding that the present activities of the community are unsustainable and there is a need to act now.

NSF international (1998) outlines that communities already have systems in place and you should not reinvent the wheel if it is not needed. It is useful to tap into the history of the community and use this as the platform for change, identifying local resource and expertise also helps buy in.

Andrew *et al.* (2007) offers us some guidance on ensuring that the wider context of the community are considered and integrated into the community systems for example local should consider regional and national issues and include these in the system development. Inclusion of outside expertise helps to seed the group with new ideas.

O'Connell *et al.* (2004) seems to indicate that sector based programmes work well at delivering sustainable outcomes. A useful way forward for sustainability in New Zealand may be the provision of specific community based tools.

James *et al.* (2004) suggests that working to develop the right culture is important and utilising the hot topics of the day help to raise the profile. The suggestion that the

way ideas are introduced is as important as the ideas themselves is extremely useful. Multiple introduction mechanisms need to be employed to ensure you engage a good cross section of the community. Asking the community what it loves about the community and finding the “fundamental principles of indisputable relevance” are extremely important for system / sustainability success. There is a definite need to ensure that you include a full range of community interests, values and perspectives within the CEMS and ensure that it is a cyclic process of continual improvement.

Within the system critics literature this dissertation reviewed systems and leadership in the broadest sense and discussed the limitations such as systems developing their own truths and cultures. The readings have covered all forms of systems from governmental, military, religious, communications, entertainment, health and science. Saul (1992) quotes the use of 420 separate references to his information and his broad macro view of some of the larger systems such as governments has some real lessons for the leaders of today and the limitations of the systemised approaches that have been employed in the past.

For the system developers and designers the lessons are just as real. Just as Leadership is an integral part of an intelligent and fluid system, the engaging of communities or organisations in the use and development of the systems is also important. For a system to become fluid and move with the changing climate in a community there is a need to capture the hearts and minds of those involved. Members, leadership and society need to be engaged in the system so they are all committed to the outcomes produced by the systems.

System processes and documentation act as both a road map and a form of historical record of the path taken. Information from areas outside the system construct need to be reviewed to keep the system honest and counteract the development of system blindness and remove the self-perpetuation of negative outcomes. Care needs to be taken during the development and at all stages of a system’s life. The integrity of the outcomes and leadership of communities lies within the accessibility of systems by all, the visibility of outcomes and avoiding the trap of the development of systems for systems sake and the self-perpetuation of systems. History has shown us that we must avoid the systemised self-supporting mechanisms of little or no social, economic or sustainable outcome. Care must therefore be taken when developing systems that they are fluid and can change as understanding and public and social climate changes.

If we take the research contained in chapter 4 of this dissertation and look for elements of system design that are identified as important, i.e., such as the cautionary elements of Saul (2002) that ensure system outcomes are wanted, through to the capacity building requirements for behaviour change outlined by Allen (2002) the following list of broad system conditions should be included as part of any system design. Inclusion of these elements should help to create an effective CEMS

1. Ensure systems are outcome based and are driven from that outcome and have a charismatic champion, community cause or combined vision.
2. Make sure system review is just that; a full review of the system elements including inputs, outcomes, process and the people involved to see that they still fit the purpose and that the purpose is still valid.
3. Ensure teams are kept as small as possible and innovation is developed through allowing individual thinking and input.
4. Deconstruct the system at regular intervals to allow rebuilding it as a more focused unit.
5. Ensure that the elements of self criticism and evaluation are effective.
6. Be careful not to over structuralise or professionalise.
7. Ensure the structure has the ability to recognise and foster innovation.
8. If the community's intent is to be ensured, new members need to be inducted and socialised into the structure.
9. Language and structures need to ensure input from all.

The research to identify critical factors also provides some useful lessons. These factors have been reviewed and developed into a checklist of questions designed as a review tool for communities. This is included in appendix 2 of this report. It was initially decided at the beginning of this research that the factors that community's need to consider would be separated into must have or "critical factors" and nice to have items called "factors" this proved difficult to do as in some cases the elements required may be different. The development of CEMS is a very complex and variable activity. Community's need to ensure that each of the factors contained in the checklist have been considered but some may have more relevance depending on the size and cultural aspects of the community.

With Community based Environmental change there are two levels of change to be managed the organic change that is occurring anyhow as the community and players

in the community take on projects and develop ideas for sustainability. Care is needed however as the development may be in the wrong direction. The introduction of risk based analysis and reviews of the process are extremely important as are the introduction of system and ecological expertise to ensure that the community not only learns about the surrounding environment but also considers the process by which it is going to get there.

A clear vision may not be the only driver for sustainable outcomes if the vision is somehow flawed or based on individual bias or lack of real knowledge and results. This is not a simple structure and developing frameworks for communities will never be a simple task. There is however a definite advantage to having simple high level frameworks for explaining training and engaging the community. These should be based on good science, information and technical background to ensure that appropriate decisions and resources are provided.

Reviews of the process at every step of the way are important as is deconstructing the whole process on a regular basis. This ensures that community is still developing processes and undertaking projects that are beneficial to the changing demographics of the community.

5 Conclusions

The research question posed at the start of this research asked,

“Is there a role for Environmental Management Systems in communities and if so can systems produce sustainable outcomes?”

It is clear from the research that the outcomes of CEMS in all of their forms can produce outcomes that aid sustainability.

The research contained in this dissertation outlines significant benefits from undertaking a CEMS but also outlines significant difficulties in dealing with the complex nature of community based programs.

It is also clear that any development of systems needs to match the community needs and culture. Before a CEMS development is undertaken, the community needs to answer the question, should systems be allowed to develop in an organic process where they just happen or is a more risk based formalised approach going to provide more benefit ?. There is a risk when just letting it happen that the outcomes may not be sustainable and based on areas of the highest risk. There are also distinct issues with developing formalised systems as these may stifle innovation and individual enthusiasm by making the process slower and less adaptive.

The way forward is seen as the development of “subtle systems” that are designed to seed ideas, encourage and support progress and ensure that any formalisation adds benefit and produces outcomes.

There is clear evidence that any CEMS developed needs to be developed by the community for the community. It is clear from the research that “one size does not fit all” when it comes to CEMS. The systems should be emergent and based on what the community holds as important. The development of the vision or policy on sustainability is at the heart of a CEMS and needs to be created with a representative cross section of the community. The community needs to develop an understanding of what it defines sustainability as. This definition will help to clarify decision making and allow policy development to be based on a common understanding.

The community needs to have a clear idea of the demographics and make up of the community to ensure that the visions created are indeed representative.

The provision of expertise and technology should support the process and not take over. Any documentation created should be simple and easy to use.

The underlying objectives and outcomes of this research were to;

1. Identify Environmental Management Systems potentially suitable for communities

This was achieved by reviewing currently available EMS and asking the question as to their suitability for communities. The identified EMS were, The Natural Step, ISO14001, Enviro-Mark@NZ and Green Globe 21 this research also suggesting two more categories of environmental management system that is the Vision or Issue led EMS and a Hybrid EMS.

The suggested format for any developed CEMS is a Hybrid system that is developed by the community for the community. A Hybrid system is suggested by this research as a way forward. This involves not defining the process initially but offering broad guidance and review tools to allow the community to develop a system that suits its specific needs.

2. Identify Communities utilising Environmental Management Systems both globally and within New Zealand

A review was performed of communities utilising the identified environmental management systems, this showed that a number of communities are utilising an

environmental management system to help focus environmental performance. The variation in these is significant and ranges from,

a) Formalised systems such as ISO14001 (Bartow County in the US) or Green Globe 21 (Kaikoura in New Zealand).

b) Less formalised programmes that focus on a specific issue or a particular vision that have less structure and are more organic in nature (e.g., Kinsale in Ireland).

The research into these communities was undertaken to identify how widespread the use of CEMS is globally. If we assess the level of uptake of CEMS as based on the number of reports or publications available on communities using EMS by far the two most used forms of CEMS are the Natural Step and Vision or Issue led EMS. (Note: This is a very unscientific gauge as it may just mean that papers or communication on the communities utilising other forms of EMS have not been published) It is interesting however that these forms seem the most prevalent as they are the least formalised and hence allow for the most adaptation. This supports the premise that CEMS need to be adaptive.

3. Critically analyse the present state of Environmental Management Systems for communities reviewing current research

The review of presently available EMS was undertaken to help identify the best option for communities looking to develop EMS. It is clear not only from the SWOT analysis used to review the Strengths, Weaknesses, Opportunities and Threats of each of the individual systems that the least formalised systems have distinct advantages and that a Hybrid system based on the best elements of the others would seem to be the best.

The review of the literature on community, business based EMS and organisational change literature identified that not only does the community need to develop strong ownership of the process but it needs to develop the structure as issues are identified.

Clear leadership and a shared vision are important to ensure that the programme has a high level of buy in. This is however tempered with the fact that you are dealing with a complex issue and conflict resolution will need to be included.

Understanding of community dynamics and demographics is important to ensure that the whole community is consulted. This also includes understanding if the community has the capacity for change and where expertise or knowledge is lacking this should be developed by identifying expertise within the community or bringing expertise in from outside the community.

Communication processes also need to be developed to ensure that you have a clear understanding of not only who your community is but how best to communicate with them.

Seeking a clear understanding of what the community believes is important is a significant factor.

4. Analyse system critics as a cautionary review to see if any lessons can be learnt for system designers.

The main cautionary note from this section of the research is that systems should not be developed for systems sake. There is a clear message that communities need to ensure that the system doesn't become determinant over the outcome.

System review and redesign needs to occur on a regular basis and the question asked, is the CEMS delivering the outcomes that the community want.

5. Identify critical factors to be included in a community based Environmental Management Systems.

The literature review to identify common themes or stated critical factors showed that there are indeed a number of factors to consider if you are to develop a successful CEMS.

The following bullet points outline the broad findings of this section of research and some key elements of system design,

- The level of success of these programmes is contingent on a number of factors which need to be considered carefully when designing or reviewing a CEMS.
- The level of documentation or formalisation of the CEMS is largely dependant on the type of community and should be decided by the community. Small communities may decide a more organic less formalised system works, for more complex communities a formalised system may help to understand the risks and co-ordinate the approaches.
- There is a need to provide simple guidance and have access to more technical expertise if needed.
- Conflict resolution processes need to be included.
- Stakeholder definition is required to ensure you have full community engagement.
- Defining roles within the community allows people to know who to contact and who is working on a specific project.
- All systems need to have simple access points for all levels of community and these should be linked to the demographics of the community as this may influence involvement by specific sectors of the community i.e. paper based versus electronic media as some people may prefer a paper based system.
- Systems work best when they are based on emergent theory and are designed with the process delivery and cultural aspects of the community in mind. Pre determining the process is counter productive.
- Systems need to be outcome focused and have clear milestones.
- Support, training and education programmes need to be included to ensure that the internal champions of the system are developed and those involved understand how they can fit in.

- Mechanisms for socialisation are important to develop understanding and internalisation of the CEMS as just the way we do things. Socialisation should also include inducting newcomers to the community about the sustainability program.
- Mechanisms for learning need to be included, the use of double loop learning i.e. critical questioning; testing, practicing and reflecting are needed to ensure that the community learns how to learn.
- There is a need to ensure there is a budget and that there is a clear process for individuals who want to champion a specific project to gain funding and resource. Projects need to be reviewed to ensure they are fulfilling on the community vision.
- The simpler the better, have simplified versions of any models used to help explain and introduce the CEMS.
- Keep groups as small as possible as this fosters innovation and allow for the development of fluid systems.
- Ensure you have considered social marketing and include this in any training provided.
- Development of a set of sustainability indicators is important to track progress and reflect on effectiveness of the CEMS.

6. Develop a framework for the development of an effective Community Environmental Management System.

It has become clear through the research that developing a fully defined framework for a community based EMS is not useful. Because of the complex nature of the communities and interaction involved is important to allow the community to develop the systems and processes themselves. It is however possible to assist communities when developing an EMS to look at common factors that others have included that could lead to a more successful process. It is also important to create simple overview frameworks to help individuals understand what the big picture is and what the community is trying to achieve. To this end a broad framework was developed based on the community asking three questions:

- 1) Where are we?
- 2) Where do we want to go?
- 3) How are we going to get there?

By asking these questions the community can start dialogue on the development of sustainability or community environmental management.

7. Develop a review checklist for community's to review their environmental systems against.

Based on the research and the commonly available EMS models a list of questions were developed (see appendix 2).

These questions can be utilised as a full system review for those communities that have already developed a CEMS or as a prompt to seed ideas for those developing a CEMS.

8. Discuss the outcomes with practitioners of community based EMS

The checklist was provided to representatives of the Project Lyttelton group at a morning tea. Feedback from this meeting suggested that the checklist would be useful as a system or community process review tool. Its main advantage was seen as its ability to seed ideas or help with brainstorming on particular issues and not as a checklist that you would necessarily sit down and fill out completely. This also fits with the rest of the research and the model of emergent theory and developing systems in specific areas when they are needed.

6 Recommendations

The following recommendations for communities undertaking any form of sustainability focused program or CEMS are,

- Develop systems for the community designed by the community.
- Learn from other systems and communities and ensure system developers have mechanisms to allow the community to learn to learn.
- Do not undertake “death by documentation” ensure systems are simple.
- Communities undertaking a sustainability program or CEMS should review their systems against the checklist provided either by,
 - Formally reviewing the checklist and writing answers, or

- using the questions as prompts when discussing specific elements of the CEMS
- Where a need is identified the community should develop a system that is simple concise and able to be adapted as ideas and information changes.
- The system should be trialled and feedback gained to see if any modifications are required.
- Communities that have an existing CEMS should ensure they have simplified models to use to explain the process and help to engage the community.
- Use the broad system criteria documented as part of this dissertation should be reviewed by communities as design criteria for their systems
These are;
 1. Ensure systems are outcome based and are driven from that outcome and have a charismatic champion, community cause or combined vision.
 2. Make sure system review is just that; a full review of the system elements including inputs, outcomes, process and the people involved to see that they still fit the purpose and that the purpose is still valid.
 3. Ensure teams are kept as small as possible and innovation is developed through allowing individual thinking and input.
 4. Deconstruct the system at regular intervals to allow rebuilding it as a more focused unit.
 5. Ensure that the elements of self criticism and evaluation are effective.
 6. Be careful not to over structuralise or professionalise.
 7. Ensure the structure has the ability to recognise and foster innovation.
 8. If the community's intent is to be ensured, new members need to be inducted and socialised into the structure.
 9. Language and structures need to ensure input from all.

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Appendix 1

What Environmental Management Systems are available?

Note: Simplified versions of these and references are contained in section 3.1 of this dissertation

1) The Natural Step

The Natural Step (TNS) is an international strategic planning tool that allows organisations and communities focus their planning on four system elements. The four elements have been agreed to by a collection of scientists and environmental experts as world system conditions that ensure the sustainability of the planet.

The Natural Step EMS is based on four system conditions that if fulfilled would lead to a sustainable planet

These are

- 5) In a sustainable society, nature is not subject to systematically increasing concentrations of substances extracted from the earth's crust.
- 6) In a sustainable society, nature is not systematically increasing concentrations of substances produced by society.
- 7) In a sustainable society, nature is not subject to systematically increasing degradation by physical means.
- 8) In a sustainable society, human needs are met world wide.

The premise of the Natural Step framework is a series of tools that allow individuals undertaking planning processes to review their proposals and programme of action against these system conditions to ensure that decisions are made based on sustainable outcomes

Within the TNS approach there is significant amounts of training material available that help individuals to understand ecology and environmental issues. There is also a process called back casting which is utilised to try and focus organisations and communities on sustainable outcomes by asking the questions about what a sustainable society looks like and looking back from that, what are some of the steps that could be taken now to achieve this in the future.

2) ISO14001

Is an internationally recognized framework and standard that outlines a number of areas that organisations or groups need to consider when developing an EMS these include

Note within this explanation organisation or business can be transposed to community

➤ **4.2 Environmental Policy**

➤ **4.3 Planning**

- Environmental Aspects (how the community interacts with the environment)
- Legal and Other Requirements (the legal and other requirements i.e. codes of practice that the community subscribes to)
- Objectives and Targets (the plan of action to achieve continuous improvement)
- Environmental Management Program (the central document or table that outlines the ongoing program of action, this is the community plan)

➤ **4.4 Implementation & Operation**

- Structure and Responsibility (who does what in relation to the EMS and within the community structure)
- Training, Awareness, Competence (enabling the community to understand the process and have the skills to complete projects)
- Communications (how communication about the EMS and information gathering for the EMS is achieved)
- EMS Documentation (The type of documents included in the EMS there purpose and function)
- Document Control (the way documents are issued and controlled within the structure of the EMS)
- Operational Control (how activities are controlled to ensure that the EMS outcomes are achieved specific attention is given to those activities that pose the greatest risk)
- Emergency Preparedness and Response (emergency preparedness that focuses on the environmental impacts of emergencies)

➤ **4.5 Checking & Corrective action**

- Monitoring and Measurement (how you check that the program of action is on track and any improvements are logged)
- Non-Conformance, Corrective and Preventive Action (how you identify any problems, what you do to fix them and how you stop them happening again)

- Records (what information is recorded as part of the EMS and the documents that are produced)
- EMS Audits (checking that what you say you are doing is in fact happening and looking for improvements to existing systems)

➤ **4.6 Management Review**

Top level review of the program and all its elements to ensure planned arrangements are being completed and appropriate resources are available, they also review the overall direction to ensure that this is appropriate. In the community context this would need to be completed by the community steering group.

An EMS developed utilizing this tool relies heavily on the robust development of an Environmental policy or community vision. The developed policy drives the flavour of the EMS and acts as a public statement of the intent of the organisation, the development of all of the elements of the EMS then considers this policy and how the organisation is going to show it is fulfilling the requirements of the EMS and associated documentation

3) Enviro-Mark®NZ

Enviro-Mark®NZ Is a step wise Health and Safety and Environmental Management tool

The certification process has five levels

- **Bronze** level includes compliance with specific Health Safety and Environmental Legislation.
- **Silver** level involves the development of commitment including documenting an environmental policy and consideration of environmental impacts.
- **Gold** level involves the development of a continual improvement programme and emergency preparedness.
- **Platinum** level requires the organisation to develop competence by documenting structure and responsibilities. Developing training and communication programs are also requirements.
- **Diamond** level ensures that the organisations are at the level of ISO14001. This level includes control of documentation, records, audits and reviews.

The process contains all of the elements of ISO 14001 but also includes Health and Safety compliance and resource efficiency as a targeted process to achieve continuous improvement. It is also differentiated from ISO14001 in that there is a requirement to be legislatively compliant whereas ISO 14001 has a statement relating to showing the intent to be compliant. As such you can show progress to legislative compliance and still achieve ISO14001 whereas you must have legislative compliance to achieve Enviro-Mark®NZ Bronze certification.

4) Green Globe 21

Green globe is a globally recognised benchmarking and certification program for sustainable tourism and communities. It is designed around the Agenda 21 protocols developed as part of the Rio De Janeiro Earth summit and is focused on Travel and tourism companies and communities

They have a community based standard called Green globe Community/ Destination Standard and this includes a number of elements including

1) Community Authority

- To ensure that the organisation or people developing the system have appropriate authority formally mandated
- Be accountable to the community

- Establish a framework and support resources to achieve sustainable environmental, economic and social performance.
- Utilizing Green globe benchmarking Standards and performance criteria to be able to compare with other communities
- Develop improvement targets
- Maintain a record and report on annual performance against the criteria of the strategic plans

2) Regulatory Framework

- Develop systems to ensure the community is compliant with relevant local and national laws

3) Environmental and Social Sustainability Policy

- Prepare a policy that is appropriate to the location, nature, environmental, social and political context of the community
- Commitment to consultation and participation and any agreements the community subscribes to
- Commitment to tourism leadership in achieving sustainability outcomes
- Agreed to the world tourism code of ethics
- Agreement to year on year improvements in the green globe benchmarking criteria
- Commitment to adopting and promoting a social sustainability policy
- Have a preference to give employment or purchase locally

4) Environmental and Social Sustainability Planning Systems

- Develop a community Sustainability strategy or plan
- Define the key sustainability issues with help from the guidance documents of green globe and its benchmarking including a specific tourism focus and development issues
- Corrective and preventative action programs
- Community level environmental and social performance criteria
- Define accountabilities
- Ensure all planning tools include guidance for sustainable development
- Provide training for members of the community accountable for collection of benchmarking data
- Retain records for 48 months

- Asses the impacts of planned accidental or emergency situations
- Undertake reviews of the effectiveness of the plans

5) Environmental and Social Sustainability Performance

Assess the performance of the community in the following areas

- Green house gas emissions
- Energy efficiency, conservation and management
- Management of fresh water resources
- Ecosystem conservation and management
- Management of social and cultural impacts of tourism
- Tourism land use planning and development
- Local socio- economic benefits of tourism
- Air quality protection and noise control
- Waste water management, drainage and streams
- Waste minimization, reuse and recycling
- Storage and use of environmentally harmful substances
- Cultural heritage conservation
- Benchmark and record the community's environmental and social performance using Green Globe sector benchmarking tools
- Establish staged and achievable improvement targets
- Increase positive impacts
- Develop a written program to implement improvements including objectives and targets with clearly defined responsibilities and deadlines
- Bench mark against the green globe benchmarking assessment report
- Develop some community specific benchmarking indicators

This process is largely Tourism based

5) Vision or Issue led sustainability programs

Vision led sustainability programs are sustainable development or environmental management programs based on a vision or identified charismatic champion. An issue led programme is characterised by the development of a programme based on a specific cause or environmental issue that doesn't necessarily have large amount of system attached to the process.

These programs normally include community action against known environmental threats or sustainability programs based on a specific defined piece of information like an area of natural beauty that captures the public's imagination such as the protesting and development of programs of action based on the solid energy mining on the West Coast of the South Island of New Zealand (2006)

6) Hybrid systems

A Hybrid system is defined by the author as development of an Environmental Management System for a community that learns from the experience of other systems but is designed by its nature to be reflective of what is important to the community. The community only develops systems or documented procedures when and where they add benefit to the community or help to guide or provide information to the community. It is a derivative and adaptive process with a broad structure based on a plan do check review process, It is designed to be simple to understand.

A suggested framework for this is suggested as asking a series of questions that need to be answered by the community

- 1. Where are we?**
- 2. Where do we want to go?**
- 3. How are we going to get there?**

Within each of these major sections other elements of standard environmental management systems will be included where appropriate (i.e. scope, stakeholders and key indicators) and details developed to ensure that they fit not only EMS best practice as identified by subsequent research but also take the best elements that have already been undertaken by the community i.e. the history of Environmental Management within the community and past performance.

The process is designed to be simple and ways the community can interact with the process clearly defined.

Appendix 2 Critical factors

Note: this checklist is a distillation of themes contained in the body of this dissertation for references to the questions origins read the body of the report

Context for review:

When going through this checklist you are reviewing your systems from your experience and this should be done with the view to identifying gaps or areas to explore;

As you read, develop the mind set of what would your community look like if you had a clean page and were designing a process to deliver sustainable outcomes?

Checklist for system review

System overview	Common system topics	Question to answer during review	Answer	
How did you decide the boundary's of the community	Scope (defines the boundaries of the EMS)	Have you defined the scope of the EMS or sustainability programme? I.e. what does it cover and what doesn't it cover?		
		Is it is clearly defined?		
			Are there any factors that helped to define the boundaries?	
		Stakeholders	How did you decide who to involve?	
			Was there any review or assessment of who needed to be involved?	
			How did you work with and Share information with other interested groups and communities?	
			Have you reviewed the stakeholders you are communicating with to ensure you have the community demographics covered?	
			Is there a forum for all to comment?	
			Have you identified the community's driver for change?	
			Have you evaluated the community's capacity for change?	
	Legal and other requirements	Was legal information included in the Programme?		

System overview	Common system topics	Question to answer during review	Answer
		Do you ensure that participants were aware of the legal framework of the community?	
		Do you ensure that participants were aware of the legal framework of projects?	
		Do you encourage them to gather or provide information on this?	
		Do you include Local, regional and central government driven initiatives?	
	Environmental / Sustainability / aspects / impacts	Did you create a list of the activities and impacts of/ for the community?	
		Did you undertake any benchmarking or comparison with other communities?	
		<p>Have you included the following in your sustainability programme?</p> <ul style="list-style-type: none"> • Sustainability forecasting or back casting • Encouragement of community cohesion • Protection of waterways • Considerations when changing land use • Managing discharges to air • Managing discharges to land • Managing Transport • Protection and restoration of sensitive receiving environments • Communication reviews 	

System overview	Common system topics	Question to answer during review	Answer
		Did you decide the order of magnitude or significance the impacts?	
		Do you have systems in place to influence consumer behaviour?	
		Do you have systems in place to deal with all types of waste (in the community)	
	Measuring and monitoring baseline / sustainability indicators	Do you have a clear idea of the demographics of the community?	
		Is there any capacity or projects that are designed to measure an environmental baseline?	
		Does your programme measure? <ul style="list-style-type: none"> • Water quality • Air quality • Biodiversity • Energy use • Waste produced • Transport issues • Changes in community make up • Community participation 	
		Have you gathered information on the history of the area?	
		Have you included any past environmental programmes or reports in current systems I.e. learn from your past?	
	Records	Is there a process for gathering information?	
		Do you have someone who is responsible for collecting data?	
		Is there a process for recording information?	
		Is there a process for giving the community information?	

System overview	Common system topics	Question to answer during review	Answer
		What are the main forms of communication with the community?	
		How well does this work?	
		How could it be improved?	
How did you decide where the community wanted to go?	Environmental policy / vision development	Is there a community policy or statement of intent?	
		Have the community agreed on a definition of sustainability?	
		Was this developed by a representative group from the community?	
		What % of the community was involved in the development of this policy?	
		Are the outcomes clearly defined?	
		Does your vision engage and is it exciting (do you get unsolicited help and support)?	
		Have there been any historical attempts to bring about change?	
		Could information from these be used as part of this process?	
		Are there any issues associated with this process that you will need to deal with before the community will listen to the new ideas?	
		Is it clear that you are developing new community traditions?	

System overview	Common system topics	Question to answer during review	Answer
	Setting objectives / identifying projects	How are objectives and targets (projects) chosen?	
		How do you identify the big issues?	
		Have you defined responsibilities for key roles?	
		Do you have a community structure map including the wider context of the community such as regional and local councils?	
		Has cultural change been included as an aspect of your CEMS?	
		Are projects evaluated on their merits i.e. cost benefit, sustainability or outcome focus?	
		Is there a project review panel?	
		Do you have processes to modify consumer behavior based on sustainable futures?	
		Do you have a purchasing policy that reviews environmental performance?	
	Setting performance objectives or mini visions	Do you define projects and their link with the environment?	
		Have you identified those people in your community with expertise?	
		Do you have champions to help communicate the program widely?	
	Communication of plans, gathering information	Do you define how information is collected and communicated?	
		Do You have a Web site? And does the environmental vision feature?	

System overview	Common system topics	Question to answer during review	Answer
		Do You have Newsletters or mail outs?	
		Do you use local media for communicating?	
		Do you undertake public talks and presentations?	
		Do you have representation at markets and community events?	
		Do you have electronic mailing lists?	
		Have you Linked communication methods to a stakeholder list and asked how they wish to be communicated with?	
		Do you gather information on the natural environment?	
		Are there any areas of significance in the natural environment?	
How did you decide how you were going to get there and how do you know when you have arrived?	Targets	Did you create aligned common vision and commitment by stakeholders?	
		Do you keep the vision in place?	
		Do you Identify realistic targets and timelines?	
	Group interactions	Do you have smaller groups working and formed to complete specific projects?	
		Have they created their own vision statements?	
		Does their vision feed into the overall community mission?	
		Do you have a check to ensure projects are ethical?	
		Is each group objective clearly defined?	

System overview	Common system topics	Question to answer during review	Answer
	Communications	What type of communication mechanisms have you developed?	
		How well do they work for gaining and maintaining commitment?	
		What sort of communication processes exist to help the community to understand and report back on progress?	
		Have you developed a communication matrix outlining how when and what?	
	Building capacity	What organisations / organisation are driving the environmental improvement programme?	
		What education processes exist for the community on environmental management or the organisation driving it?	
		What opportunities exist for participation?	
		Is there strong links and partnerships?	
		Are the education programmes accessible by all? (targeted at 12 year olds)	
		Are people able to set their own pace for training?	
		Are the community strengths well known?	
		Is there a mechanism for celebrating the successes?	
		Is involvement in the environmental management system Intergenerational?	
		Do you have processes for knowledge sharing?	
		Do you Link research, policy and education?	

System overview	Common system topics	Question to answer during review	Answer
		Do you have systems to help groups socialise?	
		Do you have a space where people can meet?	
		Have you identified rewards for best practice?	
		Is there a process for welcoming new entrants to the community and letting them know about the programme?	
		Do you practice double loop learning i.e. learning as you go along , developing theory's , practicing , reflecting on the outcomes and redesigning the process?	
		Would you say you are developing an enabling environment?	
	Resources	Are there mechanisms to help and support members of the community to undertake projects and make the right decisions for the sustainability programme?	
		Is there a help line or a way that people can get more information?	
		Is there funding available for projects?	
		Is there a simple way people can get more help?	
		Are the resources available easily understood?	
	Documentation and record retention	Is there an archive of projects, meetings minutes etc?	
		What are the ways that information is stored?	
	Reviewing performance	Is there review processes?	
		How is this process kept on track?	

System overview	Common system topics	Question to answer during review	Answer
		How do you know you are heading in the right direction?	
		Are your activities fluid and can you change direction easily?	
	Mechanisms for problem solving	What happens if it goes wrong? Do you have procedures to get the process back on track?	
		Are there people to fill in and help if the project needs more resources?	
		Is there funding for the programme?	
		How many full time equivalents does it take to keep the process alive?	
		Is there a help line for those involved to get their technical problems answered?	
	Redesign	Do you have a process where you pull the system to pieces and redesign it at regular intervals?	
	Fun	Most important do you have fun 😊	

Appendix 3 Acronyms used

CEMS = Community Environmental Management System for the purposes of this report a community environmental management system covers the full spectrum from small projects driven by a community vision through to fully certified and formalised CEMS based on a recognised standard i.e. ISO14001

EMS = Environmental Management System

ESS = Environmental Sustainability Statement