RESOURCE MATERIAL

PATHFINDER SPECIALIST AWARD

SROOPS002

Plan for Minimal Environmental Impact

Resource Material

April 2010

Resource material for the Pathfinder Specialist Award.

The Resource Material, Review Booklet and Assessment tools were produced by the Seventh-day Adventist Church Youth Ministries of the South Pacific Division (SPD). We acknowledge Angela Brown, Les Barker and Roger Pengelly who contributed to this resource as well as John Wells who led in the reshaping and rewriting with the assistance of a number of other experienced leaders. An editorial team brought the task to completion. We wish to express our deepest thanks to them all.

Contents

Orientation

Welcome to the Resource Material for SROOPS002 Plan for Minimal Environmental Impact.

Purpose

This unit covers the knowledge and skills required to plan outdoor activities to ensure that minimal environmental impact occurs.

The Resource Material

The Resource Material contains the essential information to meet the competencies outlined for this unit. It should help you to:

- Gain a comprehensive understanding of what needs to be considered when planning activities in the environment to minimize impact.
- Understand the issues relating to applying the acquired knowledge and skills in the context of Pathfindering activities.
- Prepare for the PSA training/review/assessment program.

A basic Review Booklet has been developed for this unit. It contains a small number of worksheets that, once completed, provide evidence that you understand the material. The Review Booklet needs to be completed before the assessment and forms part of the requirements to gain competence in this unit.

Note: If you have any questions, please consult your District Director or your local Conference/Mission Youth Department.

What Additional Resources Do I Need?

- None.

What Do I Need to Bring for the Training/Review/Assessment Program?

- Resource material (if received beforehand).
- Review Booklet (completed, if required).
- Pencil/pen.
- Any other resources or equipment as specified by your Assessor.

How Will I Be Assessed?

At the Conference/Mission training/review/assessment program your competency will be assessed by one or more of the following methods:

- Written/oral questioning.
- Completed Review Booklet.
- Simulation activities.
- Project/assignment.
- Practical demonstration.

Reassessment Process

- You will be given the opportunity for reassessment if you are not found competent.
- There will be no limit to the number of opportunities for re-assessment.

Appeal Process

If you are not satisfied with your assessment you can:

- Discuss the issue with your Assessor.
- Discuss the issue with your District Director.
- Request the mediation of another Assessor.
- Report your concern to the Conference/Mission Youth Director.

Consistency in Performance

This unit must be assessed after the demonstration of completing three Environmental Impact studies at different locations.

Unit Outline

The Unit Outline below summarises the requirements (Elements) of this unit. Each Element requires completion of various tasks (Performance Criteria).

SROOPS002	Plan for Minimal Environmental Impact
OPS	Field Operations

DESCRIPTION: This unit has been developed for the Outdoor Recreation Industry Training Package. It has been adapted to meet the needs of activities conducted within the framework of the Adventist Youth Ministries. The material has been presented for delivery using the Competency Based Training (CBT) method.

This unit covers the knowledge and skills required to plan outdoor activities to ensure that minimal environmental impact occurs. The planning requires consideration of the appropriate combination of an activity with a setting. This involves the learner making informed decisions about the selection of settings and the conduct of the activity during the planning phase.

Element	Performance Criteria
1. Identify the interrelationships occurring within a natural environment.	1.1. Identify key ecological concepts and their relationships within natural ecosystems. 1.2. Determine natural processes and interrelationships occurring within natural environments. 1.3. Identify the manner in which interrelationships between natural processes can be affected.
2. Identify sources of environmental impact.	2.1. Determine human impact through recreational activities on natural processes and interrelationships. 2.2. Determine aspects unique to a specific environment. 2.3. Identify sensitive areas after consultation with appropriate authorities. 2.4. Source information on the types of environmental impact likely to occur during specific outdoor activities in specific locations. 2.5. Determine uses for land and water resources.
3. Identify sources of social impact.	3.1. Identify other uses of a particular site/location and discuss possible implications for outdoor recreation and the resources. 3.2. Assess whether particular settings offer appropriate recreation opportunities by examining the nature of the activities and matching this with the characteristics of the settings. 3.3. Source information on the types of social impacts likely to occur during specific outdoor activities in specific locations.
4. Plan for minimal impact.	4.1. Identify current management strategies implemented by resource managers for environmental asset management. 4.2. Source appropriate information from authorities, landowners and/or custodians in order to identify the parameters of use. 4.3. Demonstrate compliance with resource management principles

	and policies when planning the activity location/site. 4.4. Demonstrate consideration of suitability and appropriate use of a specific recreation setting for the proposed outdoor recreation activity.
5. Implement methods to minimise impact.	5.1. Plan and conduct activities in a manner which minimises environmental impact. 5.2. Comply with policies and management plans relevant to the activity area. 5.3. Develop activity aims in order to achieve minimal impact. 5.4. Communicate unique aspects of a setting and specific impacts likely to occur during an activity to other participants in the activity. 5.5. Adopt and model a positive and caring attitude towards the natural environment throughout activities. 5.6. Demonstrate cooperation and consideration towards other users in settings where multiple use occurs.
6. Monitor and review minimal impact practices.	6.1. Identify basic techniques to determine the nature and degree of impact. 6.2. Evaluate the effectiveness of personal minimal impact practices using basic techniques. 6.3. Modify impact reduction strategies, where necessary, after evaluation.

Introduction

This module introduces you to the knowledge, skills and attitudes required to limit negative impacts on surrounding natural, social and cultural environments when planning and conducting outdoor activities.

A Biblical Basis

Our own spiritual beliefs can affect how we treat the natural environment. Accepting that God created the earth for our enjoyment and wonder as well as for our survival implies that we should respect all of creation. One of the first responsibilities given to people was to care for the plants and animals on the earth.

A strong theme running through the Bible is that of God wanting people to live in their own 'special' or 'promised land'. This trend is clear from creation and the Garden of Eden through to heaven, where at last we will live in perfect harmony with nature. Throughout the Bible there are numerous examples of nature being used to display the wonder and awe of God's power, love and care for people.

The Biblical Principles of Environmental Care

- God created our world and everything was declared good. Gen 1:1-31
- Man was asked to be 'master' and to 'subdue it' in the sense of 'tending and caring for it'. Gen 1:26, 28; 2:15
- Sin affected the world that we live in:
    - Serpent cursed to the ground. Gen 3:14,15
    - Environmental impact of weeds. Gen 3:18,19
    - Fear between man and beast. Gen 3:21; 4:4
    - Man's attitude led to the flood. Gen 6:5-7,17,18
- God cares for the world of nature
    - Organised a rescue mission to save the living creatures of the world from the flood. Gen 6:18-21
    - Cared for the land. Deut 11:11-15
    - Looks after the common birds. Mt 6:26, Lk 12:24
- The outdoors is a place for meditating about God. Jesus did it in his time on earth. Mk 1:35, Lk 4:42
- The world of nature reveals Gods love. Ps 8:3,4; 19:1-3; 36:6; 107:24; Job 12:7-12; Prov 6:6-8; Rm 1:18-20

As one Christian writer has said "'God is love', is written upon every opening bud, upon every spire of springing grass. The lovely birds make the air royal with their happy songs, the delicately tinted flowers in their perfection perfuming the air, the lofty trees of the forest with their rich foliage of living green, - all testify to the tender, fatherly care of our God, and to His desire to make His children happy."[1]

We have a Christian responsibility to have a balanced attitude in the caring process of the environment. We need to balance the reaping of fruits, with care and protection of the world of nature.

[1] Ellen G White. Steps to Christ. P10

We must never forget that nature illustrates God's love.

As leaders, we do not want the powerful witness of God's love destroyed by our selfish, insensitive attitude to the world of nature. We want to preserve our amazing natural environment because of the impact it has on our relationship with God. We want our children to see the beauty of the creator and to accept the power of his salvation.[2]

[2] See Appendix and the Seventh-day Adventist Environmental statement

CHAPTER ONE: Identify Interrelationships in the Natural Environment

The world of nature is like a big family. Every part of the family has a place or role to play. It has been this way since creation. Even though sin has come and changes and adaptations have occurred, the world of nature still interrelates with each of the players in a region or environment. This chapter introduces the basic terms and concepts that we need to understand as we become involved in outdoor adventure activities.

Some of the basic Environmental terms are:

Adaptations

This is where a living entity is able to survive in changed community conditions. Some plants and animals are able to accept the spread of suburbs. The bush curlew, a bird in Northern Australia is an example, surviving in spite of the drastic change to its community.

Biosphere

This is the earth's relatively thin zone of air, soil and water that is capable of supporting life. It ranges from the deepest ocean floor to about 10km into the atmosphere. The life in this zone depends on the sun's energy and on the circulation of heat and essential nutrients[3]

Change

This is when an ecosystem is affected by a natural change such as climate. This change usually takes place gradually and the community members respond to the change by adapting or dying out.

This change may also be caused by the change of predators to the plants (eg, rabbit, mice plague etc) introduction of weeds (eg. lantana or prickly pear) or the introduction of other animals (eg, cane toads).

Change may be the result of human impact (eg, mining, building sites, farming methods etc).

The worst result of change is the total loss of a habitat.

Community

An interacting group of various plants and animals in a common location, eg, a forest of trees and undergrowth plants, inhabited by animals and rooted in soil containing bacteria and fungi.[4]

Conservation

This is "a planned management of a natural resource or the total environment of a particular ecosystem to prevent exploitation, pollution, destruction or neglect and to ensure future use of the resource".[5]

[3] Nature of Biology Book 1 written by Judith Kinnear pp 178
[4] Based on Encyclopedia Article (2000) "Community" and "Biosphere"
[5] Encyclopedia Britannica 2000 article. "Conservation"

Cycles

In any ecosystem, the various organisms depend for survival on each other and on their surroundings. Organisms obtain the matter they need to build their organic substances from each other and from their surroundings. Matter (such as carbon atoms, nitrogen atoms, etc) cycles within any ecosystem and is reused.[6]

Diversity

This refers to the range of living things within an area.

Ecology

This is the study of the relationships between organisms and their environment.[7]

Ecosystems

A collection of living, or biotic, organisms (plants, animals or both) that live together in a specific location, and interact with their non-living, or abiotic, environment (eg. rocks, soil, air, water, climate, minerals, etc). Ecosystems may be natural or manmade. All of the parts (living and non living) can be linked together by a flow of energy and flow of nutrients (food chain).

Energy Flow

This is demonstrated in the food chain for a specific ecosystem as shown in Figure 1.1. Each step (from producer to consumer) involves a 5% – 25% transfer of stored energy and nutrients. eg.

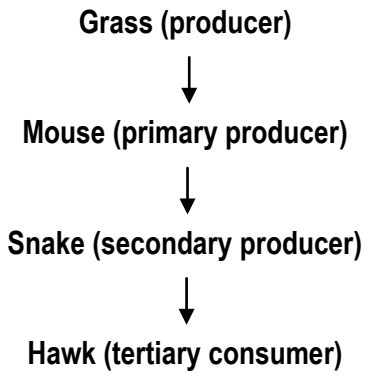

Figure 1.1: Food chain for a specific ecosystem.

A complete food chain includes the decomposers as illustrated in the Figure 1.2.

[6] Nature of Biology Book 1 p129
[7] Encyclopedia Britannica 2000 article. "Ecology"

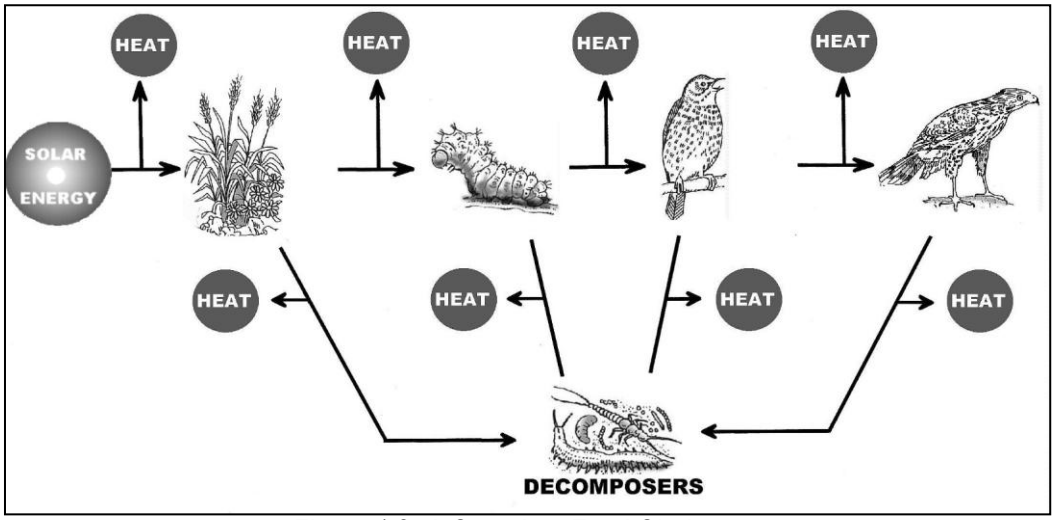

Figure 1.2: A Complete Food Chain.

At each point of transfer from one position in the food chain (trophic level) to another, there is not only energy and nutrient flow but there is also heat loss (up to 90%). This means that food chains do not generally go beyond five levels because there is nothing left for the top consumer (the hawk, crocodile, shark, etc).[8]

Inter Relationships

This refers to the way different living things interact and exist together in specific locations and space (e.g. the plants and animals that make up the mangrove ecosystem – the mangrove trees, the tidal ocean, crabs, shells, fish, birds, mud, silt, etc.)

Environment

The term environment not only applies to ecology but also refers to the significant sites where humans have created community in the past, and which we can still learn from. Aboriginal, Torres Strait Islanders and early Australian historical sites are included in the concept of the environment.

Another extension of the term refers to how we treat and respect the wishes, beliefs and outlooks of other people. This especially applies in an outdoor recreational setting when we are co-using outdoor facilities such as camping sites or activity specific sites.

The AO SPD Operations Manual outlines these factors:

Follow the golden rule "Do unto others what you would have them do unto you".

"When conflicts arise, choose the higher ground as defined by Biblical principles".[9]

[8] Based on Encyclopedia Article (2000) "Ecosystem"
[9] NAOATAC Operations Manual 2002. NAOATAC Code of Ethics

Natural Environment

This refers to all of the specific outdoor adventure environments that we use, eg.:

Bush – bushwalking, camping, 4WD

Rain Forest – Bushwalking, 4WD

Rivers – Canoeing, white water rafting, camping

Lakes – Canoeing, fishing, waterskiing

Ocean – Canoeing, sailing, surfing, fishing

Cliffs – Rock climbing, abseiling

Caves – Caving

Desert – Walking, 4WD

In the natural world where our adventure activities take place, we have a Biblical responsibility to be the stewards of that which God has given us. When having fun outdoors, we need to be aware of the food chains that are operating within that environmental community. Every intrusion has an effect, and this unit explores how we can care for the natural world and then use this to point people to the creator.

CHAPTER TWO: Sources of Environmental Impact

Every time that a human being has entered anywhere into the world, they have made an impact. Every city, road or house block was originally a natural environment. But humankind has left definite imprints wherever they go. This chapter looks at what the impact is, how we can identify sensitive areas and who is able to help us guide and monitor the impact.

We need to be aware of the different ways that humans affect the environment. If we are aware of these things then we can plan our recreational impact to have the least effect on the environment. Some of the different ways that human beings impact a natural environment include:

1. **Soil** – When we step off the pathway we immediately affect the soil that we pass over. Each step compacts the ground. A greater number of users increases the amount of impact on an area. It very quickly compacts into a no-grow zone. It can become a channel where the run-off from storms creates erosion. Camping in the one spot for more than one day kills vegetation and changes the structure of the soil. Any digging carried out by campers may affect the uniqueness of the soil structure. Soil can also be carried away on shoes or feet.

2. **Vegetation** – Trampling and breaking of vegetation by hikers, and tearing away of branches, undergrowth etc has an effect on vegetation. It opens up the area for the possible introduction of weeds. Impaction of the soil by walkers has an effect on vegetation also. Abseiling and rockclimbing can have an effect on the fragile inhabitants of sites that we use. Canoeists may damage vegetation on entry and exit points from the lake, sea or river.

3. **Pollution** – Rubbish including food scraps, papers, bottles and human body waste can impact on the environment both visually and ecologically, eg. by creating new homes (bottles), causing damage to animals (plastic bags kill turtles), and changing soil structure (human body waste or scraps). Soap, detergent and toothpaste all have an effect on water, as do poisons such as insect sprays and petrol.

4. **Disturbance of fauna** – Any clearing of vegetation whether alive or dead has an impact on the area, either by removing someone's home or creating new space for others, thus changing the balance. Camping for long periods of time makes a major impact in one area. Camping too close to water supplies affects the movements of wildlife. Making too much noise will affect many animals. Even our body odour will chase some animals away. Feeding of animals either directly or by leaving rubbish will increase populations of some animals to the detriment of others, and may even make some animals dependent on being fed instead of hunting and gathering.

5. **Geology** – Erosion can be caused by factors such as the loss of vegetation due to camping, hiking, clearing or using a site more than once. A cliff face could be changed by the inclusion of bolts or constant removal of small stones through slipping climbing shoes.

6. **Fire** – Campfires leave scars use up wood in a location, create heat in localized soil areas and leave ashes behind, as well as the damage caused by larger fires.

7. **Introduction of new fauna and flora** – Seeds may be carried on clothing to a new site. Human waste may also contain seeds that take root. An example is blackberries.

8. **Graffiti** – This should not be a problem caused by experienced outdoor users. We need to be alert to people in the group who do not appreciate the impact that this has on the visual beauty of the bush.

Sensitive Areas and Their Unique Aspects

A sensitive area is any part of the environment that is unable to adapt to any major change. We need to be alert to the uniqueness of these areas, and take this into consideration when researching a site. These things may include the following:

- **Vegetation** consists of the trees, plants and flowers that live in an area. If they represent a special type of habitat then we need to be very sensitive to our impact on entering the area. These include:
  - Wetlands
  - Rainforest
  - Heathlands
  - Arid regions
  - Coastal regions
  - Brigalow forests

  Any area that has plants that are endangered is a significant area.

- **Animals and birds** rely on specific conditions for life. Some are very tolerant of the intrusion of people. Others are very vulnerable to any changes to their habitat. Anywhere that animals and birds are struggling to survive makes the area a place to be protected.

- **Geographical features**. These include specific geological formations. It may be a cave that has special features which are easily destroyed by people who visit. It may be some delicate or fragile rock strata that have been exposed.

- **Historical features**. This may be significant for the Aboriginal, Torres Strait Islanders or the early history of the pioneers. Each of these features is significant and needs to be protected and respected due to their significance in remembering the past. There may be an archaeological site in the area that should be avoided or only entered respectfully with permission.

- **Water source**. A water hole may be the only regional source of water. It is not a place for camping near or swimming in.

- **Farmland.** The farmer's cattle or sheep need to be respected. The farmer's income is based on the care of these animals. Recreational users need to treat these animals in such a way that it does not lessen their value at the market. Some basic guidelines are:

  - Only cross farmland if you have permission from the farmer
  - Always leave gates as you find them
  - Avoid scaring any groups of cattle or sheep. Walk the long way around herds of animals.

Sources of Information on Environmental Impact in a Region

When you are considering a region for a recreational activity you need to consult the people who know the area and are able to give you advice on the possible impact of your activity. These sources include:

- **Landowner** – These people would be the first sources for finding out about the possible unique features of an area and how to manage them.

- **Farmer** – He will protect his property from loss of feed or the introduction of unwanted weeds.

- **Manager or Ranger of a National Park or Reserve** –He will give clear guidelines about the use of the resources in the park. Each area has a Management Plan for that area. You can read these on the NSW National Parks and Wildlife website. They will be protective of any Historical Sites that are relevant to Aboriginals or to the Early Pioneers.

- **Aboriginal or Torres Strait Islander custodians -** These people can give guidance to areas that have spiritual significance in the region. This is especially so if you are camping in wilderness or remote regions of Australia.

- **Miners** – Managers will be able to warn you of any dangerous areas or advise you of areas that are safe to enter.

- Other sources of information include:

    - **Other community people, eg.** the local council office or the local tourist information centre.
    - **Internet** is a great source of information about different regions.
    - **Guide books** This information is very useful but may be outdated.
    - **National Trust** is able to help with historical matters.

CHAPTER THREE: Sources of Social Impact

Environmental Impact affects more than just the flora and fauna in an area. It also impacts people. The environment is of great importance to the Aboriginal people, but also to people who use or live on the land. When planning for a recreational activity, you must include the possible social impact of the activity. Who are the other users of this area? What possible impact would the recreational activity have upon them? What are the resources to be used?

Possible resources include the following:

- **Water** is a vital resource in any setting as a source of community drinking. Rivers and artesian water supplies are used by farmers for animals or as a source for crop irrigation. Oceans are used by mussel, trout or pearl farmers. Their presence may affect the route taken when canoeing around the coast or along a river.

- **Space** for achieving the recreational activity. If a particular rock is popular with abseilers and rockclimbers, then both groups need to be considerate of each other. If an area is used by the army and camping groups, then again there needs to be understanding between the groups and a respect of each other's needs.

- **Huts** are important for different groups of people, eg. hunters, fishermen, cattlemen, hikers and outdoor people looking for a quiet, peaceful place to rest. These different expectations for using a hut need to be allowed for.

- **Fires** and wood for fuel is an ongoing issue, as camping and fires traditionally go together. The use of fires is already banned in high usage areas. Some parks allow fires only in designated places and supply the firewood. Another method is to insist that firewood be collected outside a certain boundary in order to spread the impact of firewood collecting. A group must follow any regulations that the land owner has put in place. If you are in an area where fires are acceptable, then there are some basic guidelines to follow. These include the following:
    - Only use a fire if you have a permit or permission from the land owner
    - Establish the fireplace on sand or hard ground (rock) if possible.
    - Keep the fireplace to the size that you need. No bigger than the capacity for you to be able to extinguish it.
    - Use only small sticks that can be broken by hand.
    - Establish a cleared area about 4 metres around the fire.
    - Burn all wood and coals to ash.
    - Fireplace must be cold to touch before you leave
    - Scatter the ashes so that the fireplace is not visible when you leave.

  Gas burners are now often used for cooking as they are simple to use. A small fire may then be lit to sit around and fellowship. Another option is to use a collection of candles then clean up the wax. Fire usage will always be a source of tension with users of the outdoors. The carrying of a small lantern may help to provide a focus for fellowship.

Others who we may have to share the resource with include:

- **Miners** – Many OH& S issues are associated with mining. These include blasting at the mine site, site entrances, heavy machinery and unmarked cliff faces or piles of loose rocks. Gold mines also include the use of poisons to extract the mineral. Mines and outdoor enthusiasts need to consider each other. The bushwalker needs to be aware of the mine location and avoid it.
  Unmarked mine shafts from a previous mining era may also be a hazard to bushwalkers. These sites may be marked on topographic maps or identified by the landowner.

- **Farmer** – Cattle and sheep farmers are very sensitive to strangers wandering on their property. You must respect farmers by gaining permission. You must practise the country code and leave gates as you find them, avoid animals as much as possible and cross fences by going through them or over a fence next to a post.

- **Agriculturalist** – Again it is vital to have permission to traverse their property. It is very important to follow the directions given when going through a property so as not to affect the crop or disrupt the operation of the farm.

- **Hunters** – These may be hunters using either guns or bow and arrows. It is important to find out whether hunters use an area. Generally the property owner knows if hunters are around on the property because they will also have to get permission. It is important to stay together, move with a lot of noise, and wear or display bright, non-animal colours.

- **Other recreational users** – Popular resources such as rock faces can have a number of user groups who have no idea of each other's plans. This means that the groups need to discuss their goals for the day and negotiate how they can function together. Often groups adapt their intentions and plan different times for their activity so that everyone can achieve their goals, eg. in Townsville, North Queensland, Pathfinders negotiate the use of rocks with other abseilers and rock climbers, and with private, professional and army groups.

- **Cultural purpose** – Respect the wishes of the landowner or the culture carers and avoid using those sensitive areas.

- **Tourism** – This is where the recreational user needs to respect the needs of the tourist. They are there to enjoy the beauty or purpose of the location. Their intention is totally different. Because we support the local community, we would want to make sure that tourists gain the maximum experience from the site and so encourage others to come and visit. We are to conduct ourselves in such a way that whatever activity we are doing has minimum impact on the tourist.

- **Conservationist** – We need to support the work of these people. Try not to interfere with any research being conducted. If we are able to help this would be excellent.

- **State, Territory and Federal uses** – You may not gain permission to cross some of these lands due to their designated use. In NSW, you are restricted in your use of lands that surround Water Supply Catchment areas. In areas used for army training,

the caretaker must be notified and permission sought, so that army personnel may negotiate with groups to access terrain.

When considering a place for an outdoor activity you need to consider whether the location suits the purpose of the adventure. If you wish to rock climb on the Three Sisters in the Blue Mountains it would not be appropriate because of the Aboriginal significance of the geological feature and because of the high tourist usage of the location. If you want to run a Pathfinder Camp where you need to have isolation from other groups then you would not choose a popular sea side camp site. The location needs to be suitable for the purpose of your adventure.

This means that you need to investigate a location to identify its suitability for your purposes before the activity is conducted. You need to look at the following issues:

- **The biological setting** including the vegetation, landscape, topography and scenery. Is the setting suitable for what you want to achieve? Will the shape of the land impede the type of outcomes that you want to achieve? If you want to teach canoeing, you need good access to safe, protected water and to the site. You may need space for people, vehicles and camping. All this will impact on the location. The physical aspects of the proposed activity site are extremely important in achieving goals.

- **Social Impact** – is there enough space for all of the people involved? If other people are camped in the area, what impact will they have on the program?

- **The approval of the manager or owner** is important. They will either approve what you are planning to do, provide regulations that you need to adhere to or point out that the site is unsuitable and not available.

Types of Social Impact

When you investigate a site, you need to consider not only the environment of the location and its suitability, but also the social impact that your group would bring to the location. The social impact may include:

- Possible conflicts with other people –
  - Disturbing noise after lights are out.
  - Noisy group
  - Loud music
  - Thinking that the public site is theirs or yours
  - Not communicating with other groups
  - Making lots of noise if your group has an early start
  - Leaving the site unclean

- **Damage to cultural heritage** – It is important that all members of your group respect anything of cultural or historical significance. Ask them to treat the object or location as if there was a protecting fence around it. Share with the group what the significance of the site is. If possible share the stories of what happened and the importance of the site to us today.

- **Crowding** can cause lots of tension. A crowded campsite means that you are unable to have a place of meeting together, privacy is limited and the environmental impact is concentrated. It is best to avoid these situations as much as possible.

Recreational Succession

When a recreation area deteriorates or changes because of the recreational usage or management of the area, recreational succession occurs. This leads to a change in the groups who use an area and the purposes it can be used for. Recreational succession can occur at a specific site or across large areas, but the result is always a change in recreational opportunities.

An example of recreational succession occurring would be in the case of an area once used for exploring new caves being used by an increasing number of people and groups. Due to this increased use, access to the area may be improved, thus increasing the usage even more. Facilities may be built to cope with the waste produced by visitors, and the actual caves may be opened to the general public, walkways and lights put in place, and perhaps tours given through the area.

Gradually, a different group of users would be the main visitors to the area. The original group of adventure cavers who preferred to camp and explore caves in more remote, undeveloped areas would most likely not use the original site following this recreational succession. If new areas for the original activity are available then the problem is not so severe in recreational terms; however if no new areas are available, then the original activity can no longer be carried out.

The environmental impact of the succession process is clear, with natural areas being continually developed according to demand (see Figure 3.1). Many of the changes made to areas, such as establishing walking tracks and building facilities, are necessary to protect the environmental values of an area from the impacts of increased usage. The other aspect of this is the removal of opportunities to explore and enjoy areas in their natural state.

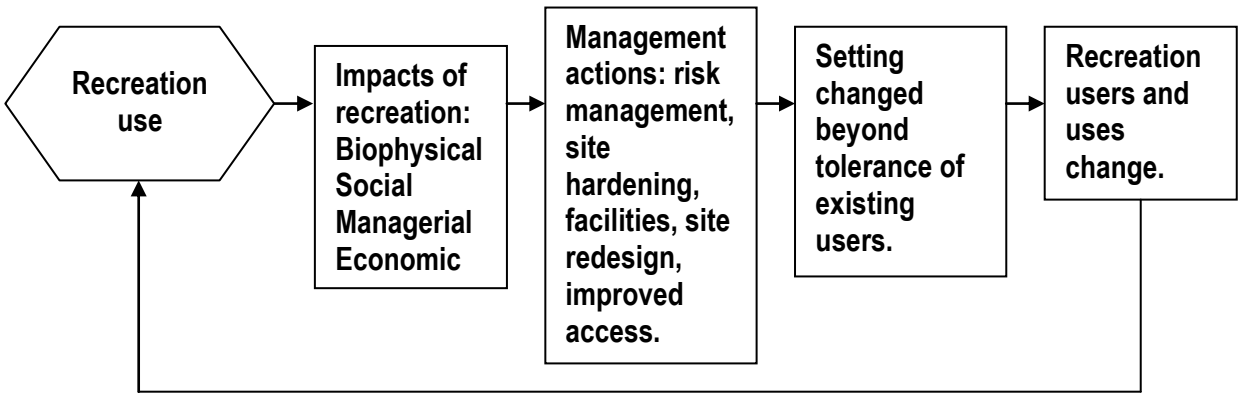

Figure 3.1: Succession Process of Environmental Impact.

Limits of Acceptable Change

Limits of acceptable change define the limits of degradation and development which are allowable at a site. These limits may apply in general terms to large areas and also in very specific terms to certain sites. Limits of acceptable change are necessary due to the often

inevitable process of recreational succession. Areas will change with use, so limits must be set to define what changes are permissible and which are not.

Land managers must balance limiting change to the environment with factors such as economics, safety and usability of areas. An example would be found in the case of a national park which becomes more popular over time due to improved access roads. The land managers must define what changes to their park will be acceptable and which must be limited. Changes, which may occur, include higher usage of facilities, wearing away of ground cover plants in picnic and camping areas and increased introductions of weed species.

Land Management Methods and Strategies to Reduce Impact

The next step is planning how to limit the impact of using natural areas. Many techniques are used to limit changes. Visitors may be dispersed over a wide area or they may be restricted to certain areas to concentrate the impacts of their activities, eg. designated camping areas. Usage may also be spread across extended time periods or may be restricted to certain times eg. seasonal closing of areas or limiting visiting hours.

Zoning areas to limit usage is often used. The activities permitted on public land, state forest and national parks are all different due to zoning restrictions. Strategic location of usage sites in areas, which will not be adversely affected, is another method of limiting change, eg. designating car parking areas so people will not drive close to creek banks to park. Site hardening or shielding is a more visible method of limiting change. This involves making changes to an area before damage occurs so that the impacts of use are controlled, eg. paving a well used walking track or clearing and compressing camping areas to prevent erosion.

Clients and Minimal Impact Practices

When operating any outdoor activity, whether a day trip or a week-long hike, the members of your group are essentially 'clients'. They may not be aware of minimal impact practices or see the need to implement them throughout the activity. Leading by example is always a good start in making people aware of minimal impact practices. This is also important when you are trying to get others to comply.

Raising awareness of these issues can be done in many ways - through brochures, videos or reading relevant material before visiting a site. A quick assessment of the impacts your activities may have will indicate what practices need to be observed. For example, if you intend to have a campfire you could discuss what impact that may have on the area and what guidelines are already in place, eg. designated fireplaces.

CHAPTER FOUR: Plan for Minimal Impact

We as a church have to move away from a view that because the Lord is coming soon we don't really need to look after the environment. We need to always be alert for the Second Coming but also practise the guidelines that were given to Adam in the Garden of Eden.

The Lord God placed the man in the Garden of Eden to **tend and care for it**. Genesis 2.15 NLT

As outdoor leaders, we must do more than just acknowledge that God is the creator. We must be active in tending and caring for the environment so that it will still be available to share with others about the Creator God until the Second Coming takes place.

The main strategies for looking after the environment are summarised in the Kimberley Environmental Skills and Ethics document titled 'The Leave No Trace Outdoor Ethics[10]. They are:

1. Plan ahead and prepare
2. Travel and Camp on Durable Surfaces
3. Dispose of Waste properly
4. Leave what you find
5. Minimise campfire impacts
6. Respect wildlife
7. Be considerate of your hosts and other visitors

Every environmental community is different. Check with the landowner for any special needs that you need to be made aware of. Some landowners (such as National Park rangers) may have specific ways that they want the environmental issues to be dealt with. General areas of concern are:

- Size of the group
- Specific method of walking through wilderness areas (abreast and not single file)
- Use of fires
- Specific camping areas

Make sure that you follow their advice so that you can reuse the area.

The following table outlines general methods for minimising impact in the outdoors. The methods are based on generally accepted practice by outdoor enthusiasts.

[10]Kimberley Tourist Brochure, Leave No Trace Environmental Skills and Ethics

Common Outdoor Environmental Impacts and Ways to Reduce Them

Impact	Suggestions for Reduction
Pollution with foreign matter • Human waste	Group camping – locate toilet trench at least 100m from campsite and waterway. Individual – Distances as above, dig a hole (min 15cm deep) with stick/scoop and cover well. Caves – carry out waste Alpine – carry out waste
• Rubbish	Carry out all rubbish including food scraps, paper, tins etc. Pre pack to reduce scraps. Plan meals so that there is no food waste.
• Soap & detergent	Wash with soap or detergent at least 50m from the water. Scatter dirty water when finished. Use scourers or sand as alternative to detergent.
Vegetation • Trampling and breakage	Follow paths (animal or manmade) wherever possible. Do not cut corners if zigzagging up or down slopes. Avoid creating multiple paths, even when muddy. Keep group sizes no larger than 8. Spread out in grassed areas to minimize impact. Choose a route to avoid breakage of branches. Take a map and compass to check your position and direction of travel particularly when track is poorly defined and no signage. Limit the destruction and collection of dead timber. They still have a role in the ecology of the location. Abseiling/rock climbing – set up, abseil and wait on open rock faces. Choose rock faces away from vegetation. Caving – keep to designated paths or follow the leader to minimise impact. Canoeing – choose rocky or sandy entry and exit points.

Compacting soil and other deposits	Unless it is a recognised or designated camping site try to vary the camping and activity sites to allow for regrowth. In a designated site, camp in already impacted areas,
Disturbance of fauna	Stay away from any recognised sensitive area. Choose camping or activity sites that minimise any disturbance of the fauna unless for OH&S reasons. Identify any specific flora or fauna and keep people from damaging them. Don't camp on animal tracks. Don't camp beside fauna drinking holes. Do not feed animals or birds as this promotes dependency. Do not leave out food for them. Don't kill harmful animals. Leave them alone.
Introduction of new flora and fauna	Avoid where possible. Don't take animals with you. If moving from a polluted site (where there could be lots of weed seeds) remove all of the seeds. Clean all equipment well, including shoes. Watch what you eat. Raspberry jam can introduce raspberry seeds.
Chemical alteration of environments	Avoid where possible. Avoid using soap in natural water ways. Burn up all your methylated spirits – don't throw out leftovers.
Damage to or inappropriate behaviour to natural sites	Keep within fences etc. Do not touch or add to natural sites - treat them with respect.
Graffiti	Don't publicly record your presence or love life anywhere other than in a diary.
Reduction of decomposing timber	Leave it alone. If allowed to use a fire, only collect what you need.
Camp fire scars	Try to avoid using a campfire as they contribute to environmental degradation. Use a fuel stove instead, especially in remote/sensitive areas. Use only a designated fire place. If you have to set up a new site, choose bare ground. Keep it small and safe. Completely remove all traces afterwards.

Noise	Respect other campers when camping at a public campsite. Keep all noise down, especially between 10pm and 7am. No electric generators or compressors unless permitted.
Intrusion into private lives.	Avoid as much as possible. Respect OH&S risks at all times. Gain permission for access to sensitive areas. Only one or two people should approach the landowner. (not the whole group) Where possible, remove all outdoor equipment (eg pack, rock climbing gear etc) when approaching people. Avoid disturbing cattle or sheep unnecessarily. Avoid climbing over fences. If you have to, climb close to the fence posts.
Culture Heritage	Show respect. Stay within any designated boundaries. Learn about the history or the significance of the location
Development of facilities and signs	Only done by landowners such as National Parks. Respect their way of controlling the impact. Respect and follow the directions indicated. Look after facilities and help to maintain them as attractive areas.
Gates not left as required by landowners	Leave gates as you find them. Follow landowners instructions at all times.

The following chapters provide guidelines for demonstrating your skills in practising reducing the environmental impact on an activity site. You must demonstrate that you conduct Outdoor activities in a way that reduces the environmental impact.

CHAPTER FIVE: Implement Methods to Minimise Impact

The hardest thing is to put minimal impact methods into practice. We must do it because the impact of humans on the environment is increasing. Outdoor activities are involving more people. If we don't practise what we preach we will come to a place where all of the wilderness areas will be locked up. All of the tracks will have security fences on either side and we will not be able to experience what we take for granted now. We have a spiritual and community responsibility to care for the outdoors that we enjoy. Refer to Appendix 2 for a statement concerning the environment by the South Pacific Division.

Steps in implementing Responsible Environmental Impact are:

- Pre-visit the activity site. Look at the site for risk management and reducing environmental impact. Fill out the following two forms:

  - Risk Management Plan
    This form was introduced in the unit on Risk Management in PLA

  - Environmental Impact Management Plan
    This form is discussed in this chapter and a copy included in the Appendix 1[11]

  Remember that safety comes before softly.

- Identify the ecosystem and the possible impact of camping or using the site for an outdoor activity.

- Identify the possible impact of the activity on the ecological community.

- Develop methods of avoiding or reducing the impact:
  - Comply with land management principles.
  - Follow the organisational environmental practices.[12]

- Identify unique aspects of the area and choose to either avoid them or follow accepted methods in visiting the site.

- Develop an activity plan that minimises the environmental impact on the area. Appendix 1 has a suggested form which will help you to focus on this issue. It asks you to list potential environmental impacts identified by yourself or the land manager.
  The headings in the table are designed to help you with different forms of impact. Not every activity will impact in all of these categories. The terms used mean the following:

  Water
  - reduced water quality
  - changes in seasonal availability

[11] See Appendix No 1
[12] See Appendix

Vegetation (Plants)

- direct injury or death
- introduction of exotic species[13]
- changes in species composition
- suppression of germination of new plants
- reduction in growth rates of new plants
- extended camping (tent) in one place
- broken tree branches
- tent ropes tied around trees, possibly causing ring barking

Wildlife

- destruction of animals
- disturbance
- loss of habitat
- altered populations
- feeding of animals
- introduction of new species to the region
- disturbance to animals by camping on known tracks

Geology

- erosion
- artificial inclusion, eg, climbing bolts or a hut
- displacement/destruction

Soil

- destruction of surface organism matter
- compaction
- aeration
- temperature change
- moisture
- erosion
- disturbance of soil and plants due to trenches around tents

Location

- special features changed
- things left behind, eg, fireplace with rocks in place or stacked woodpile
- removal of trees
- establishment of access points

People

- number of users present
- relations with other users
- impact of group's program
- impact on solitude in the wilderness

[13] Exotic species refers to any plant which does not already exist in the location.

Next, list how you plan to reduce your impact on the site or location.
The form also includes a place for review of strategies used to reduce the environmental impact.

- Prepare the activity equipment for the area.
  - Check that it is clean
  - Check that it is appropriate eg, footwear – soft soled footwear is suggested for bushwalking.

- Promote minimal impact camping and outdoor activities.
  - Talk to the group (ie. Pathfinders) before you come to the site. Make sure you connect minimal impact camping and activities to a spiritual attitude of caring for the environment because God has asked us to.
  - Talk to them at the beginning of the adventure and relate it to the features of the location.

- Monitor the group during the activity.
  - Encourage all staff to be involved in promoting environmentally friendly methods.
  - Encourage the clients (Pathfinders and participants). Praise them when they actively look after the environment.

- Evaluate the impact after the event.

You must provide evidence that you have conducted environmentally friendly outdoor activities. You must also provide evidence on how you achieved this. Evidence presented to the assessor should include the following:

- Completed Environmental Impact Management Plan (Appendix 1).[14]
- Outline of the introductory speech that you made at the beginning of the activity.
- Photos of the site, illustrating how you managed it to reduce the environmental impact.

A low impact action list has been provided in Appendix 8 to assist you before and during your outdoor trip. Please also refer to the following appendices for more useful information:

- Appendix 3 – Adventist Outdoor Environmental Code of Ethics
- Appendix 4 – Queensland National Parks Visitor Conduct on Protected Areas
- Appendix 5 – Tasmanian Minimum Impact Code
- Appendix 6 – Wilderness Society Minimal Impact in the Bush
- Appendix 7 – NZ Minimal Impact Code

[14] See Appendix No 1

CHAPTER SIX: Monitor and Review Minimal Impact Practices

Every time we use a site, we make an impact. This is especially so if the site becomes a popular one. Even if you are the only group with access to a site, there will still be an impact on that site. The challenge that we face is to be honest about that impact.

The main methods used are:

- Observation – what you can see is happening to the site
- Questioning of the land owner or members of the group that you are involved in.

Questions to ask include:

- Why do we need the development of tracks to specific sites?
- What is the impact if we clear vegetation from the site?
- What changes are happening to the vegetation of the site? Is it able to re-grow between visits?
- What is the impact of the compaction of the soil?
- Is any camping or outdoor activity equipment being left behind?
- Is any rubbish accumulation taking place?
- What is the impact of human waste disposal?
- What is the impact of timber used in fires?
- What is the impact of the campfire location?
- What is the impact on trees?
- What ways are the fauna and flora being impacted?

The Environmental Impact Management Plan[15] includes an opportunity to consider the results of your impact.

Final Thoughts

As outdoor activity leaders, we must be positive in promoting minimal environmental impact methods. We need to practise what we preach. We need to change the way that we look at the environment. If we want our children's children to enjoy the same great outdoors (whether we are Christians who believe in the Second Coming or not) then we need to be active in encouraging the next generation to change the way they perceive the outdoors. The environment is not a throw-away commodity (because there appears to be plenty of it) but a treasure that needs to be preserved, cared for, looked after, enjoyed, appreciated, studied, explored, and observed until God brings about the end of this world.

[15] See Appendix No 1

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Appendix 1: Environmental Impact Management Plan

Location _____

Activity _____

Date _____

Person in Charge _____

Size of Group _____

Time of Stay _____

Person doing assessment_____

Ref	Perceived environment that could be impacted by the activity	Steps to minimise the impact
	Water – quality	
	Vegetation	
	Wildlife	

	Geology	
	Soil	
	Location	
	People	

After the Activity, record what changes you would make to improve the method of minimising the impact? _____

_____

_____

_____

Appendix 2: Statement Concerning the Environment

The South Pacific Division of the Seventh-day Adventist Church has issued this statement concerning the environment.

The Seventh-day Adventist Church accepts its responsibility to take and promote measures to ensure the safety and well-being of the environment. We see the environment issues as not simply economic and political but moral and spiritual for they derive from our relationship to God and our stewardship of His creation.

More than any other generation before us, ours has exploited the resources of our planet in the pursuit of material comforts and new technologies. In our hunger for more, we have treated the earth as though its bounties were inexhaustible, and have created hazardous products that defy safe disposal. In the South Pacific as in other parts of the world we have polluted our air and waters, degraded our soils and denuded our forests. In Australia and New Zealand we have protected our economies and lifestyles at the expense of less advantaged areas.

As a Church we acknowledge that God's redemptive activity deals not only with human sin and salvation but extends to the well-being and restoration of creation. Moreover, we recognise that we have not always cared for His creation as we should.

The Seventh-day Adventist understanding of Scripture calls us to environmental responsibility. Our belief that the earth is God's creation requires ecological consciousness. Created in the image of God and placed on the earth to rule over it, we must act as stewards of his creation (Genesis 1:26-30; Psalm 8). Misuse of the earth and its resources indicates alienation from both God and creation. It obstructs His purposes and denies the redemptive nature of His character.

Belief in the sacredness of the Sabbath requires us to stop our self-directed activity and every seventh day frees us for rest with God, our Creator and Redeemer (Exodus 20:8-11; Hebrews 4:4-10). It provides time for spiritual regeneration and re-evaluation of those yearnings often gratified at the expense of the environment.

Taking a comprehensive view of human nature we believe that both the physical and spiritual aspects of life are crucial. We are composed of the same elements as the earth. God requires us to care for our bodies (Genesis 2:7; 3:19; 1 Corinthians 10:31). Proper care for the environment contributes to our physical well-being and to that of future generations.

Furthermore, Seventh-day Adventists believe that earth's final crisis will focus on human accountability to "Him who made the heavens, the earth, the sea, and the springs of water" (Revelation 14:7; 11:17-18).

Accordingly, the Seventh-day Adventist Church in the South Pacific encourages the corporate and individual practice and promotion of environmental responsibility. We will seek to educate our children and encourage our members to adopt a lifestyle compatible with sound ecological principles.

We challenge all people to see that at this time the global situation requires responsible action. We call upon local, state and national governments and international authorities to enact appropriate measures to preserve and restore the environment.

Appendix 3: Adventist Outdoor Environmental Code of Ethics[16]

A. Environmental Practice

Seven Principles of Low-Impact Wilderness Recreation

Campsite impact research provided the fundamental basis for the first three principles:

8. In popular places, concentrate use of the area and therefore impact on the environment.
    - avoid enlarging the area of disturbance

9. In pristine places, disperse use and impact
    - the key is to make it unlikely that a site used once will be used again until it has completely recovered
    - stay only one night
    - leave nothing to encourage the next group to use the same campsite
    - when travelling off-trail, spread out

10. Stay off places that are lightly impacted or just beginning to show effects
    - if use continues, deterioration is usually rapid and substantial

The remaining four principles are common sense:

11. Minimise noise and visual intrusion
    - these impact on other people's wilderness experiences (solitude, privacy)

12. Pack out everything brought into the wilderness

13. Properly dispose of anything that can't be packed out

14. Leave things as they were or in better condition
    - personal convenience should always be secondary to things natural

"Ultimately, the condition of the wilderness depends on those who use it. No amount of backcountry patrolling and maintenance can prevent irreparable damage, unless everyone develops a low-impact wilderness ethic."

From : Cole, D. N. and Krumpe, E. E. (1992) Seven principles of low-impact wilderness recreation. Wilderness Wildlands, 18(1): 39-43

B. Educational Practice

- To follow industry best practice wherever possible
- To train and assess leaders in the context of Competency Based Training
- To use qualified trainers and assessors

[16] NAOATAC Operations Manual 2002

C. Professional Practice

- To maintain appropriate attitudes and behaviors toward people including issues of access and equity
- To ensure appropriate requests are made re access to both public and private property
- To ensure currency of leadership skills is maintained
- To meet all legal obligations including OH&S and duty of care

D. Human Relationships

- Follow the Golden Rule
- When conflicts arise, choose the higher good as defined by Biblical principles

Appendix 4: Queensland National Parks Visitor Conduct on Protected Areas

Under the *Nature Conservation Act 1992*, Queensland has a system of 'protected areas', which include the following:

- National parks
- National parks (scientific)
- National parks (Aboriginal land)
- National parks (Torres Strait Islander land)
- Conservation parks
- Resources reserves
- Coordinated conservation areas

The Nature Conservation Regulation 1994 requires visitors to protected areas to observe the following:

- A person must not camp on a protected area without a camping permit.
- A camping permit is valid only for the number of people and the time stated.
- Visitors must obey any lawful instruction given by a conservation officer (such as a national park ranger).
- Dogs (other than guide dogs), cats and other domestic animals must not be taken into or kept on a protected area.
- All plants, animals and natural and cultural resources are protected and must not be disturbed or damaged.
- Do not feed any wildlife in the campground and do not leave any food which may be scavenged.
- Take all your rubbish home with you, or place your rubbish in bins if bins are provided.
- Do not bury rubbish or leave it in fireplaces.
- Do not pollute watercourses or lakes with shampoos, soaps, detergents or other harmful substances. Even sunscreens can cause pollution, especially in small lakes.
- Firearms are not normally permitted (although travellers may have a dismantled firearm securely stored in a vehicle or boat).
- In some protected areas, campfires are not permitted. Where constructed fireplaces have been provided, light fires only in these fireplaces. Observe any fire bans or restrictions and take extreme care with fire at all times.
- Firewood must not be collected in a protected area unless you are advised to the contrary by a conservation officer.
- Plants and plant material (other than food) must not be taken into a protected area without a written authority.
- Appliances such as axes can be used only to cut or split firewood or to drive tent pegs.
- Machetes are normally permitted in protected areas.
- Vehicles in protected areas must have current registration and third party insurance and must only be driven by a licensed driver.

- Vehicles and bicycles should only be driven on constructed roads, parking areas or routes and thoroughfares officially designated for vehicle use. Normal road rules apply.
- Minimise noise so as not to disturb other visitors, particularly between 10pm and 7am. Electric generating equipment and compressors cannot be used unless allowed by a permit or notice.
- If camping in an area without toilet facilities, all human waste must be buried at least 15 cm deep, well away from any lakes, watercourses, walking tracks, campsites or public facilities.

Appendix 5: Tasmanian Minimum Impact Code

- Avoid taking bottles and cans. If you must do so, then carry out the containers and any other rubbish you carry in.
- Keep to formed tracks even if muddy. Avoid trampling the vegetation alongside the track. Do not take short cuts.
- Do not mark new routes.
- Spread out in untracked country to disperse impact upon the vegetation. Use hard ground where possible
- Avoid sensitive vegetation, eg. cushion plants, sphagnum bogs, etc. Stay on rocks and hard ground wherever possible.
- Keep the party size reasonable. Large groups create excessive pressure on the environment, particularly at campsites.
- Avoid campsite constructions, for example drainage ditches and fireplaces.
- Leave an area as you find it, except to remove other people's rubbish where found.
- If there is a toilet, use it, if not always bury toilet waste. Choose a spot at least 100 metres away from campsites and watercourses.
- Streams and lakes are everyone's water supply. Do not pollute with detergents, food scraps, toothpaste or soaps.
- Use portable stoves rather than fires. Dead wood is an important part of nature's cycle and is scarce in many places, particularly in alpine areas. In addition, fireplace scars are unsightly and there is always the danger of bush fires.
- If you must use a wood fire, keep it small to conserve wood. Locate it in a cleared area or if an existing fireplace is available, use it. After use, completely extinguish the fire and remove foil or tins to carry out. Do not light fires in fuel stove only areas.
- Respect the solitude of others by avoiding undue noise or disturbances.

This Minimum Impact Code has been designed to help preserve our fragile bush environment. Following the Code is essential for all those who care for the bush and wish to preserve it.

From Safety in the Bush, Hobart Bushwalking Club p. 2 & 3.

Appendix 6: Wilderness Society Minimal Impact in the Bush

Bushwalking

- Safety before softly
- Clean your footwear before usage
- Leave existing features as they are
- Size 4 – 8
- Stay on the track – don't cut corners
- Spread out in open country
- Avoid walking on sensitive vegetation
- Choose footwear for the terrain and walk softly on surfaces

Toilets

- At least 100 meters from campsites and water
- Cover needs to be 15cm deep
- Use a poo spade
- Food Scraps etc.
- Pack to minimize rubbish – take off outside wrappings
- Plan to eat only what you need so that there are no food scraps
- Do not feed the wildlife

Camping

- Tents – sewn floor
- Camp only 1 or 2 nights in one spot
- Use thermal mats etc. to sleep on (softens impact)
- Sleep on hardened surface (eg. rock)
- Use recognised campsite wherever possible
- Do not cut ferns and trees for bedding
- Camp 30 metres from sensitive areas, water, streams etc.
- Wash 50 metres from the water. When finished, scatter the water.

Appendix 7: NZ Minimal Impact Code

- Protect plants and animals
- Camp carefully
- Remove Rubbish
- Keep lakes and streams clean
- Bury toilet waste
- Take care with fires
- Keep to the track
- Consider others
- Respect our cultural heritage

From Bushwalking Outdoor Skills for the NZ Bush p. 19.

Appendix 8: A Low Impact Action List

Pre-trip Planning

- Evaluate the suitability of the area for your activity
- Visit little-used areas, or high use areas in the off season
- Keep the party small
- Take a stove
- Take a trowel and/or 'poo tube'
- Take a sealable rubbish bag
- Minimize packaging and cooking
- Minimize the number of vehicles transporting participants

When Travelling

- Stay on tracks where they exist and don't make new ones
- Avoid fragile areas such as soft, marshy ground or steep, unstable dunes and hillsides
- Spread out in untracked areas
- Don't blaze or mark trails or build cairns
- Regularly clean your boots, clothes and gear of soil and plant matter
- Match your footwear with the arduousness of the trail

Toilets

- If a toilet is provided – use it
- If there is no toilet – always bury excreta or bring it home
- Keep excreta far from water supplies
- Ensure all party members have help to deal correctly with diarrhoea and vomiting
- Wash your hands away from water

When Camping

- Use an established campsite if possible
- Choose a good campsite and avoid modifying a poor one
- Refrain from using vegetation and rocks as camping constructions
- Stay a maximum of two nights in any one place
- Avoid unnecessary trampling of vegetation
- Avoid using soap or detergent and washing directly in any water bodies

Fires

- Use a stove if possible
- Use established fire sites if available
- Keep the fire small
- Avoid tree roots, stumps and overhanging trees
- If there is no established fire site, light the fire in a trench and replace the top layer when finished
- Share the fire with others
- Thoroughly extinguish the fire when finished

- Scatter ashes and unburnt wood

Throughout the Whole Trip

- Be considerate of other groups – especially with noise
- Leave an area cleaner than you found it

From Bushwalking and Ski Training Leadership p. 131.

Appendix 9: Range Statements

The Range Statements provide advice to interpret the scope and context of this unit of competence, allowing for differences between enterprises and workplaces. The Range Statements relate to the unit as a whole and helps facilitate holistic assessment. In addition, the following variables may be present for this particular unit of competency:

Range Statements	Categories
Authorities	[all categories] • relevant state and local government authorities, eg, National Parks and Wildlife Services • land owners • custodians
Basic techniques	[all categories] • observation • questioning

Characteristics of the setting	[all categories]
	• biological, including
	  ○ vegetation
	  ○ landscape
	  ○ topography
	  ○ scenery
	• social, including
	  ○ number of people present and activities they pursue
	• managerial, including
	  ○ ownership
	  ○ development
	  ○ access regulations

Impact	[all categories]
	on ecology
	• soil, including
	  ○ destruction of surface organism matter
	  ○ compaction

	○ aeration ○ temperature ○ moisture ○ erosion • plants, including ○ direct injury or death ○ introduction of exotic species ○ changes in species composition ○ suppression of germination of new plants ○ reduction in growth rates of new plants • • water, including ○ reduced water quality ○ changes in seasonal availability • geology including ○ erosion ○ artificial inclusions, eg, climbing bolts ○ displacement/destruction • wildlife, including ○ killing ○ disturbance ○ loss of habitat ○ altered populations ○ intrusion, eg, feeding, introduced species
Key ecological concepts	[all categories] • energy flow • community • diversity • change

	• adaptations • biosphere • interrelationships • cycles

Management strategies	[all categories]
	• dispersal of use
	• concentration of use
	• site location
	• site hardening or shielding
	• type of use
	  ○ zoning
	  ○ size limitations
	  ○ noise restrictions
	  ○ speed restrictions

Processes and interrelationships	[all categories]
	• food chains
	  ○ sun
	  ○ plants
	  ○ herbivores
	  ○ predators
	• introduced species
	• loss of habitat
	• removal of species
	• selective enhancement of feeding opportunities

Resources	[all categories] • water • space • huts • fires and wood for fuel

Types of environmental impact	[all categories]
	• pollution
	• physical damage
	• alteration to the environment, including
	  ○ disturbance of fauna
	  ○ introduction of new flora and fauna
	  ○ chemical alteration of environments
	  ○ reduction in decomposing timber
	  ○ gates not left as required by landholders
	  ○ damage to, or inappropriate behaviour in, cultural sites
	• Visual, including
	  ○ graffiti
	  ○ campfire scars
	• Noise
	  ○ intrusion into private lives and culture
	• Development of facilities and signs

Types of social impacts	[all categories] • conflicts with other recreational users • change of setting • damage to cultural heritage • conflicts with other forest uses/users • crowding
Unique aspects	[all categories] • caves • archaeological, heritage and cultural sites • local traditions • protected areas • delicate/fragile formations and strata • flora and fauna with restricted distribution

Uses for land and water resources	[all categories] • mining • recreation • grazing • agriculture • hunting • cultural purposes • tourism • conservation • other State/Territory specific uses

Appendix 10: Evidence Guide

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statements.

Critical aspects of evidence to be considered	• Assessment must confirm sufficient knowledge of the following as the basis for planning activities that cause minimal impact
	  ○ underpinning principles of ecology
	  ○ underpinning principles of resource management
	• Assessment of performance should be over three (3) different locations/sites in order to ensure consistency of performance over the Range Statements and contexts applicable to planning for minimal environmental impact relevant to at least one outdoor activity covering the prescribed number of categories from the Range Statements
	• Assessment must confirm the ability to apply this knowledge and appropriate techniques to
	  ○ apply knowledge of ecological concepts, processes, interrelationships, social aspects and management strategies to plan activities that are appropriate to the proposed location/site with respect to environmental impact
	  ○ plan for minimal impact during at least one type of outdoor recreation activity
	  ○ comply with minimal impact practices during the conduct of an activity
	  ○ monitor and review the conduct of activities in light of impacts caused

Interdependent assessment of units	• This unit must be assessed after attainment of competency in the following unit(s)
	  ○ Nil
	• This unit must be assessed in conjunction with the following unit(s)
	  ○ Nil
	• For the purpose of integrated assessment, this unit may be assessed in conjunction with the following unit(s)
	  ○ Unit(s) associated with participation in, or conduct of, any outdoor recreation activity

Required knowledge and skills	• Required knowledge
	  ○ Minimum impact codes
	  ○ Legal and statutory requirements (of resource management agencies)
	  ○ Specific problems of fragile environments or threatened species
	  ○ Area restrictions
	  ○ Limited knowledge of biological systems and their interrelationships
	  ○ General knowledge of factors affecting land management planning, eg, limits of acceptable change, recreation succession
	  ○ Familiarity with terms used in planning for appropriate use of sites/locations
	  ▪ recreation setting
	  ▪ recreation activity
	  ▪ recreation opportunity
	  ○ Cultural protocols for making contact and communicating with indigenous people and organisations
	  ○ Impacts caused by outdoor recreation activities
	  ○ Practices which may be implemented to minimise impact
	  ○ Practices and procedures used by resource management authorities to reduce impact
	• Required skills
	  ○ Minimal impact practices
	  ○ Research and evaluation of impact through observation and questioning
	  ○ Communication and interpersonal skills
	  ○ Problem solving and solution focused strategies

Resource implications	• Physical resources - assessment of this competency requires access to
	  ○ an outdoor location suitable for the conduct of an outdoor recreation activity
	  ○ activity specific equipment
	  ○ personal clothing appropriate to location and conditions
	  ○ food and water resources

	○ resource management agencies' requirements • Human resources - Assessment of this unit of competency will require human resources consistent with those outlined in the Assessment Guidelines. That is, assessors (or persons within the assessment team) should ○ be competent in this unit but preferably be competent in the unit SROOPS008A Apply the principles of natural resource management ○ be competent, as a minimum, in the units SRXFAD001A, SRXRIK001A and SRXEMR001A to ensure adequate risk management during the assessment ○ be current in their knowledge and understanding of the industry through provision of evidence of professional activity in the relevant area ○ have attained the National Competency Standards for Assessment: BSZ401A, BSZ402A and BSZ403A
Consistency in performance	• Due to issues such as the range of possible impacts and the minimisation strategies involved, this unit of competency must be assessed over three (3) different locations/sites in order to ensure consistency of performance over the Range Statements and contexts applicable to planning for minimal environmental impact relevant to at least one area of outdoor activity
Context for assessment	• This unit of competency must be assessed in the context of an outdoor recreation activity and must be demonstrated whilst planning and participating in an actual/real outdoor activity • Assessment of this unit of competence will usually include observation of processes and procedures, oral and/or written questioning on required knowledge and skills and consideration of required attitudes • Where performance is not directly observed and/or is required to be demonstrated over a "period of time" and/or in a "number of locations", any evidence should be authenticated by colleagues, supervisors, clients or other appropriate persons

Appendix 11: Key Competencies

KEY COMPETENCIES						
Collect, Analyse & Organise Information	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	1	3	1	2	2	2

These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.
The three levels of performance (1, 2 and 3) denote the level of competency required to perform the task:

1. Use routine approaches

2. Select from routine approaches

3. Establish new approaches

- **Collecting, analysing and organising information -** Accessing and interpreting relevant information from appropriate authorities pertaining to a particular area or setting
- **Communicating ideas and information -** Communicating with relevant land management authorities, clients and other users with regards to planning for minimal environmental impact
- **Planning and organising activities -** Planning appropriate activities and conducting them in a way that minimises the environmental impact on a particular area or setting
- **Working with teams and others -** Working collaboratively with land management authorities, colleagues, clients and other users in order to apply consistent and agreed upon minimal impact practices
- **Using mathematical ideas and techniques -** Using basic calculations to determine impact on sites
- **Solving problems -** Applying knowledge of potential environmental and social impacts of a particular setting in order to find solutions to planning considerations
- **Using technology -** Sourcing relevant information from appropriate authorities pertaining to a particular area or setting