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PLANNING ECOTOURISM TRAILS TO FACILITATE ENVIRONMENTAL EDUCATION

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ABSTRACT

TITLE OF THESIS: Planning ecotourism trails to facilitate environmental education

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STUDY LEADERS: Prof. Dr M.L. Hugo
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DEPARTMENT: Geography

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The study is placed in the realism philosophy and in the context of a three-tiered ontology. The empirical domain includes the two approaches ecotourism and environmental education. The real domain includes the trail event. The actual domain includes the agents. These agents are the trailist, trail owner, trail planner, environment, authority and host community.

The research adopts a dualistic research approach and combines the inductive and deductive processes. The study is structured by pre-determined research aims and the three-tiered ontology of realism. Theoretical discussions and case studies are employed to achieve the research aims and answer the research problem.

The research examines the link between ecotourism and environmental education, existing trail planning processes and the different agents participating in ecotourism trail planning. The conceptual analysis concludes that environmental interpretation and education are by definition essential parts of ecotourism. Nine ecotourism trail planning principles in a four phase trail planning framework are proposed to facilitate the implied environmental education responsibility of ecotourism.

The principles emphasise that 1) the primary purpose of the ecotourism trail to facilitate environmental education should be clearly stated, 2) the needs of all the agents participating in the trail planning process should be identified, 3) the trail purpose and the trailist's needs should be expressed in context of the total trail environment (biophysical, social, behavioural and physiological), 4) the agents should actively participate in the complete trail planning process in decision-making situations, problem solving situations, management tasks and planning of environmental education activities along the trail, 5) participatory discovery and interactive enlightening and educative experiences should be included on the trail, 6) the diversity and discontinuities in the trail environment should be used to unlock the environmental education potential of the trail, 7) economic and other benefits should be generated, to uplift and empower the host community, to provide "value for money" for the trail user, and profit for the trail owner, 8) responsible and sustainable planning should be undertaken towards the total environment and the trail event, and 9) the total ecotourism trail environment and the interests of the agents should be conserved and protected.

The proposed principles and planning framework are seen as a universal framework dependent on and directly influenced by the context and environment in which the framework and principles are applied. The proposed principles and framework can contribute to the multipurpose planning of tourism and increase and enrich the personal satisfaction of the ecotourism trail user, contribute to the protection of the very resource on which trails depend, integrate the community actively in the planning process and stimulate sustainable economic benefits for all the role players. The framework combines the ecological and the human dimensions of Human Geography into one. Future research can test the principles and framework in other trail environments, using a wide range of agents, in order to determine the degree to which the framework can be generalised.

OPSOMMING

TITEL VAN DIE PROEFSKRIF: Beplanning van ekotoerisme-staproetes om omgewingsopvoeding te fasiliteer

deur Elizabetha M.J.C. Schaller

STUDIELEIERS: Prof. Dr. M.L. Hugo
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Die studie is geskryf teen die agtergrond van die filosofie van die realisme en in die konteks van 'n drielaag-ontologie. Die empiriese domein sluit twee benaderings in, naamlik ekotoerisme en omgewingsopvoeding. Die reële domein sluit die staproetegebeurtenis in. Die aktuele domein sluit al die rolspelers in. Hierdie rolspelers is die stapper, staproete-eienaar, -beplanner en -omgewing, owerheidsinstansies en die gasheergemeenskap.

Die navorsing neem 'n dualistiese navorsingsbenadering aan wat die induktiewe en deduktiewe prosesse insluit. Die studie word gestruktureer deur voorafbepaalde navorsingsdoelstellings en die drielaag-ontologie van realisme. Teoretiese besprekings en gevallestudies word gebruik om die navorsingsdoelstellings te bereik en die navorsingsprobleem te beantwoord.

Die navorsing ondersoek die skakeling tussen ekotoerisme en omgewingsopvoeding, bestaande staproete-beplanningsprosesse en die verskillende rolspelers wat deelneem aan ekotoerisme-staproetebeplanning. Die konseptuele analise kom tot die gevolgtrekking dat omgewingsinterpretasie en opvoeding per definisie essensieel deel is van ekotoerisme. Nege ekotoerisme-staproetebeplanningsbeginsels binne 'n staproetebeplanningsraamwerk met vier

fases word voorgestel om ekotoerisme se geïmpliseerde verantwoordelikheid ten opsigte van omgewingsopvoeding te fasiliteer.

Die beginsels beklemtoon dat 1) die primêre doel van 'n ekotoerisme-staproete, naamlik om omgewingsopvoeding te fasiliteer, duidelik gestel behoort word, 2) al die behoeftes van die rolspelers wat deelneem aan die beplanningsproses, geïdentifiseer behoort te word, 3) die doel van die staproete en die stapper se behoeftes uitgedruk behoort te word in die konteks van die totale omgewing (biofisiese, sosiale, gedrags-, en fisiologiese omgewing), 4) die rolspelers aktief behoort deel te neem aan die hele beplanningsproses van die staproete in besluitnemingsituasies, probleemoplossingsitiuasies, bestuurstake en die beplanning van omgewingsopvoedingaktiwiteite op die staproete, 5) deelnemende ontdekking, interaktiewe kennisverwerwing en opvoedkundige ervarings ingesluit behoort te word op die staproete, 6) die diversiteit en diskontinuïteite van die staproete se omgewing gebruik behoort te word om die omgewingsopvoedingpotensiaal van die staproete te ontsluit, 7) ekonomiese en ander voordele geskep behoort te word om: die gasheer gemeenskap op te hef en te bemagtig, waarde vir geld aan die stapper te lewer en die staproete-eienaar 'n wins te laat maak, 8) verantwoordelike en volhoubare beplanning onderneem behoort te word ter wille van die totale omgewing en die stapgebeurtenis, en 9) die totale omgewing van die ekotoerisme-staproete en die belange van die rolspelers beskerm en bewaar behoort te word.

Die voorgestelde beginsels en beplanningsraamwerk word gesien as 'n universele raamwerk wat afhanklik is van en direk beïnvloed word deur die konteks en die omgewing waarbinne die raamwerk en beginsels toegepas word. Die voorgestelde beginsels en beplanningsraamwerk kan bydra tot die meerdoelige beplanning van toerisme en die verryking van die ekotoerisme-stapper se persoonlike ervaring, bydra tot die beskerming van die hulpbron waarvan die staproete afhanklik is, die gemeenskap aktief betrek by die beplanningsproses en volhoubare ekonomiese voordele skep vir al die rolspelers. Die raamwerk kombineer die ekologiese en die menslike dimensies van Menslike Geografie. Toekomstige navorsing kan die beginsels en raamwerk

toets binne ander staproete-omgewings, deur gebruik te maak van 'n verskeidenheid rolspelers, om te bepaal tot watter mate die raamwerk veralgemeen kan word.

CHAPTER 1: INTRODUCING THE RESEARCH PROJECT

"..., it is not simply the stock of natural resources of South Africa that will determine her competitiveness in tourism, but rather, how these resources are managed and to what extent they are complemented with man-made innovations." (South Africa, 1996:1).

The research applies two approaches to tourism, namely ecotourism and environmental education. The two approaches are seen as options to manage the very resource on which tourism is dependent, namely the environment. The project focuses on the planning of ecotourism trails as a human innovation operating complementarily to the environment through which a trail passes and the facilitation of environmental education. Ecotourism as an approach is chosen because it is within this specific approach to tourism that the link with environmental education lies. This link is investigated in Chapter two.

1.1 What is tourism?

It is necessary to explain what is understood by tourism before investigating the evolvement of the field of tourism into including ecotourism as an approach. Tourism is described by authors as an activity, a system and an industry (Lubbe **et al**, n.d:1; Hohnholz, 1994:40). Tourism as an activity includes all temporary travel, for whatever purpose, that results in one or more nights being spent away from places of work and home (South Africa, 1996:vi). As an industry, tourism is described as a multi-faceted environment-dependent development industry utilizing the natural and built environments for its particular economic value (Hattingh, 1994b:3; Hughes, 1995:53; Goodall, 1995:29; McIntosh **et al**, 1995:368). Tourism includes pre-trip expenditure on travel and booking, travel and en-route expenditure, and all spending at the destination (South Africa, 1996:vi).

For many years tourism has been one of the fastest growing economic industries. According to the World Travel and Tourism Council it is estimated

that tourism in 1995 contributed 10,9% to the GDP (Gross Domestic Product) of the world economy, 10,5% to the United States economy, 13,4% to the European economy, 12,3% to the British economy and 31,5 % to the Caribbean economy (South Africa, 1996:2). This tendency of growth places more and more demands on the environments on which tourism is dependent (Prosser, 1994:19). For example visitors to South Africa find aspects such as scenic beauty, wildlife, climate, African cultural experiences, seeing South Africa after political change, value for money and diversity of attractions most appealing (Bennett, 2000:7).

For many countries such as South Africa, tourism is becoming an increasingly attractive source of income and a means of financing other development (Cosgrove & Jackson, 1972:49). In South Africa it is seen as a major job creation force and a source of wealth (Bennett, 2000:7). It is also seen as a useful way in which regional imbalances in a country can be addressed. For South Africa it provides unique opportunities for involving previously neglected groups. It dynamises and rejuvenates other sectors of the economy (South Africa, 1996:6,14). Although this aspect has its own problems such as seasonal unemployment, exploitation of culture and clustering of settlements. It is, however, important to decide whether the tourist potential is worth exploiting from an economic, social and political standpoint, what type of tourism is to be encouraged and who is to provide the investment for the facilities and infrastructure (Cosgrove & Jackson, 1972:50).

If tourism is to ensure its continuation, competitiveness and marketability it will have to conserve the very commodity on which it is dependent, namely the natural, built, social, cultural and political environment (Cater, 1995:22; Goodall, 1995:29). To accomplish this, Hattingh (1994b:3), Khumbane (1995:71), Van der Merwe (1996:7) and Hall (1998:22) are of the opinion that the tourism environment should be developed in a sustainable way so that it will be available for generations to come (Palmer & Neal, 1994:3). Mayor (1998:7 in Jickling 1999:1) emphasises that education and public awareness are critical to achieving sustainability in tourism.

Tourism differs from other economic industries in that it is not a primary export item like coal, copper and iron that adds little value to the product at the export market. Tourism is the final product which means that all final value has to be added in the tourism destination by the supply sector that includes transport, food, accommodation and education (South Africa, 1996:17). Thus the supply sector of the tourism industry is wider than only the environment and forms an important part of the bigger tourism system which also includes the demands of the tourists. International tourism is the only export item of the economic industry that does not leave the economy (Robinson, 1976:xviii; South Africa, 1996:16). Tourism further differs from other industries in that it promotes awareness and understanding among different cultures, helps to save the environment and brings development to rural areas. Tourism, similar to other industries, creates opportunities for small entrepreneurs, creates jobs and develops links with other industries like agriculture, light manufacturing, crafts and service (Robinson, 1976:xxix; South Africa, 1996:4).

The demand for tourism is influenced strongly by fashion while the interest and reasons for travel often change (Prosser, 1994:22). In 1972 Cosgrove & Jackson were already of the opinion that this tendency of change in tourist demands would increase "culture travel", educational trips and active holidays, at the expense of purely tourist travel, which would greatly affect local cultures at tourist destinations (Cosgrove & Jackson, 1972:44). Budowski (Orams, 1995:3) as early as 1976 argued that tourism should be integrated with conservation. It became clear that tourism should be more than just a travel experience in a natural environment (Gunn, 1989:110; Orams, 1995:3), that would be to the financial benefit of tourism developers (Ferrar, 1993:147; Wight, 1993:3) and to the detriment of the environment. Protecting the environment has become an essential part of tourism development (Wearing, 1993:127; Hattingh, 1994a:4; Cater, 1995:22; McIntosh **et al**, 1995:368; Hall, 1998:23).

1.2 Evolvement of tourism

In the late 1980s environmental groups (Hughes, 1995:49) pressured tourism into recognizing and reacting to the negative impacts mass tourism had on natural areas (Jacobson & Robles, 1992:701; Wearing, 1993:127; Hattingh, 1994b:3; Goodall, 1995:29; Orams, 1995:3). Environmental movements expressed their dissatisfaction with the principles and practices of tourism and the industry became sensitive and vulnerable to this type of criticism (Hughes, 1995:49). Such criticism, the development of widespread and growing interest in the natural environment, and the emphasis on the importance of conserving the quality of the environment rather than exploiting it (Wight, 1993:4), challenged the tourism industry. Ecotourism emerged as a more acceptable and marketable approach to tourism (Prosser, 1994:31; Orams, 1995:3). Along with ecotourism other concepts such as nature travel, adventure travel, sustainable tourism, alternative tourism, appropriate tourism, cultural tourism, green tourism, responsible travel and soft tourism emerged (Medlik, 1993:11; Lew, 1998:93; Zeppel, 1998:61).

The challenge facing tourism is to create new alternative tourism products that will meet the need for a new form of tourism demand such as ecotourism. Both development and conservation need to be equally and effectively enforced in such tourism products. A fundamental shift from an exploitative approach to a sustainable approach in tourism development has become necessary (Prosser, 1994:31). In South Africa, a responsible approach to tourism is perceived, not as a luxury but as an absolute necessity if the country is to build a successful and sustainable tourism industry (South Africa, 1996:9). Black (1999:1) is of the opinion that if ecotourism seeks to make this shift and promote responsible travel, its foundation should be education. The **White Paper: Development and Promotion of Tourism in South Africa** (South Africa, 1996:9) highlights the absence of adequate education, training and awareness opportunities as the greatest deficiencies of the tourism industry in South Africa.

The emphasis on the educational facet of ecotourism challenges tourism to transform itself from simple experiences of enjoyment and satisfaction to greater understanding and attitude change and finally to more responsible behaviour (Jacobson & Robles, 1992:702; Orams, 1995:3). Bragg (1990:12) suggests that *"ecotourism involves active appreciation, education or interpretation ... strengthens environmental awareness, concern and commitment through an increased understanding and appreciation of nature"*. Tourists experience a need to be informed and enlightened, to become environmentally knowledgeable, literate and active (Palmer & Neal, 1994:8).

Accomplishing this transition implies that attempts should be made to incorporate a number of elements into tourist experiences. These elements include learning in, about and for the environment (Gunn, 1989:110), the facilitation of attitude and behaviour change (Orams, 1995:5,6) and an awareness and concern for poor environmental practices in the host community where the tourism product is functioning (Wight, 1993:3,6). This educational dimension of ecotourism (Botha, 1983:128; Porritt, 1996:17) should not be for the tourist alone but it should also be targeted at the host communities and tourism developers (Tallantire, 1993:55, Lew, 1998:93; Black, 1999:1).

Adopting an ecotourism approach to tourism further implies that ecotourism operations should utilise education-based management strategies to prompt their customers to adopt more environmentally sensitive attitudes and, more importantly, to change to more environmentally sound and responsible behaviour (McIntosh **et al**, 1995:368; Orams, 1995:3). Managers of ecotourism facilities need to begin to recognise education and interpretation as effective management techniques (Black, 1999:2).

If ecotourism developers seek to accomplish the above and provide opportunities for environmental learning, behaviour and attitude change, highlighting environmental diversity and problems and promoting conservation, developers will have to facilitate an educational approach throughout the planning framework they choose to adopt (McIntosh **et al**, 1995:373, Black,

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1999:2). The suggestion is that environmental education could be an educational approach facilitated throughout ecotourism planning frameworks (Jacobson & Robles, 1992:702). Environmental education is an approach that has moved beyond educating only for protecting or conserving the natural environment from human threats. It has also become an important aspect of informal education and of recreation activity. Environmental education calls for increased participation by host communities in the management and development of their environments (Smyth, 1995:8-10). This would imply that environmental education could be included to a greater extent in development approaches like ecotourism and the combination into one system of the ecological and human dimensions (Smyth, 1995:17), thus recognising the interdependence of environmental and developmental issues (Fien, 1995:22). This approach would mean that economic, educational, environmental, tourism and social issues are no longer separated but are integrated with one another in a compatible way.

Therefore, if ecotourism operating as a developmental approach to the tourism industry, and environmental education operating as an educational approach utilised by the ecotourism industry to ensure its sustainability, were to operate compatibly and complementarily (Wight, 1993:6) in an integrated way in the same environment, it would be necessary to identify similarities and differences between the two approaches. In doing this, principles that ecotourism developments could incorporate into their planning framework, to ensure the facilitation of environmental education, could be established. Such a framework could help ensure that the educational needs of tourists, tourism developer and host community, the conservation of the resources and the economic benefits of ecotourism are provided for and thus promote the sustainable development of ecotourism resources in future.

The above evolvement and understanding of ecotourism as an approach to tourism can be applied to a diverse spectrum of activities like trails, mountaineering, skiing, hotels, cruises and game viewing. (Hattingh, 1994a:5; Cater, 1995:21). The development of each of these activities takes place in

different environments and takes into consideration its own specific set of planning principles. Furthermore ecotourism does not only have one aspect, namely, education but also has other aspects such as policy, standards, carrying capacity (Lew, 1998:105), community involvement (Mosidi, 1996:25), economics (Hattingh, 1994c:3) and conservation (Wearing, 1993:127). To investigate all these aspects of ecotourism and the planning principles that underlie the development of all ecotourism activities would not be feasible within one study. Therefore, in this study the focus will be on the development of one ecotourism activity, namely, trails and one aspect of ecotourism, namely, education. Although trails as a tourism destination can be classified as ecotourism it need not necessarily be so. If the tourist destination, the trail, does not meet the principles pointed out in Chapter two, section 2.3 it fails to be an ecotourism destination that provides an environmental education experience. Therefore, the essence of this study emerges, namely, how ecotourism trails can be planned to facilitate environmental education.

1.3 Theoretical framework underpinning the study

In this study, the traditional research process of putting an epistemology first and deriving from it a methodology was not followed but rather, a certain research methodology was applied and then an epistemology derived. This is the wheel argument or diallelus process termed by Rescher (1977:17 in Bird 1989:225). The implication is that the researcher had to decide on a research method to justify the research problem. The selected research problem guides the research method used.

In the introductory paragraphs it is made clear how the field of tourism has evolved into adopting ecotourism as an approach to tourism developments. It is pointed out that with the implementation of an ecotourism approach comes an educational responsibility that can be provided through environmental education. The question that can be asked now is where the domains of ecotourism and environmental education lie in the theoretical framework of Geography which forms the study field in which the research is conducted.

1.3.1 The research in the context of Geography

Relevant to geographers is the debate about environmental values and the use of resources. Geography focuses on the physical (natural) and social (human) landscapes, having a holistic nature and inter- and cross-disciplinary focus (Pemberton, 1989:5; McKeown-Ice, 1994:40, Agnew **et al**, 1996:6). This very nature of the field of Geography places it in a strong position to exploit the interesting and important themes of conflict between what is ecologically desirable (environmental education) and what is economically advantageous (ecotourism) (Holt-Jensen, 1980:128). Three aspects that ecotourism and environmental education have in common are that both have a strong environmental focus and both share the concern for the environmental crisis and both aim at ensuring a good quality of life for future generations. Geography focuses on a spatial perspective of people-environment interaction with a spatio-temporal dimension (Fairhurst, 1994:1) which gives it a distinctive educative value. The spatial distribution and relationships Geography deals with relate to the movements of ecotourists from place to place. Other similarities with Geography is that ecotourism is an economic industry which is an aspect of Economic Geography (Freysen, 1978:28).

Pemberton (1989:41) identifies four themes that run parallel in Geography and Environmental Education. First is the interrelationship between natural and social systems; second is the unity of humans with nature as agents of landscape change, influencing processes that modify their surroundings. Third is the effect of society's technology and decision-making on the land and people, and fourth the continuation of learning throughout the human cycle.

Keeping the above associations between the two approaches, ecotourism and environmental education, and Geography, in mind; the researcher would want to reason that the problem of this study lies within the study of Geography and more particularly, Human Geography that engages in the dualism between people and environment (Bird, 1989:66) and tries to explain the dynamics of spatial association (Pemberton, 1989:6). Furthermore Human Geography is

multi-paradigmatic (Agnew **et al**, 1996:37) and has a plurality of approaches (Simmons, 1993:62).

In the process of arguing in which paradigm this research is positioned accepted facts about Human Geography will be related to the research. Human Geography derives an abiding interest in places, looks at the environment, and interprets it as space (Peet, 1998:48, Holt-Jensen, 1980:5). It engages in the study of the notions and experiences of place that can include environmental experience, interpretation and education as well as knowledge about the use of space by industries like tourism (Pickles, n.d.:32). Human Geography studies aspects related to people such as meaning, values, goals and purpose which are inherent to environmental education (Peet, 1998:35). This approach in Human Geography is criticised for being unscientific because the generalisations it postulates are perceived as mere personal opinions. However, this is not true because human geographers in their understanding of place attempt to encompass the wide range and experiential depth of life in places in their research.

The focus of this research is on the use of space by ecotourism developments such as trails which are established in the context of a specific environment. The environment that can be used as a resource may be either natural or built and functions in an economic environment by providing income and job opportunities to local communities and developers. In the process of planning ecotourism trails people are active agents in the specific environment in which they find themselves, whether the individual is a trail user, therefore the ecotourist, ecotourism developer or host community. There is a definite interaction between these different groups of people and the environment.

In the next three sections the basic three philosophies inherent to Human Geography and the applicability of each philosophy to the research will be investigated.

1.3.2 Idealism

A philosophy that is part of Human Geography is idealism (Bird, 1989:26,72). Idealism provides the human geographer with a methodology for research, namely, that the historical past, made up of existing theory at the conceptual meso and macro scale in the literature, must be encapsulated within the context of present experiences through empirical investigation at micro-scale using case studies. The research starts with general observations from the theory in the literature on ecotourism and environmental education. From the general observations a framework of principles is constructed at the outset and is contextualised and reviewed during the empirical research using case studies. The researcher chose to compare the generalisations from one primary in-depth case study namely the Tswaing trail with generalizations from other trails at Rustenburg, Northcliff and Windy Brow in Chapter six. The intra-case generalisations at micro-scale build on the existing body of scientific knowledge based on theory, concepts, principles and findings at macro and meso scale, through a process of induction. A new body of scientific knowledge is proposed in the format of an ecotourism trail planning framework that facilitates environmental education and can operate on an inter-case basis (Bird, 1989:27). Thus, the research methodology used in this study follows an agglomerative method of theory construction which is closer to the inductive perspective and to science. The difficulty with this approach is to present the results in a cumulative or hierarchical manner, and also permitting at least a few umbrella generalisations.

In the above choice of methodology, the researcher draws strongly on pragmatism rather than primarily at the level of epistemology and ontology. The reason is that the research focuses on the practical level of what can be achieved by intellectual intervention through the compilation of an ecotourism trail planning framework in an imperfect and unequal world where developments such as ecotourism are competing for space in the environment. An action-oriented philosophy is followed. This approach necessitates the rigorous research and formulation of concepts used in the research work such

as ecotourism, environmental education and trails in order to avoid abstractions and irrelevance (Bird, 1989:228). To achieve this aim an in-depth literature study is required. Such a research method could be termed methodological pragmatism (Rescher, 1977).

1.3.3 Existentialism

Another philosophy inherent to Human Geography, that supplies an ontology, is existentialism (Bird, 1989:73-74; Peet, 1998:35). This philosophy states that in order for people to confirm their own existence they must enter a relationship with space, the environment. Similarly, trails, ecotourism and environmental education deal with people like the trail user, developer and host community in the trail environment and allow people to enter into a relationship with the environment. These groups of people can increase their knowledge of the environment through their interaction with it. This philosophy is related to the interpretivism approach also present in environmental education. According to the interpretivism approach, the provision of a meaningful experience, as on a trail, should include opportunities to hear, smell, taste, touch and see. Humans can respond to the environment in different ways from visual and aesthetic appreciation to bodily contact with the most intense experiences emanating from the element of surprise. Lasting appreciation comes when there is a combination of human incidents, such as making contact with host communities, satisfying scientific curiosity, and experiencing discontinuities in the trail environment like change in the environment characteristics. This creation of a surprise element awakens interest and stimulates enquiry in the trailist (Peet, 1998:52).

Existentialism does warn that care needs to be taken not to forget the community in which people live, much like the structuralists. Relph (1976:34 in Peet, 1998:50) reminds us that there is a powerful relationship between community and place, in which each reinforces the identity of the other. This is an aspect inherent to ecotourism that places the role of the host community as a priority in its development process and explores the potential of the host

community. Ratzel, the founder of Human Geography, in 1891 already pointed out this relationship between community and place and stresses the significance of the historical development and cultural background of populations and their indigenous knowledge. Host communities form an integral part of ecotourism developments and should form part of the planning framework applied to resource developments like trails.

The existentialism philosophy in Geography further emphasises inner experience, knowledge by participation rather than observation and places more emphasis on subjectivity than objectivity (Peet, 1998:36,37). For people to understand the environment in which they function when participating in an ecotourism activity such as a trail, they need to participate in a hands-on manner (Holt-Jensen, 1980:22). Environmental Education is an educational approach that emphasises participation and could be adopted by ecotourism to accomplish this. Such a practical, action-orientated approach that enlightens, and thereby, catalyses social and political change is also inherent in the critical theory that strives to improve the quality of people's lives. It emphasises the inner experience and enrichment through active participation rather than observation. Thus, the emphasis of this research is on using an active mode of interaction with the environment such as trails to explore the possibilities of unlocking the environment to humans. The environment (trail) is the place (structure) which provides the setting for human action (agency) in the form of environmental education which is true to the realism approach in Geography.

1.3.4 Realism

In the above analyses of where this research project lies within Geography and its underpinning philosophies it becomes clear that it would be difficult to place the research within one philosophy inherent to Human Geography. This is true to the multi-paradigmatic nature of Human Geography. However, the presence of three domains, namely the actual, real and empirical, and the pragmatic nature of the research places it in a more holistic philosophy, namely, realism (Johnston, 1989:57). The reason being that the research incorporates

ecotourism and environmental education into its problem statement that stretches over this three-tiered ontology. The tourist (agent) who uses the ecotourism trail is placed in the actual domain. During the trail event the tourist experiences the outcomes of the event whether educational, recreational or physiological as part of the real domain. This event, the trail, in which the individual is engaged, is structured according to certain trail planning principles. These principles are changeable theoretical statements based on the theory from the literature research and observations during the case studies. This forms part of the empirical domain. For clarity in further discussions in the study, this three-tiered ontology can be summarised as follows:

TABLE 1.1 THREE-TIERED ONTOLOGY OF REALISM APPLIED TO THE RESEARCH

REAL DOMAIN	ACTUAL DOMAIN	EMPIRICAL DOMAIN
The event which is the trail	The agents which are the trail user (tourist), developer (trail owner, trail planner), authority and host community	Environmental education and ecotourism

Furthermore, planning an ecotourism trail to facilitate environmental education implies that an environmental decision has to be taken that impacts on the total environment, namely, the economic, natural and human environment. In adopting such a wider concept of habitat; meaning the total physical milieu in which people live, including buildings and other human artifacts, as well as vegetation and other environmental features (Holt-Jensen, 1980:8), the research takes on a socio-natural interpretation of space which is central to realism (Peet, 1998:175).

By adopting realism as the broad philosophy in which to place the research, implications for the methodology of the study arise. All empirical work from the case studies that is done through observation must be integrated with the

theory from the literature study to provide an explanation of the ecotourism trail planning framework. From the phenomenology of Human Geography, it might appear as if such a result is not possible in the ecotourism trail planning framework proposed because it is at the periphery of planning policy implications. It is important to realise that the proposed framework is not a system but rather a means to problem-solving, because as the researcher constructs the framework, recognition is given to the interconnectedness between the phenomena in question namely, ecotourism, environmental education and trails. Subjective judgement is inherent to the construct of such a framework (Bird, 1989:156). The research could therefore not be positivistic because it is not characterised by testable observations but rather subjective observations.

The study tries to create an ecotourism and environmental awareness aimed at developing the environment in which people live in a responsible and sustainable manner by facilitating environmental education through applying a specific planning framework that would help to ensure this. In this way, true to Human Geography, the researcher attempts to raise the level of consciousness of society (Peet, 1998:52). Appleton (1975) in Holt-Jensen, (1980:32) emphasises that an educated perception of the landscape is important if its attractions are to be preserved. The result of this research is aimed at preserving the environment by using a theoretical planning framework for ecotourism trails that will facilitate environmental education and thus educate people to transform conditions that will emancipate and empower them.

The research approach adopted could create the perception that the research is based on the structuralist philosophy (Bird, 1989:45) more than realism. Although, like the structuralist approach, the individual developers and host communities are simultaneously part of the development of the proposed planning framework and affect one another, the researcher does not attempt to provide a complete ready-made system (blueprint) with which to confront all empirical cases (Bird, 1989:110). The decision was taken not to compile a model or system but rather a planning framework that implies flexibility,

openness and interrelatedness that can be applied in any specific context and environment. The research results are presented as an ecotourism trail planning framework of principles postulated in a human scientific approach within Geography.

1.4 The research problem

Until recently, trails in South Africa were mainly planned by people residing in the trail area. Trail planning principles have been based on the trail planners' local knowledge of the area. Trails are mainly planned for recreational enjoyment and not within the broader conceptual context of ecotourism. From the introduction to this chapter it can be postulated that ecotourism trails have a responsibility to the total environment, namely, to include environmental education in the planning framework that trail planners would use.

The **main problem** therefore is to critically review current ecotourism trail planning frameworks, in the literature and in practice, against the theoretical principles underlying the two approaches, ecotourism and environmental education, and formulate an ecotourism trail planning framework of principles to facilitate environmental education.

To resolve this problem it would be necessary to answer questions such as:

- In what ways are the two approaches: ecotourism and environmental education linked?
- Do trails have the potential to facilitate environmental education?
- What do current trail planning frameworks look like and how would they need to be adapted to facilitate environmental education?
- What planning principles will have to be incorporated into an ecotourism trail planning framework to create the potential to facilitate environmental education?
- Who are the role players or agents in ecotourism and trail

planning and how will they contribute to facilitating environmental education?

- How practical is it for ecotourism trails to facilitate environmental education?

1.5 Aims of the study

To be able to answer the main problem and subsequent questions related to it, certain aims have been formulated for the study.

1.5.1 Primary aim

The primary aim is to establish an ecotourism trail planning framework that would succeed in arousing sensitivity towards the environment, provide opportunities for enjoyable aesthetic experiences along existing or new ecotourism trails and lead to a further appreciation of, and an interest in, the environment by engaging in environmental education experiences on the trail.

1.5.2 Secondary aims

To realise the above primary aim, the following secondary aims have been set:

1.5.2.1 to examine environmental education and ecotourism and determine the conceptual links between the two approaches (Chapter two);

1.5.2.2 to examine trails as an ecotourism activity and their utilisation possibilities for environmental education (Chapter three);

1.5.2.3 to identify environmental education principles that should be incorporated in a planning framework for ecotourism trails to facilitate environmental education (Chapter three);

1.5.2.4 to identify possible environmental education needs of the different agents (role players) that are part of the ecotourism trail environment namely the target audiences (trail users); host community, developer (owner and trail planner), authority and trail environment that a

planning framework should consider (Chapter four);

1.5.2.5 to review existing trail planning methods against the theory exposed in Chapters two and three (Chapter five);

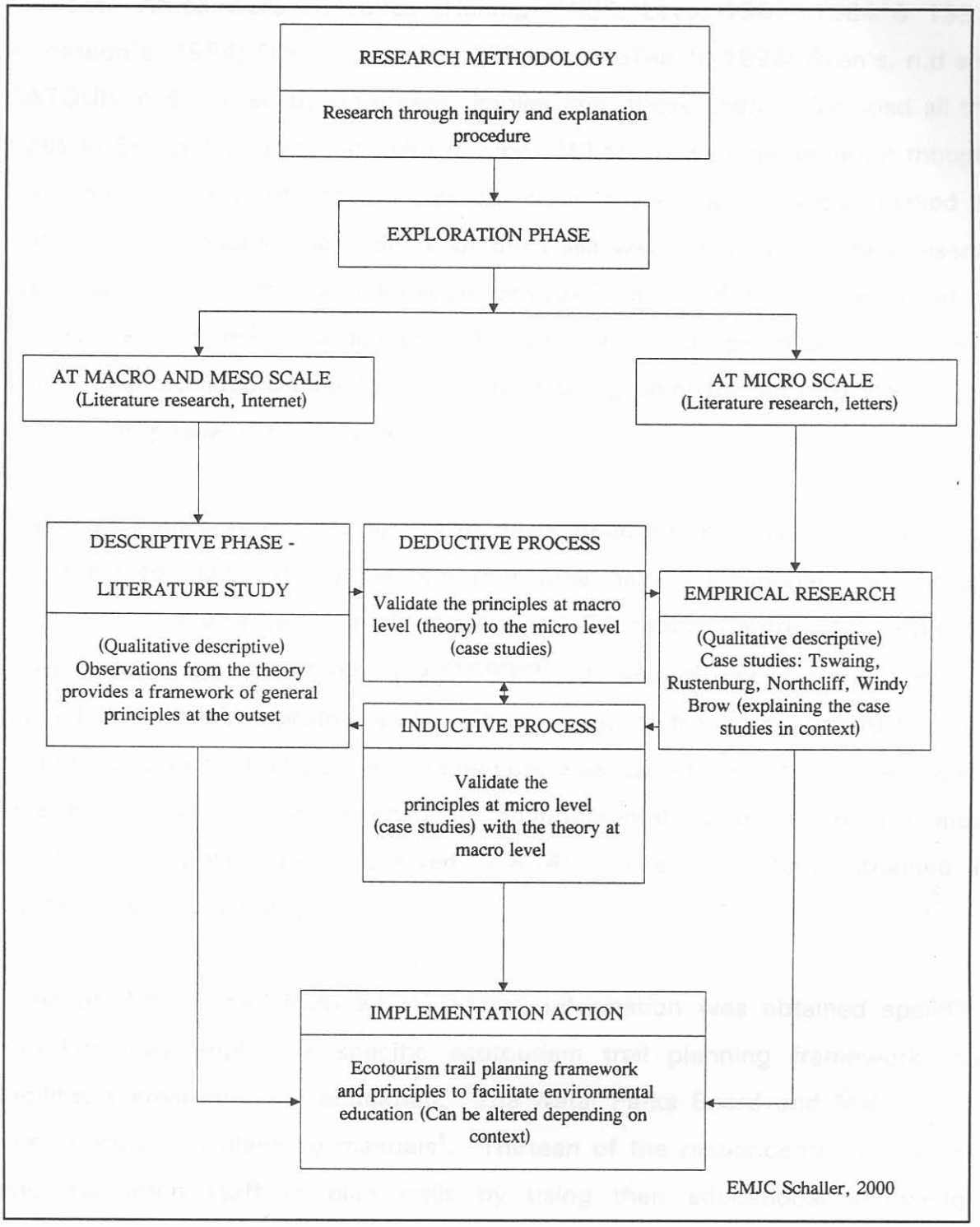
1.5.2.6 to participate in planning ecotourism trails for environmental educational purposes and review the practical applicability of the theory obtained from the literature study (Chapter six); and

1.5.2.7 to compile an ecotourism trail planning framework to facilitate environmental education that can be used to design new or upgrade existing trails to facilitate environmental education (Chapter seven), which is also the primary aim of the study.

1.6 Research methodology

The domain of Human Geography, within which the problem of the study lies, underpins the research methodology followed in this study. Figure 1.1 illustrates that a number of research phases were adopted.

FIGURE 1.1 RESEARCH METHODOLOGY



Geography is a field that obtains a vast amount of information through exploration. In this phase of the research an attempt is made to establish whether there are existing ecotourism trails in South Africa that have been

developed to facilitate environmental education and to determine what planning principles the developers used. To determine this a number of books on trails in South Africa were consulted (Hennig, 1983; Levy, 1983, 1984 & 1993; Anderson's, 1984; Olivier & Olivier, 1988; EnviroTeach, 1996; Ryan's, n.d and SATOUR, n.d). This, by no means, implies that these sources included all the trails in South Africa at that point in time. What did become apparent though, was that very few of the trails contained in these sources were marked as ecotourism or educational. Some of the trails were located in nature reserve areas with environmental education centres and could have been used to facilitate environmental education although it was not specifically mentioned. This phase provided a useful contact and starting point for the next step in this **exploration phase** of the research.

The next step was to send letters to those twenty-two trails or facilities that according to Levy (1993) indicate that they have educational trails or are located in the vicinity of an Environmental Education Centre or Interpretive Centre and were marked by Levy (1993:36) as guided day walks and/or self-guided day walk/interpretive trails. The purpose of the letter was to find out whether a specific trail planning framework was used for the trail development and how the trails were used in environmental education programmes. Fourteen responses were received (n = 14). The information obtained is contained in Table 1.2.

None of the sources from which written information was obtained specified whether they applied a specific ecotourism trail planning framework that facilitates environmental education. The Natal Parks Board and Malolotja do use specific trail planning manuals[1]. Thirteen of the respondents use officers and education staff to plan trails by using their educational knowledge, experience and familiarity with the terrain. Three of the respondents specifically indicated that the trails were designed by educationists for use with

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[1]. Scott, D.F. 1993. **The Drakensberg path manual - a practical guide to all aspects of path work.** CSIR: Division of Forest Science and Technology: Jonkershoek Forest Research Centre.
Ham, S.H. 1992. **Environmental Interpretation: A Practical Guide for People with Big Ideas and Small Budgets.** Golden, Colorado, USA: North American Press.

formal education groups, mainly school children. Fifteen of the respondents indicated that the purpose of the trails is educational, informative, interpretive or environmental education. It appears that these terms are used interchangeably by the different respondents as indicated in Table 1.2. Ten of the respondents indicated that their trails are guided, nine self-guided and five both guided and self-guided.

From the information in Table 1.2, it became clear that trails currently used for education in Southern Africa were planned without a specific trail planning framework to facilitate environmental education. This observation supports the stated research problem of this study. However, to ensure that this was not a local phenomenon, a search on the Internet and in the libraries was done to establish whether an ecotourism trail planning framework to facilitate environmental education existed outside South Africa. It did become clear that trails were used more extensively for educational purposes in overseas countries like Britain (Spray, 1975:210) and Australia[2]. A trail planning model containing principles to facilitate environmental education could not be found in this literature search and investigation.

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[2] This perception was confirmed by a personal visit to Australia in 1996 and documentation obtained from Peter Keene from England in 1997.

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TABLE 1.2 INFORMATION OBTAINED FROM EXPLORATIVE RESEARCH IN SOUTHERN AFRICA (1996)

Respondent	Type of trail*	Centre at trail	Received a response to the letter	Has an ecotourism trail planning framework	Users of trails	Purpose of trails	Who plans the trails?
Kirstenbosch National Botanical Garden, Cape Town	GDW, SDW	Nature study school	Y	N	School groups, students	EE, interpretive	Education staff
De Hoop Nature Reserve, Bredarsdorp	SDW	EE	N	-	All	Interpretive	-
Rhebok Hiking Trail, Golden Gate	SDW, GDW, 2-day trail	EE	Y	-	All	-	-
Old Furrow Trail, Estcourt	SDW	Education	N	-	-	Interpretive	-
Cedara Forest Trail, Hilton	SDW	-	N	-	All	Educational	-
Idube Trail, Pietermaritzburg (Natal Parks Board)	SDW	Education Resource centre	N	-	-	Educational	-
Lorna Doone Forest Hostel Trails, Harding	SDW	-	N	-	All	Educational, informative	-
Game Park Trails, St Lucia	SDW	Interpretive centre	Y	N	All	Informative, interpretive, educational	Natal Parks Board officers, private individuals
Hluhluwe Game Reserve	GDW	-	Y	-	All	Interpretive	Natal Parks Board officers
Mkuzi Game Reserve (Natal Parks Board)	GDW, SDW	-	N	-	All	Informative	Natal Parks Board officers

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Respondent	Type of trail*	Centre at trail	Received a response to the letter	Has an ecotourism trail planning framework	Users of trails	Purpose of trails	Who plans the trails?
Milwane Wildlife Sanctuary	SDW, GDW	Interpretive, National EE programme	N	-	All	Informative, interpretive	-
Malolotja Nature Reserve	SDW	EE	Y	N Uses Ham (1992)	All and school groups	EE	EE officers
Abe Bailey Nature Reserve, Oberholzer	SDW, GDW	Interpretive, EE	Y	N	All and school groups	Interpretive	Staff
Michiru Mountain Conservation Area, Blantyre, Malawi	GDW	EE project	Y	N	All and school groups	Interpretive	Officers
Zomba Plateaus, Malawi	SDW	-	Y	N	All	Informative	Wildlife Society of Malawi
Boelani School Tours, Boordfontein	GDW		Y	N	School groups	Knowledge of nature conservation	Game rangers, environmental lecturers
Tamboti Botanical Trails, Hoedspruit	GDW		Y	N	All groups	Study natural vegetation of the escarpment	Owner
Witwatersrand National Botanical Gardens, Roodepoort	GDW	Interpretive	N	-	All	-	-
Hiking Federation of South Africa	GDW	-	Y	N	Only provided a list of trails in South Africa		

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Respondent	Type of trail*	Centre at trail	Received a response to the letter	Has an ecotourism trail planning framework	Users of trails	Purpose of trails	Who plans the trails?
Natal Parks Board	Wilderness, GDW, SDW, Auto, hiking GDW	-	Y	N uses Scott (1993)	All	Informal EE	Field managers, regional managers and regional ecologists
Pretoria City Council	SDW	-	Y	N	All groups	Informative	Council and private persons
Umgeni Valley Project, Howick	GDW		Y	N	School groups	Interpretive	EE officers

Information obtained in 1996 from letters and Levy's book (1993)

* According to Levy (1993:36): GDW = Guided day walk and SDW = Self-guided day walk/interpretive trail

EE = environmental education

Y = Yes

N = No

The above exploration phase (Figure 1.1) was sufficient to prompt the continuation of the research and led to the **descriptive phase** of the research, namely, a comprehensive **literature study**. This phase was necessary to verify the perceptions and observations in the exploration phase of the research. Facts and information on the phenomena trails and the two approaches, ecotourism and environmental education as part of the empirical domain of the research problem of this study, were obtained.

The theory obtained in this descriptive phase formed the premises for the empirical phase of the study. In the descriptive phase, a deductive research process is followed where the general theory of ecotourism and environmental education, is surveyed and analysed at macro and meso scale. Through this process, the links between the two approaches are identified in Chapter two. Definitions, approaches and principles from both ecotourism and environmental education are surveyed, organised, classified and analysed, which is very much a deductive process resembling the deterministic explanatory model. This theory is used to arrive at new scientific knowledge in the form of an ecotourism trail planning framework to facilitate environmental education (Table 5.1). The framework provides the structure into which the planning principles can be placed. According to Gunn (n.d:4), a need exists for research in tourism that leads toward principles.

The planning principles that are identified, are an articulated system of ideas and statements held as addressing the problem. A framework as proposed does not show how the trail environment is actually organised, but rather how it should be organised if it were to adopt the ecotourism and environmental education approaches into its planning framework (Holt-Jensen, 1980:66-67).

Ecotourism projects take place in an environment of interrelated human systems and involve many role players, namely the host community, developer and visitor. It is thus necessary to determine how these role players fit into the proposed planning framework. The literature survey examines and describes the characteristics and environmental education needs of these role players.

Consequently, Chapters three and four of the study are devoted to do this survey.

Although the deductive research process is commonly used in Geography, it is often criticised for being too simplistic and quasi-scientific. While the deductive research process, literature survey, was in progress the researcher started with the inductive phase of the research, namely, the **empirical research** in the form of case studies and fieldwork to prevent the research from being judged as being too simplistic and quasi-scientific. The aim is to judge whether there is empirical support via the case studies for the general theories deduced from the literature (Holt-Jensen, 1980:19). This implies structuring reality to support or not support the generalisations from the theory. The process presented the researcher with a vast inflow of information that had to be ordered and shaped in a way that made it manipulatable and comprehensible (Harvey, 1969:298). It is important to remember that in this method, the process of ordering and structuring the planning principles is not independent from the theory which is ultimately constructed.

The researcher became actively involved in the planning of particular ecotourism trails that were specifically planned to facilitate environmental education. Taking this inductive research approach would enable the researcher to process and codify the observations made in the reality and articulate and verify the general theoretical planning principles deduced from the literature survey. The original theoretical set of seven principles was then reviewed. Allowance had to be made for where the proposed theoretical principles did not correlate with what was observed in practice and changes were made to the set of seven principles which was expanded into a set of nine principles.

It was decided to start with one primary in-depth case study, Tswaing. To eliminate the possibility that the results of the one case study could be seen as too temporal, spatial and simplistic, three other trails were used as secondary case studies, namely, Northcliff, Windy Brow and Rustenburg. The four

different trail types were used as case studies to explain and verify whether the seven theoretical ecotourism trail planning principles deduced from the literature were transferable and applicable to all trails set in different environments, natural and human. Therefore, the first trail at Tswaing is in a rural area and is a short three-hour trail broken up into sections. The second, is a longer two-day trail at Rustenburg in a nature reserve with overnight facilities. The third is a short one-hour trail in an urban area at Northcliff, Johannesburg and the fourth, Windy Brow, is a nature trail consisting of three separate day trails in a rural area adjacent to Cullinan. The four case studies are discussed in Chapter six.

The proposed trail planning framework in Table 5.1 attempts to unify the general ecotourism planning principles from the literature study and the empirical observation during the case studies, into a framework of ecotourism trail planning principles that facilitates environmental education. These principles are classified into the four main trail planning phases in Figure 5.1, namely, planning overview (aims and objectives, role players, target audience, trail focus), construction (building of trail and compiling brochures, maps and worksheets, information boards), implementation, and evaluation/maintenance.

Because the three domains, namely, trails, ecotourism and environmental education are situated in the environment and a mass of complex actions, reactions and interactions are present, the explanation of the results takes on an ecological format (Harvey, 1969:409). This means that the results will be explained as an open and flexible interrelated framework of phases connecting people and the environment and not as a one-way closed system. The research is qualitative and descriptive of nature and uses the inductive and deductive research processes together. The research results are formulated within a particular banded geographical space, namely, ecotourism trails rather than the spatial variations between different types of trails in different regions.

An ecotourism trail planning framework such as proposed, is an attempt to enlighten current trail designs to incorporate approaches such as ecotourism

and environmental education. In this way ecotourism trails can be developed to be sustainable and be utilised in the following educational ways:

- By the formal education sector such as schools where curriculum programmes can be accommodated into the ecotourism trail to accomplish direct environmental education activities,
- By the informal education sector which includes adults using self-guided and interpretative trails as direct environmental education activities, and
- By the non-formal education sector which includes the government, the private sector and non-governmental organisations who provide indirect environmental education activities and services.

1.7 Chapter divisions

The theoretical framework underpinning this research, realism and its three tiered ontology and the research strategy resulting from this philosophy, provides the framework for logically unlocking the research problem and for documenting the research.

Chapter one contains an introduction to the study, an orientation to the problem of the study, the research procedure and contextualises the study in a theoretical framework. Terms are not defined in this chapter but are defined in the applicable chapters.

In Chapter two ecotourism and environmental education which form the empirical domain of the research, are conceptualised. Through a deductive process theoretical planning principles that ecotourism should apply to facilitate environmental education are formulated at the end of the chapter.

In Chapter three the second leg of the ontology, the real domain, namely, the trail environment, is discussed. The chapter concludes with planning principles

that should be incorporated in an ecotourism trail planning framework facilitating environmental education.

In Chapter four the agents that are the actual domain, namely, the trailist, developer (trail planner, trail owner), authority and host community who operate in the real domain of the trail, are discussed. In this chapter the roles the agents play in the ecotourism trail planning process that aims at fulfilling an environmental education responsibility are discussed.

In Chapter five existing trail planning methods are critically reviewed and compared against the theory in Chapters two, three and four. The general theory from the literature is used at the end of the chapter to postulate a trail planning framework for ecotourism trails that facilitate environmental education.

In Chapter six the proposed framework postulated in Chapter five is reviewed against the primary case study of the research, Tswaing and other secondary case studies.

In Chapter seven conclusions regarding the proposed planning framework are given, proposals are made for improving it and further research options in the field of this particular research area are pointed out.

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CHAPTER 2: ECOTOURISM AND ENVIRONMENTAL EDUCATION: THE LINK

In Chapter one the evolvement of tourism to emphasise environmental awareness and consequently the establishment of ecotourism as an approach to tourism is discussed. Environmental education is proposed as an approach that can foster and reinforce environmental awareness as an aspect of ecotourism. The possibility of this being realised through ecotourism trails is highlighted as the fundamental focus of this study. Chapter one also points out that the research methodology of the study draws strongly on realism and pragmatism and follows an action-oriented philosophy. This approach necessitates that the two fields of research, ecotourism and environmental education, forming part of the empirical domain of the research be clearly researched, analysed and conceptualised. This analysis is necessary to prevent the concepts from remaining abstract and their practical relevance and links not fully realised.

The purpose of Chapter two is to conceptualise, through a process of reflection, how the concepts ecotourism (2.1) and environmental education (2.2) are visualised, thought about and understood by different persons (Robertson, 1994:26). Conceptual links between the two approaches are identified in section 2.3. At the end of Chapter two, through an inductive process these conceptual links are then postulated as theoretical planning principles based on the observational statements supported by the theory in the literature. These principles will attempt to provide guidance on how ecotourism developments like trails can be planned to facilitate environmental education.

2.1 Ecotourism

Ecotourism definitions and views in the literature should be examined in order that, in the context of the research, they can allow planning principles to be extracted from them. This process provides a conceptual framework against which the

problem of the study is set. For clarity, a working definition for this study is formulated and proposed ecotourism planning principles will be formulated.

2.1.1 The concept of ecotourism

According to Robertson (1994:26) a concept such as ecotourism is a package of publicly held meaning that may have different meanings in different contexts. Ecotourism goes back only as far as the 1980s (Orams, 1995:3) yet, when the field of ecotourism is explored, it becomes clear that there are a diverse number of understandings of the term. A number of terms such as nature tourism, values-based tourism, holidays to help the planet, adventure tourism, alternative tourism, culture tourism, green tourism, soft tourism, responsible tourism and sustainable tourism are used as substitutes for ecotourism (Medlik, 1993:11; Tallantire, 1993:53; Wearing, 1993:126-127; Wight, 1993:3; Hughes, 1995:49; Orams, 1995:4; Cowling, 1996:35; Lew, 1998:92; Schaller, 2000).

In 1983 the Mexican, Hector Ceballos-Lascurain invented the term "ecotourism" (Van der Merwe, 1996:7; Orams, 1995:4) by stating that *"Ecotourism is responsible travel to relatively undisturbed natural areas with the object of studying, admiring and enjoying the natural landscape and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas"*. The definition emphasises the use of the natural environment for ecotourism as well as the cultural environment. The use of the word "responsible" implies some extent of responsibility towards the environment, which in the context of the above definition would include the natural and cultural environments. The concept "studying" which is mentioned in this definition implies, according to Sykes (1976:1144) and Landau (1983:670), devoting time and thought to acquiring knowledge, information and doing investigation of an object in an attempt to train the mind, capabilities and character of individuals. Thus, the use of the word "studying" in this definition can be understood to emphasise the educational dimension of ecotourism which is a premise of this

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study. The definition of Ceballos-Lascurain gives a very broad definition that could be applied in different ways. Questions that arise from the definition are; who should be responsible for providing the educational experience, which agents[3] should provide this experience, for whom should the educational experience be provided, the tourist or developer, what is understood by cultural environment and what are relatively undisturbed natural areas?

Wight (1993:3) prefers to use the following definition, *"Ecotourism is an enlightening nature travel experience that contributes to conservation of the ecosystem, while respecting the integrity of host communities".* This overlaps in certain ways with Ceballos-Lascurain's definition in that the natural environment is seen as the resource. Wight's definition specifies what the cultural environment includes and refers to "respect" for the host community which implies that ecotourism should avoid degrading, insulting, injuring, interfering or interrupting the host community's life (Sykes, 1976:957). The reason is according to Huggins & Barendse (1994:2) *"... that different elements of society are plugged into society in different ways and likely to react to, and be affected by change in different ways."* According to Milne (1998:41), communities are seen as being capable of planning and participating in tourism development. This emphasis implies that ecotourism has a certain responsibility towards the host community and for that matter the natural environment as well. Wight's definition also refers to an "enlightening experience" that implies that an individual's knowledge should be broadened and prejudice or superstitions be eliminated (Sykes, 1976:344). This can be linked to the educational aspect mentioned in the previous definition of Ceballos-Lascurain (1983). What Wight's (1993) definition adds to the first definition is the aspects of "conservation" and "host community". The aspect of protecting the environment (conservation) is widely supported by authors like Valentine (1993b:114) and Wearing (1993:127).

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3. The term agents will be used to include all contributing role players such as the trail user (tourist), developer (trail owner, trail planner), authority and host community.

Wight (1993:3) expands on his definition above by identifying two views that prevail on ecotourism. The one applies to the marketing possibilities of ecotourism and its related economic value. The other is related to the conservation of the resource on which ecotourism is dependent. Wight (1993:3) is of the opinion that these two views should not be exclusive to one another but rather complementary and integrated, so that both the industry and the resource may be sustained in the long term. To achieve this, Wight (1993:3) identifies eight principles that should be followed. Ecotourism should:

- maintain the quality of the resource and develop the resource in an environmentally correct way (conservation);
- provide the tourist with a direct, participatory and enlightening experience;
- include education for all the groups including; the host community, government, non-governmental organisations, industry, and tourist (before, during and after the visit);
- urge all the involved groups to acknowledge the inherent values of the resource;
- provide supply-oriented management that implies that it willingly accepts the resource on its terms and that it recognises the resource's limits;
- involve many role players such as government, non-government organisations, industry, scientists, and locals (both before and after operations) and promote mutual understanding amongst these role players;
- encourage moral and ethical accountability and responsible behaviour by all role players towards the natural and cultural environment, and
- provide long-term benefits for the resource, host community and industry. Benefits can be of a conservation, scientific, social, cultural or economic nature. Economic benefits can include;

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economic variety, long-term economic stability, higher expenditure and longer tourist stays due to different exchange rates, increase in demand for local goods and services, infrastructure development and increase of foreign exchange earnings (Wight, 1993:4).

The above-mentioned principles answer some of the questions arising from Ceballos-Lascurain's (1983) definition. The principles clearly point out who the role players and therefore, the target groups (agents) are that form part of ecotourism and to whom the educational experience should be provided i.e. the tourist, host community, developer or non-government and government organisations. Lew (1998:93) is of the opinion that the education given to these agents should try to make them more sensitive towards the destination environment. For the purpose of this study the term agents will be used, and will refer to terms like role players and target groups that are used in the literature. According to Orams (1995:4) these agents can either show a high level of human responsibility and contribute actively to the protection and improvement of the natural environment resources or they can show a low level of human responsibility and have a passive approach and behave unobtrusively and try to minimise their impact on the natural environment. According to Orams (1995:4,5) some researchers that support the active and responsible role of ecotourists are Valentine, Richardson and Ziffer, while others like Zell, Muloin and Figgis support the passive and low responsibility role. Orams (1995:5,6) suggests four indicators to quantify and measure this transformation from passive to active human behaviour, namely; satisfaction-enjoyment, education-learning, attitude-belief change and behaviour-lifestyle change. Regarding the impact tourists have on the natural environment, Orams (1995:6) suggests three indicators; tourists should minimise disturbance, improve habitat protection and contribute comprehensively to the long-term health and viability of the natural environment. This view corresponds with the conservation view of Wight (1993:3).

Two further aspects of ecotourism referred to in the principles Wight (1993:4) postulates are, the economic and participatory aspects. The benefits of ecotourism that Wight (1993:3) mentions are related to conservation, education and finance. Responsibilities that ecotourism have according to Wight (1993:3) are closely related to these benefits and include conserving the natural and human environment, providing an educational experience for all the agents, involving all agents in the planning processes and providing financial benefits to all the agents. The principles Wight (1993:4) states, further elaborate on the concept responsibility that Ceballos-Lascurain (1983) refers to in his definition of ecotourism by including moral and ethical accountability and responsible behaviour. For Wight (1993) this responsibility extends beyond the tourist. It includes all agents participating in ecotourism and encompasses the broader environment of natural and cultural domains that Ceballos-Lascurain (1983) includes in his definition.

A definition that adds two further aspects to ecotourism is that of Robinson (1993:7) who suggests that *"Ecotourism is responsible tourism which is sustainable and thus requires the protection of living and non-living natural resources, the promotion of appropriate and environmentally sympathetic development, and which contributes to the goals of achieving social justice and enhancing quality of life and stability for the communities in the immediate vicinity of the protected area ..."*. Robinson's definition encompasses much of the previous definitions but it firstly adds the aspect of sustainability. It would be possible to say that with responsibility comes accountability and without either, ecotourism will not be able to maintain itself and be sustainable. The three concepts responsibility, accountability and sustainability go hand in hand. Sustainable development is understood as development that provides for the needs of the present without compromising the possibility that the needs of future generations will not be met (Hall & Lew, 1998:3). It is the principles inherent to sustainability that link it with ecotourism. These principles are:

- holistic planning and strategy making
- preserving essential ecological processes
- protection of human heritage and biodiversity
- long term productivity for future generations
- balance of fairness and opportunity between nations (Hall & Lew, 1998:3).

It is these linking principles between ecotourism and sustainability that allow Bramwell & Lane (1993:2) to describe sustainable tourism as *" ... an approach which involves working for the long-term viability and quality of both national and human resources. It is not anti-growth, but it acknowledges that there are limits to growth. Those limits will vary considerably from place to place, and according to management practices. It recognises that for many areas tourism was, is and will be an important form of development. It seeks to ensure that tourism developments are sustainable in the long term and wherever possible help in turn to sustain areas in which they operate. And, for good measure, sustainable tourism also aims to increase visitor satisfaction."* However, this definition of sustainable tourism does not refer to the social and political environments which are inherent to ecotourism.

The second aspect Robinson's definition adds is that ecotourism should enhance the host community's "quality of life". According to Robinson (1993:6), other definitions do not touch on the root meaning of ecotourism, namely, that ecotourism should create benefits for the host communities in terms of social upliftment and well-being and improvement of their quality of life. Valentine (1993a:64) and Hattingh (1994b:4) support Robinson's opinion that ecotourism should benefit the host community. Although, according to Wight (1993:4), benefits should not be for the host community alone but also be for all other agents.

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Cowling (1993:3) sees ecotourism as a form of tourism that is based on ecological resources such as flora, fauna and scenery and if it is properly managed will justify conservation as a means of generating wealth in a sustainable way. This perception of ecotourism again focuses only on nature and mentions the idea of generating wealth. Wight (1993) elaborates on this concept of wealth in his list of ecotourism principles. Valentine (1993a:64), Wearing (1993:127) and Jacobson & Robles (1992:702) support the view of Wight. Their opinion is that ecotourism should stimulate economic activity and make a profit. The question is, is this only financial gain and for whom will this be, the developer, visitor or host community? Wight (1993:4), in his principles answers, this question by referring to all the agents, namely; tourist, host community, developer, non-government and government organisations. Wealth should also go beyond only financial gain and include conservation and education.

The definition of Evans-Pritchard and Salazar (n.d) in Porritt (1996:17) encompasses many of the previous definitions in that they see ecotourism as: *"The planned practice of tourism in which the enjoyment of nature and learning about living beings and their relationship with the environment are brought together. It is an activity which does not result in a deterioration of the environment and which promotes and supports the conservation of natural and cultural resources, thereby producing economic benefits which reach most of the population. Moreover, real ecotourism promotes justice for people and for nature"*. What this definition does do is add to the aspect of sustainability and enhancing the quality of life of the host communities mentioned in the definition by Robinson (1993:7). The definition further adds the aspect that there should be justice, not only for people, but also for nature. Evans-Pritchard and Salazar (n.d) also emphasise, like Wight (1993:3), that most of the population should gain economically from ecotourism. Using the principles, Wight (1993:3) postulates as a guideline, the term population in the above definition, can for the purpose of this study be interpreted to include all agents involved in an ecotourism development, namely; the host community, the visitor that would be the trailist and the

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developer that can be the owner, government, non-government organisations or specialist ecotourism developers used by the owner.

Another definition that takes on an even broader meaning of ecotourism is the definition of the Centre for Ecotourism at the University of Pretoria (1996). It includes a large number of the aspects from the above definitions and reads as follows, *"It (ecotourism) is an enlightening, participatory travel experience to environments, both natural and cultural, that ensures the sustainable use, at an appropriate level, of environmental resources and, producing viable economic opportunities for the tourism industry and host communities, makes the use of these resources through conservation beneficial to all role players".* This definition like Wight's (1993:3) includes the point that the ecotourism experience should be a participatory one. However, unlike Wight, the Centre is not clear on who should participate in what. Again the principles of Wight can be used as guidance and it can be deduced that all the agents that are part of an ecotourism event should be actively involved, not only in the trail experience (event), but also in the planning of the event. **A question and the premise of this study is: how can the trailist and the other agents which include the owner (government or private), and the host community, become actively involved with the developer in ecotourism trail planning to facilitate environmental education?**

It is evident from the analyses of the previous five definitions that the concept "ecotourism" has evolved over time. This is supported by the fact that Ceballos-Lascurain in 1992 adapted his original definition from 1983 (Van der Merwe, 1996:7) to include, along with the aspects natural and cultural environment, responsibility and education, three other aspects, namely; conservation, sustainable development and economic benefits. He also puts the human being, both visitor and host community, at the centre of environmental concern: *"Ecotourism is environmentally responsible travel and visitation to enjoy and appreciate nature (and any accompanying cultural features), that promotes conservation and sustainable development, has low visitor impact, and provides*

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for beneficial, active socio-economic evolvement of local populations" (Van der Merwe, 1996:7).

What becomes evident from the above discussion is that there are certain core aspects that distinguish ecotourism from traditional tourism. These aspects can be summarised in Table 2.1.

TABLE 2.1 DIFFERENCES BETWEEN TRADITIONAL TOURISM AND ECOTOURISM

TOURISM	ECOTOURISM
An activity, industry and system based on profit making	A sustainable approach to tourism
Large numbers of tourists	Small numbers of tourists
High visitor density	Low visitor density
Low tourist participation in the event	High tourist participation in the event
Centralised	Decentralised to include peripheral areas
Single ownership	Host community takes ownership together with the developer
Large economic impact	Small economic impact
Foreign expertise	Host community employed and local expertise of host communities utilised, subject specialists used when needed
Outflow of capital	Keep money in area
Regular and high financial return	Irregular and low financial return
High impact on nature	Minimum impact on nature, responsible behaviour and conserve nature
High impact on cultural values	Protect and share culture
High impact on social life	Protect, enhance and share social life with visitors
Emphasises escapism	Emphasises the enlightening experience for visitors

(Compiled from Ceballos-Lascurain, 1997; Hall, 1998:23; Lew, 1998:104; van der Merwe, 1998:57; Wallace, 1998:5; Zeppel, 1998:60; Hugo, n.d:6)

Butler (1990:41) does warn against such a comparison because it is important to realise that tourism should not be portrayed as obviously undesirable and ecotourism as close to perfection. The idea of providing Table 2.1 is to differentiate between the different facets of tourism and ecotourism.

Therefore, after evaluating and analysing the definitions of ecotourism and noting the differences between tourism and ecotourism in Table 2.1, a working definition for the study can be formulated. For the purpose of this study ecotourism can be defined as, *a sustainable approach to tourism development that enlightens and involves all role players (agents), namely; the host community, tourist, trail owner (private and government), trail planner and the total environment (biophysical, cultural, social, and political), actively in a participatory manner in all phases of ecotourism planning and provides conservation, educational, social and economic benefits to all these role players at an appropriate level.*

2.1.2 Ecotourism planning principles

Establishing ecotourism planning principles according to Wallace (1998:2) is an exercise that has been performed by many researchers such as Cronin (1990), Wallace (1992), Lee & Snepenger (1992), Wight (1993) and Wallace & Pierce (1996). The reason researchers do this is so that each person can contextualise a set of principles for a specific environment and social condition by using criteria or indicators for each principle that are relevant to the specific ecotourism event and environment. Such principles and their associated criteria provide primary guidance to what action should be taken.

For the purpose of this study, the researcher extracted from the analyses of the concept ecotourism in 2.1.1, through an inductive process of generalisations, certain theoretical underlying principles that clarify and support the ecotourism definitions used for the analyses. The generic principles that the researcher extracts are later contextualised, and applied to, a specific environment, namely,

trails. The following seven broad principles are suggested to guide the planning of an ecotourism event like a trail and according to Wallace (1998:2) such a set of principles should provide an over-arching framework that can be applied in most circumstances.

Ecotourism should:

1. include the **total environment,** namely, the biophysical (natural and built), social, cultural, economic, and political in a holistic planning procedure.
2. be planned **responsibly and sustainably** for all agents (role players), namely; the ecotourist, owner (private and state), trail planner, authority, host community and total environment to instil an ethical responsibility in them.
3. provide an **enlightening and educating experience** to all the agents that are part of the ecotourism development to increase awareness and understanding of the total environment.
4. **conserve and protect** the total environment that ecotourism utilises as its resource by minimising negative impacts.
5. **involve and benefit all the agents** that are part of the ecotourism development, especially the **host community**.
6. provide **economic benefits** to all the agents.
7. provide a **participatory experience** to all the agents.

2.2 Environmental education

Like ecotourism, the concept environmental education has many different meanings depending on the context and circumstances where it is used (Shongwe, 1996:14). Definitions and views in the literature, which allow for planning principles to be extracted from them, are examined. A working definition for the purpose of this study will be formulated and guiding planning principles highlighted.

2.2.1 The concept of environmental education

The roots of environmental education lie in other approaches to education like nature education (fieldwork in nature), geographic education (education about space, location and environmental relationships), conservation education (teaching about wise use and management of mainly natural resources, basic ecology and conservation problems) (Irwin, 1990a; 1992:16), outdoor education (teaching and learning outside the classroom, self-development) (Staley, 1983:56; Disinger, 1984:159, Irwin, 1990a:5, Irwin 1992:16) and science education (McKeown-Ice, 1994:41). Environmental education incorporates goals and methods from these approaches to develop a new approach to education (Irwin, 1990b:35; 1992:15).

Smyth (1995:9) lists the following as descriptors that have become part of describing environmental education, namely; lifelong, interdisciplinary, holistic, learner-centred, locally relevant, concentric from local to global, quality and value, problem formulating, normative, exemplary, systemic, flexible, adaptable, forward-looking, anticipatory, interpretative, broadening, issue-based, field-based and action-orientated. Depending on the context in which environmental education is defined, these descriptors are used to contextualise and give meaning to the concept.

Furthermore, it appears from the literature that there are four major themes embraced by environmental education, namely; the interrelationship between natural and social systems, the unity of humankind with nature, the impact of society's technology and decision-making, and the continuation of learning throughout the human life cycle (Irwin, 1990a:9; McKeown-Ice, 1994:41). Pemberton (1989:8) adds to these four themes the dimension of motivating citizens to participate in environmental problem-solving. These five themes can be taught using formal subjects such as Geography, Science and History or they can be taught using the environmental education approach in an informal education situation such as on an ecotourism trail (Smyth, 1977:103; Cooper &

Smith, 1989:75). According to Tyson (1994:10-11), four education sectors, namely; the formal (primary and secondary school)[4], non-formal (adult and out of school) (Palmer & Neal, 1994:15), community based (non-governmental organisations) and interpretation (educational and recreational activities) sectors could provide environmental education opportunities. The formal, non-formal and interpretation sectors can utilise natural parks, forests and wildlife reserves and can utilise trails, fact sheets, maps and guidebooks.

When looking at the earliest and most widely accepted definition of environmental education (Loubser, 1991a:21; Irwin, 1992:14; Palmer & Neal, 1994:12 and Schulze, 1994:165) that was formulated by the IUCN (International Union for the Conservation of Nature and Natural Resources) in 1971 it reads as follows, "*Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man (people), his (their) culture and (their) biophysical surroundings. Environmental education also entails practice in decision- making and self-formulation of a code of behaviour about issues concerning environmental quality*". It is noticeable that reference is made to three of the previously identified themes by Irwin (1990a) and McKeown-Ice (1994). The IUCN's definition describes environmental education as a process through which people develop skills, values and attitudes to enable them to operate with care and understanding towards the total environment, the biophysical and the cultural, to ensure a quality life (Lisowski & Williams, 1993:73). The definition further emphasises the inter-relatedness of people, their culture and their biophysical surroundings. Skills that can be developed through environmental education according to Wade & Hughes (1994:7) and Lisowski & Williams (1993:73) are; communication, numeracy, study skills, problem-solving, personal

4. In South Africa this sector is divided into the General Education and Training Band (National Qualifications Framework (NQF) Level 1 which include the Pre-school, Foundation Phase (Grades 1-3), Intermediate Phase (Grades 4-6), Senior Phase (Grades 7-9) and Adult Basic Education Training (ABET) Levels 1 to 4; and the Further Education and Training Band which includes NQF level 2 that constitutes Grades 10-12.

and social, information technology, decision-making, identification of environmental issues and analysing issues from different perspectives.

Another definition of environmental education was adopted in 1975 at the Belgrade Workshop and in 1977 in Tbilisi at the Intergovernmental Conference on environmental education. This definition describes environmental education as "... *a process aimed at developing a world population that is aware of, and concerned about, the total environment and its associated problems, and which has the knowledge, attitudes, skills, motivation, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones*." This definition, like the previous IUCN's definition, describes environmental education as a process and refers to three of the four themes identified by Irwin (1990a) and McKeown-Ice (1994). Like the IUCN it does not make reference to the fourth theme of learning as a lifelong experience. The Tbilisi definition adds to the IUCN's definition that knowledge, motivation and commitment are needed to find solutions for environmental issues. According to Robertson (1994:22), knowledge is that which has been provided and confirmed by evidence of the senses through observation, thus implying that people should become involved in environmental education events to ensure that they enhance their knowledge. The concept environment takes on an even broader meaning than in the IUCN's definition, namely, "total" environment.

Irwin (1990a:2; 1992:14) highlights two complementary concepts of environmental education which correspond with the Tbilisi and IUCN's definitions. The first is the concept of decision-making. He is of the opinion that political processes must be understood and political structures should be in place in order to participate actively in decision-making about environmental issues on local, national and global scale. The other is, to clarify concepts related to environmental education and to acquire the necessary knowledge and understanding of ecological principles and processes before properly informed decisions about environmental issues can be made.

The Tbilisi and IUCN's definitions of environmental education discussed above contain the basic objectives, formulated at the Tbilisi Conference in 1977, that environmental education should strive to; establish an awareness of the total environment, provide opportunities to acquire knowledge, values, attitudes and skills needed to protect and improve the environment, and to create opportunities for participation in actions toward the resolution of environmental issues (Braus & Wood, 1993:6,7; Palmer & Neal, 1994:13).

A definition that includes many of the concepts in the Belgrade (1975) and Tbilisi (1977) definitions is that of Joubert & Steenkamp (1995:11) who describe environmental education as "*... basically a process that seeks to develop the necessary awareness, knowledge, concepts, ethics, values, skills, and commitment to allow people to become environmentally literate in order to be pro-active in securing a healthy and properly functioning environment that is sustainable*". The definition adds the idea of a healthy environment, the concept of sustainability, being environmentally literate and being pro-active. According to Clacherty (1992:26), by definition, an environmentally literate person will "*... have a critical awareness of social, economic and political forces in society as these relate to environmental quality and the quality of life, will not be swayed by current opinion and assumptions in society and will be committed to acting for positive change within this arena.*" The definition further adds the aspect of sustainability and by doing so implies responsibility that can, according to Tudor (1990:11), be achieved by providing environmental management skills and knowledge to decision makers. This focus of the definition would imply that the content used for environmental education should include technological aspects that can be used to understand and manage environmental problems.

Other authors do not necessarily redefine environmental education, but they do include other notions which are not contained in the previous definitions. Notions that are included in environmental education are that; environmental education uses and links a variety of learning resources both indoors and outdoors (Pohorille,

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1985:2; Ryan & Ray, 1991:9; Akwa, 1994:1), is multidisciplinary and interdisciplinary (Loubser, 1991b:82; Irwin, 1992:15; Lisowski & Williams, 1993:72; Palmer & Neal, 1994:23), is a continuous and lifelong process starting at pre-school and extending into adulthood and includes businessmen (Viljoen, 1993:22; Palmer & Neal, 1994:21) and uses experience-based teaching methods like active exploration, problem-solving, touching, smelling, tasting, seeing and hearing (Braus & Wood, 1993:9) which bring the learner into direct contact with the community and nature area. Environmental education can also develop skills (NCC, 1990:3), attitudes (Lisowski & Williams, 1993:72,74) and concepts that focus specifically on environmental interrelationships, and it has a holistic approach (Irwin, 1990a:2; Palmer & Neal, 1994:32) involving all three domains of human development, namely; the cognitive, affective and psychomotor.

The tendency of environmental education definitions to evolve is one reason why these definitions are interpreted and applied differently. The interpretation and application of these definitions can be grouped into two groups, namely, the more narrow and limited issues-oriented application and the broader social-critical application.

The first of the two interpretations is an earlier interpretation of environmental education and is narrow and limited. It is perceived as issue-oriented with an ethno-centric focus that views the ecological system as part of the human environment and educating *in* and *about* the environment are emphasised (Fien in Tudor, 1990:13; Viljoen, 1993:22). Education about the environment seeks to discover the characteristics of an area using investigation techniques. The aim is to provide cognitive and factual information. Education in the environment uses the environment as a medium for observation and inquiry. Being an issue-oriented application of environmental education it tends to focus on issues such as resource destruction, pollution and conservation and ignores social, political and economic approaches (Council for the Environment, 1993:10; EEPI, 1993:9; Joubert & Steenkamp, 1995:18). It also concentrates on the communication of information

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to make the public aware and change their behaviour, and nature study fieldwork experiences are conducted to change values and attitudes (EEPI, 1993:9 and Joubert & Steenkamp, 1995:18).

The behaviourist and "social engineering" (manipulation of those-who-don't-know by those-who-know-what's-best-for-the-environment) perspectives of changed education (EEPI, 1993:11) forms the basis of this ethno-centric focus. It assumes that exposing people to experiences in nature would solve environmental problems and that by informing them about conservation problems their environmental awareness will increase, their behaviour would change and the environmental problems disappear (O'Donoghue & Ashwell, 1994:14).

If this study were to focus only on this interpretation of environmental education it would mean that ecotourism trails would be seen as a means of teaching the agents only facts about the environment in which the event was taking place. Planning principles would focus on conservation, providing information and creating environmental awareness. Only so-called experts would provide information.

The second group of applications of environmental education definitions is broader and more balanced and has an eco-centric focus (human ecology approach) (Disinger, 1984:158; Fien in Tudor, 1990:13; Viljoen, 1993:22). This application of environmental education educates society as part of the ecology to achieve an ecological equilibrium. This focus is a social-critical one and aims to educate *for* the environment. Huckle (1991) defines environmental education for the environment as being, "*... a shared speculation with the pupils on those forms of technology and social organisation which can enable people to live in harmony with one another and with the natural world.*" Huckle emphasises the role of social structure in environmental problems and solutions and considers social-economic, political, spiritual and social values.

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Husen & Postlethwaite **ed.** (n.d:1680) expand on this interpretation of education for the environment by adding that it should be for the enhancement or preservation of the human environment by producing appropriate behaviour and attitudes. This participatory and social-process approach (EEPI, 1993:11) replaces the initial behaviouristic approach to become relevant to both rural and urban societies as noted by Southern (1971:57) over two decades ago. This interpretation is more closely linked to ecotourism because it emphasises participation and a more holistic education approach. O'Donoghue & Ashwell (1994:15) identify three applications within the social-critical application of environmental education, namely; constructivism, active learning and learning based on interaction.

According to the first application O'Donoghue & Ashwell (1994) identify namely, the constructivist interpretation, learners will actively construct meaning when in the field by drawing on existing understandings of the situation. Learners would therefore bring in and build on their prior knowledge and experience of a situation. The second application O'Donoghue & Ashwell (1994:15) mention is that of active learning which focuses on the role people play in the environment both to conserve and to harvest environmental resources (Council for the Environment, 1993:10). This, according to EEPI (1994:11), implies that teaching and learning should move towards thinking skills and problem-solving. Responsibility and an awareness of the consequences of actions must be taken. This interpretation allows an active mediator to guide the learner in the development of knowledge and values. The third application is learning based on an interactive process of thinking, touching and talking (reflection, encounter, dialogue) (O'Donoghue & Ashwell, 1994:15). Learners are given an opportunity to investigate local environmental problems and try to find solutions. Learning is done through activity that can bring about a change in the meaning of the human experience (Robertson, 1994:22). According to O'Donoghue & Ashwell (1994:16), it is clear that there has been a movement from expert-driven approaches, through neutral facilitation to joint investigations and problem-solving.

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The issue-oriented and social-critical interpretations and applications of environmental education can be summarised as in Table 2.2.

TABLE 2.2 ISSUE-ORIENTED VERSUS SOCIAL-CRITICAL ENVIRONMENTAL EDUCATION

ISSUE-ORIENTED	SOCIAL-CRITICAL
Ethnocentric focus (viewing the ecological system as part of the human environment and education)	Ecocentric focus (educating to achieve ecological equilibrium with society being part of the ecology)
Education **in and about** the environment	Education **for** the environment
Nature experience provided for observation and enquiry	Broader experiential learning
Draws on transmission teaching and behaviourist learning	Draws on active learning, constructivism and learner based interaction
Social engineering, top-down learning	Action research approach to learning, down-up learning
Educate to get cognitive and factual information across to create awareness and modify behaviour to conserve the environment	Educate about a wide range of issues like health, social, justice, peace, economic well-being and environmental quality for sustainable development and living

Compiled from Disinger, 1984:158; Fien in Tudor, 1990:13; EEPI, 1993, 1994; O'Donoghue & Ashwell, 1994:14,15.

From the preceding analyses of environmental education definitions and the possible two ways in which they can be interpreted and applied, it becomes clear that environmental education is a concept that is applied and interpreted in many ways. Therefore, for the purpose of this study, environmental education can be described in the context of the conceptual analyses of environmental education and both the interpretations summarised in Table 2.2 as *a holistic, multi/inter-disciplinary continuous education process, using experience-based methods to enhance the development of knowledge, skills, values, attitudes and behaviour to*

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make people environmentally literate so that they can actively participate in decision-making and problem-solving regarding the total environment, and consequently improve their quality of life in a sustainable way.

2.2.2 Environmental education planning principles

Contrary to ecotourism where different researchers use a process of concept analyses as their primary basis for postulating planning principles, environmental education already has a set of twelve generic planning principles. The twelve Tbilisi principles established in 1977 form the basis and guidelines for implementing environmental education according to Irwin (1992:15). This set of principles is used by institutions such as the Wisconsin Department of Public Instruction (Engleson & Yockers, 1994:10) to develop a guide for environmental education curriculum planning. These principles clarify and support the concepts contained in the definitions in 2.2.1. These guiding principles are that environmental education should:

1. "*consider the environment in its totality - natural and built, technological and social (economic, political, cultural-historical, ethical, esthetic);*
2. *be a continuous lifelong process, beginning at the preschool level and continuing through all formal and nonformal stages;*
3. *be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;*
4. *examine major environmental issues from local, national, regional, and international points of view so that students receive insights into environmental conditions in other geographical areas;*
5. *focus on current and potential environmental situations while taking into account the historical perspective;*
6. *promote the value and necessity of local, national, and international cooperation in the prevention and solution of environmental problems;*
7. *explicitly consider environmental aspects in plans for development and*

growth;

8. *enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting the consequences;*
9. *relate environmental sensitivity, knowledge, problem-solving skills, and values clarification to every age, but with special emphasis on environmental sensitivity to the learner's own community in early years;*
10. *help learners discover the symptoms and real causes of environmental problems;*
11. *emphasise the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;*
12. *utilise diverse learning environments and a broad array of educational approaches to teaching, learning about and from the environment with due stress on practical activities and first-hand experience*" (Engleson & Yockers, 1994:159).

These twelve principles together with the conceptual analyses of environmental education are used to expand on the ecotourism planning principles in 2.1.2. Before this is done the links between ecotourism and environmental education are extracted from the conceptual analyses in 2.1.1 and 2.2.1 and planning principles in 2.1.2 and 2.2.2.

2.3 The links between ecotourism and environmental education

The links between ecotourism and environmental education are contextualised in the real domain of the research problem, namely, trails.

Similar to ecotourism the original motivation for environmental education was the concern for the environmental crises and the desire to **protect and conserve** the natural environment from human threat, the first link. However, in the definition analyses it becomes clear that this conservation responsibility changed into a drive

to develop a population that is aware of and respectful towards not only the natural environment but a broader environment. This expanded and amplified interpretation over time of the concept environment to include the political, social, cultural and economic dimensions of a **total environment** is the second link between ecotourism and environmental education. However, ecotourism has the tendency to develop travel experiences only in nature areas and their related cultural aspects. If ecotourism were to embrace fully, this total environment concept, the challenge would be to expand its market to include other environments such as the built, urban and indoor environments as well. The challenge is to utilise the full capacity of the local environment in which an ecotourism event is set to facilitate an environmental education experience.

A third link between ecotourism and environmental education is that both approaches deal with **human-environment relationships**. Both environmental education and ecotourism strive to reconnect people with the environment. The social agents, in the case of ecotourism the ecotourist, owner, planner and host community, and in the case of environmental education the learner, facilitator and society, are in a relationship with a broader environment. In the case of ecotourism, the environment can be a trail and for environmental education, it can be a specific local, national or global environment. Both the approaches look at the relationship people have with their environment whether it is a rural or urban trail and how this relationship can be developed to ensure responsible decision-making and help make learning possible.

Applying this to the research it can be postulated that an ecotourism activity like a trail has the potential to provide an opportunity for the agent using the trail, namely the trailist to engage in a relationship with the trail environment. Through this relationship the trailist can have an educational experience along the trail environment that can include natural and cultural aspects of the environment. The ecotourism trail, therefore, can provide an opportunity to facilitate environmental education (Jacobson & Robles, 1992:702). The concept environment, and

specifically the trail environment, is discussed in Chapter three.

This emphasis on interrelatedness of people in a broader environment leads to the fourth link between ecotourism and environmental education. Both aim to provide a **lifelong interpretive learning and enlightening experience** that will broaden people's understanding of the environment in which they live or practise their recreation and tourism, what the environment's characteristics are, how the environment functions and what environmental problems are encountered. A person can also relate local environmental issues back to global and national environmental issues. Drawing such comparisons via a learning experience relates to other aspects of ecotourism like changing the tourist's, host community's and owner's attitudes and behaviour positively towards the local environment. The enlightening experience concept also encapsulates the idea from the ecotourism concept of enabling the tourist, host community and owner to better understand the functioning of the environment and create care and understanding towards the environment thus nurturing humankind's unity with nature. This links with the first commonality between ecotourism and environmental education and can contribute to making participating agents more environmentally literate.

The fact that ecotourism and environmental education want to provide a continuous and lifelong experience implies that ecotourism will have to continuously audit developments to determine whether it is still benefiting the tourist, host community, environment and the owner. Furthermore, the two approaches do not see the agents as empty vessels but rather as active constructors of meaning, who always bring their existing understanding into the learning situation (O'Donoghue & Ashwell, 1994:15). This means that the tourists will use their previously obtained knowledge to make sense of what they see in the field when walking a trail. The host community could also share indigenous knowledge with the tourist and trail planner. The trail owner might have knowledge that could be shared with the tourist and host community. Specialist knowledge can also be used from subject specialists as long as it is not the only

source of information.

A fifth link between ecotourism and environmental education is that both strive to **involve all agents** in the ecotourism and environmental education experiences they provide. This would mean that in an ecotourism development all the agents including the tourist, host community, trail owner and trail planner should participate in the planning and development of the ecotourism event such as a trail. From an environmental education point of view this implies that the learner, who can be a tourist, should engage in the learning activities and their planning with the facilitator and the society in which the educational experience is provided. Both approaches aim at providing opportunities for **active participation** for these agents. Blignaut (1992:252) comments that meaningful public participation requires that people understand the dynamics which operate within their environments. If applied to this study it would mean that all the agents should understand the trail environment of which they will be part. To do this, the necessary knowledge, skills and attitudes should be developed in people to empower them to be actively and confidently involved with the planning of the ecotourism event. For this study it would imply involving all agents in the planning, while at the same time providing an educational experience. This would mean that the tourism planner should not be regarded as the only expert and role player in the planning and development. The host community and other agents such as the tourist and owner should also be active in the process. The process should strive to be interrelated and complementary.

Emphasising active participation leads to the sixth link between environmental education and ecotourism, namely, **host community involvement** that includes the application of indigenous and local expert knowledge. It ties in with the idea within the ecotourism approach that the host community should be involved in decision-making. Knowledge about the ecology of the affected environment should be obtained before planning decisions are taken. This approach means that there should be a balance between asking and telling the agent about the

environment and the plans for it. There should not be a top-down authoritarian or social engineering approach, but rather an active mediation of knowledge and values to agents (O'Donoghue & Ashwell, 1994:15). Both environmental education and ecotourism encourage the development of skills and methods such as case studies, issues-based work and practical involvement in real local issues. These methods can typically be used on a trail to ensure that agents engage actively in the process. Furthermore, ecotourism and environmental education encourage problem-solving. Trails can be used as a means to illustrate certain environmental problems such as erosion, pollution and invader plants. These issues can then be discussed by the tourists who could make suggestions for possible solutions. This active learning, as opposed to mere transmission of information, should allow learners to feel part of the education process. Dialogue, interaction, hands-on work, learning in the context of environmental problems, issues and processes must form part of the teaching and learning approach used on the ecotourism trail. This aspect corresponds with the participatory link between ecotourism and environmental education discussed earlier.

The seventh link between ecotourism and environmental education is that both strive to **improve the quality of life** of all agents that are part of the planning and educational experience. Both ecotourism and environmental education strive to improve the quality of human living environments including the social, visual, natural and cultural dimensions of it. The two approaches also strive to improve the economic environment of people. Economic upliftment can be achieved by involving communities in the development of projects, such as, trails resulting in job creation and financial gain. However, this responsibility of financial gain extends to all the agents including the owner and tourist. The owner should make a profit while the tourist gets value for money spent.

An eighth link between ecotourism and environmental education is that both strive through the other links to **develop environmental responsibility** in people and in this way ensure sustainability of the environment for future generations.

The ninth link is that both approaches have a **holistic** approach and focus on a total environment and a total person including the cognitive, affective and psychomotor domains of the person.

What becomes noticeable when identifying the nine links between ecotourism and environmental education is that the links are interrelated with one another. With these theoretical links as framework a set of revised principles is now postulated. Due to the close links between ecotourism and environmental education the original list of principles in 2.1.2 do not require many additions. The additional information is highlighted in cursive print and the numbers in brackets indicate the environmental education principles associated with the original ecotourism principles. Ecotourism planning principles that incorporate environmental education principles are:

1. Inclusion of the **total environment** namely the biophysical (natural and built), social (cultural-*historical*, economic, *ethical, aesthetic and* political in a holistic *and balanced* planning procedure. (1 and 3)

2. Planning **responsibly and sustainably** for all agents (role players) namely the tourist, owner (private and government), planner, host community and total environment *considering current and historical environmental aspects in planning* to instil an ethical responsibility in the agents. (7 and 5)

3. Provision of an **enlightening and educating experience** to all the agents that are part of the ecotourism development to increase awareness and understanding of the total environment *as part of a continuous lifelong learning process that makes use of a diverse learning environment and a broad array of education approaches to develop critical thinking and problem-solving skills*. (2 and 11)

4. **Conservation and protection** of the total environment that ecotourism utilises as its resource by *emphasising environmental sensitivity and the symptoms, causes and complexity of environmental problems* and in the process minimise negative impacts. (9)

5. **Involvement of and benefit to all the agents** that are part of the ecotourism development especially the **host community** *by taking cognisance of local, national and international inputs and contributions*. (6 and 4)

6. Provision of **economic benefits** to all the agents.

7. Provision of a **participatory experience** to all the agents *that include practical and first-hand experiences and create opportunities for the ecotourists to plan their learning experience*. (3, 12 and 8)

The applicability of these principles to trails is reviewed in Chapter three when the concept environment and more specifically the trail environment as the agent in the real domain of this research are investigated. A revised set of principles is then compiled.

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CHAPTER 3: THE TRAIL ENVIRONMENT

In Chapter two the conceptual links between ecotourism and environmental education, that form the empirical domain of the three-tiered ontology of this research, were identified and seven planning principles postulated. In the process the concept "environment" featured continuously. Due to this, and the fact that ecotourism trails form the specific environment and real domain event within which the research is conducted, it is firstly important to survey what the concept environment, and then specifically trail environment, means in the context of the research. The importance of such an analysis lies therein that the concept, environment can mean different things to different people and is used and interpreted in diverse ways by researchers and authors (Shongwe, 1996:13). According to Robertson (1994:29) the reason for the lack of conceptualising the environment lies in the fact that little research literature exists on how different people understand the term environment.

To avoid any misunderstanding on how the term environment is understood and applied in the research, the researcher will firstly survey the dictionary and geographic understanding of the concept environment. Thereafter the term environment, as used in ecotourism and environmental education, will be analysed. This conceptual analysis will form the framework that will be used to specifically analyse the trail environment. Hugo (n.d.:6) emphasises that to plan ecotourism trails the planner should not only understand the need of the trail user but also the environment in which the trail is located and the integrated and dynamic people-environment system associated with its location.

At the end of the chapter the seven planning principles from Chapter two will be reviewed, specifically in the context of the trail environment. Principles applicable to an ecotourism trail environment, that will facilitate environmental education are then proposed.

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3.1 The concept of 'environment'

The dictionary definitions of Sykes (1976:347), Landau (1983:213) and Medlik (1993:55) of the term environment summarise the environment as the external surrounding conditions, influences, objects, region, circumstances of life of persons or society. According to these authors, environment can refer to physical, e.g. natural or built, or other conditions or influences e.g. economic, social, cultural or political, that affect the existence and development of an individual organism or group.

The built environment according to Hinch (1998:186) can include people-made aspects like architecture, history, sports and cultural centres, restaurants, entertainment and industrial areas. The natural environment can include fauna and flora, geology, climate and scenic views while the cultural environment brings people together and allows them to experience each other's art, history, literature, traditions, crafts and folklore. The cultural environment provides a social dimension to the environment which helps to improve interpersonal relationships (Hugo **et al**, 1995:4). The political environment can include aspects related to government such as elections, peace and war. Economic aspects of the environment can include issues such as jobs, material wealth, economic structures, economic practices and the standard of living of people.

The above clarification of the environment illustrates the expansion of initial definitions of the environment to include the social element which again leads to the notion of public involvement becoming a critical element in the process (Huggins & Barendse, 1994:1-2). Such an understanding of the environment recognises the environment in its totality and holistically with many interrelationships and interdependencies and calls for human responsibility and acceptable attitudes in the way people use the environment to satisfy their needs and wants (Fien, 1995:22). Inherent to such an understanding of the environment are three elements namely the individual, the society (people) and the ecosystem

(Fourie et al, 1990:100). Individuals and people are seen as part of an intricate web of life and not something separate.

3.1.1 Geography and the term 'environment'

The fact that the research lies in the field of Geography requires that the understanding of the environment by geographers be investigated.

Similar to the description in the dictionary of the term environment, geographers also perceive the environment as the sum total of conditions that literally surround humans at any one point on the earth's surface (Haggett, 1975:11-12). Humans are perceived as being in a relationship with the environment. In Geography this relationship is explained as a two-way system because humans can be affected by the environment and humans also have the capacity to modify the environment.

McKeown-Ice (1994:40-41) expands on this understanding and points out that geographers tend to study the natural environment, namely the biotic and abiotic elements, how human behaviour affects and alters the environment, how the environment influences human behaviour and how populations perceive their surrounding environments, how people use and change this environment at local, regional and global scale.

The four aspects that McKeown-Ice (1994) lists as being part of the environment focus strongly on the behavioural environment and can include forms of action aimed at bringing about organisation for the purpose of survival and achieving the maximum benefits for the society (Fourie et al, 1990:103). This is an added dimension to the environment that Sykes (1976) and Funk and Wagnalls (1983) do not mention.

From the dictionary and geographic interpretation of the concept environment, it can be summarised that the environment consists of six dimensions, namely; the

physical (natural and built), economic, social, cultural, behavioural and political. Taking this understanding of the environment as reference point it is possible to surmise that the environment in which this study takes place includes the natural and people-made environment as well as the behavioural environment (educational). The reason for this deduction is that the study concerns itself with the interactions among different groups of agents. These agents are part of the planning process of a trail that facilitates environmental education (behavioural environment). The trail is thus situated in a specific physical, social, political and economic environment. To contextualise the environment only within Geography would be simplistic because the research, that forms the empirical domain of the research, also lies within the two approaches environmental education and ecotourism.

3.1.2 Environmental education and the term 'environment'

The term "environment" continues to take on an ever-changing meaning in environmental education (Cooper & Smith, 1989:75). Boesler (1994:7) points out that in the early 1900s the environment was seen as the supplier of resources and the waste deposit for the social system. The environment was seen as a free commodity. This perception has changed and environmental education programmes are seen as a way in which to sensitise people to their interconnectedness with the environment (Boesler, 1994:9) and to motivate them to utilise natural resources without depleting them.

In 1991 Clacherty (1992:26) deduced from research done with final year education students that they perceive the term "environment" commonly as "nature". Clacherty did, however, point out that in environmental education the concept environment should take on a broader meaning than this. Environment should be understood as the conceptual interactions between bio-physical surroundings and the social, economic and political forces that organise people in the context of these surroundings. Blignaut in 1990 found considerable support

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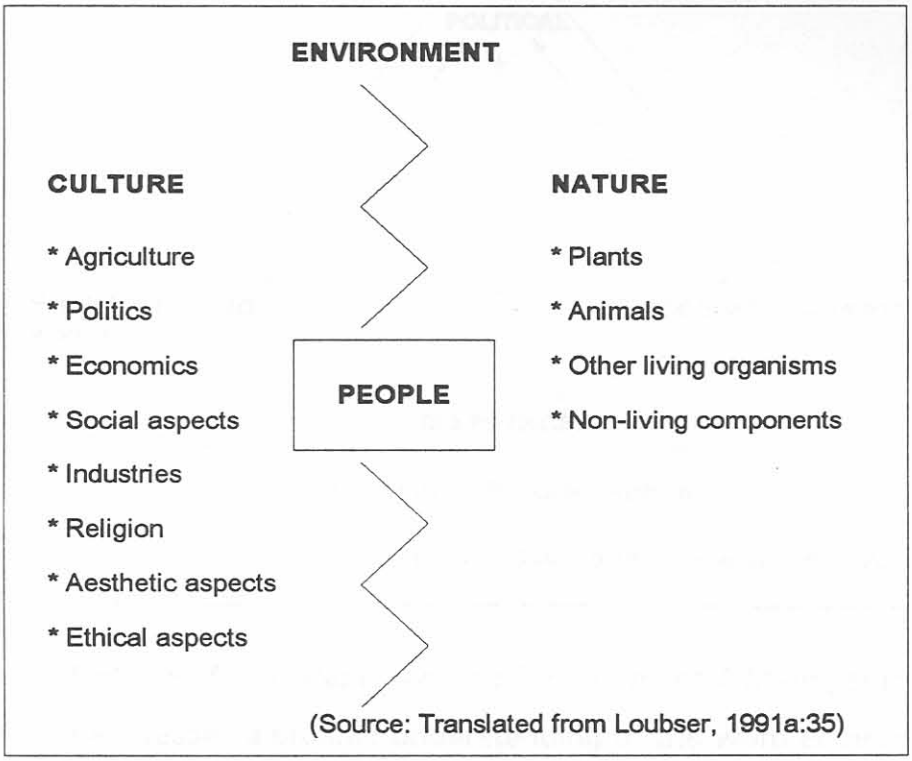
for including the bio-physical, social, economic and political aspects of the environment in environmental education. Di Chiro in 1987 had already postulated this understanding of the term environment (Robertson, 1994:25).

Cooper & Smith (1989:76) attribute an even broader understanding to the term environment. They describe the environment as a total entity that together with the natural, built, social, economic, cultural and political dimensions, includes four aspects such as technological, moral, historical and aesthetic value. The researcher would choose to place these last four aspects into the descriptions and understandings of the term environment up to this point. The moral and aesthetic aspects can be placed within the behavioural environment, the historical within the cultural domain and the technological aspects within the social domain of the environment.

On the other hand Loubser (1991a:35) conceptualises environment as the relationship between only two broad domains of the environment, namely; the natural and cultural environment. Figure 3.1 illustrates Loubser's understanding of the complex relationships of the components of the environment when people stand at the centre. Loubser uses a zigzag line to show the continuous symbiosis that exists between the cultural and natural components and their sub-divisions. He chooses to group the political, economic, social, aesthetic and ethical domains of the environment identified by other authors like Cooper & Smith (1989) under the cultural domain of his understanding of the term environment. This is an illustration of the argument that different people interpret and apply the concept environment differently (Shongwe, 1996:13).

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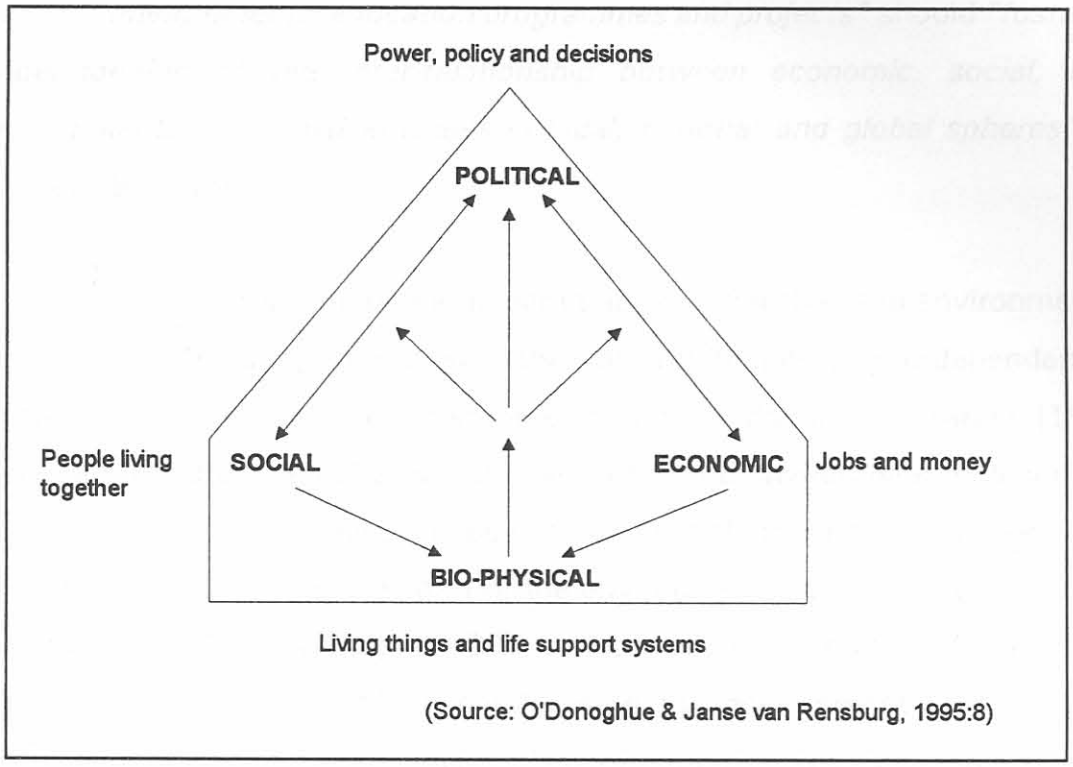
FIGURE 3.1 RELATIONSHIP BETWEEN THE COMPONENTS OF THE ENVIRONMENT



The Environmental Education Policy (EEPI) (1993:18), like Cooper & Smith (1989), Clacherty (1992) and Loubser (1991a) supports the wider understanding of the term environment, namely, that the environment includes not just plants, animals and the biophysical world but also people and social structures. O'Donoghue & Janse van Rensburg (1995:8) take this broader perspective of the environment and present it in Figure 3.2 as four interrelated and interdependent domains, namely; the bio-physical, economic, social and political rather than only the two domains nature and culture that Loubser (1991a:35) presents in Figure 3.1. Lisowski & Williams (1993:72) like McKeown-Ice (1994) adds a further domain to these four, namely the behavioural which they understand as the environment that emphasises people's stewardship of the earth.

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FIGURE 3.2 A BROAD PERSPECTIVE ON THE ENVIRONMENT



(Source: O'Donoghue & Janse van Rensburg, 1995:8)

In 1998 the White Paper on the Environmental Management Policy for South Africa expresses a broader understanding of the word environment than in Figure 3.2, by explaining environment as referring to the biosphere in which people and other organisms live. According to this understanding the environment consists of:

- *"renewable and non-renewable natural resources such as air, water (fresh and marine), land and all forms of life,*
- *natural ecosystems and habitats, and*
- *ecosystems, habitats and spatial surroundings modified or constructed by people, including urbanised areas, agricultural and rural landscapes, places of cultural significance and the qualities that contribute to their value*" (South Africa, 1998:9).

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The same document further emphasises the interrelatedness of the different domains of the environment in the context of environmental education by stating that "*... environmental education programmes and projects*" should "*foster a clear understanding of the inter-relationship between economic, social, cultural, environmental and political issues in local, national and global spheres*" (South Africa, 1998:36).

What transpires from the previous paragraphs is that the term environment has a broad meaning and emphasises the interrelatedness, interdependence and interconnectedness of the different environment domains. Marker (1977), in Henning (1979:61), emphasises this aspect of the environment in describing the environment in an ecological sense like Fourie **et al** (1990:100). Marker, Henning and Fourie include people as part of the environmental community which forms a functioning system as Hagget (1975) mentioned in the geographic understanding of the term environment. In emphasising the environment as a system, the implication is that no action can be taken without affecting the people and causing a subsequent reaction by the people. As an illustration of this, Robertson (1994:29) states that an activity such as individual learning does not occur in a social, political or historical vacuum. Likewise, all the domains of the environment are linked, and economic and social decisions have a direct impact on the natural environment and the quality of people's lives. The environment is as much a matter of economic policy and social processes as it is a matter of natural systems and resources (EEPI, 1994:1). Therefore, any action taken by people in the system of the environment should be undertaken with responsibility.

3.1.3 Tourism and ecotourism and the term 'environment'

Fien (1995:22) notes that there is an increasing awareness of the link between human developments like tourism and ecotourism and the environment. Tourism has a strong interest in the environment as a resource for leisure and an economic commodity (Hughes, 1995:52-53). According to Hohnholz (1994:42) the result

is that tourism, like any industry, uses the natural and cultural environment to sell its product. According to Fouche and Esterhuysen (1987:3), tourism has the ability to create both opportunities and problems for societies. For Fouche and Esterhuysen, the ability of a society to derive optimum benefits from tourism lies in the fact that planners and developers understand and carefully analyse the impact tourism would have on the economic, socio-cultural, biophysical and political dimensions of the environment.

In conceptualising the term ecotourism in 2.1.1 it becomes noticeable that, similar to environmental education, different authors include different domains of the term environment in their definitions depending on their personal understanding and application of the term environment. Table 3.1 summarises the different environment domains to which each definition refers. In this summary the researcher uses the analyses of the term environment, as proposed in previous sections in this chapter, as the framework for identification.

TABLE 3.1 ENVIRONMENT DOMAINS REFERRED TO IN EACH ECOTOURISM DEFINITION

DEFINITION	**ENVIRONMENT DOMAINS**
Ceballos-Lascurain (1983)	Natural, cultural and educational
Wight (1993:3)	Natural, cultural, social, economic, educational
Robinson (1993:7)	Natural, social, cultural
Cowling (1993:3)	Natural, economic
Evans-Pritchard and Salazar (n.d.)	Natural, cultural, economic, social
Centre for Ecotourism (1996)	Educational, natural, cultural, economic
Compiled by EMJC Schaller/2000	

From Table 3.1 it is clear that the interpretation of the term environment in

ecotourism has moved from seeing the environment only as a natural and cultural resource to include other domains such as educational, social and economic domains.

According to Hall (1998:23) there has been a growing recognition of the cultural environment within the field of tourism together with the natural and economic environment. Hughes (1995:52) is of the opinion that this has created the cultural context in which the physical environment is embedded and has turned the environment into scenery. Hinch (1998:187) points out that like any environment the tourist attraction comprises a system of three elements, namely; the nucleus of the attraction that could be built (museum), natural (nature reserve) and socio-cultural (traditional village), the human element that would be the visitor, and the marker or informative element which provides the desired sense of place that is intended by the promotional bodies.

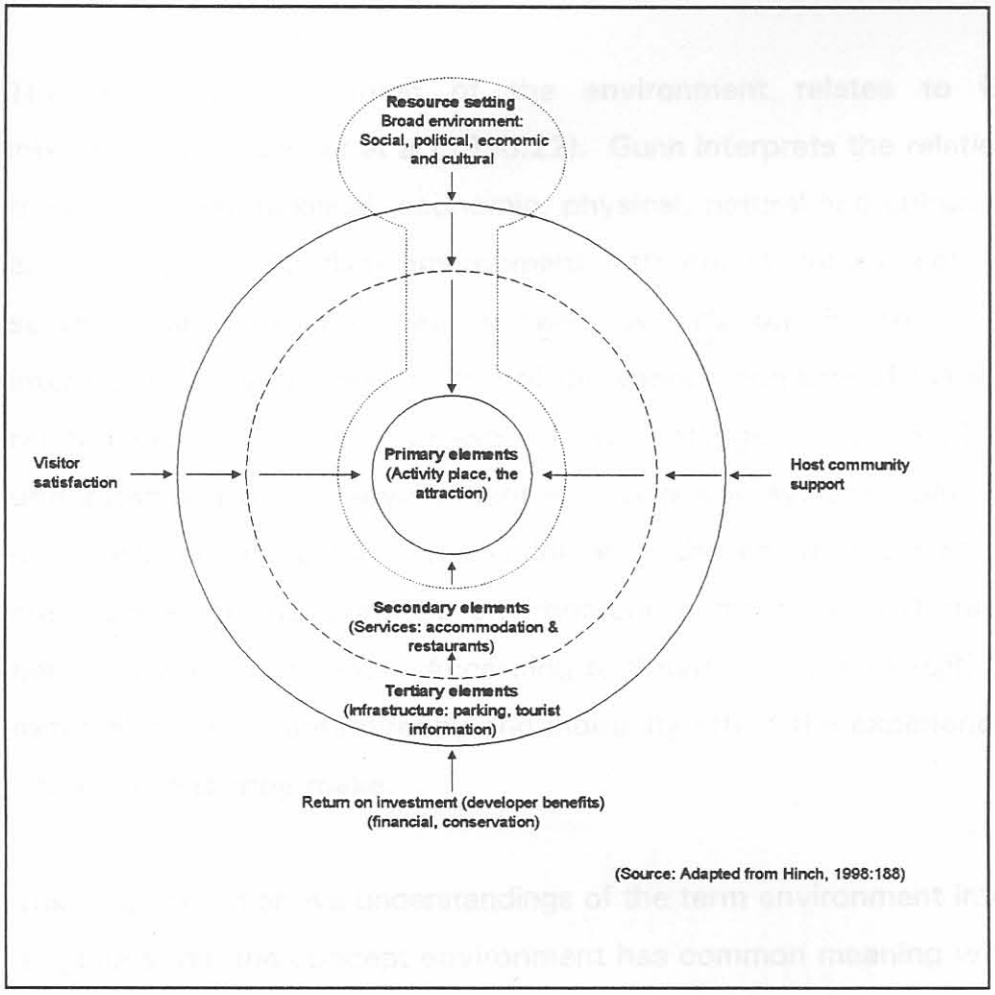
The cultural environment in tourism and ecotourism to which Hughes (1995), Hall (1998) and Hinch (1998) refer, can include political, social and economic aspects as well. The cultural patterns, traditions and lifestyles associated with a place can form an integral part of the attraction of a tourist destination. The danger of this dimension of the environment is that through the consumption of this cultural commodity by visitors the very essence of the attraction can be destroyed (Hinch, 1998:187). It is important to know what the attitudes of local communities towards visitors are. Visitors often seek interaction and this may or may not be welcomed by local communities. The zigzag line in Loubser's (1991a:35) illustration, Figure 3.1, illustrates that there should be no conflict between the cultural and natural domains of the environment, only harmony and interaction.

The economic domain of the environment in ecotourism can, according to Wight (1993:4), include aspects such as income, employment generation and infrastructure development. The political domain of the environment in ecotourism should complement government initiatives such as providing employment

opportunities, developing small and large scale businesses, skills development and marketing drives for the area. The political environment can also include aspects like crime and safety (Fouche & Esterhuysen, 1987:7).

The above interpretations of the term environment within tourism and ecotourism can be illustrated as follows in Figure 3.3.

FIGURE 3.3 FRAMEWORK FOR THE TOURISM AND ECOTOURISM ENVIRONMENT



In Figure 3.3 the core of the environment is the place of activity that is the target of the visitor and developer's attention. The attraction could be located in any environment domain such as natural, built or cultural. The broken line surrounding the core attraction reflects the roots of the core attraction in the broader environment in which the primary attraction is set. The broader environment can

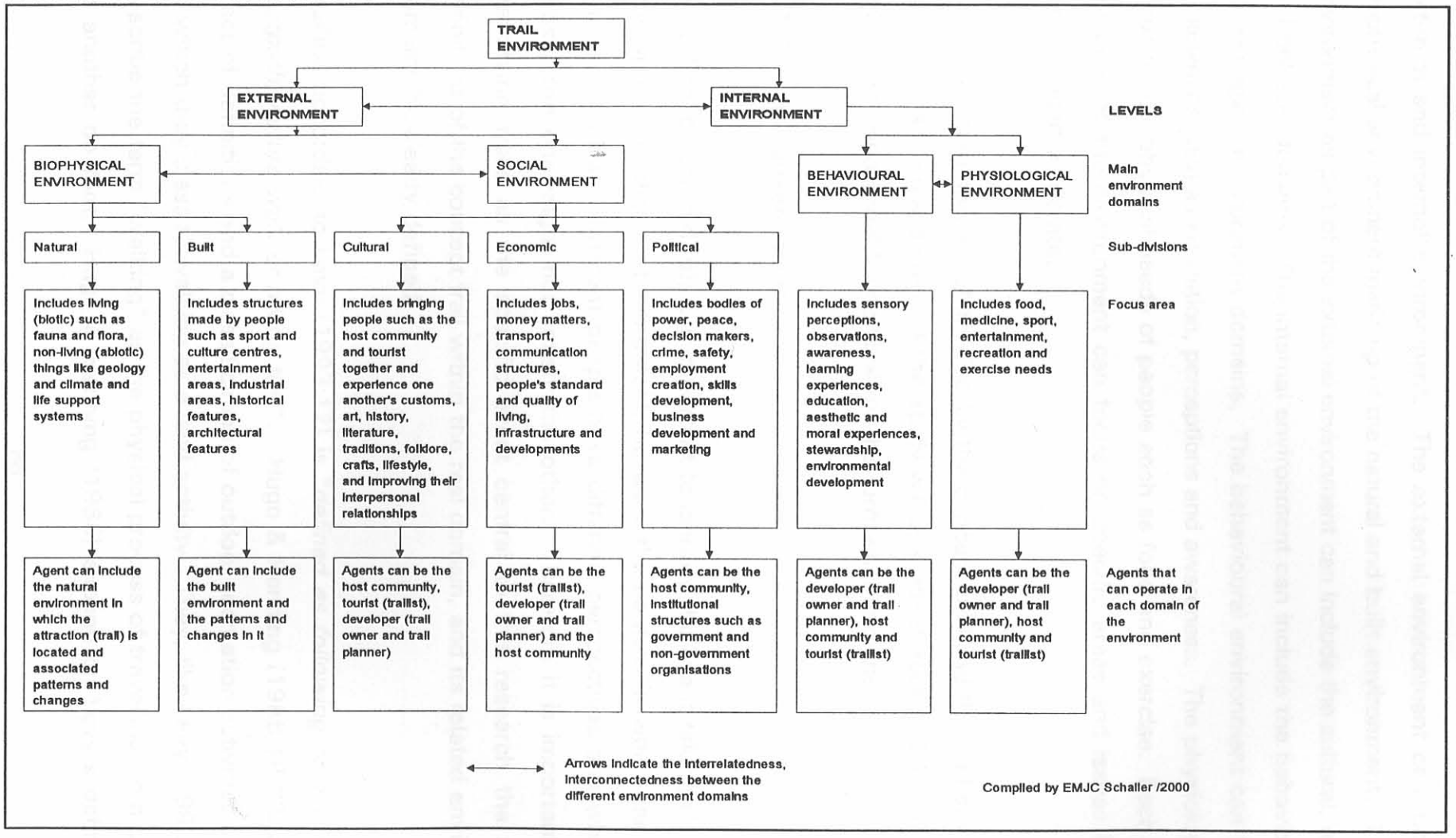
include environment domains such as political, economic or cultural. The next two layers are the services and infrastructure elements of the secondary and tertiary elements of the environment that can be part of the economic and political domain of the environment. The broken line used indicates that the distinction is not absolute but indicates the interconnectedness. The community support as part of the cultural domain, visitor satisfaction as part of the behavioural and/or physiological environment, and return on investment as part of the economic environment are further introduced as part of the environment.

The above understanding of the environment relates to Gunn's (1988) interpretation in Cooper **et al** (1996:22). Gunn interprets the relationship between the environment (political, economic, physical, natural and cultural) and the other elements in the tourism environment (attractions, information, transportation, services and facilities) as a two-way relationship that emphasises the interdependency and importance of the various domains of the environment and related elements. This corresponds with Haggett's (1975:11-12) geographic understanding of the environment as a two-way system. Smyth's (1977:105) interpretation of people's interaction with the environment adds three further dimensions to the concept environment namely the external, internal and behavioural environments. According to Smyth (1977:103-108) the internal and external environments directly and indirectly affect the experiences people have and decisions they make.

Taking all of the above understandings of the term environment into consideration it appears that the concept environment has common meaning within ecotourism and environmental education. These commonalties are that both include the biophysical (natural and built), social (economic, cultural and political), physiological and behavioural domains of the environment. The researcher would summarise the broad conceptual understanding of the term environment as understood from the dictionary, geography, environmental education, tourism and ecotourism interpretations as follows in Figure 3.4.

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FIGURE 3.4 THE TRAIL ENVIRONMENT



The summary in Figure 3.4 illustrates that the environment can be divided into the external and internal environment. The external environment can include the biophysical environment made up of the natural and built environment. The social environment as part of the external environment can include the cultural, economic and political domains. The internal environment can include the behavioural and physiological environment domains. The behavioural environment can focus on experiences such as education, perceptions and awareness. The physiological can focus on the physical needs of people such as food and exercise. Each of these domains of the environment can focus on specific areas and issues in which specific agents operate.

A more in-depth analysis of specifically the concept trail and the trail environment which forms the real domain of this study will be made in section 3.2, using Figure 3.4 as the conceptual framework for the term environment.

3.2 The trail environment

According to Pepi (n.d.:6), it is important to identify the event taking place in the environment explicitly at the outset, because the context in which the event is placed is critical. Different people have different perspectives and what might satisfy the one might not satisfy the other. Therefore it is important that in identifying trails as the specific event central to this research the different definitions of the concept trail within the real domain, and its related environment domains be clearly defined.

Trailing according to Levy (1993:12) is "*defined as following or walking on a footpath, nature walk or hiking trail*". Hugo & Henning (1986:18-19) compiled a set of definitions and a classification of outdoor recreation activities according to which they classify walking as a land activity. They, like Levy (1993) above, describe the term "walking" as the physical process of travelling from one place to another on foot. Hugo & Henning (1986) expand on Levy's definition by

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identifying and defining various recreational activities that can flow from this physiological action of walking. Hugo & Henning (1986) include strolling, walking, rambling, hiking and fell walking/backpacking/free hiking under walking. Table 3.2 contains the definitions Hugo & Henning (1986) attribute to each of these terms.

TABLE 3.2 INTERPRETATIONS OF THE CONCEPT WALKING: HUGO AND HENNING (1986)

TERM	DEFINITION
Strolling	*"an unhurried form of walking in an urban environment with as chief purpose, the idea of being in the fresh air, outside."*
Walking	*"a purposeful form of walking in an urban environment in order to get exercise in the open air."*
Rambling	*"walking along a planned circular route in nature without including steep gradients - should be completed within a day or half a day."*
Hiking	*"walking along a planned and demarcated route in nature with overnight facilities. Carrying food, etc. in a rucksack or backpack is implied in this."*
Fell walking/ backpacking/ free hiking	*"the free movement in a natural area without a demarcated route being followed. Supplies have to be taken along, and these might include overnight equipment."*
Compiled from Hugo & Henning (1986:18-19)	

When the definitions in Table 3.2 are analysed, it is noticeable that Hugo & Henning (1986) link strolling and walking to the urban environment while rambling, hiking, fell walking, backpacking and free hiking are associated with the natural environment. The researcher would choose to argue that such a differentiation is very simplistic because it can be argued that strolling and walking could also take place in the natural environment. Hugo & Henning in their definitions refer to

environmental domains like the biophysical (urban and natural) and physiological (food and exercise).

Using Levy's (1993) definition and Hugo & Henning's interpretation of walking as reference points for the case studies of this study, it is apparent that the trails used as case studies focus on trailing by means of walking. Other types of trailing by means of mountain-biking, canoeing, cycling, horseback, camel, pony, underwater and trails for the handicapped are not part of the research topic and therefore not described in any detail. Before specific trail types are analysed the understanding of the term trail is considered in 3.2.1.

3.2.1 The term trail

According to Abbott (1979:43) the first meaning associated with the word trail in the modern recreational context was a backpacking trip of several days along a marked route usually in a mountainous terrain. But the word trail in its broadest sense means a path (Sykes, 1976:1230) or pathway for people (Hultsman **et al**, 1987:63) and can include any natural or people-made path (Abbott, 1979:43). A trail can also be a functional pathway to get people or goods from one point to another.

In the recreational context Abbott (1979:44) defines a trail as "*... a marked way created to encourage users to participate in a particular activity perhaps for a distinct purpose on a specific route*". This definition attributes certain characteristics to a trail, namely, that it is a specific marked route, developed for a distinct purpose and it provides a participatory experience for the trail user. The definition highlights a few aspects of the trail environment, namely, that there is a person or persons central in the trail environment, namely, the trailist and that the trailist interacts actively with the trail environment via activities when moving along the environment in which the trail is situated. Such an analysis corresponds with the interpretation of the concept environment that emphasises the

interconnectedness between the person in the environment and the surrounding domains of the environment.

Goodey (1974:1.2) expands on Abbott's (1979) active participation idea for trailists. He states that; "*The trail, ..., challenges the visitor to explore, demands a questioning approach, often provides formal links with printed or displayed interpretive material and, most important, invites the user to appraise the quality of what is observed and experienced*". Goodey's definition of a trail points out how the trailist can actively interact with the trail environment, namely, by using exploring, questioning and interpretive techniques as well as making use of interpretive material to assist the trailist in adding value to the trail experience.

Goodey's description of a trail corresponds with the notion that when people move around an environment they sense, interpret, compare and learn different things from different domains of the environment. The trailist hears sounds and sees things which he/she compares with memories and builds new objects and landscapes of meaning (Relph, 1989:283). These experiences are part of the behavioural domain of the environment as contained in Figure 3.4.

Goodey (1979:287) also emphasises the education dimension, which is part of the behavioural domain of the trail environment, and sees trails as an interpretive tool. However, Goodey adds that the success of trails depends on local initiative and careful planning. This supports the primary aim of this research, to compile a trail planning framework that incorporates ecotourism and environmental education planning principles spanning all the domains of the trail environment and being inclusive of all the agents operating in the trail environment.

The general definitions of the term trail by Goodey (1974) and Abbott (1979) highlight the fact that the trail environment can encompass different environments. Abbott (1979:4) indicates though, that not only can a trail encompass different environments but different types of trails can be distinguished, each with its

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associated planned purpose of which one such purpose could be education. According to Goodey (1974:2.2) a trail can have other purposes like enjoyment, conservation and economic benefits which are purposes located within the physiological, natural and social domains of the trail environment. It is however possible that an educational trail can be used for multiple purposes like enjoyment as well as the stimulation of interest in conservation that might bring economic benefit to the developer and host community even though the primary aim is education. What is important is that trails are developed according to their proposed purpose (Goodey, 1974:2.2) because each type of trail requires a different planning approach to function effectively and fulfil its purpose (Hultsman **et al**, 1987:63). Thus, the need for a trail planning framework for trails with an ecotourism and environmental education purpose, which is the premise of this study.

Hugo (n.d:7) refers to trails that apply the principles of ecotourism as "ecotrails". He describes these trails as being *"much more than ecologically and culturally sustainable trails. They also incorporate the experience of the trailist as well as the well-being of the host community as 'added value'. One can furthermore say that an ecotrail is a financially viable, community friendly, educationally enlightening, psychologically satisfying and environmentally sustainable tourist product."* In this description reference is made to domains of the environment such as the biophysical, social, behavioural, psychological and physiological. In the context of the working definitions of ecotourism and environmental education formulated for this study in Chapter two it is possible to adopt Hugo's (n.d) description of ecotrails as a working definition for ecotourism trails as understood in this study.

According to Hugo's (n.d.:7) definition of ecotrails and the principles of ecotourism, the trail environment should include the host community and its needs as part of the cultural dimension of the social environment. The trail development should also be beneficial and not detrimental to the host community and its way

of life. The trail environment should further relate to the economic environment because both the host community and the developer should benefit financially. In the context of the biophysical environment an ecotourism trail should protect the natural environment. It is therefore important, according to Ferreira (1995:64), that the term environment be understood holistically in the context of ecotourism trails to include the biophysical (natural and built) and social (historical, demographic, political, economic and cultural) sub-divisions of the environment.

The literature (Goodey, 1974; Trisler, 1980; Knapp & Goodman, 1983; Levy, 1983; Levy 1984; Roff, 1995) refers to a number of types of trails such as nature, urban/city/town, rural, interpretive, discovery, disabled and wilderness trails. Each of these trails has its own purpose, features and characteristics and operates within a certain environment together with a number of agents operating in an interrelated way. To identify which trail types can be ecotourism trails and which environments they encompass would mean that trail types and their associated environmental domains be surveyed in the context of the conceptual analysis above of trails and their associated environments.

3.2.2 Types of trails and their environments

Hugo & Bewsher (1995) use purpose, environment, format and mode of transport as the four basic principles for classifying trails. Under environment they distinguish between cultural, natural, rural, urban/town, water and air. From the discussion in section 3.1 and Figure 3.4 it is clear that such an interpretation of the environment is not complete because only the biophysical environment (natural and built) and the cultural dimension of the social environment are part of their classification. Hugo & Bewsher (1995) exclude the behavioural, physiological and other social domains like the political and economic. However, Hugo (n.d.:7) in his definition of ecotrails adds a further dimension to environment, namely; the psychological domain.

In section 3.2.1 it is concluded that when Figure 3.4 is taken as the proposed framework for the concept environment, together with the understanding of the term environment within environmental education (3.1.2) and ecotourism (3.1.3) it can be suggested that a true ecotourism trail, that facilitates environmental education, will operate in a broader environment than that referred to by Hugo & Bewsher (1995). It is within this broader environment that the needs of all the agents that are part of the trail environment should be facilitated.

The descriptions of trailing and walking in the literature surveyed (Goodey, 1974; Abbott, 1979; Levy, 1984; Levy, 1993; Hugo, n.d) make provision for four different types of trails that can be identified as ecotourism trails, namely; wilderness trails, hiking trails, urban trails and nature trails. These four trail types and the environments they encompass will be analysed and the planning principles in Chapter two reassessed and adapted for the ecotourism trail environment.

3.2.2.1 Wilderness trails

Levy (1983:17) describes these trails as a walk guided by a game ranger or conservation officer not fixed to a specific path but often following game movements. The guide explains the ecology and management of the environment through which the walk is guided. Conservation principles and ethics are emphasised and much time is devoted to observation and discussion. Wilderness trails can extend over several days but can also be shorter. Wilderness trails contain a strong educational element but the presence of a game ranger makes the use of the trail for general education expensive and only accessible to a small group. According to this understanding of wilderness trails these trails tend to focus on the natural (conservation), educational (behavioural), economic (management) and physiological (recreation) environments.

3.2.2.2 Hiking trails

The next trail type, namely, hiking trails is defined by Levy (1984:1) as, "*A continuous footpath through the natural environment on which the user carries his essential overnight gear and food in a specialised structure commonly referred to as a backpack or rucksack*". These trails cover long distances and overnight huts, shelters or pitched tents can be used for sleeping in (Roux, 1994:115). Hiking trails are usually self-guided and therefore detailed brochures and maps are available. Levy (1983:13) also refers to these trails as backpacking trails. It is not clear from Levy (1983) and Roux (1994) what the main purpose of a hiking trail is. However, from Hornby's (1977:9) description of a hiking trail as providing "*... an opportunity to discover the country-side by a direct association with the natural environment,*" it can be deduced that, the primary purpose of trails i.e. recreation, is expanded, to include the discovery experience as part of the behavioural environment and the people-nature association. Hiking trails can also have accompanying brochures and maps that provide information for those wanting to learn more about the environment in which the trail is situated. Hiking trails can also go through wilderness areas. From these understandings of hiking trails it can be deduced that hiking trails can include the natural, behavioural (discovery) and physiological (overnight facilities, food, exercise) environment.

3.2.2.3 Nature trails

Levy (1984:1) defines a nature trail as "*A route planned to link features of interest outdoors, along which some form of interpretation is provided to explain natural and cultural history, conservation and management principles of these features.*" This type of trail focuses on the outdoor environment and experiences (behavioural environment) as well as related other domains of the environment like culture, natural (conservation) and economic (development). This type of trail adopts the broad context of the concept environment which both ecotourism and environmental education propose, namely; the natural, cultural, economic and

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behavioural (educational) domains. These trails are grouped by Levy (1993:12) under day walks.

Sharpe (1976:247) and Goodey (1974:1.7) support the interpretive value of nature trails that Levy (1984) mentions in her definition. Sharpe and Goodey are of the opinion that nature trails can be planned with a specific educational objective and accompanying brochures containing information on ecological or historical features on the route. Smith (1984:16) expands on the ideas of Levy (1984) and Sharpe (1976) by adding that nature trails can be an outdoor tool used for learning about the environment and helps users to focus on the environment. Such trails can help to develop respect for nature (Raze, 1993:26). The interpretive, knowledge expansion and environmental awareness experiences that nature trails can provide, according to these authors, form part of the aim of environmental education. Goodey (1974:1.7) as well as Levy (1984:1) further perceives nature trails as a tool to manage the use of natural areas by people.

Knapp & Goodman (1983:53-54) add to the education and management dimension of the nature trail another dimension, namely, community involvement in the planning of the trail. Instead of letting only the expert design and label the trail, the community can assist. They can share information and questions about features on the trail. In this way the host community and potential trail user can discover the environment along the trail together. An approach like this links with the host community involvement proposed by ecotourism.

Nature trails can take two forms. The one is a general station type where particular objects or themes in the environment are chosen and logically and sequentially linked to be observed and studied at intervals along the trail route (Wray, 1968:21). The objects chosen are not from one specific area of the environment but rather from a variety of areas like plants, animals, geology, history and culture (Knudson **et al.** 2000:3). This type of trail can have an interdisciplinary thematic approach which is suitable for environmental education.

The other form a nature trail can take, is a thematic format where different aspects of one specific theme like plants are studied in detail throughout the trail (Wray, 1968:21; Knudson **et al.**, 2000:3). Such a trail can be used for specific subject studies.

Levy (1984:1) also refers to nature trails as interpretive trails that can be on land, on surface water (canoes) or underwater (snorkelling and diving) implying that such trails can pass through a variety of physical (natural and people-made) environments. Trisler's (1980:30) understanding of an interpretive trail as a trail that teaches about the environment, has a number of learning stations and has an activity booklet that contains information that corresponds with numbers on the trail, expands on Levy's (1984) understanding. According to Trisler (1980) the environment, through which the trail passes, forms a learning environment for the tourist. The definition Roff (1995:1) attributes to interpretive trails, namely, that they are "... *guided walks with the aim of helping people come to a greater understanding of their environment ...*", also emphasises the idea of providing a learning environment for the trailist.

Knudson **et al** (2000:1) describes an interpretive trail as something more than a path connecting two points. According to them it includes the pathway, the surrounding scenery, and the interpretive devices along the trail. For them the path becomes a guide to the forest or natural area, rather than a way through it. According to Cohen (1994:302) a trail that passes through the natural environment will create a place to reflect upon and preserve and cherish memories. Such a trail can create opportunities for aesthetic and spiritual experiences, while others reflect on informational or attitudinal perspectives. To experience nature itself is an important precursor to forming realistic and enduring images of the environment. The trailist can gain a sense of where people live in and around the trail area, how they work and play. Such a trail thus spans the natural and behavioural environment. Knudson **et al** (2000:1) are also of the opinion that an interpretive trail can fulfil needs in the behavioural and physiological environment

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of people. In the behavioural domain it can provide a learning experience by providing ecological information and understanding. In the physiological domain it provides recreation and exercise. Both Knudson **et al** (2000) and Cohen's (1994) understanding of a nature trail as an interpretive trail points out that a nature trail can encompass a broad environment namely the social, biophysical, behavioural and physiological.

From the descriptions of Levy (1984), Roff (1995) and Knudson **et al** (2000) it can be concluded that a nature trail can also be called an interpretive trail and an educational trail because it facilitates a learning experience. However not all nature trails have to be educational and include the behavioural domain of the environment. According to Nichols (n.d. in Ferreira, 1995:64) interpretive trails can provide cognitive learning which is essential for conceptual understanding and will enable positive environmental action. An experience such as that is inherent to the objectives of ecotourism and environmental education.

Other features of nature trails are that they can be specialised and provide for disabled or blind persons, be guided or self-guided. Usually most nature trails last less than a day (Levy, 1983:13). Cohen (1994:303) points out that guided walks can renew excitement, reveal issues, allow for discovery experiences, develop protective attitudes and in this way become a community resource. Other trails that can be included under nature trails are "question trails" and "naming trails" (Knapp & Goodman, 1983:23).

A question trail does not give factual information at each station but rather one or more questions are asked at a station. Each question calls for some type of activity that results in a new awareness at that specific location. This enhances active participation and discovery by the trailist in the trail environment, a process striven for by ecotourism and environmental education. The initial questions can be compiled by a group of trailists themselves. This type of trail moves away from simply identifying features and utilises a variety of domains of the environment.

The trail promotes community participation, environmental awareness and cognitive experiences that is all part of the environmental education experience that should be inherent to ecotourism. Although this type of trail focuses on the natural environment it can be placed in a built environment as well.

Naming trails aim to make up names for plants and animals according to their characteristics. Trailists are not allowed to give common or botanical names. The idea is to stress awareness of characteristics and stimulate creativity in the trailist. It also allows the trailist to draw correlations between whether certain plants and animals are named according to their obvious physical characteristics (Knapp & Goodman, 1983:23). This is a self-discovery educational activity and by experiencing the relatedness between the physical features of objects and their names the trailist is exploring the environment through which the trail passes.

"Mini-trails" are also a type of nature trail. Raze (1993:27) identifies a few of these types of trails e.g. a 30 cm-trail, a smell trail and an ant-trail. The 30 cm-trail covers only 30 cm and the trailist focuses on usually unnoticed small detail. A smell-trail follows a path along which as many different fragrances as possible are situated. Sensory trails such as smell and touch trails are experiential trails that give the trailist an opportunity to "tune in" to the environment by stimulating a wide range of observations related to the sensed environment (Goodey, 1974: 1.15,1.16). Sensory experiences form part of environmental education. The trailist can describe the smells orally or in writing in the form of an essay or poem. The other mini-trail, an ant-trail lasts five to ten minutes. The trailist follows one specific ant for five to ten minutes. The distance the ant travels, the terrain it covers, the direction in which it travels and the speed at which it moves are some aspects that the trailist can calculate afterwards. These mini-trails allow the trailist to actively participate along the trail and incorporate many environmental education aims like developing the senses and skills like writing, observation, graphic skills and numeracy. Mini-trails as described, focus on the natural and behavioural (educational) environments.

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3.2.2.4 Urban/Town trails

Goodey (1979:285) describes an urban trail as a planned, self-guided exploratory route through urban areas, examining a number of linked features and relationships in the total urban space that may be walked by anybody who is interested and stimulated to explore and question the surrounding urban environment. The trail is usually marked and/or accompanied by a brochure or leaflet. According to Ballantyne & Attwell (1985:80) and Abbott (1979:44) urban trails focus on aspects such as industries, harbours, historical sites, graveyards, the inner city, road safety, conservation areas, transport schemes, cultural sites, botanical gardens, photographs and architecture. Urban trails containing these aspects thus integrate the biophysical (built and natural), social (political, economic and cultural) and behavioural environments.

Environmental education embraces both the urban and rural areas and links learning with social aspects like pollution, consumer issues and food production. In urban areas there are educational possibilities imbedded in a diversity of neighbourhood features like planned developments, architecture and local government (Goodey, 1974:1.6). An urban trail can develop appreciation and promote awareness of these features in the immediate environment (Ferreira, 1995:64). It can assist the community to explore their urban environment (Coleman, 1991:28). Creating an urban awareness is a starting point but should lead to action related to local environmental issues if it is to fully embrace the principles of environmental education. Involving residents and workers in the area in the trail planning and programme, can bring the trail alive with their inputs and views (Fyson, 1975:29). This approach corresponds with ecotourism and environmental education's perception that local communities must be actively involved. Urban trails can, therefore, be developed as ecotourism trails to facilitate environmental education.

From the above analysis of types of trails relevant to the research it is clear that these trails include a number of environments. Table 3.3 summarises the environments each trail type can include. Key words from the explanations above are used to identify the relevant environments for each trail type.

TABLE 3.3 TRAILS AND THEIR ENVIRONMENTAL DOMAINS

TRAIL TYPE	BIOPHYSICAL		SOCIAL			BEHAVIOU-RAL	PHYSIO-LOGICAL
	Natural	Built	Cultural	Economic	Political		
Wilderness	conservation			management		explain, observe, discover	walking, recreation
Hiking	natural environment, country side					discover	food, exercise, walking
Nature	conservation, natural, outdoors		cultural, historical	management		reflect, interpret, understand, explain, experience	walking, exercise
Urban/ Town	botanic garden, conservation	inner city, urban, indus-trial	architecture, historical, cultural, graveyard, photographic	transport, road, harbour, industrial	transport system, road safety	explore, examine	walking, exercise

Table 3.3 illustrates that some trails encompass more domains of the environment than others. Although nature and urban trails do not specifically indicate that they include exercise as part of the physiological domain the researcher deduced that this is the case because the fact that the trailist is walking along the trail implies a form of physical exercise. What is noticeable in Table 3.3 is that both the behavioural and natural environment are present in all four types of the trail types. All four types of trails can therefore be planned as ecotourism trails to facilitate environmental education.

3.2.3 Value of trails for ecotourism and environmental education

Hugo & Bewsher (1995) use purpose as a classifying principle for types of trails which illustrates that trails can be used differently and therefore have a different value depending on the primary purpose of the trail. Trails have a diverse number of purposes and related values such as interpretation and environmental education but at the same time, trails can be used for acculturisation (learning to know and accept each other), adventure/challenge, aesthetic appreciation, conservation, exercise/health, income (financial benefits) recreation, relief of stress, socio-economic upliftment, socialisation, solitude, spiritual growth and refreshment (Levy, 1993:11; Hugo, n.d.:6,16). However, the primary concern of this research is to plan ecotourism trails to facilitate environmental education. This concern will be the framework in which trail values are analysed.

The links between environmental education and ecotourism highlighted in section 2.3 make it clear that environmental education and ecotourism can include many of the values of trails listed above. These values are inherent to more than one environment. The reason is that trails, as summarised in Table 3.3, focus on an interrelated set of internal and external environment domains such as: behavioural, for example learning experience; social for example interpersonal relationships; cultural for example history; and physiological for example exercise.

3.2.3.1 Value of trails within the social environment

Goodey (1974:1.5,1.9) points out that many trails are developed so that trailists can share some of the environmental assets of the particular environment with knowledgeable locals. The host community in turn can be practically introduced to the local environment and can discover their relationship and connectedness with the environment for themselves. Involving the host community in this way and in decision-making allows them to accept responsibility for their local environment (Ferreira, 1995:65). The people in and around the trail as part of the social environment contribute to bringing the trail alive (Fyson, 1975:29).

Trails can also provide a socialising experience in that a trail can create an opportunity to bring visiting individuals (trailists) together with one another and with the host community, and interpersonal relationships and understanding can develop (Hugo & Bewsher, 1995:1-11).

When trails are planned with wildlife such as buck in mind, they can be effective management tools that help reduce the impact of people on wildlife (Macdonald **et al**, 1998:4). Planning decisions should also be based on community values, including the benefits the trail will offer the public (Macdonald **et al**, 1998:5). Offering environmental education to trail users can help to reduce environmental impacts because people more readily tend to protect what they understand and appreciate (Macdonald **et al**, 1998:23). The more informed trail users become, the more appreciative they become and the more willing to co-operate with the trail administrators (Abbott, 1979:44).

3.2.3.2 Value of trails within the behavioural environment

Fyson (1975:29) notes that nature trails have proved their value to all levels and structures of educational work by enlarging visual awareness of the environment as a whole. Trails are also a resource of relevant interpretation that can link and integrate features to make the trail experience more structured, and emphasise some process, relationship or pattern that would otherwise have passed unnoticed (Keene, 1991:18). Trails are an ideal way to explore a range of aspects related to the environment and gain first-hand investigation experience (Wade & Hughes, 1994:51). The focus can be on one theme or a general study on several themes can be undertaken such as buildings, walls, boundaries, birds, insects, trees, plants, roads and traffic (Wade & Hughes, 1994:54). Trails can be a classroom outside the school classroom that links the school curriculum with the environment and therefore, be a valuable resource of information for educators in the formal education sector (Ferreira, 1995:65; Keene, 1991:18). Trails provide opportunities for experiential work such as field work and experiments (Wade & Hughes,

1994:51). According to Spray (1975:209-213), trails can be used as an alternative to the traditional learning programme techniques such as field demonstration in biology. Trails can also, according to Spray (1975), be used as an assessment tool in learning programmes like Biology.

A large part of the educational value of trails lies in the learning methods that they can provide. According to Rheeder (1992:17) a trail is a user-centred methodology that encourages enquiry into real life situations and is, therefore, suited to teach about, from/in and for the environment (Ballantyne & Attwell, 1985:78). A trail can be an educational excursion that provides an opportunity for learning through experience rather than passive listening and memorisation (Rheeder, 1992:17). It provides a practical facility to facilitate environmental education because it creates a sensory experience where a person can smell, see, feel and taste the wonders of the earth as part of the behavioural environment (Roux, 1994:117).

According to Raze (1993:26), a trail can develop other experiences as part of the behavioural environment such as observation skills, awareness, understanding of cyclic processes and the ability to express experiences. Ferreira (1995:64), Wade & Hughes (1994:51) and Tracey (1991:20) are also of the opinion that trails can be utilised to develop skills over time. These include the skills of identification, observation, writing, reporting, vocabulary, graphic, data collection and recording. Gutjerrez & Sanchez (1993:176,177) add skills such as critical thinking and mapwork. This corresponds with the objectives of environmental education.

The environmental educational value of trails is far-reaching in that it can be applied to different audiences such as children, students and adults (Wray, 1968:21). It can also cover many topics and include many activities. It is important to realise that if it is aimed at school children, everything should be organised in such a way that it links with the curriculum and that the function of the trail remains focused on the decided topic (Tracey, 1991:22).

Closely associated with the above is that the trail environment can also provide a restorative experience because it provides an opportunity for the trailist to get close to nature (Coetzee, 1995:6). It allows the trailist to escape the pressures of urban life (Hornby, 1977:9) and relax (Roux, 1994:114, Fiedeldey, n.d.:3). The trailist can be exposed to positive experiences, therapeutic experiences, emotional responses, desire to return to nature/the wild, escape from pressure, using different experiences, the untouched wilderness, sense of achievement, atmosphere of a specific trail, need-fulfilment, personal growth, appreciation and humour (Fiedeldey, n.d:5,6, Coetzee, 1995:6). Trails create an emotional experience because being in a natural environment on a trail can create a sense of solitude for the trailist which provides an opportunity to come into contact with nature (Hugo & Bewsher, 1995:1-11). Trails also have an aesthetic value because the beauty and scenic environment through which a trailist moves satisfy the perceptual and cognitive needs of the trailist (Hugo & Bewsher, 1995:1-11). All these experiences contribute to enhancing the quality of life of the trail user. People need to be in "nature" to satisfy their psychological and emotional well-being. In the process they may realise the importance of nature and be activated to conserve it, which is an aim of ecotourism and environmental education.

3.2.3.3 Value of trails within the physical environment

Linked to the behavioural environment and associated educational experiences is the physical environment and conservation. A key element of conservation is the interpretation of particular features for visitors, which in turn forms the basis for developing interpretive documents (Goodey, 1974:1.5). Interpreting features along a trail can reveal places to the tourist, encourage perception of features, add value to a place, and subsequently encourage the tourist to get the most from the area visited (Goodey, 1974:1.2). It creates an awareness for the environment (Ferreira, 1995:65). This relates indirectly with the goal of ecotourism and environmental education to create environmental awareness, provide environmental information and in the process contribute to conservation.

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Hultsman **et al** (1987:64) support the idea that trail development considers resource protection and the provision of positive experiences for the users. In providing a pleasurable experience, learning can be improved and positive, caring and responsible attitudes reinforced, concepts which form part of the goal for environmental education (Gustke & Hodgson, 1980:53; Wade & Hughes, 1994:51). A trail provides an opportunity to come in contact with real processes of change such as vegetation that changes over time and geological changes that has taken place along the trail. By providing appropriate information to the trailist an understanding for these changes can be facilitated (Fyson, 1975:29). Along the trail the trailists can investigate these aspects in small groups or individually, at their own pace (Keene, 1991:18).

The ecosystemic connectedness value of a nature experience that Fiedeldey (n.d:6,7) identifies can form part of the conservation value of trails and can include categories of experiences such as feeling close to nature, holistic responses, philosophical responses, awareness of order in nature, conservation-oriented responses, spiritual experiences and the historical context. The significance of these values is that they bring about structural coupling between the natural environment and the human observer (Fiedeldey, n.d.:7) that can enhance the desire to protect and conserve.

3.2.3.4 Value of trails within the physiological environment

The experience provided by trails that receives the greatest focus is the recreational experience which can improve the quality of life of the trailist (Hultsman **et al**, 1987:64; Britton, 1981:3). However, even though this might not be a direct environmental education experience it does relate to the objective of ecotourism to improve the quality of people's lives. Improving the quality of people's lives means improving the quality of their living environments which includes the social, visual, natural and cultural dimensions (Department of Environmental Affairs and Tourism. 1996:14). Quality of life is a comparative

measure of life experiences in terms of subjective factors and priorities people have selected for themselves. It is not the same as standard of living which uses objective measures (Department of Environmental Affairs and Tourism, 1996:99). In ecotourism improving the quality of life means more than just improving the tourist's life experiences but it includes the host community's quality of life as well. Therefore, if an ecotourism trail is planned, it is necessary to keep in mind that not only the tourist, but the host community should benefit from the development. The community should be mobilised to utilise the trail. In return, for raising the involvement of the community and making it aware of the recreational value of the trail, the preservation of the trail environment can be promoted.

3.3 Revised ecotourism trail planning principles

In Table 3.4 the seven planning principles postulated in 2.3 are now placed in the context of the broad trail environment proposed in Figure 3.4. The principles are reviewed using the conceptual analysis of the term environment, types of trails and the value of trails to determine which principle encompasses which environment.

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TABLE 3.4 ECOTOURISM PLANNING PRINCIPLES IN CONTEXT OF THE TRAIL ENVIRONMENT

PRINCIPLE	BIO-PHYSICAL		SOCIAL			BEHAVIOURAL	PHYSIOLOGICAL
	Natural	Built	Cultural	Economic	Political		
1	*	*	*	*	*	*	*
2	*	*	*	*	*	*	
3	*	*	*			*	
4	*	*	*	*		*	
5	*	*	*	*		*	
6				*			
7						*	

From Table 3.4 it is clear that the ecotourism planning principles postulated in 2.3 cover all the domains of the environment. However, it is apparent that most of the principles 1, 2, 3, 4 and 5 apply to the biophysical and cultural environment, principles 1, 2, 4, 5 and 6 to the economic environment and principles 1, 2, 3, 5, and 7 to the behavioural environment. The dominance of these four environments namely the biophysical, cultural, economic and behavioural, correlates with the focus of the ecotourism approach on these four environments as well as environmental education being implied by ecotourism. What is important to realise is the fact that the seven principles are interrelated and the four main environment domains are also interconnected. Thus, although it might appear as if the cultural, political and physiological environments are omitted they are indirectly addressed via the other three environmental domains and relevant principles.

The planning principles when contextualised for trails and formulated to include the broad environment proposed in Figure 3.4 read as follows:

Principle 1: The **total trail environment** namely the biophysical (natural and built), social (cultural, economic, and political), behavioural and physiological environment should be included in a holistic, interdisciplinary and balanced ecotourism trail

planning procedure.

The implication is that all four environmental domains in which ecotourism trails are planned should be studied beforehand. That means that, the anxieties, inputs, needs, functions as part of the cultural domain of the social environment of the host community and intended trailist, be addressed as part of the total trail environment. Furthermore, the natural environment (fauna, flora, geology, climate), the economic implications, and the social and political structures and processes surrounding the trail should also be addressed.

Principle 2: Ecotourism trail planning must be done **responsibly and sustainably** towards all agents that are role players in the planning process. These agents can include the trailist (tourist), trail owner (private and government), trail planner, authority, host community and total trail environment. Current and historical environmental aspects should also be considered in the planning to instil an ethical responsibility in the agents.

The principle implies that the different dimensions of the trail environment must be considered by the trail planner and cognisance must be taken of the environmental issues related to each domain such as the degradation and pollution of the biophysical environment by the trail development. By becoming aware of the different issues the trail planner can be moved to action to improve or at least avoid making environmental problems larger. In the economic environment, issues like poverty and starvation, in the social environment conflict, violence and war and in the political environment exploitation and repression should be recognised.

Principle 3: An **enlightening and educating experience** must be provided to all the agents that are part of the ecotourism trail planning process to increase an awareness and an understanding of the total trail environment. A diverse learning environment, broad array of educational approaches and critical thinking and problem-solving skills can be used as part of a continuous and lifelong learning

process.

The implication of the principle is that cognisance should be taken of the educational strategies suggested in section 3.2.3.2 and be incorporated into the trail planning process. Hultsman **et al** (1987:69) do warn though, that extensive interpretation along all types of trails should be resisted because it can cause irritation and interference to trail users. Hultsman & Hultsman (2000:4) recommend that different trail functions such as interpretation and hiking be kept separate because compared to hikers, interpretive trail users seek a slower pace, more conducive to learning and observation than vigorous exercise. The implication of this warning is that trails for educational purposes should be planned according to their purpose, the premise of this study namely, to propose a trail planning framework that will allow ecotourism trails to facilitate environmental education.

Principle 4: The total trail environment that is utilised as the resource must be **conserved and protected** by emphasising environmental sensitivity and the symptoms, causes and complexity of environmental problems during the ecotourism trail planning process by minimising negative impacts.

The implication of this principle for trails is that the total environment through which a trail passes, such as the host community in the social domain and the developer in the economic domain, should be conserved and protected, not only the natural environment. The principle aims to ensure that the goal of ecotourism and environmental education is achieved are to create environmental awareness and sensitivity, conservation and providing environmental information about environmental problems.

Principle 5: All the agents such as the trailist, trail owner, trail planner, host community, authority and the total environment should be part of the ecotourism trail planning process and benefit especially the **host community.** Local, national

and international inputs and contributions should be recognised.

The principle links with what Hultsman **et al** (1987:64) attribute as a value of trails is that they all have a common mission of improving the quality of life. This is an aspect generic to both ecotourism and environmental education.

Principle 6: Economic benefits must be provided to all the agents participating in the ecotourism trail planning process.

The principle is relevant and applicable to the aim of ecotourism namely to provide financial benefits to the trail owner and the host community of the trail. The principle requires the trail planner to apply sound management strategies that will give the necessary recognition and participation opportunities to the host community and trail owner. Furthermore, the trailist should receive value for money.

Principle 7: A participatory and interdisciplinary experience must be provided to all the agents participating in the ecotourism trail planning process to provide the agents with practical, first-hand experiences on the trail and provide them with opportunities to plan their learning experiences.

The principle implies that all the agents that are part of the ecotourism development should be involved actively in the trail planning process and not be isolated from the trail environment in which the ecotourism event is taking place. There are certain interactions and experiences that take place between the agents and the trail environment that contribute to the environmental education experience. The agents can become enfolded by certain sensations on the trail and reflect upon them at a later stage. When a different kind of environment is entered by the agents, predictability drops, the element of surprise comes into play and the information rate increases because the agents are stimulated by the environmental change (Gustke & Hodgson, 1980:56). Peter Keene (1991:17)

emphasises this interactive educational context of trails by attributing terms such as " *... self-guided, self-paced, interactive, distance-learning packages ...* " to trails.

The revised principles and their relevant implications for the trail environment will now be contextualised in Chapter four for the different agents that can participate in the trail planning process.

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CHAPTER 4: AGENTS PARTICIPATING IN ECOTOURISM TRAIL PLANNING

"Ecotourism involves a large cross-section of people. It's a joint operation, combining the input of several role players on many different levels. Each of these role players has an important function in the development, operation and marketing of ecotourism, ..." (South African Tourism Board, n.d:7)

In this research the role players that will be investigated are those agents that form part of the actual domain of the research and who are the subjects that can participate in the ecotourism trail planning process. These agents engage in ecotourism trails and consequently experience environmental education.

Wearing (1993:125) states that it is important to consider the interests of potential agents as role players in the ecotourism planning process to ensure that sustainable tourism is achieved. Wight (1993:3,8) supports this idea and is of the opinion that a fundamental principle which underlies sustainable ecotourism is not only the involvement of these agents like the host community, trailist, authority, trail planner and trail owner but that the education of these role players is also important. The implication of Wight's opinion is that all the agents that are part of the ecotourism trail planning process should be exposed to some form of education such as environmental education during the planning process.

The agents that will be discussed are the trailist, host community, trail planner, trail owner and the authority. The agents are discussed in the context of ecotourism and the implied responsibility to achieve sustainable development through facilitating environmental education. Although the agents place other demands on a trail like, recreation, leisure, enjoyment and exercise, the focus in this study is on the environmental education demand and how this demand can be

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accommodated in the ecotourism trail planning process.

The host community, trailist, authority, trail planner and trail owner operate within a broader agent namely the trail environment. None of the agents can operate on their own in a vacuum and the trail environment does have an influence on them (Cater, 1995:21). Each of these agents functions and coexists in the environment and although each has a different stake or interest in the development of that environment they all appear to have mutually-reinforcing aims to ensure that the tourism development is sustainable (Cater, 1995:21; Hughes, 1995:51).

Each agent is discussed separately, but it is important to realise that in spite of each agent's separate interests and demands, they are interrelated and dependent on one another to form a dynamic system in the trail environment.

4.1 The trailist

Trailists are those tourists who, in the end use the trail. They span a broad spectrum of age, interests and abilities and go on trails for a variety of reasons. Trailists are part of the demand sector of an ecotourism development. In their diversity trailists can have certain things in common, such as wanting to re-establish their interrelatedness with the environment and to engage with the environment (Goodey, 1979:286,287; Porritt, 1996:17). Trailists tend to choose a specific trail according to a need felt at that moment which could be personal or group related. Therefore, some go on a trail for recreation purposes while others go to watch birds and collect butterflies (Hultsman **et al**, 1987:69). Others might go for social interaction, bonding, aesthetic experiences, spiritual growth, adventure and education (Boo, 1990:xiv; Coetzee, 1995:6; Hattingh **et al**, 1996:3).

By implication this means that the trailist does not only want to move from one point to another but has other deeper interests while engaging in the trail

experience. Trailists also have preferences regarding other aspects like group size, type of hut and facilities, distance, type of environment and signboards (Britton, 1981:4,5). Gustke and Hodgson (1980:53) are of the opinion that if the trailists have pleasurable aesthetic responses to the trail, environmental education can be facilitated and positive resource values reinforced. In this way the trailist forms an important part of the demand analysis of ecotourism trail planning and through the successful interrelatedness of the diverse needs of the trailists, the foundation of sound planning can be established.

In ecotourism planning there is still not much information available according to Milne (1998:42) on whether ecotourists actually travel with the intention of minimising negative effects and maximising the positive, or against what factors ecotourists weigh up their decisions when deciding on an ecotourism product such as trails. From an environmental education perspective, trailists that go on trails come from a wide range of people and can, according to Keene (1994:408) be grouped into four potential user groups namely an education group, interested information-seeking adult non-specialists group, thoughtful adult non-information seekers, and mass general public.

The four user groups identified by Keene are considered in the next sections. Their demands regarding environmental education and the implications for the trail planning process are investigated.

4.1.1 Education groups

This first group can include school groups, tertiary level students and organised adult groups that usually have some foundation knowledge and are going on the trail seeking to expand their existing environmental understanding (Keene, 1994:408). Their interest is primarily educational. In using a South African example, Ballantyne & Attwell (1985:75) found that urban trails provide a useful framework within which environmental values and attitudes can be developed to

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enable individuals to behave in an informed, environmentally responsible manner and become actively involved in environmental decision-making which is ultimately what environmental education is all about. The implication of this for an ecotourism trail is that the trail should take on an interactive and question- and decision-making approach. When the trail is implemented, different age groups within this group must be catered for because each age group requires different levels of interactiveness and questioning that fit their development phase. This would imply that a variety of educational materials like brochures, guides, videos, cassettes and talks be prepared in a differentiated format to accompany the trail.

A trail can, environmentally, educate this group of trailists in three different ways. Firstly, it can educate them *about* the environment through formal and transmission-reception type methods just providing sufficient basic information about the trail and the environment in which it is located. Secondly, it can also educate the trailist *from/in* the environment in which the trail is located by using an issue-based and person-centred approach. Thirdly, the trail can educate the trailists *for* the environment by helping trailists to develop environment centred attitudes, values and behaviour by exposing them to situations that require the examination of moral, social, economic and political factors that surround the trail (Ballantyne & Attwell, 1985:76). It is in this last way of education and the successful integration of all three ways of teaching environmental education that the value of an ecotourism trail lies. The trailist can be stimulated through an ecotourism trail to consider official policies and plans alongside values and opinions of other "non-official" groups and individuals about environmental issues. In this way the trailists explore a range of viewpoints and can ask informed questions and make informed decisions. Therefore, the trailists become involved in real issues, processes and become more environmentally literate in the process.

A further planning issue that should be considered for this group is whether the trail should take on a specific thematic form. The implication of this for trail planning is that the successful planning of a specific theme or themes can require

progression in the unfolding of the trail theme/s e.g geology of a specific area. The sequential unlocking of the theme requires involving subject experts as well as local experts to develop the identified theme on the trail. These experts should be involved from the start of the planning of the trail to allow them to identify problems, theme sequences and walking time constraints.

Furthermore, it is important that if the trail aims to educate trailists that the degree of the trailists' interaction with the trail environment and with one another be carefully considered (Keene, 1995b:7). Trails of this kind are more mission-driven and involve active questioning and decision-making activities. In this way the users can become more informed, more appreciative and more willing to co-operate with the administration of an ecotourism venture of this nature (Abbott, 1979:44).

When the trail is used by more specialist education groups such as students and teachers a workbook version of the trail guide can be compiled. The trail guide that is made up of simple commentary in large print and includes anticipated questions, can be adapted. The workbook version can exclude detail and fine print and include questions and problems with spaces for answers (Keene, 1989:16). In doing this the workbook creates an opportunity for the trailist to enquire and interact with the questions and problems. The use of differentiated material like a trail guide and a workbook makes it possible for one trail to be used by a specific educational group as well as the general public.

4.1.2 Interested information-seeking adult non-specialist

A second group of trailists are those members of the general public who are committed to seeking information. According to Keene (1994:408) they are responsive, appreciative and interactive and need little encouragement. This motivated non-specialist group would not mind an active, questioning type of trail such as developed for the specialist group (Keene, 1995b: 8). However, it is

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important that the questioning approach of a trail for this group be less direct, integrated into the text and asked in a semi-rhetorical way. Perhaps it is better for the trail to try and anticipate the sort of questions that might be raised by the curious non-specialist. In this way the trailist can be tempted to be involved yet, it allows an option to be passive (Keene, 1995b:10). If some specialist terms are included in the trail guide they should be clearly explained in the text or contained in a glossary (Keene, 1995b:9).

Trail guides for this group can be presented in two formats. The one format of the guide can have a left page that contains simple directions with straightforward commentary in large print and anticipated questions the trailist might have. This format will suit the needs of the unmotivated non-specialist general public. A second format a guide can have is to include on the right hand page in a finer print detailed specialist information (Keene, 1995b:8). Janet Keen's (1988) "Oxford Ecology Trail" (Appendix 1.1) and Childs and Cornford's (1989) "Geology at Hartland Quay" (Appendix 1.2) are examples of such guides developed and used in the United Kingdom.

Another aspect that needs to be considered is whether certain concepts and background information should be provided to the non-specialist group to allow them to participate successfully in the trail (Keene, 1995b:10). Such information could be provided before the trail starts to avoid overburdening the trailist while walking. This can be in an oral or written format and should be kept simple. It can also be disclosed within an appropriate environment as the trail progresses.

Keene (1995a:15,16) found on a visit to 36 sites in the United States that to differentiate between the different trailist's interests, information could be unlocked in three ways. To fulfil the trailist's immediate curiosity a signboard can be placed at a specific site that stimulates enquiry. For information on a more advanced level the trailist can refer to detailed colour brochures which address more detailed processes. A third level of interpretation could be provided by

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displays, films and books made available at the visitor centres associated with the trail.

4.1.3 Thoughtful adult non-information seekers

Not all trailists want an educational experience. This group of trailists will turn away from an information board because they see it as an intrusion on their experience of the environment. They resist interpretive control of the environment but not necessarily education (Keene, 1994:408). The challenge is in an informal and subtle way to build in an "enlightening experience" on the trail. Therefore, a trail aimed at this group would take on a more passive and descriptive design. The trail will be less interactive than that for the specialist group (Keene, 1995b:7). Brochures and guides should not be compulsory to enable trailists to complete the trail. However, it is important not to design such a trail without clear precision of thought and objectives otherwise it becomes too open-ended (Keene, 1995b:6).

4.1.4 The general public

According to Keene (1994:408) this group of trailists visit a trail without any interest in the specific environment. They have little concern about acquiring the same level of understanding the first two groups seek. This group of trailists requires freedom of choice.

To cater for this group a trail should adopt a less formal education strategy, be community-based and interdisciplinary. The trail should try and connect the educational with the recreational, open space and aesthetic value (Keene, 1994:410). A more integrated approach to development is required to make the trail interesting and create in the trailist an emotional awareness and a supportive understanding attitude for conservation. In this way the trailist might realise that this is not an academic ploy but rather a method of enlightenment that will motivate the trailist to protect a valued local environment and at the same time

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participate in decision-making related to environmental issues and conservation (Keene, 1994:410).

Farrell (1981:257) suggests some aspects that can assist in inducing the public to venture into the natural environment. These can easily be applied to environments of a broader context. Aspects that can help are:

- to allow trailists to move on lines of least resistance along the trail avoiding inclines that are too steep, long distances and providing attractive stop and rest places at frequent intervals;
- to make the trailist aware of points of interest to stimulate them in moving further along the trail;
- to include diversity of space like sun, shade, intimate and larger open space;
- to make features such as waterfalls and trees on the trail accessible to the trailist otherwise they will destroy the environment to get to them and expose themselves to dangerous situations; and
- to ensure safety and security like providing safety rails at high places and avoid obstacles like steep slopes or dangerous areas. Avoid scarred landscapes and rubbish dumps unless they provide an educational experience.

Assessing the diverse interests of the above four possible trailist groups, from an educational perspective it is possible to place these interests on a continuum. The interests of the trailists can be one of environmental awareness and sensitivity that can be obtained through a casual walk through an environment (Boo, 1990:xiv; Engleson & Yockers, 1994:63). The trailist at this point is sensitive to, aware of and open to environmental inputs but does not seek control by mechanisms such as guides and brochures (Opie, 1987:39). The trailist exhibits a more passive participation. The other end of the continuum would be those trailists seeking specific educational experiences where they can be actively part of the education experience in exploring, studying and researching the area through which they walk (Boo, 1990:xiv). This group is inquisitive and wants to develop informed

decision-making techniques because they have already established a certain environmental value system for themselves and an intention to act on environmental issues (Opie, 1987:39; Engleson & Yockers, 1994:63). This group looks for well constructed brochures and trained guides to enhance their experiences.

This continuum of interests would imply a variety of other interests between the above two. To encompass the interests of all possible trailists would mean that a trail should be developed to serve many purposes and try to provide for a wide range of interests. It should attempt to be enjoyable, informative and enlightening to the trailist (Bewsher **et al**, 1995:8) all in one. The trail should prompt the trailists to adopt more environmentally sensitive attitudes and beliefs, and this ultimately can change their behaviour to be more environmentally and ecologically sound (Orams, 1995:3,6). However, the development of such trails should not be approached in too general a fashion (Keene, 1995b:6), or contain unlinked facts and be without focus and clear aims and objectives (Keene, 1989:16). Development should rather be a dualistic process that enables the trailists to enjoy the trail and be environmentally educated at the same time (Roux, 1994:117). This focus should be established in the initial planning phase of the trail to prevent an unstructured trail that is open to vandalism by those not primarily interested in the full educational experience (Hultsman **et al**, 1987:70).

Hultsman **et al** (1987:88), suggest that more than one type of trail should rather be developed as part of a network of trails to allow trailists to choose the trail that suits their interests and preferences. In this way trailists can start designing the type of experience they want. What is important is that if a trail is developed from an ecotourism approach which implies an environmental education responsibility, the planning of such trails should attempt to primarily provide for an environmental education experience that can be interlinked with secondary experiences such as enjoyment, exercise and recreation.

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The complex needs of the different trailist groups and the accessibility of the case studies to the researcher narrowed down the group of trailists that the research will focus on. The research focuses on the first trailist group, namely the education group (4.1.1) that uses trails in a formal education situation.

4.2 The host community

The complexity of the trail environment has been discussed in Chapter three and it is noted that ecotourism developments like trails rely not only on the natural environment through which the trail passes but also other domains of the environment such as the cultural environment. Furthermore, ecotourism emphasises the protection and minimal disruption of these environments. This implies a sensitivity not only to the natural features but also to the people in the trail area namely the host community. Aspects like traffic, road construction, noise pollution, overcrowding, crime, rapid changes in land values are but a few impacts an ecotourism development can have on the host community (Boo, 1990:8).

Sproule (2000:3) describes a community as *"... a group of people, often living in the same geographic area and who identify themselves as belonging to the same group."* Sproule warns though that although communities have things in common like religion and language they are not a homogeneous group. There are many sub-groups in a host community and not all of them will value trails in the same way. For this reason it is important that broad participation takes place in the planning process (Macdonald, 1998:25).

Many ecotourism researchers agree that the host community forms an important agent in tourism planning because without host community involvement progress can be hampered (Gunn, 1989; Boo, 1990; Cowling, 1993,1996; Robinson, 1993; Singh, 1993; Valentine, 1993a; Hattingh, 1994b:4; Khan, 1996). It is also, almost unavoidable that the host community through which a trail passes will have

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certain fears and expectations regarding such development. The community has a need to know how the development of a trail and accompanying changes will affect the community (Huggins & Barendse; 1994:2), understand why the trail is placed there and how the community can benefit from such a development. A community needs to know whether it is going to be removed and severed from resources on which it has been dependent for its livelihood because access is denied to the area or it is too expensive to use (Boo, 1990:20). Ecotourism offers an opportunity for the host community to participate in the development of a venture like a trail. How a community chooses to define this participation is important because it will only participate on its own terms should it so desire (Sproule, 2000:31). When it chooses to participate its traditions and lifestyle must be respected (Gunn, 1989:116).

The potential of the host community's participation in ecotourism trail developments is great. Involvement holds social and economic benefits for the people depending on the level of involvement. Community participation plays a significant role in improving the quality of life of host communities (Cater, 1995:21). One such benefit is that through cultural diversity, sharing and interaction, intercultural understanding can be promoted (Wearing, 1993:129; Porritt, 1996:17). Economically the host community can benefit by becoming part of service delivery, management, maintenance, interpretation, recording and construction of the development using local materials, products and people (Boo, 1990:xvii,18; Odendaal, 1993:3; Coetzee, 1995:139). In this way an ecotourism development can encourage capacity building and participation in the community allowing its people to take ownership of the development and motivate them to protect the environment in which they live.

Members from the host community can be used as guides, assist in the development of brochures by including things like indigenous information, stories and songs (Kerry, 1979:32). They can also sell curios. Involving the host community from the start in the development of a trail creates a better

understanding of the project proposal and accompanying environmental decisions which make the process more socially justifiable and manageable (Goodey, 1979:287). Such an approach extends beyond mere financial benefits, it allows for political involvement and decision-making that would empower the community to take ownership of the trail, conserve and protect it and at the same time allow the community to financially benefit from it and hopefully help improve its quality of life. All these are aims of ecotourism and environmental education.

However, potential economic benefits like job creation, infrastructure and foreign exchange can be offset by related social, cultural and environmental costs (Pleumarom, 1995:70). High entrance fees aimed at foreign tourists can limit access to the trail for the host community (Wearing, 1993:128,129). Therefore, it is very important that there be consultation and negotiation with the host community to give its people opportunity to contribute to decisions from the start of the planning stage (Mosidi, 1996:29). Brandon (1993:139) suggests that *"... ecotourism planning needs to view local people as their counterparts and use both the planning process and ecotourism activities as tools that empower local people to exercise greater control over their lives"*. This will provide an opportunity for the host community to understand what ecotourism involves, create an opportunity to make decisions about the nature of their participation and help minimise impacts. The success of an ecotourism development will depend on achieving a long-term balance between the three variables; commercial success, the resilience of cultural integrity and social cohesion, and the maintenance of the physical environment. This allows the community to appreciate their environment as a resource, take ownership of it and become active partners in the utilisation of it and not remain passive beneficiaries (Sproule, 2000:5).

Mosidi (1996:48) identifies some key issues that should be taken into account to ensure that the trail planner, trail owner or authority who initiates a trail development, and the host community are equal partners in negotiations and any decisions taken. This approach can empower the community to take ownership

of the trail development. The key issues that Mosidi identifies can be applied to host community participation in the planning of an ecotourism trail as follows:

TABLE 4.1 HOST COMMUNITY PARTICIPATION IN ECOTOURISM TRAIL PLANNING

1. Information	The idea of an ecotourism trail is communicated to the host community.
2. Involvement	The host community is encouraged to participate in the trail planning process.
3. Participation strategy	Leaders from the host community and government together with the trail planner form a task group/s.
4. Advice	Ecotourism and environmental education expertise are called in to give the task group/s advice on the ecotourism trail project.
5. Information gathering	Collection of detailed information from the host community through postal surveys, interviews and open-ended meetings.
6. Analysis	Sifting of information from the host community by the task group/s.
7. Synthesis	Joint decision-making by both the host community, the trail planner, subject specialists and authority.
8. Implementation	Decisions taken are implemented and the ecotourism trail is built.
9. Review	The entire process is reviewed to close any gaps that might exist.
Source: Adapted from Mosidi, 1996:48	

From Mosidi's model it is clear that, for a host community to take ownership of a development like an ecotourism trail and make it sustainable, host community participation should extend further than merely participating. The planning process should be a form of community development that takes place in conjunction with intended trailists, trail planner, trail owner and strives to improve the quality of the

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host community's life, environmentally educate the people and include their indigenous knowledge and experience (Hughes, 1995:58,59). The ideal would be for the trail to be community-managed in the end (Bruce & Archer, 1996:19). However, to accomplish this, training programmes will have to be made available to host communities to equip them with the appropriate skills to participate actively and confidently in the trail planning process (Jacobson & Robles, 1992:710).

4.3 The trail planner and trail owner

The trail planner is the business link between the trailist and the trail environment. A trail owner can be someone who owns a piece of private land and chooses to plan a trail or uses a specialist trail planner. The government, like the private trail owner, can do the trail planning itself or acquire the services of a specialist trail planner. The most preferable option is for private trail owners and government trail owners to make use of someone with the necessary knowledge, expertise and experience in trail planning. If the trail is an ecotourism trail the planner should have the related knowledge because according to Wight (1993:4) the planner has the potential to significantly influence tourist behaviour and numbers at a destination. The planner plays a pivotal role in developing sustainable ecotourism. Furthermore, in realising that ecotourism has an environmental education function and that it is a lifelong process that should start at pre-school and extend to adulthood it is implied that provision should be made to educate businessmen like private trail owners, the government, and specialist trail planners as well. These groups traditionally have been excluded in the process of creating environmentally literate persons. Ecotourism trail planners can be included in this group and instead of concentrating only on their financial interest they should be made environmentally literate and take cognisance of the host community.

In the United States, national parks staff are taught that " ... *from interpretation comes understanding; from understanding comes appreciation; and from*

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appreciation comes preservation" (Keene, 1995b:17). Therefore, if the trail planner understands the total environment through which a proposed ecotourism trail is passing the planner will learn to appreciate the total environment's uniqueness and problems. This can motivate the planner to try and preserve most of the resources used for the trail. Adopting such an approach can ensure the sustainability of the trail. However, training and skills development for the trail planner will be necessary (Robinson, 1993:8; Keene, 1995b:18).

The trail planner needs a support system or organisations that can assist in the development of the trail and the appropriate environmental education material to accompany the trailists on the trail (Goodey, 1979:287). Organisations can assist by providing expertise and writers for brochures and guides. These guides and brochures can be used for self-education on a self-guided trail. More advanced and supportive literature can be designed to be used by specialist education groups (Keene, 1996:14). Multi-agency partnerships can help to avoid misunderstandings and duplications (Hughes, 1995:55). These agencies can put money back into the planning of trails and in this way assist in subsidising educational programmes.

Other aspects that the trail planner should consider include environmental impact studies for economic, ecological and social sectors of the environment. Ecological and social carrying capacity studies should be undertaken especially with regard to the aesthetic experiences of the trailist (Robinson, 1993:7). These studies will enable the planner to determine how many users can be accommodated on the trail at a specific time without damaging the trail environment or it being experienced as overcrowded. These studies should be part of the initial planning phase as well as during the management phase when utilisation is monitored at regular intervals.

Trail planners and trail owners should receive training in areas such as ecology, environmental education, environmental and resource management,

communication and business skills. Such training should be competency based and tailored to the particular requirements of training and be provided in a culturally appropriate manner.

4.4 The authority

The authority that can be part of ecotourism trail planning can include private land owners, local government, provincial and national government. These authority sectors can identify ecotourism trail opportunities, provide infrastructure, provide maintenance and marketing, provide management support, develop strategies, develop policy documents and provide funding and training. The South African government commits itself to participating in tourism planning and management by stating as part of Goal 2 in the Environmental Management Policy for South Africa (South Africa, 1998:33) that people should strive:

- *"To ensure that tourism is sustainable and not damaging to the environment.*
- *To ensure that local communities, particularly previously disadvantaged communities, benefit through active participation in tourism associated with protected areas and sites.*
- *To ensure the sustainable management and respect for the integrity of landscapes and other environmental assets."*

Sproule (2000:8) mentions a number of ways in which authorities who are committed to be part of ecotourism planning, can help a community to develop an ecotourism enterprise. Taking South Africa as an example, authorities can, according to Sproule, provide coordination between a local project and other related projects in the area. Authorities can also provide technical assistance via departments such as the Department of Environmental Affairs and Tourism. The

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authorities can also share market research information and give promotional assistance to the project through national tourism bureaux like SATOUR (South Africa) or provincial tourism bureaus. Financial assistance and reduced tax rates can be given to planners and host communities. Finally authorities can assist in developing and implementing policies. In South Africa the department that is formally responsible for trails is the Department of Water Affairs and Forestry (DWAF). The Department has a committee called the Forest Access Committee that deals directly with trails.

4.5 The trail environment

Ecotourism is an environment-dependent industry (Goodall, 1995:29). The ecotourism trail environment is the broad agent in which the other four agents as participants in the trail environment are active. The ecotourism trail environment forms the space in which the trail event takes place and is discussed in Chapter three. Although it appears from Chapter three as if the majority of trails focus on the natural environment (Table 3.4), the conceptual analyses of the term environment have proved that they include a broader environment. Trails can pass through natural areas, urban areas and even the inside of a building like a museum. Furthermore environment refers to more than the physical world, it includes people and their social structures (EEPI, 1993:17).

Placing an ecotourism trail in any of these environments will have some influence on the environment and result in many discontinuities between the environment and the ecotourism development (Cater, 1995:25). It is important to keep the interests of the specific environment through which a trail passes in mind. If a trail passes through a natural area there are certain requirements that should be met to prevent the deterioration of the environment. Aspects such as soil, vegetation and gradient should be considered when a trail is planned (Wahl & Hugo, 1995:2,3). However, part of the environment is the people living there with their economic and social interests as well as the political climate and decisions that

have to be taken.

It is necessary that the ecotourism trail planning principles that facilitate environmental education incorporate management strategies as applied to the broader environment. The principles should in the long-term assist in improving and protecting the environment thus actively contributing to the improved health and viability of the environment (Orams, 1995:6).

4.6 Revised ecotourism trail planning principles

From the above analyses and according to Jacobson and Robles (1992:703) it can be concluded that the major agents participating in ecotourism planning all have interests in long term sustainable ecotourism planning. Hattingh (1994b:5) is of the opinion that ecotourism is of necessity and by definition sustainable tourism. The need for sustainable ecotourism planning and the fact that a number of agents are part of the planning process and that these agents are in many ways tied to one another and to sound environmental practice, have planning implications. It is important to as far as possible include all the agents that are part of the ecotourism planning process if ecotourism wants to fulfil its environmental education responsibility. This approach will assist in ensuring that the very resources on which trails are dependent, are respected and maintained for the future.

The multitude of interests of the different agents make a completely sustainable outcome more of an ideal than a reality. A planning strategy is required that at least tries to unite these interests into a symbiotic relationship and not only looks for whom the development is but also by whom and, when and where it is taking place (Cater, 1995:25). This implies that an ecotourism trail should be planned taking into consideration the diverse interests of the agents within time and space and, in recognising this, come to a compromise or trade-off that will satisfy as many agents as possible by taking the total trail environment into consideration.

Approaching ecotourism trail development in this way demonstrates a long term vision that involves a wide range of agents in the context of a broader environment. According to Bates (in Wearing, 1993:134) this approach will help to improve local economies, assist in the retention of local customs, preserve the environment and still result in profits for the trail owner who wants to practise sustainable tourism.

The revised ecotourism trail planning principles proposed in 3.3 are now reviewed and adapted for the different agents that can play a role in the ecotourism trail planning process. The seven broad principles up to now are theoretical and it would be difficult to apply these principles pragmatically to an ecotourism development and determine whether or not the development applies these ecotourism principles. To make the principles more applicable as a planning tool it is necessary under each principle to identify planning criteria that are ideal or desired and can be used in a practical way to guide the planning process for each agent. These criteria can be used to determine adherence to each of the principles given. The agents mentioned in the literature that forms the actual domain of this study, namely the trailist, trail planner and trail owner, host community and authority are used in Table 4.2 as four categories in which these principles and criteria can be categorised. The biophysical environment in which the trail event functions and which forms the real domain of the study is added as a fifth category to which the principles apply because it forms the broader agent in which the other four agents operate. The ecotourism trail planning principles and related criteria for each agent are contained in Table 4.2.

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TABLE 4.2 ECOTOURISM TRAIL PLANNING PRINCIPLES AND CRITERIA FACILITATING ENVIRONMENTAL EDUCATION

PRINCIPLES	AGENTS				
	BIOPHYSICAL ENVIRONMENT	HOST COMMUNITY	TRAILIST	TRAIL PLANNER AND OWNER	AUTHORITY
1 The total environment	* Inclusive use of the natural and built environment * Careful consideration of environmental aspects in plans for development and growth	* Inclusive use of the cultural, social and political environment of the host community * Respectful acknowledgement of the value of the cultural environment of the host community	* Respectful and holistic recognition of the needs of the trailist namely the cognitive, affective and psychomotor	* Supply-oriented management practice that recognises the total environment on its terms and recognises its limits * Environmental impact studies done * Carrying capacity studies done	* Ensure that sustainable management strategies are applied and that the environment is respected * Ensure that local and national environmental policies are adhered to
2 Responsible and sustainable planning	* Responsible use of the environment as resource causing minimal disturbance * Sustainable development of the environment as resource to ensure its long-term health and viability	* Responsible utilisation of the cultural environment causing minimal disturbance	* Encouragement of responsible behaviour and actions towards the total environment	* Responsible, interdisciplinary and sustainable planning methods used in a holistic and balanced way * Responsible use of local, national and international cooperation in the prevention and solution of environmental problems	* Ensure that the trail is sustainable and not damaging to the total environment

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PRINCIPLES	AGENTS				
	BIOPHYSICAL ENVIRONMENT	HOST COMMUNITY	TRAILIST	TRAIL PLANNER AND OWNER	AUTHORITY
3 Enlightening and educational experience	* Responsible recognition and unlocking of the current, potential and historical education and enlightenment opportunities of the environment * Recognition of environmental issues from local, national, regional and international points of view	* Active and continuous education and enlightenment of the host community about ecotourism and related issues * Active involvement of the host community in providing an enlightening experience to the trailists * Active environmental literacy programmes for the host community * Active development of the host community's knowledge, skills, values and environmental awareness * Active involvement of the host community in planning the learning experience and information material * Providing opportunities to the host community for making decisions and accepting the consequences * Using a diverse learning environment and applying a broad array of educational approaches to teaching and learning in, about and for the environment * Inclusion of practical activities and first-hand experiences for the host community	* Active and continuous education and enlightenment of the trailist before, during and after the event about the total environment and relationships in it that will bring about understanding, admiration and appreciation for the environment and the symptoms and real causes of its problems and change the attitude, behaviour and life style of the trailist in this respect * Active environmental literacy programmes for the trailist * Active development of the trailist's knowledge, skills, values and environmental awareness * Enjoyable experience provided to the trailist * Active involvement of the trailist in planning the learning experience and information material * Providing opportunities to the trailist for making decisions and accepting the consequences * Using a diverse learning environment and applying a broad array of educational approaches to teaching and learning in, about and for the environment * Include practical activities and first-hand experiences for the trailist	* Active and continuous education and enlightenment of the trail planner and owner about ecotourism and the biophysical environment * Active environmental literacy programmes for the trail planner and owner * Active development of the planner and owner's knowledge, skills, values and environmental awareness * Creative information material development by the trail planner * Active involvement of the trailist in planning the learning experience * Providing opportunities to the planner and owner for making decisions and accepting the consequences * Using a diverse learning environment and applying a broad array of educational approaches to teaching and learning in, about and for the environment * Include practical activities and first-hand experiences for the planner and owner	* Ensure that an enlightening experience is provided to all agents * Provide assistance in training the trail owner, planner and host community

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PRINCIPLES	AGENTS				
	BIOPHYSICAL ENVIRONMENT	HOST COMMUNITY	TRAILIST	TRAIL PLANNER AND OWNER	AUTHORITY
4 Conserve and protect total environment	* Sustainable protection and conservation of the living and non-living sectors of the environment * Sustainable low impact on the environment	* Sustainable low impact on the host community * Continuous respect and protection of the host community's integrity, way of life, social values system and privacy as to ensure its existence	* Sustainable low impact on the total environment	* Sustainable holistic management strategies applied by the trail planner and owner to the total environment	* Ensure that the trail environment in its totality is protected
5 Inclusion of all agents	* Continuous recognition of the environment in the planning process	* Continuous and direct involvement of the host community in the planning process	* Continuous and direct involvement of the trailist in the planning process * Active awareness programme for the trailist about environmental problems	* Continuous and direct involvement of the trail owner and planner in the planning process	* Ensure that the host community benefits
6 Economic benefits	* Responsible infrastructure development	* Long-term generation of wealth and economic benefits, like job creation, for the host community to create social upliftment and well-being for it and enhance its quality of life	* Long-term value for money for the trailist	* Long-term financial profit generated for the trail owner	* Funding and infrastructure provided for the trail development
7 Participatory and interdisciplinary experience		* Active participatory involvement of the host community in the planning of the ecotourism event * Active participation in environmental decision-making and problem-solving	* Active and direct participatory experience in the ecotourism event by the trailist by using participatory activities	* Active and participatory involvement of the trail planner and owner in the ecotourism trail planning process	* Ensure that the host community actively participates in the planning process

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CHAPTER 5: TRAIL PLANNING PROCESSES

"It (planning) is a demanding process ... and without complete understanding and a disciplined approach, planning may fall far short of our expectations. The point is that planning is not an automatic thing. It may result only in wasted time, for difficulties abound in its implementation" (Knezevich, 1973:35).

The statement above applies to ecotourism trail planning as well, especially when it aims at facilitating environmental education. Trail planning is a complex process and involves not only the physical construction of the trail, as most current trail planning processes discussed in this chapter maintain. Although some of the processes discussed do consider the specific purposes of a trail, such as education, as part of the planning process, none proceeds further to say how education should be incorporated into the complete trail planning process. In recognising the environmental education responsibility of ecotourism the time has come for ecotourism trail planning processes to incorporate environmental education principles into the planning process. This can primarily be done by using the trail planning principles in Table 4.2 that apply to both ecotourism and environmental education.

The principles postulated in Table 4.2 and the environmental education needs of the agents form the theoretical framework against which current trail planning processes will be analysed and compared. Similarities and differences between existing trail planning processes are pointed out. A theoretical but flexible ecotourism trail planning framework that will facilitate environmental education is presented. The framework classifies the planning principles postulated in Table 4.2 into four trail planning phases and indicates the agents involved in the planning. The classification is an attempt to ensure consistency and coherence but, yet, retain a flexible procedural system. According to Harvey (1969:327) a framework can be altered to meet the needs of a given situation and environment. The trail planning framework postulated in this research should therefore, not be

seen as an absolute complete framework to be followed in a rigid way.

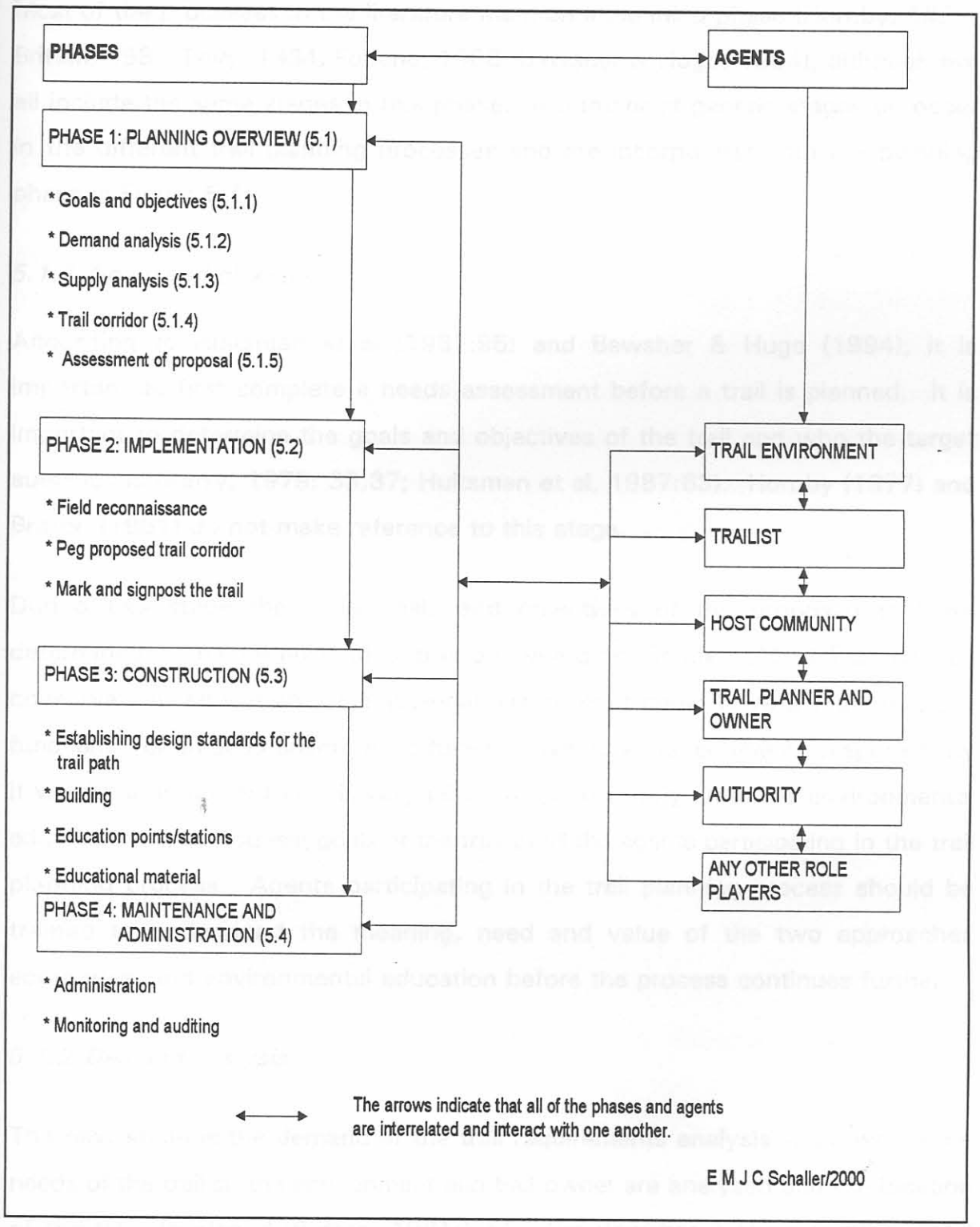
After an extensive literature search for ecotourism trail planning processes not one specifically applicable to ecotourism trails and environmental education was found. Only seven trail planning processes were found during the literature study. Thus, these seven trail planning processes were considered, namely; Hornby (1977), Kerry (1979), Britton (1981), Levy (1984), Hultsman **et al** (1987), Fouche (1988), Bewsher & Hugo (1994). The trail planning processes of Hornby, Britton, Levy, Fouche, Bewsher & Hugo are South African while Kerry's is from England and Hultsman **et al** are from the United States.

These seven trail planning processes all consider only development within nature and no reference is made of criteria for a trail designed in built environments like a museum or a city. This is a serious shortcoming of current trail planning processes when applied to ecotourism trails which facilitate environmental education, because these two approaches adopt a much wider understanding of the environment than just nature, as is presented in Figure 3.4. After a theoretical analysis of the seven trail planning processes in the literature, it is deduced that the trail planning process can be structured and organised into four main trail planning phases. Figure 5.1 illustrates these phases, namely; the planning, implementation, construction and maintenance phases. Each of these phases again has a number of stages under it. Of the seven trail planning processes reviewed, the comprehensive trail development model of Bewsher & Hugo (1994) (Appendix 2) contains all the basic aspects of trail planning and is adapted as the general framework into which the other six processes can be organised. Bewsher & Hugo's (1994) model is also South African and the case studies selected for the research are thus South African.

The trail planning process deduced from the literature is summarised in Figure 5.1 and will form the structure and order in which the trail planning process is discussed.

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FIGURE 5.1 THE TRAIL PLANNING PROCESS



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5.1 Phase 1: Planning overview

Most of the processes in the literature mention a planning phase (Hornby, 1977; Britton, 1981; Levy, 1984; Fouche, 1988; Bewsher & Hugo, 1994), although not all include the same stages in this phase. A number of generic stages do occur in the different trail planning processes and are incorporated into the planning phase in Figure 5.1.

5.1.1 Goals and objectives

According to Hultsman **et al** (1987:95) and Bewsher & Hugo (1994), it is important to first complete a needs assessment before a trail is planned. It is important to determine the goals and objectives of the trail and who the target audience is (Kerry, 1979: 33,37; Hultsman **et al**, 1987:63). Hornby (1977) and Britton (1981) do not make reference to this stage.

During this stage the main goals and objectives of the proposed trail are determined. The purpose of a trail according to Goodey (1974:2.2) can be conservation, education, or enjoyment/leisure or it could have a multi-purpose function. For an ecotourism trail to fulfil its environmental education responsibility it would be important at this very initial stage to clearly state the environmental education and ecotourism goals of the trail to all the agents participating in the trail planning process. Agents participating in the trail planning process should be trained to understand the meaning, need and value of the two approaches ecotourism and environmental education before the process continues further.

5.1.2 Demand analysis

The next stage is the **demand or the trail requirements analysis** stage where the needs of the trailist, the environment and trail owner are analysed and the location of the trail developed (Britton, 1981:2-5). The Bewsher & Hugo (1994) model refers to *ecological, emotional and physical* requirements while Britton (1981:3) refers to this stage in the planning phase of the trail as the *feasibility study*.

Factors like practicality, expected use, development potential and potential environmental impact are investigated. This demand analysis should include conservation and sustainability demands which are inherent to the empirical domain of this research, namely, ecotourism and environmental education.

Ecological/environmental considerations can include type of soil surface, vegetation, gradient, path surface, soil properties, erosion resistance, landforms, climate, geology, soil, water, plants, animals, current and predicted land-use patterns (Britton, 1981:8-9; Levy, 1984; Wahl & Hugo, 1995:2,3). The environmental education and ecotourism goals set in the previous stage must be linked closely during this stage to the environmental education and ecotourism needs of the different agents. Gustke & Hodgson (1980:53) point out that aesthetic enjoyment on a trail enhances the education rate and proposes that predictability of experiences and education points should be low. An element of surprise must be present.

The environmental education needs of all the agents must be identified because the trail environment is seen in a holistic manner. It is necessary to establish who the intended trailists will be because the environmental education needs can be different for children and adults (Hultsman **et al**; 1987:93,94). For education purposes the needs will be different for the formal, informal and non-formal education sector (Chapter 4). This study focuses only on the formal education sector.

None of the processes in the surveyed literature refer to financial requirements and considerations as part of this feasibility stage of the trail planning process. Financial demands, benefits and costs to the trail owner and host community are important aspects to be considered for ecotourism development as well as for community improvement and upliftment which are responsibilities of ecotourism and environmental education.

During this phase the trail planner should also look at possible causes for trail deterioration so that it can be eliminated during the planning of a new trail (Britton, 1981:6-7). This corresponds to the carrying capacity analysis referred to by Levy (1984). Carrying capacity is defined by Levy (1984:2.3) as *"the maximum number of trail users allowed per unit trail length, per unit time, without deteriorating the environment or interfering with the user's optimal recreational experience"*. Macdonald **et al** (1998:45) defines carrying capacity in a similar way. They define it as *"The number of recreationists that can be accommodated in a specific area based on ecological, physical, facility and/or social factors"*. Both the definitions consider the trail environment as a resource as well as the trailist as the human element. The resource element that these definitions include emphasises the conservation principle of ecotourism and environmental education. The human element emphasises the enjoyable and enlightening experience that an ecotourism trail wants to facilitate. Based on past experiences Levy (1984:2.3) suggests twenty trailists per kilometre of nature trail to facilitate a successful enlightening experience.

When the emotional needs of the trailist are considered, design psychology aspects like the *entrance zone* of the trail, *eliminating contact* with other users and *visual variety* can be investigated (Hultsman **et al**, 1987:79-81). These aspects are important to enhance the trailist's experiences, be inviting and make them feel comfortable in the trail environment.

Involving all the agents from the actual domain that will participate in the real domain of the trail event is important. None of the trail development processes surveyed make reference to host community involvement during this demand analysis phase. It is an important criteria for ecotourism trails that the needs and expectations of the community be established during the planning phase if the trails want to facilitate environmental education. The community's environmental literacy level can be determined by assessing aspects such as: the people's awareness of the natural and built environment of which they are part, their

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awareness of the natural resources they are directly or indirectly dependent on, their conviction of their individual responsibilities for the health of the land they live on, their stimulations into positive environmental action in their daily life and their concern with developing or maintaining a quality of life acceptable to the majority of the community (Clacherty, 1992:26). Depending on their level of environmental literacy and environmental awareness the host community's specific role in the trail planning process can be marked out. Indigenous knowledge can be identified and documented during this stage as well.

5.1.3 Supply analysis

During the supply analysis stage the *collection of ad hoc data and information*, takes place. Information is gathered from host communities, landowners, interest groups, researchers and historians regarding the possible trail environment (Fouche, 1988; Bewsher & Hugo, 1994). Data can be collected regarding aspects such as existing buildings, access roads, places for exit, paths and other trails in the area, places of interest, swimming areas and places with a scenic view.

Kerry (1979:32,33) terms this the discovery stage when local geographical knowledge and professional judgement are used to identify some possible trail sites. This corresponds with Bewsher & Hugo's (1994) planning stage. The research and initial writing stage of Kerry's (1979) model would be part of this stage during which the environment is surveyed and a possible trail guide or sets of study notes are drafted. Kerry (1979:32) regards the input of local experts as important during this stage. This utilisation of indigenous knowledge is an important ecotourism and environmental education principle. It is during this stage that seasonal variations should be considered and documented and the different possible experiences recorded that can be unlocked for the trailist during different seasons. It is important to take seasonal aspects into account because seasons can affect the vegetation and sighting of specific animals and birds.

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During the supply analysis stage possible environmental education teaching and learning points are identified along the proposed trail corridor. The quality of possible historical, cultural and natural features must be evaluated. This process necessitates that the trail be developed with the assistance of subject specialists such as geologists, botanists, environmental educators, ecotourists and zoologists, trail planners and host communities. The expertise of these persons can be used to identify features along the trail that can be interpreted and incorporated into the physical layout of the trail corridor. In identifying these features consideration must be given to the fact that although an ecotourism trail allows for physical exercise it should avoid excessive physical challenge if its primary function is education and at the same time aim at providing the trailist with an enjoyable experience (Hultsman **et al**, 1987:93-94).

Bewsher & Hugo (1994) approach this discovery and research stage by *identifying parameters*. This involves the evaluation of the terrain on which the proposed trail is going to be developed. Primary and secondary parameters to establish the limitations of the proposed trail site are identified. Vegetation and geomorphology serve as primary parameters and water points, roads, gradient and scope of vision can be secondary parameters. A value system is used to determine the suitability and importance of these parameters. The value of each terrain is expressed as a percentage suitability to identify terrains with high and low suitability values for trailing. No educational parameters and associated value systems are mentioned for the model but once identified could be included in this stage. After identifying the parameters the *determination of ecological terrain* is done by superimposing the primary and secondary parameters from the previous stage on one another using the overlay method. Potentially ecological better or less suitable terrains for a trail can then be identified.

Also part of the supply analysis stage is the *identification of sensitive terrains*. Sensitive areas can include endangered species, steep areas, sensitive vegetation and places of archaeological interest that have the potential to be damaged and

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disturbed by exposing them to people. Features that need special attention because of the value placed on them by the host community can also be included as sensitive areas (Macdonald **et al**, 1998:16). An ecotourism trail that facilitates environmental education needs to consider other sensitive aspects such as dangerous areas like the unexpected appearance of cliffs and poisonous plants that are not safe for the trailists and can hamper the enlightening trail experience.

5.1.4 Trail corridor

After the supply analysis stage the *trail corridor* is determined, or as referred to by Hornby (1977:13-16), *route selection and trail zoning* is done. A base map is drawn using all the information from the previous stages. A tentative trail corridor is determined. Bewsher & Hugo (1994) grade the trail corridor according to its level of difficulty using a computer software programme called "Stapgrad".

Britton (1981:10-12) uses the conventional overlay method to determine the *trail corridor* which allows the trail planner to identify the most suitable area through which the trail should go. During the zoning phase of trail planning it is important to consider the *function or functions of the trail* (that are determined in the earlier stages of the planning phase), *consider how the trail relates to other trails in the area and consider how the trail relates to other facilities in the area* (Hultsman **et al**, 1987:77-79). During this phase the trail planner looks at functions and facilities that are compatible with one another.

In this regard Levy (1984:2.1.1) makes special reference to specific requirements regarding route selection for educational trails. Educational trails should start at the visitors centre, museum, camp site or entrance gate and should, in a nature area, pass educational features like plants, geomorphological structures, water and historical sites. Some trails can have a single thematic approach and focus on one of these features while others can be multi-thematic and focus on a number of these features.

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It is suggested that an educational trail should go through a diversity of areas and can be either a circular, single directional or two directional trail. Gustke & Hodgson (1980:53,56) suggests that educational sites be placed after discontinuities in the trail environment when there are changes in the environment and the trailists are exposed to new sensory experiences. These points of discontinuity are useful in the presentation of important environmental concepts and principles. The circular trail (one-way loop) that starts and ends at the same point is better suited for educational purposes. An alternative to the circular trail is to have a main circular trail that focuses on a theme and describes a variety of features or identifies specimens of plants and animals. Side trips on spur trails that loop off the main trail can focus on one aspect of a theme like tree names, plant ecology, flower and herb identification, soil and water relations, wildlife habitats, geology, forestry practices, a plant nursery or local history (Levy, 1984:2.1.1; Knudson **et al**, 2000:4). These spur trails investigate specific themes in-depth. Levy (1984:2.1.1) suggests a walking time of one to one and half hours (0,5 to 1,5 km) for educational trails. Spurs off the main trail that can be shorter or longer in distance and duration can be added to the main trail.

It is important at this stage to decide on which of the above formats the trail corridor will be based. The trail can also be planned incorporating a combination of the following three options. It can focus on a single theme or topic like vegetation or geology and expose these sequentially so that it makes sense to the trailist. The trail can also adopt a multi-thematic approach where a number of related topics such as vegetation, fauna and flora and geology are investigated. A further format the trail can have is, as mentioned by Levy (1984) and Knudson **et al** (2000), a main trail with either a single or multi-thematic approach with short spur trails focussing on specific aspects of the theme or themes of the main trail.

5.1.5 Assessment of proposal

Bewsher & Hugo (1994) build in an **assessment stage** between the planning phase and implementation phase. This is the stage when the ecotourism trail planner considers whether the planned trail looks right and decides whether to continue with the rest of the trail planning phases or not. It is not clear what basis is used for the assessment because during the previous stages only the suitability of the trail is established and a possible corridor identified. Financial implications like cost analysis of the planning phase of the trail, maintenance cost and income projections are not mentioned during the assessment phase. Finance is an important aspect if the trail is an ecotourism development which aims at financial benefits for the host community, trail planner and trail owner.

Environmental impact studies should be done. Furthermore the proposed trail should be evaluated by possible trailists, the host community, subject specialists and any other agents participating in the trail planning process. At this stage environmental educationists should decide whether the proposed trail corridor contains sufficient environmental education possibilities or not. An important aspect that should also be assessed is the direction in which the trail goes because for environmental education purposes it is important that a theme or landscape is revealed to the trailist in the correct order. The trail should also reveal education points on a slight down slope to give the trailist an opportunity to look around because when walking uphill the trailist tends to look down. Other aspects that should be assessed for environmental education purposes are the location of overnight huts for viewing stars, the direction of the sun for taking photographs and visibility of Bushman drawings. Sighting of birds and animals is best in the early morning and late afternoon which, if included in an environmental education programme, will influence departure times for environmental education groups.

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5.2 Phase 2: Implementation

The implementation phase takes the information and maps of *the provisional trail within the trail corridor* that was identified in the planning phase (Britton, 1981:21-22) and investigates it in the field. The trail is pegged out and assessed so that the final trail can be marked. Only after this phase is completed can the construction of the route begin.

According to Bewsher & Hugo's model (1994) trail construction, compiling brochures and maps, and administration are all simultaneously developed during this phase. According to this model the trail can then be opened. It is noticeable that there are no trial hikes before the final construction or opening. Kerry's (1979:32,33) laying out stage forms part of this implementation stage. This is when guide posts or information boards are sited. The wardening stage Kerry (1979) mentions follows hereafter. During the wardening stage the study area is walked over regularly, changes noted and accounted for. Intended target groups and agents should be part of this stage. After this follows the trial stage when written material is given to pilot groups of trailists to assess the accuracy and suitability of the content. The written material and notes can then be improved and corrected for the final documents.

The model of Bewsher & Hugo (1994) does not make a distinction between different types of brochures for different seasons or trailists. This is an important facet of an ecotourism trail that wants to facilitate environmental education. A trail that is not aimed at one specific trailist group should state it clearly and provide for a diverse group of trailists and their specific environmental education needs. This has significant implications for the development of brochures because it will have to cater for the broader user group. Where there is only one target trailist group the brochures should be developed accordingly. Targeting a number of trailist groups also has implications for the implementation and administration of the trail because control will have to be exercised over who will use the trail,

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where and when. Decisions must be taken whether it will be used at specific times by certain groups or whether different groups will use different parts of the trail or walk in different directions.

5.3 Phase 3: Construction

Part of the construction phase is *establishing design standards* according to which the final trail will be constructed. These construction standards for trails are well documented (Hornby, 1977:17-28; Britton, 1981:13-20; Levy, 1984:3.2-3.12; Hultsman **et al**, 1987:81-85; Fouche, 1988:5-39). Generic standards for the physical construction of trails are clearly stated in these documents namely; gradient, slope of the path, drainage, switchbacks, tread width, tread surface, crossings (river, fences, roads, etc.), back slope or embankment, overnight huts, clearing height of path, trail entrance, trail exit, erosion, signing placement, trail markers, barriers (fences) and retaining walls. According to Hornby (1977:29-31) other aspects such as car parks, ablution blocks and interpretive centres must also be investigated during this phase.

Currently standards given for trail construction do not make specific reference to environmental education trails. Some trail planning guides such as Levy (1984) and Hultsman **et al** (1987) do give standards for nature trails which can be applied to education trails because of their suitability for education purposes. Britton (1981) and Hornby (1977) do not give specific guidance for nature trails. Levy (1984:3.2.1) gives guiding standards regarding the width of nature trails that can be used for educational purposes which relates closely with the design specifications Hultsman **et al** (1987:84) give for interpretive/educational trails. A guided trail should be 2 to 2.5 metres wide and longer trails about 1.5 metres. Hultsman **et al** (1987) specifies 1,83m (6') for a single lane and 2,44m (8') for a double lane, a clearing height of 2,44m (8 feet) and tread width of between 0,6m (2') and 1,83m (6'). Maximum gradient of a nature trail used for interpretation purposes should be less than 10% so that trailists do not become too exhausted

and miss the environmental education experience (Knudson **et al**, 2000:3).

Levy (1984:3.5.2) has further suggestions regarding the tread surface of the nature trail. It is preferable to use material like wood chips, fine shale and gravel. Hultsman **et al** (1987) agree with this suggestion but propose that gravel not be used because it makes a noise which can interfere with and detract from the trail experience. In wet or sensitive areas a boardwalk can be constructed and slippery areas can be covered with netting or a light coat of tar and fine chips. The boardwalk should follow gentle curves so that it is compatible with natural features. This relates to the protection and conservation principle of ecotourism and environmental education and preventative maintenance measures should be built into the trail construction to minimise maintenance after the trail is built and used.

Host communities can participate in different trail construction aspects. This creates job opportunities for them and provides an income. Participating in this way can stimulate their interest in the trail project and contribute to capacity building. Host community involvement is an aim of both ecotourism and environmental education. The host community can also assist with the naming and design of information signs.

Another aspect that is important during construction is the diversity of environments. The trail should go through different environments. The length of the trail should also be considered. On a longer type of trail like a hiking trail different distances can be covered on different days. A difficult and long section should be followed by a shorter and easier section (Fouche, 1988:2-5).

Hornby (1977) and Britton (1981) make no detailed reference to the interpretive material that accompanies ecotourism trails that facilitate environmental education such as maps, brochures, videos and audio cassettes. Levy (1984:3.11) mentions that marked stations along the trail must be linked to descriptions in an

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accompanying leaflet or guidebook, written descriptions and illustrations in a trail guide or booklet, wayside (trailside) panels with descriptive text and sound guides and message repeaters. Trail booklets can be general, seasonal or aimed at different age levels. What is noticeable about the type of interpretive material described by Levy (1984) is that it is informative and descriptive. This format of educational material provides environmental education in and about the trail environment. To extend this experience further and educate the trailist for the environment, material should be developed from a discovery and participatory approach which can give the trailists the opportunity to discover the information themselves and relate it to their own environment at their home destination. This can motivate the trailist to start considering the relevance and importance of different environments and start caring for the environment. It can be debated whether the trailist in a non-formal education setting will voluntarily do this.

Knudson **et al** (2000:2) further suggest that stations and interpretive points must not be placed at a walking link between two busy places. The pathway must not be blocked and signs should be placed out of reach of the casual walker. Such placement implies that a larger typeface should be used. A technique that can be used to mark objects corresponding to signs and text in the brochure is to place a white paint spot on the object referred to in the text.

An aspect that is lacking in these trail planning processes is criteria that should be looked at when the overnight huts are designed and placed on ecotourism trails. The processes also do not mention where stations along the trail should be placed or where an educational experience should be accommodated. Gustke & Hodgson (1980:62) suggest that these educational points should be placed immediately after a discontinuity in the environment. Knudson **et al** (2000:4) suggest that on a nature trail used for interpretation these education points should be scattered along the trail in such a way that they provide effective and connected interpretation. Knudson **et al** (2000) propose a 15 to 60m (50 to 200 foot) interval between points and suggest 10 to 20 principal interpretive stops for a

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0.8 km (0.5 mile) trail loop.

5.4 Phase 4: Maintenance and administration

Following the construction phase is the maintenance and administration phase. This final phase of trail planning includes aspects like *maintenance, patrolling, reservations, fire control and general management of the trail* according to Hornby (1977:32-33). It also includes other aspects such as enquiries, reservations, fees, cancellations, arrival, feedback from trailists and visitor database.

Levy (1984:4.1) identifies under the maintenance phase aspects like the *condition of the trail, alleviating of problem areas and the utilising of trail guards*. Hultsman **et al** (1987:85-87) include in this phase *the naming of the trail, signing the trail and developing trail brochures*. However, these are seen as part of the construction phase by the other authors and are placed there in this study.

Kerry's (1979) last four stages can be grouped under this maintenance and administration phase. The four phases are the improvement and correction of material, dealing with the planners to make recommendations and suggestions for changes and improvements, keeping of records so that annual reports can be produced and finally looking ahead, planning for future changes and anticipating possible effects of events on the trail.

Except for Kerry (1979), the trail planning processes surveyed exclude from the maintenance phase the evaluation of the trail by the trailists, trail planner and owner, host community and authority. These are aspects that are important if an ecotourism trail wants to successfully fulfil its lifelong environmental education purpose because needs can change over time and should be catered for.

Bewsher and Hugo's (1994) monitoring and auditing stage is part of this final stage of the trail development. In their model, during this stage the trail is

checked through internal and external environmental audits. Monitoring in the context of environmental education implies that the trail, as a complete unit and the educational stations along the trail as part of the real domain, be evaluated regularly. The accompanying maps, brochures and worksheets should also be evaluated.

The evaluation of the trail as real domain should be done by as many of the agents that are part of the actual domain and should include the trailist, trail owner, trail planner, host community, authority and any other local role players. Monitoring and auditing is important if the trail wants to sustain its ecotourism responsibility and facilitate environmental education. In this way it can be determined whether the trail is still fulfilling the original purpose as set out in the planning phase or whether the purpose has to be redefined. Possible evaluators identified by Kerry (1979:33,37) are representatives from the local authority's planning and education staff, the main trail consumer groups, volunteers from local wildlife organisations and communities, and experienced professionals. Together with report forms observation can be used to determine the trail planner, trail owner, administrator and trailist's level of satisfaction and their changed needs.

The essential purpose of this phase in the framework is to determine to what extent the objective of the implemented planning procedure has been achieved, namely to apply an ecotourism approach to trail planning and facilitate environmental education. During this phase aspects such as trail deterioration and its general condition, the user pattern, the trail user satisfaction and the host community satisfaction must be investigated. Such a process might seem simple but it is important to realise that the initial objectives involved in the planning framework might have changed as the trail has been used over time. It is therefore important that all the role players remain active participants in the framework to enable continuous evaluation of the process from the different perspectives. That is why the framework has to be open and flexible in order to accommodate any change.

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5.5 Proposed ecotourism trail planning framework to facilitate environmental education

The proposed ecotourism trail planning framework put forward in Table 5.1 tries to bring together environmental systems from the real domain and social systems from the actual domain into a single conceptual structure in the empirical domain.

The framework in Table 5.1 takes the deduced trail planning process from the theory described in sections 5.1 to 5.4 and places the deduced ecotourism planning principles in Table 4.2 in it. The principles from Table 4.2 are placed under the four different trail planning phases suggested in Figure 5.1 namely planning, implementation, construction, and maintenance. The principles can be placed in more than one phase for more than one of the agents. The reason for such multiple placements is that the framework functions as a dynamic whole because of the interrelatedness, interaction and feedback that exists between phases, agents and environments that are part of such a complex trail planning framework.

Table 5.1 in effect brings together four key features. Firstly, it brings together the trail environment, trailists and the plant and animal world within a single framework thus being monistic (Harvey, 1969:468). Secondly, the framework is structured in a more or less orderly, rational and comprehensible way in the four planning phases. These four phases do not operate in isolation from one another but rather interact. Thirdly, the framework is functional in that there is a continuous flow of processes which involves people. Lastly, it is an open system which allows for change and flexibility, true to the realism philosophy in which this research is placed. The trail planning framework tries to remain realistic and pragmatic within the context in which it is used and must work. The framework highlights important trail planning principles that should be considered at specific points in the planning process raising an awareness rather than providing answers to trail planning questions.

The planning principles in Table 5.1 can be used as a checklist when engaging in the development of ecotourism trails that facilitate environmental education. How well a trail that concerns itself with ecotourism and environmental education is planned will depend on how well the following issues are understood: the specific host community and trailist that will be affected, the trail environment and the proposed environmental education activities affecting the trailist and host community. The phases and principles outlined in Table 5.1 should help trail planners to become familiar with these issues.

Every trail project is unique and not all the detailed steps and principles in Table 5.1 will be relevant to each project. It is important to adapt the list to each situation.

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TABLE 5.1 ECOTOURISM TRAIL PLANNING FRAMEWORK FACILITATING ENVIRONMENTAL EDUCATION

PHASE 1: PLANNING OVERVIEW

STAGES	TRAILIST	TRAIL PLANNER AND OWNER	HOST COMMUNITY	TRAIL ENVIRONMENT	AUTHORITY
* Goal & objectives	* Inform the trailist of the goal of the trail namely ecotourism and environmental education	* Develop the goal of the trail within the realm of ecotourism and environmental education * Educate and train developers in what ecotourism and environmental education entail, using workshops. Emphasise that the environment should be utilised and developed responsibly and be sustainable	* Inform the host community that the goal of the trail is environmental education and ecotourism. * Educate and train the community in what ecotourism and environmental education are using workshops. Develop their environmental knowledge, skills, values and awareness * Create realistic expectations	* Assess the broad trail environment when developing goals and objectives for the trail	* Determine how the goal of the trail fits in with existing plans and policies for the area. Identify complementary aspects and possible clashes
* The target audience	* Create a profile of the main kind of trailists who are likely to use the trail * Consider whether the trail will be used by one type of trailist or more	* Identify subject specialists such as botanists, historians and geologists to participate in the holistic planning of the trail	* Identify who from the host community wants to participate in the planning process (community leaders, non-governmental organisations, businessmen, teachers)	* Identify environmental aspects that can be considered in the trail planning process	* Identify departments or persons within the local and provincial authorities who can participate in the project
DEMAND ANALYSIS: * Needs analysis	* Determine the ecotourism and environmental education needs (ecological, emotional, physical) of the trailists	* Find out the trail owners ecotourism and environmental education needs e.g. financial and conservation	* Determine the ecotourism and environmental education needs of the host communities. Obtain their inputs and ideas via forums, meetings and workshops.	* Identify sensitive vegetation areas, political and social issues	* Find out what the needs of the authority are for the area in which the trail is planned
*Feasibility study/scoping	* Consider the emotional, physical and social impact of the trail on the trailist * Determine if the presence of the trailist will have a low impact on the area (carrying capacity) * Determine the number of trailists that can be accommodated on a trail at a specific time and over a period of time	* Determine the development potential, cost and financial benefits of the trail for the trail owner	* Consider the social, cultural and financial scoping of the trail on the community. It must respect their way of life, social values, systems and privacy * Determine if the trail will enhance the host community's quality of life and ensure stability	* Assess the development potential of the environment from an ecotourism and environmental education perspective * Evaluate the environmental impact of the trail. It must have a low impact * Assess whether the trail is sustainable * Identify causes of possible trail deterioration	* Find out whether the authority considers the trail to be feasible

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STAGES	TRAILIST	TRAIL PLANNER AND OWNER	HOST COMMUNITY	TRAIL ENVIRONMENT	AUTHORITY
SUPPLY ANALYSIS: Planning parameters	* Identify activities that will provide an enjoyable participatory experience to the trailist * Determine the difficulty rating of the trail for trailists	* Gather and document information about the trail site from landowners, researchers, historians and other interest groups	* Let the host community identify education points that can be used on the trail (cultural, historical, tribal, etc.), acknowledge and incorporate their indigenous knowledge and environment	* Assess the primary and secondary parameters of the trail * Identify seasonal features * Evaluate the trail terrain and identify environmental discontinuities, diversities and educational points (historical, cultural, natural) * Identify sensitive terrain such as cliffs, wetlands, dangerous areas, steep slopes	* Obtain inputs on aspects the authorities would like to include in the planning parameters
TRAIL CORRIDOR	* Identify environmental education activities that will enlighten the trailist, develop their skills, values and attitudes and can be facilitated along the trail * Determine the suitability of the trail length for trailists	* Establish the compatibility of the trail with other trails, facilities and activities in the same area * Draw a map of the trail using the information gathered during the previous stages * Decide whether the trail will concentrate on a single theme or more and identify them * Decide whether it is a circular, open-ended or a circle with spur trails * Identify a starting point of the trail where pre- and post-activities can be presented	* Obtain the community's input, ideas and indigenous knowledge on the proposed trail corridor	* Encourage the conservation, protection and respect of the environment	* Obtain inputs from authorities on the proposed trail corridor
ASSESSMENT OF PROPOSAL	* Decide whether the proposed trail corridor can facilitate an ecotourism and environmental education experience	* Determine the financial viability and cost of the proposed trail * Determine what facilities are available on the trail * Decide whether to continue with the trail development	* Decide whether the host community will benefit from the trail development	* Determine the environmental impact of the trail and whether it will conserve, protect and respect the environment	* Determine whether the authority supports the proposed trail

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PHASE 2: IMPLEMENTATION

STAGES	TRAILIST	TRAIL PLANNER AND OWNER	HOST COMMUNITY	TRAIL ENVIRONMENT	AUTHORITY
Field reconnaissance	* Obtain inputs from trailists by letting them walk along the provisional trail corridor and record their comments and suggestions (pilot the trail)	* Survey the provisional trail with all the participating agents * Document changes that have to be made after the agents have given their inputs	* Obtain the community's inputs on the path by letting them walk along the provisional trail and give their inputs. Incorporate their indigenous knowledge where possible * Survey the area with them and identify restricted, sensitive and private areas	* Survey the environment for possible education aspects that could have been missed in the planning phase and add points of interest, educational value and wilderness areas * Identify problem areas such as slippery, steep areas or issues related to heat and distance that could have been missed in the planning phase	* Obtain inputs from authorities when taken on the provisional trail
Peg proposed trail corridor		* Trail planner pegs/mark the proposed trail path	* Involve community members in pegging the trail path and provide them with economic incentives	* Take note when pegging the trail path that the environment is not damaged by the pegging or the proposed path	
Mark and signpost the trail (placing guide posts and information boards)	* Place markings and signposts where they are clearly visible	* Use material that is durable and environmentally friendly * Keep the signs short and non-technical * Ensure that the signage on the trail corresponds with the text in the brochures, on tapes, maps	* Use the community to help make the markers and information boards	* Use environmentally friendly material that will not damage the environment and spoil the aesthetic views	

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PHASE 3: CONSTRUCTION

STAGES	TRAILIST	TRAIL PLANNER AND OWNER	HOST COMMUNITY	TRAIL ENVIRONMENT	AUTHORITY
Establish design standards for the trail path * Width * Tread surface * Gradient Establish design standards for huts and environmental education centres	* Apply the appropriate standards depending on whether the trail is used by blind people, elderly or people in wheelchairs	Apply the appropriate construction principles * 1,5m to 2,5m wide * wood chips, fine shale, gravel, sand, board walks for sensitive areas * gradient of less than 10 %		* Apply preventative maintenance measurements	* Incorporate design standards from authority if any are applicable
Building * Trail path * Overnight facilities * Interpretative centre	* Check that all signposts are clearly visible to users * Plan the facilities and educational materials (brochures, videos, cassettes, information boards, etc) that it provides an enlightening experience and give the trail user value for money	* Build the trail path keeping in mind the trail width, surface, etc. * Build the overnight facilities * Build the information centre * Apply environmentally sensitive strategies at all time	* Use members from the local community to help with the building of the trail, designing and building of the overnight huts and information centre. This contributes to their social and economic upliftment and allows them to take ownership of the development	* Build the trail keeping in mind the general trail building principles such as gradient, drainage, crossings, sun position etc. * Use environmentally friendly building material * Use products from the environment to build with, without damaging the environment	
Education points/stations	* Ensure that the marked distances are correct and that educational points are not too far from one another	* Place them at turnouts and at discontinuities * Place signs out of reach of casual walkers	* Let the host community identify possible points on the trail that provide an environmental education experience	* Place them directly after discontinuities in the environment	

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STAGES	TRAILIST	TRAIL PLANNER AND OWNER	HOST COMMUNITY	TRAIL ENVIRONMENT	AUTHORITY
Educational material (seasonal, general and for different age groups) * Design pre- and post-trail activities * Identify persons to manage the trail and train them	* Design informative discovery and participation type of activities on the trail * Develop different brochures for different user groups * Introduce the trailists to a pre-trail programme to inform them and orientate them to the goal of the trail and the intended experience * Implement post-trail programmes to assess the trailists experience * Train organisers such as teachers in environmental education and ecotourism before they bring learners to use the trail	* Develop an environmental education plan * Appoint environmental education officers to facilitate the programmes * Keep the brochures short and non-technical for the general public * Compile specific brochures for specialist groups and different seasons	* Identify community members that can manage the offices or education points along the trail * Train the community leaders as tour guides and for other positions * Use the community to present the activities and share their culture * Use the community in compiling the material, naming the trail etc.	* Use environmentally friendly material * Keep seasonality in mind when developing the material	*Ensure that education programmes fit into the formal education learning programmes of the Department of Education

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PHASE 4: MAINTENANCE AND ADMINISTRATION

STAGES	TRAILIST	TRAIL PLANNER AND OWNER	HOST COMMUNITY	TRAIL ENVIRONMENT	AUTHORITY
Administration	* Keep a visitor database and comments book	* Appoint an environmental education officer to administer the environmental education groups	* Use people from the host community to do the bookings and other administrative tasks such as enquiries and arrivals		
Monitoring and auditing	* Use evaluation forms that the trailist must complete after being on the trail. This helps determine the trailist's satisfaction and whether the demand has changed. This active participation in the maintenance of the trail gives them a sense of responsibility.	* Determine whether the trail is financially viable * Work recommendations and suggestions into the trail corridor * Improve and correct materials used on the trail	* Use volunteers from the community to patrol the trail for damage * Determine the host community's satisfaction on a regular basis through forum meetings. Changed needs and problems can then be identified	* Monitor the condition of the environment and pay attention to deterioration, fire control and conservation issues * Make use of internal and external environmental audits	* Let the authority assess the trail * Obtain formal accreditation of the trail

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CHAPTER 6: EVALUATING THE PROPOSED ECOTOURISM TRAIL PLANNING FRAMEWORK USING CASE STUDIES

"A case study is an examination of a specific phenomenon such as a programme, an event, a person, a process, an institution, or social group" (Merriam, 1991:9).

The domain of this research is in the field of Human Geography and deals with two approaches in the empirical domain, namely, ecotourism and environmental education. The two approaches operate within a specific space, the trail environment. The research is true to the case study approach in that it is contextual and deals with a specific phenomena in the real domain of realism, namely, ecotourism trails. The study focuses on a specific process: the planning of ecotourism trails to facilitate environmental education because such a process does not exist in the literature and is the problem investigated by the study.

A theoretical analysis, based on a literature review, of the three domains of the research, namely; the real (trail event), actual (agents) and the empirical (ecotourism and environmental education experiences) is done and culminates in a detailed and idealistic theoretical ecotourism trail planning framework in Table 5.1. It is an idealistic framework because it is imbedded on one side in the ambitious and idealistic agenda of ecotourism that strives for progressive educational travel that conserves the environment and benefits host communities. On the other hand it is imbedded in environmental education that strives to equip the learner, in this study it can be the trailist, trail owner, trail planner, host community or the authority, with knowledge as well as environmental attitudes and values reflecting awareness of the surrounding trail environment and acceptance of the responsibility for actions.

The overarching principles contained in the framework in Table 5.1 can arguably be applied with varying degrees of ease to different trail environments. Therefore, the theory postulated by other researchers in the literature is subjected to the observation method and researcher participation[5] in a real world situation using case studies. The value of the researcher participating in different ways in the case studies is that it helps to provide structure and focus to the case studies. Furthermore, the researcher gains access to events and groups, such as forums and meetings otherwise inaccessible to the investigation. In the process the researcher becomes an "insider" rather than an "outsider" which makes it possible to call meetings with host communities, learners and educators. These meetings can increase community participation levels in the trail planning process. In practice trail planning is an objective one-sided scientific process where the trail planners do the planning on their own. The reason is that the trail planners consider themselves the only experts.

Case studies in this study do not take on the normal purpose, namely, to test a model. The case studies are used as part of the development of knowledge. The possible application possibilities of the seven theoretical principles, proposed in the framework, in practice is determined using the case studies. This approach results in changing the set of seven principles to nine principles.

6.1 Case study selection

The selection of trails is based on accessibility to, and own judgement of the researcher whether the trails would be suitable for addressing the problem of this study. The primary criteria used to select the case study trails were that all the trails indicated that education is their aim. This approach can be criticized for being subjective and not offering proof of how representative the sample of trails is of the

5. Tables 6.2 to 6.5 in Appendix 3 contain the ways in which researcher participation is achieved in each of the case studies as well as the purpose of the participation.

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population of ecotourism trails.

To overcome subjectivity, Tswaing is selected as the primary case study together with three other secondary case studies. The Tswaing trail project is selected as the primary case study because it is set in a larger project environment that is very suitable to the problem of this study. It would be simplistic and quasi-scientific to determine the applicability of the proposed planning framework only in the context of one trail environment, namely, Tswaing.

Three secondary case studies, namely; Northcliff, Rustenburg, and Windy Brow are selected for comparison purposes. In adopting this approach the researcher overcomes the problem of possible biased interpretation and idealisation that could lead to circular argument. Criteria that were considered to help make the case studies more representative of a wider variety of micro trail settings are:

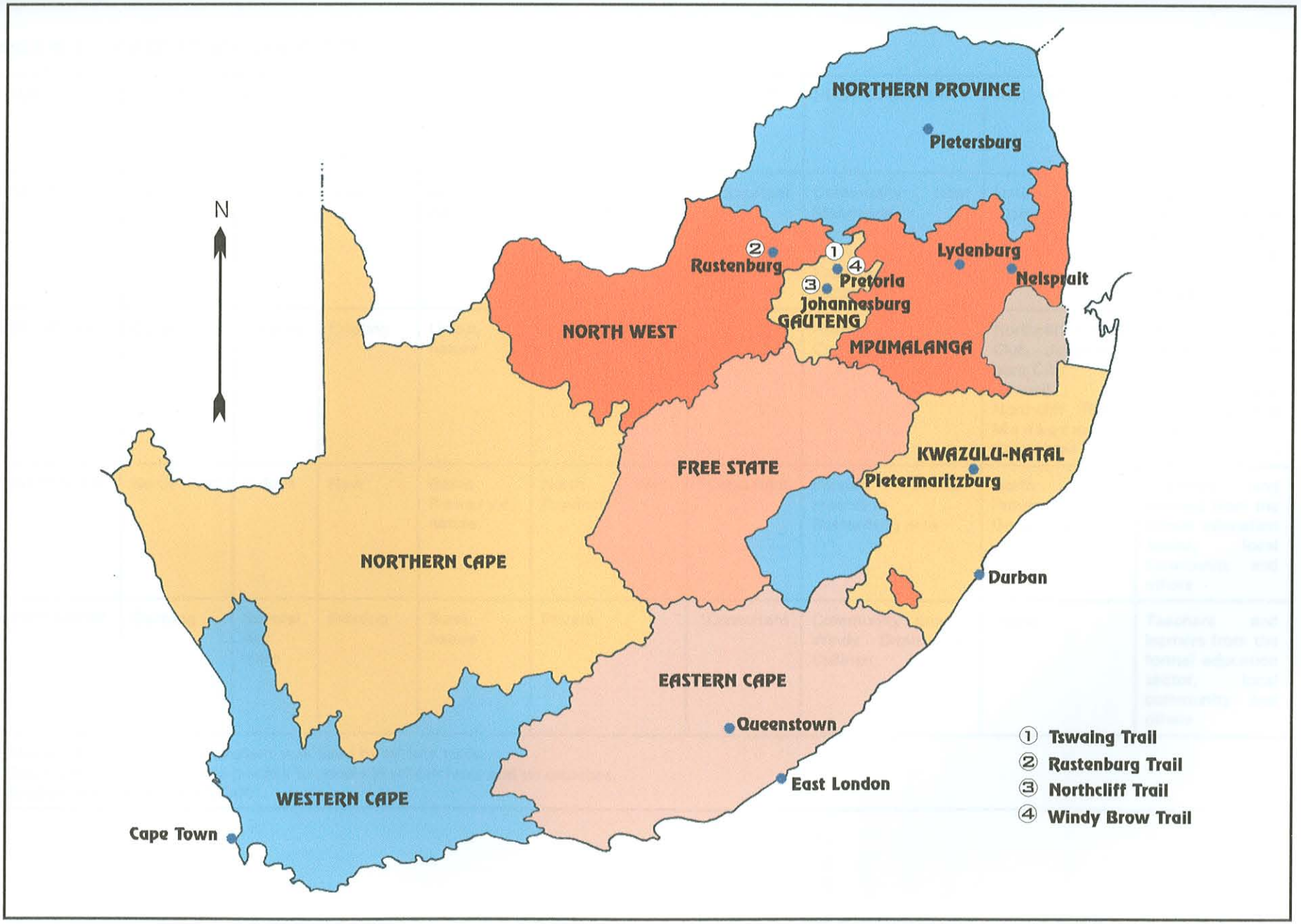
- trails of different duration (a few hours, 1 day, 2 days)
- trails at different stages of development (new or existing)
- trails in different biophysical environment settings (urban and rural)
- trails set in different host communities
- trails involving different agents such as trail owners, trail planners, trailists, environments and host communities
- different trail owners/management (provinces, private and public)

6.2 Case study description

The trail locations are marked on the map in Figure 6.1. Table 6.1 summarises the characteristics of the four trails in the context of the different agents.

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FIGURE 6.1 LOCATION OF TRAILS USED AS CASE STUDIES



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TABLE 6.1 CASE STUDY CHARACTERISTICS

TRAIL	LOCATION	DURATION	STAGE OF DEVELOPMENT	ENVIRONMENT	OWNER	PLANNER	HOST COMMUNITY	AUTHORITY	TRAILISTS
TSWAING	Gauteng	3 hours	New	Rural, nature	National Cultural History Museum	*Consultant	Community from Mabopane, Winterveld, Soshanguve, Kromkruil, Nuwe Winterveld	National Cultural History Museum	Teachers and learners from the formal education sector, local community and others
NORTHCLIFF	Gauteng	2 hours	Existing	Urban, nature	Johannesburg City Council	*Consultant	Northcliff Ridge Community	Northcliff Rotary Club, Johannesburg City Council, Northcliff Ridge Management Committee	Teachers and learners from the formal education sector, local community and others#
RUSTENBURG	North West	2 days	New	Game Reserve, nature	North West Province	*Consultant	Persons outside reserve in Rustenburg area	North West Provincial Government	Teachers and learners from the formal education sector, local community and others
WINDY BROW	Gauteng	Several day trails	Existing	Rural, nature	Private	*Consultant	Community around Windy Brow and Cullinan	None	Teachers and learners from the formal education sector, local community and others

* The same trail planning consultant was used by all four trails.
# The Northcliff trail is also accessible to people in wheelchairs and on crutches.
Compiled by EMJC Schaller/2000

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6.2.1 Tswaing Trail

The Tswaing trail (Appendix 4) is developed in the natural environment of a 220 000 year old meteorite impact crater in a rural area 40km north-northwest of Pretoria. The trail is 7km long and the duration of the trail is about 3 hours. The trail is developed in two phases. The first phase started in 1995 and continued into the second phase from 1997 to May 1998.

The vegetation of the crater relates directly to the geology associated with a meteorite impact crater. The area is rich in woodland areas and shrubveld. Almost all large animals have disappeared. Nearly 300 bird species have been recorded at Tswaing. The Tswaing Crater is situated between formal and non-formal settlements such as Soshanguve (south and east) and Nuwe Eersterust (east). Informal settlements such as Kromkuil (north) and Winterveld (west) are also in the area and create a large demand for firewood and grazing.

An important feature of the Tswaing trail is the soda and salt industry that operated between 1912 and 1956. Some of the remnants of the industry such as foundations of buildings, machinery platforms and boreholes can be found along the trail.

6.2.2 Rustenburg Trail

The Rustenburg trail (Appendix 5) is situated in the Rustenburg Nature Reserve in the North West Province which, at the time of the research, went through a change of government structures from the old Boputhatswana to North West. The Rustenburg trail is made up of two trails. Each of the trails is two-days long and passes through different natural environments. The Summit Route passes through a high lying area which includes a wetland area. The Baviaanskrans Route passes through a low lying area of the reserve.

Since it is a nature reserve there is abundant animal and bird life. The trail passes through interesting metamorphic rock features and a variety of vegetation types such as grass, shrubs and trees is present.

6.2.3 Northcliff Trail

The Northcliff trail is an existing short 2.7 km nature trail on the Northcliff Ridge 12 kilometers from downtown Johannesburg. It is situated on a quartzite ridge with distinct geological structures. It is in an urban environment and in close proximity to residential areas.

The ridge on which the trail is found provides a 360° panoramic view of surrounding areas and hosts a variety of trees, shrubs, flowers and grasses indigenous to the area. A rich bird life is also present. 17th century Tswana iron-age settlements have also been identified on the ridge.

6.2.4 Windy Brow Trail

The Windy Brow trail (Appendix 6) is an existing nature appreciation trail. The trail is made up of a network of three short trails, namely; the ecology, archaeology and geological trail. The trails are situated on a farm that formed part of the bigger farming unit of Elandsfontein where the famous Cullinan diamond was discovered. Windy Brow is situated 27 kilometers east of Pretoria.

A special feature of Windy Brow is the presence of fourteen species of game. Other features include the bird life, the quartzite koppie, view of the Cullinan diamond mine and the remains of old African settlements dating from the 1650s. There are traces of old Sotho and Ndebele kraal formations. On the farm forty-five tree species have been identified.

6.3 The application of the proposed planning principles

It is important to realise that no case study follows a set design. The scope of the study and the depth to which issues are pursued are at the discretion of the researcher. What is important is that, due to the selected research approach and the emphasis on qualitative descriptive research, the researcher documents the primary case study, Tswaing, in more detail. The other three case studies are being used to support or contradict evidence where applicable.

For an understanding of the process to follow, it is necessary to note that the seven broad planning principles in Table 4.2 are reviewed one by one in the context of the four trail planning phases postulated in Figure 5.1 and the agents involved in the trail planning process, namely; the trail planner, trail owner, trailist, environment, authority and host communities. This integrated planning approach is supported by McCool (2000:6) who emphasises that tourism planners should start thinking in terms of appropriate frameworks of *"tourist-environment-community"* interactions.

According to McCool and Stankey (1993) in McCool (2000:6) an adequate framework for tourism should *"recognise* (that) *the interface between tourism and the environment involves primarily social questions as opposed to biotechnical ones, avoid the excessively reductionistic and limited perspective provided by a carrying-capacity-based approach, and include the wide range of stakeholders affected by tourism development choices in the planning and management processes"*. The proposed ecotourism trail planning framework in Table 5.1 applies this approach to tourism because the approach applies the ecotourism and environmental education principles in Table 4.2 deduced from the literature.

Through the comparison of the trails the researcher can relate the applied principles to the literature and try and arrive at general applicable ecotourism trail planning principles that will facilitate environmental education.

6.3.1 Planning principle 1: The total trail environment

Principle one states that the total trail environment, namely; the biophysical (natural and built), social (cultural, economic and political), behavioural and physiological environment should be included in a holistic, interdisciplinary and balanced ecotourism trail planning procedure.

At the Tswaing trail this first planning principle manifests itself in a theoretical format in the mission and educational goals formulated in the assessment stage of the trail planning process. The Tswaing trail was developed as part of a larger project at the Crater Museum conducted by the trail owner, the National Cultural History Museum. The implication is that the trail had to fit in with the mission statement formulated by the trail owner and the education goals of Tswaing. The mission statement for Tswaing is:

"Tswaing Crater Museum is a non-aligned independent people's project for the conservation and utilisation of the environmental (natural, cultural, human) resources of the Tswaing area. Resources will be provided for environmental management and education, training, research, tourism and recreation. This is done in a democratic, participatory manner in order to enrich the quality of life of people in a healthy environment" (Moolman & de Jong, 1995:28).

The educational goals formulated for Tswaing and the environments implied by them are:

- *"Interpret the significance of the site in a holistic manner for the visitors in order to broaden their knowledge and enhance their quality of life* (behavioural and physiological environment)
- *establish a concern for the environment within the communities surrounding the museum* (biophysical environment)
- *promote job creation* (economic environment)

- *adhere to the Tbilisi principles in developing the educational programmes* (educational environment)
- *give preference to participatory methods* (behavioural environment)
  be an example of an organisation that is environmentally sensitive (political environment)
- *involve all the senses in the outdoor learning experience and give a real **African** experience* (cultural environment)
- *encourage a positive and respectful attitude towards man and the uniqueness of the world and the environment"* (behavioural environment) (Moolman & de Jong, 1995: 33).

The above mission statement and educational goals incorporate a number of sectors of the trail environment as understood from Figure 3.4. The mission statement and goals of Tswaing form the theoretical framework for the identification of the purpose of the trail and the intended trail users and their needs during the assessment and demand analysis stage of the trail planning process.

The lack of existing information on the environmental education possibilities of Tswaing made it necessary for researchers, the trail planner, museum staff, educators and community members to visit the trail. The purpose of the visit was to assess the environmental education possibilities of the trail and identify specific sites that could be used to facilitate environmental education for trailists. During this stage it became clear that education as a parameter was not considered by the trail planner when parameters were identified to determine a suitable trail corridor. The fact that this parameter was not included in the initial set of parameters that focused on vegetation and geology, created the impression that the environmental education component was added onto the original planning idea, although the mission and goal statements of Tswaing did include it. It can also be argued that education as a parameter is abstract, difficult to measure, and is not defined in existing trail planning literature. In ignoring the full extent of principle one, namely, the total environment, the educational dimension of the behavioural

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environment is overlooked. The result is that education points are spaced far from one another and the complete three-hour trail is too long for school learners.

Principle one also implies that when information is gathered about the proposed trail site during the supply analysis stage of the framework, the information for the total environment should be obtained. Types of information can include knowledge about the built environment and amenities such as existing huts, roads and paths. Knowledge about the social environment can include relevant cultural, political and historical features such as ruins and battlefields. Information about the natural environment should also be obtained.

At Tswaing the amount of information available on the history, vegetation and geology is extensive. This is due to the fact that a great deal of research has been done by other researchers on issues such as the geology, vegetation, animals and the salt factory at Tswaing. The information is well documented by the Museum and is in many research articles. Tswaing's environmental education potential is not as extensively researched and the only document available is the report entitled, *"The contribution of SITE Museums to the conservation and interpretation of the environment with special reference to the Tswaing Crater Museum"* by Moolman & de Jong (1995). The resources are readily available to researchers for background information. A list of these resources is contained in Appendix 7.

In assessing the theoretical general objectives formulated for the Rustenburg trail it is clear that these objectives mainly focus on the biophysical and behavioural environment and neglect the cultural, political and economic environment. The general objectives formulated for the Rustenburg trail are:

- *"To answer possible questions users might have about the environment in which they are*. (behavioural environment)
- *To contribute to the environmental education of users*. (behavioural environment)

- *To convey certain environmental facts to users.* (behavioural environment)
- *To create a love and appreciation of nature in users.* (behavioural and biophysical environment)
- *To familiarize the user with plants and animals in the reserve.* (biophysical environment)
- *To make the user aware of micro climatic variation.* (biophysical environment)
- *To allow the user to observe and experience vegetation, soil and animal changes.* (biophysical environment)
- *To guide the user's observation and sensoric experiences.* (behavioural environment)
- *To give the user opportunity to express his/her thoughts, experiences and observations verbally or in writing.* (behavioural environment)
- *To stimulate the user's critical and creative thoughts.* (behavioural environment)
- *To develop the problem-solving ability of the user.* (behavioural environment)
- *To enable the user to conduct certain experiments practically in the field.* (behavioural environment)
- *To make the user aware of the need for nature conservation.* (biophysical environment)
- *To create a love and interest in the user for the environment around him/her.* (behavioural environment)
- *To stimulate the user to enquire.* (behavioural environment)
- *To make the user more environmentally literate."* (behavioural environment) (Rustenburg trail brochure, 1998).

At the Rustenburg trail the behavioural environment receives detailed consideration. Unlike the other trails, specific environmental education objectives

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are formulated for the Rustenburg trail. These objectives are grouped under four headings according to the core syllabus for environmental education in South Africa developed by the Council for the Environment in 1993. These objectives are:

"* *Objectives concerning life*

- *To promote an awareness of place and surroundings.*
- *To develop personal values for place.*
- *To gain an awareness of relationships within the community.*
- *To promote an awareness of the interdependence of living and non-living systems.*
- *To promote an awareness of the need to protect water and land ecosystems.*
- *To promote an awareness of the food chains of life.*
- *To promote an appreciation of changes in nature.*

* *Objectives concerning resources*

- *To promote an awareness of human uses of natural environments.*
- *To gain an awareness of the origins of natural resources.*
- *To promote an awareness of human dependence on natural resources.*
- *To promote an awareness of the sustainable use of resources.*
- *To promote an awareness of the consequences of exhausting resources.*

* *Objectives concerning life skills*

- *To learn co-operative teamwork skills.*
- *To promote creativity in thinking.*
- *To promote effective communication skills in decision-making.*
- *To promote inquiry learning skills.*
- *To promote problem-solving skills in local contexts.*

* *Objectives concerning personal values*

- *To promote an awareness of personal values systems as they relate to the environment.*
- *To promote an awareness of other cultural positions.*
- *To promote an appreciation for different positions and perspectives from our own.*
- *To promote a positive attitude towards others and the earth which sustains life."* (Rustenburg trail brochure, 1998)

Unlike at Tswaing and Rustenburg, no objectives are formulated for the existing Northcliff and Windy Brow trails. At Northcliff the initial purpose and target audience of the existing trail are revisited to facilitate environmental education as well. For the new Northcliff Ridge Community project, of which the Northcliff Trail is part, the following objectives are formulated:

- *"Develop a safe and natural viewing platform.* (behavioural environment)
- *Develop the 2.7km nature trail on the Ridge, (accessible to the disabled).* (physiological environment)
- *Allocate and enhance the specific area for rock climbing.* (physiological environment)
- *Recreate the 17th century Tswana Village as a tourist and educational attraction.* (cultural and behavioural environments)
- *Organize educational trails for schools and special interest groups.* (behavioural environment)
- *Create opportunities to view bird life and small animals.* (biophysical environment)
- *Re-establish the original ecology of this unique Ridge.* (biophysical environment)
- *Establish a visitor information centre illustrating the history;*

and natural features of the Ridge." (cultural and biophysical environments) (Northcliff Sponsorship brochure, 1998)

These objectives, as at Tswaing, encompass a broad environment and include the biophysical, physiological, behavioural and cultural environments.

When the purpose of Windy Brow was expanded to include environmental education, a set of environmental education goals was formulated. These goals and the environment they refer to are:

- *To promote a conservation ethic*. (biophysical environment)
- *To enhance in the students an awareness, understanding and concern for the environment and associated problems.* (behavioural environment)
- *To motivate people to take positive action*. (behavioural environment)
- *To provide opportunities for outdoor recreation (fun).* (physiological environment)
- *To promote a sustainable living motto:"think globally, act locally"* (behavioural environment) (Windy Brow promotional flyer, 1997).

The above set of theoretical goals, formulated for Windy Brow, attempts to include a broad environment as proposed in principle one. However, the biophysical environment received primary attention and motivated the original thematic trail development that took place around aspects such as geology and vegetation. The economic, political and cultural environments are neglected in these goals.

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In determining the application of principle one to the different case studies it can be concluded that the trails in theory strive to keep the total environment proposed by ecotourism and environmental education in mind when formulating goals and objectives. In practice though it does not realise. Planning principle one furthermore seems to have specific relevance to the assessment and demand analysis stages of the trail planning framework (Table 5.1). At this stage the host community should be involved in attaining the environmental education and ecotourism goals for the total trail environment and be involved in initiating the trail project.

6.3.2 Planning principle 2: Responsible and sustainable planning

According to this principle, **ecotourism trail planning must be done responsibly and sustainably in terms of all agents that are role players in the planning process. Current and historical environmental aspects should be considered in the planning to instil an ethical responsibility in the agents.**

This principle was applied during feasibility studies done in the demand analysis stage of the Tswaing trail. Aspects such as practicality, expected use, developmental potential and environmental impact were investigated. These aspects were addressed at the Tswaing trail through visits and surveys done by environmental educationists[6]. During the visits it was determined whether it was practical to use the trail for environmental education and what the environmental education development potential of the trail is. The trail planner[7]. who did the physical planning and layout of the proposed trail was part of the trail survey process. The trail's potential for environmental education was determined using

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6. Specialists from the Cultural History Museum in Pretoria and the researcher did the assessment.

7. Paul Bewsher (1995)

the deduced links between ecotourism and environmental education principles in section 2.3. The result is that the decision was taken that the trail could facilitate environmental education purely based on the theory at hand.

Principle two was further addressed at Tswaing during the demand analysis stage by investigating the physical and ecological demands the trail site has. The trail planner identified potential areas of deterioration. Mechanisms to alleviate deteriorations were built into the building standards applied to the trail. At Tswaing principle two further manifests itself in the Integrated Environmental Management procedure (IEM) that was adopted for the planning process (Moolman & de Jong, 1995). Adopting the IEM procedure as a sustainable management strategy at Tswaing implies that the term environment is used in its broad sense as is suggested in the literature. Environment encompasses the biophysical and socio-economic components as proposed in Figure 3.4. Therefore the trail development had to keep in mind the broad general IEM principles that underpin the Tswaing project namely:

- *"Informed decision-making.*
- *Accountability for information on which decisions are taken.*
- *Accountability for decisions taken.*
- *A broad meaning given to the term environment.*
- *An open, participatory approach in the planning of proposals.*
- *Consultation with interested and affected parties.*
- *Due consideration of alternative options.*
- *An attempt to mitigate negative impacts and enhance positive impacts of proposals.*
- *An attempt to ensure that the social costs of development proposals (those borne by society, rather than the developers) be outweighed by the social benefits (benefits to society as a result of the actions of developers).*
- *Democratic regard for individual rights and obligations.*

- *Compliance with these principles during all stages of the planning, implementation and decommissioning of proposals.*
- *The opportunity for public and specialist input in the decision-making process.*" (Moolman & de Jong, 1995:27-28).

The IEM principles correlate strongly with the revised trail planning principles deduced from the literature and proposed in section 3.3. These principles not only address planning principle two but also overlap with other planning principles such as, a broad meaning be given to the term environment (principle one), planning be done in an open and participatory manner (principle seven), consultation take place with all the affected role players (principle five), negative effects be minimised and positive impacts enhanced (principle four), the social costs to the community be minimised and the social benefits be enhanced (principles two, five and six), the community's democratic rights be respected and considered (principle two), both the community and specialists provide inputs in the planning process (principle five), and that all the principles be considered in all the stages of planning (principle seven).

With all the IEM principles theoretically in place and consultation taking place through community forums at Tswaing, problems were still experienced during the implementation phase of the trail. Large groups of learners (up to 300 at a time) of different age groups arrived at Tswaing. The teachers were unprepared for the visit and have no set outcomes, or selected activities and themes for the visit. Rheeder (1992:17) suggests that teachers make pre-trail visits to the site to determine how the trail environment can be integrated into the curriculum. The educational officer did not have sufficient resources to facilitate the groups on the trail in practice. The trail planning at Tswaing neglected to apply planning principle two which emphasises the need for responsible and sustainable planning. Applying the principle would have assisted in identifying the need to train the teachers and the educational officer to facilitate the environmental education programmes on the trail and ensure the sustainability of the programmes.

The result is that the National Cultural History Museum has to reassess the first phase of the environmental education project and make adjustments that will limit these problems. The intended broad target audience was narrowed down to focus mainly on the formal education sector, school children and teachers around Tswaing in the second phase of the trail development. The trail developer took on a more focused responsibility and a new set of 57 activities was developed. However, the adjusted programme again illustrated that conceptual understandings of the two approaches by the host communities and trail users were different to the understandings of the developers and researchers. Programme developers (1998) participating in the second phase commented at a review meeting of the pilot programmes that the "learner's concept of environment only linked to the natural environment" (Appendix 8).

Principle two, emphasising responsibility and sustainability, suggests that careful consideration be given during the trail corridor planning stage of the framework to the length of the trail. In conventional trail planning models set standards exist. For trails that need to facilitate environmental education different suggestions are given in the literature. To establish the correct distance would require taking pilot groups from the targeted trail user groups on the intended trail corridor to determine their level of distance acceptance. Distance is experienced differently by different people. Distance is a personal physical experience that needs to be researched in conjunction with the learning experience to determine acceptable distances for different levels of learning. None of the trails specifically addressed this issue and at Tswaing it resulted in changes being made to the trail to accommodate acceptable distances for different learner groups. At Windy Brow the format of the trail, namely, short interlinking sections, made it possible to facilitate learning experiences on a variety of distances.

Principle two further implies that a trail be sustainable over time. At Tswaing, sustainability has been hampered by regular staff changes subsequent to the opening of the trail. The consequence is that the implementation and running of

environmental education programmes has not taken place without problems. The result is that the initial teacher's manual has had to be restructured in a different format. Staffing problems have also created a lack of continuity in the programme implementation and environmental education workshops that were conducted with the local communities in and around Tswaing. One of the staff from the Cultural History Museum has suggested that *"There is a need for a full-time educational officer to apply and upgrade the programmes over time"* (Minutes of meeting 18/03/98, Appendix 8). Tswaing even opted for the service of an outside person to facilitate the environmental education groups in the formal education sector.

The application of principle two to the case studies is complicated by the fact that at Tswaing sustaining the environmental education programmes over an extended period of time has been difficult owing to staff changes, lack of staff training for environmental education and the arrival of large groups of learners. At Rustenburg and Northcliff the environmental education programmes are not sustained at all. Windy Brow is the only trail where environmental education programmes have been sustained over a period of time.

6.3.3 Planning principle 3: Enlightening and educational experience

This principle suggests that **an enlightening and educating experience must be provided to all the agents that are part of the ecotourism trail planning process to increase an awareness and an understanding of the total trail environment.**

The proposed framework incorporates principle three during the supply analysis stage and suggests that educational themes be identified and linked in an order that would contribute to unlocking the space through which the trail passes in a logical way. It is important that environmental education sites and points be identified during this stage through site visits before a final decision is taken on the trail corridor.

At Tswaing, the trail corridor had already been identified by the time the trail was assessed from an environmental education perspective. The result was that environmental educationists and other subject specialists only identified environmental education points along the already identified trail corridor. A further result was that the trail direction had to be changed after visits by teachers, learners, researchers and host communities. The change in direction has become necessary because the learning experience is not unlocked sequentially and the total distance of the trail is too tiring for learners. The fact that the host community was not involved in identifying educational sites has resulted in indigenous knowledge not being built into the education experience along the trail. This is not only a shortcoming in applying principle three but also principles two, five and seven. These principles together suggest representative and active participation by all agents to ensure that planning is done in a responsible and sustainable manner.

In determining the extent to which the existing Windy Brow trail applied principle three it is clear that the layout of the Windy Brow trail proves to be more open to facilitating environmental education. It is possible to select, from the network of shorter trail links, different distances for different user groups depending on their age and fitness. The result is that more than one group with different environmental education needs can be accommodated on the trail. Programmes for the different trail sections can link a number of diverse environmental aspects or concentrate on one theme. It is important to note that although each of the shorter trails focuses on a specific environmental aspect, for example geology it is not possible in any environment to isolate one aspect. The different environmental aspects remain part of the interconnected web of environmental features along the trail environment. The Windy Brow trail format makes it possible to design a variety of environmental education programmes for different sections. Possible themes and points are identified by environmental educationists along the trail that could be used to facilitate these environmental "education programmes". Host communities were not asked for their inputs.

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The application of principle three at the Northcliff trail is apparent in the fact that the trail environment includes special features such as a unique habitat of indigenous flora and fauna and it is an important archaeological site. The trail has the potential to become a major recreational amenity serving the environmental education needs of a wide community. The result is that trailists can enquire into the environment through which the trail passes, become aware of the bird and animal life on the ridge, the panoramic view, study the geology of the ridge and simply enjoy nature. Such an enlightening experience can contribute to the physical and mental well-being of society. Further applications of principle three can result in archaeological discoveries being displayed and explained at an exhibition centre and research opportunities being created for local educational institutions such as schools, universities and technikons. Research information can be used to develop environmental education programmes that will educate trailists along the trail, about the environment which can enrich trailists for the future.

The trail planning framework suggests that when principle three is applied to the trail corridor stage, a place for pre- and post-trail activities should be identified. At Tswaing and Rustenburg the trails start at the visitor centres. The result is that pre- and post-trail activities can be presented at the centres.

At Tswaing, principle three was realised during the construction phase through the development of three types of educational resources. A teacher's guide, tour guides and an activity manual have been developed. The teacher's guide has been compiled to give the teacher enough physical information about Tswaing, obtained from previous research reports and articles. It also includes instructions on how to use the guide, giving detail on the trail and indicating possible activities (Appendix 9) that could be engaged upon along a specific section. Preliminary and follow-up activities are included. Rheeder (1992:18) regards pre-trail lessons as important because these lessons supply background information on the place to be visited, the purpose of the visit, what trailists should look out for and what

follow-up work will be done.

The teacher's guide contains safety hints, materials needed for the activities, techniques to be used on the trail, examples of worksheets and lists of fauna and flora found in the vicinity of Tswaing. Teachers could, for example, select activities from the teacher's guide or they could design their own programmes for their students. In conjunction with the compilation of the teacher's guide, a programme was structured and tour guides from the local community were trained to assist teachers in facilitating the school groups on the day of the programme. Training local tour guides is a means of creating jobs in the local community, the main focus of any community project.

During the monitoring and auditing stage at Tswaing, the teacher's guide was reassessed by the National Cultural History Museum. The result was that at the end of 1996 a more structured approach was adopted for the environmental education project. In the middle of 1997 the Project Manager of the trail development approached an environmental education specialist to set up a team of educationists to help with the development of specific environmental education programmes at Tswaing[8]. This was subsequently done and individuals from different tertiary institutions and staff of the National Cultural History Museum met to start the process. Important decisions taken at this, and subsequent meetings, were the following:

- Programmes should adhere to the new Outcomes Based Education system.
- The crater should form the focal point of the programmes.
- The whole education system should be covered (all the phases and all the learning areas).

8. The Project Manager was Mr Kobus Basson. The chairperson of the educational committee was Prof Callie Loubser. The tertiary institutions involved were University of South Africa, Vista University, the South African College for Teacher Education.

- The community at Tswaing should be consulted and included in the development of programmes, true to the philosophy at Tswaing.
- The programmes will operate along the trail.

At a meeting of the Tswaing Forum, a chairperson for the educational committee was elected and commissioned to proceed with the development of programmes. The educational committee was extended to include: The Gauteng Department of Nature Conservation, teachers of the area and community members (Appendix 10). The committee explored the trail at Tswaing twice before starting with the revised programme. The result was the identification of 16 educational sites (Minutes of meeting 18/03/98, Appendix 8).

At Rustenburg only a draft brochure has been designed (Appendix 11). It was not piloted by the time the case study was documented. Northcliff also has no specific educational material and no educational points were identified by the time the case study was documented.

Windy Brow does not have specific educational material except for an information brochure briefly explaining the features that can be found on the different loops on the trail. At Windy Brow the developer coordinates the environmental education programmes but uses external persons from tertiary institutions such as Pretoria Technikon and Vista University to develop and implement the programmes. Some schools design and run their own environmental education programmes on the trails.

With regard to principle three, what transpires from the case studies is that although ecotourism trails should contain an education component they also have the potential to facilitate specialised environmental education. If an ecotourism trail is to facilitate specialised environmental education an additional administrative task needs to be added. This task entails the appointment of a trained environmental education person to help facilitate this specialist purpose of a trail.

This appointment is crucial especially for organised environmental education programmes for the formal education sector because this sector of trailists should be actively involved in diverse learning experiences on the trail. They should be given opportunities to evaluate certain environmental situations, be provided with decision-making opportunities based on study and be given an opportunity to apply prior knowledge to new learning. This level of trailist requires the expertise and experience of a well-trained person.

6.3.4 Planning principle 4: Conserve and protect total environment

Planning principle four proposes that **the total trail environment that is utilised as the resource must be conserved and protected. Environmental sensitivity and the symptoms, causes and complexity of environmental problems during the ecotourism trail planning process should be emphasised and negative impacts should be minimised.**

Principle four, focusing on conservation and protection issues according to the framework, needs to be applied during the trail corridor stage and construction phase when design standards are established for trails. The principle has been applied by all four trails for the biophysical environment because generic trail construction standards exist regarding the natural environment through which the trail passes. Specification for biophysical aspects such as drainage, gradient and trail widths exist in the literature. However, no clear standards are given in the literature for the cultural, economic and political aspects of a trail.

Behavioural standards, such as educational standards do not exist and are not applied. The teacher's manual for Tswaing and the brochure for Rustenburg are therefore designed without set specifications. The compiler has relied strongly on practical and research experience and guidelines from literature. In the case of the Tswaing teacher's manual the compiler had to decide whether or not to take a thematic approach to the activities. In an attempt to make the activities relevant

to the users, teachers have been invited to give inputs into the manual. The environmental education officer at Tswaing and community members also gave their inputs. Appendix 10 contains a list of persons who gave inputs on the Tswaing teacher's manual and fifty seven activities. The fifty seven activities took notice of Rheeder (1992:17) and Schulze's (1994:166) suggestion that comprehension, discussion, note-making, application, analysis, synthesis, evaluation, problem-solving, experimentation, case studies, debates, brain storming, projects, survey and role play type of activities should be included on the trail.

At the Rustenburg trail, careful consideration has been given to environmental impact and an eco-hut has been designed for overnight purposes (Appendix 12). The eco-hut is designed to fit in with the natural slope and vegetation of the surrounding trail environment. The structure is covered in rocks, soil and plants from the area. The Windy Brow and Northcliff trails also apply ecological design standards that exist in the literature. As at Tswaing and Rustenburg, specific educational standards are not applied.

The lack of consideration given to principle four further resulted in the fact that the outdoor environmental education facility built on the Tswaing trail for environmental education groups was not environmentally aesthetic and was an intrusion rather than a resource. The result is that the aesthetic environment has not been conserved and protected because no clear design standards exist for such structures. The facility had to be removed. If clear specifications regarding outdoor environmental education facilities had existed, the cost and effort of building the structure could have been correctly applied.

What is evident from all the case studies with regard to principle four is that existing generic standards for the biophysical environment have been applied to all the trails. Definite educational design standards do not exist therefore little consideration is given to the requirements environmental education places on the

total trail environment. Environmental education design standards that have emerged, especially from the Tswaing trail, are that:

- the distance between educational points on the trail needs to be taken into account,
- the sequence of education points must correlate with the trail direction,
- the design and placement of outdoor facilities must be investigated,
- the total distance of the trail and where and how indigenous knowledge will be incorporated into the trail experience must be investigated, and
- the discontinuities in the environment, where environmental education points can be placed, identified.

6.3.5 Planning principle 5: Inclusion of all the agents

Principle five states that **all the agents such as the trailist, trail planner, trail owner, host community, authority and the total environment should be part of the ecotourism trail planning process and especially the host community must benefit. Local, national and international inputs and contributions should also be recognised.**

At Tswaing, principle five was applied in the assessment stage via the Tswaing Forum. *"In October 1993 the Tswaing Forum was established in order to involve the interested and affected parties in the planning and decision-making"* (Moolman & de Jong, 1995:26). The Tswaing Forum is made up not only of the trail owner, trail planner and host community as well as a number of other interested parties. *"Serving on the Forum are representatives of local communities, specialists like museum scientists, botanists, zoologists, business people, geologists, educators, agricultural scientists, and representatives from various non-governmental and community-based organisations"* (Moolman & de Jong, 1995:26,27). The Forum structures were functioning positively and the trail project could make use of them rather than try to establish new links and associations with host communities.

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Through these structures, the host community had already been made aware of the purpose of the project, what their role was in the project, and which of their needs it would attempt to address. The fifth planning principle has been applied more specifically through two of the four working committees from the Tswaing Forum, namely; the Tourism, and Education and Training committees.

The intended users of the Tswaing trail had also already been determined by the Planning Forum of the developer of the trail, the National Cultural History Museum. These users included the local formal education sector, namely; *"schools (pre-primary, primary, secondary, tertiary),"* and *"people that are conscious of the environment, people that prefer the environment as method of relaxation e.g. bird clubs, habitat and conservation clubs, hikers, etc., environment specialists (researchers), tourists (South African and international), and local communities and business communities"* (Moolman & de Jong, 1995:31). Thus, at Tswaing the intention has been to involve as many agents as possible in the planning process of the ecotourism trail that facilitates environmental education.

The Rustenburg trail differs from the Tswaing trail in that it did not in theory state who the agents were during the assessment stage. The Rustenburg trail mainly targets the communities around the nature reserve where the trail is located. The trailists targeted by the Rustenburg trail include the formal education sector which demands curriculum relevant activities and programmes, as well as the non-formal education sector which includes communities in and outside the local area of the trail.

During the demand analysis stage at Tswaing, principle five was addressed by determining the broad needs of possible trail users. According to Moolman & de Jong (1995:28) *"The Planning Committee has compiled a list of the needs of the interested and affected parties. These needs comprise intended activities at and around Tswaing, and the necessary facilities. The needs cover a wide variety of aspects, such as conservation/environmental management, recreation,*

education/training/research, tourism, and regional community needs." The result at Tswaing is that although in theory recognition is given to the fact that agents have different needs these are not clearly formulated in the demand analysis stage in the context of environmental education and ecotourism. The lack of specifying these needs has resulted in different understandings of the concepts environmental education and ecotourism by the teachers and learners who have used the trail. Environmental educationists piloting programmes also *"encountered problems with language, background knowledge, translation, graphics and experiments"* (Minutes of meeting 18/03/98, Appendix 8).

The lack of applying principle five and consequently not identifying the environmental education needs of all the agents participating in the trail planning process during the demand analysis stage, impacted on the trail corridor stage at Tswaing when the tentative trail corridor was identified using all the information obtained during the previous stages. The result was that the direction in which the trail had to be walked had to be changed to unlock the trail environment in a logical order for the trailist. A further result was that shortened sections of the trail had to be identified for environmental education activities because the user groups from the formal education sector found the complete route too long for a satisfactory experience.

The lack of applying principle five in earlier stages of the planning process at Tswaing resulted in problems during the building stage of the trail facilities when the trail itself, overnight facilities, ablutions and reception were built. Local community involvement should have been established by getting local community people to build the trail path and upgrade the ablution facilities at the start of the trail. At Tswaing, the trail was completed before pilot groups, community members and environmental education specialists were invited to walk it. The result is that distances relevant for educational experiences were not considered which made it necessary to divide the original trail corridor into shorter sections. Shorter interlinking loops on the trail were not originally planned.

At Windy Brow, the fifth planning principle of including all the agents in the planning process was not fully applied. Trailists, teachers and communities were not included in determining suitable educational themes and sites. The reason was that the initial trail purpose was recreation and it only changed later to include environmental education. Furthermore, the Windy Brow trails are on a private farm and there is no large host community living on the farm except the farm workers. There could therefore not be extensive host community involvement.

As at Windy Brow the initial recreation and leisure purpose of the Northcliff trail was reassessed by the developer, Northcliff Rotary Club. The Club wanted to develop the trail as an ecotourism resource and environmental education facility. The expanded purpose for Northcliff stems from the fact that the Northcliff Ridge on which the trail is situated is public property with uncontrolled access from the surrounding urban area. The free access results in extreme cases of littering, vandalism and graffiti on the trail. Ecotourism and environmental education are seen as a way in which the rich geology and the natural site can be conserved but at the same time be used as an ecotourism and environmental education resource by the public. Community representation is achieved via the Rotary Club. Other agents involved in the assessment stage of the existing trail were the trail planner and an environmental educationist.

At Rustenburg, Windy Brow and Northcliff no needs analysis was done in the demand analysis stage for ecotourism and environmental education with the intended trailists. This means that no broad participation was facilitated during this stage and principles one and five were not applied. The result is that the focus of the trails is based on general trends rather than specific needs of the host communities and intended target audiences contextualised in a specific environment. At Windy Brow and Northcliff the developer wants the existing trails to become focused on the formal education sector as their target market and should have involved these agents at that stage in the re-planning of the trail. The lack of broad participation and ownership of all possible agents in the Northcliff

project did not take place and can be seen as a contributing factor to the fact that the Northcliff trail had not developed further during 1999. Montford (1991:31) is of the opinion that environmental education projects must lead to involvement otherwise empowerment cannot take place. At Windy Brow environmental education programmes were developed for schools based on the developer's own educational experience, the inputs from the researcher and Pretoria Technikon Nature Conservation students.

As at Tswaing and Rustenburg, the trail corridors at Windy Brow and Northcliff were already built. Inputs from the wider group of agents as suggested in principle five, were not obtained.

At Rustenburg, as is the case at Tswaing, the two trail corridors were already identified by the time the researcher was asked to provide guidance regarding environmental education aspects of the project. The two trails, each two days long, pass through two different environments namely the Summit area and the Baviaanskloof area (Appendix 5). As is the case with Tswaing, the two trail corridors were identified by the trail planner without inputs from local communities, environmental education specialists or intended users.

Both abstract and physical information were included in the development of the teacher's guide and the training of the tour guides at Tswaing through close consultation with the parents, teachers, school children and subject specialists[9] via regular forum meetings and training sessions. Their local inputs shaped both these elements of the project. The participation by different agents in the compilation of the guide proved valuable in that it guided the researcher where changes had to be made regarding walking distance, time spent on activities and providing activities more suitable for the different school phases. The programme development group found that *"The expectations of different phases are different"*

9. Subject specialists from Geography, Geology, History, Botany, Zoology, Environmental Education were used.

(Minutes of meeting 18/03/98, Appendix 8).

Determining the applicability of principle five to the different case studies reveals that a diverse group of agents can participate in the trail planning process. The presence of a variety of agents supports the importance and relevance of planning principle five in the framework that requires that the intended users be clearly defined in the context of their ecotourism and environmental education needs. What is noticeable is the prominent role the ideas of the developers play in determining the purpose and goals of the trails. These purposes and goals are formulated in the assessment stage of the trail by the trail owner and planner in most cases with little or no input from trailists and host communities.

A further result that stems from applying principle five is that in the formulation of a purpose, goals and objectives, it is important to state that ecotourism and environmental education approaches form the basis for the trail. Including ecotourism and environmental education as part of the purpose from the start helps to structure and focus the trail planning process. Adding this as an additional principle to the proposed framework would be appropriate.

With regard to principle five, it appears from the different case studies that a needs analysis is seldom undertaken for environmental education or ecotourism. Personal interpretations and generalisations are used to direct the trail planning process once the developer decides that the trail should facilitate an environmental education experience. The trail planner appears to determine the feasibility of the trail without consulting the other agents in the process. In practice there is very limited participation from the agents during the demand analysis stage of the trail planning phase of trails.

The case studies surveyed indicate that principle five, namely involving all agents in identifying environmental education themes and sites on a trail as a planning parameter, is important. This can assist in eliminating subjective interpretation of

the trail environment and prevent the exclusion of indigenous insights and understanding of environmental education.

Theoretically the community is recognised as an important agent during the assessment stage, but host community participation is absent during the demand analysis stage. The host community is not asked to express their understanding of, and needs for, ecotourism and environmental education. This is a typical trend in existing trail planning methods. Although trail owners, trail planners and other external role players, in theory at least, have the intention of involving all role players, they enter the planning process with predetermined purposes and ideas and preconceived needs for the agents.

The case studies show that decisions as to "whether to continue or not" (Assessment of proposal stage, Figure 5.1) is a subjective decision taken by only two of the agents in the planning process, namely the trail planner and the owner. Other agents remain passive and uninvolved in this phase of the trail planning process which contradicts true ecotourism development and environmental education.

6.3.6 Planning principle 6: Economic benefits

This principle states that **economic benefits must be provided to all the agents participating in ecotourism trail planning.**

Principle six is a principle that did not receive much attention in any of the case studies. The only trails that applied the principle to an extent are Tswaing and Rustenburg. At Tswaing and Rustenburg, economic benefits have been carried through to the host community via job creation initiatives. People from the host community were employed to peg and construct the trails. At Tswaing women from the host community were used to chop out the invader sickle bush (an invader plant which takes over the veld when overgrazing takes place). These

women were paid for their services and the Museum then sold the bundles of wood to the local community for firewood. Tour guides from the community were also trained and appointed. The guides are paid for their services.

Windy Brow, according to the owner, also used local labour to construct new buildings and do maintenance work on the trails.

In general, the case studies do not show that this principle was broadly applied. Except for attempting to create different job opportunities for the host community, little consideration was given to finances by the trail planner or trail owner.

6.3.7 Planning principle 7: Participatory and interdisciplinary experience

Planning principle seven states that **a participatory and interdisciplinary experience must be provided to all the agents participating in the ecotourism trail planning process. Agents must be provided with practical, first-hand experiences on the trail and opportunities to plan their learning experiences must be provided for them.**

This principle should be applied during the field reconnaissance stage of the implementation phase of the framework. The framework suggests that pilot groups from the different trailist groups be asked to walk the trail and give inputs. This would help to increase active agent participation.

At Tswaing, three trial groups of school children (grades 1 to 6, 7 to 9 and 10 to 12) went on the trail only once the complete trail was built. The trial groups of learners were assisted by teachers and trained tour guides. The result was that certain group dynamics could be observed in the different age groups of learners. Cultural and language differences also became significant influencing factors. Different environmental features meant different things to different groups. The different language groups had different names and uses for the same plant or

feature and had a variety of folk stories to tell about certain objects. After the piloting exercise these aspects were incorporated into the activities in the teacher's manual. This exercise helped to enrich the project by increasing its indigenous value. It also allowed prospective trailists to shape the educational experiences intended for the trail. Moreover, it enabled the tour guides that come from the areas surrounding Tswaing to point out that groups could represent up to nine different language groups. The tour guides suggested that individuals in the group be used as interpreters which also increases learner participation.

During the revised trail project at Tswaing, a further pilot run of the fifty seven structured activities in six programmes was done over four days. On day one the activities were piloted for the foundation phase (grades 1 to 3), day two the intermediate phase (grades 4 to 6), day three the senior phase (grades 7 to 9) and day four grades 10 to 12 that form part of the further education phase of the National Qualifications Framework. The learners used were invited from schools in the local area together with their teachers to ensure that the target community helped to shape the programme and a true learning process be established. Including the teachers was an attempt to have a familiar person in the group and to facilitate communication.

It took a while for both groups to be comfortable with the programme presenters because they were unfamiliar with their faces, methods and approaches. Once the learners settled down, the piloting exercise was experienced positively by the learners as well as the teachers. The result of the second pilot at Tswaing was that activity developers learned a great deal. Further planning principles emerged that had to be kept in mind when developing an environmental education programme for a specific community and environment.

Aspects that emerged included the following:

- The teachers and learners were not familiar with the environmental education concept and did not perceive it in the same way as the project developers.
- The background knowledge of learners was not at the level assumed to exist by the environmental education programme developers.
- Language and terminology differences existed.
- The mastery of specific skills required repetition.
- The environment was perceived mainly as biophysical by the learners.
- Time was a factor and the trail was too long.
- Cross-curricular activities were new to the teachers and learners. (Minutes of meeting 18/03/98, Appendix 8)

The first five aspects could have been resolved if they had been addressed in the assessment stage of the planning phase of the trail. The time factor could have been addressed if the intended users (learners and teachers) had been included in the trail corridor stage of the planning phase of the trail.

These aspects reiterate that it is necessary to do an intensive situation analysis of the community with which developers are planning to work. Projects need to be contextualised within the social, political, cultural, educational and economic environment in which the project takes place. Project developers can then design activities to accommodate above-mentioned aspects. At Tswaing, the redeveloped activities (examples in Appendix 13) have been compiled into a publication which is used by the environmental education officer at Tswaing to facilitate different school groups for environmental education on the walking trail.

At Rustenburg the brochure (example in Appendix 11) that was compiled was not piloted on the trail. This was the result of change of ownership and authorities, from Boputhatswana to North West Province. At Northcliff no piloting took place. At Windy Brow, programmes were presented by independent environmental

education presenters. These programmes were not piloted. The result was that programmes were not assessed and adapted before implementation. Considering that the same schools return every year for these programmes at Windy Brow, it can be assumed that they fulfil the needs of the trailists and are fulfilling the aims put forward by the teachers.

Principle seven can further be applied during the stage when the proposed trail is pegged out. Host community participation at this stage at Tswaing and Rustenburg was achieved by employing people from the area to put pegs in or markers on trees and bushes to mark the proposed trail corridor.

Principle seven that proposes participation during all stages was not applied during the marking and signposting stage of the trail at Tswaing. The developer had already made the decision on the material to be used and the type of information that should be on the information boards. These information boards were placed at specific information points predetermined by the developer. The lack of applying participatory planning procedures resulted in not obtaining inputs from the host community, environmental educationists and prospective trail users on the type of information they would like and whether they wanted it in formats such as information boards, brochures, on tapes and via guides. The result is that once the information boards were installed and the trail walked, it was noted that the direction markers on the boards were facing in the wrong direction. Walks a few months later on the trail showed that the boards were already deteriorating from sun exposure and had been vandalised by persons scratching on them with rocks. No indigenous knowledge was included on the boards.

The type of information contained on the boards at Tswaing did not apply principle seven that suggests participatory activities. The result is that factual information is written on the boards and no discovery or participation by the trail user is encouraged. When comparing this with the type of signage used on the Minnamurra Rainforest Boardwalk in Australia, it is information requiring a passive

response. On the Australian trail, short discovery questions such as *"How many different leaves can you spot on the ground around you?"* and sketches of possible leaves that can be found are placed on the sign boards along the trail to actively unlock the surrounding trail environment and move the trailist to discover elements of the environment[10].

At Tswaing, the application of principle seven during the construction phase was not achieved when identifying specific education sites. In an attempt to increase active participation by teachers the choice of sites was left to them. The teachers could choose activities from the teachers' manual that complied with their educational aims for the learners. The literature suggests that discontinuities in the environment be used to introduce learning experiences to the trail user. The result however has not been positive. The teachers that utilised Tswaing did not have the skills or experience to utilise the manual independently. This resulted in the application of a more structured approach. Sixteen special features on the trail were selected by environmental educationists and grouped together into 10 stations. These special features were further refined into 6 possible programmes that could be conducted along sections of the longer trail. Small teams worked on the development of these programmes keeping in mind the different phases and learning areas of the new outcomes based curriculum, adaptability and exchangeability, and the guides that had to be trained to facilitate the programmes. Local teachers participated in the development of the activities and indigenous knowledge was incorporated into the activities. Informal discussions were held with members of the community to obtain any additional information that might have been left out in the other resources such as articles and reports (Appendix 14).

Applying a more structured approach to the learning experience of the trailist can be contradictory to the principle of ecotourism and environmental education that

10. Personal visit by the researcher to the Minnamurra Rainforest Boardwalk trail during 1997.

asks for participatory planning and discovery experiences. However, as was pointed out this specific programme along the trail served a very specific audience namely the formal education sector around Tswaing.

Principle seven has also not been applied correctly at Rustenburg. The education points in the draft brochure were selected by the person compiling the brochure. Activities and questions that the trailist can complete are included in the brochure. Windy Brow uses persons from tertiary institutions[11] to develop environmental education activities on request for specific groups using the trail.

In determining the application of principle seven by the case studies it can be concluded that selective participation takes place by the different agents during different stages of the trail planning process. Continuity in participation from one stage to another is also lacking. Where case studies used pilot groups the exercise *"was a positive experience for all"* (Minutes of meeting 18/03/98, Appendix 8).

6.4 Generic planning issues

Determining the application of the seven proposed trail planning principles using case studies results in the identification of generic issues that should be considered by similar projects using an event such as ecotourism trails as the real domain. Generic issues can include the host community of the trail, the training of tour guides or educational officers and teachers, the development of specific stations and the compiling of educational materials.

11. Students from Pretoria Technikon and lecturers from Vista University are used.

6.4.1 The host community

The case studies support the idea of Knapp & Goodman (1983:53-54) that the host community should be involved in the trail planning process. It transpired that with regard to the host community which is an important agent in the actual domain of the trail event, it is necessary to:

- keep in mind the way in which the host community interprets the local and wider environment because of indigenous abstract information that is not known to the developer (Kerry, 1979:32);
- use the host community in as many aspects of the programme development as possible to ensure that they are participating in the development of the direction and context of the programme;
- utilise the host community to physically construct the buildings and structures and pay them for their service thus contributing to the well-being of the community, to tell stories on tape, be tour guides, simply to be involved;
- keep in mind the host community's indigenous background knowledge and their understanding of environmental education, in line with the constructivist approach which finds it important to recognise prior learning when trying to practise environmental education and exploring what they know (Robertson, 1994:23).
- keep in mind language and terminology differences of the host community and incorporate the different languages and terminologies into the programme which then provides a programme that incorporates the community's background.
- use persons from the host community to give live interpretations along the trail. This provides an opportunity for self expression and fulfilment. On the other hand it creates a high level of communication, an effective medium for the event message, easy monitoring of quality, a pleasant experience and an opportunity for

creative involvement with the visitor (Sharpe, 1976:179).

These aspects, that emerged from the case studies as important planning issues and are all pointed out as important to ecotourism and environmental education in the literature, thus support the problem of the study and are included in the proposed planning framework in Table 5.1. These issues also correspond to the supporting objectives of Goal five of the White Paper on Environmental Management (South Africa, 1998:36) in South Africa which brings the framework in line with local policy.

6.4.2 The trailist

Regarding the trailist as an agent of the actual domain of the trail event the case studies illustrate that it is important to:

- develop pre-trail activities for the trailists to familiarise themselves with the purpose of the programme and obtain information from the trailists that can influence the progress of the programme;
- develop post-trail activities for the trailists to help the developer and community to assess the success of the activity;
- keep in mind language and terminology differences of trailists and incorporate these differences into the programme thus providing a programme that incorporates the community background.

6.4.3 Training

The case studies illustrate that a further aspect contained in the proposed framework, namely providing training, is important. This facet of the trail planning process is necessary to help eliminate possible misunderstandings between the trail developer and the host community. Strategies that are important to apply are:

- To inform trail developers of the customs, traditions, fears, literacy of the local host community in which they are about to plan a trail;
- To train local tour guides and/or educational officers to help with facilitating programmes;
- To train local teachers in the fields of ecotourism and environmental education and on how to use the educational programmes on the trail, if the formal education sector is targeted specifically;
- To train staff using programmes to understand ecotourism and environmental education and the principles underlying it;
- To provide training in outcomes based education for teachers and tour guides or educational officers, when the formal education sector is targeted, because the participatory and discovery approaches to learning are part of environmental education and ecotourism;
- To provide sufficient background information to all the agents that are part of the trail planning process otherwise misconceptions and misunderstandings can occur; and
- To use community leaders to assist with the training process to localise and contextualise the programme.

6.4.4 Educational points and resource material

The Tswaing case study illustrates that if an ecotourism trail uses specific educational points to facilitate environmental education it is important that the following points be considered:

- Use people from the host community to do construction work as and where needed and to build tool boxes and equipment needed at the points, this helps the community to participate actively in the project and provides them with a needed income.

- Use those points that are relevant to the specific trail users' requests.
- Keep safety aspects in mind when working with school groups.
- Incorporate local indigenous information into activities, use local persons to tell stories thus incorporating local customs and traditions into the trail experience.
- Give the educational points locally accepted and understood names rather than numbers, it creates an indigenous and familiar environment.
- Focus only on a limited number of features, rather than on too many, otherwise the learning experience becomes too intense and the trailist loses interest.
- Provide facilities such as water, toilet points to facilitate the physical needs of the trailists using the programme.
- Establish recycling and waste programmes at the starting point of the trail.
- Use people from the host community to assist with compiling activities and in this way eliminate biased interpretations by users and developers and the loss of indigenous information to the area. This approach will help to incorporate local interpretation(s) and terminology into the activities.
- Allow for freedom of interpretation and flexibility when programmes are used by different groups and communities.

In conclusion, even though the case studies are set in unique environments and communities, they have the same trail planning procedures in common and so it is possible to evaluate the extent to which the proposed theoretical principles in the ecotourism trail planning framework can be applied. A criticism that can be made against the selected trails as case studies is that all the trails are planned by the same trail planner using the same trail planning process (Bewsher & Hugo, 1994). The strength of having the same trail planner ensures comparability and

makes the analyses of the case studies easier in that all the trails are planned using the same process and go through the same phases and stages. This helps to provide structure to the case study analyses bearing in mind that the Bewsher & Hugo (1994) trail development model is the only scientific trail planning model being used in South Africa.

It can, however, be argued that this makes it difficult to decide to what extent the principles that are suggested in the end be accommodated into other trail planning processes. Using different case studies reveals that the trail planning principles can be applied to different ecotourism trail developments in different communities. It is important to realise though that the trail planner has to understand the real domain of the community in which a trail event is planned. The trail planner also has to take cognisance of the actual domain of the trail event namely the participating agents in the trail development which include the trailist, trail owner, trail planner, host community, authority and the space/environment in which they operate (Bird, 1989:113). The implication of this is that the principles formulated should be seen as theoretical principles to be used and adapted to the context in which they are applied. What the proposed framework allows for is, the flexible application of the principles contained in the framework that can be adapted to specific trail environments and integrated agents where the trail is being implemented, in order to make it workable. Adopting this approach strengthens the argument of the research that a theoretical trail planning framework would provide guidance to all trail planners planning ecotourism trails to facilitate environmental education and should be a flexible and open system rather than a closed model.

CHAPTER 7: CONCLUSION AND PROPOSALS

"Nothing is vital for science; nothing can be. Its accepted propositions, therefore, are but opinions at most; and the whole list is provisional. The scientific man is not the least wedded to his conclusions. He risks nothing upon them. He stands ready to abandon one or all as soon as experience opposes them (Peirce, 1931-5, I.347 in Bird, 1989: 347)."

The research problem (1.2) and aims (1.3) focuses the study on existing literature concerning ecotourism and environmental education, their links and existing trail planning methods. Through analyses information is gained about ecotourism, environmental education and trails which culminates into an ecotourism trail planning framework (Table 5.1). The framework's applicability in practice is reviewed against different case studies. According to Bernstein (1966:110) this end-product may serve as a means for further enquiry and research.

7.1 Research results

The results of the research are presented according to the secondary aims (1.3.2) of the research which also guides the progression of chapters. Realism philosophy underpins the study and focuses on three domains. Firstly, the ecotourism and environmental education approaches that are part of the empirical domain; secondly, the trail event and environment as part of the real domain of the research and thirdly, the agents that form the actual domain of the research and are the role players in the trail planning process. The analysis is used to achieve the secondary aims of the study.

7.1.1 Results related to the secondary aims of the study

The literature study in Chapter two shows that the two approaches **ecotourism and environmental education have links**. The conceptualisation of the two approaches

reveals that the approaches have many aspects in common (2.3) such as the aim to protect and conserve, the concept of total environment, dealing with human-environment relationships, to enlighten and provide a lifelong interpretive learning experience, involving all agents actively, getting the host community involved, improving people's quality of life, developing environmental responsibility and proposing a holistic approach to planning. These links make the two approaches mutually supportive of one another. These similarities form the foundation on which the ecotourism trail planning principles that facilitate environmental education are formulated in 2.3 and achieve the first secondary aim 1.3.2.1.

In Chapter three the meaning of the concept environment is conceptualised from within ecotourism and environmental education for trails. The chapter also investigates different types of trails and the value of trails for ecotourism and environmental education within the different domains of the trail environment. From the analyses it is concluded that **the trail environment can facilitate environmental education**. This is the second secondary aim (1.3.2.2) set for the research. At the end of the chapter a revised set of **ecotourism trail planning principles that facilitate environmental education** is formulated (3.3) to include the broad understanding of the term environment as proposed in Figure 3.4. This addresses the third secondary aim (1.3.2.3) and guides the case study analysis.

To achieve the fourth secondary aim (1.3.2.4) of the study, the researcher investigated the actual domain of the research, namely, the **agents that participate in ecotourism trail planning and are part of the trail environment** (Chapter four). This analysis illustrates how diverse the agents are and that each has a different role to play in the trail planning process which has to be accommodated in the ecotourism trail planning framework.

The different **trail planning processes are reviewed** in Chapter five and a trail planning framework is proposed in Table 5.1. This process achieves the fifth secondary aim (1.3.2.5) of the study.

Once the preceding theoretical analyses had been completed, the theory could be assessed in the field. This was done through researcher participation in four selected **ecotourism trail case studies** that have, as their specific purpose the aim to facilitate environmental education. This enables the researcher to achieve the sixth secondary aim of the study (1.3.2.6).

In obtaining the secondary aims set out for the study the primary aim can be achieved. This answers the problem of the study, namely, to critically review ecotourism, environmental education and existing trail planning frameworks and establish an ecotourism trail planning framework that will succeed in arousing sensitivity to the environment, provide opportunities for enjoyable aesthetic experiences along existing or new trails and lead to a further appreciation of, and an interest in, the environment by engaging in environmental education experiences on the trail.

7.1.2 Results related to the primary aim of the study

Participation in and observation of the trail planning processes applied in the different case studies enables the researcher to determine to what extent the theoretical principles deduced from the literature study were applied. The result of this process is that the seven principles postulated for ecotourism trail planning (Figure 5.1) could be assessed on whether or not, and how, they can be applied in practice and what the results are. These results are given in the following paragraphs and lead to the reassessment of the seven planning principles to produce a matrix of nine principles for effective ecotourism trail planning to facilitate environmental education.

- One of the first results is that by leaving out **educational parameters,** as well as not involving the host community and intended trail users in identifying such parameters during the discovery stage of the trail planning process (Figure 5.1), the selection of the trail corridor at a later stage in the planning phase of the framework is affected. The lack of involvement and continuity from one stage to the next results in changes that have to be made to trail direction and distances at Tswaing and

subjective identification of educational sites on the Tswaing, Rustenburg, Windy Brow and Northcliff trails.

Educational parameters that emerged from the case studies, especially Tswaing, are that the distance between education points on the trail must not be too far or too close. The education points must be placed in a logical sequence along the trail, the direction of the trail and order of education points must coincide, the design and placement of outdoor environmental education facilities must be aesthetically acceptable. Furthermore, education points must be placed after discontinuities in the environment, not too many education points should be placed on a trail and indigenous knowledge must be incorporated into trail activities.

- It also transpires that **no evaluation scale for educational parameters** as for the physical parameters such as vegetation and geology exists. An evaluation scale needs to be constructed for educational parameters once these parameters have been identified. If the parameter strives not to be subjective it will have to involve all the agents such as the trail owners, trail planners and host communities in establishing it. The lack of such an evaluation scale can initiate new research opportunities.

- The case studies reflect that the trail planning process is an **interrelated process** and that what happens in the planning phase of the framework gets carried over to other phases. In the case of Tswaing, the lack of agent involvement in the planning phase resulted in redesigning the trail direction in the implementation phase.

- Applying an ecotourism and environmental education approach to the trail planning process, as is suggested by the framework, allows for **job opportunities to be created**. Job opportunities can include building the trail and other facilities as at Tswaing and Windy Brow, doing maintenance tasks such as chopping out sickle bush (an invader plant which takes over the veld when overgrazing takes place) in the trail environment as at Tswaing, and acting as tourist guides as at Tswaing. This

empowers people, and by allowing them to be part of the continuous process of trail planning they take ownership of the trail, hence the selection of the slogan for Tswaing *"For the people, by the people"* (Moolman & de Jong, 1995:28). What is important is that they be trained and skilled in the different tasks required, such as the tour guides at Tswaing. This will enable them to actively and successfully participate in the trail planning process and as Mosidi (1996:48) states *"... community participation involves more than just ensuring benefits for the local people; it entails empowering communities in the decision-making process and in the implementation of a project, as equal partners."* It is important to direct economic and other benefits to local people that complement rather than overwhelm or replace traditional practices and, in this way, minimise negative impacts on the host community.

- A further result of the research is that the different agents participating in the trail planning process and environment have **different understandings of the concepts and approaches environmental education and ecotourism**. These differences need to be addressed by the trail owner, trail planner and specialist groups that participate in the trail planning process. At Tswaing these differences in the understanding of concepts caused the activity developers to revisit some of the activities after piloting them with the different user groups from the formal education sector. During piloting, it emerged that concepts such as environment and environmental education were understood differently by the trail users. The South African Tourism Board (n.d:2) found in their research that a very small percentage of South Africans understand or have even heard of the term ecotourism.

- **Community involvement** is an aspect that features strongly in the research because it is an element that is present in both environmental education and ecotourism and is one of the agents in the actual domain of the research. Buhalis (1999:57) suggests that it is an aspect critical to the success of the tourism industry and for the satisfaction of indigenous people in the long term. Community involvement contributes to the improvement of the quality of life of host communities

and encourages capacity building and participation. **Community participation** ensures that relevant issues be looked at and that the community will identify with these issues, thus enhancing the value of participation. Maximising the early and long-term participation of local people in the decision-making process helps to determine the kind and amount of tourism that should occur. The proposed framework is thus constructed to accommodate this aspect in all four of the identified phases of trail planning.

The **analysis of the needs and understandings of the host community** as stakeholder is an integral principle in the framework. The fieldwork at Tswaing proved that certain aspects directly relate to a specific community and can play an influential role in the application of the proposed approach to environmental education. The understandings of the term environmental education and environment and the diverse number of language groups that use the trail at Tswaing at the same time, created problems during the pilot programmes.

Although the initial intention of the researcher was to look at more than one trail user group, such as the formal and non-formal education sector, this did not happen. The reason is that in the case of Rustenburg, the trail planning process did not proceed into the implementation phase during the time the case studies were done. At Tswaing the non-formal group of users never became actively part of the trail either. The result is that the target audiences of the case studies are all from the formal education sector. This sector of trail users is very specialised (Chapter four). The formal education sector of trail users requires that **training be provided to the teachers** (educators/facilitators) who will use the trail to facilitate their environmental education programmes and activities. Training programmes should introduce the teacher to environmental education as well as ecotourism to place the resource, the trail, in context. This implies that a specific site (trail) functions best when used for one purpose only. If environmental education is the main objective only a site that lends itself to such a purpose should be developed.

- **Training** is also needed for the teachers as well as **for the host communities** to explain why a nature area, such as Tswaing, should be conserved and developed for ecotourism rather than allowing it to be turned into a soccer stadium or be used for housing and grazing. They need to learn more about wonders such as the impact crater at Tswaing, that ecotourists come to see. This process increases host community awareness and understanding of an area's natural and cultural systems and subsequently leads to the community's involvement in issues affecting the system. In this way they contribute to the conservation and management of the area and minimise negative impacts on the environment.

- The proposed planning framework provides a process with **structure and continuity** which, if lacking, can result in the process being stopped as in the case of Northcliff and Rustenburg.

- The framework **brings together** and facilitates the interdependency of four environment domains, namely, the biophysical, social, behavioural and physiological and agents such as the trail planner, trail owner, authority, host community and trailist via planning principles.

- It is found that existing trails such as Windy Brow and Northcliff have applied some of the proposed principles, while new trails such as Tswaing and Rustenburg have not considered many of the planning principles. Researcher participation and observation of the case studies reveal that certain **principles are applied in more than one phase** in the trail planning process and are interlinked with the different agents that are part of the trail planning process. These principles could ultimately be classified as generic principles in the framework. This makes it possible to take the detailed framework postulated in Table 5.1 and rework it into a revised set of principles for the trail environment to make the application of the framework less detailed, more streamlined and pragmatic.

In the final analysis of the research the seven planning principles proposed in section 3.3 are reformulated into nine planning principles that are part of the process of planning ecotourism trails to facilitate environmental education. Principles one and six are added to the original set of seven because the case studies have revealed that these two aspects are important if a trail wants to fulfil its specialised aim of environmental education. These principles span all four trail planning phases and include the broad understanding of the term environment.

Principle one states that the primary purpose/aim of the ecotourism trail to facilitate environmental education should be identified from the assessment stage of the trail. This principle implies that all agents should have an enlightening experience in a discovery, participatory and interdisciplinary manner. This can be achieved by incorporating environmental educationists from the initial planning phase of the framework. The environmental educationists can help to inform the host community, owner and trail planner of the associations between ecotourism and environmental education and how the two approaches can be made compatible in the trail environment. In doing this the environmental literacy of the host community, owner and planner can be developed and their attitudes and beliefs regarding the holistic trail environment be changed.

Principle two states that all the agents that will be part of the trail planning process should be identified and a comprehensive needs analysis regarding their environmental education and ecotourism needs be done. Their integrity must be respected at all times. These agents can include the trailist, trail owner, trail planner, host community and the authority. This is an important principle because the individuals' internal environments of needs influence their perceptions of the external trail environment. Non-targeted promotions of tourism events, such as trails, will not maintain the tourism demand.

Principle three sates that the purpose, aim and the needs of the trailists should be identified in context of the total trail environment (biophysical, social, behavioural and

physiological).

Principle four states that the agents should be involved actively in a participatory manner in the complete trail planning process. They should be involved in decision-making situations, problem-solving situations, management tasks and planning of environmental education activities along the trail. This will make the agents recognise the value of the trail environment and stimulate admiration, appreciation and responsibility towards it. This principle encourages environmental sympathy, increases the participation of people in the management of their own environment and in this way supports sustainable and responsible resource development.

Principle five states that discovery, participatory and interactive enlightening and educating experiences should be included in the trail environment in which all the agents can participate in an enjoyable, satisfying and interrelated manner. This experience should be facilitated by using a broad array of educational approaches and activities along the trail. This can help broaden their vision from the local trail environment to a more global perspective, helps them in identifying environmental issues and includes participation in solving these.

Principle six states that the diversity and discontinuities in the trail environment should be used to unlock the environmental education potential of the trail. This can contribute to creating an awareness and appreciation for both human heritage and biodiversity which again helps to protect the trail environment.

Principle seven states that wealth and economic benefits, upliftment and empowerment should be generated for the host community, value for money for the trail user and profit for the developer. This principle will help assure stability in the trail environment and enhance the quality of the lives of the host community, trail users and the developer. Adherence to this principle will contribute to sustaining productivity over a long term for future generations.

Principle eight states that responsible planning should be done towards the total environment and the trail event should be sustainable into the future. This implies that the potential of the environment as well as its limitations should be recognised. Sustainable practices should be implemented to ensure that the ecotourism trail will be able to facilitate environmental education for an extended period of time.

Principle nine states that the total ecotourism trail environment and the agents should be conserved and protected. Without the trail environment as the resource it will not be possible to apply the other principles.

7.2 Critical review of the research

7.2.1 Strengths of the framework

The proposed framework attempts to involve all those **individuals and groups** likely to be affected by the placing of an ecotourism trail in their environment. The importance of involving all the agents is that their basic objectives, values and desires with regard to ecotourism trails and environmental education will be reflected. It also becomes a learning process within and between the different agents during the planning process and in the process the trail project will gain community support and commitment.

The framework also answers to the **demand that citizens make**, especially minority groups, that they be involved in all decisions and plans which might affect or alter the quality of their community's life and future. In applying a planning framework of this nature, **physical, social and economic goals of the community can be achieved** through the participation of developers at national, state or regional level, as well as, involving host communities and special interest and civic groups from the area where the ecotourism trail will be developed. Developers thus demonstrate social responsibility.

A further strength of the framework is that in its complexity it relies on the **interdisciplinary** coordination of inputs from specialists in ecotourism, environmental education and trail development to ultimately reach its goal of planning ecotourism trails to facilitate environmental education for all agents (trail owner, trail planner, host community, trail user, authority and total trail environment). The framework moves away from traditional trail planning methods where only trail planners are incorporated into the planning. The framework allows for the incorporation of the accumulated knowledge of planning from other professions and seeks to accommodate the intricacies of relations between the different specialist fields.

The framework facilitates the process of **environmental awareness** of all the agents which is an important aspect of ecotourism and environmental education. It allows for communication between the different agents on how they perceive the trail environment and what they regard as sensitive issues and problem areas when a trail is to be developed in this way at a specific site. The trail environment is used to expose the ecotourist to the environmental education component of ecotourism and the importance of preserving essential processes.

The framework recognises the **total environment** in which trail planning takes place, bio-physical (natural and built), social (economic, political, cultural), behavioural and physiological. The framework thus encompasses the total welfare of the community in which it takes place and does not operate in a vacuum (Bannon, 1976:18). It has a holistic and encompassing approach. The framework integrates the three core concepts inherent to ecotourism and environmental education, namely; host community participation, financial benefits for all agents, and resource conservation. It also incorporates into the real domain of the trail event the agents from the actual domain (trail owner, trail planner, authority, host community and trailist) and the ecotourism and environmental education experience from the empirical domain of the trail.

The framework encourages the incorporation of **indigenous knowledge** which is part of true and rich ecotourism and environmental education experiences. It creates a

balance between opportunities for planners, trailists and host communities and contributes to maintaining environmental, social and cultural integrity.

The **flexibility and openness** of the framework allows for adaptions as the future trends and priorities in ecotourism and environmental education change. There is also space for interaction, monitoring, feedback, collaboration and negotiation. This is important in the context of new information, changing social attitudes and values, new technology and new ways of approaching problems because the framework should be flexible enough to reflect such changes (Sharpe, 1976:58). The framework also adopts within its flexibility and openness a holistic planning strategy by taking cognisance of all agents participating in the trail planning process as well as the total trail environment.

The application of the framework facilitates the possibility of ecotourism trails to include a specialist market of tourists, namely, **educational tourism**. This group of tourists specifically visits an area to learn more about its people and their culture, environment and politics. These tourists require specific activities that can be presented at market related prices that will broaden the income base of the trail owner and other agents involved in the trail such as the host community.

The framework proposes basic underlying principles with explanatory criteria which are not site specific and therefore make the framework **transferable to other trail sites**.

The researcher sees the strengths of the ecotourism trail planning framework as a mechanism that will provide a suitable delivery system for environmental education and ecotourism. The nine suggested guidelines can help to make the planning process more consistent, efficient, simple to negotiate and cost effective. However, the framework does have its weaknesses.

7.2.2 *Weaknesses of the framework*

The initial trail planning framework proposed in Table 5.1 is a **long and detailed process** but from the case study observations and analyses it was possible to identify nine principles. The list is still very comprehensive because trail planning, ecotourism and environmental education are not simple processes but rather complex due to the fact that there are so many agents that participate in the process. The revised set of principles does, however, try and simplify the trail planning framework.

The researcher would in the true sense of the realism approach suggest that the application of the framework be made practicably applicable by the owner and trail developer by placing the principles summarised above in a simplified framework with a matrix such as:

TABLE 7.1 SIMPLIFIED TRAIL PLANNING MATRIX

Trail planning phases	Planning principles								
	1	2	3	4	5	6	7	8	9
Planning overview phase									
Implementation phase									
Construction phase									
Maintenance and administration phase									

The more comprehensive framework in Table 5.1 can also be used. Using a matrix as in Figure 7.1 forces the trail planner to plan in a more focused way and take cognisance of all the principles in all of the phases of the framework. The researcher would argue that the more consistently the principles are applied the better the trail will be planned to facilitate environmental education.

The suggested **incorporation of professionals and laymen** in the planning framework can be a problem when there is an artificial distance between them. This can only be overcome when both parties become true participants in the planning process rather than the professionals being outside experts.

The case studies that were accessible to the researcher in the end all **focused primarily on the formal education sector**. Rustenburg and Northcliff did have the non-formal education sector in mind as well but these trails did not proceed into the implementation phase and thus no pilot studies could be run on this group of trail users. From this weakness in the research further research opportunities can therefore stem, such as comparing the environmental education needs of formal and non-formal education groups using trails and investigating whether and how these groups can be accommodated on the same trail.

It would be **difficult for individuals to apply the trail planning framework on their own** because not only does it require specialist knowledge on conventional trail planning parameters such as vegetation, geology and climate but it includes two other approaches namely ecotourism and environmental education. The last two are not very well comprehended by many laymen. Thus professional inputs would be needed on the technical planning and layout of the trail as well as on the ecotourism and environmental education dimensions of the trail. This will have cost implications for trail developers and can be a deterrent for planning ecotourism trails to facilitate environmental education.

7.3 Suggestions for further research

From the research presented future research ideas can stem. Research possibilities could concern or focus on:

- The impact of ecotourism trails on local communities: employment, financial, socio-cultural impacts.

- Reasons why people use ecotourism trails, their needs and values in order to deliver a more satisfying experience.

- Comparative analyses of the environmental education needs of formal and non-formal education groups using trails.

- Comparative analyses of the experiences of users of ecotourism trails and non-ecotourism trails.

- The success of different educational techniques and materials that can be used on ecotourism trails.

- The ability of ecotourism trails to develop environmental skills, attitudes and values of role players.

- The frequency with which ecotourism trails are used for environmental education purposes.

- Establishing educational parameters for trail planning and an associated numeric value system such as for vegetation and geology.

- Assessing the level of environmental education that has taken place for different trailists. (Take different groups on an ecotourism trail and provide them with environmental education experiences. Develop a method of determining the environmental education experience level of each group and identify the differences.)

- The use of effective signage and marking material for trails facilitating an environmental education experience and transfer of information.

- Techniques to impart indigenous knowledge to ecotourism trail users.

- The understanding of the concepts ecotourism and environmental education by different agents such as the trailist, trail planner and host community.

7.4 Conclusion

However, it can be argued that a planning framework as proposed is unique for each situation and that every group of developers encounters different variables and conditions in space and time. It is true that reality is interpreted through conceptual systems and filters and is transformed into perception (Robertson, 1994: 24). Therefore, the proposed planning framework in this research clearly stipulates these filters. These principles can be used as a tool for coping with planning different ecotourism trails to facilitate environmental education.

A planning framework as proposed is aimed at alleviating past mistakes, preventing present mistakes from spreading, and for reducing future errors to the minimum (Bannon, 1976:3). It is also an attempt to bring together environmental educators and tourism developers and operators because though they come from different disciplinary backgrounds with different motivations they use the same environment.

The proposed ecotourism trail planning framework should, however, contribute to the multipurpose planning of tourism in such a way that it will increase and enrich the personal satisfaction of the ecotourism trail user, contribute to the protection of the very resource on which trails depend, integrate the community actively in the planning process and stimulate sustainable economic benefits for all the role players that are part of the process. The trail planning framework combines into one framework the ecological and the human dimensions of Human Geography.

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APPENDIX 1.1: EXAMPLE OF THE "OXFORD ECOLOGY TRAIL" GUIDE

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BIRDS IN TOWN

Birds often thrive in towns because there are many trees, buildings and even nest boxes for them to breed in. In the country, many birds die of cold and starvation in a hard winter, but in towns food is often plentiful on bird tables and rubbish tips. The 'heat island' [N14] of a town is often several degrees warmer than the nearby countryside especially near heated buildings. Breeding cycles of wild birds are mainly controlled by day-length so the extra light in city centres enables some birds to breed all the year round.

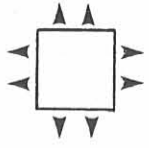
ASPECT OF TREE TRUNKS

South-facing sides of tree trunks and stonework, in the northern hemisphere, tend to be barer because more solar radiation is received per unit area. Heat from the sun evaporates any water rapidly. The drought and the heat often make conditions too extreme for plants to grow, apart from a few hardy lichens. Near the base of the tree where water can rise by seeping up the surface of the trunk (capillarity) it will be damper encouraging growth.

On both bark and stonework the damper or north-facing side is often coated with mosses or with a green powdery covering of microscopic single-celled algae such as Pleurococcus. Drier, south-facing surfaces are bare or have some lichen. However, where trunks are shaded by other trees for most of the year the south sides stay moist and also become green. Where water is prevented from trickling down a trunk by being sheltered by a branch above, bark may be dry and bare even on the north side. The side facing the prevailing wind (west or south-west in Britain) will be dried rapidly on a fine day but soaked by driving rain on a wet one. On the rest of the walk bear in mind how aspect may influence plant cover.

NORTH. Damper so more moss and richer growth of flowering plants. Cooler as no direct sunlight

WEST. Exposed to prevailing wind and rain. Warm and dry on fine days.



EAST. Cool and moist as water slowly evaporates during morning.

SOUTH. Drier and warmer. More lichens and fewer flowering plants because of full exposure to midday sun and wind.

Figure 1 Aspect of walls

Grassland

4. Christ Church Meadow

Ahead is the Broad Walk, a sandy, gravel path running along the northern edge of Christ Church Meadow. Stop near the far end of the college building. Several different types of grassland are visible from here. Areas of contrasting vegetation include:-

a. Lawn between the college and the Broad Walk.
b. Grass verge between the Broad Walk and the sports field ahead to your left.
c. Christ Church Meadow to the right (south) of the Broad Walk.
d. Sports field (Merton Field) ahead to your left.
e. The edge of Merton Field near the railings.
f. Plants growing on the Broad Walk itself.

Without leaving the path try to account for the different appearance of the grassland in each area. What probably controls the height of plants here?

Compare the variety of different plants present in each area and also the size and shape of these plants. Which grassland seems to have the greatest variety of species? Which has the fewest?

What controls the types of plant found in each area?

Christ Church Meadow has been left with minimum management for centuries so why has succession [N9] not occurred to produce open woodland, the climax community [N5] for this area?

APPENDIX 1.2: EXAMPLE OF THE "GEOLOGY AT HARTLAND QUAY" TRAIL GUIDE

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STARTING THE WALK. Open out the cover to reveal the map locating the stops on the walk. The extended outside cover gives a panorama of Warren Beach from the beginning of the walk.

1. THE SLIPWAY Panorama of Warren Beach

The spectacular cliffs of Warren Beach are the result of Atlantic storms. At high tides the waves erode the base of the cliffs eventually causing parts of the undercut cliff to collapse. This has exposed a clear section through typical rocks of the district. The rocks have a stripy appearance and are folded. Notice two types of fold. In the centre of the bay are a series of tight (zigzag or chevron-type) folds. At the sides of the bay are more gentle (open) folds.

Have the folds affected the way the cliffs have eroded? Consider this when you walk along the beach. The question can be picked up again at stop 7.

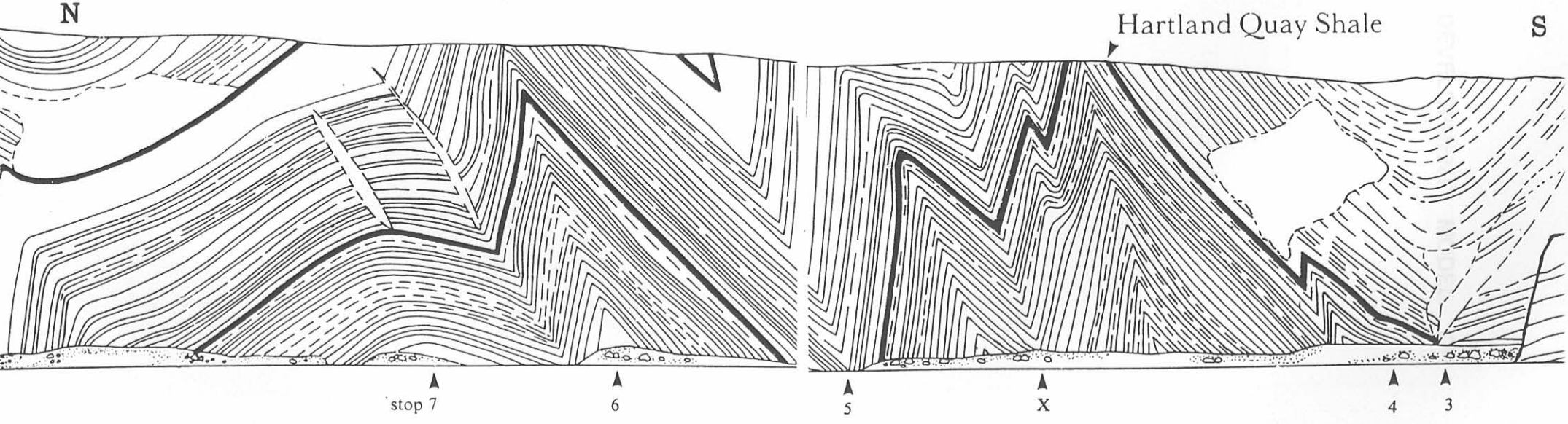
Folding in the cliffs

The folding in the cliffs as viewed from the Slipway is impressive, particularly when it is remembered that these beds were originally laid down in near-horizontal layers. To get a clearer idea of the degree and complexity of the folding involved, select a prominent bed and follow it by eye across the cliff face as it is folded up and down. Do this and then check your ideas against figure 8.

The British Geological Survey (Edmunds and co-workers, 1979) in their description of this area, traced the detailed path of each bed of rock in the Warren Beach cliff (figure 8). The 'Hartland Quay Shale', shown as the lowest band emphasised in black in their sketch, is an easily identifiable horizon, and demonstrates the folding well. Shale is a fine-grained mudstone, which splits easily along closely-spaced bedding surfaces and can be seen from several of the stops on the walk (figure 8).

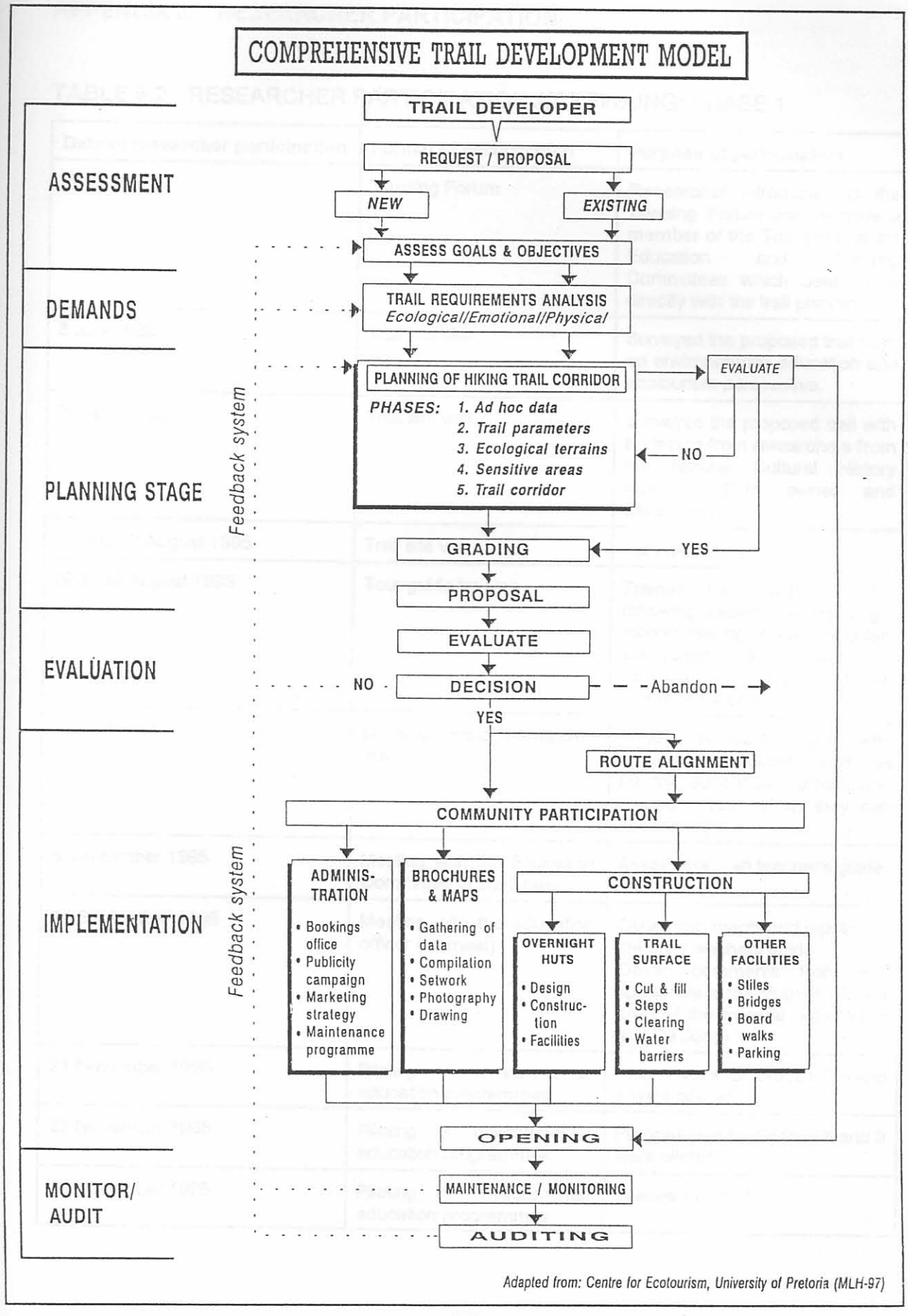
Now look at the folds more closely. Note that there are smaller, 'parasitic', folds on the limbs of the larger structures. There is a good example above the X marked on figure 8. The question of how folds develop and change perpendicular to the beds is one of the more complex concepts currently of interest to structural geologists.

Figure 8. An accurate sketch of the beds exposed in the Warren Beach cliff (reproduced with permission of the Director of the BGS. Crown/NERC copyright reserved)



APPENDIX 2: COMPREHENSIVE TRAIL DEVELOPMENT MODEL OF BEWSHER & HUGO

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Adapted from: Centre for Ecotourism, University of Pretoria (MLH-97)

APPENDIX 3: RESEARCHER PARTICIPATION

TABLE 6.2 RESEARCHER PARTICIPATION AT TSWAING: PHASE 1

Date of researcher participation	Format of participation	Purpose of participation
May 1995	Tswaing Forum	Researcher introduced to the Tswaing Forum and became a member of the Tourism and the Education and Training Committees which dealt more directly with the trail planning.
8 July 1995	Trail site visit	Surveyed the proposed trail from an environmental education and ecotourism perspective.
26 July 1995	Trail site visit	Surveyed the proposed trail with the inputs from researchers from the Natural Cultural History Museum (The owner and developer)
11 and 12 August 1995	Trail site visit	Follow-up surveying
28 to 30 August 1995	Tour guide training	Trained tour guides in the following aspects; archaeology, modern history, geology, animals, ecosystems and plants of Tswaing and basic communication skills.
August 1995	Development of the teacher guide	Develop the teacher's guide with environmental education activities for the educational officer and teachers from which they can choose
8 September 1995	Meeting with the Education Committee at the Crater	Assess the draft teacher's guide
14 September 1995	Meeting with the education officer (Ishmael)	Obtain comments and inputs into the draft teachers guide. Obtain comments from two specialists at the Museum on the draft of the manual (van Coller and De Jong)
21 November 1995	Piloting of environmental education programmes	Programmes for Grades 5, 6 and 7 were piloted
23 November 1995	Piloting of environmental education programmes	Programmes for Grades 8 and 9 were piloted
24 November 1995	Piloting of environmental education programmes	Grades 11 and 12

Date of researcher participation	Format of participation	Purpose of participation
16 January 1996	Tswaing planning meeting (27 persons present)	Discuss the need for an environmental education centre, an environmental education community awareness programme and naming the trail.
25 January 1996	Walked the trail with 18 teachers from schools in the host community	Familiarise them with the trail environment in which the environmental education activities are planned.
2 February 1996	Teacher workshop at Tswaing	Brainstorming the draft teachers manual and the activities in the context of their own experiences of the planned target audiences, trail environment and environmental education experience
10 February 1996	Tswaing Forum meeting	Obtain the input of the meeting on the edited document
21 February 1996	Planning meeting	Get the meetings input on the edited document
April 1996	Final teachers guide was edited and implemented	

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TABLE 6.3 RESEARCHER PARTICIPATION AT TSWAING: PHASE 2

Date of researcher participation	Format of participation	Purpose of participation
21 October 1997	Planning meeting	To inform the planning committee that UNISA (University of South Africa) and other interested organisations be involved in developing the environmental education programmes in a more structured way for the formal education sector.
24 October 1997	Meeting with the educational committee of Tswaing	The educational committee of Tswaing met to discuss the process.
28 October 1997	Educational committee meeting	Discuss the holistic and multi-disciplinary approach that had to be followed. Identify sixteen activity points (a to p) and educational themes at each point were identified. Programmes were to be developed for all four phases: Gr1 to 3, Gr 4 to 6, Gr 7 to 9 and Gr 10 to 12.
25 November 1997	Tswaing planning committee meeting	Appoint four members from the host community to participate in the education committee's development of the trail. They represented the youth forum, planning committee and the Tswaing Forum.
5 December 1997	Site visit with the activity developers.	Walk the trail and visit the 16 activity sites and group them into ten stations.
9 January 1998	Meeting of the activity developers.	Group the activity developers into teams to develop specific station activities depending on their expertise. Criteria for the development of each programme was stipulated.
19 January 1998	Meeting with two of the senior local residents that has been in the area for many areas.	Obtain indigenous information about Tswaing and surrounding areas to incorporate into the activities.
9 February 1998	Meeting with local teachers	To obtain their inputs and ideas into the programmes
16 February 1998	Editing meeting	Obtain inputs on the revised activities from the whole group of activity developers

Date of researcher participation	Format of participation	Purpose of participation
23 February 1998	Editing meeting	To obtain inputs from the different activity developers and to decide on dates for piloting the activities.
9 to 12 March 1998	Piloting of environmental education programmes	Piloting the activities for each phase of the learner groups.
18 March 1998	Final editing meeting	To do the final editing, work in inputs and review the activities and programme as a whole
End of March 1998	Final report and activity manual handed over for use on the trail.	

TABLE 6.4 RESEARCHER PARTICIPATION AT WINDY BROW

Date of researcher participation	Format of participation	Purpose of participation
31 January 1997	Trail survey	Visit the existing trail network to obtain background information and contextual information about the trail and the environment in which it is situated.
20 and 23 February 1997	Walked the trail network	To write down the type of environmental education information that can be found along the different sections of the trail.
25 February 1997	Discussion with owners	To discuss the different environmental education possibilities of the trail network.
26 February 1997	Meeting with Pretoria Technikon students	To discuss the possibilities of environmental education activities on the trails for which the students had to develop different environmental education programmes.

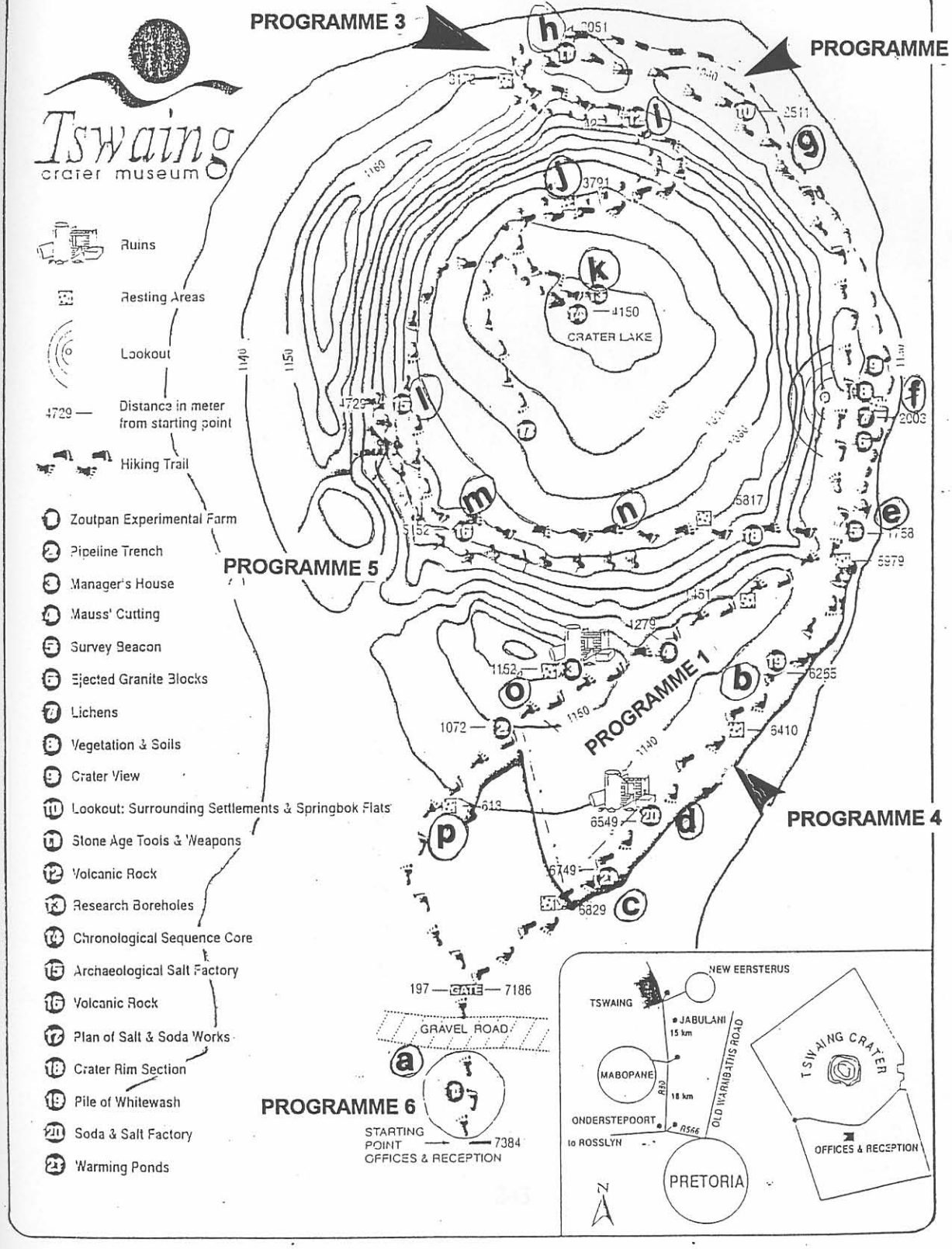
TABLE 6.5 RESEARCHER PARTICIPATION AT NORTHCLIFF

Date of researcher participation	Format of participation	Purpose of participation
9 September 1998	Trail survey	Visit the existing trail with Ulbe Visser to obtain background information and contextual information about the trail and the environment in which it is situated.
28 September 1998	Meeting with developers from the Rotary Club	To discuss the possibilities the trail has for environmental education.
12 October 1998	Meeting with developers	To discuss the different environmental education possibilities of the trail.

APPENDIX 4: MAP OF TSWAING TRAIL



TSWAING CRATER TRAIL



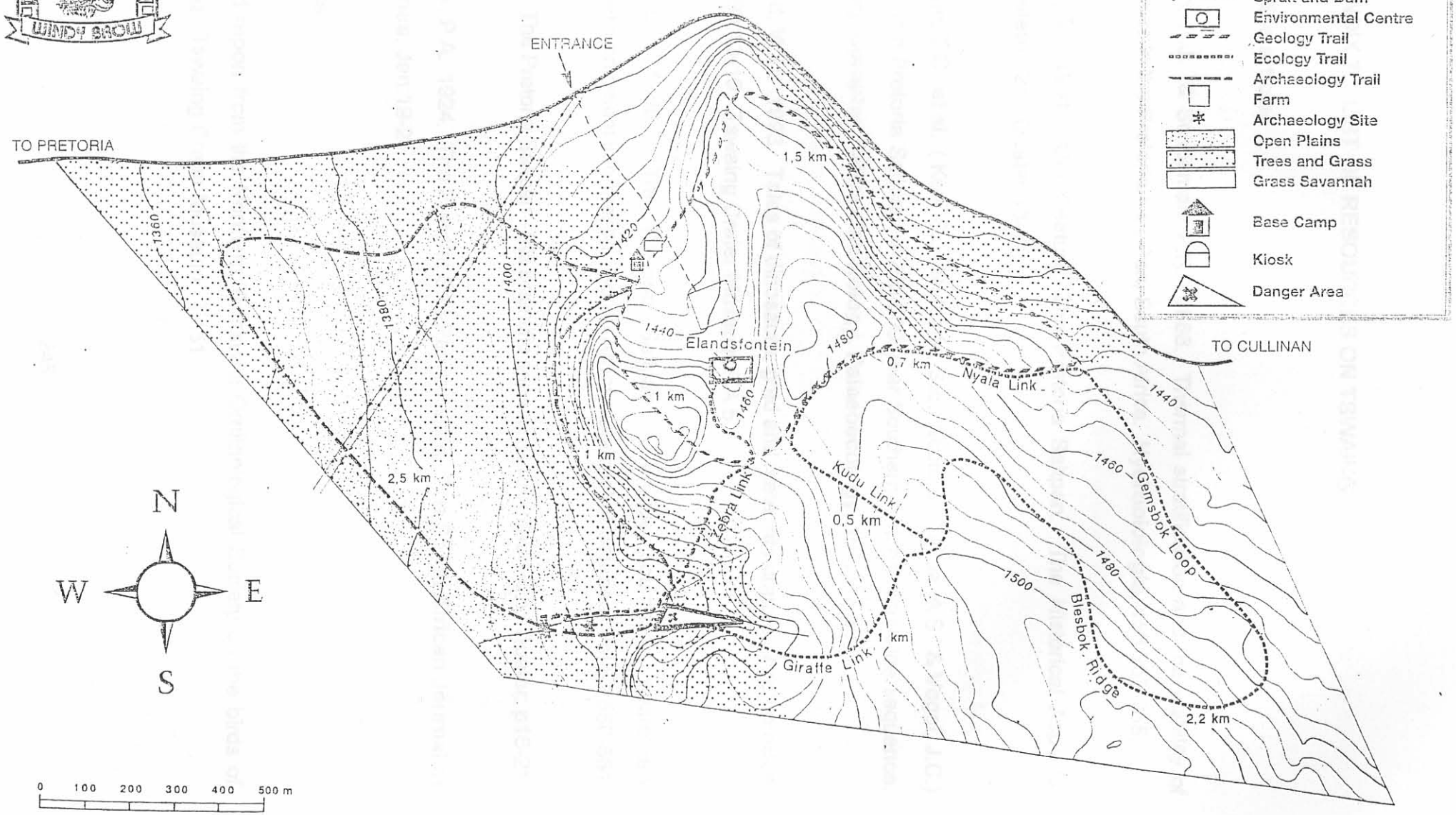
APPENDIX 5: DRAFT MAP OF RUSTENBURG TRAIL



Map not to scale

APPENDIX 6: MAP OF WINDY BROW TRAIL

WINDY BROW NATURE ASSOCIATION HIKING TRAIL, GAME FARM, ENVIRONMENTAL EDUCATION AND OUTDOOR ADVENTURE CENTRE



APPENDIX 7: LIST OF RESOURCES ON TSWAING

Magazine articles

Ashton, P.J. & Schoeman, F.R. 1988. Thermal stratification and the stability of meromixis in the Pretoria Salt Pan, South Africa. **Hydrobiologia**, 158:253-265.

Levin, G. 1991. Our Feature: The Pretoria Saltpan. The Historical Aspects. **Geobulletin**, 2nd Quater:13-14.

Partridge, T.C. **et al.** (Kerr, S.J., Metcalfe, S.E., Scott, L., Talma, A.S. & Vogel, J.C.) 1993. The Pretoria Saltpan: a 200 000 year Southern African lacustrine sequence. **Palaeogeography, Palaeoclimatology, Palaeoecology,** 101:317-337.

Reimold, W.U. 1993. Tales of dinosaurs, gold and meteorite craters. **Archimedes**, Mei 1993:13-19. Tswaing Crater Museum, TA 5.

Scott, L. 1988. The Pretoria Saltpan: a unique source of quaternary palaeoenvironmental information. **South African Journal of Science**, Vol 84:560-561.

-.1991. The Pretoria Saltpan - the scientific aspect. **Geobulletin**, 2nd Quater: p16-21.

Wagner, P.A. 1924. The Pretoria Salt-Pan revisited. **The South African Journal of Industries**, Jan:19-21.

Reports

Untitled report from the Northern Transvaal Ornithological Society on the birds of Tswaing. Tswaing Crater Museum. TA51

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Ashton, P.J. & Schoeman, F.R. -. **Water Report.** p14-16. Tswaing Crater Museum TA9.

Bredenkamp, G.J. -. **Grazing Capacity of Tswaing Museum Site.** Tswaing Crater Museum TA50.

Bredenkamp, G.J. 1993. **The Vegetation of the Farm Uitspan.** Tswaing Crater Museum TA 65.

Bredenkamp, G.J. 1994. **Game Species Composition for the Tswaing Museum Site.** Tswaing Crater Museum TA49.

De Jong, R.C. 1995. **A Short History of the Settlements Around Tswaing.** National Cultural History Museum, Pretoria.

De Jong, R.C. 1996. **Chronology of Historical Information on Tswaing.**

Partridge, T. 1993. **Environmental Data Relative to the Establishment of a Museum at the Pretoria Saltpan.** Tswaing Crater Museum TA17.

Reimold, W.U, Koeberl, C. & Brandt, D. 1994. **The Origin of the Pretoria Saltpan Crater.** Council of Geoscience, Pretoria. Tswaing Crater Museum TA36.

Van Rooyen, N. & Schultz.-.**Plant Community Diversity and Species Relationships of an Impact Crater Near Pretoria, South Africa.** Tswaing Crater Museum TA74.

Van Rooyen, N. & Van Wyk, A.E. -. **Prelimenary Plant Species Checklist: Tswaing Crater Museum.** Tswaing Crater Museum TA60.

Notes

The two boreholes in the crater floor.

The Carbonatite

Ejected Granite Block

The Crater Rim Section

Geology

Reservoir

The Maroela Tree

List of species of medicinal importance collected at the Pretoria Zoutpan.

Birdwatching at Tswaing. Compiled by H.D. Oschadleus.

Trees for everyday use. Tswaing Crater Museum TA56

De Wet, D.F. 1982. **Bewaringsboerdery en Droogte: Soutpan Proefplaas.** Tswaing Crater Museum TA102.

Photos

General view of the Saltpan.

View of the Pan during the dry season, 1916.

Aerial view of the Saltpan.

Method of putting down boreholes in the Pan by hand-jumper. Southern rim with Mauss' Cutting in the background.

Maps

Geology of the Pretoria Saltpan (Zoutpan) Crater. Compiled by Dion Brandt 1992-1993.

APPENDIX 8: MINUTES OF MEETING HELD ON 18 MARCH 1998 AT THE MUSEUM

1. **Present:** Liz, Helene, Marthie, Tumi, Callie, Elrina, Miriam, Irma, Solly, Robert, Alet and Salome.

2. **Apologies:** Mark

3. **Report on the pilot programmes:**

Programme 1: Done with grades 8 and 10 who enjoyed the mornings activities. Encountered problems with language, background knowledge, translation, graphics, experiments. The learner's concept of environment only linked to the natural environment. The teachers shared freely and willingly and responded that it was a learning experience for them too. The cross-curricular approach and local concepts transferred to home were new to them.

Programme 2: The foundation phase programmes worked well. Translation was a problem as well as convincing the parents. Guidelines for clothing for a field trip needed. A need exists to transport the learners to the starting point of the programme otherwise time becomes a problem.

The intermediate group was shy and slowly participated. They enjoyed the activities which was new to them. Terminology in Tswana was also a problem.

Programme 3: With the intermediate phase there was a lack of participation even though the teacher accompanied them. Water is needed along the trail. Proper understanding of language and learner's level was a problem. Rather focus on one activity than to many. Evaluation is difficult.

The foundation phase found it difficult to draw what they can not see. Long distance that had to be walked was a problem. Translation and time was problems. Did not get to k. The learner's enjoyed the activities.

Programme 4: Water, directions, clothing and time, were problems. It was a new environment for the learners. Activities between the points are needed. Freedom to participate is a problem. Follow-up activities are needed. Techniques used in the activities were new to the learners. The school needs to take responsibility for getting the learners to Tswaing on time.

Programme 5: Due to work constraints Louise could not pilot her activities. The meeting decided that these activities will be taken up as is and be adjusted as they are used over time.

Programme 6: Similar problems as the rest of the programmes. Rather take 1 activity and do it till the learners can master it. This programme needs a mature community leader like Chris or Ester to assist with the stories etc.

4. **The way forward:**

* The different activities must be adjusted and finalised by each person although activities remain flexible. Final activities must be send to Callie via E-mail or a hard copy can be send to him to be scanned in. Callie will compile the activity document. All information must reach Callie by 12 April 1998.
* Liz will get an updated map with the sites to include in the document.
* The meeting decided to give the following descriptive names to the 16 sites.

A - Nguni Cattle
B - Marula trees
C - Warming ponds
D - Salt and soda-ash factory
E - Beacon
F - Granite

G - Settlements

H - Stone age

I - Volcanic rock

J - Vegetation zones

K - Saltpan

L - Iron age

M - Volcanic rock

N - Wagon road

O - Manager's house

P - Indaba tree

* The training of the educational officers in May 1998 must still be done names from UNISA and SACTE can be used, criteria must be identified (St 8 to 10, Sotho speaking, etc) as well as the format of the training (workshops etc?). This phase must still be negotiated with the museum.
* The activities for the education centre must still be developed. This phase must still be negotiated with the museum.
* A brochure for adult-trailists must be developed. This phase must be still negotiated with the museum.
* A report of the project must be compiled. Documents for the schools and officers must be compiled.
* Miriam and Alet will circulate the general information brochure for inputs.

5. **General comments from Alet:**

* It was a new experience for the learners.
* Afrikaans and English are the medium of instruction in the museums.
* Heat is a problem
* Was a positive experience for all.
* Educational programmes are never ready immediately
* There is a need for a full-time educational officer to apply and upgrade the programmes over time.
* Follow-up programmes are needed.

* A brochure is needed to tell the teacher and learner what they need and get.
* Strategies need to be build into the programmes to try and overcome problems.
* The expectations of different phases are different.
* Allow for creativity.

6. **Educational officer:** There is a big need for an educational officer at Tswaing. This officer can be a staff member of GDE or NW. Any good programme needs some one to implement it. Callie will formulate a motivation. The following ideas were shared by the meeting on this issue:

* The schools need to get information before the time like lists, rules etc.
* Workshops must be held to introduce the teachers to the new activities that are planned for their learners.
* It will give Tswaing a prestige value.
* The person will have to do and co-ordinate the bookings, planning, follow-up, assessment, workshops, etc.
* The person will have to compile all related documentation.
* The person will have to monitor the programmes, change and upgrade where needed.
* The person will have to compile the activity sets, group the visitors etc.
* The officer will help with the training and upgrading of the educational officers that assist on the trail, book them and co-ordinate their schedules.
* Qualifications that such a person need are: Environmental education background, PR experience, first aid knowledge, language proficiency, writing skills, people skills, etc.

7. **General:**

* A certificate or letter of appreciation can be given to those coming to Tswaing.
* The activity material boxes needs more thought.
* Liz will buy 50 water bottles, and some first-aid kits.
* Walkie talkies should also be introduced.

8. **Next meeting:**

A date was not set. A further meeting will only be held if and when it is necessary.

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APPENDIX 9: EXAMPLE FROM TSWAING TEACHER'S MANUAL - PHASE 1

2.3.5.2 Table of activities

SECTION 4 (30 min walk) This section starts among the trees on the northern side of the pan. The trail continues around the edge of the pan towards the two boreholes. This section ends here.	**Objectives** * To understand the formation of the saltpan * To make use of specific skills and equipment to test the water quality and measure the water temperature * To see the correlation between change in soil type and vegetation * To identify the animals and birds around the pan * Experience the change in micro-climate from the rim to the pan		**Information board** 13. Research boreholes	
Themes	Salt pan	Water	Animals/Birds	Soil
				* How does the soil differ in colour and texture from the soil on the rim of the crater? [PS/HS/G/5] * Take a sample of the soil. Do a pH test back at school.[HS/S/10]
				Vegetation
Activities	* Feel the white deposit on the rim of the pan. What is it? How did it form?[PS/HS/S/2] * Where does the salt in the crater come from? Rain, rock, meteorite[PS/HS/S/G/3] * What does salt get used for?[PS/HS/G/3] * Which industries make use of salt and how?[PS/HS/G/3] * What are the metal structures in the water? What were they used for? [PS/HS/G/3] * What is the temperature like at the salt pan? Compare it with the temperature on the rim of the crater?[PS/HS/G/2]	* Smell and taste the water. How does it compare with the water at home? [PS/HS/G/2] * What is the colour of the water? Why is it this colour?[PS/HS/S/2] * What organisms do you see in the water?[HS/PS/B/2] * Measure the temperature of the water?[PS/HS/B/5] * Do a water quality test.[PS/HS/B/5] * Why do you think they drilled the two boreholes?[HS/G/2] * What can the water in the pan be used for?[HS/G/2]	* Look for animal spoor around the pan. Try and identify them with the aid of the table.[PS/HS/B/5] * Make a plaster cast of one print.[PS/A/10] * Look for bird footprints around the pan. Try and identify them with the aid of the table.[PS/HS/B/5] * Record on the table which and how many birds you see at the water.[PS/HS/B/5]	* What type of vegetation occurs directly around the pan and why?[HS/B/3] * How does the vegetation around the pan compare with the vegetation at the rim of the crater? What causes the difference?[HS/B/3]

APPENDIX 10: LIST OF PEOPLE THAT GAVE INPUTS INTO TSWAING ENVIRONMENTAL EDUCATION ACTIVITIES

Name	Address	Tel/Cel/Fax/Email
Callie Loubser	Department of Further Teacher Education, Unisa, PO Box 392 Pretoria 0003	T: 429 4614 F: 429 3444 E: loubscp@alpha.unisa.ac.za
Petro van Niekerk	Vista University, Dept of Biological Sciences, P/b X634, Pretoria 0001	T: 322 1303 F: E:
Anna Hugo	Department of Primary School Teacher Education, Unisa, PO Box 392 Pretoria 0003	T: 4294002 F: 429 3444 E: hugoaj@alpha.unisa.ac.za
Irma Horn	Department of Primary School Teacher Education, Unisa, PO Box 392 Pretoria 0003	T: 429 4381 F: 429 3444 E: hornih@alpha.unisa.ac.za
Marthie Bornman	Department of Educational Studies, Unisa, PO Box 392 Pretoria 0003	T: 429 4004 F: 429 3444 E: bornmgm@alpha.unisa.ac.za
Dietmar Vogl	Tswaing Crater Museum, P.O Box 28088, Sunnyside, 0132	T: (01214) 987302 F: Do E: nchm@nchm.co.za
Alison Nielson	Transvaal Museum, P.O Box 413, Pretoria,0001	T: 322 7632 F: 322 7939 E: aneilson@interlog.com
Liz Schaller	SACTE, Private Bag x460, Pretoria 0001	T: 422 8157 F: 343 9893 E: emjcschaller@sacte.ac.za
Carol Steenkamp	Vista University Dept of Agricultural Sciences P/Bag X634, Pretoria 0001	T: 322 1303 F: 322 3243 E: STKMP-CJ@acaleph.vista.ac.za
Elrina Whitlock	Vista University Dept of Biological Sciences P/Bag X634, Pretoria 0001	T: 322 1303 F: 322 3243 E: WTLCK-CE@acaleph.vista.ac.za

Zola Vakaliza	Department of Secondary School Teacher Education, Unisa, PO Box 392 Pretoria 0003	T: 429 4788 F: 429 3444 E: vakalncg@alpha.unisa.ac.za
Mark van Heerden	SACTE, Private Bag x460, Pretoria 0001	T: 422 8213 F: 343 9893 E:mfdvanheerden@sacte.ac.za
Romy Little	110 Van Heerden Street Capital Park, Pretoria 0084	T: 01214 912165 F: 01214 912167 E:
Annah Kekana and Venda Bopape	Transvaal Museum, P.O Box 413 Pretoria, 0001	T: 012-3227632 F:012-322-7939 E:kekana@tm.up.ac.za
Louise Maritz	Gauteng Nature Conservation Community Services Private Bag x209, Pretoria, 0001	T:012-3032824 F:012-3032046 E:
H G van Rooyen	Dept Kurrikulumstudies, RAU, Bus 524, Aucklandpark, 2006	T:011-4892666 C:0828086402 F:011-4892048 E:hgvr@edcur.rau.ac.za
Valerie Baron	University of Guelph, Canada	T:519-8371066 905-2721822 F:905-2721955 E:vbaron@uoguelph.ca
Riana Venter	Posbus 202, Settlers, 0430	T:014-7300039(h) 01464-43601/2(w) C:0825774869 E:rianven@netactive.co.za
Tumi Holomisa	SACTE, Private Bag x460, Pretoria 0001	T:012-4228154 F:012-3439893 E:tholomisa@sacte.ac.za
Meriam Maswanganye	Tswaing Crater	T:012-7902302 C:082 6547084 E:
Joas Mapanyane	Tswaing Crater Educational Officer	T:01214-987302 F: E

Clansinah Khunou	Tswaing Crater	T:01214-987302 F: E
Sydney Matjeni	Tswaing Crater Youth Committee	T:01214-3687 F: E

Esther Masilela Community member

Diketedi Modise
Thulaganyo Middle School
P O Box 131
Winterveldt
0198

01214-7040447

Leta Mahwanazi (Tswaing Planning Committee)

Ester Moketsi (Chair person Tswaing Forum)

Solly Kotu (Soshanguve school, 01214-7931002)

Salome Mafa (Batiseng Primary School, Soshanguve, 01214-7931337)

Robert Molapo (Junior Secondary School, P.O Box 2753, Rosslyn, 0200, 012-5493060)

Alet Boshoff (National Cultural History Museum, 341 1320)

Robert de Jong (National Cultural History Museum)

Kobus Basson (National Cultural History Museum)

APPENDIX 11: EXAMPLE FROM RUSTENBURG TRAIL BROCHURE

6.4 Trail description

Ice-breaking session on arrival:

When you arrive at the Kudu hut, inspect the area around the hut and concentrate on the following:

* *Would you say the hut is situated on a ridge, in a valley or gulley? Why do you say this?*
* *Take a hand full of soil and feel what it is like, is it fine or coarse?*
* *Do you hear or see any birds and animals around the hut? Can you identify them?*
* *What is the vegetation like around the hut? Are there lots of grass, shrubs or trees?*
* *Desribe the feature in front of the hut. What do you think caused this? How can it be stabilised?*
* *What do you notice about the rocks to the right of the kloof above the hut?*

After allowing the individuals to investigate and experience the area an officer from the reserve can welcome them to the reserve later the evening. The officer can give a very brief information session on the aspects covered by the above ice-breaking questions.

DAY ONE: Suggested departure time - 07:00

Activity a:

* *Ask the individuals to write down a description of the types of vegetation they walk through and what animals they see in each area.*

Activity b:

* *Also give them a contour map of the trail and ask them to fill in any streams or possible streams they come across. Indicate the presumed direction of flow.*

When you have climbed the ridge you arrive at the crest.

Activity c:

* *Pick up some soil and feel it, how does it compare to that at the hut?*
* *Describe the vegetation and rock formations you see when you have reach the crest.*
* *What is the air temperature like here?*

The soil here is shallow and gravelly with limited plant cover because soil of this kind retains very little moisture. This lack of water and food limits the animal life here.

The route continues down towards the tar road. After crossing the road the route descends downward along the crest towards the valley below.

Activity d:

* *How deep is the soil here?*
* *How much water do you think the plants need?*
* *Compare the soil, vegetation, rock formations and air temperature here with that of the kloof.*

The trail climbs along the crest you will come across some "Boer War skanse".

Activity e:

* Draw the lay out of these trenches.
* Why do you think they are located here?
* What do you think their purpose was?

7.2 Baviaanskrans worksheet

Ice-breaking session on arrival

Would you say the hut is situated on a ridge, in a valley or gulley? Why do you say this?
. . . . . .
. . . . . .
Take a hand full of soil and feel what it is like, is it fine or coarse? . . . . . .
. . . . . .
. . . . . .
Do you hear or see any birds and animals around the hut? Can you identify them? .
. . . . . .
What is the vegetation like around the hut? Are there lots of grass, shrubs or trees?
. . . . . .
. . . . . .
Desribe the feature in front of the hut. What do you think caused this? How can it be stabilised? . . . . . .
. . . . . .
. . . . . .
What do you notice about the rocks to the right of the kloof above the hut?
. . . . . .
. . . . . .

DAY ONE:

Activity a:

Ask the individuals to write down a description of the types of vegetation they walk through and what animals they see in each area. . . . . . .
. . . . . .
. . . . . .
. . . . . .

Activity b:

Also give them a contour map of the trail and ask them to fill in any streams or possible streams they come across. Indicate the presumed direction of flow.

Activity c:

What do you note about the rocks, vegetation and temperature in the kloof?

. . . . . .
. . . . . .
. . . . . .

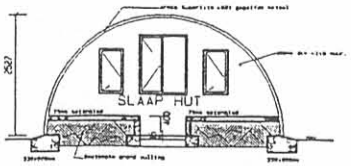
Complete the following table over the next two days.

PLACE	*TIME*	*TEMPERATURE*	*VEGETATION*	*ALTITUDE DESCRIPTION*
Kudu hut				
Kloof				
Crest				
Plain				
Eco-hut				
Waterfall				
Tar road				

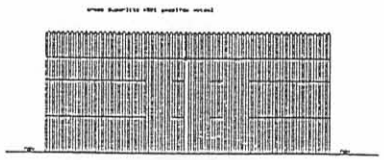
What is the soil like in the kloof? . . . . . .
. . . . . .

APPENDIX 12: ECO-HUT AT RUSTENBURG

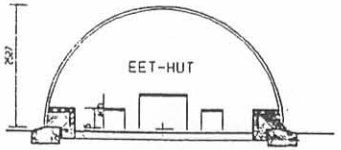
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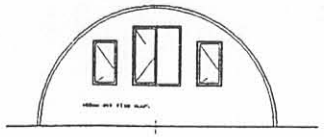
SNIT A-A 1:50



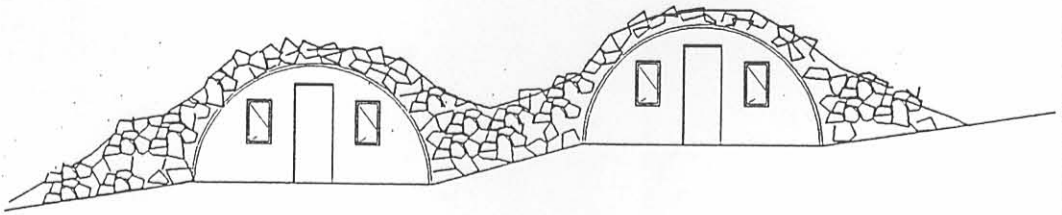
AANSIG 2. 1:50



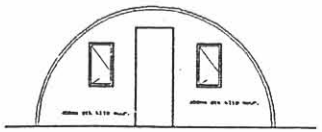
SNIT B-B 1:50



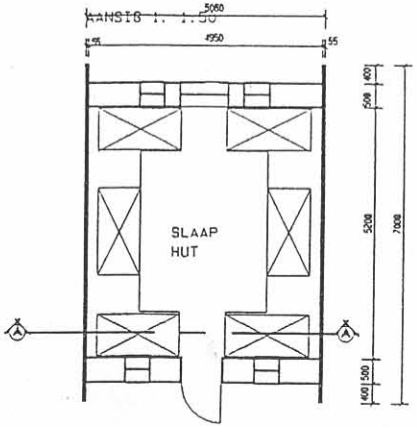
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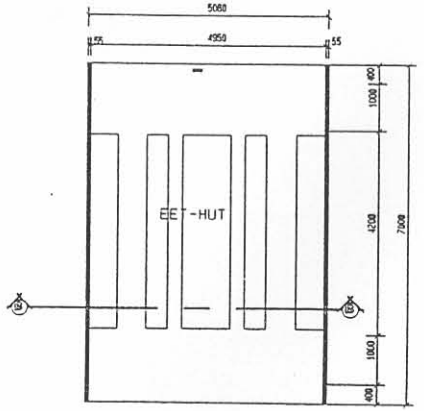
AANSIG 1. 1:50



AANSIG 1. 1:50



PLAN 1:50



PLAN 1:50

WYSIGINGS | REVISIONS

TRANSVAALSE PROVINSIALE ADMINISTRASIE
TRANSVAAL PROVINCIAL ADMINISTRATION

HOOFDIREKTORAAT : WERKE
CHIEF DIRECTORATE : WORKS

R.L.S. UYS

RUSTENBURG NATUUR-RESEVAAT

STUPPERS HUTTE
TIPE A.

W4/2/1/87

EBEN EMELIN | S. I. MOLALA

1:50 | DEC. 1993

K. FISCHER.

DEPARTEMETEEL

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APPENDIX 13: EXAMPLES OF TSWAING ENVIRONMENTAL EDUCATION ACTIVITIES - PHASE 2

Activity 13

Stations : Station F

Topic: Making soil

Learning area: Human and Social Sciences, Natural sciences, Technology

Outcomes:

- To indicate how weathering leads to soil formation
- To show different types of soils and soils in different stages of weathering
- To teach learners some calculating skills

Skills: To read time, measuring by using a teaspoon

Duration of activity: 40 minutes

Materials needed: Two pieces of soft stone, a newspaper, a spoon or small measuring instrument, a self made clock, bottles with pebbles, different soil types.

Pre visit activity: Let the children make a clock by using a paper plate or by cutting out a round piece of card board. Insert clock arms by cutting them out and fastening them with a paper clip.

Background



It is important that young children understand how important **natural resources** are. Soil is one such a resource which supplies plants a place to grow, contain minerals, etc. It, however takes a long time to be formed. This activity will show how soil is formed and how long it takes to be formed. It will also be shown what happened at the crater and where the rock pebbles come from. It will be shown how different soil types look like. This activity can be extended in the class room by growing seedlings.

Methodology:



1. Let children rub rocks together for exactly 10 minutes. The rocks must be rubbed vigorously. Collect the dust on a piece of newspaper.
2. After 10 minutes measure the sand made with a tea spoon or other measuring instrument.
   The amount of sand made in 10 minutes was: _____ level teaspoons.
3. A few calculations can be made according to the level of the learners. Ask the learners: if it took 10 minutes to make the amount of sand mentioned in 2 above, how long will it take to make 100 cubic

centimetres (100 teaspoons).

4. For a bit older children, A medium sized tree needs at least one cubic metre of soil in which to grow. A cubic metre contains 1 000 000 cubic centimetres or 1 000 000 level teaspoons. How long will it take to make enough soil for a tree? Show your calculations.
5. In what ways can soiled be formed? Bearing in mind that rocks are not rubbed together in nature as continuously as in our activity - would you say that soil is formed quickly, slowly or very slowly.
6. Tell us why you think soil is an important resource for us.

Post visit activity

1. When back in the class room, learners can use old plastic margarine containers and make holes in the bottom of the containers. Add some small stones and fill them with some of the soil that was made in the activity. Also make a container with some other soil (Other interesting containers can be used such as egg shells, hollowed out potatoes, etc.)
2. The learners plant a seedling in each container, press soil around it and water. (Seeds can also be used)
3. Learners label the containers with their names and the type of plant they are growing.
4. Learners make up a note book on their plants or on a piece of paper left beside the container. Learners note the dailey growths of their seedlings, measuring changes in height, new leaves, flowers, etc.
5. After a while the plants can be presented to family members, the Tswaing crater, the local library, a park, the school, etc.

Why do the seedlings not grow well in the freshly made soil?

Adapted from `We care primary'

Example of table to use for observation

Date	Growth observation
Monday 11 March	*Seedling grows 1cm, 1 new leave formed*
Tuesday 12 March	*Seedling grows 0,7 cm, No new leaves*
Thursday 14 March	*Seedling grows 1,4 cm. Two new leaves formed*
Etc	Etc

The table can only be used by children that can read and write.

APPENDIX 14: DISCUSSIONS WITH TWO OF THE COMMUNITY MEMBERS OF TSWAING

Discussion with Ester from Kromkuil at Tswaing on 19/01/1998

* Pedi's, Sotho's and Tswana men lived at the mine in compounds while the families lived at Kromkruil. The cattle was also kept at Kromkuil.
* The people worked at the mine in day and night shifts to get money to send the children to school. It was only at a later stage that believe aroused that the spirits were not allowed to be disturbed at night.
* The mine provided an opportunity to make a living.
* Young girls helped to pack the sacks.
* Pyramid was the closest station to the factory and the salt was carted by oxwagen (Nguni) and bokwagen.
* Traditional way of mining stopped when the factory started.
* The salt was payment for the packers/helpers. They sold it again in solid pieces. The salt was packed in hesiene bags.
* Mr du Toit was the plant master
* Church and school gone
* There is a storey that the meteorite came after the factory.
* Lebalangwe: stayed there, local mine, clay soil, made dishes from the clay soil.
* The lime bags are the last stop before the salt was packed. Hard canvas was placed on top of the bags. The lime was used to disinfect the salt and keep it dry and loose/fresh. Ox wagens were used to transport the salt.
* The morula fruit was boiled and used for beer. This was sold again.
* Morokulu tree is scarce in the veld now. They used it for jam and did not need sugar to sweeten it. Was like youngberries.
* At the factory the salt was dried in the drying pans.

Discussion with Mr Tiki Motau (born in 1918) at Tswaing on 19/01/1998

* The soda was boiled at night and was dangerous
* The factory closed in 1961
* The workers got paid 6 sjielings a month
* The first group of salt miners were unsuccessful
* Lime was added into the soda to get it white but it stayed brown.
* A diesel machine was used to mix it for 1 hour.
* The Middleburg farmers bought a lot of salt for their cattle and goats
* The coal used came from ABC coal company in Pretoria West. The coal was used twice therefore the ash is very fine. If the ash heaps are dug up some articles used in the factory might be found.