

**TRAINING NEEDS FOR MUNICIPAL EMPLOYEES: A CASE STUDY OF
MAKANA MUNICIPALITY**

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Supervisor: Professor Heila Lotz-Sisitka

by

Tyson Hamaamba

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ABSTRACT

This study investigated the education and training needs for municipal employees in order to inform an education and training strategy that would address environmental management challenges in Makana local municipality in Grahamstown, Eastern Cape province. The research was conducted as a qualitative case study that made use of questionnaires, document analysis, focus group discussions and interviews as instruments for data generation. Samples of respondents were selected from Makana Municipality employees in top and middle management positions, professionals/technicians and workers, including elected councillors.

The study was contextualised through establishing environmental management issues in Makana municipality; establishing organisational needs; development of a learner profile; and through a review of policies and recent trends in adult education.

The study established that the Makana Municipality employees are most concerned with the following issues: sanitation; solid waste management; livestock management and fire management. These issues require primary environmental competences among all council employees (top and middle management, professionals and technicians, workers and councillors who work on part-time basis). The educational implications needed to respond to these issues also require an understanding of legislation.

The study also established that technical education and training which includes planning, project management, and financial and budgeting competences are necessary amongst the management and professionals. These competences may enable them to develop capacity in environmental management. This study further established the need for social education which includes competences such as communication and social justice. These competences should be developed amongst members of the same group as they need to involve the community in management of the environment. This should enable the municipality to create job opportunities and help change negative attitudes.

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LIST OF ACRONYMS

AIDS	Acquired immune deficiency syndrome
ANC	African National Congress
ARC	Agriculture Research Council
CCT	City of Cape Town
DEAT	Department of Environmental Affairs and Tourism
DoL	Department of Labour
EE & T	Environmental Education and Training
HIV	Human Immunodeficiency Virus
IDP	Integrated Development Plan
IMATU	Independent Municipal and Allied Trade Union
LEAP	Local Environmental Action Plan
LGW	Local Government Water Related Services
NEMA	National Environmental Management Act
NEPAD	New Partnership for African Development
NGO	Non Governmental Organisation
NQF	National Qualification Framework
NSB	National Standard Body
RSA	Republic of South Africa
SAAWB	South African Association of Water Board
SADC	Southern African Development Community
SALGA	South African Local Government Association
SAMWU	South African Municipal Workers Union
SAQA	South African Qualification Act
SDF	Sustainable Development Framework
SETA	Sector Education and Training Authority
SGB	Standards Generating Body
UNESCO	United Nations, Education Science and Cultural Organisation
WSSD	World Summit on Sustainable Development

Chapter One

INTRODUCTION

I.1 Orientation to the chapter

This chapter provides an overview of the study. It presents the context and background to this research. The chapter also introduces the research question and methodology used to conduct the study. The chapter later provides an overview of how the chapters are structured. This research takes place in post apartheid South Africa. Since 1994, environmental issues have been placed on the transformation agenda and wide-ranging policies have been introduced to govern environmental management, such as the National Environmental Management Act 1998 (Act No.107 of 1998) (NEMA). The constitution holds local government accountable for service delivery that is environmentally sustainable (Butler, 1997). In many cases municipalities are struggling to implement this 'under funded mandate', and the Local Government: Municipal Systems Act 2000 (Act No. 32 of 2000) stipulates that Municipalities must develop their human resource capacity to a level that enables them to perform their functions effectively, efficiently and accountably, in line with the Skills Development Act (RSA, 1998a). This study investigates the roles of education and training in this context.

I.2 Context of study

This research focuses specifically on the environmental education and training needs of local government employees. It was carried out in Grahamstown, which is the seat of the Makana Municipality. The Makana Municipality includes two administrative units: Alicedale and Riebeck East. Grahamstown is located in the Eastern Cape Province in South Africa. It is approximately 120km east of Port Elizabeth, one of the major industrial cities in the Eastern Cape. Makana Municipality has a total area of 423338 km². Figure 1 shows the physical location of Grahamstown and the boundaries of the Makana municipality.

The Makana Municipality is a category 'B' local municipality in South Africa¹. It falls under Cacadu District Municipality, which is a category 'C' municipality according to Local Government Municipal Structures Act 117 of 1998 (RSA, 1998b). Makana municipality has four directorates, namely: Community and Social Services Department; Technical and Infrastructure Department; Corporate Department and, finally, Finance Department. Apart from the four directorates there are six different portfolio committees where elected councillors sit to oversee service delivery to the people.

The Directorate of Community and Social Services includes: primary health care; environmental health control; fire fighting and community safety; occupational safety; cleansing services; library services; parks and recreation facilities; animal facilities and a cemeteries section. This directorate is of primary importance for this study as it has many functions in terms of service delivery to this community, and it carries the primary responsibility for environmental management. The directorate of Technical and Infrastructure includes the following sections: civil engineering; electricity; water and sewerage; roads and motor vehicle fleet management; technical contract management; land management; housing management; buildings management and planning schemes administration. This directorate is concerned with developmental projects, which may impact both on nature and human life. Environmental management is therefore relevant to this directorate.

The Corporate Directorate includes: administration; human resources and information technology sections. The Finance Directorate includes revenue; expenditure; accounting; stores; insurance and investments sections. While not directly involved in

¹ Category A- metropolitan areas or large cities in South Africa with more than 500 000 voters.

Category B – local municipalities and is broken into wards and people are represented by ward councillors.

Category C – District municipalities are made up of a number of local municipalities that fall in one district and there is usually 4-6 local municipalities that fall under one district council.

environmental management, these two directorates impact on and support the other two directorates, and are therefore also of concern to this study.

The Makana Municipality employs about 586 employees. It also has 24 councillors from 12 community wards and 12 proportional representatives from different political parties. From these 24 councillors, six are elected to chair six different portfolio committees and six serve in the Environment, Disaster Management and Heritage portfolio within Makana Municipality.



Figure 1. Physical location of Makana Municipality (Source: Makana Engineering Dept.)

1.3 Background to the research

Makana Municipality is increasingly experiencing rapid population growth, due to migrations from nearby farms as land use patterns change from commercial farming to game farming, which is less labour-intensive. According to Rudolecky (2004, pers. Comm.), the latest average figure from a recent housing survey conducted in 2003 indicates the population is 124,000. This rapid population movement has resulted in the establishment of large informal settlements without basic amenities, a situation which is exacerbated by the apartheid-linked backlogs in service provision.

The Draft Reviewed Integrated Development Plan (IDP) internally prepared for Makana Municipality in May 2004 (Makana Municipality, 2004), identified some of the development priorities as follows: potable water, sanitation, health care and environmental health, education and training, job creation, poverty alleviation, housing, land distribution and safety. The contextual profile I developed for Grahamstown (Hamaamba, 2004), drawing largely on articles in the local news paper, the *Grocott's Mail*, shows that environmental issues and risks such as housing and sanitation, livestock management, solid waste management, HIV/AIDS and crime have a high prevalence in the Makana Municipality.

In response to environmental issues, the Makana Municipality committed itself to Agenda 21, the National Environmental Management Act (NEMA) and the Johannesburg Declaration on Sustainable Development, by forming a project called the Local Environmental Action Plan (LEAP) in January 2004 (ARC, 2003). One of the key deliverables for LEAP is to establish an environmental education and training strategy for Municipal employees in line with the Reviewed Integrated Development Plan for 2004. The Environmental Education and Sustainability Unit at Rhodes University (which is a member of the LEAP committee on which I sit) was tasked to research what education and training is needed for municipal employees to respond to environmental management issues in the Makana Municipality.

Recent studies involving local government and environmental management have been conducted. Dingela (2002) conducted research on roles and competencies of entry-level environmental managers in local government and other government sectors. Some of his recommendations include environmental capacity-building for workplace environmental management. Another recent study was done by the Department of Environmental Affairs and Tourism (DEAT 2004b). It contains recommendations for strengthening environmental management in South Africa which requires a wide range of cross-cutting knowledge, skills and values, for instance: interpreting policy and legislation, contributing to the development of integrated management plans, compiling annual reports, working according to financial plans, liaising with interested and affected parties and initiating projects/programmes.

It is against this background that I decided to carry out this research, centred on the research question below, as it is linked to the need for environmental education² and training³ in local government.

1.4 Research question and goals

As indicated above, these factors prompted me to come up with this research question: **what education and training is needed for municipal employees to address environmental management challenges in Makana local municipality?**

The goals⁴ of the research are to:

1. Identify environmental management issues relevant to municipal employees in the Makana Municipality.
2. Identify and review organizational needs and policies relevant to environmental management processes in Makana Municipality.

² Environmental Education: refers to education that has life-long relevance to all people, an integral part of socio-economic development processes required to ensure equality of and better quality of life for all.

³ Training: typically involves instruction and practice aimed at reaching a particular level of competence.

⁴ Goal: refers to how best to achieve the output.

3. Compile a learner profile of employees involved in environmental management in Makana Local Municipality.

With a view to:

1. Establishing the environmental management education and training needs of municipal employees in the Makana District Municipality.
2. Informing an Environmental Education and Training Strategy for municipal workers in Makana Municipality.

In order to achieve these goals, I decided to use a case study approach. The case study context was the Makana Municipality, based in Grahamstown. The case study approach was selected to provide rich data to answer the research questions. Various data-generating tools were used to identify the environmental management issues in the context of this case study. I compiled a learner profile and established organisational needs, working with a sample of the Makana municipal employees. The environmental management issues, learner profiles and organisational needs contributed to the recommendations that will guide the development of an environmental education and training strategy for Makana Municipal employees. The term 'environmental education and training' is referred to many times in this study, and is to be regarded as the proposed education and training that will respond to environmental issues and environmental management needs. It also reflects the international trend towards integrating education and training in the context of life-long learning (Kraak, 1999). The research processes, results and context of the research are discussed in more detail in the following chapters.

1.5 Overview of chapters

An overview of the chapters follows, detailing the structure of the chapters in this study and giving insights into the main themes covered in the chapters.

Chapter two

In chapter two, I present the contextual factors that shape this study. The contextual factors I present include an overview of the state of the environment in the Southern African Development Community (SADC) and South Africa, with a focus on the

Eastern Cape. The description of the state of the environment leads into a focus on the emergence of global policy developments and environmental education and training as a response to emerging issues and risks. I also discuss the formation of the LEAP for Makana and its aim to build capacity, among municipal employees, to manage the environment.

Given the focus on education and training for adult employees, I discuss the importance of understanding trends in adult education and training with the emergence of life-long learning. Life-long learning has emerged in response to the changes confronted by adults in the work place (Edwards, 1997; Tight, 1996). I further present an overview of the rapidly changing context of education and training in South Africa, with a focus on applied competences in environmental management. This chapter also explains the South African National Qualifications Framework (NQF) in terms of available opportunities for accredited education and training (Department of Labour, 2001). Local government are challenged within the framework of the National Skills Development Strategy to provide for skills development through education and training as they have responsibilities to manage the environment and deliver services. This chapter finally looks at current debates in improved environmental management, with a focus on local government.

Chapter three

In this chapter I present the research methodology and data generating methods used in this study, namely: questionnaires; focus group discussions; interviews and document analysis. This chapter describes the process of using these data collecting methods and the difficulties encountered in using these methods. Issues of ethics and trustworthiness are also discussed in this chapter. I finally present how the data was analysed and share the process of establishing the categories and subcategories used to present the findings of the study in chapter four and five. I describe how this formed a first layer of analysis and how a second layer of analysis enabled a synthesis of the main findings, which are presented in chapter six.

Chapter four

In this chapter I present the main findings on the environmental management issues identified in this study. These issues include sanitation, solid waste management,

livestock and fire. Sanitation issues include lack of water-borne sewer systems in informal and formal townships. Solid waste management largely deals with illegal dumping in the centre of town and in township or residential areas. Livestock management is associated with stray animals in town and residential places. The animals spread rubbish, graze in parks and gardens and cause soil degradation. They are also a source of bad odours and attract flies. The fire issue is associated with a lack of a service station in some townships for emergency fire fighting. Makana Municipal employees identified these issues as priority issues during the study.

Chapter five

In this chapter I present the main findings on the learner profile and organizational needs for Makana municipal employees. The learner profiles include profiles of selected top and middle management, professionals and technicians, as well as lower-level employees and councillors. The learner profiles consist of demographic data which includes, age, average years of service, academic and professional qualifications. The training needs reported in this chapter reflect individual training needs as well as organizational needs. The chapter further provides insights on how training should be structured and some discussions of the backlogs associated with training in this context.

Chapter six

In this chapter I explore the implications of different competencies required for environmental management as evident in this study. These competencies are discussed for all municipal employees, including the councillors and other politicians. There is a general need for education competences that enable change and response to complex issues in context. The legal compliance competence is particularly important for the management and professionals/technicians levels. The chapter also discusses the need for planning, project management and financial and budgeting competences for management, professionals/technicians and workers to improve environmental management in Makana Municipality. It further focuses on the need for social education, especially for management and professionals, which develops communication and social justice competences. These competences promote interdepartmental communications in the Municipal areas and also contribute towards job creation in communities through implementation of recycling and other projects.

The chapter finally presents recommendations with a summary of education and training needs for different learner groups. It also considers the potential of providing accredited environmental education and training to enhance environmental management. It provides recommendations for future research, such the as need to explore work-based environmental education for workers and research to establish how funding could be accessed from the Local Government, Water and Related Services, Sector Education and Training Authority (LGWSETA)⁵. In this chapter, I also present the conclusion of the study. The conclusion includes a summary of the main findings. Finally, I present a reflection on the study as a whole, noting the limitations of the study.

⁵ SETA – the body which plans and regulates provision of education and training within a particular sector

Chapter Two

ENVIRONMENTAL EDUCATION AND TRAINING IN RELATION TO LOCAL GOVERNANCE

2.1 Introduction

This chapter provides insights into the diverse contextual factors that shaped and influenced this study on the education and training needs of municipal employees in the Makana Municipality. These include: state of the environment in the Southern African Development Community (SADC) and in South Africa, with a focus on the Eastern Cape; global policy development and environmental education and training as an emerging response to environmental issues; development of Makana Local Environmental Action Plan (LEAP); international trends in adult education; the changing context of education and training in South Africa, including recent trends and current issues in local governance. I firstly discuss the state of the environment in SADC, South Africa and the Eastern Cape before discussing the LEAP and trends in adult education and training.

2.2 State of Environment in SADC

Southern Africa is home to 291 million people, of which about 25% live in urban areas while 75% live in rural areas (Lotz-Sisitka, 2004:6). As the majority live in rural areas, they depend on natural resources for their livelihood. This puts pressure on the biophysical life support systems, due to increased population levels coupled with poverty (*ibid*).

Fakir (2002: 14) notes that, particularly in the urban development context, many of the urban environmental problems in Southern Africa can be “attributed to weak local government capacity, limited capital investment for infrastructure improvement and weak monitoring”. Fisher and Ponniah (2003) further explain that most of the urban population live without basic services, which they refer to as ‘unjust societies’. Shaw and Louw cited in United Nations Populations Division (UNPD, 2001) further

observe that many African cities have an increasing number of overcrowded informal settlements, or shanty towns, without proper housing, sanitation and waste management services. Fakir (2002:14 cited in Lotz-Sisitka 2004:6) notes that this is seen as a problem for the future, particularly since there is increasing rural-urban migration in South Africa, where almost 50% of the population are living in urban areas.

Moyo and Mtetwa (2000 cited in SAIEA 2003:14) note that SADC countries also experience relatively poor standards of pollution control and experience extremely high percentages of urban sewage discharged directly into rivers and lakes, without treatment of any kind. Apart from sanitation issues, most SADC countries experience solid waste pollution due to lack of waste reduction, recycling and public involvement (SAIEA, 2003:18). SADC is facing serious threats to biodiversity and one of the main causes of loss of biodiversity is the loss of fragmentation and conservation of natural habitats due to mining, agriculture or urban expansion (SAIEA, 2003). In SADC, 45 % of urban households grow crops or raise livestock in urban environments in order to supplement their livelihoods (UNPD, 2001).

2.3 State of the Environment in South Africa: Eastern Cape

South Africa is currently experiencing a rapid urban growth rate, which is projected to be at 2.10% by 2000 – 2005 (UNFPA, 2003). Mc Donald (2002:243) observes that the number of South Africans without adequate services still remains in the millions and many new infrastructure schemes have fallen into disuse because of lack of operating funds. According to the State of Environment report (CSIR, 2004) the Eastern Cape has a population of about 6, 436 763 persons (2001 Census). The CSIR (2004:122 citing Dhlamini and Ntonto, 2003) reports that this population growth, which is currently rated at 2.1%, is predicted to decline, as the Eastern Cape Province has the highest HIV/AIDS rate increasing from 0.4% in 1990 to 23.6% in 2002 for antenatal clinic attendees. The region also suffers from poverty, which is projected at 50%, with Cacadu District Municipality, within which the Makana Local Municipality falls, with more than 36% of its households comprising two or less persons per household (CSIR, 2004). The sanitation facilities in the Eastern Cape vary

from water-borne sewerage, ventilated pit latrines and bucket systems, to no sanitation at all (CSIR, 2004). Households which have access to water-borne sewerage account for 51% of households in Cacadu District, a figure which flies in the face of the Water Services Act 108 of 1997, which states that everyone has the right to basic sanitation (CSIR, 2004). The CSIR, (2004) further reports that waste removal is generally poor and Cicadu District refuse collection is reported to be at 68%.

The natural environment in the Eastern Cape is affected by agricultural cultivation, urban development-towns and rural settlements, afforestation or timber plantations, and alien plant invasions which account for some 16% of the degradation of the region (Pierce, 2003). As this study is looking at environmental management in urban sectors, such changes require critical examination in order to avoid negative effects of development both to humans and nature. Pierce (2003) further notes that some areas in the natural veld have been severely degraded through overgrazing by stock and even game farming. With the high levels of destruction of plants, the stronger water run-off causes damage, soils erode, natural vegetation is lost, ecosystems do not function well and ecosystem services are diminished or completely destroyed. It is estimated that about 12% of solid thicket is severely degraded by overgrazing (Pierce, 2003).

I turn now to a discussion of global and national responses to environmental issues and risks, which includes policy development and an emphasis on education and training.

2.4 Global policy development, environmental education and training as an emerging response to environmental issues

An increased awareness of environmental issues and risks associated with the economic development agenda has resulted in the emergence of an emphasis on environmental education and training processes in response to these issues, both internationally and locally. It has also resulted in numerous international policy frameworks.

2.4.1 International responses

The first United Nations conference, which was held in Stockholm, Sweden in June 1972, focused on the close link between humans and the environment and emphasised the need to protect and improve the environment for the present and future generations (Lotz-Sisitka, 2004). Another UN conference was held in Tbilisi, Russia, in October 1977 with a focus on environmental education. This conference recognised that education made a “crucial contribution” to enabling people to manage the earth and could put forward many approaches for understanding pressing problems which populations face (UNESCO, 1980:1). The final report of the Tbilisi Conference further recognises that:

environmental education should not be just one more subject to add to existing programmes but should be incorporated into programmes intended for all learners, what ever their age...[and should stress] the social role of educational institutions and the establishment of a new relationship....(UNESCO, 1980:3).

An important recommendation of the Tbilisi conference states that environmental education should make individuals and communities understand the nature of the natural and built environment (UNESCO, 1980). The report further explains that the understanding of the environment will be achieved through interaction of biological, physical, social, economic and cultural aspects (*ibid*). This perspective applies to this study, where the focus is on municipal employees and how they may be better able to respond to environmental management issues through education and training. In 1992 the Rio Earth Summit (another UN conference) was held to explore the relations between humans, the environment and development (Lotz-Sisitka 2004:10). The summit also developed Agenda 21, which is a global plan of action for sustainable development (*ibid*). Agenda 21 (Chapter 28) states that:

... because so many problems and solutions addressed by Agenda 21 have their roots in Local authorities, participation and co-operation of local authorities will be determining factor in fulfilling its objectives... [and]... subsequent to Agenda 21 is Local Agenda 21 which is a participatory, multi-sectoral process to achieve the goals of Agenda 21 at local level through the preparation and implementation of a long-term strategic action plan that addresses priority local sustainable development concerns (Butler, 1997: 4).

The concept of solving problems at the local level appears to be crucial, as local municipalities require community participation in order to address local sustainable developmental concerns. Lotz-Sisitka (2004:10) notes that, as a result of the Rio summit, many countries have “established government agencies that are responsible and in charge of environment and have created institutions and organisations to deal with environment and development issues at local, national, regional and global levels”. Agenda 21, through Chapter 36, emphasises the need for “wide scale environmental education programmes in diverse settings and the need to re-orient all education and training towards sustainable development” (Lotz-Sisitka 2004:10).

Following the Rio Summit ten years later, was the UN World Summit on Sustainable Development (WSSD) convened by the UN General Assembly in Johannesburg, South Africa, from August 26th to September 4th, 2002 (UNEP, 2002). The WSSD implementation Plan recognises that education should promote sustainable development in education systems at all levels to promote education as a key agent of change (UNEP, 2002). The UN Millennium Development Goals established in September 2000 further developed eight goals for poverty alleviation and development (Lotz-Sisitka, 2004). One of the goals emphasises the integration of “principles of sustainable development into country policies and programmes to reverse loss of environmental resources” (Lotz-Sisitka 2004:24).

In order to achieve the Millennium Development Goals and to promote Africa’s development, African countries developed a framework called “New Partnership for Africa’s Development” (NEPAD) (*ibid*: 27). NEPAD includes, amongst others, a focus on addressing environmental problems at national and regional government levels. To this end, NEPAD has developed an Environmental Action Plan (UNDP, 2003) (*ibid*).

The growing concern, both at international and local levels, requiring a response to environmental issues would be attributed to the “growing global awareness of the social-ecological crisis of modernity” which should be accompanied by educational responses (Janse van Rensburg, 1993:279). O’Donoghue and Janse van Rensburg (1995:4) further note that early responses to environmental education were to “protect

the endangered wild life in nature reserves". Lash and Wynne (1992:3) note that risks have become an "intellectual and political web across which threads many strands of discourse relating to the slow crisis of modernity and industrial society". As a response to risk society, environmental education in the SADC region has focused on "socio-ecological justice and participation which includes a focus on history, context, reflexivity, criticality and open processes of learning and change" (Lotz-Sisitka 2004:51). At a national level, policy and educational responses have also been developed, which I discuss in detail below.

2.4.2 National responses

South Africa has adopted the principles of Local Agenda 21 and integrated them into the Local Government planning process (DEAT, 2000). The aim of Local Agenda 21 is to change the way local government is organised and operates, to ensure municipal services are distributed equitably and in a sustainable way between current and future generations (*ibid*). Examples of cities in South Africa that have implemented Local Agenda 21 as of the year 2000 include the following: Cape Town, Johannesburg, Pretoria, Durban, Kimberley, Port Elizabeth and East London (*ibid*). In terms of the Constitution of the Republic of South Africa, Section 152, a municipality is required to provide democratic and accountable government for local communities and provide services in a sustainable manner (RSA, 1996). The same Constitution, within its Bill of Rights section 24, provides citizens with the right to an environment which is not harmful to their health or well-being and to an environment that is protected for the benefit of present and future generations (RSA, 1996).

Apart from the Bill of Rights, there are two national Acts relating to local government, which take the constitutional provisions further for environmental management. These are Local Government: Municipal Structures Act 117 of 1998 and the Municipal Systems Act 32 of 2000. The Local Government: Municipal Structures Act 117 of 1998 provides for the establishment of local government structures in accordance with the constitution (RSA 1998b). The Municipal Systems Act 32 of 2000 section 4 (2) (d) specifically states that "Municipal officials have the

duty ... to ensure that municipal services are provided to the local community in an environmentally sustainable manner” (RSA, 1998a). The Municipal Systems Act (No 32 of 2000) further requires the local municipalities to provide democratic and accountable government for local communities (*ibid*). According to Nel (2002: 64) municipalities are required to develop Integrated Development Plans (IDP) to guide and inform all planning and budgeting, management and decision-making in a municipality. This is in line with the National Environmental Management Act (RSA, 1998c:10), which emphasises that:

Community well-being and empowerment must be promoted through environmental education, raising of environmental awareness, sharing of knowledge and experiences and other appropriate means.

In terms of NEMA it appears that local municipalities need an understanding of legislation which impacts on the environment. Table 1 below shows a summary of some of the legislation relating to local governance and environmental management.

Table 1: showing a summary of some of the legislation relating to local governance (DEAT, 2004a; DEAT, 2004b; ARC Makana LEAP, 2004)

Legislation	Extract
Agriculture and Conservation Act (No 88, 1996)	... Promote community participation in the protection, use, development, conservation management and control of water resources in its water management areas.
National Water Act (No. 36 of 1998)	To protect aquatic ecosystems in order to secure sustainable development and use of the relevant water resources.
Environmental Conservation Act (No 73 of 1989)	The management authority of nature reserve or world heritage site must establish systems to monitor the impact of activities; compliance and any relevant norms and standards.
World Heritage Conservation Act (1998)	All people must have the opportunity to develop their understanding, skills and capacity necessary for equitable and effective participation
Water Services Act (No 108 of 1997)	Water authorities must make by-laws containing conditions for the provision of water services and which may relate <i>inter alia</i> to the standards of services and technical conditions including quality standards and measurements, installation and tariff structures.
White Paper on Integrated Pollution and Waste Management (March 2000).	To establish guidelines for appropriate waste collection services for all sectors of society, which cater for appropriate recycling and set national standards.

In the light of these legislative requirements, I now turn to a discussion on how the Makana Municipality is attempting to respond to these legal imperatives through establishment of a Local Environmental Action Plan (LEAP).

2.4.3 Makana Local Environmental Action Plan (LEAP)

In response to environmental issues and risks and the legal frameworks noted above, the Makana Municipality committed itself to Agenda 21 and the National Environmental Management Act (RSA, 1998c) by forming a project to establish a Local Environmental Action Plan (LEAP) in January 2004 (ARC, 2004a). The LEAP development process involves the following key stakeholders⁶:

- The Makana Municipality: in particular the Department of Community and Social Services; and the Technical and Infrastructure department,
- Rhodes University: including the Environmental Education and Sustainability Unit, the Environmental Science Department and the Institute of Water Research,
- The Albany Museum (Makana Centre for Biodiversity),
- The Makana Environmental Forum, including representatives from many CBOs and NGOs who are engaged in environmental activities, and
- Eastern Cape Provincial Departments of Health and Welfare, Education and Agriculture (ARC, 2004a).

The purpose of the LEAP is to create a sustainable community through minimisation of environmental management issues such as pollution and waste in Makana Municipality (ACR, 2004a). The LEAP process recognises that environmental issues and risks can best be solved at local level, in line with Local Agenda 21 (*ibid*). The key deliverables of LEAP are: an environmental audit; a sustainable development framework; an implementation plan for strategic interventions and an Environmental Education and Training strategy. I now discuss these in more detail.

⁶ Stakeholder – A person, group, or institution with a special interest in what is happening.

Environmental Audit (ARC, 2004b)

The purpose of the environmental audit in the first phase of the project is to provide an overview of environmental issues currently being faced by Makana Municipality (ARC, 2004b). This report will compare the similarities and differences in Makana Municipality and the wider Eastern Cape. The environmental issues are classified under the following themes:

- Air quality (includes indoor pollution and outdoor pollution)
- Biodiversity (includes alien fauna & flora, medicinal plants)
- Built environment (includes access to sanitation and water supply, urban environmental quality and waste management)
- Environmental management (environmental education and legal compliance in Makana Municipality and local industry)
- Fresh water (availability of water)
- Land (erosion and land management) (ARC, 2004b).

Sustainable Development framework (SDF) (ARC, 2004c)

This will provide strategic guidelines for environmental management. The SDF ensures that the Makana LEAP is in line with the principles outlined in local Agenda 21 and NEMA. The framework further provides guidelines to incorporate Makana Municipality's Integrated Development Plan environmental needs analysis and it provides environmental and sustainable development guidance for development of the Makana Spatial Development Framework (ARC, 2004c).

Implementation plan for strategic interventions (ARC, 2004d)

This is the key deliverable of LEAP, which is to be completed by the end of the first phase, at the end of 2004. The project members and stakeholders are to identify specific intervention projects to respond to prioritised environmental issues in Makana Local Municipality. Some of the identified projects for implementation include:

- Green infrastructure - aims to establish natural life-support systems and built systems that maintain quality of life such as roads, sanitary sewers and storm drains.

- Biodiversity framework – aims to develop a control programme to monitor threats to biodiversity.
- Livestock and commonage management - aims to investigate better livestock management in Makana Municipality.
- Biocarbon Fund – aims to promote re-forestation of endemic leaf succulent species in Eastern Cape and provide opportunities for job creation.
- Waste management – aims to reduce environmental ‘foot prints’ of waste in Makana.
- Water projects – aims to consider the following: ecotoxicological risk assessment and sewerage treatment works in Grahamstown, development of hydrological water use and assessment of natural salinity levels within water resources (ARC, 2004d).

Environmental Education and Training strategy (ARC, 2004e)

Capacity building for Makana Municipality employees is one of the other key deliverables for the LEAP (ARC, 2004e). The Environmental Education and Sustainability Unit at Rhodes University has been tasked to research the education and training needs for municipal employees to respond to environmental management issues in the Makana Municipality.

The environmental education and training strategy should include the development of a framework for a learnership for employees of the Makana Municipality (ARC, 2004e). The environmental education and training strategy is also aimed at enabling education and training for the community, industry, business, educators in schools, and the private sector (*ibid*). The environmental education and training strategy should build capacity amongst key personnel to implement the plan and to develop similar initiatives with other municipalities and in the district (*ibid*). This strategy follows on the lines of similar initiatives; for example, the City of Cape Town (CCT) environmental education and training strategy (CCT, 2003). In this strategy, environmental education is understood to relate, among other factors, to:

- The natural and built environment, including visual dimensions.

- Social-ecological and economic aspects, including ‘green’ and ‘brown’ environmental issues.
- Natural and cultural heritage resources, including historical sites, landscapes (CCT, 2003:5).

The City of Cape Town environmental education and training strategy aims to

- Guide decisions regarding environmental education and training in the CCT,
- Address current concerns through Environmental Education and Training
- Ensure that achievement and quality of good practice is maintained
- Link the CCT’s programmes to broader national initiatives (CCT, 2003:6).

As outlined above, it is hoped that the City of Cape Town environmental education and training strategy will provide guidelines for the development of the Makana LEAP environmental education and training strategy. This study explores the environmental education and training strategies required to develop capacity among municipal employees to enable them to respond to environmental management issues as part of the broader Makana LEAP environmental education and training strategy development process. Because this study focuses on Municipal employee’s education and training needs, a consideration of adult education and training becomes a contextual factor in this study and I will now discuss it in detail.

2.5 Trends in adult education

Adult education is one of the dimensions that needs to be considered in this research as a means to respond to environmental management issues in the context of a local municipality, such as Makana. Tight (1996) observes that adult training allows for the acquisition of skills, rules, concepts or attitudes that result in improved performance in the work situation. He notes that “... education is organised and sustained instructions designed to communicate a combination of knowledge, skills and understanding valuable for all the activities of life” (Tight,1996:18). He further argues

that, as a result of training, individuals are able to respond adequately and appropriately to an expected and typical situation (*ibid*).

Tight (1996) notes further that the concept of life-long learning which emerged after the Second World War was developed in response to increased globalisation of economies, society and technology. Tight (1996:35 citing Croples 1980) explains that, the life-long education concept was to ensure the following:

- Rejection of a model of education which is confined to childhood, adolescence and early childhood,
- Education should last for the whole life of each individual, and
- Education that leads to the acquisition, renewal, upgrading and completion of knowledge, skills and attitudes, which has become necessary in response to the constantly changing conditions of modern life, with the ultimate goal of promoting of self-fulfilment of each individual.

Edwards (1997:23) agrees that “adult learning has developed as a response to a complex series of overlapping and interrelated factors”. He explains that the emergence of life-long learning is central to addressing the changes confronting adults and challenges such as rapid and unpredictable change, uncertainty and ambivalences prevalent in modern, globalising society (*ibid*). However, the life-long learning concept has been viewed differently by industry, whose motive is to focus on training to achieve company goals. It is critiqued as being rather vague, lacking in coherence, and apparently making little contribution to the notion of adult learning (Tight 1999:35).

The above critiques and increased demands in industrial relation practices prompted the emergence of recurrent education, which was seen as a means to implement life-long learning. The recurrent education concept argues for individuals to abandon the unalterable education-work-leisure retirement sequence and argues for a mode which alternates activities within what is socially possible (Tight 1999:38). Recurrent education ensures that education is distributed over the lifespan of the individual in a recurring way, so that it serves industry needs (*ibid*). However, the concept of

recurrent education was criticised for a lack of “greatest possible choices” for adults in terms of variety and flexibility in the face of continued changes in skills needed to serve industry (*ibid.*)

According to Edwards (1997) these changes in industry, such as new forms of production, distribution and consumption, affect adult education with regard to five aspects.

- The first aspect is about the nature of change, which involves increased global competition and environmental degradation and risks.
- The second aspect which affects adult education is the rate of change, which raises questions about the initial education and training for adults required to be able to act in a world of rapid changes.
- The third aspect of change focuses on contestability, which demands that individual adults learn to participate and challenge themselves across a range of different settings and practices. This third aspect also requires organisations to be learning organisations in order to cope with and shape the processes of change (*ibid.*). Tight (1996:40, citing Jones and Hendry 1994; Kim 1993) notes that “learning organisations were seen as something greater than the sum of the bits of individuals or group learning”.
- The fourth aspect of change raises the question of impact upon the contemporary world, which makes it difficult for adult learners to determine central and peripheral issues. It further raises another question about the cost and sustainability of such changes in terms of environmental degradation and risks (*ibid.*: 26).
- The fifth and final aspect of change is “our capacity to work flexibly in our particular settings and with adult learners to develop their capacities to understand and shape change and the meanings of change” (Edwards 1997:29).

These aspects of change will be considered in this study of capacity building for municipal employees in order to respond to emerging environmental management issues and risks (see chapter six).

With life-long learning, change has come to focus on learners and learning. Edwards (1996:69) describes 'moorland' of life-long learning which signals a shift that makes education for adults richer, more diverse and more responsive to current needs. Usher *et al.* (1997:1) further note that the "... shift from adult *education* to a 'moorland' of adult *learning*, with its adult education theory, purposes and practices needs reconfiguring to make sense of the contemporary time".

These changes in adult education affect both individuals and organisations, which are challenged to become flexible so that they can participate in the process of change (Edwards 1999). The concept of flexibility in offering adult education has become crucial, especially in Australia, where the concept of open distance learning was considered problematic as a result of significant factors such as:

- Increased number of students,
- Shortage of academic staff,
- Pressure to serve industry (Edwards 1999:40).

This has led to the offering of education and training in workplaces (Edwards 1999). Stock (1996:11) observes that during these changes in adult education and training, education "... by and for workers was seen as a major engine for political and social change... [and]... work was part of social transformation". Stock (1996) further explains that adult education was not only a matter of making up for deficits such as inadequate educational resources in the wider society, but the desire was to make learning part of the process of social change. These trends in adult education have had an increasing impact on environmental educational processes (Lotz, 1999). Lotz (1999) further notes that changes in adult education have occurred alongside a broad levelling of the power gradient in society in a democratisation of institutional contexts. The use of adult *learning* and not adult *education* indicates the wide array of possibilities for learning among adults as it "de-emphasises traditional institutional framings of adult education" (Lotz, 1999:57; Usher *et al.* 1997:2,111). Usher *et al.* (1997:2) further argue that:

Adult learning is now beginning to signify learning which may be inside or outside educational institutions but not within that project and not necessarily bounded by what educators would define as appropriate and worthwhile.

Lotz (1999) questions the power of the educator to define what constitutes worthwhile knowledge and what matters as learning in the context of these changes in education and training. She further argues that in the context of environmental education and training, education seems most usefully viewed as engaging in “processes of contextual deliberation in and around developing patterns of socio-historical interaction and emerging risks” (*ibid*: 57). Many of the above developments relating to changes in the context of adult education have been taken up in educational reform processes most notably standards-based reform, which I discuss below.

2.6 Trends in education and training (standards-based reform)

Kraak (1999) notes that transformation in education and training takes the form of developing national standards, being articulated as ‘competences’. These are commonly known as ‘competence-based’ systems of education and training. This new approach has been regarded as narrowly conceived, because it defines competence in terms of individuals attaining discrete units of competences (*ibid*). Kraak (1999:52) notes that broad competences “... are those skills which prepare workers to face the challenges posed by the new global economic context”. He argues that competences should enable individuals to adapt “in the face of change ... and participate in the management of work roles and production systems and flexible responses to new demands” (*ibid*: 52). This seems significant in the context of this study, where I consider existing competences of municipal employees at different levels in order to build capacity for flexible and responsive environmental management in Makana Municipality.

Usher and Edwards (1994:106) further recommend competences that take account of “skills, knowledge and understanding” that relate to performance at the work place. However, in the South African context, the shift that has taken place in ANC policy thinking was from “scepticism and eventually, rejection of competence models in the

early 1990's, to embracing of an outcome approach" (Kraak, 1999:52). The most recent broadening initiative consists of a return to the term 'competence' with the development of the idea of 'applied competence', which I discuss below.

2.6.1 Applied competences and environmental management in education and training

Applied competence, according to Kraak (1999:52) involves a combination of:

- Practical competence: our demonstrated ability to perform a set of tasks;
- Foundational competences: our demonstrated understanding of what we or others are doing and why;
- Reflexive competence: our demonstrated ability to integrate or connect our performances with our understanding of those performances so that we learn from our actions and are able to adapt to changes and unforeseen circumstances.

A recent study in South Africa has revealed seven categories of competences for environmental management namely; environmental; educational and training; management/planning/administrative; legislative; communication; social justice and ethical and finally; monitoring (DEAT, 2004b). These competences could be understood in terms of practical, foundational and reflexive abilities. Some examples of foundational competences amongst environmental managers include:

- Environmental competences (practice of ecological sustainability)
- Education and training (knowledge and capacity building)
- Social justice and ethical competence (community participation and job creation)
- Management /planning (project management skills and IDP formulation)
- Legislative (implications of implementation of required acts e.g. NEMA)
- Communications (skills leading to the strengthening of interdepartmental and public communication) (DEAT 2004b:22)

While practical competences are based on skills, the foundational competences require managers to have in-depth knowledge and an understanding of why they should manage the environment. Reflexive competences requires managers to "... critically reflect on their work and seek to strengthen their practice in order to adapt to change in context which is in line with contemporary management theory" (DEAT, 2004b:23). The development of applied competence is important in this study, as it may enable municipal employees to respond more effectively to environmental management issues and risks, as articulated in the intentions of the LEAP. The focus on applied competence is part of the changing context of education and training in South Africa. I will now discuss this in some detail, to provide further background to the competence discussions in South Africa.

2.7. Changing context of education and training in South Africa

Christie (1997:111) observes that the White Paper on Education and Training (DOE,1995) commits itself to an integrated approach to education and training. This offers guidelines to post-apartheid systems of education (*ibid*). Christie (1997:115) further notes that integration and the relationship between education and the work force is of current concern in South Africa. South Africas Qualifications Authority (SAQA) provides a framework for training reforms (Kraak, 1999:35; Christie 1997:11). It is further stated that "the end of apartheid, combined with the opening up of the South African economy has resulted in radical shifts in workplace practices, organisational structures and cultural attitudes" (DoL 2001a:30), which has implications for education and training reforms.

In recognition of this changed reality, the South African government passed the South African Qualifications Authority Act in 1995, which introduced the South African National Qualifications Framework (NQF) (DoL 2001a:30). The NQF provides learning opportunities regardless of age, circumstances and the level of education and training one may have (Department of Education, 1995:6). The NQF consists of different levels which cover all the many possible learning and career paths (DoL

2001b:20). Table 2 below shows the qualification levels and bands as found in the South African NQF:

Table 2: Illustration of the qualification levels and bands, as found in South Africa NQF (Source: Department of Labour, 2001)

NQF Level		Band			
8	Higher education and training	Post-doctoral research degree		Universities	
		Doctorates		Technikons	
7		Masters Degree		Colleges	
		Professional qualifications			
6		Honours degrees			
		National First Degree			
5		Higher Diplomas			
		National Diplomas			
		National Certificates			
Further Education and Training Certificates					
4	FET	School /	Private schools	Technical, community some police, some nursing, private colleges	RDP and labour market schemes, unions, workplaces, etc.
3		College /	Government		
2		trade certificate	Schools		
General Education and Training Certificate					
1	Std.7/ grade 9 (10 years)	ABET level 4	Formal schools Urban, rural, farm, special school	Occupation, work-based training, RDP, labour market schemes, upliftment programmes, community programmes	NGOs, churches, night schools, private ABET programmes, unions, workplaces, etc.

In support of life-long learning, the NQF recommends seven critical cross-field⁷ outcomes for education and training. These critical cross-field outcomes are: identifying and solving problems, working with other people, communicating well, using science and technology and being aware of their effect on people and the environment, organising and managing yourself, collecting and analysing information and realising that we are part of a bigger society and world. (DoL, 2001b:21). In order to achieve these cross-field outcomes, the NQF provides for Standards⁸-Generating

⁷ Critical cross-field outcomes: General skills which all qualifications and standards should promote.

⁸ Standard: A detailed description of what a person must know. Also used to test people who want to start a learning programme, or want to get a qualification.

Bodies⁹ (SGB) who agree on learning outcomes and unit standards and then send them to the National Standards Body¹⁰ (NSB) which registers them on NQF (DoL, 2001b:21). The NSBs are organised around twelve fields, each covering a different area of learning (*ibid*). For example NSB (05) focuses on education, training and development practice and adult education is a sub-field of NSB (05) (Government Gazette, 1998:6). The SGB for environmental education is under the NSB (05) and has developed standards and qualifications which should incorporate environmental education processes in different work contexts, such as industry (Raven, 2003). The development of the Environmental Standards Generating Initiative resulted in the establishment of a number of SGB's such as Environmental Management in NSB (10) (physical science, mathematics, computer and life science) and Environmental Health in NSB (09) (Health Science and Social Services) (Raven, 2003:36). According to Raven (2003:37) these standard setting processes in the NQF provide opportunities for accreditation¹¹. She further argues that the challenge for the SGB for environmental education was to come up with national standards which enable learning processes to meet social changes (*ibid*: 37).

While the focus in the SAQA Act is on the quality of learning, the Skills Development Act focuses on structuring of training, accessing funding and creating new forms of learning programmes for existing and new jobs (DoL, 2001). These learning programmes, which take the form of learnerships and skills development programmes, should fit in the NQF (*ibid*: 26). However, in order to implement the learnership and skills programmes in the work place, the specific Sector Education and Training Authorities (SETAs) have to find out what training is required in a sector. The SETA of interest to this study will be the Local Government Water and Related Services SETA which I discuss below.

⁹ Standard Generating Body: A body which designs the qualifications and standards in a sub-area of learning and reports to the national standard body.

¹⁰ National Standard Body: A body that advises SAQA about registration of qualifications and standards in learning areas.

¹¹ Accreditation: Approval of training within South Africa's NQF.

2.7.1 Current issues in Local Governance

The Local Government Water and Related Services SETA (LGWSETA)'s major stakeholder employers in the sector are the South African Local Government Association (SALGA) and the South African Association of Water Board (SAAWB) DoL (2001c:33). The major employees are all affiliated to the Independent Municipal and Allied Trade Union (IMATU) and the South African Municipal Workers Union (SAMWU) (*ibid*: 33). A study on how SETAs should consider environmental education in their learnerships was conducted by Griffin (2003:53). He undertook research to explore whether the learnership systems in South Africa reflect the government's education and training goals and objectives. His research found "lack of environmental qualifications below the Higher Education and Training band of the NQF" (Griffin 2003:53). He recommends that SETAs "take these findings as a baseline for their own research in order to establish their own policies and develop effective environmental outcomes in their own learnership" (Griffin (2003:61).

A follow-up study by (DEAT, 2004a:14) which involved, amongst other SETAs, the LGWSETA, recommends that this SETA provide training for waste and water management sectors and environment functions of local government officials. Other recommendations include:

- Understanding recent amendments to NEMA, such as appointment of environmental inspectors, which would require training for Municipal officials to implement the legislation,
- Critical analysis of the Water Act (No. 36 of 1998) to ensure that capacity is built within local government for water resource management and service delivery, and
- Understanding of the Local Government: Municipal Systems Act (No. 32, 2000) and Local Government: Municipal Systems Act (No 44, 2003) to empower the poor and to develop a harmonious relationship between communities and their environment (DEAT 2004a:18).

An understanding of the role of the LGWSETA is important in this study, as it is the SETA responsible for funding and planning skills development and learnership programmes in Local Municipalities. As noted earlier, this study aims to explore the environmental education and training needs for Municipal employees in order to address the environmental management issues in Makana Municipality.

2.8 Conclusion

In this chapter, I provided an overview of the changes in adult education and training as a result of changes in work and society due to globalisation. These changes have had an impact both in formal and informal sectors. South Africa has been affected by these changes and through the NQF and SAQA, has integrated education and training in order to effectively respond to the emerging issues. The emerging issues and risks resulting from the impact of globalisation have received international, regional and national responses. Environmental education and training has been seen as an agent of change in responding to environmental management issues. The formation of the Makana LEAP is seen as a way to respond to environmental issues at the local levels. These contextual factors influenced the choice of the research question and goals, which I present in the following chapter.

Chapter Three

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, I present the choice of the research design and an overview of how the research was conducted. I present data collecting tools that enabled me to generate data to answer the research question. The data collecting tools included questionnaires, document analysis, focus group discussions, and individual interviews. I further discuss the ethics and trustworthiness and explain how this study dealt with issues of validity and triangulation. This will lead into how the data was analysed to come up with the first layer of categories and subcategories, which guided presentation of the findings in chapters 4 and 5 and a second layer of categories and subcategories, which guided further discussion of the findings in chapter 6.

3.2 Research orientation

This research is designed as an interpretivist case study. I have decided to work within this orientation in order to understand the environmental management issues as perceived by Makana Municipality officials and employees. Janse van Rensburg (2001:16) notes that an interpretivist researcher is “interested in the meaning that people make of the phenomena”. Terre-Blanche and Durrheim (1999) also argue that the meaning of human creation, words, actions and experiences can only be ascertained in relation to the context in which they occur. Connole (1998) further notes that an interpretive orientation allows an understanding of what is going on, at least in the first instance, through active involvement in the process of negotiated meaning. She further argues that, through this orientation, the researcher can easily identify patterns of meaning which emerge.

By working in this orientation, I was able to work with individuals and groups of employees in Makana Municipality to generate data on learner profiles, environmental

management issues and environmental education and training needs, which could inform the environmental education and training strategy.

3.3 Case study method

As indicated above, this research takes the form of an interpretive case study. Patton (2001) observes that case studies become particularly useful where one needs to understand a particular group of people, particular problem or unique situation in great depth. He further explains that a qualitative case study not only seeks to describe units in depth, but brings out the issue of context and history of the particular issue under investigation. Janse van Rensburg (2001:16) further notes that

A researcher can take a close look at individuals or small groups in naturalistic settings, using in-depth case studies, often involving just a single case ... [and] would look for rich, detailed information of a qualitative nature through in-depth interviews or interpretation of documents.

As this study aims to establish what education and training is needed by municipal employees to address environmental management, knowledge of context and history of these issues is vital to inform the training strategy. Bassey (1999:30) also notes that the case study is given, within which issues are indicated, discovered or studied so that a tolerably full understanding is possible. He further argues that:

For the case study this is particularly important in that sufficient data is collected for the researcher to be able to explore significant features of the case [and] that another essential feature is that the study is conducted mainly in its natural context (*ibid*:44).

Stake (1995) further notes that a case study enables collection of information that is specific to the particular case and that the idea of a case study is to understand the particular case under study. Yin (1989: 13) also observes that a case study “investigates a contemporary phenomenon within its real-life context”. Merriam (1998:19) further notes that a case study provides in-depth understanding using intensive descriptions and analysis.

I decided to conduct a case study for Makana Municipality because I wanted to get an in-depth view of environmental management issues, organizational needs and policies relevant to environmental issues in the local municipality. Makana municipality was a convenient case study site for me as it is near Rhodes University, where I am a student. The sample of respondents I worked with consisted of senior and middle management officials who understood Makana Municipality in terms of policies and organisational needs. The management also needed to understand and be committed to any proposed training. The sample incorporated some technicians/professionals and some workers. The sample further included some councillors, who provided their perspective on environmental management issues of immediate concern in Makana Municipality.

To begin with, I gave all respondents questionnaires to establish learner profiles, perceptions of environmental management issues and organisational needs. A follow-up focus group discussion was held and one-to-one interviews were used to generate rich data for the case. I selected a sample of individuals to work with in the case study through making contact with the management of Makana Municipality. I used local newspaper articles as data sources to inform me of community perceptions of environmental management issues in the Makana Municipality. The data collecting techniques are presented in more detail below.

3.4 Questionnaires

I used semi-structured questionnaires (see appendix A) to generate data with management staff, middle management and workers. The questionnaire contained open-ended and closed questions. Cohen *et al* (2000:248) argue that "... a semi-structured questionnaire sets the agenda but does not presuppose the nature of the response". I used semi-structured questionnaires because I wanted to get a variety of responses that would establish a basis for the next data generating process. Terre-Blanche and Durrheim (1999) note that open-ended questions allow respondents to communicate their experiences or opinions and closed questions ensure a standard

response. As it was my wish to generate rich data for conducting a case study, I included a number of open-ended questions.

Process of drafting the questionnaire

The process of drafting questionnaires was a challenging one, as I needed to take the research questions into account when planning the question. Cohen *et al* (2000:260) also note that the practical implications of designing a questionnaire include the following:

- Ensuring that the data acquired will answer the research question
- Piloting the questionnaire with a sample group who will not receive the final refined version.

Since the questionnaire was to be distributed to all levels of the Makana Municipality, I had to use English and IsiXhosa for the lower level employees (see appendix B for samples of questionnaires in IsiXhosa). I don't understand the IsiXhosa language and I had to rely on the assistance of a local person who did the translations of the questionnaires into IsiXhosa from English and *vice-versa*.

The focus of the questionnaires was on demographic data and the academic and professional qualifications of the respondents. The questionnaires also focused on environmental management issues that employees perceived to be of immediate concern, possible causes of issues, impacts and areas that were most affected.

The questionnaire also sought information on how the Municipality was addressing these environmental management issues and the limitations they faced. This was to enable me to recommend a training strategy which was within the Makana resources. This information enabled me to check the feasibility of the training strategy. Feasibility focuses on whether the goals can be realised when barriers do exist within the Municipality, such as shortage of funds, language difficulties, lack of departmental coordination and so forth.

The respondents were required to provide information on what type of training they required in order to respond effectively to the environmental issues listed, and also how long the training should be. They were also to indicate where training could take place. This was to provide guidance on the timing of any Environmental Education and Training strategy. Timing is important in any training strategy, as it ensures meeting of needs with minimum delay. This information would also provide insights into how the respondents would be trained by the provider. The questionnaires were structured to allow respondents to bring their own experiences into the recommendations for the training strategy. The questionnaires had a covering page, explaining the purpose of the research and its relevance to Makana Municipality employees (see appendix A). There was also a covering letter from my supervisor, explaining who I was and the purpose of the research (see appendix C). This was to ensure that respondents were clear as to what was being required of them and to weed out false expectations associated with the training needs analysis.

Pilot Testing

Pilot testing is crucial. Cohen *et al.* (2000) observe that the benefits of piloting include increased reliability, validity and practicability of the questionnaire. Pilot testing, according to Cohen *et al.* (2000:260) serves:

- To check the clarity of the questionnaire items, instructions and layout,
- To identify commonly misunderstood or non-completed items, and
- To try out the coding/classification system for data analysis.

I selected two questionnaires in English and two in IsiXhosa for the purpose of pilot testing. On the sixth of May, 2004, with the help of the research assistant, we administered the first two questionnaires in the morning to one middle management member (code QA2) and one professional from the Directorate of Community and Social Services (code QB5). The reason for selecting management and professional staff was to check whether the questions were addressing the issues, as recommended by Cohen *et al.*, (2000) above.

The other two pilot questionnaires in IsiXhosa were administered in the afternoon by the research assistant John (pseudonym). They were completed in IsiXhosa and these respondents were from the Department of Community and Social Services, specifically from the Parks and Recreation section (coded Q B) (see appendix C for the pilot questionnaire).

After administering of the pilot questionnaires, there were some changes that were made (see appendix C). I agree with Cohen *et al.* (2000) who said that pilot testing helps in checking the clarity of questionnaires and also to check commonly misunderstood items in the questionnaires. The questionnaire had five major changes that arose from the respondent's feedback and these were;

- (i) The word Makana "**District**" Municipality on the title of the research paper was changed to Makana '**Local**' Municipality, as the respondent indicated that Makana Municipality was not yet a District;
- (ii) There was a suggestion that the word '**academic qualification**' be removed, as it was misleading and would affect the follow-up question items;
- (iii) The word '**kind of training**' should include the alternative word '**qualification**', since training alone was not, to the respondent, explicitly taking into account the practical training and theoretical aspect;
- (iv) The column for '**certificate obtained**' should include other words like '**Degree**' / '**Diploma**'
- (v) The word '**prevalent**' should be replaced with '**predominant**' in areas most affected by environmental issues.

These changes were considered and the final copies were drafted in both English and IsiXhosa to accommodate lower level employees in Makana municipality. There were some employees who spoke Afrikaans, but I was advised that the two languages chosen would serve the purpose.

Administering the refined version of questionnaires

The final version of the questionnaires (see appendix A) was drafted in English and IsiXhosa. The questionnaires were given codes on the basis of the Departments. The Department of Infrastructure and Technical services was assigned 'A', the Department of Community and Social services 'B', the Department of Corporate 'C' and Department of Finance 'D'. The councillors were assigned the code 'E'. Questionnaires are therefore coded¹² QA, QB, QC, QD and QE.

With the help of the Section Heads and Directors, I was allocated a sample of respondents that would at least represent all levels of employees in the Makana Municipality. Having identified the sample, I decided to deliver the questionnaires by hand. The reason for this was that I was aware of what Cohen *et al*, (2000) mention about the disadvantages of mailing the questionnaires, as the return is often low. I was also worried that time was limited for data generation. The respondents were given one or two days to complete the questionnaires, as they all stayed within Makana Municipality. This strategy worked well.

I handed 11 questionnaires to top and middle management. All 11 questionnaires were returned, as I kept on reminding them to return the questionnaires on a daily basis. I sent four questionnaires to professionals and technicians and three of these were returned. One respondent was reported to have gone out of town for official duty. I sent one questionnaire to the councillor, who is the Chairperson of the Environment, Disaster Management and Heritage portfolio. I further distributed two more questionnaires when I attended a meeting on community-based programmes for ward councillors on 17/05/2004. All questionnaires from all three councillors were returned. I handed out four questionnaires to the workers, who included foremen/supervisors and workers. One respondent completed the questionnaire in IsiXhosa and three completed it in English. All four questionnaires were collected.

¹² Coding of questionnaires was done on departments by assigning letters of alphabet to ensure that every department was represented and the codes are: QA stands for questionnaires assigned to department of Infrastructure and Technical Services; QB stands for questionnaires assigned to department of Community and Social Services; QC for questionnaires assigned to Corporate department; QD for questionnaires assigned to Finance department and QE for questionnaires assigned to the councillors.

The questionnaires generated data on the workers' experiences and current levels of education and training relevant to environmental management issues. The data generated informed the next stage of the research – the focus group discussions. The questionnaires, though difficult to design, generated a lot of data. The semi-structured questionnaires also allowed respondents to write 'rich', detailed information, which was useful in understanding the phenomenon under investigation.

3.5 Document analysis

Document analyses in this study largely consisted of a review of the local newspaper articles *The Grocott's Mail* from 2003 to 2004, and the *Herald*, the minutes of the Environment, Disaster Management and Heritage Portfolio Committee, the Executive Mayor's minutes, and the Makana skills audit report (2003-2004). I followed the arguments put forward by Terre-Blanche and Durrheim (1999) that interpretive analysis sometimes makes use of documentary sources such as letters, newspaper articles, official documents and books.

As an outsider in the Makana Municipality, I used documents as a way of opening a path of inquiry. Patton (2001) observes that documents prove valuable, not only because of what can be learned directly from them, but also as stimulus for a path of inquiry. He further notes that documents could help with:

- Description of the social environment,
- Capturing historical perspectives,
- Commenting on what does not happen (Patton 2001:302).

I wanted to capture the historical perspective of Makana Municipality in terms of the social environment and to establish what the public perceived to be environmental management issues in Makana Municipality. However, I was aware of Patton's warning that it would be difficult to:

- Get access to some important documents;
- Understand how and why the documents were produced;

- Determine the accuracy of documents (Patton 2001:498-499).

The choice of using local newspaper articles from the *Grocott's Mail* is supported by Merriam (2001:212) who notes that:

Primary sources are those [documents] in which the originator ... is recounting the first hand experience with phenomenon of interest and that best primary sources are those recorded closest in time and place to the phenomenon by a qualified person.

The choice of reviewing the minutes of council meetings is supported by Patton (2001:498-499), who observes that: "qualitative researchers are uniquely positioned to study those texts by analysing the practical social contexts of everyday life within which they are constructed and used". This assisted me in understanding what debates had been taking place in the Makana Municipality on environmental issues, as well as how such debates had been resolved.

The choice of reviewing the *Herald*, a newspaper that covers issues of the Eastern Cape, was due to the contention that the local newspaper articles might not have been very accurate, since Rhodes University Journalism students, not professional journalists, were involved in writing these articles. The *Herald* newspaper acted as a check and balance tool to the *Grocott's Mail*.

Conducting document analysis

I collected newspaper articles of issues from the local newspaper, *Grocott's Mail*, dating from January 2003 to June 2004. I also read issues of the *Herald* whenever I went to buy the *Grocott's Mail* and collected relevant articles. The major environmental management themes were recorded and frequencies were kept. The themes were coded D/EM (Document analysis environmental management issue). This method was in process during development of an earlier contextual profile (see Hamaamba, 2004).

The Environmental Portfolio Committee made recommendations to the Executive Mayor's meetings, which in turn made resolutions and policies. This provided more

information on how the municipality tackled environmental issues. The skills audit document provided information on what training programmes were planned for the next financial year.

The strength of this method is that there is accuracy in terms of location of the issues being reported and dates are kept for further enquiry. Terre-Blanche and Durrheim (1999:177) further observe that:

Newspaper articles can be written to publicise research findings or to stimulate public debate and can play an important role in lobbying for change or sensitising the public to the crucial issue.

In line with this quotation, most of the articles on various issues appeared to have attracted the attention of the sample of municipal employees selected for this case study, which further supported the choice to use document analysis.

3.6 Focus group interview

I undertook a focus group interview on the 25th June 2004 as one method to generate data from Makana Municipal employees. A focus group, as Terre-Blanche and Durrheim (1999:388) note, is typically a group of people who share a similar type of experience but are not ‘naturally’ constituted as an existing social group. Makana Municipality employees were drawn to the focus group because they shared similar experiences. A focus group should consist of a small group of people for easy management (Patton, 1990:335). The focus group as a method in this study was applied as a special kind of interview which was ‘largely non quantitative’ (Neuman 2000:274). Terre-Blanche and Durrheim (1999:388) further observe that we, as researchers, can “gain access to intersubjective experiences [that are] shared by a community of people”.

Conducting the focus group interviews

I selected different participants from the level of the middle management, superintendents, foremen, professionals and the lower level of the Makana municipality and invited them to the focus group discussions (see appendix F for sample of invitation letter). This was to ensure that interaction amongst participants enhanced data quality and provided checks and balances, which weeded out false or extreme views, as recommended by Patton (2001). The selection was made possible by the help I received from the top and middle management

This stage was crucial for me, as I used the focus group as an opportunity to triangulate the data from document analysis and questionnaires, as Cohen *et al.* (2000:288) recommends. I used this method for prioritising the environmental management issues generated from the questionnaires. This was to enable me to get 'high quality data in a social context where people can consider their own views in the context of the views of the others' as noted in Patton (1990:335). The group consisted of a total of ten members from the following sections of the Makana Municipality: Fire:1, Primary Health Care:1, Water Works:1, Storm Water:2, Parks and Recreation:2, Sewerage Reticulation:1, Finance:1 and Environmental Health and Cleansing: 1.

I trained two facilitators from the LEAP team to help me take notes and take down whatever was being said. I decided not to record the interviews, because some junior employees were reticent about speaking in the presence of supervisors. One member was my research assistant, who helped to translate into and from IsiXhosa when required. Two other members were from the LEAP team and this brought the total number to 15 participants.

The group was divided into two smaller groups of seven and eight members to make it easier to manage. Patton (1990:335) and Neuman (2000:274) advise that the focus group should consist of at least six people for easy management. The focus group started by prioritising the environmental management issues that came out from the questionnaires and members provided more information regarding the prioritised

issues. The coding for the focus group environmental issues is (FG1) for group 1 and (FG2) for group 2.

During the focus group discussion, I took some photographs, which show two different groups involved in the prioritisation of environmental management issues in Makana Municipality. Figure 2 shows focus group 1 and Figure 3 shows focus group 2.



Figure 2: Focus (Group 1).



Figure 3: Focus group (Group 2).

The other focus point of the discussion was on the training needs in the Makana Municipality. The generated themes on training needs from the focus group were coded 'focus group training needs' (FG1/TN; FG2/TN). The strength of this method was that I was able to get rich data on descriptions of environmental issues and training needs as people narrated their experiences.

3.7 Interviews

I used interviews to generate data with top management and councillors to get their perspectives on the proposed environmental education and training strategy in the Makana Municipality. Cohen *et al* (2000) note that interviews allow for great in-depth analysis. It was my intention to get more detailed information on some environmental issues, the learner profiles and the organisational needs of Makana municipality. The

focus group revealed that the approval of the Management for any 'training strategy' appeared to be important and I therefore felt that these interviews would provide more depth and substance.

Conducting the interviews

I prepared the interview schedule, drawing on insights emerging from the data collecting techniques mentioned above. I secured an appointment to interview two directors from the following directorates: Community and Social Services and Technical and Infrastructure Services, as well as one Councillor from the Environmental, Disaster Management and Heritage portfolio.

I conducted an interview with the Director of Community and Social Services, Madlavu, B on 3rd June 2004. The interview with the Director of Technical and Infrastructure Services, Tshungu, M took place on the 31st May 2004. I specifically chose the two directors because they are the ones who were most affected by, and charged with, environmental management responsibilities in Makana Municipality. The interview with Councillor Wells, J was on the 2nd June 2004. The councillor was selected because she chairs the Environmental, Disaster Management & Heritage Committee and she is also a member of the Finance and Delivery Committee in the Makana Municipality. The actual names of interviewees were used as they did not object in having their names in this study.

I originally intended to interview four directors and six middle managers. I could not do that because, at this stage, I had already generated enough data. There was also some contention from the Makana Municipality management that they had supplied adequate information in the questionnaires and in the focus group discussion conducted previously. They did not feel that an additional interview was necessary.

Transcribing

The process of transcribing after interviews is crucial, as Cohen *et al* (2000:281) note that there is a "danger of loss of information, distortion and the reduction of complexity". I transcribed the three interviews and let the interviewees have an opportunity to check whether what they said was quoted within the stated context. A

sample of the transcribed interview with the Director of Technical and Infrastructure is contained in Appendix D and the interview with the councillor is contained in Appendix E.

3.8 Validity in the case study

In order to ensure validity and trustworthiness I have used Lincoln and Guba (1985:374), who note that:

Completion of the draft case provides a final opportunity to test the credibility of the inquiry report as a whole with respondents at the case site. The purpose is to check accuracy but also provide evidence of credibility - the trustworthiness.

In compliance with the above, I presented the findings to the stakeholders and Municipal officials in the form of the draft environmental education and training strategy. This provided an opportunity for respondents to check the accuracy of the study. I also did member-checking to ensure what Lather (1986) refers to as 'face validity'. I sent the draft of this document to interviewees for them to check the accuracy of the quotes. The Director of Technical and Infrastructure acknowledged that information was correctly quoted and used in the document (see appendix F). The Director of Community and Social Services acknowledged that data was correctly quoted and used (see appendix G). The councillor made some corrections to some of the quotes (see appendix H).

The preliminary findings in this study were also used to inform a contextual profiling process in learnerships and skills programmes for environment and sustainability education and training in local and provincial government (November, 2004) and also to inform the LEAP implementation plan. This, according to Lather (1986), is an instance of catalytic validity, where the research helps practice, or is used for further studies, or re-orientation of another study. This study further used triangulation to ensure validity through the use of multiple sources of data, including collection of questionnaires, document analysis, focus group discussions and interviews (Arksey and Knight 1999). This study further collected rich data and has provided thick description (Maxwell, 1996:95).

3.9 Ethics in interpretive case study research

Bassey (1999) notes that a researcher needs to respect the origin of data and ensure the dignity and privacy of the respondent. Cohen *et al* (2000) further argue that one needs to consider confidentiality, anonymity, non-identifiability and non-traceability when conducting interviews. Kelman (1982 cited in Merriam 2001) observes that serious ethical problems arise only when respondents agree to provide information for a stated purpose and the data are used for a clearly different purpose.

In this study, the questionnaires that I sent to the participants had a cover explaining the purpose of the research (see appendix C). During focus group sessions, clear explanations were given before commencing the discussions. In terms of newspaper articles used for this study, I obtained written permission from the editor of the *Grocott's Mail* to allow me to use newspaper articles for this research (see appendix I). This letter also explained how the paper should be quoted and that I should use pseudonyms on issues that involved individuals.

3.10 Data Analysis

Glaser and Strauss (1967) suggest a method in qualitative data analysis that uses an analytical procedure of constant comparison. I used an explicit coding procedure to code the raw data generated by the four different methods above, while data was being generated.

The use of constant comparison enabled me to identify themes and sub themes. Glaser and Strauss (1967) explain that with constant comparison, each stage informs the successive stage until the analysis is terminated. This approach to analysis enabled me to come up with the categories and subcategories used to guide the reporting of findings in Chapters Four and Five. Table 3 shows a summary of the categories and subcategories of the environmental management issues and risks, learner profiles,

organizational needs and structuring of training identified through the process of constant comparison.

Table 3: summary of categories and subcategories for the first layer analysis

Categories		Subcategories
Environmental management issues	Sanitation management	<ul style="list-style-type: none"> • Lack of water-borne sewer systems • Lack of public toilets • Sewer blockages • Responses to sanitation issues
	Solid waste management	<ul style="list-style-type: none"> • Illegal dumping • Responses to solid waste management issues
	Livestock management	<ul style="list-style-type: none"> • Increase in livestock ownership • Stray animals in town • Levies and community disruption • Responses to livestock management issues
	Fire	<ul style="list-style-type: none"> • Capacity to respond to fire
Learner profile		<ul style="list-style-type: none"> • Age • Years of service • Academic and professional qualification
Organizational needs		<ul style="list-style-type: none"> • Improved environmental management capacity • Improved capacity for community interaction • Improved management capacity • Community and political awareness
Structuring of training		<ul style="list-style-type: none"> • Structuring of training at different levels • Medium of instruction • Training Venues • Conclusion

A second layer analysis involved a synthesis of the main findings (presented in Chapter Four and Five) and development of further categories and subcategories. This enabled me to discuss the implications of the main findings in depth, bringing about new insights. This layer also enabled me to come up with recommendations. Table 4 below shows a summary of these categories and sub-categories.

Table 4: Categories and subcategories for the second layer analysis

Categories	Subcategories
Education and training and change competences	<ul style="list-style-type: none"> • Ability to respond to change • Ability to respond to complex issues in context • Legal compliance competences
Education and training and technical competences	<ul style="list-style-type: none"> • Planning competences • Project management competences • Financial skills
Education and training and Social aspects of education	<ul style="list-style-type: none"> • Communication competences • Social justice competences

3.11 Reflection on the methods used in this study

I experienced some limitations in using each of my data collecting techniques during this case study. As a new researcher I was posed with many challenges in handling these methods.

The problem I experienced with questionnaires is that some people didn't have time to sit and complete the question items, due to busy work schedules. Some respondents did not explain exactly what they meant and it was difficult to follow up with each respondent to get clarity. Some respondents assumed the researcher knew about the problem and they didn't see any need to explain the details.

The weakness I found with analysis of the newspaper articles was that they could not be used to generate data that related to demographics: some names that were used may have been fictitious, due to ethical issues. The events may also have been accompanied by pictures that may not necessarily have been linked to the events, but were just added to illustrate the issues being reported.

The weakness I found in focus groups was that the senior members tended to dominate the discussion, but had less practical knowledge concerning what was happening on the ground. This method appears to have limitations in exploring

training needs, as the decisions concerning who was sent for training lay with the top and middle management. However, it is a very useful method to use in investigating environmental management issues.

The difficulty I found in interviews was that transcribing was extremely time-consuming. Some of the interviewees talked till all the cassettes were filled on both sides and it was difficult to interrupt them. I struggled to understand what was being said, as some interviewees used some vernacular.

3.12 Conclusion

In this chapter I discussed how the research orientation influenced the choice of methods used in this study. I discussed each of the data collecting tools (questionnaires, documents analysis, focus groups discussion and interviews) and how they enabled me to answer the research question. I also discussed the difficulties I experienced in using these methods.

I discussed face validity, catalytic validity, and triangulation and thick description, which were employed in this study to ensure validity and trustworthiness. I further discussed how I respected the origin of data sources in this study to ensure ethical research methods.

I discussed how the data generated from the tools was analysed to provide a first layer of interpretations and how the categories and subcategories were used to guide reporting of findings in Chapter Four and Five. A second layer of data analysis provided new insights, based on the first layer of analysis, and these categories and subcategories guided a further interpretation of the findings, as reported in Chapter Six.

Chapter Four

FINDINGS ON THE ENVIRONMENTAL MANAGEMENT ISSUES AND RISKS IN MAKANA MUNICIPALITY

4.1 Introduction

In this chapter, I present findings related to the environmental management issues identified as priority issues by Makana municipal employees. These include sanitation, solid waste, livestock and fire management. I also provide insights into the responses to these issues in the Makana Municipality context. I begin by indicating how these priority issues were established, and then I discuss each issue in some detail. The purpose of this discussion is to provide insights into the issues and challenges faced by municipal employees, in order to consider how environmental education and training strategy may assist these employees to respond. The preliminary analysis of the environmental management in the questionnaires issues, as perceived by the Makana Municipality employees, is shown in Table 5.

Table 5: Summary of environmental management issue and risks

Environmental issue	Frequency	Percentage (%)
Sanitation	12	46
Waste	7	27
Livestock	5	19
Fire	1	4
Urban greening	1	4

Document analysis of local newspaper articles from the *Grocott's Mail* and the *Herald* are shown in Table 6.

Table 6: Environmental issues from the Grocott's Mail and the Herald

Herald mail	Frequency	Grocott's mail	Frequency	Total
Sanitation	None	Sanitation	19	19
Waste	1	Waste	8	9
Livestock	None	Livestock	7	7
Fire	None	Fire	2	2

The analysis of environmental management issues and risks, as prioritised by two focus groups (FG1 and FG2) is shown in Table 7.

Table 7: Prioritised environmental management issues and risks

FG1	FG2
Sanitation	Sanitation
Waste	Waste
Livestock	Livestock
	Fire

There appears to be consensus that issues of sanitation, waste, livestock and fire management are priority issues as shown above. I now discuss each of these issues in detail.

4.2. Sanitation

According to the Makana LEAP Waste Management Project Proposal Implementation Plan, sanitation issues can be divided into the following categories; flushing toilets to septic tanks, flushing toilets to sewers, ventilated pit latrines, pit latrines, chemical toilets, bucket latrines and no access (ARC 2004d). In the past, poor sewage treatment, or lack thereof, has caused problems in farming communities and has affected river health. For example, the citrus farming community downstream of Grahamstown was decimated due to the poor water quality in the past (ARC, 2004d). In this study, the main concerns associated with sanitation were identified as a lack of

Grahamstown was decimated due to the poor water quality in the past (ARC, 2004d). In this study, the main concerns associated with sanitation were identified as a lack of water-borne sewer systems in some townships and informal settlements, a lack of public toilets and, finally, sewer blockages. I will also present the responses to these issues. I now discuss the lack of water-borne sewer systems in Makana Municipality.

4.2.1 Lack of water-borne sewer systems

According to the Makana LEAP Waste Project Proposal Implementation Plan, the current levels of sanitation provision in Makana Municipality stand at: flush toilet connected to sewerage systems: 34%; flush toilet with septic tanks: 3%; pit latrine with ventilation: 8%; pit latrine without ventilation: 14%; bucket latrine: 30%; chemical latrine: 0.2%; and those without any sanitation: 12%. (ARC, 2004d).

The issue of a lack of water-borne systems in some formal and informal townships has been of concern to both the Makana Municipality and its residents. The *Grocott's Mail* (February, 25, 2003:3) reports that

In opening the Finance and Service Delivery portfolio committee meeting on 20 January, the chairperson Cllr N Kepe said that both councillors and officials had to ensure that a goal to be attained in 2002 was the eradication of the bucket system.

The article shows that the issue of the lack of water-borne sewer systems was a primary concern in Makana Municipality and the District office in Cacadu in terms of allocating some funds to eradicate the use of the bucket system in the formal townships. The *Grocott's Mail* (July 25, 2003:7) reports that:

... the Makana Municipality was investing R8 million to improve the hazardous sewerage systems in the Fingo village, Joza and Tantiyi townships... [and] ... the Cacadu district municipality and the local Department of Environmental Affairs and Agriculture had assisted the Makana Municipality in acquiring R8 million to eradicate the bucket system in Grahamstown.

The responses to the questionnaires also show that the Makana Municipality is concerned about providing proper sewer systems in formal townships. For example, respondent QA5 wrote on the questionnaire:

...the municipality is currently implementing programs on eradication of the bucket systems [and] the municipality has applied for funds from Bisho;

Human Settlement Redevelopment program, Cacadu District Municipality and currently funds have been acquired for Tentyi, Newtown, Makana Central, Extensions 2, 3, 7 and Fingo (QA5).

However, the data from questionnaires and the focus group showed that the immediate concern for the Makana Municipality appeared to be sanitation in formal townships, while the informal settlements like “Extension 4, 5, and 8” have to bear with the situation for some time. During my interview with Director Tshungu, he had this to say regarding the state of informal settlement in Makana municipality:

... informal settlements are settlements which are not formal, they are not registered and not in the plan of Director General so they cannot be catered for that is point no.1. The government came up with a system that was saying because these people might stay here for the next ten years or five, at least they have a right to clean water [and] I provide them communal taps and they must use pit latrine or bucket system or dig some hole in the yard (Tshungu, 2004, pers. Comm.).

The status of informal settlements remained a worry in terms of providing proper sewer systems in Makana Municipality. The worry about use of the bucket systems in this sector was linked to the potential health hazard to both human and other forms of life. The *Grocott's Mail* (October 28, 2003:1) reports that:

For this person the toilet is a bucket system at the back of the house. It just sits there until it is full, being consumed by disease-carrying flies and a health hazard, not just to his family, but the community at large. He waits for municipal truck to trek in with fresh ‘clean’ buckets, which he exchanges for his, full to the brim with human waste.

The concern for the use of the bucket system and its potential risk is linked to the flies that could infect foodstuffs for human consumption. The residents continue to worry about the possible health hazards of the system. The *Grocott's Mail* (April 6, 2004:3) reports:

Residents of Zolani informal settlement are alleging that toilet bucket collectors wash the buckets at communal standpipes after the night soils has been discarded into the tankers, posing health risks for residents. “I have seen them washing the buckets at the taps during summer when I get up at 4am to draw water [claimed the resident and she continued saying that] ... buckets come back with worms because they are not cleaned properly” said one resident.

The responses in the questionnaires also showed that the Makana Municipality employees were worried about the potential health hazard of the bucket systems still in place in some formal and informal systems. Respondent QA5 wrote that lack of water-borne systems:

...cause grey water which result in bad odours and huge health risk to our municipal officials or staff collecting these bucket systems and cleaning them and pollute the water down the river (QA5).

During the focus group discussions it was established that the buckets were not regularly collected. The focus groups further provided information that on weekends, when families have funerals and social functions, the buckets fill up and get emptied into storm water drains, due to the lack of adequate collection services. This human waste therefore permeates itself in the river systems of Grahamstown. The focus groups also noted that as a result of resentment of the bucket system, people tend to “use the nearby bushes and streets to relieve themselves” (FG1; FG2). Figure 4 shows a typical situation of polluted local rivers in Makana Municipality, which pose a health to hazard to nature and human life.



Figure 4: The polluted Kowie River (source: LEAP, 2004)

The pollution of rivers is a concern closely linked to the sanitation problems reported above. The *Grocott's Mail* (April 2, 2004:3) reports that:

The Kowie Catchments Campaign (KCC) was a response to the high water pollution levels in Grahamstown particularly sewerage pollution...[and]... sewerage is a local problem that will take a long time to resolve ... besides human waste, other materials found in the sewerage include oil, petrol, toxic poison – including insecticide, herbicide, paint, turpentine, soap and battery fluid etc.

The pollution caused by inadequate sewer systems appeared to be of great concern to the Makana Municipality. To get more clarity on the issue of improper ways of dealing with the human waste, I asked Director Tshungu, who said that he was concerned. He explained that he gave a final warning to a driver because he was not servicing the people appropriately and that he did not see any reason why buckets should not be cleaned and disinfected. He further explained that “we don’t want those buckets to be washed in the vehicles” (Tshungu, 2004, pers. Comm.).

I now present the issue of lack of public toilets and their implications in detail.

4.2.2 Lack of public toilets in the city centre of Grahamstown

The issue of a lack of public toilets appeared to be of concern to the residents of Makana Municipality and was linked to sanitation issues. The *Grocott's Mail* (April 30, 2003:3) reports from the executive mayor’s minutes:

That the decision by senior management to close the City Hall toilet facilities from the public and the development of new ablution facilities be approved [and] the ablution facilities in the inner city be developed to serve both residents, visitors and tourists visiting our city.

The issue of closure appears to be poorly articulated, but the Makana Municipality top management appreciated the need for the public toilet, though their discourse did not link to health hazards. The concern for visitors appears to be linked to tourism, not the potential health hazard. A year later, the *Grocott's Mail* (March 12, 2004:1) reported that:

... For the third time Makana Municipality is attempting to establish public toilets in the centre of Grahamstown... [and] ... R200 000 has been set aside

by the Municipality for the installation of the public toilets. The lack of public toilets is a problem for shoppers, tourists and businessmen.

The responses in the questionnaires showed that a lack of public toilets was also a concern to Municipal officials. One respondent, for example, wrote that “lack of public toilets cause health hazard” (QD1). During the focus group discussions, a concern was raised that a lack of public toilets in the city centre made people use some of the buildings as toilets, which may cause “health hazards to the community” (FG2).

4.2.3 Sewer blockages

Further discussions on the sanitation issue included the blockages of the sewer pipelines in Makana Municipality. The *Grocott's Mail* (May 14, 2004:7) reports that:

At about 12.30 am on May 1 the inflow of sewerage inside my house at 45 Nolifa Street woke me up. I tried to contact the police through 10111 and was referred to the fire department where a man said he would refer the matter to the relevant person. I tried whatever I could to decrease the flooding in of this sewerage which contained menstrual pads, used condoms, human faeces and other dirty stuffs ... [and] the man who was responsible for cleaning and sucking of the blockage admitted their fault...

The blockage of the pipes was also raised by some of the respondents in the questionnaire as an issue the Municipal employees faced, particularly the lower level employees. The focus group pointed out that areas most affected were in the older areas of town. The causes of the blockages, as one respondent wrote in the questionnaire, included “children throw stones in manholes, papers and roots from trees growing” (QA7). In a follow-up on the same issue during the focus group’s discussion, it was explained that this problem was also compounded by lack of education among children on the importance of the sewer lines.

4.2.4 Responses on sanitation issues

The Makana IDP draft (2004) indicates that the Makana municipality was committed to improving bulk water infrastructure in Grahamstown by eradicating the bucket

system. Some of the specific projects in the Makana IDP were to install water-borne sanitation systems in these areas: Extension 2, 6 and 7; Lower Makanaskop; Fingo Village; Xolani and all informal households in the Makana Municipality (Makana Municipality, 2004). The Makana IDP further committed itself to improving the existing sewer systems. The advert contained in the *Grocott's Mail* (May 14, 2004:22) shows that Makana municipality asked for people to tender for the construction of sanitation facilities (see Appendix J). The Makana IDP further shows that the issue of a lack of public toilets was being addressed. There was a project, which was estimated to cost R200 000, and the Municipality was, at the time of writing, looking into the possibility of building or renting a building for this purpose (Makana Municipality, 2004). The Makana LEAP water projects were also linked to improving sanitation, and examples include the projects on ecotoxicological risk assessment, sewerage treatment works, development of hydrological and water use plans and assessment of natural salinity levels within water resources in Grahamstown (ARC, 2004d). In Makana Municipality, sanitation issues are also linked to management of waste, which I now discuss in detail.

4.3 Solid waste management

The issue of solid waste management, as shown in section 4.1, is one of the issues of concern in Makana Municipality. Solid waste management, which largely deals with refuse removal is linked to sanitation. The Makana Municipal Diagnostic Study on Infrastructure Investment and Finance (Makana Municipality, 2002) reports that the refuse services in the areas ignored income levels, that quality of service in former black areas seemed to be particularly poor and there was a lack of acceptable standards in the town centre (Makana Municipality, 2002). It puts the areas that were below basic service to be at 35.54% of the whole. In this study, the main issue associated with solid waste management, according to the municipal employees, is illegal dumping, which is linked to sanitation issues and water.

4.3.1 Illegal dumping

The concerns regarding illegal dumping were reported in *Grocott's Mail* (February 21, 2003:9) as follows:

Garden refuse containers all over Grahamstown have elicited vociferous complaints from residents in the neighbourhood, who say that people not only dump their rubbish inside the containers, but around them as well. Also, that the containers are not cleared by the Municipality often enough. One such container is situated at the end of Jackson Street adjacent Fort England Hospital. Representations from the hospital have resulted in the container being removed, as it was deemed to be blocking an emergency gate. In spite of the fact that the container has been removed, residents continue to dump their garden refuse at the site.

The problem presented appeared to be related to the attitude of Makana Municipality citizens, who had the habit of illegal dumping and also depositing rubbish where there were no containers. One of the respondents in the questionnaires wrote that the problem of "litter is about illegal dumping" (QB2). During focus group discussions, some members said that "the problem of the people in Makana is that they dump garden refuse, dead dogs and cats in skips and some cases there are no skips for putting the rubbish" (FG1; FG2). The issue of illegal dumping appeared in *Grocott's Mail* (November 11, 2003:6) and it is reported that:

... learners reported on the main issues that they had identified during their audits [and] these include pollution in form of litter, human and animal faeces, oil and dirty water from car washing, building, rubbles and other types of illegally dumped materials.

The *Grocott's Mail* (May 21, 2004:7) reports that:

... not only are there problems of litter, invasive plants, human waste and building rubble, but there are also broken pipes, up-ended guttering and various other obstructions affecting the flow or spilling ill-health into the stream. Some Municipal skips too need to be moved: they are so placed as to spill over into the water-course [and] ... most of the litter that we encountered was commercial packaging...

It appears that the problem of the skips was that, apart from illegal dumping going on, some of them were wrongly placed. The focus groups noted that the problem of the

skips was compounded by people (waste pickers) who threw worthless refuse out of the skips and caused a mess around the skips. Focus group respondents further noted that “livestock, especially donkeys and goats and animals like dogs, spread rubbish by looking for food in the rubbish bags and skips and spread the litter around” (FG1). Focus group further explained that solid waste management affected almost all skips around Grahamstown, Scott’s Farms and Hoogenoeg areas (FG2). Both focus groups agreed that the most affected areas included Victoria Road and the townships, especially Extension 9. Figure 5 shows a skip in Makana municipality with illegally-dumped waste, which makes it difficult to manage waste.



Figure 5: Illegal dumping of solid waste around the skip (source: LEAP, 2004)

The issue of solid waste management appears to have affected the entire Makana Municipality and was an issue that needed to be addressed more broadly, as nothing much seems to have been done to help the Municipality, which was “spending millions of Rands to purchase plastic bags for putting domestic refuse” (FG2). One of the participants during focus group discussion said “only if we can educate our people we would save a lot of money which go for waste collection and use it for developmental projects” (FG2). Solid waste management issues appear to be serious in Makana Municipality, as they affect the urban areas, especially the formally disadvantaged, the drains and the commonage areas. It would also appear that to address the solid waste issue, broad-based environmental education and training will be needed in order to raise awareness in the Makana community.

4.3.2 Responses to solid waste management

The Makana IDP (2004) indicated that a number of projects had been identified as a response to improving solid waste management in Makana Municipality. Such projects contained in the Makana IDP included a project to study solid waste management with an estimated cost of R150 000 (Makana Municipality, 2004). To confirm this, the *Herald* (May 28, 2004) placed an advert for investigation of solid waste management in Makana Municipality (see Appendix K). Other projects contained in the Makana IDP are research on recycling, which is to be funded by DBSA at a cost of R20 000, and the Siyacoca waste management environmental education programme, which focuses on an awareness campaign (Makana Municipality, 2004). This project was already in progress and four volunteers were employed to assist with the campaigns (*ibid*).

The Makana LEAP also identified some projects which responded to solid waste management in line with the IDP. The projects would form part of the implementation plan of the Makana project. The identified projects included:

- Waste collection through public participation (engage public in waste collection)
- Transfer station in Grahamstown East (to increase amount of refuse collection per day and save operational costs)
- Pilot of community waste collection (to be funded by a NGO; waste collection is linked to job creation)
- Litter campaigns through media (use radio and newspapers to heighten awareness)
- Construction of a trash screen for waterborne litter (to prevent waterborne litter from polluting streams)
- Waste minimisation in business (encourage business to reduce waste) (ARC, 2004d).

It was hoped that by implementing these projects, the issue of solid waste management could be minimised in Makana Municipality. The waste management issue was linked to stray livestock, which I now discuss in detail.

4.4 Livestock management issue

The issue of Livestock management is a concern in the Makana Municipality. According to the Makana LEAP Livestock and Commonage Management Project proposal (ARC, 2004d), two hundred and sixty three (263) people own livestock and graze them on the Grahamstown commonage. It was estimated that, in 2001, livestock amounted to three thousand seven hundred and seventy (3770), comprising 1858 cattle, 1912 goats and an unknown number of donkeys (ARC, 2004d).

4.4.1 Increases in Livestock ownerships

As there was an increase in the numbers of livestock noted above, the Makana Municipality employees and the public had been complaining about the poor management of animals in townships and in the centre of Grahamstown. The *Grocott's Mail* (February 25, 2003:1) reports that:

It was recommended at the same meeting that the environmental health services and cleansing section, together with the parks and recreation department go to Alicedale at the end of February and remove all pigs from the residential areas, with the blessing of the council.

The same article continues and reports that:

Cllrs Matyumza and Wells, as well as the director of technical and infrastructure services look into the appropriate use of 8063... [and] location of farm no. 333 in the Makana municipal areas with the aim of looking into the possibility of giving the land to the stockowners for grazing purposes

4.4.2 Stray animals in town

The same article reports that “there is a problem of stray animals around town and appealed to the director of community and social services to ensure that stray animals are impounded”. One of the respondents in the questionnaire wrote that stray animals

'make the environment not to be conducive to personal growth and has negative impact on the social status of the community causing health hazard and conflict within the community' (QB4). The *Grocott's Mail* (December 19, 2003:3) reports that:

Residential areas in Grahamstown are being overrun by stray animals spreading and causing traffic accidents. Cattle, donkeys and goats have become accustomed to finding food in the city's bin and residents are concerned at the spread of disease through rubbish strewn over roads and pavements. The Makana Municipality says it is working towards solving the problem through discussion with local stockowners [and] that the Municipality had purchased four farms to add to the commonage in order to accommodate the large numbers of stock for emerging stockowners.

This article shows that stray animals have the potential to cause harm to humans through road accidents and spreading of disease from rubbish food in the bins. Figure 6 shows stray livestock spreading rubbish in and around a skip in Makana municipality.



Figure 6: Stray livestock scavenging waste (source: LEAP).

4.4.3 Levies and community disruption

On the issue of livestock management, the Makana Executive Mayor's meeting reported that, on November, 24, 2003, the task team's recommendations were referred to the ordinary council meeting, containing the following:

- A grazing fee based on a charge of R5.00/month/large stock unit, with a sliding scale for other units including, that of small stock units.

- Alternatively, a grazing fee based on charge of R2.00/month/large stock unit and 50c/month/small stock unit.
- A grazing fee that is levied per household, irrespective of the number of stock ranged on municipal land, a system fraught with irregularities and almost certain to create huge problems for Council in the future.
- That where the second option was preferred and/or adopted, the level of service by Council be greatly reduced (Makana Municipality, 2004:16).

Levies on livestock, however, have been a controversial issue, as reported in the *Grocott's Mail* (December 19, 2003:1)

In terms of the decision, approved at the council's last meeting of last year, households will pay R10.00 a month for large stock and R5.00 a month for small stock, irrespective of how many units of stock they have. The decision goes against the proposal made by a task team set up to consider the issue ... However, the mayor won the argument that a flat fee would help council get the stock out of the suburbs.

One of the respondents (QB4) in the questionnaire wrote that the livestock issue was complicated by the unwillingness of the residents of the Makana Municipality to have their animals removed from the residential places and there was resistance to payment for services rendered. The issue of stray animals continued as the *Grocott's Mail* (In January 27, 2004:1) reports that:

... Pupils try yet again to chase stray animals off the field at Nombulelo school. For nearly two years now, they have been forced to share their school with donkeys, cattle and goats following the stealing of an aluminium fence that had surrounded the school.

It appears that the stray animals not only caused accidents and the spread of diseases but also disturbed learning activities in Makana Municipality, where learners were required to chase or drive the animals out of the school premises. It would also appear that those schools without proper or no fencing had to struggle with the livestock issues. Still on the issue of livestock, the *Grocott's Mail* (April 6, 2004:5) reports that:

Imagine all you have to live off are the few mealies or cabbages that you've planted. Then imagine a stray donkey or goat destroying your entire crop. This is a problem that many people are facing in and around central Grahamstown and the nearby townships, where rubbish bins are being trashed, side walks and parks are being over-grazed and drivers risk potentially fatal collisions

with stray animals wandering on public roads and highways... now finally, it seems that there is a solution to the problem that has plagued Grahamstown for many years...the municipality has purchased five farms north- east of Grahamstown and is planning to offer stock owners a place to graze their animals in a secure environment

The overgrazing caused by a large number of stock has a potential impact on the soil as it leads to degradation of the soil. Figure 7 shows goats browsing at a hedge in Makana municipality.



Figure 7: Stray goats browsing at a hedge (source: Grocott's Mail 2003)

The stray animals, particularly the donkeys, goats and cattle seemed to be of great concern to Municipal employees during the focus group discussions. One focus group respondent noted that “cattle owners are keeping cattle in the township and bring them back in the kraal in the evening in the residential area where they cause flies and ticks and odours, especially in summer” (FG2). This focus group further noted that “cattle, goats and donkeys are endangering people’s lives, especially on the N2 road” (FG2). Both focus groups agreed that these animals also “spread the rubbish from the refuse bags and skips and get into people’s vegetable gardens and destroy their crops” (FG1; FG2). Both focus groups further observed that: “some people are still keeping pigs in the residential areas and hide them from municipal workers who are sent to investigate the complaints” (*ibid*). The respondents, in the questionnaires and both focus groups, noted that the livestock issue affected mostly the following areas: townships; roads like N2 to Peddie; Fort Beaufort; and main roads into town from the east.

4.4.4 Responses to livestock management issues

One of the respondents in the questionnaire wrote that “the Municipality is currently acquiring 6 farms to put the animals, though fencing wire was still being awaited and the project of fencing should be started by June-July 2004” (Q/EM) . The Makana IDP draft (2004) indicates that Makana Municipality had initiated some projects to solve livestock management. Such projects include; stock registration, allocation of stock to different units, and the implementation of farm management plans, including grazing agreements (Makana Municipality, 2004). The Makana LEAP also identified some projects in line with the Makana IDP (2004) to respond to livestock management. Such projects include: fencing N2 and provincial Roads to Bedford and Fort Beaufort and the old entrance to Rini; development of a monitoring framework; establishing an animal health programme; providing livestock owner training (ARC, 2004c). The livestock management issue is followed by fire management issues in Makana Municipality (in terms of employees priority), which I now discuss in detail below.

4.5 Fire

Fire management issues in Makana Municipality are discussed in terms of the capacity to respond to fire, which I discuss below.

4.5.1 Capacity to respond to fire

Fire appeared to be of concern amongst the Makana Municipality employees, due to the destruction it caused to vegetation and human life, including property. The *Grocott's Mail* (December 19, 2003:1) reports that:

A fire fighter fights flames on mountain Drive on Sunday evening. The fire started in Howison's port and was finally brought under control on Wednesday afternoon, destroyed large areas of the commonage and Featherstone Kloof, as well as buildings, equipment and timber at J & J sawmills near the old SABC building on Mountain Drive. Involved in the fire were members of staff of the Makana Municipality, as well as members from the local military base.

This particular article raises a number of issues, such as the destruction caused by fire and also the extent of the fire. This coincides with the issue raised by the focus groups that there were not enough fire fighting staff in the Department of Fire. Figure 8 shows a fire fighter trying to put out a fire in the Makana Municipality.



Figure 8: Fire fighter attempting to put out fire (source:Grocotts Mail)

The article reports that fire destroyed large areas of commonage over a four-day period. A question arises as to why the fire took four days to bring under control. Focus group respondents raised some issues as to why fire was an issue in the Makana municipality and these include the following:

- The Makana Municipality town planning department did not consult the Fire Department on how to include Fire services in the newly-developed townships,
- Fire Department vehicles that were not four-wheel drives could not access certain areas,
- Not enough fire hydrants in the township,
- Fire hydrants and standpipes are clogged with rubbish, so it took a long time to fill tankers for emergency operations,
- No extension services (substation) existed to serve rural areas and even outlying areas of Grahamstown (FG1).

In response to a follow-up on the issue, to confirm whether the fire department was indeed not involved in the town planning, Director Tshungu said that:

Fire has got problems with access and the way we operate is that we have town planners who say access? Yes, sewer? Yes, water? Yes ... and if access

is in order and my car and taxi can pass, that is point number one. I take consideration in terms of my design regarding hydrants, which are allocated within certain areas in regard to the number of people or houses in that particular area to check the water pressure... [and] I don't know what this municipality has been doing in terms of previous development, but now we are squeezing hydrants in according to the required standards (Tshungu, 2004, pers. Comm.).

Both focus groups identified the areas most affected to be: outlying townships (Extensions 9 & 10 or Vukani); Stone's Hill; Alicedale; Riebeck East; and all rural areas in Makana Municipality. Focus group respondents further explained that the fire issue was compounded by a shortage of staff in the fire department and that they depended on volunteers during emergencies (FG1). A review of the executive mayor's minutes revealed that "in November 24, 2003, the Alicedale Administrative Unit Head and Assistant Director: Fire and Rescue met with the Alicedale investors and stakeholders to study and review fire services in Alicedale" (Makana Municipality, 2003:12). This further shows that lack of fire services in some areas was of primary concern within the Makana municipality.

4.5.2 Responses to fire management issues

In response to fire management issues, the Makana IDP (2004) shows that some volunteers had been recruited and first aid training had been provided. The Makana IDP further explains that there were no projects on fire, as it was not budgeted for in the 2004/5 financial year (Makana Municipality, 2004).

4.6 Conclusion

Through the research process of using questionnaires, document analysis, focus group interviews and semi-structured interview, I was able to identify those environmental management issues that appeared to be of most concern to municipal employees. I have tried to outline why these issues are of concern and have highlighted some of the contextually specific complexities of these issues through drawing on reporting in the

local newspaper (*Grocott's Mail*) and perspectives provided in the questionnaires and focus group interviews. I have also consulted available documents such as the IDP, the Makana LEAP audit project documents and other studies that shed further light on the issues that concerned Municipal employees, to provide a fuller picture of these issues in the Makana Municipal context. The main issues discussed are sanitation, solid waste management, livestock and fire.

While these are not the only environmental issues in Makana Municipality (see section 2.4.3 LEAP audit ARC, 2004b) and in the initial questionnaire results (see section 4.1), I have focussed attention on these four issues in this study as they were identified by Makana Municipal employees as priority issues of concern to effective environmental management in the local Municipality.

This analysis therefore has implications for the development of an environmental education and training strategy that wishes to respond to workplace and learner needs and priorities. In the next chapter, I explore these needs in more depth, this time from a learner profile and organisational needs perspective.

Chapter Five

LEARNER PROFILE AND ORGANIZATIONAL NEEDS

5.1 Introduction

This chapter provides results in two sections, according to the research goals of the study. In section 5.2, I focus on the learner profile, which provides insight into a sample of those who would be participants in training programmes as learners. In section 5.3, I focus on the analysis of organisational needs, which highlights areas that require a training response. It also presents how the proposed training would be structured, with a focus on specific learners. In presenting this data, I consider environmental education and training needs from both an individual learner perspective, and from an organisational perspective. This data, combined with the findings reported in chapter four, provides broader insights into environmental education and training needs in Makana.

5.2 Learner profile

The following subcategories were generated from analysis of questionnaires, focus group discussions and individual interviews: age; years of service, academic and professional qualification; training needs; structuring of training; medium of instruction; and where training should be conducted. Each of these is discussed below. The learner profile provides useful insights into some factors that need to be considered in the development of an environmental education and training strategy. I now turn to discuss the issue of age in detail.

5.2.1 Age

The 12 questionnaires, which were sent to top management and middle management show that the highest age was 55 years, while the lowest was 33. In this sample, the

average age was 44 years for the management. This age would be favourable to start up what could be a new career path for the top and middle management. Among the four professionals and technicians in this study, the highest age was 58 and the youngest, 22. The average age was 40. The highest age amongst the seven lower employees was 58, while the youngest was 32 years. The average age was 45 years. The three councillors represented the oldest group, with 65 being the highest age and the lowest being 39. The average age for the councillors was 52 years. This average age was of concern to me, as it was slightly higher than other groups. During a one-to-one interview, Councillor Wells explained that some of the councillors had retired. Age-related data therefore reflects that, amongst the sample of municipal employees involved in this study, most were mid-career professionals. The average age was between 40-45 years and only councillors appear to be in a different age range. This may have implications for an environmental education and training strategy. I now focus on the years of service identified in the learner profile.

5.2.2 Years of service

Years of service are important to consider in an education and training strategy, as lifelong learning amongst adult learners draws on experiences and the prior knowledge which learners bring to the learning situation (see section 2.5). In the sample of top and middle management involved in this study, four had worked for Makana municipality for less than five years, four had worked for more than five years but less than 10 years, three had worked for more than 15 years and one for more than 20 years. Thus from this sample, top and middle management appears to have relevant experience, which can be drawn on in the planning and structuring of an environmental education and training strategy.

Of the four professionals and technicians involved in this study, the longest period of service was 24 years, while the shortest was one year. This indicates that there would need to be a process to establish levels of experience at the start of a training programme for this group, and that some professionals would have much more experience than others. Therefore, the environmental education and training strategy would need to draw on the more experienced learners when offering training.

Amongst the seven workers involved in this study, the longest period of service was 29 years, while the lowest was one year. This wide range of experience among the lower level employees raises similar challenges for the development of training programmes, as outlined above. An understanding of years of service therefore helps to establish how an environmental education and training strategy can be developed that draws on the experienced employees, and which considers how this could be shared with less experienced employees.

The three councillors showed that they had all worked for more than three years as councillors for Makana Municipality. The councillors appeared to be aware of the environmental management issues Makana Municipality was facing and their experience could provide suggestions, which could inform the environmental education and training strategy for council employees. Similarly, more experienced employees could also inform the development of the learning programmes. I now focus on academic and professional qualifications, as shown in the learner profile.

5.2.3 Academic and professional qualifications

The questionnaires sent to the top and middle management showed that all 12 respondents had Matric. Their tertiary qualifications varied and seven of the 12 respondents had degrees which were offered by different institutions, such as Natal Technikon, University of Fort Hare, UNISA, Rhodes University, University of Western Cape and the University of Port Elizabeth. The duration of training for these degrees ranged from three to five years, and six of the 12 respondents indicated that they had self-sponsorship for the degrees, while one indicated that a non-governmental organisation (NGO) had sponsored the degree.

Six of the management respondents involved in this study had Diplomas offered by different institutions, such as Pretoria Technikon, Port Elizabeth Technikon, and Cape Technikon and the duration of their training ranged from three to four years. Only two of these respondents had state sponsorship and four were self-sponsored. The type of

training possessed by the 12 respondents varied from management courses and civil engineering to health and agriculture.

The four professionals and technicians had Matric and three had Diplomas in Agriculture and Nursing, while one had a degree in Environmental Health. This group would be relevant in helping to educate the Makana community, as their qualifications show. These findings indicate that top and middle management and technicians and professionals had a considerable educational background and that they were all well qualified. This study established that some of their prior training had an environmental focus. This has implications, in that this expertise should be considered in the environmental education and training strategy.

The seven workers had varying academic qualifications. Four of the seven respondents had only primary academic qualifications and only one had done short courses in computers and safety relations. Three of the four respondents completed the questionnaires in IsiXhosa. One respondent had grade 10 and was a supervisor with a certificate in report writing. The other two had matric and different professional qualifications, with the following qualifications respectively: one had a certificate in report writing and one had no professional qualification. The four respondents opted to complete the questionnaire in English. This learner profile indicates that an environmental education and training strategy should consider language and literacy issues, particularly for this lower level. The sample indicates that some workers were able to use written English, while others were more conversant in IsiXhosa.

The councillors were asked to provide information on the type of training they had undergone as office-bearers. The respondents showed that they did training workshops on councillor development. As indicated earlier, these councillors had been office bearers for at least three years. The councillors worked on part-time basis, despite holding powerful positions and having a key role to play in addressing environmental management issues in Makana Municipality. This finding indicates that it may be possible to consider training workshops for councillors in the environmental education and training strategy, as they appeared to be used to this kind

of intervention. These academic and professional qualifications are linked to organisational needs, which I discuss below in detail, as they will also influence the environmental education and training strategy.

5.3. Organisational training needs

The environmental education and training needs established from the questionnaire, focus discussions and one-on-one interviews in this section, will be presented in terms of: improved capacities in environmental management; community interaction with the Municipality; management within Makana Municipality; and community and political awareness. An environmental education and training strategy that addresses organisational needs should enable Makana Municipality to respond to environmental issues and risks effectively. I now focus on the need for improved environmental management capacity, which I discuss below.

5.3.1 Improved environmental management capacity

The analysis of questionnaire data, focus group discussions and interviews all indicated that there was a need for improved environmental capacity in the Makana Municipality. In order to achieve this, some respondents indicated in the questionnaires that there was a need for the staff to have training in ISO 14000, as it would enable the municipality to comply with environmental standards in their developmental projects (QC1; QD1). I learnt from the focus group discussions that two municipal employees had undergone training in ISO 14000 but that the principles had not yet been implemented.

Some questionnaire respondents indicated that the training should include the “interpretation and implication of NEMA Act” (QB1; QB2). The focus group discussions also indicated the need for improved understanding of legislation among the management (FG1; FG2). Other respondents indicated that there was a need to strengthen the “inter-sectoral co-operation and communication” (QB3, QB4). This concern was emphasised by focus groups, who felt that this should enable Makana

Municipality officials to respond to environmental management issues (FG1; FG2). Some respondents indicated the need for “implementation of LEAP” by Makana Municipality officials as a way to enable them to respond to sanitation, solid waste livestock management and fire issues (E1; A2). The focus groups emphasised that LEAP should attend to these issues practically, and not just call for meetings with senior management only (FG1; FG2). Improved capacity in environmental management is linked to the need for improved capacity for community interaction, which I present below.

5.3.2 Improved capacity for community interaction

The questionnaire data, focus groups and interviews indicated that training should enable Makana Municipality employees to acquire skills in addressing the community in order to respond to environmental management issues and risks. Respondents indicated that training should be focused on “community-based planning” (QB1; QB2; QA1 and QA2). The focus groups agreed to this, as they felt that it promoted improved “community awareness and co-operation” in environmental management. One respondent indicated that training should enable Makana Municipality officials to “understand DEAT community guidelines” (QB1). The focus groups further recommended training that should also enable Municipal officials to develop “skills to address and interact with communities” (FG1; FG2). Councillor Wells agrees that the involvement of the community in environmental management is very important. She suggested that:

It is a good idea to talk to people at the Drama Department and ask them if they would like to develop a video on developmental drama, and use it to teach the community. The drama could explain the issues and ways in a simple and clear language. We have to convince our own financial departments to put the money into developing the video. It really becomes a planning issue and is very important. ... [and] our local government structure, I think, should even sponsor such a project (Wells, 2004 pers. Comm.)

Improved capacity in community interaction, as shown above, is linked to the need for improved management capacity for Makana Municipality, which I discuss in detail below.

5.3.3 Improved management capacity for Makana Municipality

An analysis of the data from questionnaires, focus groups and interviews also revealed that there was a need for improved management capacity and that this was closely linked to the municipality's ability to ensure good environmental management. Some respondents indicated that management staff for Makana Municipality needed to be trained in "financial planning and budgeting" (QE1; QA2; QA3; QA6; QB3 and QD1). The focus groups also had the same view, and noted that it could help management prioritise environmental issues accordingly (FG1; FG2).

Other respondents indicated that improved skills in planning would enable Makana Municipality to develop "communication skills" and organise "fundraising" activities to respond to environmental issues (QB1; QB4). The focus groups had the same view, and they further explained that training would enable the Makana Municipality to develop skills which would help in "sourcing of funding" to address environmental management issues and risks (FG1; FG2). The training, according to focus groups, should further improve "team building for top and middle management" for Makana Municipality staff (FG1; FG2). The need for management capacity is linked to the need for improved community and political awareness, which I present in detail below.

5.3.4 Improved community and political awareness in Makana Municipality

The data from questionnaires, focus groups and interviews further revealed that the training needed to be broader than just municipal officials. Some questionnaire respondents (QA1; QA2; QA4; QA5; QB1; QB2; QB4; QE1) and focus groups noted that training should focus on providing "primary environmental education for the whole community" of Makana Municipality, to enable Municipal officials to address environmental issues and risks (FG1; FG2). The concept of educating the community more broadly was strongly emphasised during individual interviews. For example, Councillor Wells said: "the issue of waste and livestock management is about the negative attitudes of the so called 'elite' and the general public" (Wells, 2004 pers. Comm.)

The focus groups noted that the community needed to be sensitised to the impact of environmental issues (FG1; FG2). According to some respondents (QA2; QE1; QE2; QE3) and focus groups, the training should also include “all councillors who play a vital role in prioritising and budgeting” in Makana Municipality (FG1; FG2). The focus groups explained that councillors have direct links with the community through ward committees and therefore their training would contribute to Makana Municipality becoming a more environmentally literate community.

The analysis of training, from an organisational needs perspective, provides further insights for the development of an environmental education and training strategy. It indicates that the training should not only be focussed on environmental priorities, as outlined in Chapter Four, or individual needs, as outlined in the learner profile above. It should also consider how the training could build and support improved management capacities with the municipality and also strengthen community interactions and relationships. These above training needs are linked to the way in which training could be structured, which I present below.

5.4. Structuring of training

During the interviews I focused on finding out how the sample of three groups of management, professionals, technicians and employees could be organised for training within the Makana Municipality. This was to enable recommendations that could inform the delivery modes of training programmes within the environmental education and training strategy. I tried to establish how training could best be structured at the management level, and also for technicians and professionals and workers or lower level employees. I further looked at how the medium of instruction and venues could inform the environmental education and training strategy. I now present how training could be structured at different levels.

5.4.1 Structuring of training at different levels

Management level

The focus groups felt strongly that top and middle management needed to “understand environmental issues” (FG1; FG2). Director Madlavu agreed with this concern, and she said that: “Heads of Department and their deputies need some kind of awareness [of] legislation and understanding of policy development” (Madlavu, 2004, pers. Comm.). She further suggested that: “all 12 ward councillors and 12 proportionate councillors” needed to be included in the management training. Director Tshungu seemed to agree with Madlavu, as he said:

I would rather combine the top management with the level up to the superintendents, so that there could be common understanding in the approach so that the senior managers know exactly what is expected of that person under control who is a manager.... (Tshungu, 2004, pers. Comm.)

Director Tshungu raised a crucial issue about including councillors in training, since they influenced most of the decisions in portfolio meetings. He explained:

... We've got councillors, we've got chairpersons. I've got my chairperson who's in my section for Housing and Infrastructure, another one in the Health Department who's fighting for ambulances and one who is dealing with finance, who doesn't want to give this money out, and those councillors only see their portfolios as extremely important. They prioritise issues only on 'paper', but when it comes to funding, they cannot see a compromise. Each one wants a “big cake” to his own ... so that's why I'm saying then it becomes a problem because the budgeting, Mr Finance, is not satisfying what we have just raised in terms of bucket system (Tshungu, 2004, pers. Comm).

Councillor Wells supported the idea of training councillors together with management, but she also proposed the inclusion of the ward committee members. She explained:

... every ward councillor is required to have a committee of 10 people from that ward so that they get representation closer to the ground, so the ward committees are required to meet once a month and they are supposed to discuss with ward councillors all the issues related to peoples' everyday lives on the ground. So, if you are looking for networks to reach everybody, this is a very good network ... ward councillors are the channels to get to the ground and vice-versa. So it is an important structure to understand. It should be a good idea to give skills to the ward councillors and entire committee (Wells, 2004, pers. Comm.).

This indicates that the potential exists for environmental education and training programmes that could be developed and offered for both management and councillors together. The data also suggests, however, that there may be a need to consider not only councillors and management, but also ward committee members in the environmental education and training strategy.

Professional and technician's level

I also tried to establish how training could be structured at this level. There were many suggestions concerning how training could be conducted. Director Madlavu suggested that “it may be better to take one technician from Electricity, Fire, Traffic and so on and so forth to join the management team during training” (Madlavu, 2004, pers. Comm.). Director Tshungu appeared to agree, though with emphasis on giving this group separate training. He said that “senior foremen and technicians can be given training on their own on the same topics so that we don’t create different understanding from what we understand” (Tshungu, 2004, pers. Comm.). This data suggests that training should be on the same topics and the implication for the environmental education and training strategy could be to combine this group with the management, so as to create common understanding of environmental management issues.

Workers

I also tried to establish how the lower level employees could be trained in order to inform the environmental education and training strategy. Director Madlavu explained the importance of giving training to this level. She said that:

At the foremen level, we want them to understand and be sensitised to environmental issues. They should understand that what they are doing every day impact the environment. For example, people who are involved in unblocking the drains should see how important they are and the effects caused to people by unblocked drains (Madlavu, 2004, pers. Comm.).

This group, however, appeared not to be that easy to reach and I explored some of the backlogs and difficulties involved. Director Tshungu explained that:

... At these lower levels you need no class whatsoever. If you are going to provide books and something to write or material, you are wasting your time. What we need here is to get “hands on”. They must touch things; they must do things or [be] practical [in order to] transfer skills. They need to see a manhole in order to understand what to do when it is blocked They need to be taken from the existing area where they are working...take them out and put them for a month in that kind of environment (Tshungu, 2004, pers. Comm.).

This data indicates that an environmental education and training strategy would need to consider practical constraints faced by lower-level employees and that this training should be fairly ‘hands on’ and contextualised within the workplace. The structuring of training will also be influenced by the medium of instruction, which I discuss in detail below.

5.4.2 Medium of instruction for training

In addition to the above, I explored the possibilities involved in choosing a medium or mediums of instruction during the proposed environmental education and training at different levels. The focus groups explained that: “at the management level, English wouldn’t be a problem as medium of instruction” (FG1, FG2). Director Madlavu also agreed with this point and explained that “at management level, professional and technicians and councillors, there is no problem with English” (Madlavu, 2004, pers. Comm.). Councillor Wells further explained that:

Among councillors it’s not a problem about educational levels, because we have people who retired with PhDs ... [and] ... we are required to read 300 to 400 pages of agendas in every month and so literacy levels are not a problem (Wells, 2004, pers. Comm.).

However, the medium of instruction and literacy issues appear to be a concern for lower level employees. Director Madlavu explained that “at the lower levels is where we are going to have problems with language as we must get into IsiXhosa” (Madlavu, 2004, pers. Comm.). In agreeing with this, Director Tshungu further explained that:

.... at this level you have to be patient and one needs to be as practical as possible. One needs to be able to speak IsiXhosa and if you make materials to

empower them you at least need IsiXhosa, Afrikaans and English (Tshungu, 2004, pers. Comm.).

The focus group also agreed that language would be an issue at this level and they said that “workers need to be taught in IsiXhosa and Afrikaans” (FG1; FG2).

This confirms the data in the learner profile and indicates that an environmental education and training strategy should take issues of language and literacy into account and that English as a medium of instruction may not be appropriate for all training programmes offered to municipal employees. The structuring of training and medium of instruction is linked to a discussion on venues, which I present below.

5.4.3 Training venues

I explored the issue of venues for training to further inform the environmental education and training strategy, as stated above. The responses varied. Ten respondents indicated that they preferred training to be conducted at training institutions, while eight indicated the workplace as their first choice. The other eight indicated other places or specific names. One respondent wrote that: “training should be done in the afternoon as the workers work in the night and nearest the hall” (QA7). Another wrote that: “training should take place in the township where every farmer can have access to the meeting” (QB7). This issue was pursued during focus group discussions and most of the respondents felt that training should be conducted at the training institutions.

I also sought the opinion of top management on the question of where and why training should be conducted at specified places. During an interview with Director Tshungu he said that “I think there must be on-site training for lower level employees, [and] show these things to these guys maybe in the afternoon after lunch” (Tshungu, 2004, pers. Comm.).

It seemed that management strongly felt that some lower level employees needed to be trained at the site of work to effectively respond to the environmental management

issues in Makana Municipality, due to the poor levels of literacy and the practical nature of their work. It also appeared that management was willing to have the training conducted at the training institutions for top and middle management only.

The councillors had different perceptions regarding where training should be conducted. One councillor recommended that training be conducted at training institutions, while two more felt that training should be conducted in the workplace. These responses were followed up during the one-on-one interview with Councillor Wells and she said that: “you can conduct the workshop on weekends but you do it far from town or a place that is a little bit inviting” (Wells, 2004, pers Comm.).

This data indicates that there appeared to be strong feelings that lower level workers should be trained in the workplace through a practical approach, while management training would be more appropriately undertaken in training institutions or venues away from the workplace. These insights are useful for informing the environmental education and training strategy.

5.5. Conclusion

In this chapter I identified three groups of employees within Makana Municipality that would be considered as learner groups in an environmental education and training strategy. These groups are top and middle management, including councillors, technicians/professionals and lower level workers. The top and middle management and technicians/professionals had good academic qualifications and years of experience in Makana Municipality all of which has implications for the development of an environmental education and training strategy. The lower level workers had problematic language and literacy levels, which would have implications for an environmental education and training strategy. The data from the sample shows that councillors had potentially influential positions for addressing environmental issues and this will also have implications for the environmental education and training strategy.

The data in the sample indicates that the identification of training needs should go beyond identified environmental issues. It should provide insights into how training should build capacity for management within the municipality and strengthen community municipality interactions. This will have implications for the environmental education and training strategy, as this also has to be considered.

The delivery mode of training identified in this study shows that management, councillors, technicians and professionals and ward committees members could undertake training at training institutions. The lower level workers would require training in the work place as their needs were practical and context-based. The data from the sample indicates further that, for the delivery mode to be effective, language and literacy levels also need to be considered in the environmental education and training strategy. The data shows that for management technicians and professionals and councillors, English is suitable, while for lower level workers, the environmental education and training strategy requires English, IsiXhosa and Afrikaans as languages of instruction.

In the next chapter, I synthesise the findings reported in Chapter Four and Five and consider the competences that appeared to be required amongst municipal employees, drawing on the applied competences framework outlined in the South African National Qualifications Framework (see section 2.7). This is done to ensure that the recommendations for environmental education and training strategy articulate with South Africa's National Skills Development Strategy (see section 2.7.1) and with SETA requirements for the design of learning programmes for addressing South Africa's development needs (see section 2.7).

Chapter Six

RECOMMENDATIONS INFORMING THE MAKANA ENVIRONMENTAL EDUCATION AND TRAINING STRATEGY

6.1 Introduction

In this chapter I present environmental education and training implications associated with changing contexts and challenges facing Municipal employees in their places of work. I consider these in the light of Edwards' (1997) view of the need for adult education to enable learners to adapt to change. In this study, this appears to involve an ability to respond to change, respond to complex issues that are also changing and to comply with changes in legislative requirements. I discuss this in relation to the issues discussed in Chapter Four and the individual and organisational training needs discussed in Chapter Five.

Given the contemporary landscape of education and training in South Africa, I considered the education and training needs of Makana Municipal employees in the light of developments surrounding the National Qualifications' Framework. The discussion therefore has a bias towards accredited training, as this is the preferred model for adult education and training within the National Skills Development Strategy and the NQF (see section 2.7). This also involves a consideration of training needs in the light of the applied competence framework of the NQF (see section 2.7) involving practical, foundational and reflexive competence (see section 2.5, DEAT, 2004). As identified in DEAT, (2004a and b) environmental management training in South Africa involves both technical and social dimensions, and these are discussed as they emerge from the findings reported in Chapter Four and Five. In conclusion, I highlight some of the limitations of this study and make recommendation for further research.

6.2. Environmental education and training based on identified issues

The identified environmental management issues and risks have educational implications for the municipal employees who are charged with the responsibility to address them. According to Edwards (1997) these changes affect the adult learner, who is challenged to consider the following:

- Environmental degradation and risks,
- Their ability to act in a world of rapid change,
- Their ability to participate in and challenge different settings and practices,
- Their ability to determine impact in terms of central and peripheral issues and
- Their ability to be flexible in particular settings and to shape change and the meaning of change (see section 2.5)

These have implications for competence development and also for designing the environmental education and training strategy. The issues and risks as reported in chapter four are complex, and changing, and thus require education and training which enables the following:

- Abilities to respond to change
- Abilities to respond to complex changing issues and
- Ability to comply with changing legislative requirements.

I discuss this at the three different levels of training needed in workplaces, as identified in this study.

6.2.1 Education that enables responsiveness to change

I shall discuss the need for environmental education and training competences that enable Municipal employees to adapt to and respond to change among the management and professionals, workers and councillors.

Management and professional level

As established in this study (see Chapters Four and Five), the increased roles of management and professionals/technicians in local governance require environmental

management competences. As indicated below, this involves practical, foundational and reflexive competences to enable environmental management (see section 2.6.1). Local Agenda 21 (see section 2.3.3) emphasises the need for local government to *change the way they organise and operate* to ensure municipal services are distributed equitably and sustainably for current and future generations. The purpose of the Makana LEAP (see section 2.4.1), which is a response to Local Agenda 21, is to create a sustainable community through the minimisation of environmental management issues, such as pollution and waste. To do this, LEAP provides the following guidance for this change: an environmental audit outlining the key environmental issues facing the district, a sustainable development framework to guide development planning, an outline for implementation of strategic intervention projects and an environmental education and training strategy to support the other components. Implementing these will require changes in the way the Makana Municipality operates.

DEAT (2004b:24) also notes that managers at all levels, from senior management to lower levels of management, require sound knowledge and understanding of environmental concepts and processes such as sustainability, sustainable development and ecological systems. These concepts are complex and are open to change and different interpretations at a local level, which means education and training competences should develop the capacity for this learner group to:

- Change the way they operate (reflexive competence).
- Develop a sound understanding of these changing concepts (foundational competence).
- Manage environmental management issues and risks (practical competence).

The learner profile for Makana Municipal management and professionals (see sections 5.1.4, 5.1.5, 5.1.6 and 5.2.1) shows varied gender, age, years of service and academic and professional qualifications. There appears to be a potential for accredited environmental education and training on the NQF (see section 2.7) in the form of skills development programmes at level 6 or 7 of the NQF. As noted above, the accredited training should take into account reflexive competence, which enables

these groups to adapt to changes and to respond to changing their ways of operation to address environmental management issues identified. As Lotz (1999) notes, in the context of change, there is a need to engage in processes of contextual deliberation in and around developing patterns of social-historical interaction and emerging risks. This would need to be carefully planned for a context of accredited training.

Workers

This learner group is present in large numbers in the Makana Municipality. Through interaction with a very small sample of these workers, this study established that this learner group required primary environmental education and training to improve their practical and foundational environmental management competences, as they were involved in physical delivery of services. For example, this learner group was involved in the physical collection of bucket systems, impounding stray livestock, collection of refuse and extinguishing of wild fires. As established in this study, it is important for these workers to execute these duties according to sound environmental management practices, which require responsiveness to change, through a focus on practical and foundational competence relevant to the workplace needs of these workers. The environmental education and training programmes could enable this learner group to develop:

- Skills to collect all the buckets from the houses and clean them properly, with good health and safety practice (practical competence),
- An understanding of health risks associated with poor management of bucket collection (foundational competence),
- Skills necessary to impound stray livestock in urban areas (practical competences),
- An understanding of health risks associated with stray livestock and socio-cultural issues associated with livestock impounding (foundational competence),
- Skills to collect refuse efficiently, with good health and safety practices and skills necessary to respond to illegal dumping (practical competence),
- An understanding of health risks associated with solid waste management (foundational competence),

- Skills necessary to fight fires efficiently (practical competence), and
- An understanding of health issues associated with fire (foundational competence).

In addition to this, workers may need to adapt to changes in their functions (reflexive competence), as new environmental management practices are introduced (as indicated in the IDP and in the LEAP planning).

The learner profile (see sections 5.1.4 and 5.1.5) shows varied ages and years of service and this learner group appeared to have rich practical competences required to perform their specific duties. However, their academic and professional profile (see section 5.2.0) shows that this learner group may have difficulties in acquiring environmental education and training competences which are required to improve their foundational and reflexive competences. However, despite these difficulties, this learner group required competences which go beyond practical competences. Usher and Edward (1994:106) further recommend competences that take account of “skills, knowledge and understanding” that relate to performance in work places (see section 2.5). Tight (1996) also observes that adult training allows the acquisition of skills, rules, concepts or attitudes that result in improved performance in the work situation (see section 2.5).

In response to changes in adult education and training, the South African National Qualifications Framework (NQF) provides learning opportunities regardless of age, circumstances and the level of education and training one may have (see section 2.5.1). It further provides a framework within which all learning can be quality assured – whether it takes place at work or at home. Training for this particular learner group should preferably be conducted on-site. The challenges for providing accredited training from an institutional perspective include:

- Language barriers, as most of the lower level workers speak and write only IsiXhosa or Afrikaans,
- Working shifts, which require some to work at night, and
- Weak academic and professional backgrounds (see 5.4).

These issues pose particular challenges for the development of environmental education and training programmes for this learner group. Work-based education approaches appear to be most suited to this learner group.

Councillors

This study has also identified that there is need for primary environmental education and training for politicians. Councillors and associated ward committees need foundational and reflexive competences, which contribute to improved environmental management in Makana Municipality. As this study established that politicians chair the various portfolio committees which oversee service delivery (see section 5.2.3), the need for foundational competences (to enable them to understand why environmental issues need to be prioritised) and reflexive competence (to be able to critically analyse their practices and bring about change), is clear. This group, similar to the managers and professionals, are also faced with decision making in context and learning programmes for this group should also include a focus on adapting to and responding to change (reflexive competence).

6.2.2 Education that enables response to complex issues

This will be discussed, as above, with a focus on the management, professionals, and councillors.

Management, professionals and councillors

To fulfil their mandate of environmental management and service delivery, this learner group would need to understand the causes and effects, and the complex nature, of the issues they are dealing with, in order to develop adequate responses. Education and training programmes should enable this learner group to develop foundational competences such as an in-depth understanding of the potential effects of the bucket toilet systems, and debates surrounding alternatives. At this level, the education and training programmes should be able to bring out the economic and political issues associated with the bucket systems. For example, the political implications of getting rid of this hazardous system and installation of new

waterborne systems require the management to have reflexive competences which require understandings of the impact of the new systems. They may also require new practical and foundational competences for workers and new solutions to, for example, finding adequate water supplies, servicing of waterborne sewerage systems and so forth.

The environmental education and training programmes should also enable this learner group to understand the link between sanitation and solid waste management and ways in which illegal dumping may pollute water resources, thus emphasizing the interrelated nature of environmental issues and risks. This requires reflexive competences, to change and respond to the complex interrelated nature of these issues and their effects, both on nature and human life. At this level, the education and training programmes should also enable this learner group to analyse the effects of the livestock issues in terms of biophysical and social effects. As already described in section 4.3, the livestock have the potential to cause land degradation and have the potential to spread health risks. More complex, however, are the socio-cultural aspects of livestock ownership, which influence and impact on management decisions. Education and training programmes should therefore also include practical skills to explain and negotiate with owners of livestock about the effects explained above. A summary of competences as identified in this study would include:

- Understanding of the causes and effects of issues (long term causes and effects as well as short term causes and effects) (foundational competence),
- Understanding of the way in which environmental issues and risks are interrelated (e.g. sanitation and illegal dumping) (foundational competence),
- Understanding of socio-cultural and technical aspects of environmental issues (e.g. livestock issues) (foundational competences),
- Ability to make and evaluate decision, considering the complexity of environmental issues and risks (reflexive competence), and
- Ability to assess alternative solutions (reflexive competence).

As indicated in the discussion above, in developing education and training programmes for the above different learner groups, there is a need to consider them in terms of practical, foundational and reflexive competence. The practical competence

implications for all the learner groups would require the development of programmes in communities to respond to the priority environmental issues. The foundational competences would require the knowledge to identify these issues and an in-depth understanding of the complexities associated with the issues. Reflexive competences would require particularly the management and professionals/technicians to critically make and evaluate decisions and reflect on these programmes in order to improve management of the environment. In addition to the competences identified above, the study also identified a need for competence to understand and comply with legislation, which I discuss below.

6.2.3 Education that enables legal compliance

As described in Chapter Two, environmental policy-making has been a key international and national response to environmental issues and risks. In the past decade, since 1992, African governments have all created new institutions and legal frameworks for improved environmental management. South Africa has recently experienced a great deal of environmental policy-making at national and local government levels. This has left many local government employees unprepared for new legal compliance regulations, and few have developed adequate practical, foundational and reflexive competencies in this area. To make matters more complex, this new legislation is also changing, for example the recent amendment to the NEMA (see section 2.7.1).

This study established that there is a need for legislative competences among the management and professionals/technicians, as expressed by the Municipal employees (see Chapter Five). Education and training programmes should enable this learner group to develop legislative competences, which may require interpreting, analysing and implementing the relevant environmental legislation. The management and professionals require understanding of their responsibilities towards enabling a healthy and safe environment, as indicated in the Health and Safety Act (No.85 of 1996) (see section 2.4.2). Section 24 of the Bill of Rights binds the municipalities with a duty to protect the environment and it states that everyone has the right to an environment that is not harmful to their health or well-being (see section 2.3.3).

Legislative competences will enable this learner group to interpret the NEMA Act and understand the amendment discussed in section 2.7. This learner group also requires understanding of the LGWSETA (see section 2.7) as it provides a mechanism for providing training in understanding the various legislative competences required by local government officials. Legislative competences should also enable this learner group to implement environmental management standards such as implementation of ISO 14000, as expressed by the Municipal employees (see section 5.3.1).

A number of legislative competences based on the identified issues (see section 2.4.2, table 1) require this learner group to understand and implement relevant legislation to respond to the prioritised issues described in Chapter Four. For example, sanitation issues require management and professionals to understand the Water Services Act (108 of 1997) (see section 2.4.2), which states that everyone has a basic right to sanitation. Management of solid waste would require this learner group to understand Integrated Waste Management policies (see section 2.4.2) which may enable them to come up with ways to minimize or avoid waste generation, where possible, by formulating by-laws, as required by the Municipal Systems Act (Act 32 of 2000). They further need to understand the Municipal Structures Act (117 of 1998), which states that local municipalities have the responsibility to collect and dispose of waste within their areas. The livestock issue requires this learner group to understand such legislation as the Agriculture and Conservation Act (No 88, 1996) (see section 2.4.2), which may enable them to come up with good livestock management practices and monitoring systems. Fire issues, as well as the sanitation and waste issue, would require understanding of the Occupational Health and Safety Act (No 85 of 1993) (see section 2.4.2) which may enable this learner group to develop strategies to avoid dangers during fire outbreaks. The education and training programmes thus need to be closely linked to legislative competence.

It appears that it may be difficult for municipal employees to comply with legislation without access to education and training that builds legal compliance competences. Legislative competences, particularly for the management and professional, should be understood broadly in terms of practical, foundational and reflexive competences. In terms of practical competence, the management and professionals/technicians are required to implement the relevant environmental legislation. The foundational

competence implications require this learner group to have knowledge and understanding of local government legislation and other legislation as described above, with a view towards improved environmental management. This also requires an understanding of how different legislation works at local government level. Reflexive competences require this learner group to critically review and be proactive, in order to understand current changes in legislation for improved environmental management at local level. A summary of legal compliance competences include the following:

- Implementing legislation and making by-laws, as required in local government context (practical competence),
- Understanding relevant legislation for environmental management in local government context (foundational competence),
- Understanding legislation in its broader socio-political context (foundational competence),
- Understanding the relationships between different legislation and related implications for environmental management in local government context (foundational competence), and
- Critically review legislation and its implementation at local government level in response to environmental management issues (reflexive competence).

6.3 Technical education and training implications

As there are increased responsibilities in local municipalities, Butler (1997:23) notes that “there is concern about its capacity to deliver and it is apparent in terms of human, financial, technical and skills, and capacity to carry out environmental responsibilities”. The technical aspect of education and training would require competences such as planning/administrative, project management and financial budgeting, which I discuss below. The focus shall be on management and professionals/technicians competence, which goes beyond environmental education.

6.3.1 Planning/administrative competence

Competence in the area of planning and administration was identified as a concern in questionnaires, focus groups and interviews, as described in Chapter Five. The main focus was on the development of these competences amongst management and professionals/technicians, which I discuss below.

Management, professionals and councillors

Section 153 (a) of the Constitution says that a municipality must structure and manage its administration and planning processes to give priority to the basic needs of the community, and to promote the social and economic development of the community (RSA, 1996). The Municipal Systems Act (No 32 of 2000) requires local municipalities to provide democratic and accountable governance to local communities and requires of local authorities an integrated development plan (IDP) (see 2.4.2). The formulation of an IDP would enable this learner group to:

- Assess current realities of the whole municipality (including State of Environment Reports),
- Prioritise needs,
- Formulate strategies to achieve goals within a specific timeframe,
- Implement projects,
- Use performance-monitoring tools to measure impact and performance (DEAT 2000).

The challenge for this learner group thus appears to be the development of planning competence, which requires them to formulate the IDP's as a guide to sustainable development. Planning competences are linked to formulation and implementation of projects aimed at responding to environmental management issues. In order to understand this category of the competencies, it is useful once again to consider practical, foundational and reflexive competence:

- Participate in integrated planning through formulation of IDP (practical competence),

- Understand how to formulate the IDP and how to identify issues that need attention, as well as how to develop the IDP's in such a way that they take into account other relevant policies which contribute to improved environmental management in the local municipality (foundational competence), and
- Critically review the IDP through implementation of monitoring procedures, and other development concerns, as outlined in the IDP (reflexive competence).

This also involves the project management, which I discuss below.

6.3.2 Project management competence

This study established that there is a need for project competence at the management, professional/technicians and councillor's levels (see Chapter Five). Project management competence is required to plan, implement and monitor environmental management projects within the IDP and the LEAP.

Management, professionals and councillors

These competences can also be understood in terms of practical, foundational and reflexive competences. Examples of the competences include:

- implement specific projects such as LEAP, as well as propose implementation projects (see section 2.4.3) (practical competence),
- Develop knowledge of designing and monitoring the intervention projects (foundational competence), and
- critically evaluate the projects and establish ongoing monitoring systems to ensure improved environmental management in the local municipality (reflexive competences)

Project management competences are closely associated with financial budgeting, which has implications for environmental management, as identified in Chapter Five. I turn now to a discussion of the need for financial and budgeting competences.

6.3.3 Financial budgeting competence

Financial budgeting and management is normally a management, professional's or councillor's responsibility. In this study, it was identified that budgeting is an important enabling factor for local municipalities.

Management, professionals and councillors

One of the most important duties of a municipal council is to manage its funds effectively by drawing up a budget (see section 2.4.2) showing income and expenditure, protection of the income and capital assets and monitoring of this income (Burger 2000). This study established that it appears there was a need for further capacity-building related to financial budgeting within the Makana Municipality, as expressed by Municipal employees (see section 5.3.3). This learner group is required to manage and understand capital and operational costs needed to make systems operate effectively. For example, this learner group would need to understand the costs involved in waste management technical factors such as:

- Accessibility (roads, terrain) how easy it is to reach the waste,
- Waste type and quantities,
- Type of collection equipment (containers, vehicles and equipment) and
- Availability of secondary collection sites.

Financial and budgeting competences can also be understood in terms of practical, foundational and reflexive competences for this learner group:

- cost and manage the funds (practical competence),
- understand how to cost projects, organise fundraising ventures and draw up budgets, all of which should contribute to improved environmental management in the local municipality (see section 5.3.3) (foundational competence), and
- Critically review the budgets in order to allocate funding in priority areas on time (reflexive competence).

This study indicates that the formulation of an environmental education and training strategy for Makana should strengthen planning, project management and budgeting competences to inform internal decision-making and planning in Makana Municipality (see section 2.4.3). I now turn to social aspects of environmental management education and training which focuses on management's, professionals' and councillors' development of communication competence, which appears to be needed to involve the community in environmental management (see Chapter Five).

6.4 Social aspects of education and training

Social aspects of education and training focus on what the management professionals and councillors can do in order to effectively involve the community through public participation to respond to management issues and risks. The study established that the most affected areas are the informal and formal townships. Therefore the management, professionals and councillors would appear to need communication competences to improve understanding of how citizens could become more involved in responding to the issues using established channels. I now discuss communication competences for this learner group.

6.4.1 Communication competence

I will discuss this competence with a focus on management, professionals and councillors as this study established in section 5.3.2 and 5.3.4.

Management, professionals and councillors

Agenda 21 (Chapter 28) acknowledges that problems and solutions can be achieved through participation and co-operation with local authorities (see section 2.3.3). The Constitution (RSA 1996) requires municipalities to be accountable to their local communities. As identified in this study, it is important for this learner group to know how to involve the communities through the structure of the ward committee. The purpose of the ward committees, according to Burger (2000) includes:

- Facilitating participation from the community to inform council decisions,

- Making sure that there is more effective communication between the council and the community, and
- Assisting the ward councillor with consultation and report-back to the community.

As discussed in Chapter Five (see section 5.4) ward committees are vital links to enabling community participation and the municipal officials would thus need understanding of how to utilise this structure to respond to environmental management issues in local municipalities. The ward committees need to be set up to reach most sectors and areas in the ward (Burger 2000). As above, it is useful to consider this in terms of practical, foundational and reflexive competences that foster environmental management in local municipalities. Examples of this competence are:

- Involve the community in projects and decision-making, and strengthen interdepartmental communication which improves environmental management (practical competence),
- Develop knowledge of the existing structures and strategies for working with communities such as ward committees (foundational competence),
- Develop capacity in improved community interaction through effective use of councillors, arranging community meetings, lobbying (either through the media or public meetings) (foundational competence), and
- Critically review and evaluate the community programmes in order to improve communication strategies and ensure community well-being (reflexive competence).

These competences are closely linked to social justice competence, which I discuss below.

6.4.2 Social justice competence

In this study, the municipal employees expressed the need for training of councillors (see 5.3.4) and involvement of the community in environmental management. The

ward councillors and ward committees, according to the Constitution, should know their communities and people. They should know:

- What problems they experience and their needs, and
- The environment of the ward (type of housing, services provided or not provided, such as water and sanitation) (Burger 2000).

In order to adequately address community needs and issues, as identified in Chapter Four, management, professionals and councillors need to engage with and understand social justice in communities. This is particularly important in a South African context, where the legacy of Apartheid lives on in terms of inequitable access to services at local levels (see section 2.3). Again, this can be considered in terms of practical, foundational and reflexive competences.

- Implement projects such as recycling of waste with a view to creating jobs for the community and alleviating poverty in the Makana district (see section 2.3). (practical competence),
- Understanding the scope of job-creation projects linked to improved environmental management in the local municipality context (foundational competence), and
- Critically review these projects, which are aimed at improving quality of life and redress, while improving environmental management projects (reflexive competence).

6.4.3 Summary: The scope of environmental education and training

In sections 6.1-6.4 above, I have discussed the need for environmental education and training based on the identified environmental management issues for different learner groups in Makana Municipality. As identified, this requires competences to adapt to change, and competences to respond to complex issues. Legislative competence should enable this learner group to interpret, implement and formulate by-laws to strengthen local environmental management. Part of this competence is an understanding of the policies and procedures governing skills development, as this

could secure access to LGWSETA funding towards environmental education and training.

Technical education and training competences were also identified, for the management, professionals and councillors, which included planning competences for the development of integrated development plans, and project management competence which enables the development, monitoring and evaluation of projects which contribute to environmental management. Project management competences are closely linked to financial and budgeting competences, which, in turn, contribute to environmental management. Financial and budgeting competences would enable appropriate costing of projects and timely implementation. In addition, social aspects of education were identified for management, professionals and councillors through identification of communication and social justice competences. Communication competences which improve community interaction through use of existing structures, such as councillors and ward committees, and social justice competencies that focus on job creation among communities, with a view to managing environmental issues and risks, are some of the social aspects identified in this study.

6.5. Recommendations to inform environmental education and training strategy

The competence framework, used to articulate the education and training needs as identified in this study, is consistent with the South African National Qualifications framework as it aims to enable applied competence and workplace-based skills development, as identified in the National Skills Development Strategy. By focusing on practical, foundational and reflexive competence, the framework emphasises the integration of education and training as required by the NQF. The competencies identified here are also consistent with those recommended for environmental management education and training in the recent DEAT study, which articulates a framework for environmental management qualifications (DEAT, 2004b). With its emphasis on competences for adapting and responding to change, it also considers broader issues characterising the field of adult education (see section 2.5). In producing recommendations for the Makana LEAP environmental education and

training strategy, I thus draw on these identified trends and competences and the competences framework.

6.5.1 Recommended competence framework

As outlined above, recommendations are based on the competence framework developed in 6.1-6.4 above. Recommendations are also made according to the specific competences that were identified for the three specific learner groups.

Management and professionals

This study recommends that the management and professionals undergo accredited Environmental Education and Training at level 6 or 7 on the NQF. Table 8 summarises the range of practical, foundational and reflexive competences identified in the study, that should be incorporated into learning programmes. As suggested by Directors Tshungu and Madlavu (see section 5.4), education and training for this particular learner group can be combined. Based on the findings, it appears that accredited training could develop the required identified competences (see sections 6.2, 6.3 and 6.4) to foster improved environmental management for the present and future generation in Makana. As indicated in the learner profile, such education and training should be designed to take account of, and draw on, existing experiences of the learner group, as many have experience that could inform the training programmes.

Table 8: Competence framework for management, professionals and councillors

Environmental Management Competence	
Practical	<ul style="list-style-type: none"> Identify priority environmental management issues and risks
Foundational	<ul style="list-style-type: none"> Understanding of the causes and effects of issues (long-term causes and effects as well as short-term causes and effects). Understanding of the way in which environmental issues and risks are interrelated (e.g. sanitation and illegal dumping). Understanding of socio-cultural and technical aspects of environmental issues (e.g. livestock issues).
Reflexive	<ul style="list-style-type: none"> Ability to make and evaluate decisions, and consider the complexity of environmental issues and risks. Ability to assess alternative solutions.
Legislative Competence	
Practical	<ul style="list-style-type: none"> Implement relevant legislation in relation to these issues e.g. NEMA. Implement legislation and make by-laws, as required in the local government context.
Foundational	<ul style="list-style-type: none"> Understand relevant legislation for environmental management in local

	<ul style="list-style-type: none"> government. Understand legislation in its broader socio-political context. Understand the relationships between different legislation and related implications for environmental management in local government context.
Reflexive	<ul style="list-style-type: none"> Critically review legislation and its implementation at local government level in response to environmental management issues.
Planning Competence	
Practical	<ul style="list-style-type: none"> Participate in integrated planning through formulation of IDP.
Foundational	<ul style="list-style-type: none"> knowledge of how to formulate the IDP and how to identify issues that need attention, and how to develop the IDP's in such a way that they take into account other relevant policies which contribute to improved environmental management in the local municipality.
Reflexive	<ul style="list-style-type: none"> Critically review the IDP through implementation of monitoring procedures, and other development concerns, as outlined in the IDP.
Project Management Competence	
Practical	<ul style="list-style-type: none"> Implement the specific projects, such as the proposed LEAP implementation projects.
Foundational	<ul style="list-style-type: none"> Develop knowledge of designing and monitoring the intervention projects.
Reflexive	<ul style="list-style-type: none"> Critically evaluate the projects and ongoing monitoring to ensure improved environmental management in the local municipality.
Financial and Budgeting Competence	
Practical	<ul style="list-style-type: none"> Cost and manage the funds.
Foundational	<ul style="list-style-type: none"> Develop Knowledge of how to cost projects, organise fundraising ventures and draw up budgets, which should all contribute to improved environmental management in local municipality.
Reflexive	<ul style="list-style-type: none"> Critically review the budgets in order to allocate funding in priority areas and on time.
Communication Competence	
Practical	<ul style="list-style-type: none"> Involve community in projects and decision-making, and strengthen interdepartmental communication, which improves environmental management.
Foundational	<ul style="list-style-type: none"> Develop knowledge of the existing structures and strategies for working with communities, such as ward committees. Build capacity in improved community interaction through effective use of councillors, arranging community meetings, lobbying either through media or public meetings.
Reflexive	<ul style="list-style-type: none"> Critically review and evaluate the community programmes in order to improve communication strategies and ensure community well being which is also linked to social justice competence
Social Justice Competence	
Practical	<ul style="list-style-type: none"> Implement projects such as recycling of waste, with a view to creating jobs for the community and the alleviation of poverty.
Foundational	<ul style="list-style-type: none"> Develop knowledge and understanding of the scope of job-creation projects linked to improved environmental management in the local municipality context.
Reflexive	<ul style="list-style-type: none"> Critically review projects which are aimed at improving quality of life and redress, while improving environmental management projects.

Councillors

As outlined in table 8, this study recommends that the councillors need competences identified for management and professionals, as they are involved in decision making

within the Makana Municipality. Education and training programmes for councillors, it appears, should be delivered through workshops as they work on a part-time basis. The study further recommends that ward committee members need to be involved in workshops, as they are a link to communities.

Workers

As outlined in Table 9, the study recommends that training for workers would mainly focus on practical and foundational competences. The study also recommends that issues such as language and literacy should be carefully considered in education and training programmes for this learner group. It also recommends that education and training for this learner group should ideally be workplace-based and should also draw on, and take account of learner's existing experience.

Table 9: Competence framework for workers

Environmental Management Categories of Competence	
Practical	<ul style="list-style-type: none"> • Collect all the buckets from the houses and clean them properly with good health and safety practice • Impound stray livestock in urban areas • Collect refuse efficiently, with good health and safety practices and skills to respond to illegal dumping • Fight fires efficiently.
Foundational	<ul style="list-style-type: none"> • Develop an understanding of health risks associated with poor management of bucket collection • Develop an understanding of health risks associated with stray livestock and socio-cultural issues associated with livestock impounding • Develop an understanding of health risks associated with solid waste management • Develop an understanding of health issues and risks associated with fire.
Reflexive	<ul style="list-style-type: none"> • Critically develop ability to adapt to change

6.5.2 Recommendations for funding of environmental education and training for municipal employees

The study recommends that investigations be made to establish how funding could be accessed from the LGWSETA, as it is required to provide funding for training in local government through the National Skills Development Strategy. This would inform the implementation of education and training programmes. The study recommends that the competence framework identified in Tables 8 and 9 be used to inform education and training programmes articulated in the environmental education and training strategy for municipal employees, and that training programmes, based on this competence framework be developed and submitted for funding through SETA funding where possible to ensure sustainability.

6.5.3 Reflexivity and recommendations for further research

Given the limited time I had, I could only select a small sample of respondents for this research project. From this case study report, it is clear that there has been a bias towards management, professionals/technicians and councillor's environmental education and training needs and less attention has been given to explore what other competences are needed among the workers. Therefore, it becomes important to conduct research in future to focus on the needs of the workers in greater depth. This study recommends that further research be conducted to establish how work-based Environmental Education and Training could be implemented for the lower level employees, due to language, weak academic and professional qualifications and complex work schedules. As indicated in Chapter Three, this study was only able to sample one group of workers, and due to the limited scope, this aspect could not be followed in great detail.

The prioritised environmental management issues are likely to change in the near future, due to the fact that there are implementation intervention strategies in place to respond to these issues, as indicated in Chapter Four. This would require any environmental education strategy to be open-ended, and a reflexive review process should be included in the education and training strategy.

This study further recommends that research be conducted to establish the full scope of practical, foundational and reflexive competences for improved environmental management in local government context, as this study was only able to establish a competence framework for one case study context.

6.6 Concluding remarks

In this study, I have established four priority environmental management issues in the Makana Municipality, which are of concern to municipal employees. These are sanitation, solid waste management, livestock management and fire. The study points out that responding to these issues requires a full range of competences, which include environmental management, legal compliance, planning, project management, financial and budgeting competences, communication and social justice competences for all council employees: management, professionals and technicians, lower level employees and councillors. These require new approaches to environmental education and training in workplaces, due to the context of change articulated in lifelong learning discourses. In the South African context, this involves a new framework for accrediting training within South Africa's NQF. Drawing on this, recommendations were made to inform the environmental education and training strategy, which is part of the Municipality's effort to ensure sustainable development through local governance.

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7.1 PERSONAL COMMUNICATIONS

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- Rudolecky, O. (2004, June 1st). Senior Technical Officer, Makana Engineering Department, Grahamstown. Personal communications.
- Tshungu, M (2004, May 31st). Director of Technical and Infrastructure Services Department, Grahamstown. Personal communications.
- Wells, J (2004, June 2nd). Chairperson of Environmental, Disaster Management and Heritage Committee, Member of Mayoral Committee and Finance and Delivery Services Committee, Grahamstown. Personal communications.

APPENDICES

Appendix A

Dear Respondent,

The purpose of this questionnaire is to establish training needs for the Makana Municipality. This information is required by Rhodes University Education Environmental Unit to recommend a training strategy for Makana Municipality to improve service delivery to the community. This has been an initiative of Local Environmental Action Plan (LEAP). Therefore you have been chosen as one of the respondents to supply such information on training needs. Please do not write your names on the questionnaire but you are requested to answer truthfully as this information will be treated in the strict confidence possible.

QUESTIONNAIRE ON TRAINING NEEDS FOR MAKANA MUNICIPALITY

Name of Department -----

Name of section: -----

SECTION A

1. Gender of respondents (tick where appropriate)

Female	Male
--------	------

2. Age:

--	--

3. What is your highest level of academic qualification? (Tick where appropriate)

Primary: _____ (1- 7)

Secondary: _____ (8-10)

Matric: _____ (12)

SECTION B

4. How long have you worked for Makana Municipality?

5. Complete the table below:

Kind of training or qualification done	Certificate, Diploma or Degree obtained	Offered by	Length of Training	Sponsored by e.g.(self, company, scholarship)

SECTION C

6. How do you describe your knowledge of environmental issues in Makana Municipality? (Tick where appropriate)

Very good	<input type="checkbox"/>	Good	<input type="checkbox"/>	Fair	<input type="checkbox"/>	Poor	<input type="checkbox"/>
-----------	--------------------------	------	--------------------------	------	--------------------------	------	--------------------------

7. List the kind of environmental issues relevant to your department / section

- (i) _____
- (ii) _____
- (iii) _____
- (iv) _____

8. List any two which need immediate attention in your department / section

- (i) _____
- (ii) _____

9. In your own view, what would cause the environmental issues mentioned in question 8 above

- (i) _____
- (ii) _____

10. What impact do these environmental issues have?

11. In which areas/ locations are these environmental issues predominant in Makana Municipality?

12. How is the municipality tackling these issues?

13. What are some of the limitations the municipality experiences in addressing these environmental issues?

14. How many workers are involved in tackling the environmental issues you mentioned above?

15. What type of training would you require to effectively address these environmental issues mentioned above?

16. Where should this training be conducted? (Tick where appropriate)

Work place	Training institution	Others specify:
------------	----------------------	-----------------

17. How long should the training take? (Tick where appropriate)

A week	A month	Others specify:
--------	---------	-----------------

18. Which legislation/ policies are relevant in addressing these environmental issues?

19. Do you have anything more to suggest?

Thank You.

Appendix B

Mhlobo othandekayo

Injongo zoluphando kukuqinisekisa ngoqeqesho olufunekayo apha kulo Masipalati wase Makana. Olu lwazi lufunwa liSebe lase Rhodes University kwi Candelo lwe Mfundo yezeNdalo ngenjongo zokuqulungqa esona sixhobo soqeqesho sifanelekileyo apha eMakana Munisipalati

Esi sixhobo sincedisana ngokubambisana nenjongo ze- Local Environmental Action Plan (LEAP). Ngoko ke uchongiwe ube ngomnye wabantu abanikezela ngolwazi kolu qeqesho.

Uyecelwa, musa ukubhala igama lakho koluphando kodwa kubalulekile uthethe inyaniso okanye uphendule ngokuthembekileyo le ngcaciso siyithathwa njengemfihlo.

Abasebenzi

IMIBUZO MALUNGA NOQEQESHO NEEMFUNO ZASE-MAKANA
NEZIPHALUKA JIKELELE

Igama lecandelo _____

ICANDELO A

1 Ubuni bomphenduli (khetha apho kuyimfuneko))

Femal e umfaz i		Male ndod	
--------------------------	--	--------------	--

2. Iminyaka

--	--

3. Loluphi ibanga ophumelele kulo (khetha apho kuyimfuneko)

Eprayimari _____ (1-7)
Esekondari _____ (8-9)
Matriki _____ (12)

ICANDELO B

4. .Mingaphi iminyaka usebenza apha eMakana Manisipaliti?

.....
.....

5. Zalisa le bhokisi ingezantsi

Uhlobo loqeqesho olwenza kulo msebenzi wakho	Isetifiketi sakho	Iziko loqeqesho	Ubude boqeqesho	Umnikezeli-nxaso (Umz: nguwe; ngumqeshi;liziko-nxaso-mali

ICANDELO C

6. Uluchaza njani ulwazi lwakho kwimiba yezendalo apha kwesi sithili soMasipala wase Makana?
(Yolatha apho kufanelekileyo)

Kulungile kakhulu		kulungile		Kuyazameka		Akuzameki	
-------------------	--	-----------	--	------------	--	-----------	--

7. Dwelisa iintlobo zemiba yezendalo ekhoyo kwicandelo/ isebe lakho

- (i).....
-
- (ii).....
-
- (iii).....
-
- (iv).....
-

8. Dwelisa neyiphiphina imiba emibini efuna ukuqwalaselwa ngokukhawuleza kwicandelo/isebe lakho.

- (i).....
-
- (ii).....
-

9. Kuluvo lwakho, yintoni ebangela imiba yezendalo echaziweyo kumbuzo wesi – 8 ongentla.

- (i).....
-
-
-
-
- (ii).....
-
-
-

10. Yeyiphi imiphumela ethi idaleke kule miba yezendalo?

-
-
-
-

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

11. Kukweziphi iingingqi okanye iindawo apho kufumaneka khona le miba yezendalo?

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

12. Umasipala uyilungisa njani le miba?

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

13. Loluphi uhlobo loqeqesho olufunekayo lokukhankanya le miba yezendalo ingentla ngokufanelekileyo?

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

14. Lungenziwa phi oluqeqesho? (Khetha efanelekileyo)

Apha emsebenzini	Kwizakhiwo zoqeqesho	nakwezinye
------------------	----------------------	------------

15. Lungathatha ixesha elingakanani oluqeqesho ? (Khetha efanelekileyo)

iveki	inyanga	ezinye
-------	---------	--------

16. Kukhona onokucebisa ngaphezulu?

ENKOSI

APPENDIX C

A2



RHODES UNIVERSITY
Wise leaders learn

RHODES UNIVERSITY ENVIRONMENTAL EDUCATION UNIT
PO Box 94, Grahamstown, 6140 • Tel: 046-603 8389 • Fax: 046-622.3432 • E-mail: L.Timmermans@ru.ac.za

3 May 2004

To whom it may concern

RE: TRAINING NEEDS ASSESSMENT FOR THE MAKANA DISTRICT MUNICIPALITY

Tyson Hamaamba is currently a Rhodes University Masters conducting his research for a Master in Education (Environmental Education).

His is conducting research into the training needs of the Makana Municipality as part of the Makana Local Environmental Action Plan.

Please would you be so kind as to afford him the time to administer his questionnaire and conduct interviews with municipal staff.

Regards

Ingrid Timmermans
Lecturer
Rhodes University Environmental Education Unit

In partnership with the Murray and Roberts Chair of Environmental Education • In association with the Environmental Education Association of Southern Africa



Management LCC/MC
QUESTIONNAIRE ON TRAINING NEEDS FOR MAKANA DISTRICT MUNICIPALITY

Name of section: WATER & SANITATION

SECTION A

1. Gender of respondents (tick where appropriate)

Female Male

2. Age:

46

3. What is your highest level of academic qualification? (tick where appropriate)

Primary: _____ (1-7)

Secondary: _____ (8-10)

Matric: ✓ (12)

Others specify B.TECH. (TECHNITION DEGREE)

SECTION B

4. How long have you worked for Makana ^{Local} district Municipality?

8 yrs

5. Complete the table below:

Kind of training for Current job	Certificate/obtained	Offered by	Length of Training	Sponsored by e.g.(self, company, scholarship)
B.TECH.	TECHNITION DEGREE	NATAK TECHNITION	5	COMPANY & MYSELF
PERSONNEL & TRAINING	DIPLOMA	DAMELIN	4 MONTHS	MYSELF (LOAN FROM COMPANY)
SMALL BUSINESS	"	"	"	
FINANCIAL MANAGEMENT	CERTIFICATE	"	"	

Appendix D

Interview with Director Tshungu (Technical and Infrastructure)

1. What should training focus on at the level of the top and middle management and lower levels?

At the management level I would combine the top management with the level up to the superintendent, so that there could be a common understanding in the approach. The senior management should know exactly what is expected of that person under control.

In terms of management, what I'm thinking is that managers should actually be equipped to run departments, and if they are not equipped, then there's a problem. The second one is that they need Socio-economic and environmental awareness. You must give a basic service that people can be able to manage e.g. To eradicate bucket system is something that requires training on how manage finance.

- At the level of senior foremen and technicians they can be given training on their own on the same topics so that we don't create different understanding from what we understand.

At the lower levels you need no class whatsoever. If you are going to provide books and something to write on and that kind of material, you are wasting your time. What we need here is to get "hands on". They must touch things; they must do things or practical [as] you want transfer of skills. They need to see a manhole in order to understand what to do when it is blocked They need to be taken from the existing area where they are working...take them out and put them for a month in that kind of environment..

2. Who should be involved in training at management levels?

Top management with the level up to the superintendent.

3. What about the ward councillors joining the training?

It is extremely important our councillor need to know, and understand matter the community, especially social economic factors relating to health. More on, for instance, understanding what you pay or you don't pay for e.g. If this is your sewer line, you pay from this point to that point, anything that happens here is your responsibility, that's a municipality sewer, that kind of information they need to understand.

We've got councillors, we've got chairpersons. I've got my chairperson who's in my section for housing and infrastructure. But we've got another one in the health department who's fighting for ambulances, fire. We've got another one who's sitting in the services where we discussing governance and those issues are very important. We've got another one who's sitting with finance, who doesn't want to give this money out, and those councillors only see their portfolios as extremely important. They prioritise those issues only on 'paper', but when it comes to funding, they cannot see a compromise. Each one wants a "big cake" to his own.....so that's why I'm saying then it becomes a problem because the budgeting, Mr Finance, is not satisfying what we have just raised in terms of bucket systems.

4. Would you clarify the issue that Fire Department is not consulted in developmental issues?

Fire has got nothing to do with sewer. Fire has got problem with access that is the only problem they must have in their own lives. They must have problem with access. Now this is exactly what I've been trying to highlight. I just want to.....not that I put a house. If I see there is a hill, there's a flat area there, I think Mr X's house can sit there. This is not how I do things. We've got town planners who'll say "access? Yes, sewer? We'll get there, water? No problem. So if access is in order, and I know that my car can get to that point, Mr Fireman, that can happen, that's point number one, so access can be there. I take considerations in terms of my

designs regarding hydrants. The fire hydrants are allocated within certain areas and these hydrants must be there. They are actually minimal requirements. There's what we call a "Bible", a red book on our side; but when I'm doing any design that has certain number of people, I need certain hydrant in a certain position that can cover certain radius.... I don't know what the municipality has been doing in terms of previous developments, but with the developments that we are doing now with the grants, we are trying to squeeze.....put a hydrants.

5. Would you clarify the issue of informal settlements in terms of service providing?

Informal settlements are settlements which are not formal, they are not registered, and these informal settlements are not in the plan of Director General. But the government has noted that these are informal settlements and we need to address them, how? The government then came up with a system that was saying because these people might stay here for the next ten years or five years, at least they have a right to clean water. And I provide them with communal taps. In terms of flush toilet, I can't do that because that is required only in an area which is serviced, where stay for the rest of their lives. So we can't provide that, they must use either pit latrines.

6. Would you clarify the issue that buckets are not properly cleaned?

These cases must be brought to the office. These workers, who are not cleaning buckets, should be reported, so that we know. Because we know who are in that area at that time. We gave a final warning to a driver here already, and we actually took him to task because he was not servicing people accordingly. We further try to re-structure the department. I mean that section, so that we can have more people working early in the morning, and we've got some people on the site to sit and clean these buckets, so I don't see any reason why these buckets must not be cleaned and be disinfected. We don't want these buckets to be washed in the cars, they must be washed down there.

7. Do you know any providers that could be of great help?

We need someone who knows about sewer. Who have studied or at least has been in operations in another municipality. Like, for instance, Port Elizabeth. That someone should discuss the issues about sanitation and safety because they are critical. The Eastern Cape training centres can help to give practical training e.g. plumbing. The municipality will be interested in an outsider like Rhodes University to provide services.

8. How long should training take?

At the management level I would suggest that a week in a quarter with some task in between and submit them at end of month. This can be done during working hours. At the lower level you need at least to take 3days in a week for two weeks. This is important as I stated earlier that this is operational or onsite training especially in the afternoon.

9. What languages should be used for training?

At the Management will be comfortable with English. At the lower levels you have to be patient, because you are having a problem there with language. First thing there it must be as practical as possible and you need someone who is able to speak Xhosa. If you are to make materials to empower them, you need at least Xhosa, English and Afrikaans and your programmes must not be in lecturing (theoretical), since most of them are not literate. Some of them have got Sub B, but they know the work.

10. How often should training be conducted?

I suggest quarterly initially, for the first year and then for the second year may be once in six months.

11. What days should you suggest to be used for training?

I think training should be during working hours in a week.

Thank you

Appendix E

Interview with Councillor Wells, J.

1 How many portfolio committees that you have in Makana Municipality?

I think its six portfolios.

2. Why do you have these different committees?

It's a division of specializations so far example there's finance for service delivery and finance is very specialized and it needs to be dealt with separately. Infrastructural development has to do with the whole of your housing, sewage, storm water systems. You see, there's a difference between putting the houses and managing the books, those are very different functions, and each portfolio has its special area.

3. What's the difference between local Municipality and district?

Local Municipality –this is what is called grade “B” Municipality

Grade “A” – is the metropolis – very big urban areas like Johannesburg, Pretoria, Durban, Cape Town.

Grade “B” Municipality –which means local government probably Makana Municipality includes a wide geographical area that goes over from Fish River, Riebeck east etc municipality is not a town but a geographical.

A grade “C” municipality is what called district municipality which has a jurisdiction over many local municipalities.....Cacadu district municipality co-ordinates Makana Municipality.

4 .How many councillors do you have in the Makana Municipality?

We have 24 Councillors. We are divided into half –half. There are twelve wards in Makana Municipality, each one has a ward. The other twelve is coming by proportional work presentation.

Every ward is also required by law to have ward committee of ten people from that ward, to give a ward presentation closer to the ground and are required to meet at least once a month, to discuss all the issues that affect people and their lives on the ground. So if you looking for the networks, to reach everybody, it is a good network. Ward councilors really must channel council right down to the grass root and vice versa, the issues that coming from the ground should come through the ward councils, so it's a very important structure to understand.

5. How should training be organized councillors for Makana municipality employees?

I think it should be good, to give skills to both ward councilors and staff because my understanding and my observation is that environmental issues about is about attitudes and mind set .

I would also think you need specialized workshops in particular on disaster management which also includes sort of top management from municipality and those who chair portfolio committees. The top management is the one which implement everything and set policies on what should be implemented. So if your thinking along the same lines and also if there's a dialogue In areas of environment I must always think in terms of external fundraising.

Governance is always a dialogue between reality and dreams, it's the way I see it. Politicians turn to come with dreams and officials come with realities so they have to do things within a budget, within resources, etc. So there is always, so its going to be a tension there, that's why I say it would be useful to have them sitting on the same training in the workshop and give guidance as to what decision is needed and policies.

6 . What the literacy levels among councillors

Among councils it is quite generalized about educational competence etc because we've got people from retired professors with PhDs. Councillors are used to read agendas with-- three to four hundred pages every month.

7. What days do you suggest should be used for training?

I think you have also to be quite strategic and probably you should do a lot of research as to what really works for getting participants together. The officials working hours its normal as it is part of their job but the councilors are working are part-time, and during working hours might be seriously very difficult to attend. To find yourself at the right time , right way, at the right place is a bit difficult sometimes I think really may be do it on a weekend but you do it away from town or a place that's little bit inviting. Basically the solution is we need everybody to participate and make environment clean and healthy. But how do we get that point is,

8. How long should training be?

3 days should be better.

9. Any suggestion on training

And we have a drama department here, in fact because of that video I'm always proposing to people, we talked to people at drama department to ask them if they would like to develop the whole unit on developmental drama, how you can use drama to teach community. The drama is going to explain the issues and ways in a simple and clear language. Then we have to convince our own financial analyst to put the money into developing the video. This is really becomes a planning issue, becomes very important. I know it's hard to develop a video like that and I don't know what the cost should be but you need a whole consultation process. I don't know how much will it cost may be R100 000, R250 000 to get a project run very nice. So, our local government structure, if we knew exactly what we wanted to do or we had a design of such a project I think we could even sponsors from

APPENDIX F

MAKANA



MUNICIPALITY

☒ 176 (6140)
☎ (046) 603 6135
(046) 603 6027

E-mail:
mktshungu@makana.gov.za
Fax: (046) 622 9488/9700
Grahamstown
South Africa

DIRECTORATE: TECHNICAL & INFRASTRUCTURE SERVICES

Ref/Verw
Enquiries/Navrae M.TSHUNGU/npl

15TH SEPTEMBER 2004

TO: MR TYSON HAMAAMBA

PLEASE NOTE THAT I HAVE NO OBJECTION ON YOU USING MY NAME
(MELIKHAYA TSHUNGU) IN YOUR DOCUMENT.


M. TSHUNGU
DTIS

APPENDIX G



MAKANA

Municipality
Masipala
Munisipaliteit

City Hall
Grahamstown 6139
PO Box 176
Grahamstown 6140
South Africa

Tel: 046 603 6111
Fax: 046 622 9488
Email: admin@makana.gov.za
Website: www.makana.gov.za



Office of the Director : Community & Social Services

Enquiries:

File Reference Number:

TO: MR TYSON HAMAAMBA

PLEASE NOTE THAT I HAVE NO OBJECTION ON YOU USING MY NAME
(BULIE) IN YOUR DOCUMENT.


NLD MADLAVU
DSCS

15TH SEPTEMBER 2004

OUR VISION

Makana Municipality shall strive to ensure sustainable, affordable,
equitable and quality services in a just, friendly, secure and healthy environment.

APPENDIX H

21 Sept 2004

TO: Tyson Hamaamba

FROM: Dr J Wells *JW*

SUBJECT: Consent to use name and quotations

I have read the drafts of your thesis and made minor corrections in the places where I am directly quoted, to my satisfaction.

I also agree to your use of my name at any stage, if you so choose, but understand that you might prefer to use a pseudonym for your own needs. Both options are fine with me.

APPENDIX I

David Rabkin Project for Experiential
Journalism Training (Pty) Ltd t/a

Grocott's Mail

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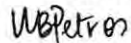
June 8 2004

Dear Tyson Hamaamba,

I hereby give you permission to use Grocott's Mail news articles and pictures in his thesis for MA in Environmental Education. All materials used should be acknowledged in the following manner:
Source: Grocott's Mail, January 1 2004.

Yours sincerely,

Nontyatyambo Petros



Editor: Grocott's Mail

Directors: N K Kariithi(*), G J E G Berger, A C Garman, S Fourie, A M Vorster, L N Steenveld
(* Kenya)

APPENDIX J

MAKANA MUNICIPALITY



TENDER NO. 11/2004

CONSTRUCTION OF SANITATION FACILITIES FOR 350 ERVEN

Tenders are hereby invited for the construction of sanitation facilities for 350 erven including construction of new and rehabilitation of existing toilet structures and connections to the existing sewer reticulation.

Tender documents will be available free of charge as from Friday, 14 May 2004, from the office of the **DIRECTOR: TECHNICAL & INFRASTRUCTURAL SERVICES, HIGH STREET, GRAHAMSTOWN.** All enquiries to be directed to Mr Tshungu, telephone no. 046 603 6033.

Representatives of the Makana Municipality and Nihham Shand Consulting Services, will meet prospective tenderers at 10h00 on Wednesday, 19 May 2004 at the Makana Municipal Offices in Grahamstown for the purposes of a compulsory site inspection. **Tenderers who failed to attend the site inspection meeting will not be considered.** Tenderers will be required to sign an attendance register.

Tenders in sealed envelopes endorsed **«CONTRACT NO.11/2004 FOR THE CONSTRUCTION OF SANITATION FACILITIES FOR 350 ERVEN»** must be deposited in the tender box in the **ADMINISTRATION SECTION of the CORPORATE SERVICES DIRECTORATE, CITY HALL, GRAHAMSTOWN,** or posted to **THE MUNICIPAL MANAGER, PO BOX 176, GRAHAMSTOWN, 6140,** on or before 12h00 on **FRIDAY, 28 MAY 2004.**

The Municipality reserves the right not to accept the lowest or any tender and no reasons for the acceptance or rejection of any tender will be furnished. Late, telegraphic or telefaxed tenders will not be considered. Tenders will be evaluated according to the Municipality's Tender Procurement Policy.

Notice No. 32 of 2004 dated 14 May 2004

PRAVINE NAIDOO
MUNICIPAL MANAGER

MAKANA MUNICIPALITY
P.O. BOX 176
GRAHAMSTOWN, 6140

APPENDIX K

ALBANY CAPE 6671
HERALDS FRIDAY MAY 29, 2004

502 Officials and tenders 502 Officials and tenders 502 Officials and tenders

MAKANA MUNICIPALITY



TENDER No. 14/2004

SOLID WASTE MANAGEMENT SERVICES

Tenders are hereby invited for the investigation of Solid Waste Management Services as required by the Municipal Systems Act of 2000.

Further details can be obtained from the Assistant Director: Environmental Health and Cleansing Services on telephone number 046 603 6141 during normal office hours, email: Johann@makana.gov.za

Tenders must be placed in a sealed envelope and clearly marked "Solid Waste Management Services, Tender - 14/2004" and placed in the tender box in the Administration Section of the Corporate Services Directorate, City Hall, Grahamstown or posted to reach the Municipal Manager, P.O. Box 176, Grahamstown, 6140 by no later than 12H00 on 18 June 2004 when tenders will be opened publicly in the Council Chamber at 12H15.

Please note that the Municipal Ordinance of 1974 requires the Municipal Manager to reject all envelopes which do not indicate the tender number/description.

Tenders will be adjudicated in terms of the Council's Procurement Policy.

The Council does not bind itself to accept the lowest or any tender and late tenders will not be accepted.

PRAVINE NAIDOO
MUNICIPAL MANAGER

NOTICE NUMBER: 42: 25 May 2004

