

Critical evaluation of the extent to which environmental aspects are considered in strategic
level municipal decision making - case studies from the Gauteng Province

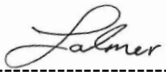
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Environmental Management at the Potchefstroom Campus of the North-West University

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Declaration

I declare that this research report, apart from the contributions mentioned in the acknowledgements, is my own, unaided work. It is being submitted for the Degree Master of Environmental Management at the North-West University, Potchefstroom Campus. It has not been submitted before for any degree or examination at any other university.

A handwritten signature in cursive script, appearing to read 'Salmer', is positioned above a horizontal dashed line.

(Signature of candidate)

07 Day of December 2011

Abstract

Historically the practice of conservation planning has occurred in an ad hoc manner in areas that have no economic or agricultural value. When systematic conservation planning has been implemented it has ensured the identification of priority areas that contain species, habitats, and processes essential to achieving conservation targets and goals set out by government. In the recent past a number of authors within the conservation planning fraternity have started questioning the actual impact of conservation plans. Only one third of the conservation plans (globally) published between 1998 and 2000 resulted in actual implementation. Prendengast *et al.* (1999) described this gap between conservation plans and conservation action as the 'research-implementation-gap'. The same phenomenon is experienced in local government conservation planning, in South Africa. This has led to a lack of conservation planning and implementation.

By using the Gauteng provincial Conservation Plan (C-Plan), that is considered the strategic conservation planning document for the province government, a critical evaluation of the extent to which environmental aspects are considered in strategic level municipal decision making was done. Six local and two district municipalities within the Gauteng Province were selected to ascertain, through a comparative and objective analysis, to what extent their strategic documents (Integrated Development Plan, Spatial Development Framework and Environmental Management Framework) reflect the conservation planning done on a provincial sphere (C-Plan). An analysis was done of the selected documentation and spatial maps to determine whether incorporation occurred either explicitly and/or implicitly. The expectation is that municipalities within the Gauteng Province, should, as part of their Integrated Development Plan process, integrate the Gauteng C-Plan with their Integrated Development Plans.

The research found that all the municipalities fully incorporated the C-Plan within their Environmental Management Frameworks indicating that local government conservation planners do consult and incorporate provincial conservation plans when they are generating their own plans. The Spatial Development Frameworks and Integrated Development Plans did not reflect this strong connection with regards to conservation planning. There is a lack of integration between the different documents and an inability to bring a planning aspect(s) to delivery and implementation. There is no problem with the incorporation of the C-Plan into the Environmental Management Frameworks, thus future research or conservation initiatives should focus on the effective incorporation of the Environmental Management Frameworks into other strategic municipal documentation (Spatial Development Frameworks and Integrated Development Plans) and promote the integration that occurs between the municipal documents themselves.

Key words: Incorporation, Integrated Development Plan, Conservation Planning, Local Government, Spatial Planning

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Abbreviations

BioD	Biodiversity
CBD	Central Business District
CGTA	Department of Cooperative Governance and Traditional Affairs
ConP	Conservation Planning
C-Plan	Gauteng Conservation Plan
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DFA	Development Facilitations Act (Act 67 of 1995)
DLA	Department of Land Affairs
DME	Department of Minerals and Energy
DP	Development Planning
DPLG	Department of Provincial and Local Government
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
ELM	Emfuleni Local Municipality
EMF	Environmental Framework
EnvS	Environmental Sensitive Areas
EnvZ	Environmental Zoning
GDACE	Gauteng Department of Agriculture Conservation and Environment
GDARD	Gauteng Agriculture and Rural Development
GDP	Gross Domestic Product
GIS	Geographic Information System
GP	Gauteng Province
GPG	Gauteng Provincial Government
IDP	Integrated Development Plan
IGR	Intergovernmental Relations Act
IUCN	International Union for the Conservation of Nature
IWMP	Integrated Waste Management Plan
LED	Local Economic Development
LG	Local Government
LLM	Lesedi Local Municipality
MCM	Mogale City Local Municipality
MEC	Member of the Executive Committee
MFMA	Municipal Finance Management Act
MIG	Municipal Infrastructure Grant
MINMEC	Ministers and Members of Executive Council
MLM	Midvaal Local Municipality
MSA	Municipal Systems Act
MSS	Municipal Support Services
NBSAP	National Biodiversity Strategy and Action Plan

NEMA	National Environmental Management Act (Act No.107 of 1998)
NGOs	Non-governmental Organisations
NSDP	National Spatial Development Perspective
PGDS	Provincial Growth and Development Strategy
RLM	Randfontein Local Municipality
SA	South Africa
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
SDM	Sedibeng District Municipality
SGDS	Sedibeng Growth and Development Strategy
Stats SA	Statistics South Africa
STEP	Subtropical Thicket Ecosystem Plan
WLM	Westonaria Local Municipality
WDM	West Rand District Municipality
DRDLR	Department of Rural Development and Land Reform

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1 INTRODUCTION

This chapter introduces the research by first presenting the background and subsequently the problem statement. This is followed by the main research question and sub-questions. The chapter ends by presenting the structure of the dissertation. This is to assist the reader early on to navigate the text. A clear link is made between the research questions, methodologies and specific sections in the text where the questions are answered.

1.1 Background

European scientists in the 19th century were amongst the first voices to call for a more planned approach to the conservation of natural resources and the protection of valuable landscapes from being over-exploited (Dasmann, 1972). The modern land protection movement began on a meaningful scale in 1872 in the United States of America with the declaration of 'Yellowstone'; the world's first formal national park (Western, 2003). The first reserves were established not for the purpose of conservation of the natural resources but for the protection of scenic landscapes, and the exclusion of ethnic people from natural resources as a means to control them. At that time reserves were proclaimed for recreational uses and the protection of ecosystem services (Dasmann, 1972; Sloan, 2002). The fundamental role of protected areas is to separate endangered fauna, flora and ecosystem processes from activities that threaten their ability to function and exist (Margules & Pressey, 2000; Robinson, 2002). The practice of conservation planning has historically not been systematic and protected areas have often been established in areas only because they do not have no economic or agricultural value. In the late 1980's South Africa started researching the use of systematic conservation planning (Reyers *et al.*, 2008) but it was only by the mid 1990's that attempts at application started (Van Jaarsveld, 1995).

Systematic conservation planning entails the identification of priority areas that contain species, habitats, and processes essential to achieving conservation targets and goals (Margules & Pressey, 2000; Escott, 2011). This is achieved via computer software, various tools, techniques and databases aimed at identifying priority areas for conservation (Sarkar *et al.*, 2006; Reyers *et al.*, 2008; Escott, 2011). The quality of systematic conservation planning products is not a concern (Rodrigues *et al.*, 2000), the question is however, whether these plans have any real-world effect or not (Balmford, 2003; Knight *et al.*, 2008; Reyers *et al.*, 2008). In the recent past a number of authors within the conservation planning fraternity have started asking questions related to the actual impact of conservation plans (Prendergast *et al.*, 1999; Balmford & Cowling, 2006; Knight *et al.*, 2006; Knight & Cowling, 2007).

Implementing organisations (usually government bodies) hold the key to achieving real-world conservations goals through systematic conservation planning techniques. If the techniques are not acknowledged during the planning process and the tools not easily understood by the end-user, nothing is accomplished (Pierce *et al.*, 2005). There have been numerous attempts to bridge the gap between conservation assessments (Pressey, 1999; Theobald *et al.*, 2000; Ribaud *et al.*, 2001; Pierce *et al.*, 2005) and land-use planning but the products developed are often not useful to land-use planners, who have to integrate various

stakeholders' issues into a single spatial plan (Pierce *et al.*, 2005). Often conservation plans are clear on where we need to conserve but silent on how we need to go about achieving the goals (Knight *et al.*, 2006).

Conservation planners started to explore the issues that hamper the successful implementation of conservation planning and found that only one third of the conservation plans (globally) published between 1998 and 2000 resulted in actual implementation (Knight *et al.* 2006, 2008; Reyers *et al.*, 2008). This finding along with Prendengast *et al.*'s (1999) description of the gap between conservation plans and conservation action led to the description of the 'research-implementation-gap' (Knight *et al.*, 2006; 2008) and the realization that:

“...conservation is primarily not about biology, but about people and the choices they make”
(Balmford & Cowling, 2006).

South Africa started bridging the gap between science and implementation by focussing on the integration of human and biological elements in conservation (Knight & Cowling, 2007; Reyers *et al.*, 2008). Many considered South Africa the leader in real world conservation planning (Balmford, 2003). The Subtropical Thicket Ecosystem Plan (STEP) is one of the many real-world attempts to bridge the gap between systematic conservation assessment and land-use planning, but the peer-reviewed literature does not give a substantiated view of its effectiveness (Knight & Cowling, 2003; Pierce *et al.*, 2005). Pierce *et al.* (2005) found that to date there has been no published review, that can be used to assess the effectiveness of conservation plans.

Despite the considerable progress that has been made worldwide in addressing the effective implementation of conservation plans, the degree of success with which many conservation plans are implemented still remains uncertain (Reyers *et al.*, 2008).

1.2 Problem statement and substantiation

New awareness concerning the importance of the environment and the development of legislation to protect and regulate human activities, has become a major driving force in government planning (Carsjens & Ligtenberg, 2007; Margules & Pressey, 2000; Pauleit & Duhme, 2000, Rae *et al.*, 2007). Planning in all spheres of government should include environmental considerations (Retief & du Plessis, 2008; DEAT 2003, Sowman & Brown, 2006). Neighbouring municipalities', districts' and provincial plans are drafted separately and then integrated, in a bottom-up planning process and the product of this process is an Integrated Development Plan (IDP). The local sphere of government uses Integrated Development Planning (IDP) as the key strategic planning instrument within the municipality. The purpose of integrated development plans is to ensure that resources (both human and capital) are available for municipalities to direct at identified projects and programmes that meet the approved development priorities (COT, 2011). The municipalities have been given major developmental responsibilities through the Constitution and by developing and implementing an IDP they are enabled to manage the process of fulfilling their responsibilities (RLM, 2006).

Conservation planning is a key element that needs to be considered in the planning phases of the IDP. Many conservation scientists are of the opinion that for any development plan to be truly sustainable systematic conservation planning should form the basis of its design (Turpie, 2009). Other strategic documents that can influence the implementation of conservation planning are: The Spatial Development Framework (SDF), which is the spatial representation of the IDP and is most frequently consulted by development planners; and the Environmental Management Framework (EMF) which assists government decision-makers in making informed decisions on environmental issues.

In 2004, the provincial government of Gauteng developed a Conservation Plan (C-Plan) that identified areas of importance for conservation (categories: irreplaceable, important and reserved sites) using the method developed in Margules & Pressey, 2000. This plan is considered a strategic conservation planning document for the province that should be considered in any land-use development. The expectation is that municipalities within the Gauteng Province, should, as part of their IDP process, integrate the Gauteng C-Plan with their IDPs. This study explores the extent to which the Gauteng C-Plan has been incorporated into strategic municipal decision-making documents (IDP, SDF and EMF).

1.3 Research Question

Main Research Question

To what extent is the provincial Gauteng Conservation Plan (C-Plan) reflected in municipal IDP, SDF and EMFs?

Sub-research Questions

To answer the main research question the following sub-questions need to be answered:

1. *To what extent is the Gauteng Conservation Plan explicitly reflected in the IDP, SDF and EMF of local municipalities?*
2. *To what extent is the Gauteng Conservation Plan implicitly reflected in the IDP, SDF and EMF of local municipalities?*

The analysis explored both explicit incorporation (through the defined and regulated processes), and the implicit incorporation (such as mere reference to the information of the Gauteng Conservation Plan in selected strategic municipal documentation and maps).

1.4 Structure of Research

To enable the results presented by the research to be as easily interpreted as possible, a clear link is made between the research questions, the methodology used to address the questions and the eventual interpretation of the data.

This dissertation comprises five sections, namely:

Introduction – introduces the background to the research, the problem statement and research questions and finally, presents the structure of the dissertation.

Literature review – provides information from published resources on the key concepts of the research, namely: spatial and conservation planning and the role played by government.

Methodology – this chapter describes what data were used, how the research question was answered and, finally, what limitations and constraints were experienced.

Results – this chapter gives results of the analysis clearly and concisely and presents information from the documentation that is relevant to the research question.

Conclusion & Recommendations – based on the outcome of the analysis in Chapter 4, conclusions are arrived at, the research question answered and recommendations made.

Table 1-1. The structure of the dissertation that links research questions with methodologies and chapters.

RESEARCH SUMMARY			
Sub-Research Questions	Methodology	Data Analysis	Chapters
To what extent is the Gauteng Conservation Plan <u>explicitly</u> reflected in the IDP, SDF and EMF of local municipalities?	¹ <i>Documentation review</i>	Step 1: Research key concepts, namely: environmental governance, spatial and conservation planning.	Chapter 2: Literature Review 2.1 Spatial Planning 2.2 Conservation Planning 2.3 Environmental Governance in South Africa 2.4 Fragmentation of Environmental Governance 2.5 Integration
		Step 2: Conduct an Objective Analysis to determine explicit incorporation.	Chapter 3: Methodology 3.1 Case Studies 3.2 Strategic Documentation 3.3. Data Analysis
To what extent is the Gauteng Conservation Plan <u>implicitly</u> reflected in the IDP, SDF and EMF of local municipalities?	<i>Comparative analysis on the spatial maps, using selected sites.</i>	Step 3: Conduct a Comparative Analysis on spatial maps: • Select sites to be compared; • Ensure C-Plan representation; • Make visual comparisons between C-Plan and EMF and SDF to determining implicit and explicit incorporation.	
	<i>Documentation review for key concepts.</i>	Step 4: Conduct an Objective Analysis (key concepts) and determine implicit incorporation.	
Main Research Question		Step 5: Evaluate incorporation of C-Plan in strategic municipal decision-making documentation.	Chapter 4: Results 4.1 Across Case Analysis 4.2 Single Case Analysis
To what extent is the provincial Gauteng Conservation Plan (C-Plan) reflected in municipal IDP, SDF and EMFs?		Step 6: Study the results of the analysis and answer the research questions.	Chapter 5: Conclusion and Recommendations

¹ Documentation refers to municipal IDP, SDF and EMF.

2 LITERATURE REVIEW

This section provides the context around the problem statement by reviewing the historical development and current government involvement in spatial and conservation planning.

This section is subdivided into:

- Section 2.1 – Spatial Planning: Gives an overview of the development of spatial planning and the involvement of government with it in South Africa.
- Section 2.2 – Conservation Planning: Gives an overview of the development of conservation planning in South Africa. Introduces the ‘research and implementation gap’ and a review of relevant publications
- Section 2.3 - Environmental Governance in South Africa: Provides the background and framework of how conservation planning has changed in South Africa and what role the government has played; as well as an overview of the legislated relationship between the different spheres of government, specifically focusing on the Integrated Development Plan (IDP), Spatial Development Framework and Environmental Management Framework.
- Section 2.4 - Fragmentation of Environmental Governance: Explores how the different role players in government communicate, or not, with the various stakeholders, within and around the government structure.
- Section 2.5 - Integration: The solution to fragmentation is the integration and cooperation of different of stakeholders.

2.1 Spatial Planning

Since the commencement of democracy in South Africa there has been a sharp increase in the number of official systems and legislation that has attempted to control spatial development and planning (DEAT, 1997). Modern day spatial planning in South Africa, also referred to as ‘land-use’ planning, is largely based on the British model of planning (Claassen, 2009). In South Africa the land-use planning was heavily influenced by political agendas. Currently land-use planning is influenced by legislation, government at a local and district sphere, conservation planning, various governmental and private initiatives (economic and social) (Turpie, 2009).

Land-use management can be used to protect the natural environment and the public from the negative impacts resulting from unsustainable development and land-use changes. Land-use management can promote environmental management and may improve the welfare of communities while ensuring sustainable use of their resources in numerous ways (Theobald *et.al.*, 2005). It facilitates a holistic approach to the management of land. According to Enemark (2007), by understanding how land management functions, government can promote the relationship between policy making, good governance, land administration systems, and land information infrastructures. This will assist in developing a coherent approach in dealing with land issues and will promote sustainable development.

South Africa started spatial planning and land-use control with the use of ordinances, supported by town planning schemes that developed regulations that defined the land uses in a selected area (Claassen, 2009). This planning was implemented only within town and urban areas, not in rural areas. Town planning is currently regulated by somewhat dated provincial ordinances, which have no express requirements for environmental assessments (Claassen, 2009). In some cases where planning decisions in terms of the Ordinances have been made, that do significantly affect the environment, Section 2 principles of the National Environmental Management Act (Act 107 of 1998) were applied. These principles require that any development must be socially, environmentally and economically sustainable. Thus, local officials deciding town planning matters may invoke the NEMA principles in appropriate cases (Kidd & Retief, 2008). Unfortunately, due to the high turnover of government personnel and a lack of environmental and legislative awareness may local officials are unaware of the regulatory options available to them.

Schedules 4A and 4B in the Constitution of South Africa causes some confusion about what the function of municipalities is with regard to the environment (Claassen, 2009). The general trend has been to move control and land-use management to a provincial level. This is clearly supported by the Development Facilitation Act (Act 67 of 1995) (DFA) section 15, where the provincial 'development tribunals' replaced the municipalities as the decision-making bodies. In 2001 a Land Use Bill was published with the intent to replace the DFA. No progress was made until in 2011, 10 years later, the Ministry for Rural Development and Land Reform invited members of the public to submit comments on the Draft Spatial Planning and Land Use Management Bill (published in the Government Gazette on 6 May 2011). The department foresees that the Bill will impact on all national, provincial and particularly pre-1994 legislation on land use management and land development (replacing the Development Facilitation Act No 67 of 1995, Removal of Restrictions Act No 84 of 1967, the Physical Planning Act No 88 of 1967 and other laws). The Bills primary objectives are to:

- “provide for a uniform, effective, efficient and integrated regulatory framework for spatial planning, land use and land use management in a manner that promotes the principles of cooperative government and public interest;
- provide for and determine development principles, compulsory norms and standards for land use management; maintain essential standards for land use management, spatial development and land use; promote cooperative governance; socio-economic benefits; sustainable and efficient use of land; establish planning tribunals; and
- redress the imbalances of the past and ensure that there is equity in land use and land use management” (DRDLR, 2011).

The Bill also clearly defines the elements of municipal spatial planning, which comprises: compilation, approval and review of integrated development plans, the supporting documentation and spatial development frameworks. The bill awards the municipality the “control and regulation of the use of land within the municipal area where the nature, scale and intensity of the land use does not affect the provincial planning mandate of provincial government or the national interest” (DRDLR, 2011). How this will be determined is still unclear.

2.2 Conservation Planning

The IUCN (2010) divides conservation tools into *Conservation Databases* which include: Species, Protected Areas, Law, and Ecosystem Databases; and *Action Tools* which comprises guidelines on Assessment and Monitoring, Conservation Management and Planning, Conservation Policy, Conservation Education and Awareness Raising, as well as the IUCN Programme Management tools (Sarkar, *et. al.*, 2006). This dissertation focuses on the strategic Conservation Planning and Assessment tool (i.e. the Gauteng Conservation Plan) with implementation through area protection. The protection of the areas could be implemented by means of the traditional Protected Areas (e.g. nature reserves) or by land-use stipulations and zoning.

Traditionally protected areas have always been used as a conservation tool. The first protected areas in southern and eastern Africa were created in the 1890s (Western, 2003). Central Africa followed suit and established its first protected area in the 1920s (Western, 2003). The first official protected areas in South Africa were proclaimed in terms of the Cape Forest Act of 1888, this was done to protect the forest reserves in the Knysna and Tsitsikamma area from further degradation (Rabie & Fuggle, 1992).

The recognition that wildlife (elephant and white rhino) was drastically declining due to uncontrolled hunting led to a number of statutory game reserves being proclaimed, i.e. the Pongola and Sabie Game Reserves in the Transvaal in 1894 and 1898 respectively (Rabie & Fuggle, 1992). Currently, 6% of South Africa's land area is under formal protection as protected areas (Algotsson, 2009). The aim is to expand the protected area network to the international standard of 10% terrestrial and to 20% for marine areas by 2012 (IUCN, 2010). In 2003/4 the then Department of Environmental Affairs and Tourism (DEAT) and the South African National Biodiversity Institute (SANBI), executed South Africa's first national assessment of spatial priorities for conservation action as part of the National Biodiversity Strategy and Action Plan (NBSAP). The objective of this assessment was to systematically identify geographical priority areas for the development of strategies and action plans (short- to medium-term) (DEAT, 2005). This was heralded as a great step forward towards an holistic approach to development and conservation planning.

Protected areas, in particular biodiversity conservation, should ideally fulfil two requirements, namely representatively and persistence (Reyers *et al.*, 2008). Protected areas should include the full variety of biodiversity of the area, at all levels (genus, species and ecosystems); it should be ensured that the ecological and evolutionary processes that are necessary for their persistence are maintained. The need for a more systematic way of conservation planning originated from the realisation that (Reyers *et al.*, 2008):

- The isolation of areas from threatening processes/behaviours/activities is one of the responses most successful for the conservation of biodiversity.
- Existing protected areas were in many instances pre-determined by the presence of tsetse fly and malaria, or by the fact that their agricultural potential was poor. This led to bias towards certain areas and biomes, thus failing to meet the expectations of protecting a representative sample of biodiversity.
- As the human population grows so does their demand on natural resources. There is a limit to the resources available to develop new protected areas, thus techniques have been developed to efficiently and effectively select the most appropriate areas for protection.

Margules and Pressey (2000) hypothesize that a “structured systematic approach to conservation planning provides the foundation needed to meet (the) objectives” of persistence and representation of biodiversity with the challenges of limited resources and competitions for land. Thus conservation planning should be seen as the ‘bottom line’ constraint in terms of all other types of planning. Conservation assessment techniques have been developed as spatial tools that explicitly identify candidate areas for conservation action (Knight *et al.* 2008). To identify these candidates, not only the location of reserves in relation to natural biological and physical patterns must be considered, but also the reserve design, size, connectivity, replication and alignment with biological processes. Therefore a structured systematic approach to conservation planning is needed (Margules & Pressey, 2000).

Systematic conservation planning is based on several unique characteristics (Margules & Pressey, 2000).

Planners should:

- have a clear understanding of the key concepts that will be used as an indicator for the overall biodiversity in an area;
- comprehensively define the goals and targets; while
- recognising the extent to which similar goals have been met in existing reserves;
- design and/or locate new reserves to support existing ones in achieving the defined goals;
- have a specific plan for implementing the conservation action on the ground, keeping in mind scheduling of protective management when not all candidate areas can be secured at once (which is usually the case);
- identify objectives and mechanisms for maintaining the conditions within the reserves that promote the persistence of key natural features;
- further monitor those features and implement adaptive management

These concepts provide scientifically defensible information that minimises implementation and opportunity costs, thus enhancing the effectiveness of the implementation of conservation actions (Rodrigues *et al.*, 2000).

Conservation planning occurs at both national and provincial sphere, while development and land-use planning generally takes place in a municipal sphere. Management of these different types of planning (conservation and land-use), is carried out through action plans on local scale (Muller, 2009). The successful implementation of environmental management plans depends on the resources, skills and related effectiveness available in the local government sphere.

Recently South Africa has made remarkable strides in expanding conservation principles on private and communal lands, through community conservation areas, natural heritage sites, conservancies and cooperative models such as biospheres (DEAT, 1997). Conservation legislation and planning have evolved to encourage the development of ecological networks, as well as changing the traditional focus of area-based conservation to ecosystem approaches (Algotsson, 2009). Environmental Zoning is one of the environmental concepts used to promote more systematic conservation (Butchart *et al.*, 2010). Zoning has always been used, from the perspective of land use planners, as a regulatory tool to implement the land use and control the land uses. By focusing on environmental considerations the tool promotes sustainable

development. Biodiversity is another environmental concept used to promote conservation. It is regularly used as a measure of the health of an ecosystem.

Conservation assessment tools have been integrated into legislation through EIAs (Environmental Impact Assessments), SEA (Spatial Environmental Assessment), Conservation Plans (C-Plan), State of the Environment Report (SoER), etc. The discipline of conservation planning has grown significantly: more journals and papers are being published; programmes and plans are receiving funding and there is a better understanding and management of protected areas.

The overall picture of conservation looks optimistic until the realities of current facts are considered (Albers *et al.*, 2005):

- Species extinction rates are currently one thousand times higher than the historical rates over the known history of the Earth.
- Biodiversity has been declining more rapidly in the last 50 years than at any other time in recorded human history.
- The majority of species, besides man, across taxonomic groups have experienced a decline in population size.
- Most ecosystems have lost up to 50% of their original natural extent.

Possibly the most disturbing fact is that the degradation of our ecosystems which are also our life support systems occurs almost unabatedly (Butchart *et al.*, 2010). These ecosystem provide us with valuable services, on which we depend for our health, happiness and general well-being (Daily, 1997). In spite of all the successes very little has changed. There seems to be a lack of effectiveness of research and conservation tools in informing the delivery of conservation actions. Knight *et al.* (2008) coined this phenomenon the “*research-implementation gap*”.

2.3 Environmental Governance in South Africa

The environmental movement gained momentum in the 1960s (Western, 2003). The public and other concerned parties recognised the need for a comprehensive approach to the management of the environment. The South African government started the quest for a National Environmental Strategy and by the 1980's a statutory body called the Council for Environment had been created that advised on environmental policy matters, and reported on priority conservation and development issues to the President (Claassen, 2009). In the 1990's before distractions of a political nature eclipsed all other developments, a Presidential Council was established to champion the environmental cause (Muller, 2009). The new government of 1994 inherited a governmental system that, as in most countries in the world, had grown incrementally over a number of years as new issues were addressed. The governmental system became a compendium of objectives, practise and organisational structures.

Additional difficulties were faced with the inequalities of the past that had been built into the legal landscape. Influential individuals spent long years planning and structuring a new governmental system for South Africa, but struggled to cope with the significant challenges it faced. In 1995 the International Development Research Centre (IDRC, 1995) published a report detailing the environmental governance challenges faced

by the new government. The challenges, in short, were: fragmentation of policy, conflict of interest, ineffective enforcement, inadequate accountability, scarcity of trained human resources, over-centralisation, lack of public participation and finally a weak 'champion' for the environment. After almost 15 years these challenges remain, with the possible exception of public participation.

Environmental governance has evolved rapidly over a short period of time and is also referred to as environmental management. It means different things to different people, depending on the context in which it is used. When defining '*Environmental Management*' one has to look at 'environment' separate from 'management', and what these two concepts signify together. Environment can be defined from either an integrative perspective or as an exclusively green concept. The integrative perspective includes human culture, economic and social issues into the environment as an integral and indivisible part of the earth system. While the exclusively green concept focuses on the biotic (living elements: human, animals, plants, etc.) and physical elements (nonliving elements: air, soil, light, etc.) of the earth system.

South African law defines 'environment' as: "means the surroundings within which humans exist and that are made up of:

- the land, water and atmosphere of the earth;
- microorganisms, plant and animal life;
- any part or combination of (i) and (ii) and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing" (NEMA, 1998)

It is clear that 'environment' in South Africa law is defined as an all-encompassing or 'integrative' concept. The definition of 'management' is: the use of available resources efficiently and effectively, to achieve a set goal or predetermined outcome. There is a wealth of management models (e.g. SWOT, 7S Model, PEST/PESTLE, Deming cycle, spatial maps, etc) that provide tools to manage a variety of activities. The use of these tools depend on what needs to be managed.

The post-1994 government designed the governing system to function in three spheres: National, Provincial and Local Government.

2.3.1 National Government

There are 45 national departments; arguably the most important of these is the Department of Cooperative Governance and Traditional Affairs (CGTA). This department is responsible for the promotion and facilitation of cooperative governance and intergovernmental relations between the different departments and spheres of government. To improve the integration among the different spheres of government in policy, development and implementation the Intergovernmental Relation Framework Act (Act 13 of 2005) was promulgated.

The four national departments that have the most influence on the natural environment are: Department of Environmental Affairs, Department of Water Affairs, Department of Agriculture, Forestry and Fisheries and the Department of Mineral Resources.

Department of Environmental Affairs has the mandate to manage South Africa's environment, to do this a number of directorates were established (DEA, 2011). Their strategic objectives are:

- protect, conserve and enhance our environment, natural and heritage assets and resources;
- proactively plan in order to manage and prevent pollution and environmental degradation to ensure a sustainable and healthy environment;
- provide leadership on climate change adaption and mitigation;
- contribute to sustainable development, livelihood, green and inclusive economic growth through facilitating skills development and employment creation;
- contribute to a better Africa and a better world by advancing national environmental interests through a global sustainable development agenda.

The Department of Water Affairs is the custodian of South Africa's water resources and it:

- is primarily responsible for the formulation and implementation of policy governing this sector;
- has an overriding and supervisory role over water services provided by local government;
- strives to ensure that all South Africans have access to clean water and safe sanitation;
- also promotes effective and efficient management of water resources to ensure sustainable economic and social development (DWA, 2011).

The Department of Agriculture, Forestry and Fisheries interacts with the natural environment on a very basic level but from a unique point of view (DAFF, 2011). It seeks to completely alter the natural environment to provide the basic needs for South Africans, while being profitable. The department's second strategic goal is: "Sustained Management of Natural Resources" that to say the continued use of natural resources in any form or function. This is a deviation from the norm of 'sustainable' management which focuses on the responsible long term use of resources without depleting/damaging/impairing it.

The mining industry as a whole is incredibly destructive towards the natural environment (Knight *et al.* 2011). There is ongoing dispute between the Department of Mineral Resources and Environmental Affairs about the authorisation of activities that may affect the environment. The Department of Mineral Resources states that its mission is to: "Promote and regulate the minerals and mining sector for transformation, growth, development and ensure that all South Africans derive sustainable benefit from the country's mineral wealth" (DME, 2011).

There are also a number of parastatal and statutory institutions that have important environmental governance functions (Muller, 2009), for instance, the South African National Parks (SANP) that manages twenty parks and serves the important function of conserving sectors of natural and cultural heritage; and the SANBI which is the custodian of the National Botanical Gardens' system and responsible for exploring, revealing, celebrating and championing biodiversity for the benefit and enjoyment of all of South Africa's people.

There are a number of structures that facilitate co-ordination at a political level, between the national and the provincial levels. To name a few: various portfolio committees consisting of national level members of Parliament and at provincial level of members of Provincial Legislatures; and the MINMEC which co-

ordinates the national Minister and provincial Ministers (or MECs) of Environmental Affairs (Muller, 2009). The effectiveness of these bodies still needs to be determined.

2.3.2 Provincial Government

There are 9 provincial governments in South Africa, which are responsible for ensuring that planning and development activities occur in a sustainable manner. Each province has legislative powers vested in a provincial legislature and executive power vested in a provincial premier and the other members of a provincial executive council (Muller, 2009). The provincial governments are also mandated to establish provincial norms and standards for the area while assisting municipalities in carrying out their mandated functions. If a municipality is unable to fulfil its obligations in terms of the Constitution or legislation the relevant provincial executive may intervene by taking appropriate steps to ensure the fulfilment of those obligations. Appropriate steps might include: issuing a directive, assuming responsibility for the relevant obligation or dissolving the Municipal Council. In a case where a relevant provincial executive cannot or does not perform its duties towards a municipality, the national executive must intervene.

Provincial governments are responsible (mandated by NEMA) to administer the following in terms of environmental management:

- Environmental Impact Assessments (EIAs);
- Strategic Environmental Assessments (SEAs);
- Environmental Management Frameworks (EMFs), and
- Environmental Implementation Plans (EIP).

There are various provincial departments that are actively working (North West Province) on the relationships between different government departments, as well as those between local and provincial government spheres. The conflicting roles and duplications of statutory mandates and uncertainties with regard to powers and function of authorities, are still affecting the government's ability to achieve cooperative governance.

2.3.3 Local Government

The South African Constitution (Section 152) mandates local government to integrate environmental issues in its planning process and to conduct its business in a way that is consistent with sustainable development principles (Muller, 2009). Local government is responsible for implementing policies, programmes and plans of provincial and national government (RSA Constitution Section 153). Uncertainty exists as to what the environmental management mandates of local politicians and senior officials are and therefore there is frequently insufficient budget allocation for environmental functions. As a result there has been a deficiency in the incorporation of sustainability and environmental principles into local planning processes (Muller, 2009). Fortunately there are a number of local authorities that have been producing environmental reports (e.g. SoER, EMF, Environmental Outlook), thereby creating awareness of the implications of neglecting the environmental component.

There are three different categories of municipalities:

Category A (Metro Municipalities) – exclusive municipal executive and legislative authority in its area (e.g. Metropolitan City of Johannesburg).

Category B (Local Municipalities) - shares municipal executive and legislative authority in its area with a category C municipality within whose area it falls (e.g. Westonaria Local Municipality).

Category C (District Municipalities) – municipality that has municipal executive and legislative authority in an area that includes more than one municipality (e.g. West Rand *District Municipality*) (COT, 2011).

This research focuses on Category B and C municipalities as they make up the majority in South Africa (231 municipalities are in Category B and 46 in Category C). Each municipality (Category B) is divided into wards. People are represented by an elected ward councillor. Local municipalities also form part of the district municipality in their area. District municipalities are made up of a number of local municipalities that fall in one district (Category C) (COT, 2011). A district municipality administers and make rules for the local municipalities that fall under it. There are usually between 4-6 local municipalities that fall under one district council. Some local municipalities do not have the capacity (finance, staff, knowledge or facilities) to provide services to their communities (COT, 2011). For this purpose District and Local Municipalities share the responsibility for local government in their areas, to ensure that all communities have equal access to resources and services. This should ensure a greater sense of cooperative governance and uniform environmental management. Unfortunately this is not always the case.

Local government can be described as the ‘mad-hatter’ when discussing environmental management. It has multiple roles to fill, or rather hats to wear:

- Governed, by provincial and national spheres of government;
- Governor, of the area and the activities, facilities and services that occur in its area;
- Manager or administrator, of the global common goods and environmental services in its area; and
- Driver, of local economic and social development.

These roles are interlaced and influence each other continuously. The managerial or administrator role has the most influence on the efficiency and effectiveness of environmental management. Under the constitution and other legislation, municipalities have been awarded major development responsibilities. Municipalities have to ensure that the quality of life for their citizens is improved by the provision of basic services, creation of jobs, promoting democracy and accountability and eradicating poverty. To do this the ‘Integrated Development Plan’ is used (DLA, 1999). The IDP is a legislative requirement and has a legal status. It supersedes all other plans that guide development at Local Government sphere (WLM, 2007).

The National Spatial Development Perspective (NSDP) (2006) considers the macro policy and planning implications of the South African economy. By targeting all areas of the country, regardless of the economic viability of an area, this national programme supplies all municipalities with basic planning instruction of infrastructure services. Local municipalities are responsible for co-ordinating and planning with other spheres of government (neighbouring municipalities, districts and provinces) what infrastructure investment will be needed (LLM, 2007). The relationship between the NSDP, provincial plans and Integrated Development Plans should be influenced by intergovernmental planning principles, such as the following:

- “National development guidelines and principles should inform planning for development in all spheres;

- Each sphere has its own distinct development tasks and related planning tasks corresponding to the scale of operations and the area of jurisdiction;
- Integrated development planning (IDP) by municipalities is a tool to integrate and co-ordinate implementation in terms of geographical space and time in that locality;
- Municipalities have to inform, and be informed by the planning of other spheres of government, including the sectoral / departmental planning of line agencies; and
- The necessary movement towards mutual alignment between national principles / guidelines, sectoral planning requirements and local needs, conditions and resources must be conducted in the spirit of co-operative governance whereby the plans of one sphere should support those in another.” (NSDP, 2006)

2.3.3.1 Integrated Development Plan (IDP)

The purpose of an IDP is to ensure that resources available to municipalities are directed at the delivery of projects and programmes that meet the agreed development priorities (RLM, 2006). Further, it enables a municipality to gain a better understanding of the changes it encounters and to identify effective methods to deal with such changes (WLM, 2007). Problems are also identified in advance and a municipality can avoid being trapped in a cycle of crises management (WLM, 2010). Integrated development plans are multifunctional tools that deliver much more than what they were originally designed for. For instance:

- **Focused and Proactive Management**
Which mobilises the municipality to focus on the future and develop for it. It enables the municipality to proactively position itself to a better position to understand the coming challenges and help identify effective methods to deal with them.
- **Institutional Analysis**
This internal analysis allows the municipality to understand its own internal operations. It empowers the municipality by identifying its strengths and weaknesses in its staff composition and deployments, culture, structures and financial situation; while offering opportunities to proactively capitalise or overcome them (SDM 2007).
- **Empowerment of Stakeholders**
The IDP involves the participation of all stakeholders that have an interest in or a contribution to make to the process. In many cases ‘meaningful’ participation is not always possible due to a lack of knowledge and circumstances (i.e. poverty, previous disadvantage, illiteracy, etc) (MCM, 2007). Thus communities and stake holders have to be empowered (by means of education, workshops, road shows, etc.) to be able to understand what issues have to be addressed.
- **Focused Budgeting**
The IDP provides for a strategic management foundation for budget allocations (i.e. objectives, targets and plans/programmes) allocations (ELM, 2007a).
- **Change Agent**
Development is synonymous with change. IDPs provide a tool for managing the changes as they occur. The IDP process changes the mindsets of people to address the realities of the present and to embrace the future whilst ensuring participation from all spheres of government (WDM, 2007).

Once the IDP has been adopted it remains effective for a five year period. It is reviewed annually to ensure that it is still relevant (in light of the municipality's strategic plan and priorities). To ensure relevancy the review must include an assessment of implementation performance and the achievement of targets and strategic objectives; and also the success of corrective measures when addressing problems. The IDP review informs other components of the municipal business processes (financial and budget planning) and the cyclical inter-governmental planning. The review is also important to facilitate the conformance to all legal requirements.

The Municipal Systems Act (MSA) (Act 32 of 2000) (Section 25 (1)) clearly outlines what should be included in the IDP and states they should include:

- the municipalities vision of long-term development;
- a current assessment of existing levels of development;
- the council's development:
 - priorities and objectives (for its elected term), and
 - strategies (aligned with provincial and national sectoral plans);
- applicable disaster management plans;
- a financial plan with projected budget plans for 3 years;
- key municipal performance indicators and performance targets.

Before starting the IDP Process a plan must be drawn up to ensure the proper management of the planning process. The plan should outline departmental structure involved in the IDP, how public participation will take place, time schedules and responsibilities and finally how the whole process will be monitored. The process of formulating an IDP can be divided into different phases: the Analysis, Strategy, Project, Integration and Approval Phases. Figure 2-1. clearly depicts steps in the process, the activities that occur in each that step and the proposed outputs. The IDP Guide Pack published by the Department of Provincial and Local Government (DEAT, 2003) sets out the particulars of IDP and should be consulted if more detailed information is required.

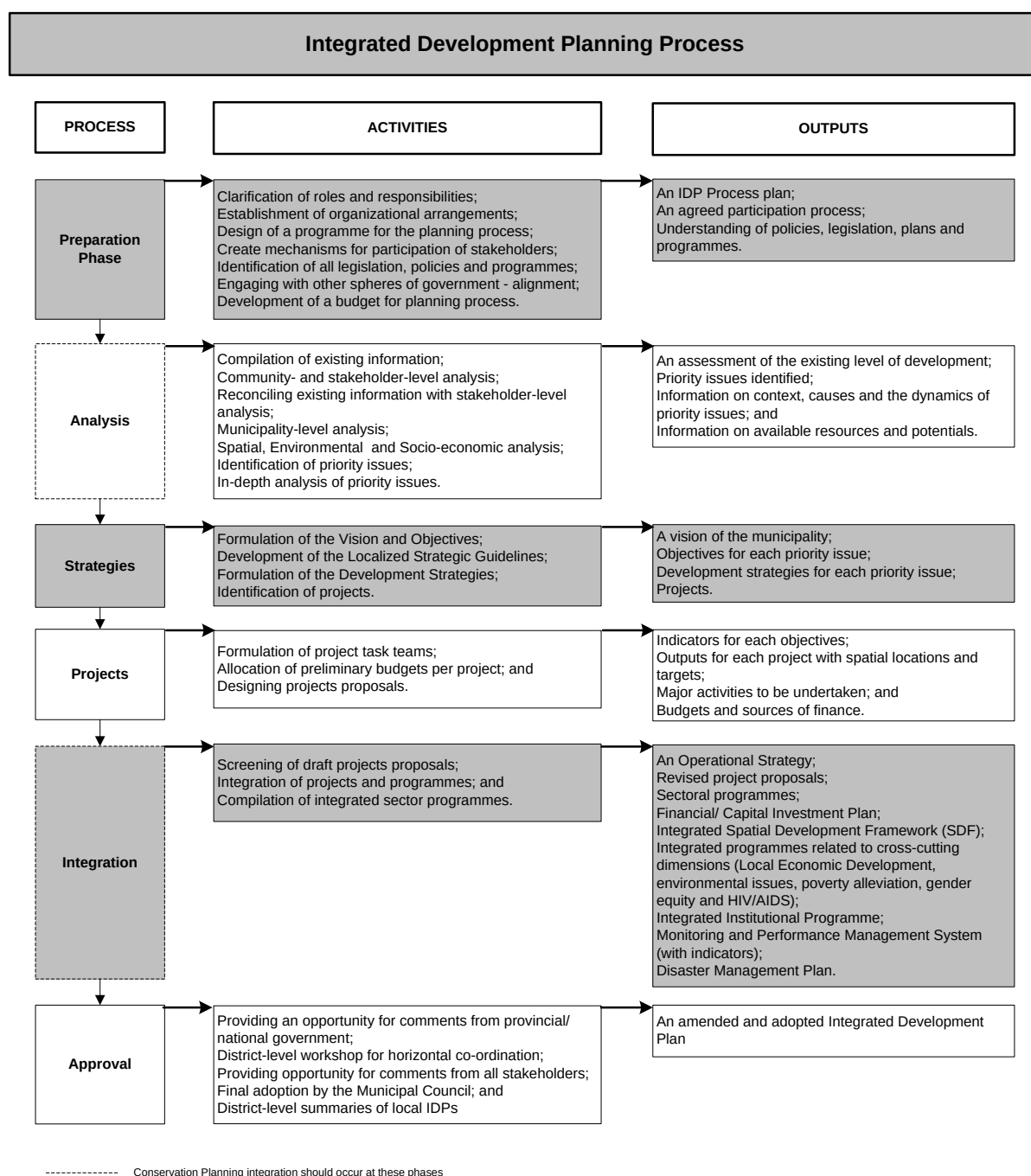


Figure 2-1. Integrated Development Planning Process

There are various role players in the IDP process (ELM, 2007b). The success of integration, participation and implementation depends on each identified role player having the expertise and resources to do their work effectively. The following sets out details of the different role players and their responsibilities with regard to the IDP:

Local Municipality

- IDP preparation and adoption of the Process Plan.
- Overall management and co-ordination of the planning process.
- Integrate the different projects, plans and sector programmes.

- Councillors should play a leading role in the IDP process. The IDP is not only a mechanism through which they have to make decisions; it also contains their constituencies' needs and aspirations.

District Municipality

- Co-ordinate the roles of each local municipality within its area of jurisdiction;
- Horizontal alignment of the IDPs of local municipalities within the district;
- Vertical alignment between district and local municipalities;
- Vertical alignment of the IDPs with other spheres of government and other sectors;
- Preparation of joint strategy workshops with local municipalities, provincial and national role-players and others (SDM, 2010).

Provincial Government

- The broad responsibility of ensuring horizontal alignment of the reviewed IDPs of district municipalities within the province.

Civil Society (Community and other stakeholders)

- Provision must be made for civil society to participate in the IDP review process to ensure that the interests of different groups are represented.
- Community based, provincial and other stakeholders should participate in the IDP review process through the Representative Forum.

Support Providers/Planning professionals

External service providers are engaged to:

- provide technical guidance to the review process;
- facilitate planning workshops and document the outcomes of planning activities;
- special duties;
- support to organised and non-organised groups and communities; and
- ensure alignment with Provincial and National Departmental budgets.

MSA (Act 32 of 2000) Sections 30 and 55(1) describe the responsibilities of the different role players further.

The Analysis and Integration phases are the critical time periods where integration between sectors, departments and spheres should take place. The legal framework, community and stakeholders, municipality technical, institutional, economic, socio-economic, spatial and environmental analyses are just some of the factors that have to be integrated into the IDP. For the purpose of this study the spatial and environmental municipal analyses are the most important.

2.3.3.2 Spatial Development Framework (SDF)

The spatial analysis is delivered in the form of the Spatial Development Framework (SDF) which gives effect to the principles contained in Chapter 1 of the Development Facilitation Act (Act No 7 of 1995). It is a critical land-use management tool, used by local municipalities to spatially plan and guide development (WDM, 2005, 2009). It contributes towards the orderly spatial structure of districts and the provinces. It forms an important part of the Integrated Development Plan (IDP) and is the spatial representation of the plan. The purpose of the spatial development framework is to:

- provide guidance as well as a strategic assessment of what is possible and desirable for land development;

- develop an approach to development (policies, frameworks and guidelines);
- develop a spatial logic which guides private sector investments;
- protect the rights of people and natural systems;
- make efficient use of resources while ensuring sustainability;
- establish priorities for public sector development and investment;
- identify spatial priorities and places where public-private partnerships are possible (DLA, 1999).

The SDF deals with all key aspects of land development and stipulates where development may or may not occur, while taking into account zoning and related regulations, land-use policies, as well as current and future proposed development (Anonymous, 2008; SDM, 2009). All developmental decisions, planning laws, and operational policies and requirements must be consistent with these controls (Anonymous, 2008; RLM, 2008).

2.3.3.3 Environmental Management Framework (EMF)

Environmental Management Frameworks are defined as: the way to study the biophysical and socio-cultural systems of a defined area, with the purpose of revealing where specific land-uses may best be practiced and to offer performance standards for maintaining suitable uses (SDM, 2008). An EMF is developed on a foundation of environmental information as well as socio-economic priorities. The following environmental information should be included in the EMF: a description of the climate of the area (wind, temperature, rainfall), topography, geology, ground water, water quality and noise impact on the population in the area, flora and fauna, cultural and historical areas, protected areas, disaster risks and water pollution (WDM, 2006). EMFs are primarily aimed at:

- Securing environmental protection;
- Promoting sustainability, and
- Promoting cooperative environmental governance.

In 2010 the Environmental Management Framework Regulations were published (18 June 2010; GNR. No. 547) under sections 24(5) and 44 of the National Environmental Management Act, 1998, (Act No. 107 of 1998). The regulations state that an EMF must, as a minimum, include assessments of the following:

- why a EMF is needed,
- the status quo of the area,
- the desired state of the environment, and
- the actions should or need to be taken to achieve the desired state.

The Ekurhuleni Metropolitan Municipality (in Gauteng) was one of the first local municipalities to produce and gazette an EMF (17 June 2008). An EMF assists government decision-makers in making informed decisions on environmental issues. The EIA regulations in terms of Chapter 5 of NEMA (Act 107 of 1998) make provision for EMFs as a regulatory instrument. The act further specifies the contents of the EMF and the process to be followed in developing it. It further states that once an EMF has been approved, authorities must consider the guidelines and recommendations in it when deciding on any land use application (LLM, 2006). The EMF takes the environmental as well as socio-economic factors into account for each individual developmental decision that has to be made. An EMF should contain a list of all the major existing environmental problems, their location, people affected and the magnitude of the problem as well as and the

causes, it should also list the risks and opportunities. While the SDF identifies specific areas for planned developments (i.e. reports on what land is available), the EMF analyses the environmental attributes of an area and identifies areas that are environmentally sensitive. It provides area-specific guidelines on whether certain activities may take place in each area (i.e. what land is suitable).

2.4 Fragmentation of Environmental Governance

Arguably, environmental management and governance in South Africa could be substantially improved if the issue of fragmentation was resolved. Environmental governance is fragmented in numerous ways. Horizontal fragmentation occurs because of the numerous different mandates that are vested in various separate, independent line functions of state (e.g. DEA, DME, etc.) (Nel & Kotze, 2009). Vertical fragmentation takes place because mandates are shared between the national, provincial and local spheres of government. Horizontal and vertical fragmentation are further divided by parameters of medium (i.e. biota, air, water, soil, etc.) and sectoral (i.e. agricultural, mining, radio-activity, waste, development planning, etc.) parameters (Figure 2-2) (Nel & Kotze, 2009). Fragmentation is further amplified by the possible difference in paradigms. For instance the SDFs reflect the planning paradigms and are compiled by planners while the EMFs reflect conservation, environmental and ecological paradigms and were compiled by environmentalists.

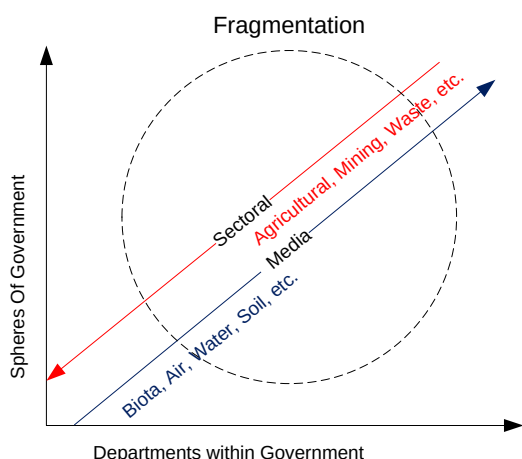


Figure 2-2. Environmental Governance Fragmentation

The Department of Environmental Affairs (DEA) is responsible for managing environmental matters in South Africa but does not act as a strong centralised manager. Rather it acts as a coordinator that provides an environmental framework for other departments and spheres of government to interact within. The control over environmental matters is still exceedingly fragmented between various spheres and line functions of government and this decentralised governance structure results in inconsistencies and duplication among them. The sectorally fragmented legislation further aggravates the duplication and overlap of environmental governance.

Fragmentation has substantial impacts on sustainable environmental governance and can be summarised as:

- disjoined and incremental decision-making processes that culminates in uncoordinated and often duplicated governance efforts and instruments (policies, legislation, etc.).

- conflicting conditions in environmental authorisations.
- inconsistent behaviour by government officials, industry and the public become frustrated because of the complicated, costly and time consuming process of authorisation by various organs of state.
- organs of state focusing on the authorisations processes and, as a result, not having enough resources available to do post-authorisation follow-ups.
- inefficient arrangement, communication and cooperative governance within departments and between the different organs of state. Promoting 'silo-thinking' in government which is the practise of excluding all outside opinions and functions.
- expensive delays in decision-making.

The most damaging consequence of fragmentation of environmental governance is the externalisation of governmental inefficiencies to the private and public developmental planning sector (e.g. conflicting messages, etc.) (Nel & Kotze, 2009).

Environmental awareness has increased in recent years and the incorporation of environmental considerations has to a large extent become legislated (Carsjens & Ligtenberg, 2007). The implementation of these environmental considerations is not observed on local level (municipal). The purpose of this study is to determine the extent of incorporation of a provincial environmental plan within strategic municipal documentation and to determine where the 'breaks' in the incorporation chain occur.

2.5 *Integration*

Integration and cooperation is seen as the solution to fragmentation. Legislation has been used as a tool to mitigate some of the causes that have resulted from the continued fragmented, decentralised system of governance that has been in force since 1994. The first and most important part of this legislation is the Constitution of the Republic of South Africa 1996. All legislation and organs of state must adhere to this important piece of legislation. The government comprises of 3 distinct spheres: national, provincial and local government. These spheres are inter-dependant and inter-related. Section 40(1)-(2) of the Constitution makes provision for cooperative governance. This section aims to 'shape the attitude' of government. Nel and Kotze (2009) suggest that current attitudes within state bodies, especially those that are responsible for the environment, are less than favourable. Perhaps knowingly, provisions were made in Section 41 of the constitution to provide more detailed obligations that have to be employed, to reshape the prevailing attitudes of uncooperative governance practice. Thus cooperative governance must occur:

- within a sphere (horizontally) between the legislative and executive branches;
- between different spheres (vertically) and their various departments; and
- between spheres and organs of state that are not part of any sphere.

The National Environmental Management Act (Act 107 of 1998) is the framework environmental legislation which provides various provisions and principles with which all other environmental legislation must fall in line. It focuses strongly on cooperative governance between the different spheres by providing a decision-making guide for environmental authorities. Section 2(4)(b) requires environmental managers to acknowledge that all environmental elements are interconnected and linked. This necessitates cross-sectoral and intergovernmental communication and decision-making, in theory.

Further legislation that supports and promotes cooperative governance is the Intergovernmental Relations Framework Act (Act 13 of 2005). Since 1994 government has experienced many transformations from transitional government to fledgling government and, more recently (17 years later) a form of maturity. The main aim of the act is to facilitate and promote intergovernmental relations and provide procedures to manage the coordinated implementation of policy and legislation. The act recognises that to achieve this it depends on an established, effective system of governance for regulating the conduct and settlements of intergovernmental disputes.

2.6 Conclusion

Environmental governance and conservation planning has advanced significantly in South Africa. The development of legislation, policies and plans has greatly improved the integration of spatial and environmental planning. At the forefront of these documents are the municipal Integrated Development Plan (IDP), Spatial Development Framework and Environmental Management Framework and the provincial Conservation Plan. Fragmentation occurs between these documents and their practical implementation. The study focuses on to what extent the provincial Gauteng Conservation Plan (C-Plan) is reflected in the 8 selected municipal IDP, SDF and EMFs. The subsequent chapter details the methods used to answer this question.

3 METHODOLOGY

This section describes the research methodology applied to address the research questions introduced in Chapter 1. Six local and two district municipalities within the Gauteng Province were selected to ascertain, through a comparative and objective analysis, to what extent their strategic documents (IDP, SDF and EMF) reflect the conservation planning done on a provincial sphere (C-Plan). An analysis was done of the selected documentation and spatial maps to determine whether incorporation occurred either explicitly and/or implicitly.

This chapter contains the following sections:

- Section 3.1 - Case Studies: Introduction and short description of selected cases.
- Section 3.2 - Strategic Documentation: The key environmental plans that were used (C-Plan and EMF) and the strategic planning documentation of the IDP and SDF
- Section 3.3 - Data Analysis: A summary of all documentation used. Objective and Comparative Analysis.

3.1 Case Studies

The Gauteng Province is the smallest province in South Africa, with only 1.4% of the land area. Gauteng is bordered by the North West Province to the west, Limpopo to the north, Free State to the south and Mpumalanga to the east. Gauteng is the only landlocked province in South Africa that does not have a foreign border. The province is considered the economic hub of South Africa and contributes to the manufacturing, financial, technology, transport and mining sectors amongst others. Gauteng is also considered the 'gateway' to South Africa. Due to this expansive development natural areas are limited in extent and require active conservation management to ensure that they continue to provide habitat for more endemic species. The ecology of Gauteng Province consists mainly of the Highveld, a high-altitude grassland. Grasslands are traditionally excellent agricultural land and most have been converted for farming (Rutherford & Westfall, 1994). Gauteng is translated as 'Place of Gold' due to the thriving gold industry. Since the discovery of gold in 1886 mining has played a major role in the development of the province. Mining activities and the waste they produce irreversibly alter and degrade natural landscapes.

Case studies were selected from the Gauteng province due to its high urbanisation and rapid population growth (22.4% of the South African population live there) which result in high social-development and environmental pressure (Pearce & Turner, 1990). In such situations systematic strategic planning for the future is more crucial than ever (De Villiers, 1998). For the purpose of the research a representative sample of district and local municipalities were chosen from the Gauteng province. The metropolitan municipalities have been excluded due to the fact that remaining natural areas are few and widely dispersed. Of the three district municipalities only two were selected for this research, namely Sedibeng District Municipality which encompasses Emfuleni, Midvaal and Lesedi Local Municipalities; and West Rand District Municipality which contains of Mogale City, Randfontein and Westonaria Local Municipalities (Figure 3-1). Metsweding District Municipality was excluded due to its geographical position, which is the furthest away from the other district municipalities and difficulty experienced in obtaining the selected documentation. Merafong City and the

District Management Area from the West Rand District Municipality were not included in the study due to a lack of selected strategic documentation.



Figure 3-1. Selected district and local municipalities in the Gauteng Province.

Sedibeng District Municipality (SDM)

Sedibeng District Municipality (SDM) is one of three districts within the Gauteng Province; it is the most southerly district and contains an estimated 9% of Gauteng's population. SDM extends for 120km from east to west and has three local municipalities within its borders: Emfuleni, Lesedi and Midvaal Local Municipalities. The municipality has a 5 year IDP (2007-2011) and a single revision (2010/11, 4th revision) could be sourced as well as the SDF from 2009/10. No approved, published EMF could be found, therefore the draft from 2008 was used in the analysis (SDM, 2007, 2008, 2009).

The social-development and environmental pressures in Sedibeng have resulted in serious environmental challenges. The area includes a diverse array of ecological and environmentally sensitive areas (SDM, 2007, 2008, 2009). Air pollution caused by industrial smokestacks (steel and chemical industrial activities), as well as coal and wood smoke from townships is a major environmental and health issue. There is no formal recycling initiative and the capacity of landfills is close to exhausted. Runoff from industry and leaking, poorly

operating sewage systems are the major causes of water pollution in the area (e.g. Klipriver, Blesbokspruit and Vaal River) (SDM, 2007, 2008, 2009).

Emfuleni Local Municipality (ELM)

Emfuleni Local Municipality (ELM) is the south western most municipality in Gauteng, and covers an area of 987.45km². Emfuleni is bordered by the Vaal River and Metsimaholo Local Municipality in the Free State Province to the south, Midvaal Local Municipality in the east, the City of Johannesburg and Westonaria in the north and finally Potchefstroom (North West Province) in the west (ELM, 2007a). The municipality comprises two main city centres: Vereeniging and Vanderbijlpark, which form the 'heartland' of the Vaal Triangle and is renowned for its contribution to the iron and steel industry in South Africa, and unfortunately also the associated environmental impacts (ELM, 2009a). Emfuleni encompasses six large townships (i.e. Evaton, Sebokeng, Sharpville, Boipatong, Bophelong and Tshepiso) and another 10 smaller settlements. The 5 year IDP 2007-2012 and two annual revisions were sourced (second, 2007/8 and third, 2009/10). ELM does not have an EMF and a draft SDF from 2009 could be accessed. No related documentation could be found for the draft SDF, only the spatial map (ELM, 2009b).

Emfuleni has a high growth rate and population density. It houses around 80% of the population in the Sedibeng District, further increasing the social development and environmental pressure. The public in ELM are faced with environmental health risks due to the pollution caused by industrial, mining and domestic activities. The severity of the environmental pressures is evident in the degradation that occurs due to the illegal dumping of domestic, industrial, commercial and garden waste. There is a lack of approved waste disposal facilities in the municipality, and there is no evidence of planning to rectify this situation (ELM, 2009a). Effluent and sewage has spilled into the Vaal River but all attempts to correct the situation have failed.

Midvaal Local Municipality (MLM)

Midvaal Local municipality (MLM) is located south of the City of Johannesburg, and has Lesedi Local Municipality on the eastern border and Emfuleni Municipality on the western side. The Free State Province is located to the south of Midvaal Local Municipality. The 5 year (2007-2012) IDP was sourced along with two annual revisions (2007/8, second and 2009/10, third). An approved and published SDF (2010) and EMF (2007) was used in the analysis (MLM, 2007a).

Midvaal has two significant natural features, namely the Suikerbosrand Nature Reserve and the Vaal River. The Vaal River basin is the main hydrological system in the area and represents an important water source in Gauteng (MLM, 2010). Currently this system is facing major problems as a result of social development and environmental pressure, with polluted run-off from urban areas and industries. Air pollution is another major concern. Dust from the mining activities and emissions from industry, occurring to the north in the mining belt of Johannesburg, blow over Midvaal causing significant air pollution. Other natural features are the Klip and Suikerbosrand Rivers (MLM, 2007).

Lesedi Local Municipality (LLM)

Lesedi Local Municipality (LLM) is located on the south-eastern edge of Gauteng. LLM covers an area of approximately 1430km², which is considered mostly rural. There are two towns, namely Heidelberg/Ratanda and Devon Impumelelo, which serve as centres for the surrounding agricultural areas. Areas such as Heidelberg, Jameson Park/Kaydale, Aston Lake and Vischkuil/Endicott provide residential areas for many people working in the East Rand/Far East Rand (LLM, 2008). All the documentation sourced has been published and approved, namely: the IDP 2007-2012 (5 year), SDF 2008 and the EMF 2006. No annual IDP revisions could be found.

The Lesedi Local Municipality has a number of significant environmental features, namely:

- Suikerbosrand Nature Reserve and Alice Glockner Reserve;
- Blesbokspruit and Suikerbosrand rivers;
- dams, pans and wetlands;
- natural primary grasslands in the eastern part of the study area;
- mountain slopes, summits and rocky outcrops in the southern and western parts of the area;
- Wooded Savanna Areas; and
- Heidelberg CBD has cultural and historic features (LLM, 2006).

Agricultural activities have been identified as the primary threat to the remaining natural environment. Due to the rural nature of this municipality most agricultural holdings have no access to municipal services. People use ground water, accessed through the use of boreholes, domestically and French drains and septic tanks for waste water (LLM, 2007). The ground water in the area is therefore vulnerable to pollution. The main pollution sources in LLM are from industry, agricultural pollution (herbicides, fertilisers, pesticides, etc.) and mining activities (slimes dams). The remaining natural vegetation in undeveloped areas consists mostly of Highveld grasslands and has been classified as having high conservation importance. The continued pressure of social-development on the environment is clearly seen in the consequence of non integrated developments

West Rand District Municipality (WDM)

The West Rand District Municipality (WDM) consists of three local municipalities, namely, Mogale City, Randfontein and Westonaria. The area of the municipality is approximately 40 6623 km² with large areas of natural open spaces and agricultural lands. The municipal 5 year IDP (2007-2012), draft 2005 and approved 2009 SDF, with the 2006 EMF, was used in the analysis.

Mining is the dominant economic sector in the municipality but it is currently experiencing negative growth due to economic and political circumstances (WDM, 2005). WDM has a shortage of licensed landfill sites and burial sites. Dust from the mine dumps in the area is causing some people to contract respiratory illnesses. There are several red data species in the area that need focused management. The largest part of the Cradle of Humankind World Heritage Site lies within this area and to the north of Mogale City, but also extends into the western, central, and eastern part of Mogale City (MCM, 2009; WDM, 2007). The Merafong City Local Municipality area has been excluded from the study area, but is subject to high environmental pressure from the surrounding area (MCM, 2008, 2009).

Mogale City Local Municipality (MCM)

Mogale City (MCM), once known as the Krugersdorp Local Council covers approximately 1100 km². MCM is situated at the western side of the Gauteng Province and comprises the following urban areas: Kagiso and Rietvallei, Azaadville, Krugersdorp and surrounding areas, Munsieville, Muldersdrift, Tarlton, Sterkfontein, Magaliesburg and finally Hekpoort (MCM, 2009). The municipality is accessible from all the major centres of Gauteng and the North West province, namely Johannesburg, Pretoria, Midrand, Haartebeesspoortdam, Randfontein, and Soweto. The municipality's 5 year IDP (2007-2011), the first annual IDP revision (2008/9), SDF (2009) and EMF (2003) was available to be included in the research.

There is no structured waste management within the municipality. This has resulted in pollution of the air, land and fresh water systems, and subsequent disruption of the ecosystem processes (MCM, 2007). Habitat destruction and species loss are also a major problem in the area (i.e. ridge habitat). In the past, gold mining was the main drive of the region's economy, but due to the closure of mines the focus has shifted to tourism, agribusiness and manufacturing. Currently the dominant economic sectors are: retail, service, manufacturing and industrial (MCM, 2009). There is a continuous drive to develop and most often the environment is damaged under the pressure (MCM, 2003).

Randfontein Local Municipality

Randfontein Local Municipality (RLM) borders on the North West Province and falls in between Mogale City and Westonaria Local Municipality. Randfontein Local Municipality is approximately 477.10km² in extent. The 5 year IDP (2006-2011) and SDF (2008) was found for the research but to date no EMF has been found. The municipality comprises a number of different land uses the majority consists of natural open spaces, with a large number of agricultural holdings and built-up residential areas (RLM, 2006). The natural environments are under pressure due to insensitive housing developments and mining activities. RLM is characterised by low levels of income and high unemployment levels and influx from the North West Province (RLM, 2008).

Westonaria Local Municipality

Westonaria Local Municipality (WLM) is bordered by five local municipalities. Westonaria is characterised by a dispersed urban structure, with various urban areas and mining villages spread across the entire municipal area. WLM consist of the following settlements: Westonaria, Bekkersdal, Simunye, Venterspost, Glenharvie, Hillshaven, Wagterskop, Extension 2, Nufcor (private township), Libanon (mining village) and Waterpan (mining village) (WLM, 2008).

Mining activities and the related waste are considered the biggest threats to the natural environment in WLM. The municipality relies heavily on support from West Rand District Municipality in the way of documentation and expertise. The 5 year IDP (2007-2012), third annual revision (2010/11) and a spatial SDF map were obtainable for the research but no EMF or SDF documentation could be retrieved (WLM, 2007).

3.2 Strategic Documentation

The strategic municipal documents analysed as part of this research are shortly described in this section. The Literature Review chapter (see 2.3.3 Local Government) provides more detailed information on the

municipal documents. These plans and frameworks are in the public domain and are easily obtainable. The Gauteng Conservation Plan is discussed in detail in this section.

Integrated Development Plans (IDP) - All municipalities are mandated to develop and implement an integrated development plan (IDP) as part of their legislated responsibilities. This plan is generated every 5 years and reviewed annually (MLM, 2009). Various sectoral plans (State of the Environment (SoER), Waste Management Plan and Environmental Management Framework (EMF)) are generated along with the IDP. These plans and frameworks are incorporated into the analysis and integration phases of the IDP process.

Spatial Development Framework (SDF) - The Spatial Development Framework is the spatial representation of the IDP, which supports the development vision, objectives and strategies that have been identified. Its purpose is to guide and inform all decisions made by the municipality on spatial development and land use management.

Environmental Management Framework (EMF) - The EMF provides strategic guidance in spatial decision making to ensure protection of the natural resource base within the municipality while identifying suitable areas for development.

Gauteng Conservation Plan (C-Plan)

The Department of Agriculture, Conservation and Environment (Gauteng) (GDACE or GDARD) has published the Conservation Plan (C-Plan) Version 2 (Figure 3-2) as a product of the spatial data capture of the Biodiversity Information Management Systems Branch. The data are based on an analysis of sites selected in units that are 100ha in size or smaller (1km x 1km grids). Version 2 was completed in 2003, GDACE had proposed to release Version 3 in 2006 but there has been no new information has been forthcoming.

The Gauteng Conservation Plan (C-Plan) has identified areas of importance for conservation and categorised them as: irreplaceable, important or reserved sites. Irreplaceable Sites are those it is crucial to protect in order to meet set targets for the conservation of biodiversity in Gauteng. Important Sites are essential for the continuation of biodiversity and Reserve Sites are those sites that are classified by the National Environmental Management: Protected Areas Act (Act. No 31 of 1998) (NEMPAA). Reserve Sites include all existing level 1 and 2 protected areas.

The manner of representing data was developed by the New South Wales National Parks and Wildlife Services in Australia. The data was analysed following the systematic conservation planning protocol as documented and published by Margules and Pressey (2000). This involves the selection and mapping of biodiversity indicators and key concepts. Conservation targets are then set based on conservation biology and ecological principles. An assessment is done of the currently existing protected areas and, if they are found to be insufficient, proactive conservation planning (selection of areas) can be undertaken to meet the conservation targets identified. The C-Plan sites are represented in GIS format and are identified and classified based on the principles of:

- complementarity (avoidance of duplication of important attributes);

- efficiency (most protection for the least cost/area);
- defensibility and flexibility (many combinations of potential solutions in the face of competing land uses);
- irreplaceability;
- retention (consideration of threatening factors);
- persistence (capturing of ecological processes and exclusion of threats) and;
- accountability (in allowing decisions to be critically reviewed).

For the purpose of this study Version 2 was used to allow municipalities time to assimilate and incorporate the C-Plan into their IDPs and sectoral plans.

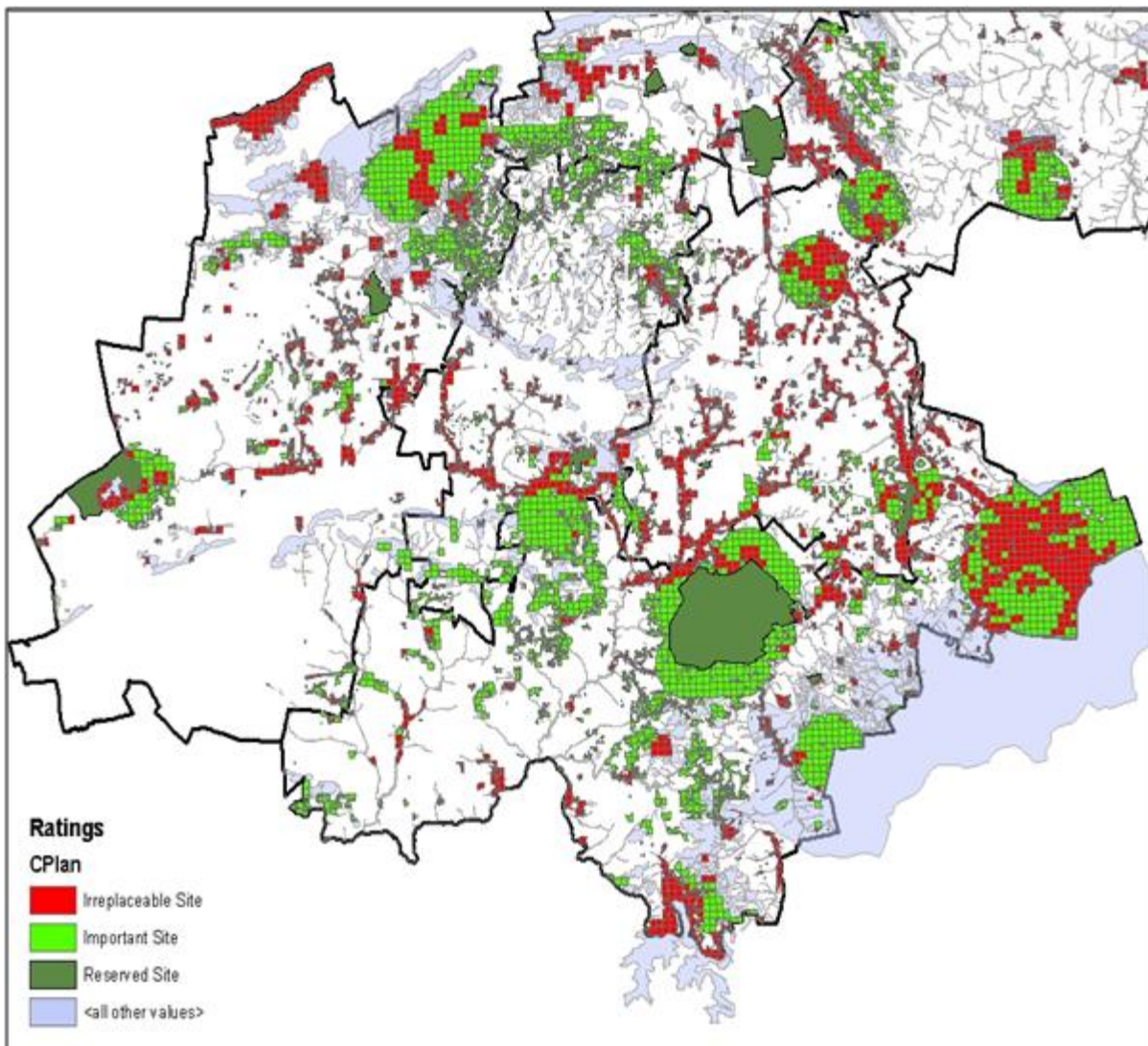


Figure 3-2. Gauteng Conservation Plan Version 2 (2003).

3.3 Data Analysis

The data analysis was divided into two sections namely Objective Analysis and Comparative Analysis. The Objective Analysis determines the extent to which the Gauteng C-Plan has been incorporated (implicitly and explicitly) in strategic municipal documents (IDP, SDF and EMF). The Comparative Analysis focuses on the

extent to which the C-Plan has been considered in the spatial components of the SDF and EMF (implicitly and explicitly). Figure 3-3 illustrates the analysis approach.

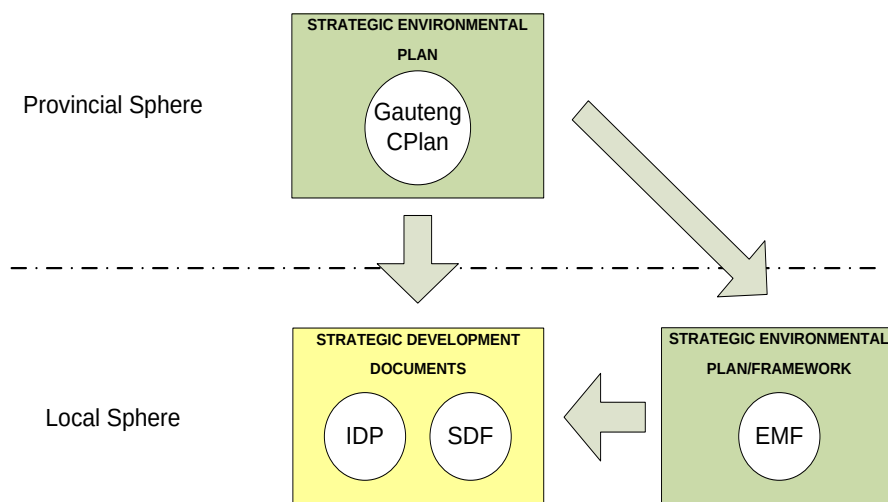


Figure 3-3. Illustration of the analysis approach.

The provincial Gauteng Conservation Plan (C-Plan) and the following municipal documents (IDP, SDF and EMF) were included in the research:

- Sedibeng District Municipality (SDM)
 - ◆ IDP 2007-2011
 - IDP 2010/11 (fourth review of 5 year plan)
 - ◆ SDF 2009/10
 - ◆ Draft EMF 2008
- West Rand District Municipality (WDM)
 - ◆ IDP 2007-2011
 - ◆ Draft SDF 2005 and approved SDF 2009
 - ◆ EMF 2006
- Emfuleni Local Municipality(ELM)
 - ◆ IDP 2007-2012
 - IDP 2007/8 and IDP 2009/10 (second and third annual revision)
 - ◆ Draft SDF 2009 (*no supporting documentation only spatial map*)
 - ◆ EMF - NONE
- Midvaal Local Municipality (MLM)
 - ◆ IDP 2007-2012
 - IDP 2007/8 and 2009/10 (second and third annual revision)
 - ◆ SDF 2010
 - ◆ EMF 2007
- Lesedi Local Municipality (LLM)
 - ◆ IDP 2007-2012
 - ◆ SDF 2008
 - ◆ EMF 2006
- Mogale City Local Municipality (MCM)

- ◆ IDP 2007-2011
 - IDP 2008/9 (first review)
- ◆ SDF 2009
- ◆ EMF 2003
- Randfontein Local Municipality (RLM)
 - ◆ IDP 2006-2011
 - ◆ SDF 2008
 - ◆ EMF - NONE
- Westonaria Local Municipality (WLM)
 - ◆ IDP 2007-2012
 - Draft IDP 2010/11 (third annual review)
 - ◆ SDF 2008 (*no supporting documentation only spatial map*)
 - ◆ EMF - NONE

The abbreviations above will be used to refer to the municipalities in the rest of this dissertation.

3.3.1 Objective Analysis

The objective analysis is divided into two parts namely Part A examines explicit incorporation and Part B reviews implicit incorporation. The following sections provide a more detailed description.

Objective Analysis Part A:

A desktop study was conducted on the municipal IDP, SDF and EMF documentation to ascertain whether the C-Plan was explicitly incorporated. Incorporation was either fully incorporated (denoted with an “A”), not mentioned at all (denoted with a “B”) or partially incorporated (denoted with a “C”).

Objective Analysis Part B:

Municipal documentation does not always reference the documents that were consulted in developing an IDP, SDF or EMF. Thus environmental key concepts were used to gauge whether the information contained in the C-Plan had in fact been incorporated implicitly. A ‘word and content’ search was done on the IDP, SDF and EMF documentation to determine whether the C-Plan was implicitly incorporated through the use of environmental concepts. The concepts were either fully incorporated (denoted with an “A” and green), not mentioned at all (denoted with a “B” and red) or partially incorporated (denoted with a “C” and yellow). The following concepts were used:

- Environmental zoning

The importance of ‘environmental classification’ when planning within the bigger municipal structure.

- Environmental Sensitive Areas

Environmentally sensitive species and habitats are more vulnerable than other areas, and are thus excellent indicators of disturbance. To ensure the continued existence occurrence of these sensitive areas municipalities need to actively plan to protect them.

- Biodiversity

Biodiversity is the foundation of Earth’s ecosystems and its services. The protection of biodiversity is paramount for service delivery.

- Conservation Planning

The inclusion of Conservation Planning indicates a prioritization and an awareness of important environments and their continued protection.

3.3.2 Comparative Analysis

Municipal documentation frequently do not explicitly reference the C-Plan. SDF and EMF maps were analysed and compared to ascertain whether the zoned land-uses were complementary or contrary to classification in the provincial C-Plan.

Using the Gauteng C-Plan data eight maps were created, one for each municipality, depicting the C-Plan sites. A consistent spatial analysis method of site selection was applied in view of the vast differences in the quality of spatial data related to the SDFs and EMFs. Three to five C-Plan sites were selected per municipality. Sites were selected to ensure, where possible, that all the C-Plan categories (irreplaceable, important and reserve) were represented. The selected sites (labelled: A – E) were compared with the land-use zoning, as mapped in the municipal SDF and with the information on selected EMF maps.

The EMF generates numerous maps that municipalities consult when making decisions. The maps are the spatial representation of detailed information. These maps may depict information on the municipality's infrastructure, economy, tourism, environment and open spaces, protected areas and biodiversity, environmental control zones, major land-use patterns, hydrology, agricultural distribution potential, urban edge, etc. Every municipal EMF contains maps that are relevant to that municipality's circumstances. As stated in section 3.1 Case Study, most of the existing pressure by social development on the environment is due to conflicting land-use and the result of inappropriate development, therefore maps were selected that depict factors that reflect these conflicts such as: agriculture, live stock grazing, mining and residential. Ecological or environmental maps were also selected in order to ascertain whether the C-Plan had been incorporated in the municipal conservation planning. A maximum of three maps was selected from each of the following categories: agriculture, grazing, land-use (cover/category/patterns), open spaces, habitats, vegetation, environmental zones, biodiversity and ecologically important areas.

The C-Plan was compared with the SDF to determine the incorporation of spatial land-use planning, while the comparison with the EMF determines the incorporation future in municipal spatial environmental planning. Where a selected site consisted of more than one C-Plan category or land-use, all the C-Plan categories and land-uses were noted. The land-use zones were either 'complementary' (A), 'conflicting' (B) or partially 'complementary' (C) to the C-Plan categories. Complementarity was used as an indicator of incorporation of the C-Plan. Where land-use types could not be distinguished due to the quality of the map the land-use was noted as '?'. Figure 3-4 shows the two maps together and the corresponding sites selected (A – C). Municipal SDF land-use types/zones can be compared with provincial C-Plan categorised sites.

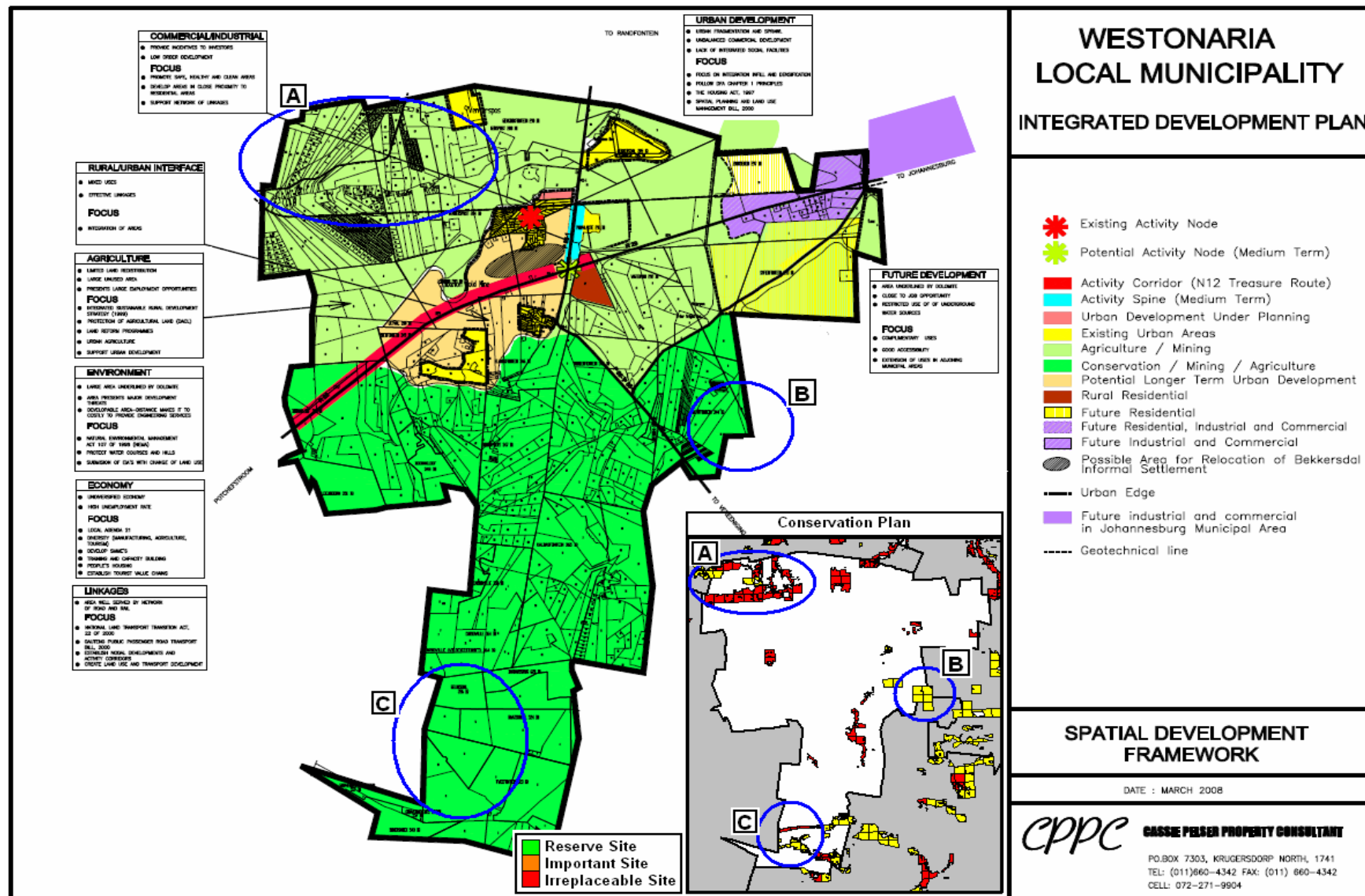


Figure 3-4. An example of the maps created, where the SDF and C-Plan sites are compared (WLM, 2005).

3.3.3 Constraints and Limitation

There were various constraints in completing this research. Due to the public participatory nature of the generation of municipal documents numerous revisions of the documents were found. In many cases it was unclear whether the status of a document was draft, final draft or approved. Another limitation during the research was the lack of strategic decision-making documents. Some municipalities did not have EMFs (WLM, RLM and EML) or 'complete' SDFs (ELM and WLM). The content of a number of the approved municipal documentation was insufficient, thus not providing the background or the context in which decisions were made. The inconsistency of the structure, content and quality of the municipal documentation was a problem as pertinent information was often missing or not detected. The availability of the selected documents was often a problem. The documents used in this research were obtained from municipalities, websites, public libraries and an academic institution (North West University, Potchefstroom). Other relevant documents and information may exist but the author was unable to retrieve them.

4 RESULTS

This section describes the results of the comparative and objective analysis, as well as detailing relevant information discovered from the documentation. The first section reports the general, across case results and the second, the more detailed individual municipal results.

4.1 *Across Case Analysis*

The incorporation of the Gauteng Conservation Plan in selected strategic municipal documentation (IDP, SDF and EMF) was determined through both explicit and implicit (environmental concepts) means (see 3.3.1 Objective Analysis) and a comparative analysis of selected EMF and SDF maps. Table 7-31 summarises the results of C-Plan incorporation.

The summary of individual municipal incorporation scores can be seen in Table 4-1. The WDM, MCM, MLM and LLM incorporated the C-Plan in their strategic municipal documentation. RLM achieved partial incorporation, while SDM did not incorporate the C-Plan at all. The negative incorporation score of WLM and ELM may be due to the fact that they do not have EMF and SDF documentation to analyse. The most strategic municipal document, the EMF, has incorporated the provincial C-Plan. This suggests a clear link between provincial and municipal conservation planning documents. The SDF documents partially incorporated the C-Plan; the explicit incorporation of the C-Plan in the SDF documentation is not evident, except in Midvaal Local Municipality (MLM). Implicit incorporation through an environmental concept has been successful in the majority of the SDFs. Sedibeng District Municipality SDF is the only municipality that did not show any incorporation of the provincial C-Plan. SDFs, used as strategic municipal documents, only partially incorporated the provincial C-Plan. Some municipalities partially incorporated the C-Plan into their IDPs, but overall this did not take place.

Table 4-1. Summary of results of explicit and implicit C-Plan incorporation in selected municipal strategic documentation as determined (Objective Analysis A and B).

Strategic documentation as determined (Objective Analysis A and B):

Strategic Documentation	EMF		SDF		IDP ²		Municipal Incorporation
Municipalities	Explicit	Implicit	Explicit	Implicit	Explicit	Implicit	
WDM	A	A	B	A	A	A	A
MCM	A	A	B	A	B	A	A
RLM	NONE	NONE	B	A	B	A	C
WLM	NONE	NONE	N/A	N/A	B	B	B
SDM	A	A	B	B	B	B	B
ELM	NONE	NONE	N/A	N/A	B	B	B
MLM	A	A	A	A	A	A	A
LLM	A	A	B	A	B	A	A
Strategic Documents Incorporation	A		C		B		

NONE- no documentation available for analysis;
N/A – no supporting documentation available, only a spatial map;
A – full incorporation, B – not mentioned at all and C partially incorporated

The C-Plan is compared with the SDF spatial map to determine the incorporation with spatial land-use planning, a summary of the results is shown in. Emfuleni Local Municipality's (ELM) SDF could not be analysed as the resolution of the map was too poor to enable discernment of land-use types in the map key. WLM achieved a partially complementary (C) which could indicate that the C-Plan was incorporated, but not in a manner which the researcher could determine (see 4.2.4 Westonaria Local Municipality). RLM and WLM both scored partial complementary. WDM did not incorporate the C-Plan in its SDF. The Sedibeng District Municipality, however, incorporated the C-Plan but its local municipalities failed to incorporate it into their SDF maps. This is possibly an indication of a lack of cooperative governance between district and municipal representatives in spatial conservation planning.

² This IDP analysis excludes annual revisions.

Table 4-2. Results of the comparative analysis between the C-Plan and spatial maps of SDF and EMF.

Strategic Spatial Maps	Individual EMF Incorporation			Total EMF	SDF
Municipalities	MAP 1	MAP 2	MAP 3		
WDM	A (Agriculture)	C (Grazing)	C (Land-use)	C	B
MCM	A (Ecological)	A (Biodiversity)	A (Land-use)	A	A
RLM	N/A			N/A	C
WLM	N/A			N/A	C
SDM	A (Open Spaces)	A (Vegetation)	NONE	A	A
ELM	N/A			N/A	?
MLM	C (Agriculture)	C (Environment)	A (Land-use)	C	B
LLM	A (Habitats)	A (Vegetation)	B (Land-use)	A	B
(xxx) – map category, see annexure for more detail; N/A – no maps are available for analysis; ? – the SDF map resolution is weak to analysis; A – complementary, B – conflicting and C partially complementary.					

EMF maps were analysed and compared to ascertain whether the zoned land-uses were ‘complementary’, ‘conflicting’ or partially ‘complementary’ to the categories of the C-Plan. The majority of the EMF maps incorporated the C-Plan, with the exception of LLM (Map 3 - Major Land Uses and Settlement Patterns) (Table 4-2). WDM and MLM EMF maps indicate partial incorporation, while the other municipalities fully incorporated the C-Plan.

Municipalities are required to review and update their IDPs annually after the approval of the initial 5 year plan. Table 4-3 illustrates that not all the municipalities comply with this legislation (Municipal Systems Act 32 of 2000). Not all the municipalities’ (MCM, SDM and LLM) IDPs are valid for 5 years and annual revisions could be found for only five municipalities. The incorporation of the C-Plan in the IDP did not improve, except in the case of SDM in 2010/11 (partially incorporated). In fact, the incorporation of the C-Plan declined over 5 years for two of the local municipalities (MCM and MLM). WDM, LLM and MLM each had a 5 year IDP which incorporated the C-Plan in their documentation.

Table 4-3. Environmental planning concept incorporation scores for municipal IDPs (5 year plan and annual reviews).

Municipalities IDP	# years ³	5 year IDP	Annual IDP Revisions			
		C-Plan Score	2007/8	2008/9	2009/10	2010/11
WDM 2007 2012	5	A	N/A	N/A	N/A	N/A
RLM 2006 2011	5	C	N/A	N/A	N/A	N/A
MCM 2007 2011	4	C	N/A	B	N/A	N/A
WLM 2007 2012	5	B	N/A	N/A	N/A	B
SDM 2007 2011	4	B	N/A	N/A	N/A	C
ELM 2007 2012	5	B	B	N/A	B	N/A
LLM 2007 2010	3	A	N/A	N/A	N/A	N/A
MLM 2007 2012	5	A	A	N/A	B	N/A
N/A – no annual revision could be sourced for the analysis; A – full incorporation, B – not mentioned at all and C partially incorporated.						

4.2 Single Case Analysis

Each of the 8 case studies results are discussed in detail in the section below. Additional information is available in the annexure.

4.2.1 West Rand District Municipality

The West Rand District (WDM) municipal IDP provides comprehensive feedback on the current status (poverty, housing, education, gender, etc.) but fails to explain the IDP process as they have implemented it (WDM, 2007). Neither does it provide the regulatory framework, nor how integration, consultation, participation and communication were achieved with the public and national, provincial and local government.

The management tool SWOT (strengths, weaknesses, opportunity and threats) was used to analyse sectors of the IDP. A favourable climate for tourism and agriculture was identified as strengths for the Environmental Sector, while inadequate waste disposal, limited information and poor management were recognised as weaknesses (WDM, 2007). The following opportunities and threats were detailed:

“Opportunity

- Natural features that could be utilised if managed correctly;
- Archaeological potential that could be found in the ridges of the area;
- Giving the community the opportunity to become more involved in the care of their environment by the establishment of conservancies.

Threats

- The *inadequate information* available on environmental issues;
- A threat to open spaces due to increased development, densification and pollution;

³ The number of years the IDP is valid for.

- Informal settlements with poor basic services are a threat to the environment and resource thresholds (i.e. the carrying capacity of the environment);
- Pollution of air and water is a major threat to the population and the national environment” (WDM, 2007).

The SWOT analysis identifies valid objectives and targets, but does so only superficially. The statement of ‘inadequate information’ is not correct. Various organisations are conducting research in West Rand Municipality (mines, farmers, universities, government and NGOs). All the information generated could be shared among the different parties, with the municipality acting as the custodian or at least a cataloguer.

The West Rand municipal IDP has identified and demarcated four dedicated development areas:

- Agriculture ~ rural recreation and conservation;
- Large scale and intensive commercial farming;
- Mining activities with agriculture;
- Extensive agriculture (WDM, 2007).

As seen above, the municipality almost exclusively focuses on agriculture as the primary land-use, with secondary land-uses ranging from conservation to mining. Many of the primary and secondary land-uses are conflicting. Generally agriculture and mining activities do not and should not occur in the same area, as there are pollution and health issues. The definitions of these demarcated areas are also unclear on how agriculture and extensive agriculture differ. The IDP explicitly states that the C-Plan should be consulted concerning the endangered species when development is considered.

Although the Environmental Management Framework (EMF) was included as an annexure in the IDP, its success depends on its application as a decision making tool by both government (local, district and provincial) and developers. The EMF has identified nine environmental control zones/areas that differ in their potential for conservation and development; in line with the areas sensitivities’ and current land uses, they are as follows:

1. Ecological zone
2. Low Density area
3. Agricultural zone/area
4. Mining Industrial area
5. Protected Areas
6. Tourism transition zone
7. Urban Agricultural area
8. Urban Areas
9. Unknown – no mention is made of what the ninth zone is in the EMF (WDM, 2006).

The 9 demarcations are referred to as both zone and area. The difference between zone and area is unknown. Neither the IDP nor the SDF reflect these environmental control zones/areas.

The WDM used a Spatial Decision Support System to assist them in compiling the SDF. This system deals with two aspects, namely a Land Availability Module (excludes currently built-up and unsuitable land) and a Land Suitability Module (prioritises land, based on development suitability) (WDM, 2009). The determination of these modules is based on predefined suitability criteria that allocate different weights of importance, thus

the result of applying these modules is to rank available vacant land from most suitable to least suitable for a specific land use (WDM, 2009). Unfortunately, the criteria on which the modules are based are not available and can therefore not be analysed regarding their environmental considerations. The SDF document has specific demarcated zones as well, which are as follows:

- Urban growth zone;
- Peripheral interfaces;
- Prime opportunity zones;
- Mining corridor ;
- Extensive agriculture (WDM, 2009).

None of demarcated zones are included in the SDF map (Figure 7-1). This is the third set of demarcations (IDP, EMF and SDF) within the municipality; nowhere in the IDP are these zones/areas amalgamated into a single truth. Integration within the IDP was somewhat lacking.

The C-Plan was not explicitly incorporated in the SDF documentation. The spatial maps were not complementary either. Environmental concepts were either fully incorporated or not at all. Only 'Conservation Planning' was not incorporated in the SDF (see Table 7.1). The results indicate that the C-Plan has been successfully incorporated in the documentation and maps of the EMF (Table 4-4).

Table 4-4. Summary of the C-Plan Incorporation into the IDP, SDF and EMF of the WDM.

West Rand District Municipality	Documentation Analysis		Map Analysis	Total Summary of incorporation
	Explicit Incorporation	Implicit Incorporation	Comparative Analysis	
EMF 2006	A	A	C	A
SDF 2009	B	A	B	B
IDP 2007-2012	A	A		A
A – full incorporation, B – not mentioned at all and C partially incorporated.				

The comparative analysis with the SDF showed that the C-Plan categorises site E as 'irreplaceable' and 'important' while the SDF zoned the area as 'commercial/industrial zone' and 'general agriculture development' (Table 7-2). These land-uses are clearly conflicting. The analysis revealed that of the 5 sites compared only two had complementary land-use types. 'Primary Environmental_Tourism Areas' and 'Irreplaceable' can be classified as complementary as the SDF acknowledges that the areas have environmental potential. A stronger statement of importance is warranted as to the areas that are categorised as 'irreplaceable' in the C-Plan. There are three conflicting land-use types where urban expansion and agricultural development are not activities that are favourable towards the protection and conservation of irreplaceable and important sites.

The EMF comparative analysis showed that Map 1- Agricultural Potential (Table 7-3) and the C-Plan categories were complementary towards each other. Map 2- Grazing Potential (Table 7-4) showed high grazing potential in two areas that the C-Plan had categorised as Irreplaceable and Important. Agricultural has been identified as a land-use that places pressure on the environment. Indigenous Highveld Grassland is considered good grazing land for livestock. Two selected sites are conflicting in Map 3- Landcover, as

seen in Table 7-5. The C-Plan categorises D and E as 'irreplaceable' and 'important' while the EMF Landcover has noted them as cultivated lands with permanent crops. Map 2 and 3 both scored partial complementary towards the C-Plan.

4.2.2 Mogale City Local Municipality

In the past Mogale City (MCM) produced a 5 year IDP (2002-2006) with annual revisions (2003/04, 2004/5, 2005/06 and 2006/07) (MCM, 2007). Unfortunately, the trend did not continue, as only a single annual revision (2008/9) was available for the analysis. It is clear that the municipality has a firm grasp on the IDP process and its intention. Mogale City is one of four municipalities that explicitly make the environment one of their priorities (MCM, 2007).

Table 4-5. Incorporation summary of the C-Plan into the MCM's IDP, SDF and EMF.

Mogale City Local Municipality	Documentation Analysis		Map Analysis	Total Summary of incorporation
	Explicit Incorporation	Implicit Incorporation	Comparative Analysis	
EMF 2003	A	A	A	A
SDF 2009	B	A	A	A
IDP 2007-2011	B	A		C
IDP 2008/9	B	B		B

A – full incorporation, B – not mentioned at all and C partially incorporated.

The C-Plan was not explicitly incorporated into the SDF, IDP or the annual revision (Table 4-5). The EMF, SDF and IDP (5 year) all incorporated the C-Plan implicitly, through the use of environmental concepts. The concept 'Conservation Planning' was not incorporated in any of the municipal IDPs. The 5 year IDP achieved marginal incorporation with the C-Plan, with two of the planning concepts being successfully incorporated, 'biodiversity' only partially and 'Conservation Planning' not at all (Table 7-6). Unfortunately, with the review of the IDP a year later (2008/9), none of the environmental planning concepts were incorporated and the C-Plan was not mentioned at all.

The MCM SDF is detailed and well structured. Four sites were compared with the C-Plan and three were found to be complementary. Site D was categorised as 'Irreplaceable' by the C-Plan, but was noted as 'Urban Area' by the SDF (Table 7-7 and Figure 7-5). The municipal SDF contains more than 19 maps, which range from showing conservancies and protected areas, constraints to urban development, ranch and crop farming to land-use suitability preferences, to name a few. Map 10: Protected Areas and Conservancies in the Municipal Area, in the SDF, details the different protected areas, which are important in deciding on long term development proposals and strategies for the municipal area (MCM, 2008). When compared to the C-Plan, there are areas that lack protection, particularly in the western interior of the municipality. The SDF acknowledges these important conservation areas, but fails to indicate any formal protection in that region.

The EMF was the only strategic document that fully incorporated the C-Plan. Three maps were selected from the MCM EMF, namely: Map 1 - Ecologically Important Areas (Table 7-8 and Figure 7-6), Map 2 - Faunal Biodiversity (Table 7-9 and Figure 7-7) and Map 3 - Land Categories (see Table 7-10 and Figure 7-8). All but two sites were judged complementary. This indicates a high level of incorporation between the provincial C-Plan and the municipality's environmental planning.

4.2.3 Randfontein Local Municipality

The IDP of the Randfontein Local Municipality is well structured. It links with district, provincial and national government departments providing an integrated representation of the municipality in the IDP (RLM, 2006). RLM does not have an Environmental Management Framework and relies on that of the WDM municipality. No mention could be found of a planned EMF. The implicit incorporation of the C-Plan in the SDF was successful (Table 4-6). The IDP did not explicitly incorporate the C-Plan within its documentation, but the environmental concepts were fully incorporated (Table 7-11).

Table 4-6. Summary of the Incorporation of the C-Plan into the IDP, SDF and EMF of the RLM.

Randfontein Local Municipality	Documentation Analysis		Map Analysis	Total Summary of incorporation
	Explicit Incorporation	Implicit Incorporation	Comparative Analysis	
EMF	NONE	NONE	NONE	NONE
SDF 2008	B	A	C	C
IDP 2006-2011	B	A		C

A – fully incorporation, B – not mentioned at all and C partially incorporated.

The comparative analysis of the SDF and the C-Plan shows that of the three sites selected, only one was complementary (Table 7-12, Figure 7-8). Complementary might also be considered too strong a term. The area (site A) is zoned Municipal Open Space which does not afford the irreplaceable site (C-Plan) formal protection (via legislation) but does acknowledge its natural importance. The two remaining sites scored 'partial' complementarity. Where irreplaceable sites (C-Plan) were zoned with municipal open space, residential and agriculture land-use.

4.2.4 Westonaria Local Municipality

The IDP is very well structured and clearly fulfils all the requirements of the Municipal Systems Act (MSA) (2000). It gives a clear and comprehensive situational analysis, linkages with national, provincial and district government, NGOs and the community. It outlines future strategies and budget allocations with risks, weaknesses and strengths.

Westonaria Local Municipality (WLM) does not have an EMF, and may use the Westrand District Municipalities EMF for information, but it is unclear whether or not this was done (Table 4-7). No SDF documentation could be found, thus no Objective Analysis could be done on it. The SDF map has information boxes on the map indicating that the national legislation, strategies and policies were taken into

account. NEMA was the only environmental legislation considered. The SDF map is not very detailed. The map includes information boxes that supply the Constraints and Focus of the municipality. The Environment information box states the following:

- Constraints
 - Large area with underlying dolomite;
 - Area presents major development threats;
 - Developable area;
 - Distance makes it too costly to provide engineering services.
- Focus
 - Natural⁴ Environmental Management Act 107 of 1998 (NEMA);
 - Protect water courses and hills;
 - Submission of EIAs with change of land use (WLM, 2008).

Which areas the municipality is referring to in the information box is also unclear, as there are no indicators. The SDF groups completely different land-uses together, which makes it difficult for the users to infer the intent of the municipality. For instance, the major part of the municipality, especially the south, is zoned: Mining, Agriculture and/or Conservation (Table 7-14, Figure 7-9). None of these land-uses are complementary. This has made the spatial analysis difficult, as it is unclear which land-use to compare with. A 'partially complementary' category was assigned.

⁴ The municipality incorrectly quoted the act. The correct wording for the act is 'National' instead of 'Natural'.

Table 4-7. Summary of Incorporation of the C-Plan into the IDP, SDF and EMF of the WLM.

Westonaria Local Municipality	Documentation Analysis		Map Analysis	Total Summary of incorporation
	Explicit Incorporation	Implicit Incorporation	Comparative Analysis	
EMF	NONE	NONE	NONE	NONE
SDF 2008	N/A	N/A	C	C
IDP 2007-2011	B	B		B
IDP 2010/11	B	B		B
A – full incorporation, B – not mentioned at all and C partially incorporated.				

The environmental concept incorporation results were not as positive as the other Westrand local municipalities. None of the concepts were completely incorporated. 'Environmentally Sensitive Area' and 'Biodiversity' were mentioned within the IDP, but no substantial information supporting it. The concepts 'Environmental Zoning' and 'Conservation Planning' were not incorporated at all (Table 7-13). Neither of the IDPs incorporated the C-Plan within their documentation.

4.2.5 Sedibeng District Municipality

The municipality states that it developed the IDP in close co-operation with the three local municipalities under its jurisdiction and other spheres of government. The Sedibeng District Municipality (SDM) IDP has been successful in incorporating various national and provincial plans, programs and legislation. The 20 year Sedibeng Growth and Development Strategy (SGDS) was consulted and incorporated along with the National Spatial Development Perspective (NSDP) and Gauteng Growth and Development Strategy (GGDS). These plans, programmes and strategies are all focused on development.

Table 4-8. Incorporation of the C-Plan into the IDP, SDF and EMF of the SDM.

Sedibeng District Municipality	Documentation Analysis		Map Analysis	Total Summary of incorporation
	Explicit Incorporation	Implicit Incorporation	Comparative Analysis	
D EMF 2008	A	A	A	A
SDF 2009	B	B	A	B
IDP 2007-2011	B	B		B
IDP 2010/11	B	A		C
A – full incorporation, B – not mentioned at all and C partially incorporated.				

The draft EMF documentation and maps all incorporated the C-Plan. Two EMF maps were compared with the C-Plan, namely: Map 1 - District Environmental Importance of Open Spaces (Table 7-17, Figure 7-11) and Map 2 - DEI for Vegetation (Table 7-18, Figure 7-12). Both maps would have received full C-Plan incorporation scores but for the fact that Site B was zoned as 'Not Applicable' on both maps according to the key. The meaning of 'Not Applicable' (N/A) could not be found. The SDF documentation did not show any evidence of C-Plan incorporation, but the comparative analysis indicated that the C-Plan was incorporated into the SDF spatial map. Table 7-16 and Figure 7-10 show the results of the spatial analysis between the C-Plan and municipal SDF, where 2 of the 5 sites were not complementary to the C-Plan categories. As

previously stated, the 5 year IDP did not incorporate the C-Plan but the annual revision (2010/11) showed signs of improvement, with the majority of environmental concepts incorporated (Table 4-8). No mention is made of the EMF or the C-Plan. This is disturbing, as most local municipalities rely heavily on the district municipalities' strategic documentation for guidance and information regarding their own IDPs and SDFs.

4.2.6 Emfuleni Local Municipality

The Emfuleni Local Municipality (ELM) municipality has no environmental department and has transferred the duties of managing the environment to its Department of Health and Social Development. This department is not adequately staffed and does not have the resources or expertise to practise environmental management, which includes participation in the Environmental Impact Assessments (EIAs) undertaken in the area (ELM, 2007a). The municipality is therefore heavily reliant on consultants. The municipality has put plans in place to address these challenges, but no timeframe is set in which to achieve this (ELM, 2007a).

Table 4-9. Incorporation of the C-Plan into the IDP, SDF and EMF of the ELM.

Emfuleni Local Municipality	Documentation Analysis		Map Analysis	Total Summary of incorporation
	Explicit Incorporation	Implicit Incorporation	Comparative Analysis	
EMF	NONE	NONE	NONE	NONE
D SDF 2009	?	?	?	?
IDP 2007-2012	B	B		B
IDP 2007/08	B	B		B
IDP 2009/10	B	B		B
NONE – no maps are available for analysis; ? – the SDF map resolution too weak for analysis; A – complementary, B – conflicting and C partially complementary.				

The municipality focused on the protection and maintenance of land exclusively in critical tourism areas, rather than areas of critical conservation importance (ELM, 2007a). No Spatial Analysis could be done on the ELM draft SDF map. The selected C-Plan sites could be clearly identified but due to the SDF maps' low resolution it was not possible to discern the land-use types in the legend (Table 7-20, Figure 7-13). Thus no determination could be made as to whether the land-uses in the SDF and C-Plan category were conflicting or complementary to each other. The majority of incorporated results (implicit and explicit) of the IDPs were negative (Table 4-9). There are two instances where 'partial incorporation' was achieved by including 'Environmentally Sensitive Areas' and 'Biodiversity' as environmental concepts, but no real incorporation occurs (Table 7-19).

4.2.7 Midvaal Local Municipality

The five year IDP of the Midvaal Local Municipalities (MLM) and its first annual revision (2007/8) scored the same in the analysis of incorporation of plans into the IDP (MLM, 2007a). Annual revision 2009/10 showed a sharp decline in incorporation (explicit and implicit), thus not fulfilling its role of ensuring integration and alignment, reflecting the changed circumstances and addressing the shortcomings of the IDP and improving

it (Table 4-10). The IDP has detailed projects it wants to achieve and targets have been set out for the next five years. Of these projects, tourism was prioritized and the IDP highlighted the importance of forming and maintaining links and partnerships with local, district and national governments, the public and business to co-ordinate the protection and maintenance of areas that are critical for tourism (MLM, 2007b).

Table 4-10. Incorporation the C-Plan into the MLM's IDP, SDF and EMF.

Midvaal Local Municipality	Documentation Analysis		Map Analysis	Total Summary of incorporation
	Explicit Incorporation	Implicit Incorporation	Comparative Analysis	
EMF 2007	A	A	A	A
SDF 2010	A	A	B	A
IDP 2007-2012	A	A		A
IDP 2007/08	A	A		A
IDP 2009/10	B	B		B
A – fully incorporation, B – not mentioned at all and C partially incorporated.				

The SDF contains detailed information about the climate, atmosphere, topography, hydrology and drainage, the fauna and flora, including sensitive areas that contain red data species (MLM, 2010). The SDF identifies the Environmental Management Plan (EMP) as of great importance to the protection of the natural resources and wildlife in the area. No EMP could be found. The SDF (2010) incorporated all the selected environmental planning concepts (Table 7-21) and explicitly mentioned the C-Plan. The SDF integrated existing legislation and a range of national, provincial and local development policies and plans. The municipality also makes use of the Strategic Environmental Management Plan (SEMP) that is used to established control zones which can be used to indicate the environmental suitability of parcels of land for various types of land use activity (MLM, 2007). Development Guidelines for Ridges (DGR) (GDACE, 2001a) have also been used extensively, as the MLM area is largely characterised by Category I and II ridges. The comparative analysis between the SDF and the C-Plan revealed a different description from the objective analysis. Only site C (Table 7-22, Figure 7-14) reflected complementary land use, where both the C-Plan and the SDF showed the same area as protected. Sites A and E are conflicting, while sites B and D are scored 'Partial'. The SDF states that all C-Plan sites that have been identified as irreplaceable must be accommodated within the primary open space system, but this does not seem to be the case, as illustrated in Table 7-22, site E. The municipality states that the promotion of tourism should not be viewed as being in conflict with conservation, but rather as an asset that can be used to enhance the region's economy and a vehicle to ensure the protection of the natural environment.

The EMF incorporated only the environmental concepts 'Environmentally Sensitive Area' and mentions 'Conservation Planning' (Table 7-21). Three EMF maps were analysed to ascertain the complementarity with the C-Plan, namely: Map 1 - Agriculture Patterns (Table 7-23, Figure 7-15), Map 2 – Environmental Control Zones (Table 7-24, Figure 7-16) and Map 3 – Land-use Patterns (Table 7-25, Figure 7-17). Map 1 - Agriculture Patterns acknowledges the important ridge habitats, but zones the same areas as moderate to high agricultural zones (site A and B). Hence most of the sites were classified as 'partially complementary' with two sites as 'conflicting' (C and D). Map 2 details the environmental control zones as identified in the

EMF. Only two sites from Map 2 were complementary to the C-Plan categories (Site B and C). Of the three maps analysed, Map 3 – Land-use Patterns achieved the most ‘complementary’ scores.

4.2.8 Lesedi Local Municipality

The Lesedi Local Municipality (LLM) IDP is aligned with provincial, district and adjacent municipalities. It also aligns with the different sectors within the municipality. The IDP states that specific environmental management plans must be complied with so that pristine environments are conserved and that the restoration of degraded areas is managed (LLM, 2007). It was expected that the EMF (2006) would generate specific action plans for demarcated environmental areas that would be incorporated into the IDP targets and objectives. The EMF states that 16 action plans for specific issues were formulated (e.g. the mining areas; the natural grassland areas; the major national and provincial roads; solid waste management).

The objective analysis revealed that the Lesedi Local Municipality had successfully incorporated the C-Plan implicitly within all the other documentation (Table 4-11). The EMF performed very well in the incorporation of selected environmental concepts into the documentation (Table 7-26) and ‘Conservation Planning’ was the only concept that was not incorporated in the IDP and SDF.

Table 4-11. Incorporation of the C-Plan into the IDP, SDF and EMF of the LLM.

Lesedi Local Municipality	Documentation Analysis		Map Analysis	Total Summary of incorporation
	Explicit Incorporation	Implicit Incorporation	Comparative Analysis	
EMF 2006	A	A	A	A
SDF 2008	B	A	B	B
IDP 2007-2010	B	A		C
A – full incorporation, B – not mentioned at all and C partially incorporated.				

The spatial comparative analysis results are remarkably different from the document analysis. The SDF comparative analysis sites C and D conflicted with the C-Plan categories, as mining and natural areas often are (Table 7-27, Figure 7-18). Site A contained a Reserve site, but Agriculture and Environment (land use) and Future Integrated Development are not considered complementary to the conservation of important and irreplaceable sites. Site B has a similar situation.

The EMF has identified eight Land-use and Development Control Zones and has developed guidelines on what development would be suitable for the identified areas. These control zones are:

1. Low control zone
2. Ecological/hydrological control zone
3. Topographic and geotechnical control zone
4. Ecological/hydrological and topographical/geotechnical control zone
5. Agricultural control zone
6. Ecological/hydrological and agricultural control zone
7. Topographical/geotechnical and agricultural control zone

8. Ecological/hydrological, topographical/geotechnical and agricultural control zone

The SDF has included these zones into the SDF documentation, but this is not reflected on the spatial map.

Table 4-11 is a summary of the findings and states that the EMF was found to have incorporated the C-Plan. The comparative analysis was done on three maps namely: Map 1 - Fauna & Invertebrate Habitats (Table 7-28, Figure 7-19), Map 2 - Vegetation Communities (Table 7-29, Figure 7-20) and Map 3 – Major Land Use and Settlement Pattern (Table 7-30, Figure 7-21). Map 1 and 2 fully incorporated the C-Plan, with the exception of site C on Map 2. All the sites selected on Map 3 were 'conflicting'. The Major Land Use and Settlement Patterns of LLM indicated that none of the 'irreplaceable' or 'important' sites were considered.

4.3 Conclusion

From the results it is clear that no single pattern emerges for the incorporation of the C-Plan into strategic level municipal decision making documents, with the exception of the Environmental Management Frameworks. The municipal documentation incorporation scores revealed that the EMF documents were the only municipal documents fully incorporated the C-Plan. The majority of the SDF documents partially incorporated the C-Plan while only two municipalities fully incorporated it into their IDPs (MLM and WDM). West Rand District Municipality (WDM) was more successful in the incorporation of the C-Plan than Sedibeng District Municipality. The incorporation of C-Plan in the municipal spatial maps (comparative and objective analysis) was for the most part successful in the EMF while the SDF maps did not achieve high incorporation scores. Therefore there were no obvious disparities between the explicit and implicit incorporation of the C-Plan. The following chapter will explore the possible reasons for this and their implications.

5 CONCLUSION & RECOMMENDATIONS

Using the Gauteng Conservation Plan (C-Plan), which is considered a strategic conservation planning document, a critical evaluation was done to determine to what extent environmental aspects are considered in strategic level municipal decision making documents. Six local and two district municipalities within the Gauteng Province were selected to ascertain, through a comparative and objective analysis, to what extent their strategic documents (IDP, SDF and EMF) reflect the conservation planning done on a provincial sphere (C-Plan). An analysis was done of the selected documentation and spatial maps to determine whether incorporation occurred either explicitly and/or implicitly. The expectation was that the municipalities within the Gauteng Province, should as part of their IDP process, integrate the Gauteng C-Plan with their Integrated Development Plan directly or/and indirectly via their strategic planning documents (EMF and SDF).

All the municipalities fully incorporated the C-Plan in their EMFs. There were two exceptions to this: with regard to the spatial incorporation, municipalities West Rand District Municipality (WDM) and Midvaal Local Municipality (MLM) achieved only partial complementarily (Table 5-1). This indicates that local government conservation planners do consult and incorporate provincial conservation plans when they are generating their own plans. SDF and IDP incorporation scores do not reflect a strong connection between local and provincial government with regard to conservation planning. As shown in Table 7-32 incorporation of the C-Plan in municipal strategic documentation varies, and no single simple explanation can be given as to why this is the case. Each municipality, district and local, is faced with its own individual challenges. The municipalities will be discussed to highlight the different reasons for incorporation or the lack thereof, of the Gauteng Conservation Plan.

During the implicit objective analysis, it became clear that certain environmental concepts were incorporated more often than others. The 'Conservation Planning' concept was only incorporated an average of 44% of the time, while 'Environmental Zoning' was included 94% of the time. The reason for this could be that the term 'conservation' or planning for the practice thereof, is not common in municipal documents, while 'environment' is an accepted, widely used term as it encompasses, as NEMA (1998) states, a wide range of elements (the surroundings within which humans exist).

The IDP annual revisions are essential to the IDP process. They provide an opportunity for the municipality to assess the implementation performance and the achievement of targets and strategic objectives to date. This allows the municipality to take corrective measures to address any problems identified and to adjust the priority issues to changing internal and external circumstances. The annual revisions of five municipalities were analysed for the incorporation of the C-Plan, either explicitly or implicitly, and the majority did not incorporate it. The five year IDPs and annual revisions of Westonaria Local Municipality (WLM) and Emfuleni Local Municipality (ELM) did not include the C-Plan, which indicates that the review process was flawed as the environment (conservation planning) should have been one of the aspects that was assessed. The five year IDP of Mogale City Local Municipality (MCM) partially incorporated the C-Plan, but its review did not, and the first revision of Midvaal Local Municipality (MLM) incorporated the C-Plan, while the second did not. SDM was the only municipality that showed slight improvement in the incorporation of the C-Plan, using the opportunity to improve conservation planning at municipal level.

Although both Mogale City and Midvaal Local Municipality successfully incorporated the C-Plan, there were notable differences in the way they did this. MLM incorporated the C-Plan into its documentation, while MCM did it in the spatial maps. The reason why they differ is unknown, as both municipalities' spatial maps (EMF) were generated by consultants (Pretoria and Highveld). Randfontein (RLM) and Lesedi Local Municipality (LLM) partially incorporated the C-Plan in its municipal documentation. LLM partially incorporated the C-Plan only in the IDP, while RLM did so partially in both the SDF and IDP. RLM does not have an EMF and relies on the district municipality's EMF (WDM). No mention of a planned EMF could be found.

Emfuleni Local Municipality (ELM) did not incorporate the C-Plan in its documentation. The negative incorporation score may be due to a lack of selected municipal documentation. There was no EMF and the SDF spatial map's resolution was too weak to use for comparison. The lack of relevant documentation may be the result of the fact that the duties of the municipality's environmental department had been moved to the department of Health and Social Development, which was not adequately staffed, nor had the expertise necessary to successfully produce an EMF.

ELM placed great emphasis in the IDP on building the partnerships and links, particularly the co-ordination between environment and planning authorities that helps to facilitate the protection and maintenance of land in critical tourism areas. In the short term this protection of the environment in tourism areas is sensible, but it limits the opportunities for future growth of the economy. Other areas that are potentially sensitive to environmental degradation and face immediate threats, but are not considered valuable tourism areas at this time, are lost.

Westonaria Local Municipality (WLM) did not incorporate the C-Plan into its IDP and SDF map (no supporting documentation). The municipality does not have an EMF and relies on West Rand District Municipality's (WDM) EMF for information, but it is unclear whether this document was consulted. In the absence of an EMF, the Westonaria Local Municipality (WLM) refers extensively to its State of the Environment Report released in 2005. The district's IDP (WDM) has been extensively incorporated within this local municipality. The SDF map zoning was coarse, clumping land-uses like mining, agriculture and conservation together. No guidance was given as to which conflicting land-use the municipality preferred for a specific area. The information boxes on the SDF map do provide some guidance to the user, but are deemed insufficient due to their lack of detail and reference to an area. The IDP discusses conservation and mining under the same heading, which is interesting as these two activities are often opponents (WLM, 2007). This would be advantageous if the impacts of mining activities on conservation were discussed. Unfortunately, this is not the case. The municipality subtly indicates that mining activities are the preferred activity. It states that future mining activities should be accommodated, while areas that are not utilised for mining should be reserved for conservation purposes (WLM, 2007), consequently, leaving the 'leftover' or remaining areas for conservation purposes, completely ignoring the environmental concepts of the C-Plan.

The West Rand District Municipality incorporated the C-Plan in two of the three selected strategic documents (EMF and IDP). The comparative analysis showed that the SDF and EMF maps exhibited weaker incorporation than the documents. The municipality uses the management tool SWOT (strengths,

weaknesses, opportunity and threats), to analyse the different sectors of the IDP. The environmental sector analysis was superficial and states that there is “inadequate information on environmental issues”. With over 265 tertiary academic institutions in Gauteng; mining companies like Anglo American and Gold Fields; and NGOs that conduct various studies in the area, a lack of information is not the difficulty; rather the sourcing, interpretation and implementation of the information could be the limiting factor. The municipality could function as an intermediary or library for the information and so resource and upskill its employees.

The IDP explicitly states that the C-Plan should be considered in all development proposals and demarcates four dedicated development areas. These areas focus primarily on agriculture and mining. The SDF uses a Spatial Decision Support System to demarcate zones within the documents. The zones focus mainly on urban growth, mining and agriculture, missing the opportunity to bring conservation into the spatial planning development that occurs at a district level. None of these zones were noted in the SDF spatial map, EMF or IDP documentation. The EMF documents nine environmental control zones, each of which has been identified for its conservation and development potential. None of these environmental control zones are not shown on any map or noted further than the initial mention of them. They are not to be found in either the SDF or IDP. The theme is the same for all three strategic municipal documents. There are three different types of land-use zoning in three different documents, of which not one is fully explained or spatially represented. There is a lack of integration between the different documents and an inability to bring a planning concept(s) to delivery and implementation.

Sedibeng District Municipality (SDM) partially incorporated the C-Plan. The C-Plan incorporation in the IDP and SDF documentation did not occur (explicitly or implicitly), but the comparative analysis showed that all the spatial maps were complementary towards the C-Plan. Clear breaks exist between the academics who do the writing of reports and documents, and those responsible for the execution of that information onto a practical spatial map. The SDMs IDP did not once mention either the EMF or the SDF. This is problematic, as most local municipalities rely heavily on the district municipalities’ strategic documentation for guidance and information regarding their own IDPs, SDFs and EMFs. This state of affairs indicates a weak ‘Integration’ phase in the IDP generation process, as the ‘Analysis’ phase was clearly successful in generating a detailed SDF and EMF.

Both districts (WDM and SDM) plainly show that a gap exists between the information documents and their practical implementation through spatial maps. The same was found for MLM, LLM and MCM. There is also a clear break in the integration of the strategic municipal documents, which confirms the ‘silo-thinking’ of departments within the government. Although West Rand District Municipality was successful in its incorporation of the C-Plan and Sedibeng District Municipality achieved only partial incorporation, their local municipalities scored exactly the same, i.e. one yes, one no and one partial incorporation.

The research found that all the municipalities fully incorporated the C-Plan within their Environmental Management Frameworks indicating that local government conservation planners do consult and incorporate provincial conservation plans when they are generating their own plans. The Spatial Development Frameworks and Integrated Development Plans did not reflect this strong connection with regards to conservation planning. There is a lack of integration between the different documents and an inability to

bring a planning aspect(s) to delivery and implementation. There is no problem with the incorporation of the C-Plan into the Environmental Management Frameworks, thus future research or conservation initiatives should focus on the effective incorporation of the Environmental Management Frameworks into other strategic municipal documentation (Spatial Development Frameworks and Integrated Development Plans) and promote the integration that occurs between the municipal documents themselves. The main research question of determining to what extent the provincial Gauteng Conservation Plan (C-Plan) are reflected in strategic municipal documents i.e. Integrated Development Plan (IDP), Spatial Development Framework (SDF) and the Environmental Management Framework (EMF) has been achieved.

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WLM see Westonaria Local Municipality

7 ANNEXURE

The following annexures contain the detailed analysis of the selected case studies.

7.1 West Rand District Municipality

Objective analysis B - Implicit Incorporation

Table 7-1. Environmental concepts used to determine implicit incorporation of the C-Plan in strategic municipal documentation.

Environmental Planning Concepts	IDP 2007 - 2012	SDF D2005 ⁵	SDF 2009	EMF 2006
Environmental Zoning	Yes	No	Yes	Yes
Environmentally Sensitive Area	Yes	Yes	Yes	Yes
Biodiversity	Yes	Yes	Yes	Yes
Conservation Planning	Yes	No	No	Yes
Yes – incorporation successful; No – incorporation not successful; Partial – incorporation occurred partially.				

Comparative Analysis

The C-Plan selected sites were compared with the same sites on the SDF and EMF spatial maps.

Table 7-2. WDM - results of comparative analysis between the C-Plan and the SDF.

C-Plan Site Categories		SDF Site Categories	Incorporation Score
A	Irreplaceable	Primary Environmental_Tourism Areas	A
B	Irreplaceable	Primary Environmental_Tourism Areas	A
C	Irreplaceable Important	Urban Expansion Area	B
D	Irreplaceable	General Agriculture Development	B
E	Irreplaceable Important	Commercial/Industrial Zone General Agriculture Development	B
A – fully incorporation, B – not mentioned at all and C partially incorporated.			

⁵ Draft SDF

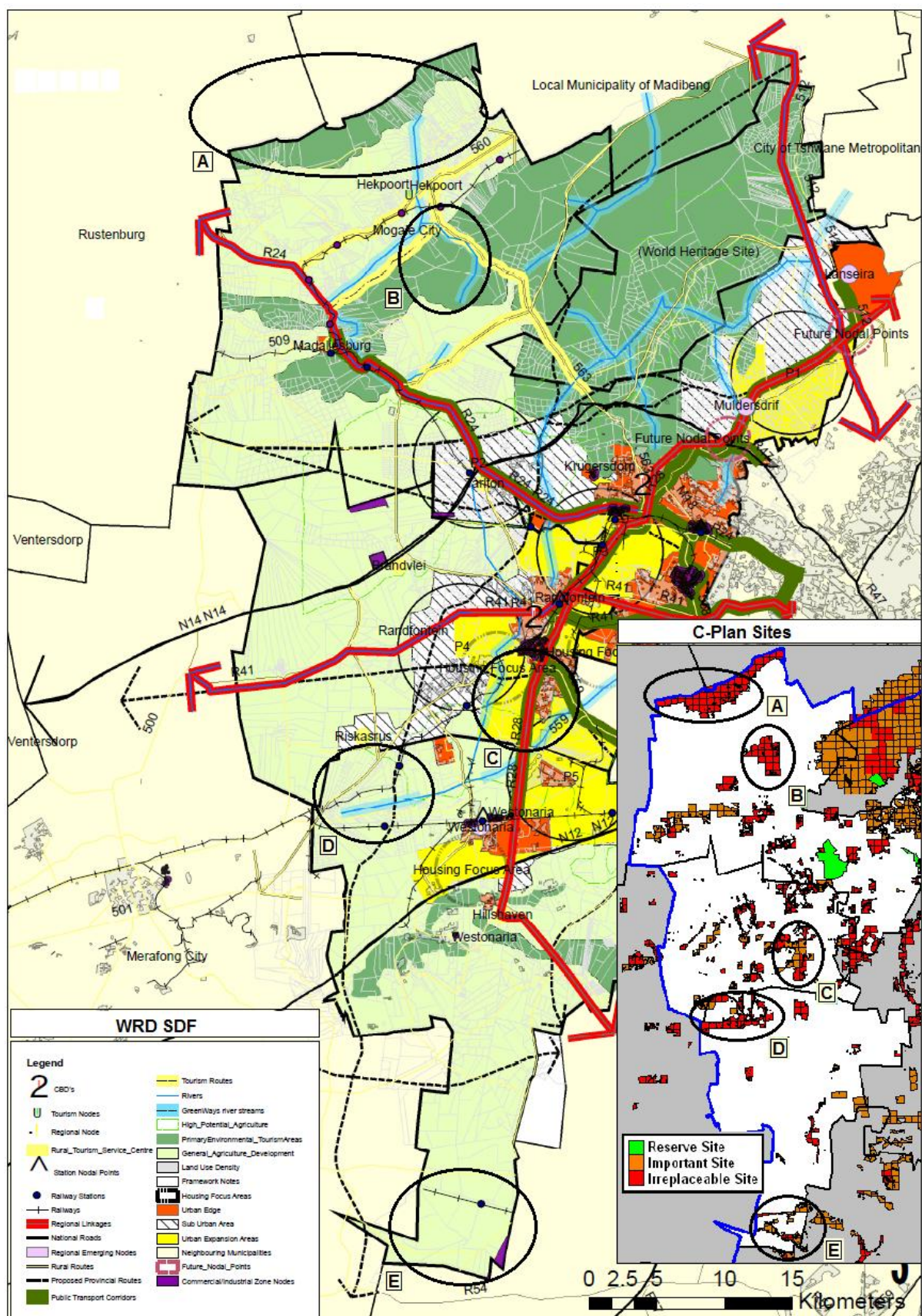


Figure 7-1. Comparative analysis between the provincial C-Plan and the municipality's SDF.

Table 7-3. WDM - results of comparative analysis between the C-Plan and Map 1.

C-Plan Site Categories		Map 1 - Agricultural Potential	Incorporation Score
A	Irreplaceable	Very low agricultural potential - None	A
B	Irreplaceable	Very low agricultural potential - None	A
C	Irreplaceable	Very low agricultural potential - None	A
	Important	High agricultural potential	B
D	Irreplaceable	High agricultural potential	A
E	Irreplaceable	Low agricultural potential	A
	Important	Very low agricultural potential - None	A

A – fully incorporation, B – not mentioned at all and C partially incorporated.

Table 7-4. WDM - results of comparative analysis between the C-Plan and Map 2.

C-Plan Site Categories		Map 2 – Grazing Potential	Incorporation Score
A	Irreplaceable	Low grazing potential	A
B	Irreplaceable	Low grazing potential	A
C	Irreplaceable	High grazing potential	B
	Important		
D	Irreplaceable	Low to moderate grazing potential	C
E	Irreplaceable	High grazing potential	B
	Important	Low to moderate grazing potential	

A – fully incorporation, B – not mentioned at all and C partially incorporated.

Table 7-5. WDM - results of comparative analysis between the C-Plan and Map 3.

C-Plan Site Categories		Map 3 – Landcover	Incorporation Score
A	Irreplaceable	Thicket, bushland, high fynbos	A
		Unimproved grassland	
B	Irreplaceable	Unimproved grassland	A
		Unimproved grassland	
C	Important	Unimproved grassland	C
		Cultivated lands - subsistence dryland	
D	Irreplaceable	Cultivated lands - permanent crops commercial	B
E	Important	Cultivated lands - permanent crops commercial	B
		Unimproved grassland	

A – fully incorporation, B – not mentioned at all and C partially incorporated.

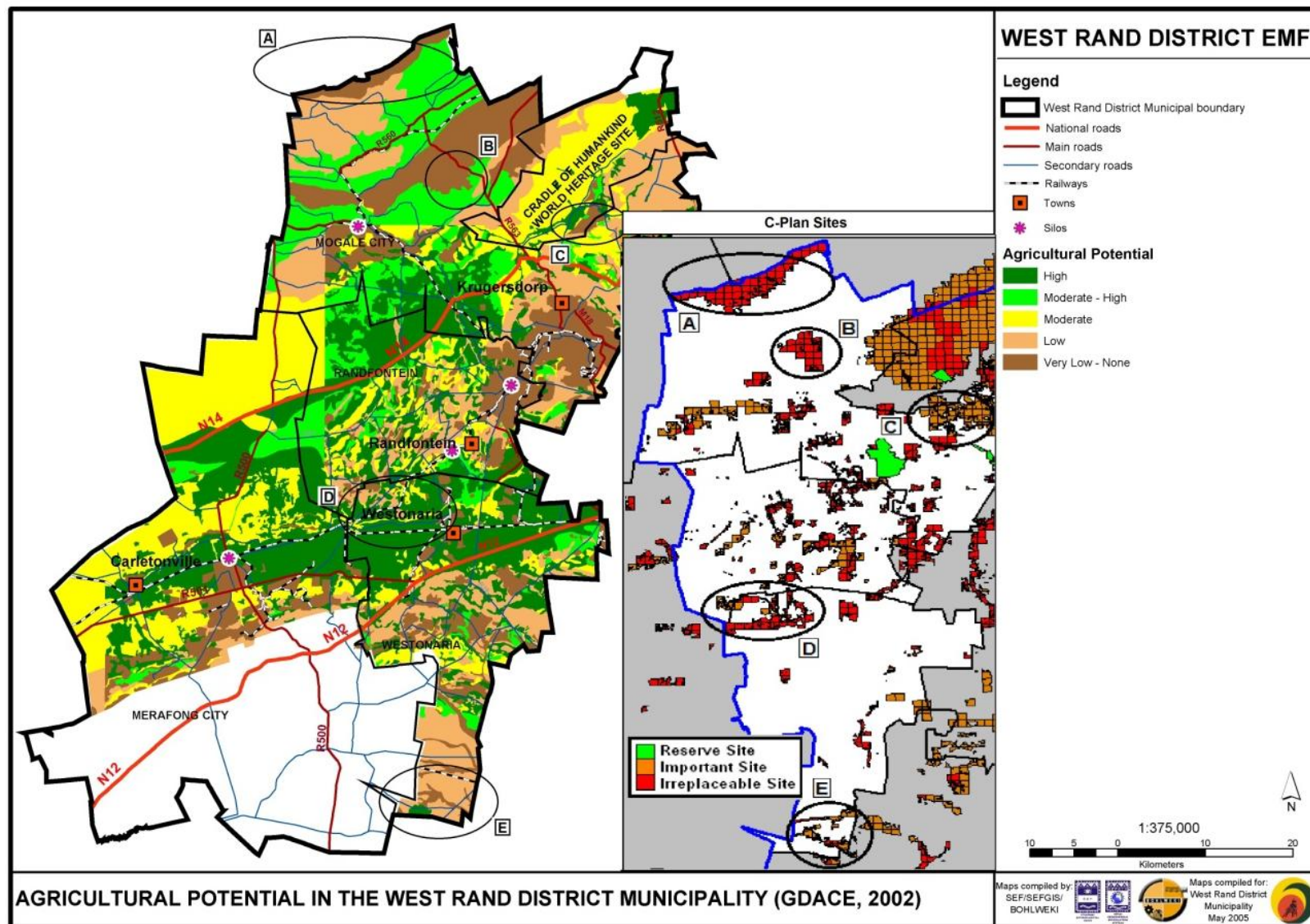


Figure 7-2. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 1 - Agricultural Potential.

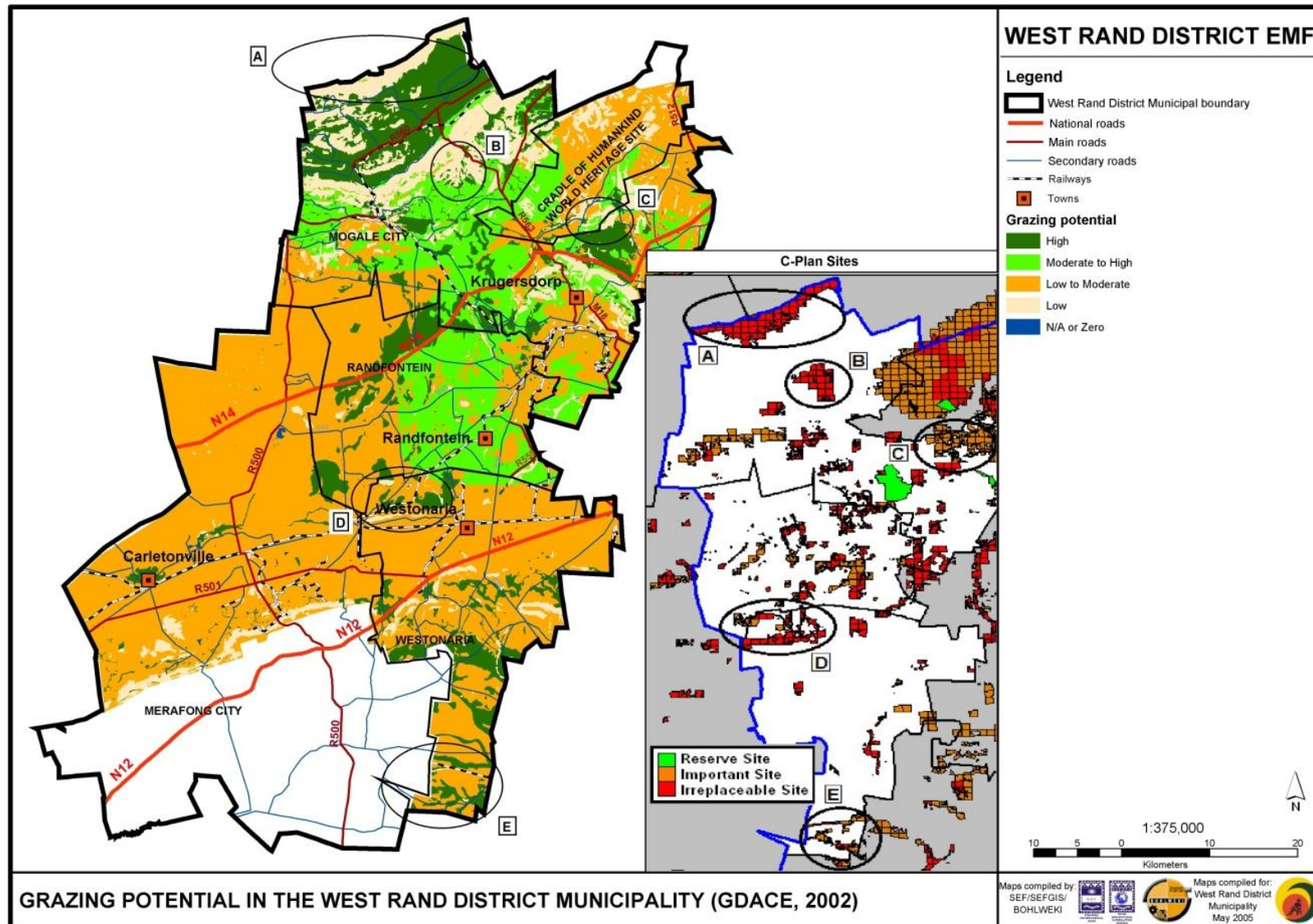


Figure 7-3. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 2 - Grazing Potential.

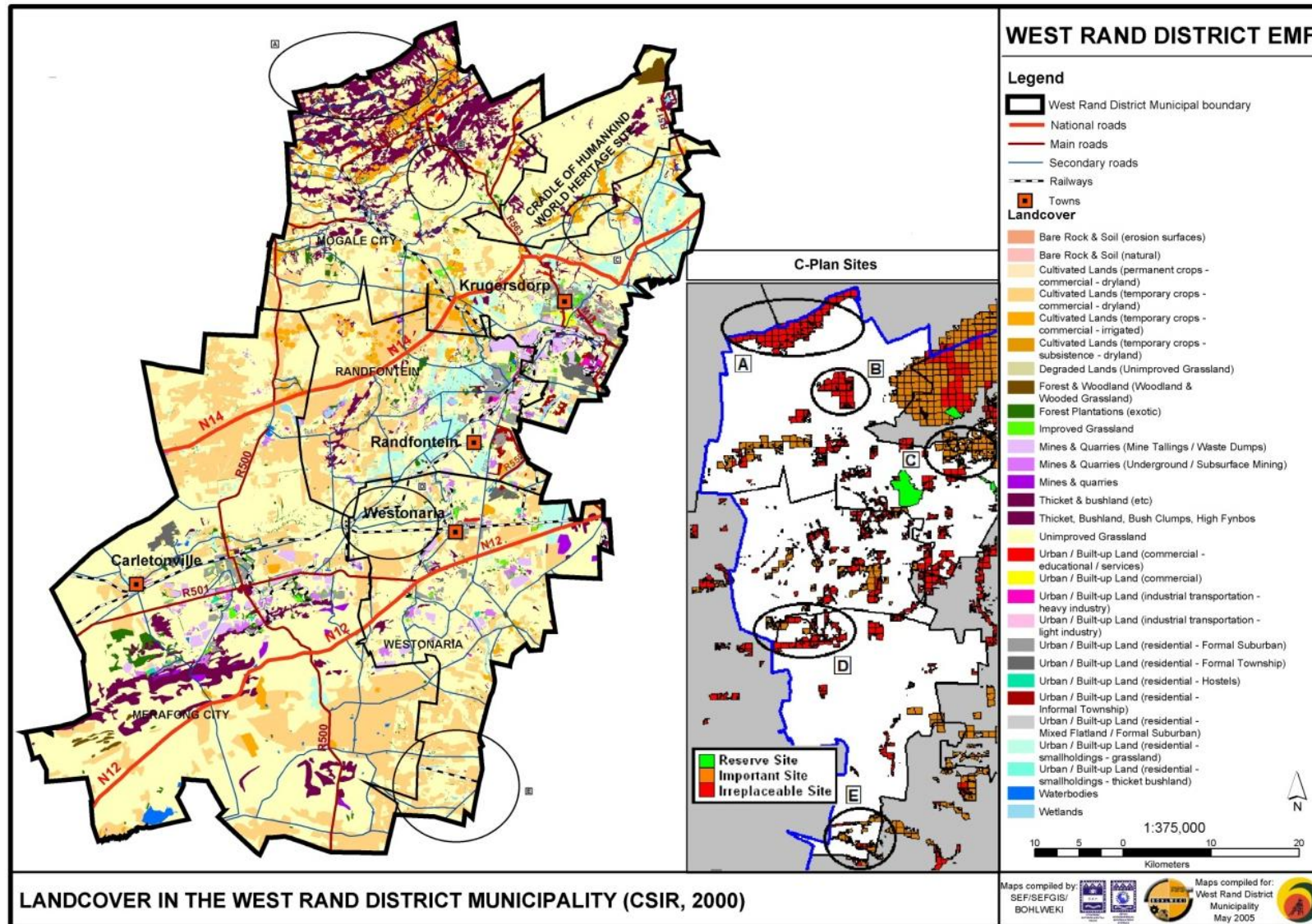


Figure 7-4. Comparative analysis between the provincial C-Plan and the municipalities EMF Map 3 - Landcover.

7.2 Mogale City Local Municipality

Objective analysis B - Implicit Incorporation

Table 7-6. Incorporation of the Environmental Planning Concept into Mogale City Local Municipality.

Environmental Planning Concepts	IDP 2007-2012	IDP 2008/9 ⁶	SDF 2009	EMF 2003 ⁷
Environmental Zoning	Yes	No	Yes	Yes
Environmentally Sensitive Area	Yes	No	Yes	Yes
Biodiversity	Partial	No	Yes	Yes
Conservation Planning	No	No	Yes	Yes
Yes – incorporation successful; No – incorporation not successful; Partial – incorporation occurred partially.				

Comparative Analysis

The sites selected in the C-Plan were compared with the same sites on the SDF and EMF spatial maps.

Table 7-7. MCM – results of comparative analysis between the C-Plan and the SDF.

C-Plan Site Categories		SDF Site Categories	Incorporation Score
A	Irreplaceable	Protected Area	A
B	Important	Mountain and Ridges	A
C	Reserve	Protected Area	A
D	Irreplaceable	Urban Area	B
A – fully incorporation, B – not mentioned at all and C partially incorporated.			

⁶ IDP 2008/9 is the first annual review.

⁷ The EMF was published in the same year as the Conservation Plan.

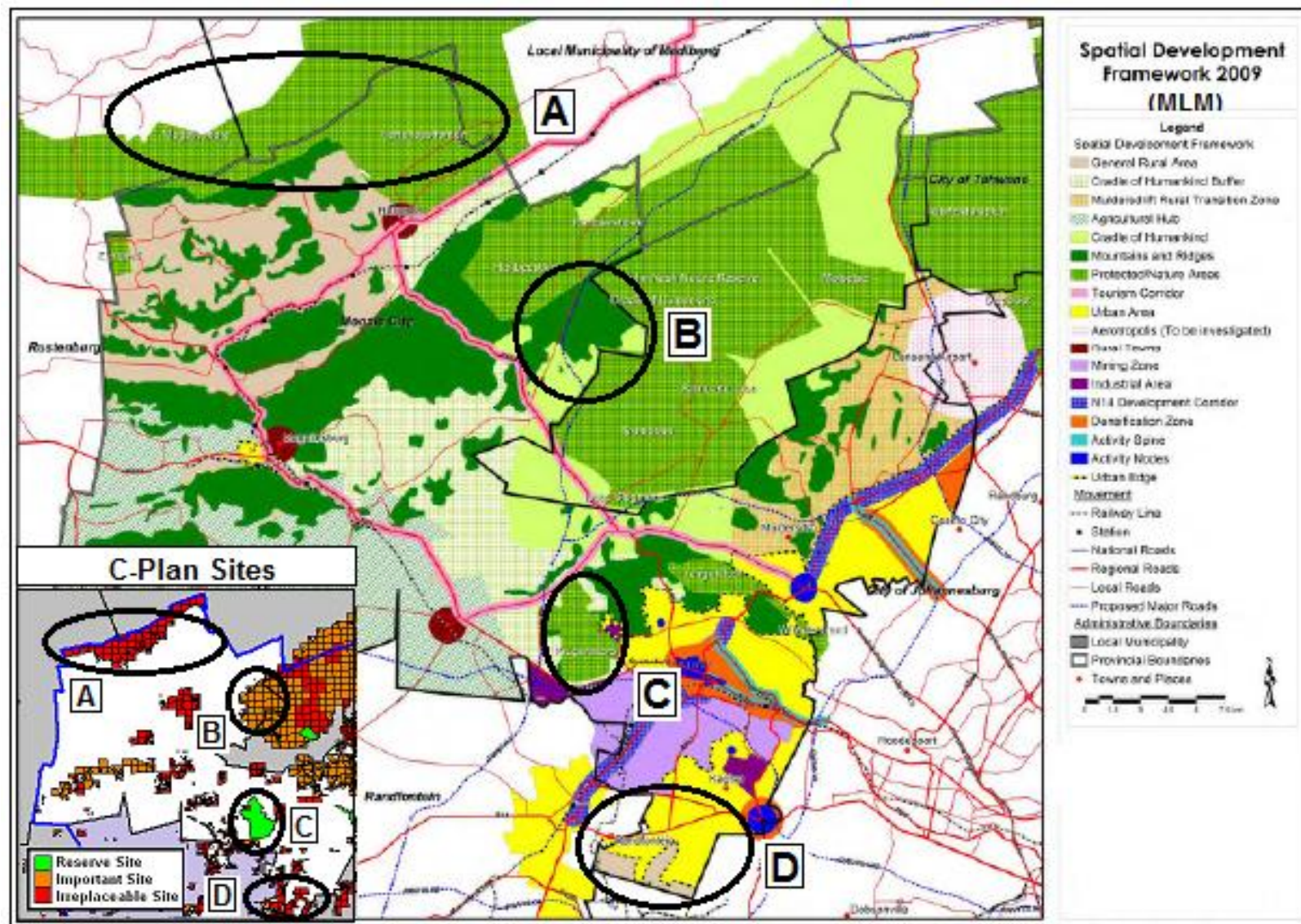


Figure 7-5. Comparative analysis between the provincial C-Plan and the municipalities SDF.

Table 7-8. MCM - results of comparative analysis between the C-Plan and EMF Map 1.

C-Plan Site Categories		Map 1 – Ecological Important Areas	Incorporation Score
A	Irreplaceable	High ecological importance	A
B	Important	High ecological importance	A
C	Reserve	High ecological importance	A
D	Irreplaceable	Medium to low ecological importance	C
A – fully incorporation, B – not mentioned at all and C partially incorporated.			

Table 7-9. MCM – results of incorporation analysis between the C-Plan and Map 2.

C-Plan Site Categories		Map 2 – Grazing Potential	Incorporation Score
A	Irreplaceable	High Fauna Biodiversity importance	A
B	Important	High Fauna Biodiversity importance	A
C	Reserve	High Fauna Biodiversity importance	A
D	Irreplaceable	Medium to low Fauna Biodiversity importance	A
A – fully incorporation, B – not mentioned at all and C partially incorporated.			

Table 7-10. MCM results of comparative analysis between the C-Plan and Map 3.

C-Plan Site Categories		Map 3 – Landcover	Incorporation Score
A	Irreplaceable	Protected natural environment	A
B	Important	Private nature/game reserves	A
C	Reserve	Municipal nature reserve	A
D	Irreplaceable	Water bodies Grasslands	C
A – fully incorporation, B – not mentioned at all and C partially incorporated.			

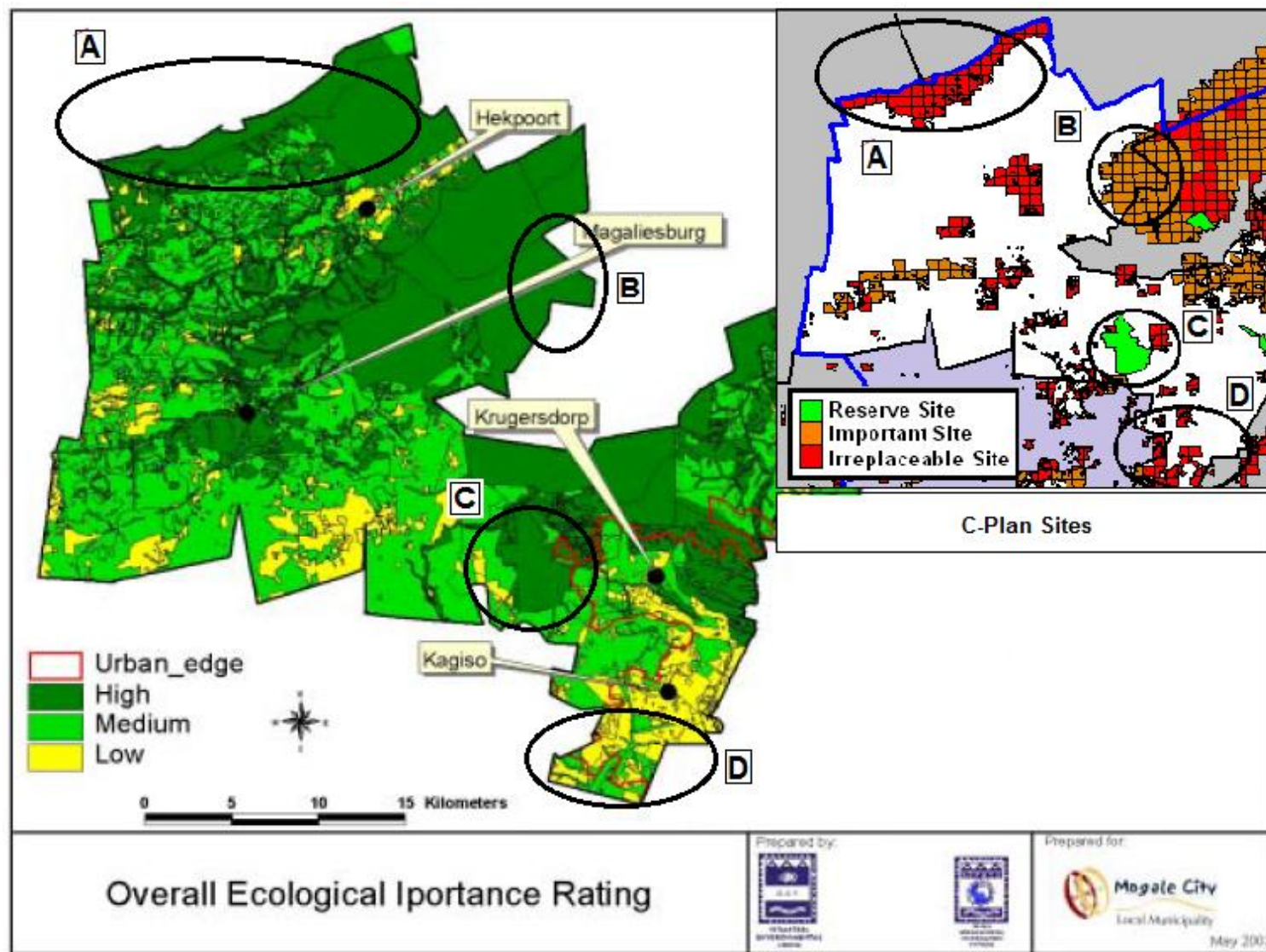


Figure 7-6. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 1 – Ecological Importance.

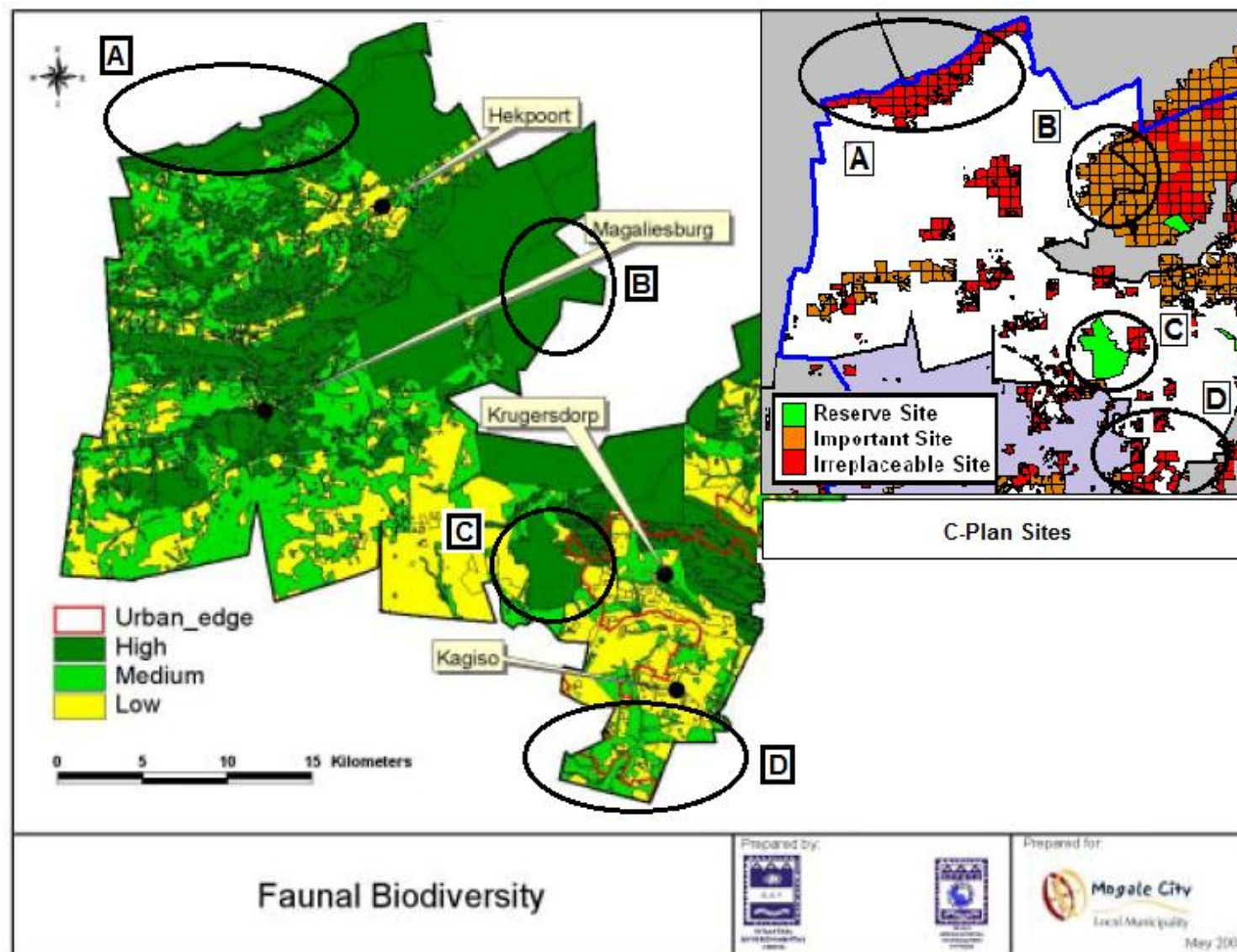


Figure 7-7. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 2 – Faunal Biodiversity.

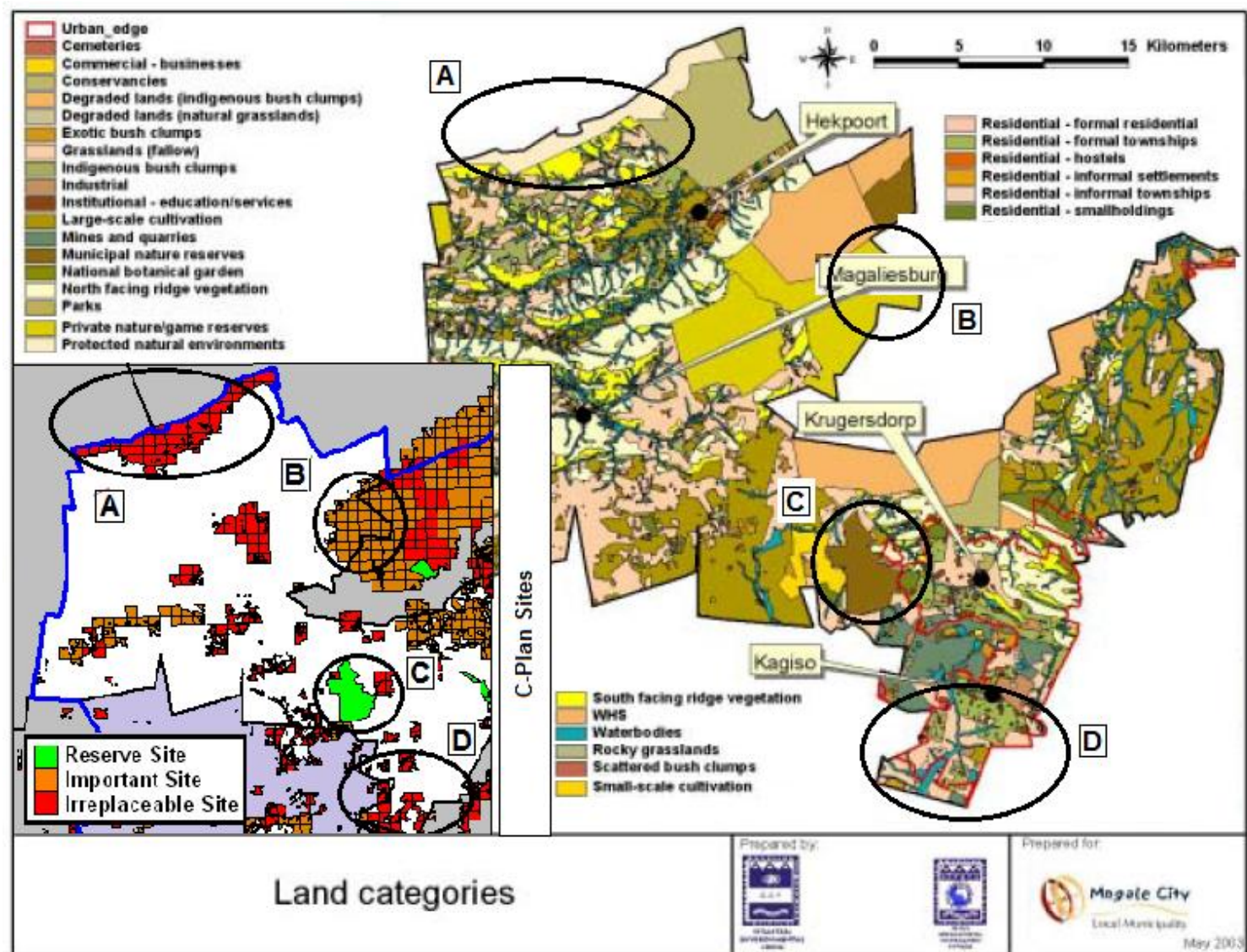


Figure 7-8. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 3 - Landcover.

7.3 Randfontein Local Municipality

Objective analysis B - Implicit Incorporation

Table 7-11. Environmental Planning Concept incorporation into Randfontein Local Municipality.

Environmental Planning Concepts	IDP 2006 - 2011	SDF 2008
Environmental Zoning	Yes	Yes
Environmentally Sensitive Area	Yes	Yes
Biodiversity	Yes	Yes
Conservation Planning	Yes	Yes
Yes – incorporation successful; No – incorporation not successful; Partial – incorporation occurred partially.		

Comparative Analysis

Table 7-12. RLM - results of comparative analysis between the C-Plan and the SDF

C-Plan Site Categories		SDF Site Categories	Incorporation Score
A	Irreplaceable	Municipal Open Space	A
B	Irreplaceable	Municipal Open Space,	A
	Important	Future Residential area	B
C	Irreplaceable	Extensive Agriculture	B
		Municipal Open Space	A
A – fully incorporation, B – not mentioned at all and C partially incorporated			

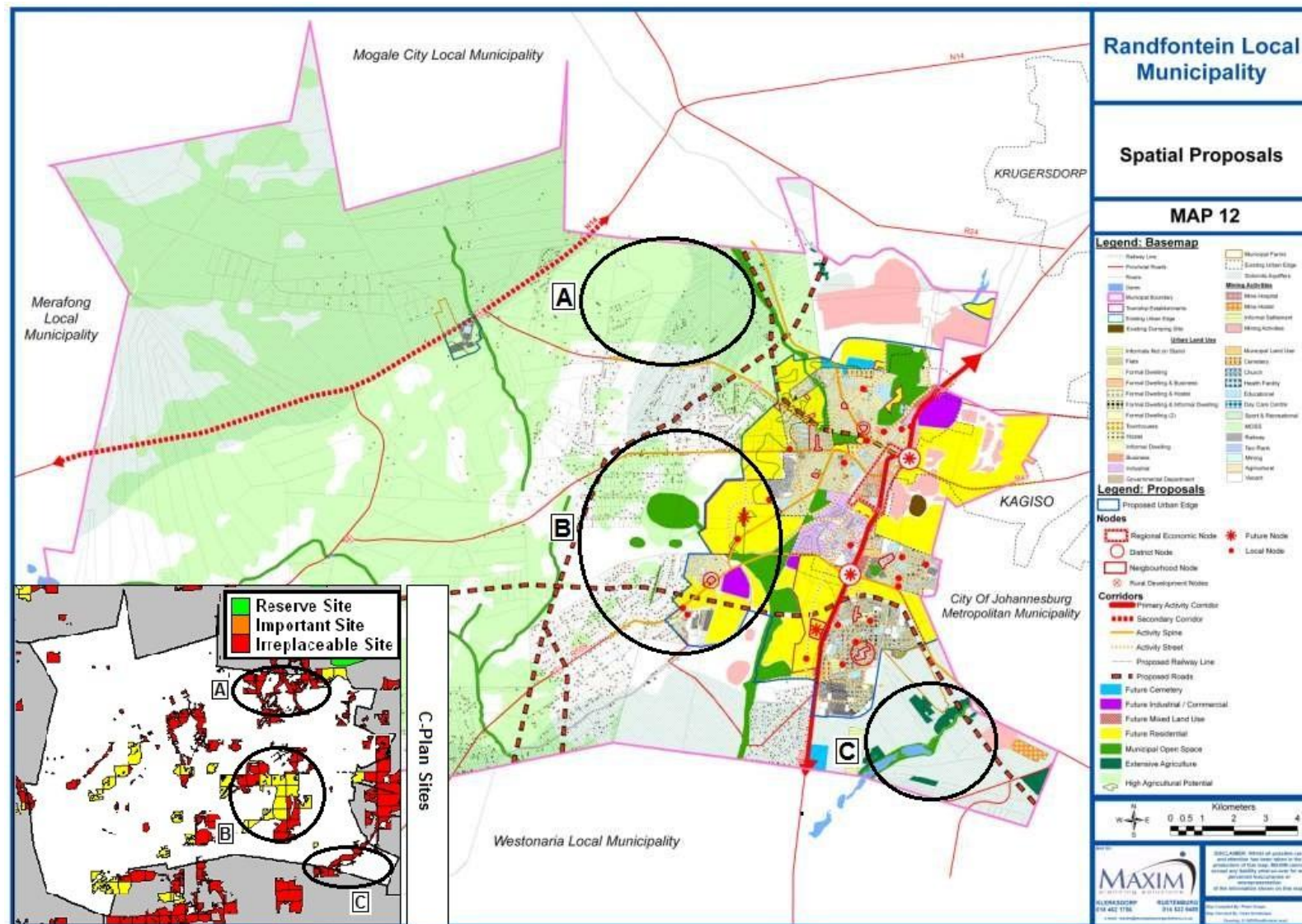


Figure 7-9. Comparative analysis between the provincial C-Plan and the municipality's SDF.

7.4 Westonaria Local Municipality

Objective analysis B - Implicit Incorporation

Table 7-13. Incorporation of the Environmental Planning Concept into Westonaria Local Municipality.

Environmental Planning Concepts	IDP 2007 - 2012
Environmental Zoning	No
Environmentally Sensitive Area	Partial
Biodiversity	Partial
Conservation Planning	No
Yes – incorporation successful; No – incorporation not successful; Partial – incorporation occurred partially.	

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Table

7-14. WLM - results of comparative analysis between the C-Plan and the SDF.

C-Plan Site Categories		SDF Site Categories	Incorporation Score
A	Irreplaceable Important	Agriculture/ Mining	B
B	Important	Conservation/ Mining/ Agriculture	C
C	Irreplaceable Important	Conservation/ Mining/ Agriculture	C
A – fully incorporation, B – not mentioned at all and C partially incorporated			

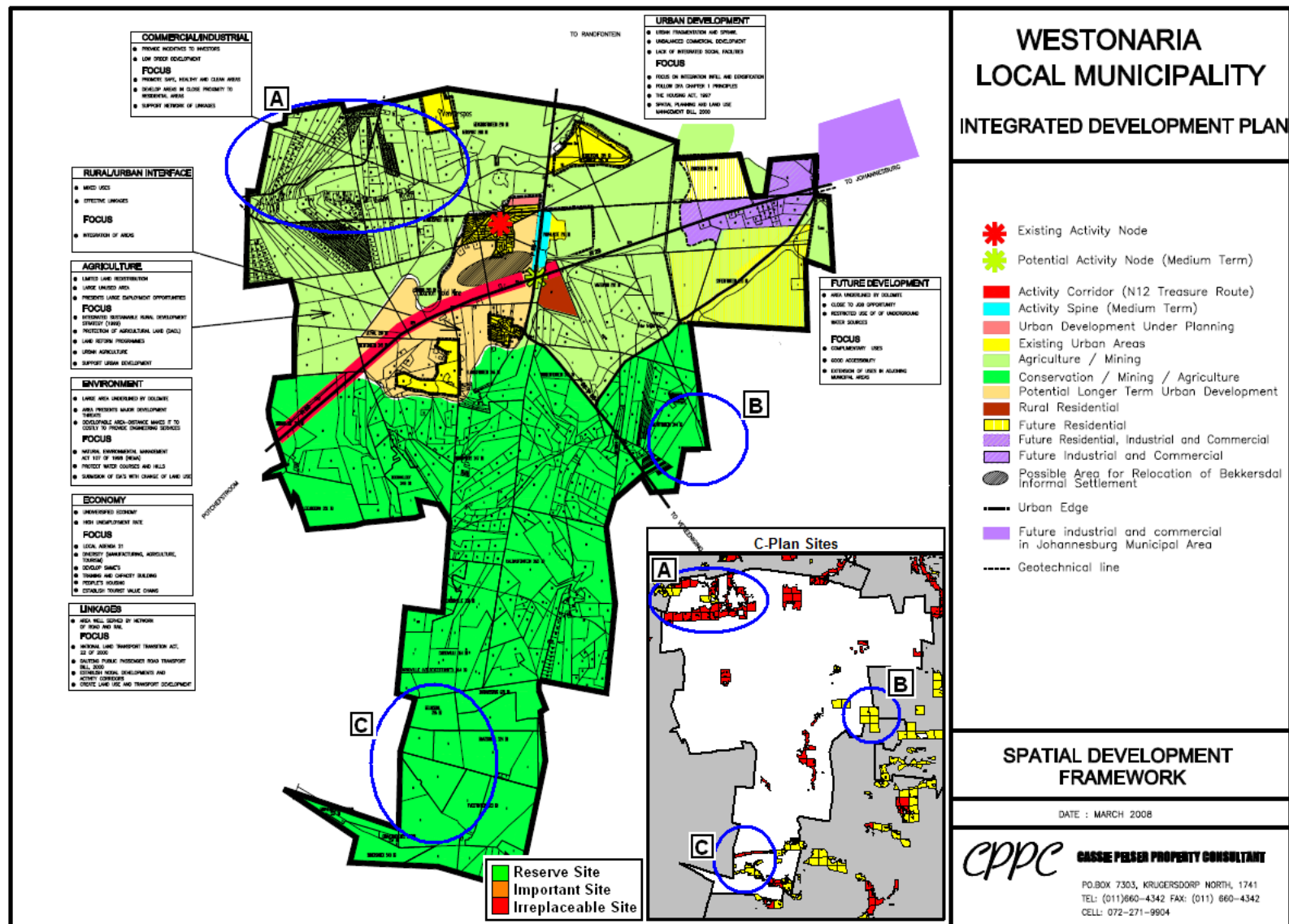


Figure 7-10. Comparative analysis between the provincial C-Plan and the municipality's SDF..

7.5 Sedibeng District Municipality

Objective analysis B - Implicit Incorporation

Table 7-15. Incorporation of the Environmental Planning Concept into Sedibeng District Municipality.

Environmental Planning Concepts	IDP 2007 - 2011	IDP 2010/11 ⁸	SDF 2009	EMF D2008 ⁹
Environmental Zoning	Partial	Yes	Partial	Yes
Environmentally Sensitive Area	No	Yes	Partial	Yes
Biodiversity	Yes	Yes	No	Yes
Conservation Planning	No	No	No	Yes
Yes – incorporation successful; No – incorporation not successful; Partial – incorporation occurred partially.				

Comparative Analysis

Table 7-16. SDM - results of comparative analysis between the C-Plan and the SDF.

C-Plan Site Categories		SDF Site Categories	Incorporation Score
A	Irreplaceable Important	Agriculture Residential Development	B
B	Reserve Important Irreplaceable	Open Space System Tourism Area	A
C	Irreplaceable Important	Open Space System	A
D	Irreplaceable Important	Tourism Area	A
E	Important	Extensive Agriculture	B
A – fully incorporation, B – not mentioned at all and C partially incorporated			

⁸ IDP 2010/11 is the last annual review.

⁹ Draft EMF

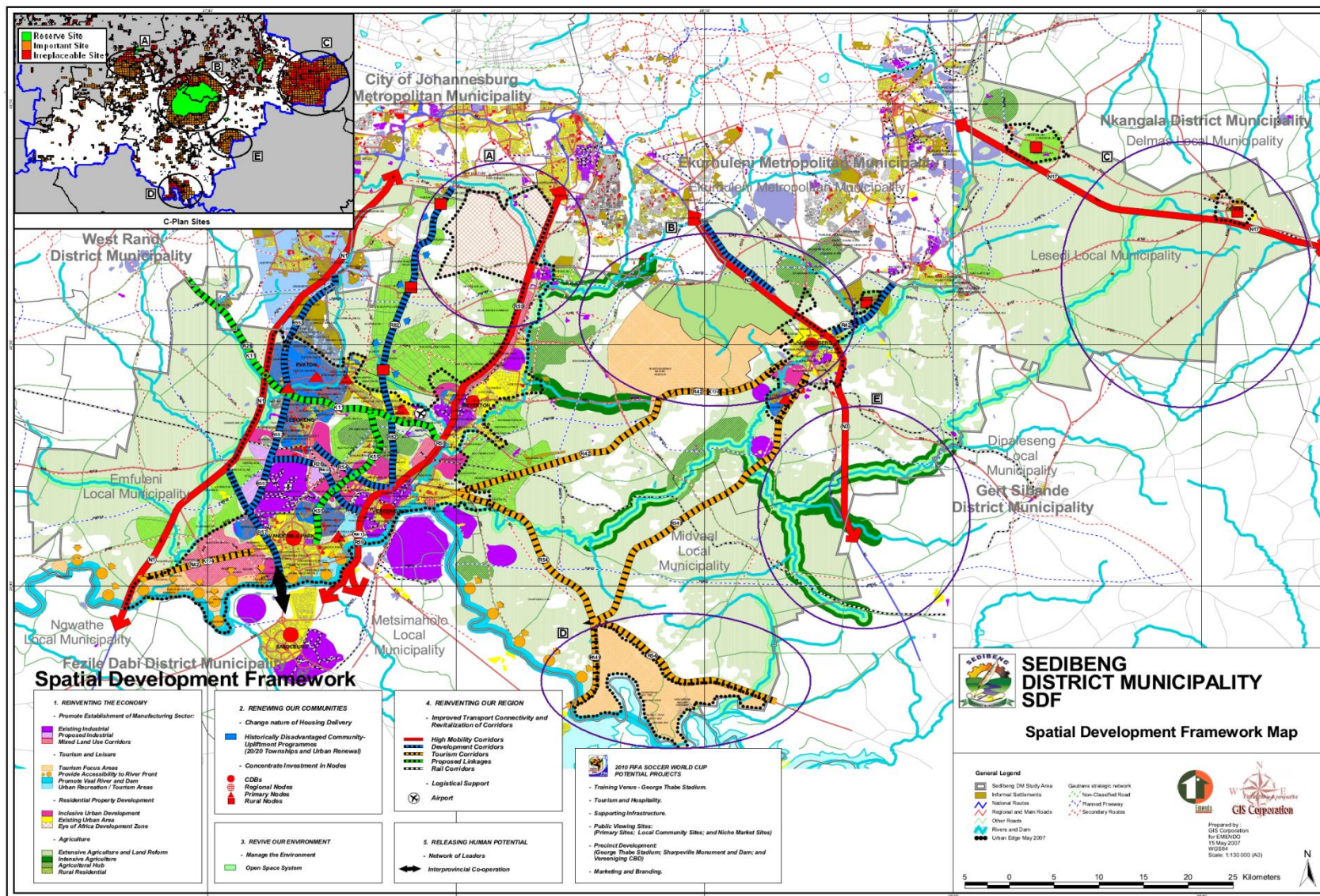


Figure 7-11. Comparative analysis between the provincial C-Plan and the municipality's SDF.

Table 7-17. SDM - results of comparative analysis between the C-Plan and Map 1.

C-Plan Site Categories		Map 1 – Important Open Spaces	Incorporation Score
A	Irreplaceable Important	Protected natural environment	A
B	Reserve Important Irreplaceable	Private nature/game reserves	B
C	Irreplaceable Important	Municipal nature reserve	A
D	Irreplaceable Important	Water bodies Grasslands	A
E	Important		A
A – fully incorporation, B – not mentioned at all and C partially incorporated			

Table 7-18. SDM - results of comparative analysis between the C-Plan and Map 2.

C-Plan Site Categories		Map 2 – Vegetation	Incorporation Score
A	Irreplaceable Important	High Importance Rating	A
B	Reserve Important Irreplaceable	Not applicable	B
C	Irreplaceable Important	High Importance Rating	A
D	Irreplaceable Important	Dams High Importance Rating	A
E	Important	High Importance Rating	A
A – fully incorporation, B – not mentioned at all and C partially incorporated			

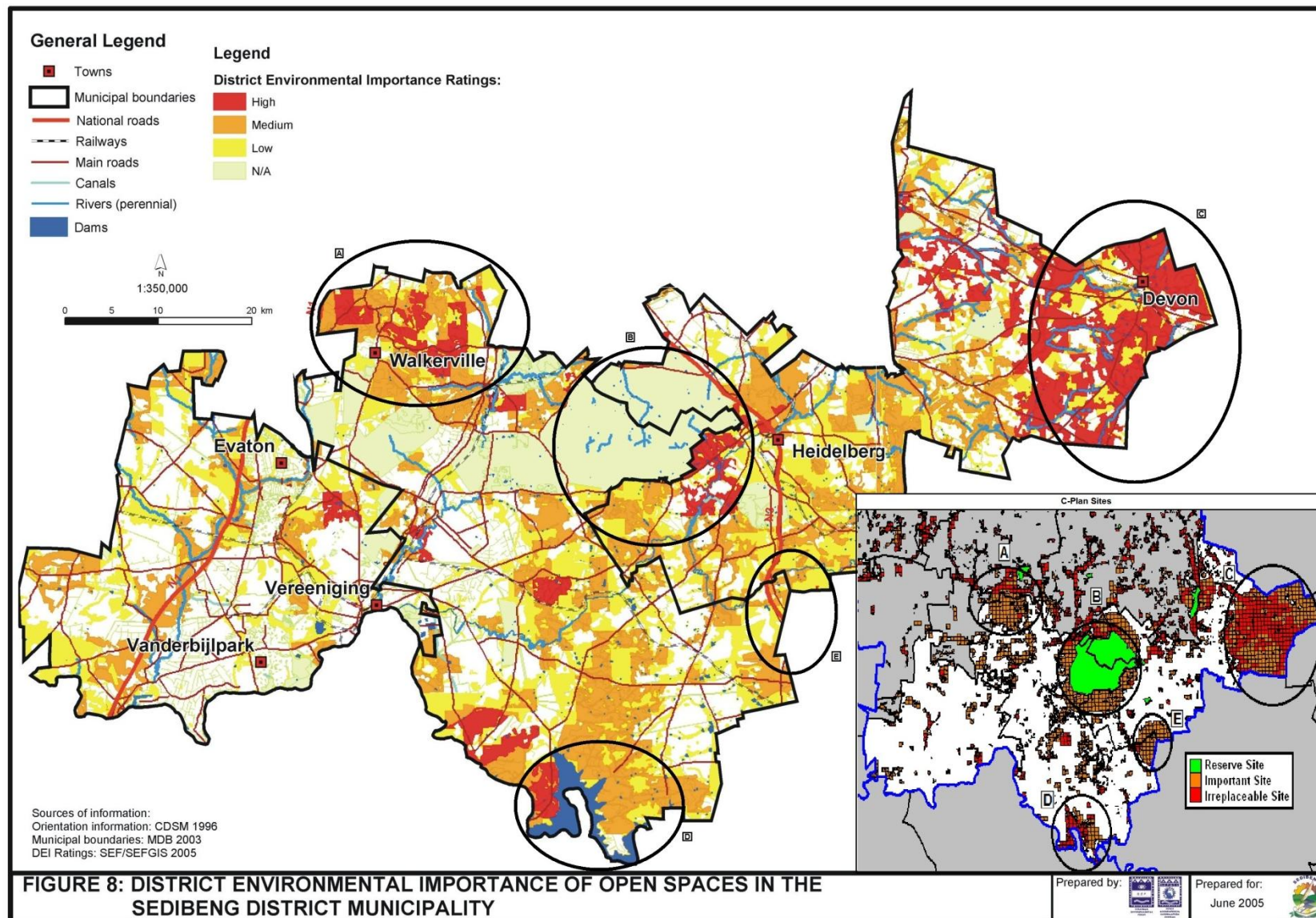


Figure 7-12. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 1 - Important Open Spaces.

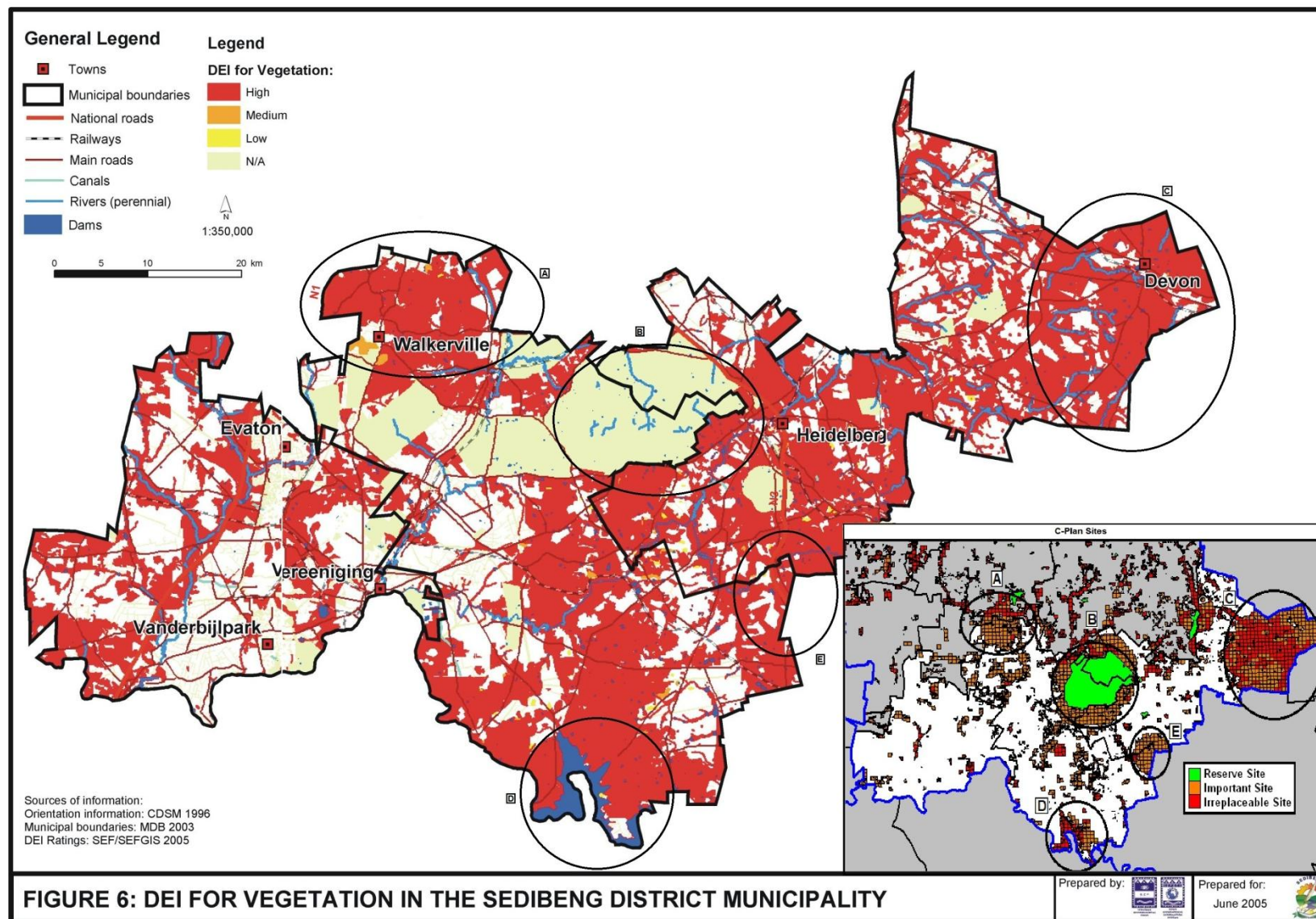


Figure 7-13. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 2 - Vegetation.

7.6 Emfuleni Local Municipality

Objective analysis B - Implicit Incorporation

Table 7-19. Incorporation of the Environmental Planning Concept in Emfuleni Local Municipality.

Environmental Planning Concepts	IDP 2007 - 2012	IDP ¹⁰ 2007/8	IDP 2009/10	SDF D2009 ¹¹
Environmental Zoning	No	No	No	N/A
Environmentally Sensitive Area	Partial	No	No	N/A
Biodiversity	Partial	Partial	No	N/A
Conservation Planning	No	No	No	N/A
Yes – incorporation successful; No – incorporation not successful; Partial – incorporation occurred partially; N/A – no maps are available for analysis.				

Comparative Analysis

Table 7-20. ELM - results of comparative analysis between the C-Plan and the SDF.

C-Plan Site Categories		Draft SDF Site Categories	Incorporation Score
A	Irreplaceable Important	?	?
B	Important	?	?
C	Irreplaceable	?	?
A – fully incorporation, B – not mentioned at all and C partially incorporated; ? – the SDF map resolution too weak to analysis.			

¹⁰ IDP annual reviews

¹¹ No documentation could be found for this draft SDF. Thus only map.

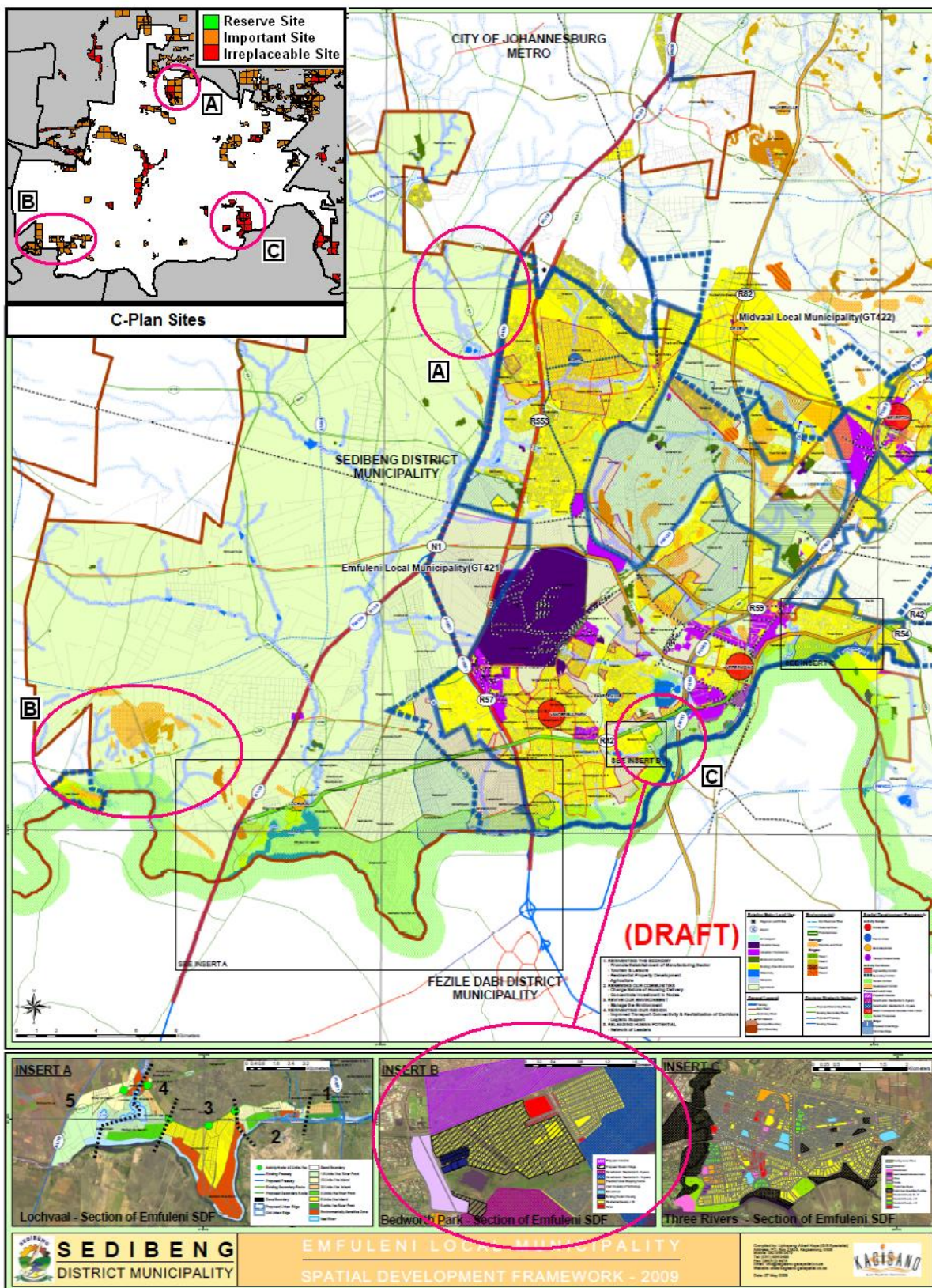


Figure 7-14. Comparative analysis between the provincial C-Plan and the municipality's SDF.

7.7 Midvaal Local Municipality

Objective analysis B - Implicit Incorporation

Table 7-21. Incorporation of the Environmental Planning Concept in Midvaal Local Municipality.

Environmental Planning Concepts	IDP 2007 - 2012	IDP 2007/8	IDP 2009/10	SDF 2010	EMF 2007
Environmental Zoning	Yes	Partial	Partial	Yes	No
Environmentally Sensitive Area	Yes	Yes	No	Yes	Yes
Biodiversity	Yes	Yes	No	Yes	No
Conservation Planning	Yes	Yes	No	Yes	Partial
Yes – incorporation successful; No – incorporation not successful; Partial – incorporation occurred partially.					

Comparative Analysis

Table 7-22. MLM - results of comparative analysis between the C-Plan and the SDF.

C-Plan Site Categories		SDF Site Categories	Incorporation Score
A	Important	Proposed Mixed Use Development Area Residential Area Rural Development Agriculture and Tourism	B
B	Important	Low Density Residential Rural Development Agriculture and Tourism	B
C	Reserve	Protected Area Rural Development Agriculture and Tourism	A C
D	Important	Rural Development Agriculture and Tourism	C
E	Irreplaceable Important	Tourism Development Focus Area Housing Project and Mixed Use node	C B
A – fully incorporation, B – not mentioned at all and C partially incorporated.			

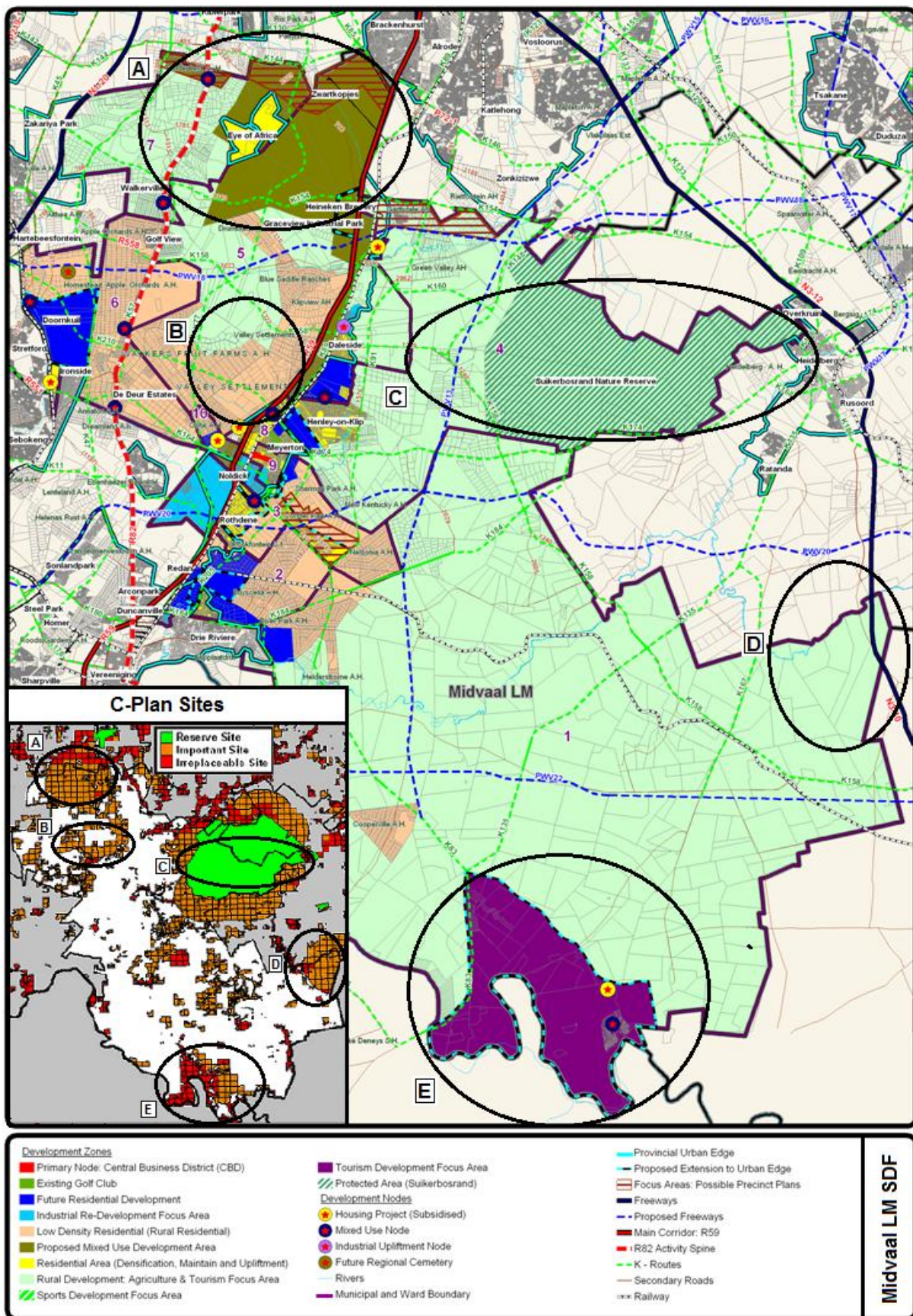


Figure 7-15. Comparative analysis between the provincial C-Plan and the municipality's SDF.

Table 7-23. MLM - results of comparative analysis between the C-Plan and Map 1.

C-Plan Site Categories		Map 1 – Agriculture Patterns	Incorporation Score
A	Irreplaceable Important	Ridges Moderate agricultural zone	C
B	Reserve Important Irreplaceable	Ridges High and Moderate agricultural zone	C
C	Irreplaceable Important	High and Moderate agricultural zone	B
D	Irreplaceable Important	High and Moderate agricultural zone	B
E	Important	Wetlands Moderate agricultural zone	A B
A – fully incorporation, B – not mentioned at all and C partially incorporated.			

Table 7-24. MLM - results of comparative analysis between the C-Plan and Map 2.

C-Plan Site Categories		Map 2 – Environmental Control Zones	Incorporation Score
A	Irreplaceable Important	Ridges	A
		Agricultural zone/ Low density residential	C
		Development corridor/buffer	B
B	Reserve	Conservancy	A
	Important	Low residential development	C
	Irreplaceable	Ridges	A
C	Irreplaceable Important	Nature reserve	A
D	Irreplaceable Important	Agricultural zone/ Low density residential	C
E	Important	Tourism and low density residential	C
A – fully incorporation, B – not mentioned at all and C partially incorporated.			

Table 7-25. MLM - results of comparative analysis between the C-Plan and Map 3.

C-Plan Site Categories		Map 3 – Land-use Patterns	Incorporation Score
A	Irreplaceable Important	Area of conservation value	A
B	Reserve	Area of conservation value	A
	Imporant	Park/ Recreational area	A
	Irreplaceable	Built up land	B
C	Irreplaceable	Nature reserve	A
	Important	Area of conservation value	A
D	Irreplaceable	Cultivated land	B
	Important	Open spaces	C
E	Important	Dams	A
		Area of conservation value	A

A – fully incorporation, B – not mentioned at all and C partially incorporated.

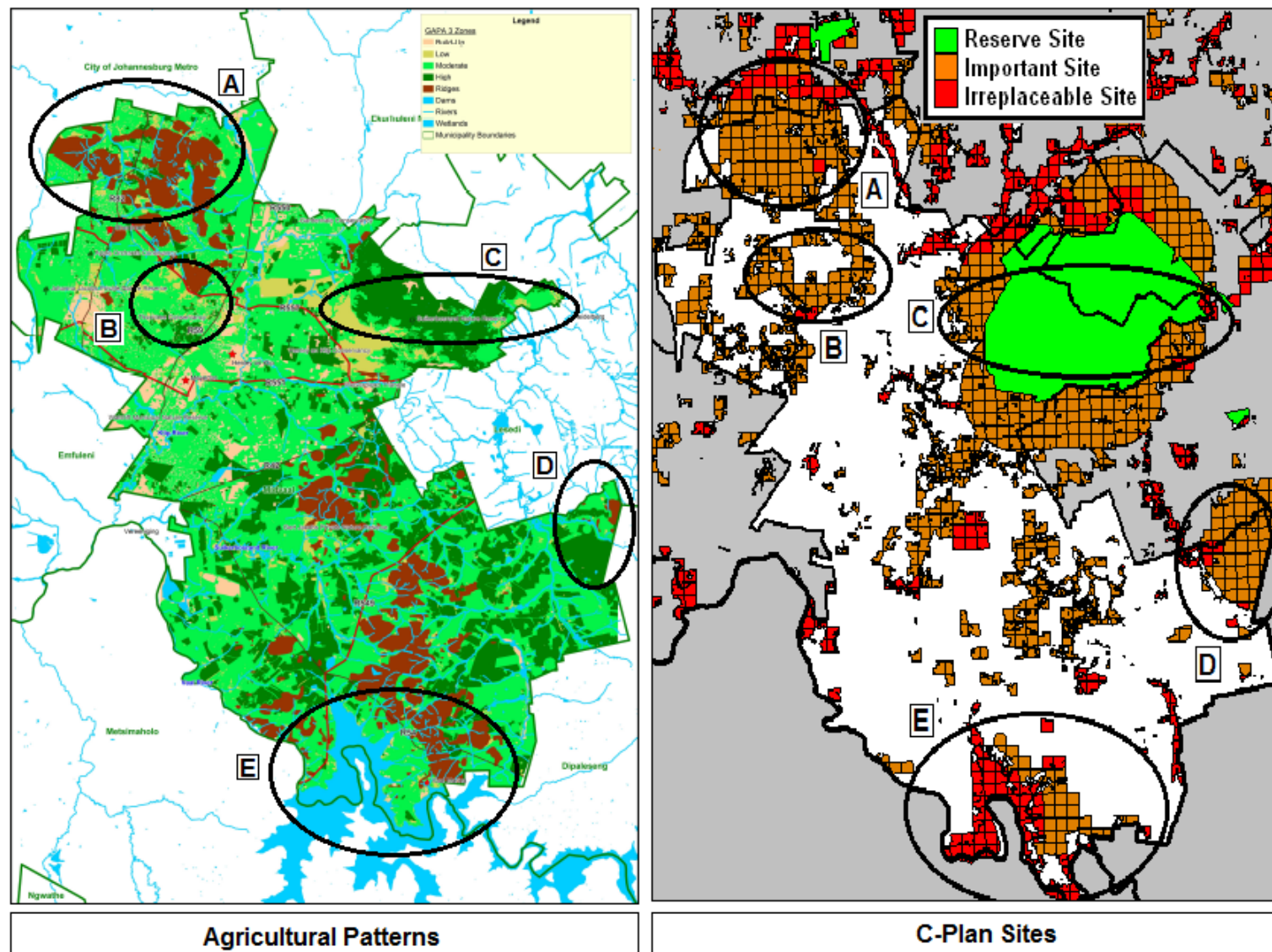


Figure 7-16. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 1 - Agriculture Patterns.

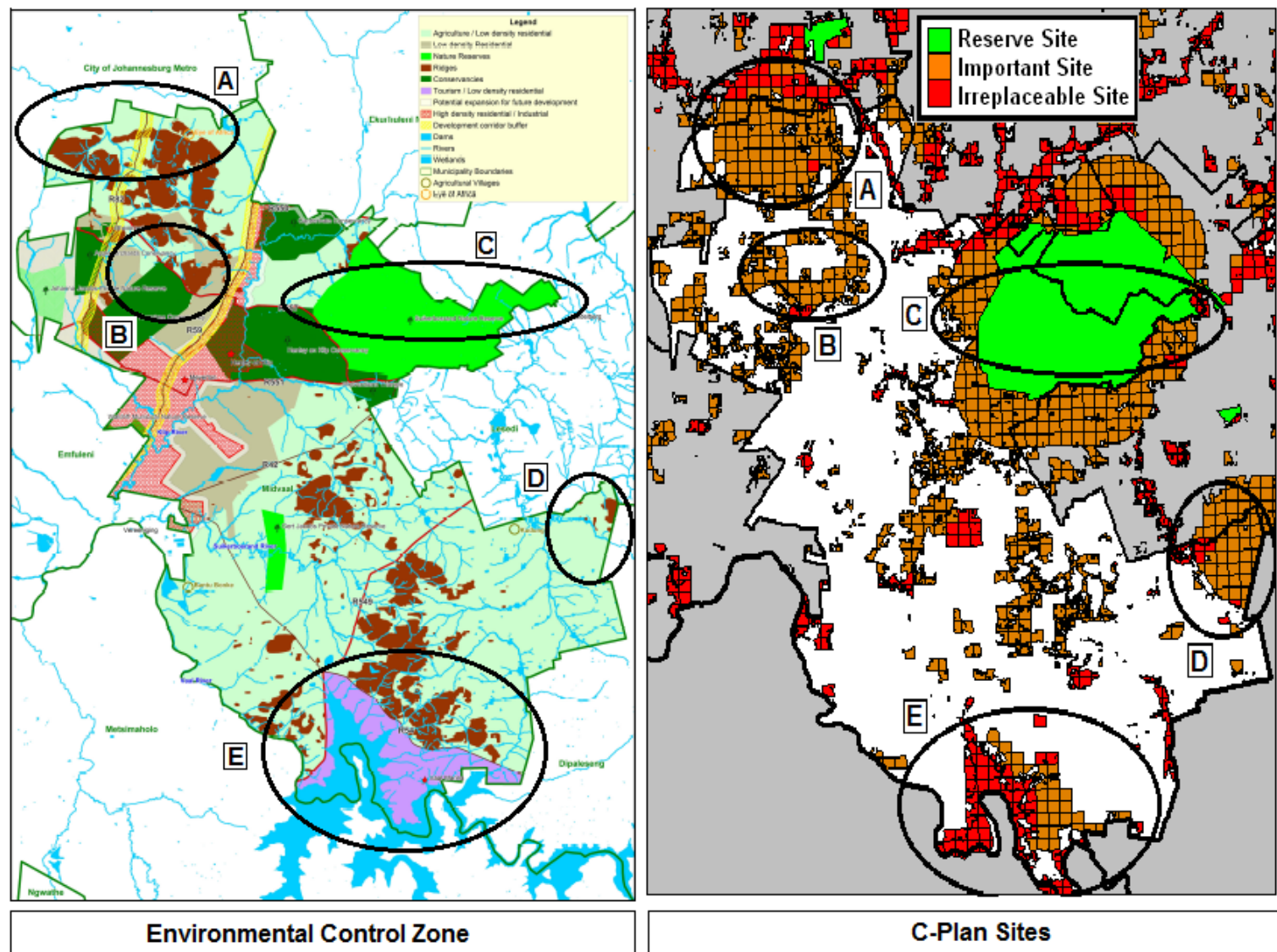


Figure 7-17. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 2 – Environmental Control Zones.

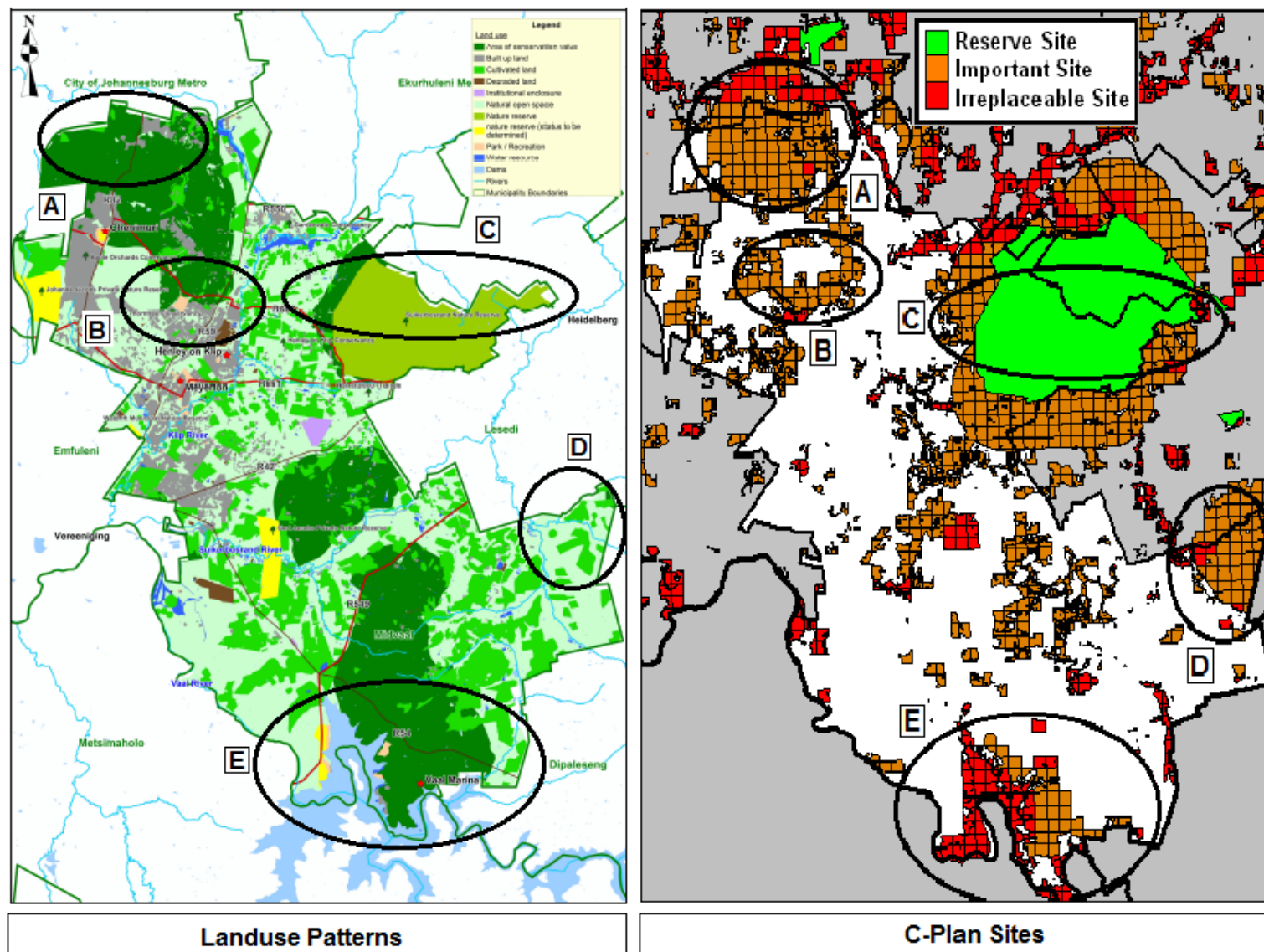


Figure 7-18. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 3 – Land-use Patterns.

7.8 Lesedi Local Municipality

Objective analysis B - Implicit Incorporation

Table 7-26. Incorporation of the Environmental Planning Concept in Lesedi Local Municipality.

Environmental Planning Concepts	IDP 2007/10	SDF 2008	EMF 2006
Environmental Zoning	Yes	Yes	Yes
Environmentally Sensitive Area	Yes	Yes	Yes
Biodiversity	Yes	Yes	Yes
Conservation Planning	No	No	Yes
Yes – incorporation successful; No – incorporation not successful; Partial – incorporation occurred partially.			

Comparative Analysis

Table 7-27. LLM - results of comparative analysis between the C-Plan and the SDF.

C-Plan Site Categories		SDF Site Categories	Incorporation Score
A	Reserve	Future Integrated Development Agriculture and Environment	B
	Important		A
	Irreplaceable		
B	Important	Ridges and Agriculture	C
C	Important	Mine and Qurries	B
	Irreplaceable	Agriculture	B
		Naturals Areas	
D	Important	Mining Rights	B
	Irreplaceable	Natural Areas	C

A – fully incorporation, B – not mentioned at all and C partially incorporated.

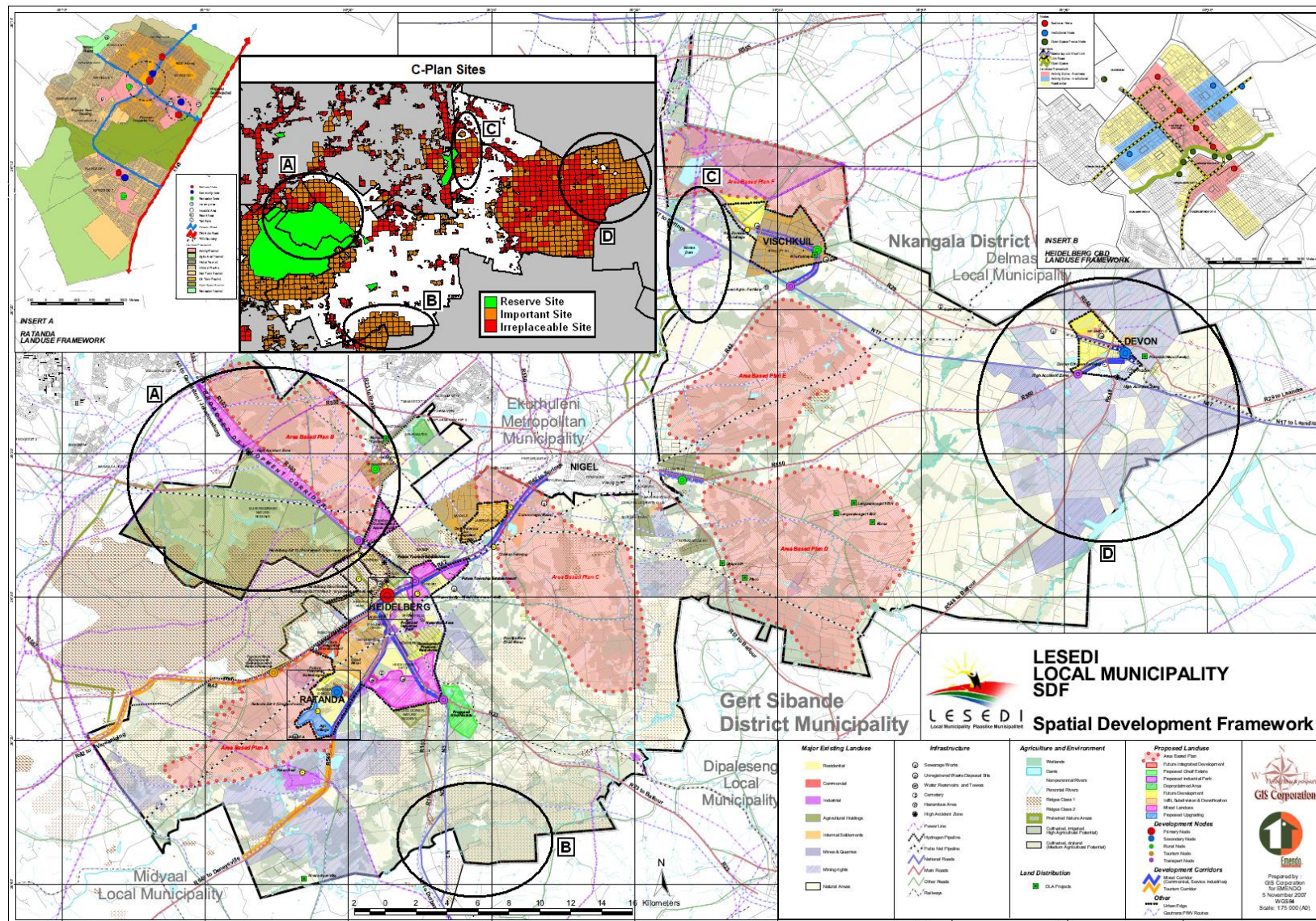


Figure 7-19. Comparative analysis between the provincial C-Plan and the municipality's SDF.

Table 7-28. LLM - results of comparative analysis between the C-Plan and Map 1.

C-Plan Site Categories		Map 1 – Fauna & Invertebrate Habitats	Incorporation Score
A	Reserve	High and Low biodiversity	A
	Important	Biodiversity hotspot	A
	Irreplaceable	No biodiversity	B
B	Important	High and Medium biodiversity	A
C	Important	No biodiversity	B
	Irreplaceable	High biodiversity	A
D	Important	High and Low biodiversity	A
	Irreplaceable		

A – fully incorporation, B – not mentioned at all and C partially incorporated.

Table 7-29. LLM - results of comparative analysis between the C-Plan and Map 2.

C-Plan Site Categories		Map 2 – Vegetation Communities	Incorporation Score
A	Irreplaceable	Developed land - agricultural crops	B
	Important	Rehabilitated agricultural land	A
		Natural grassland vegetation	A
B	Reserve	Mixed woodland vegetation Natural grassland vegetation	A
	Important		
	Irreplaceable		
C	Irreplaceable	Developed land - agricultural crops	B
	Important	Slimes dams - mining	B
D	Irreplaceable Important	Developed land - agricultural crops	B
		Rehabilitated agricultural land	A
		Natural grassland vegetation	A
		Developed land - urban gardens	B

A – fully incorporation, B – not mentioned at all and C partially incorporated.

Table 7-30. LLM - results of comparative analysis between the C-Plan and Map 3.

C-Plan Site Categories		Map 3 – Major Land Use & Settlement Pattern	Incorporation Score
A	Irreplaceable	Vacant/ Rural/ Agricultural land Agricultural holdings and small farms	B
	Important		B
B	Reserve	Vacant/ Rural/ Agricultural land	B
	Important		
C	Irreplaceable	Vacant/ Rural/ Agricultural land	B
	Important	Slimes dams	
D	Irreplaceable Important	Vacant/ Rural/ Agricultural land	B

A – fully incorporation, B – not mentioned at all and C partially incorporated.

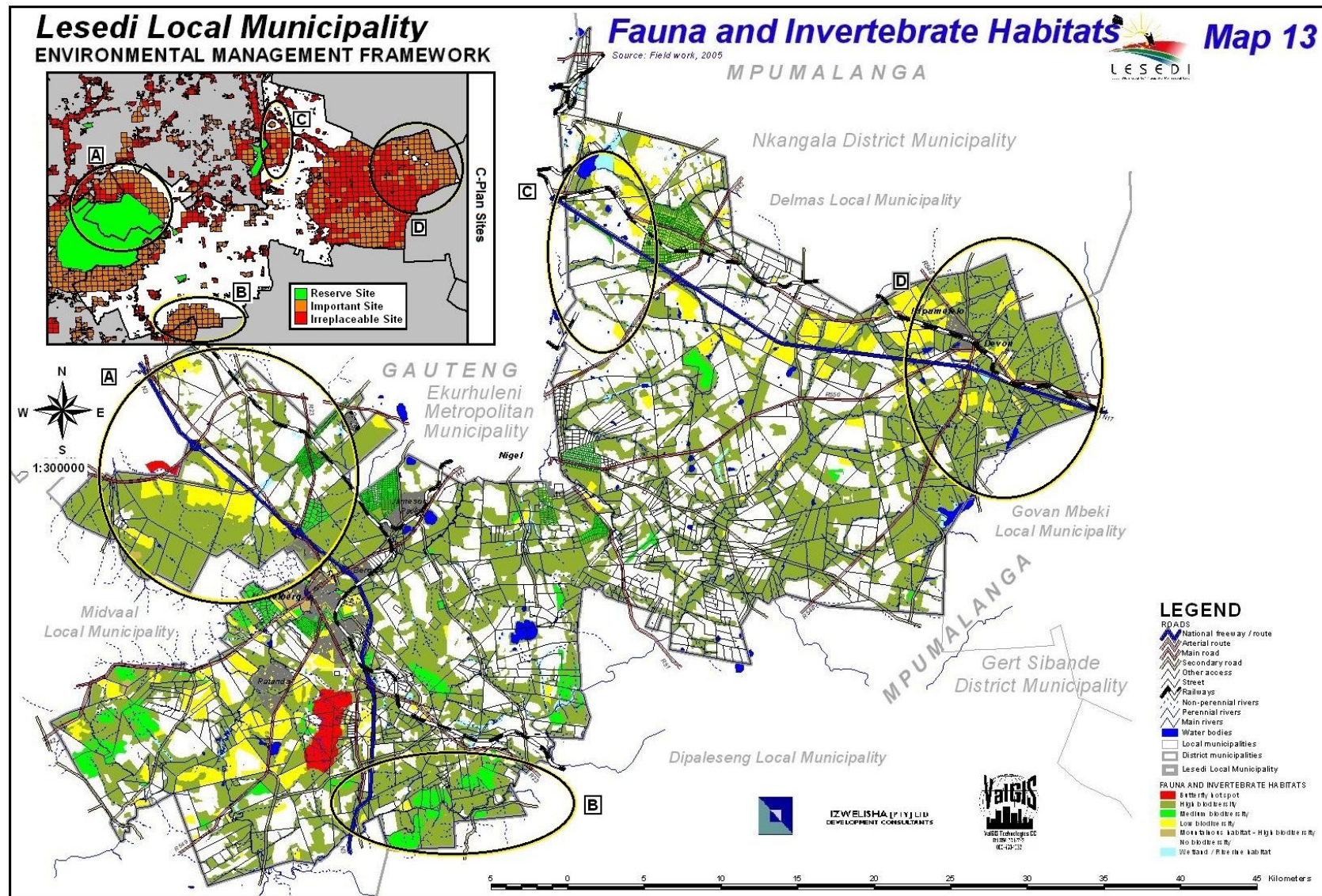


Figure 7-20. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 1 - Fauna & Invertebrate Habitats.

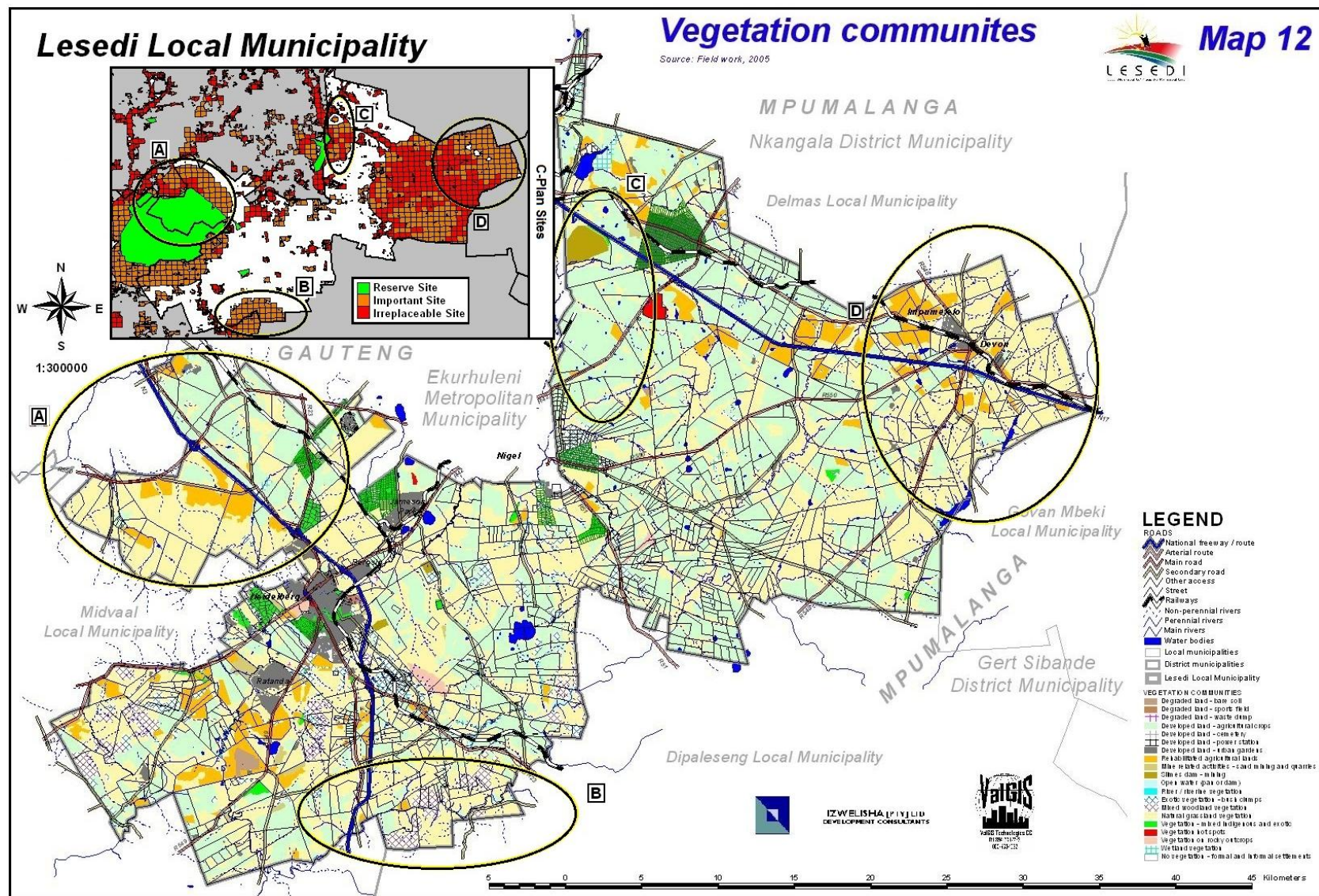


Figure 7-21. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 2 - Vegetation Communities.

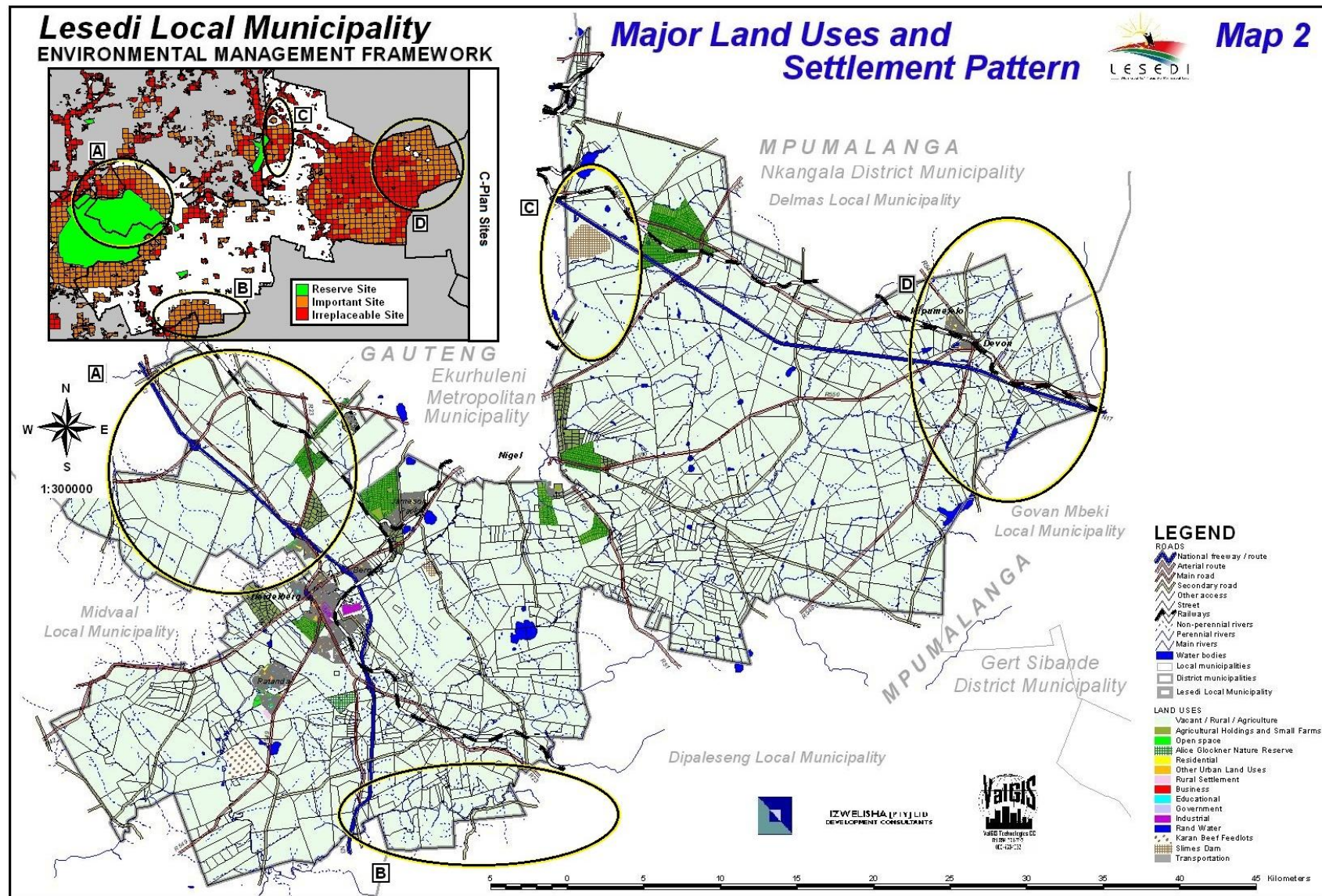


Figure 7-22. Comparative analysis between the provincial C-Plan and the municipality's EMF Map 3 - Major Land Use & Settlement Pattern.

7.9 Summary of Incorporation Results

Table 7-31. Summary of results of incorporation from Comparative and Objective Analysis.

Municipalities	Spatial Maps		Documentation		
	EMF	SDF	EMF	SDF	IDP
WDM	C	B	A	C	A
MCM	A	A	A	C	C
RLM	-	C	-	C	C
WLM	-	C	-	-	B
SDM	A	A	A	B	B
ELM	-	-	-	-	B
MLM	C	B	A	A	A
LLM	A	B	A	C	C
- – data could not be analysed; A – full incorporation, B – not mentioned at all and C partially incorporated					

Table 7-32. Final results of the incorporation of the C-Plan in strategic municipal documentation.

Municipality	EMF	SDF	IDP	Incorporation?	
WDM	A	B	A	A	Yes
MCM	A	A	C	A	Yes
RLM	-	C	C	C	Partially
WLM	-	C	B	B	No
SDM	A	C	B	C	Partially
ELM	-	-	B	B	No
MLM	A	C	A	A	Yes
LLM	A	B	C	C	Partially
- – data could not be analysed; A – full incorporation, B – not mentioned at all and C partially incorporated.					