



# uMGUNGUNDLOVU DISTRICT MUNICIPALITY SPATIAL DEVELOPMENT FRAMEWORK

## SUSTAINABILITY APPRAISAL

Submitted to:



Submitted by:



**Institute of Natural Resources NPC**

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# TABLE OF CONTENTS

1.	INTRODUCTION .....	3
1.1	Project Overview and Study Area .....	3
1.2	Environmental Synopsis .....	5
1.3	Environmental Spatial Development Framework Objectives .....	7
1.4	Purpose of this Report .....	9
2.	SUSTAINABILITY EVALUATION.....	9
2.1	Approach to Evaluation.....	9
2.2	Assumptions and Limitations .....	11
2.3	Evaluation Against Sustainability Criteria .....	12
3.	SUMMARY SUSTAINABILITY PERFORMANCE KEY FINDINGS AND RECOMMENDATIONS.....	17
3.1	General Comments and Recommendations.....	17
4.	REFERENCES .....	18

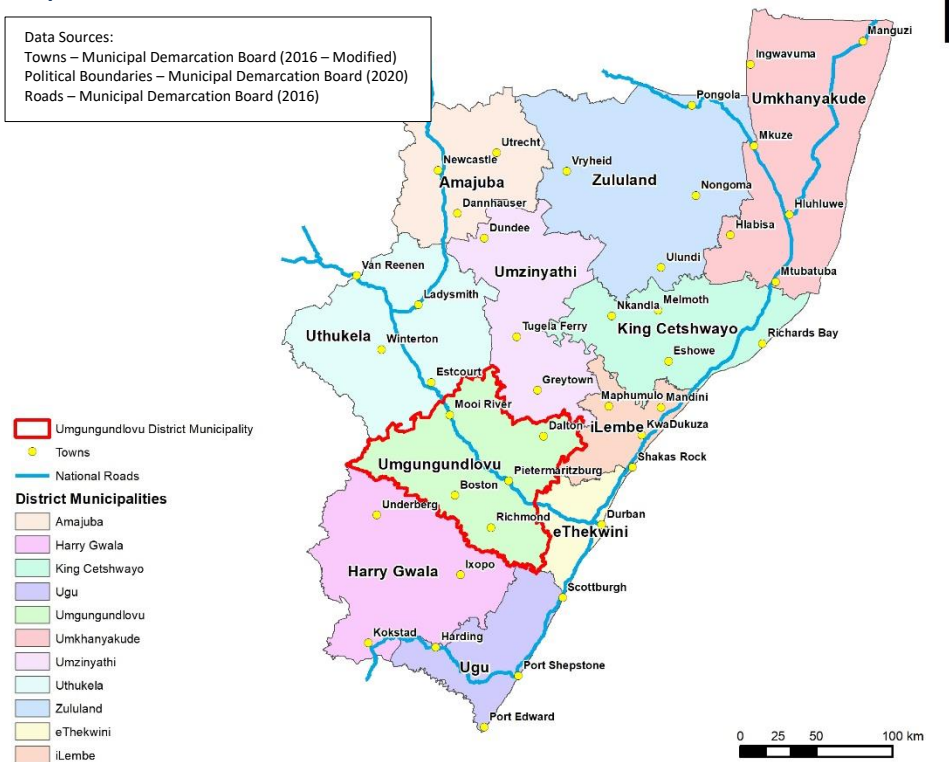
# 1. INTRODUCTION

## 1.1 Project Overview and Study Area

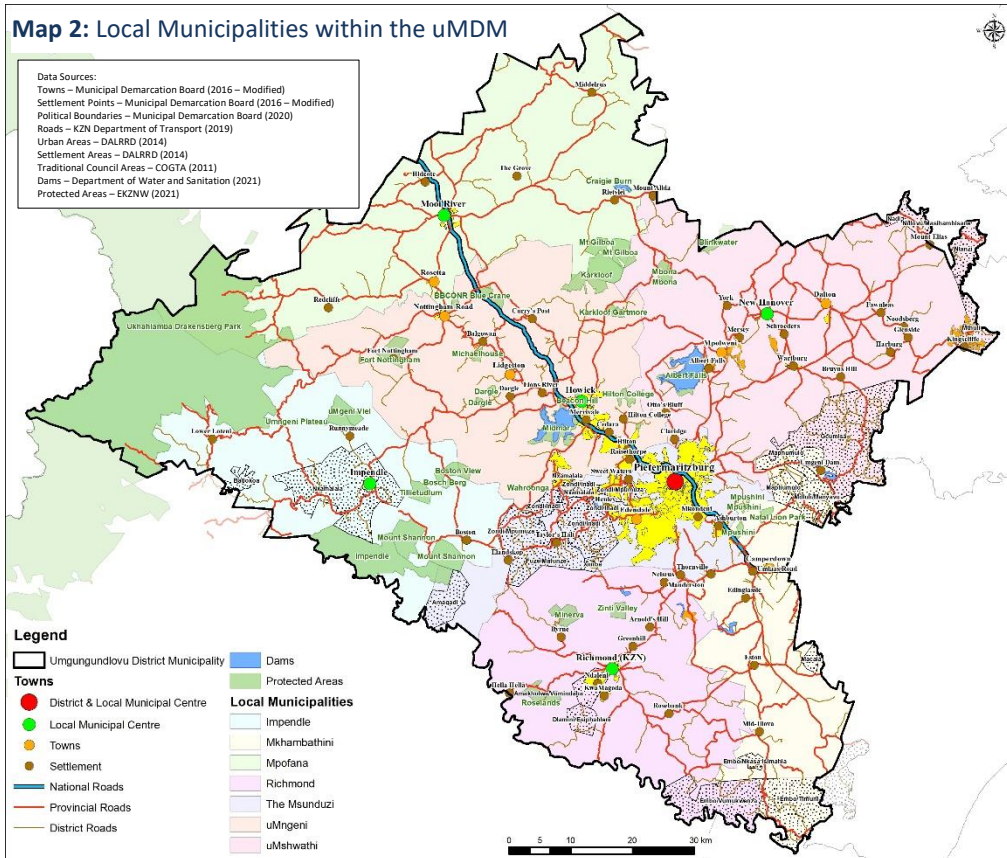
The uMgungundlovu District Municipality (uMDM) initiated a process towards the formulation of a Municipal Spatial Development Framework (MSDF) in terms of Sections 21 of the Spatial Planning and Land Use Management Act (SPLUMA), Act 16 of 2013. The MSDF will form an integral part of the uMDM’s Integrated Development Plan (IDP) and will express the development vision of the municipality spatially. The MSDF is being developed by Isibuko Development Planners, with the Institute of Natural Resources NPC providing the environmental input into the process.

The uMDM is one of the eleven (11) district municipalities that make up the KwaZulu-Natal Province (**Map 1**). It is located approximately 80 kilometres west of the eThekweni Metropolitan Municipality along the N3 national and provincial corridor. The district shares a boundary with eThekweni Metropolitan Municipality to the east; iLembe District to the north-east; uMzinyathi District to the north; Harry Gwala District to the south; and the uKhahlamba-Drakensberg World Heritage Site and the uThukela District to the west. The uMDM comprises of seven (7) local municipalities, namely; Msunduzi, Impendle, uMshwathi, Mkhambathini, Mpofana, uMngeni and Richmond Local Municipalities (**Map 2**).

**Map 1:** uMDM within KwaZulu-Natal



**Map 2: Local Municipalities within the uMDM**



Several reports have been prepared during the preparation of the MSDF which should be read in conjunction with this report so as to provide greater depth of understanding and context. These reports include:

- Isibuko (2021a). uMgungundlovu District Municipality Municipal Spatial Development Framework Policy Review and Vision Directives Report, Version 2, May 2021. Isibuko Development Planners, Pietermaritzburg.
- Isibuko (2021b). uMgungundlovu District Municipality Municipal Spatial Development Framework Opportunities and Challenges Report, Version 3, July 2021. Isibuko Development Planners, Pietermaritzburg.
- Isibuko (2021c). uMgungundlovu District Municipality Municipal Spatial Development Framework Spatial Proposals Report, Version 2, December 2021. Isibuko Development Planners, Pietermaritzburg.

Further key studies have been conducted for the uMDM where a wealth of specialist environmental sustainability data has been generated, these include:

- Umgungundlovu District Municipality (2014). *Umgungundlovu District Municipality Spatial Development Framework*. Umgungundlovu District Municipality, Pietermaritzburg.
- Umgungundlovu District Municipality (2019). *Integrated Development Plan for Umgungundlovu District Municipality: 2019/2020 Review*. Umgungundlovu District Municipality, Pietermaritzburg.
- Umgungundlovu District Municipality (2017). *Environmental Management Framework for the Umgungundlovu District Municipality: Environmental Management Framework Report*. Umgungundlovu District Municipality, Pietermaritzburg.

## 1.2 Environmental Synopsis

The uMDM is located within the Maputaland-Albany-Pondoland-Albany **biodiversity hotspot**, a globally recognised biogeographic region of significance, which contains unusually high numbers of endemic species, as well as globally unique ecosystem diversity in terrestrial, fresh water and marine systems. The area contains **listed 1 threatened ecosystems**, which are included in the district's **Biodiversity Sector Plan**, *requiring municipal protection* to prevent their further loss and degradation. The uMDM is one of four districts *prioritised* by the South African National Biodiversity Institute's (SANBI) Biodiversity and Land Use Project for 'mainstreaming biodiversity' as a *key strategy for addressing issues of biodiversity loss and ecosystem degradation*. The uMDM contains several formally **protected areas and other conservation areas**, mostly situated in the northwestern sector. Notable is the uKhahlamba Drakensberg Park World Heritage Site, an area with international recognition and listed as a Ramsar site. These areas have *important spatial and planning implications*, such as layered buffers, which restrict and conditionally permit development and affect listing notices, triggering the need for EIAs for certain types of development. In addition, there are several other Biodiversity Stewardship sites and Protected Areas. The KZN Provincial conservation Plan, **Biodiversity Land Use (BLU) coverage** published by EKZNW reflects **Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the district**, particularly more dominant in the uMngeni, Mpofana and Impendle local municipalities. These CBAs are terrestrial (land) and aquatic (water) areas which must be *safeguarded in their natural or near-natural state because they are critical for conserving biodiversity and maintaining ecosystem functioning*. Whilst ESAs are areas that play important roles in supporting the persistence of CBAs, for instance via ecological corridors. Important **macro-ecological corridors** in the district include: the Tugela North Corridor which bisects a portion of the northern part of the uMDM; the Tugela Corridor, situated further south, which extends east-west from the Blinkwater, Karkloof, and Nottingham Road to Karkloof; the Midlands Corridor, which mostly follows the southern boundary of the uMDM; and the Berg Corridor which forms a large portion of the uMDM in the west. **Micro-ecological corridors** include a link between the Tugela and Tugela North Corridor terminating in the south at the Karkloof Nature Reserve and Mbona Private and Mount Gilboa Nature Reserves; and a large microecological corridor linking Kamberg in the west, via the uMngeni Vlei Nature Reserve, Boston View Biodiversity Agreement, the south of Midmar Nature Reserve (priority wetland), Hilton College Nature Reserve, following the uMngeni River to terminate at the Eastern Valley Bushveld protected area expansion area. Some CBAs are further classified as **Agro-Biodiversity Zones (ABZs)** and **Environmental Management Zones (EMZs)**. The district contains several **formally protected areas, stewardship sites, and other conservation areas**, mostly situated in the northwestern sector. Most notable is the uKhahlamba Drakensberg Park World Heritage Site (UDP WHS) (approximately 67 000ha), which is also a listed Ramsar site. The UDP WHS has a series of *layered buffers, which restrict and conditionally permit development*. Buffers around protected areas also apply for EIA listing notices, which *trigger the need for EIAs for certain types of development*. The district is an important role-player in global efforts towards the minimisation of species extinction and in ensuring the continued functioning of ecological and evolutionary processes. This becomes more significant when one considers that at least 70% of the original habitat, which occurred in this hotspot, has already been lost or **transformed to urbanisation**. Ezemvelo KZN Wildlife's 2014 vegetation type database, which lists the conservation status of remaining vegetation, indicates that the highest concentration of remaining 'critically endangered' vegetation types is situated in the uMshwathi and the Mkhambathini local municipalities. Whilst the highest concentrations of remaining 'endangered' and 'vulnerable' vegetation types occur in the Richmond, Impendle and uMngeni local municipalities. **Land degradation** is a further concern, as related to the decline in the quality and quantity of vegetation or even a change in the physical and chemical state of soils, which would, impact both biodiversity and agricultural potential. The most important drivers of land degradation in the district are overgrazing and invasive alien plants. Significant areas of land are impacted by these drivers in the upper uMkhomazi River catchment in the Impendle Municipality.

The district is endowed with vast tracts of **high potential agricultural land** (comprising of mostly sugarcane, forestry, annual crops, irrigated vegetables, irrigated pastures, and natural grassland for cattle grazing) to the north and south, categorised mostly as 'irreplaceable' and 'threatened' agricultural land. Development, particularly within the high potential agricultural land areas is subject to the Subdivision of Agricultural Land Act 70 of 1970, which requires a formal application to subdivide agricultural land or rezone agricultural land for other purposes. In addition, the Preservation and Development of Agricultural Land Framework Bill (PD-ALF) aims to preserve high potential agricultural land for agricultural purposes to sustain long-term food security for a growing population. While not yet enacted, this will have substantial implications for development in the future. Agricultural land once disturbed, altered, or destroyed is difficult to rehabilitate, and can never fully be returned to its prior productive state. Anticipated pressure points include 'urban sprawl' areas on the outskirts of towns, nodal areas and along transportation corridors.

The uMDM is the custodian of a wealth of **water assets** that supply critical water to the economic hub of KwaZulu-Natal. These assets include: (1) six main rivers; the uMngeni, Mooi, uMvoti, Lovu, Mlazi and the uMkhomazi; (2) four critical water supply dams on the uMngeni River; the Midmar, Albert Falls, Nagle, and the Inanda dams, which supply the Pietermaritzburg-Durban urban development node; (3) the Southern Drakensberg Strategic Water Source Area, covering the western and central portions of the district which includes the headwaters of the Mooi, uMngeni, uMvoti and uMkhomazi catchments – key water production areas; (4) ecologically and hydrologically critical wetlands, most notably the uMngeni Vlei situated in the iMpendle local municipality, the Hlatikhulu River wetlands in the Mpofana local municipality and the Karkloof River floodplains in uMngeni local municipality; (5) a vast network of smaller wetlands and river ecosystems; and (6) groundwater resources. The **demand for water** in the Pietermaritzburg-Durban development node presently exceeds the available supply from the uMngeni Catchment. Water supply is supplemented by an inter-basin transfer from Spring Grove Dam and Mearns Weir in the adjacent Mooi River catchment to the north, referred to as the Mooi-Mgeni Transfer Scheme. Despite this transfer, as demand continues to increase, water shortages for many areas in South Africa, including the uMDM are imminent, likely to be further exacerbated by climate change. A new inter-basin transfer is in the process of being developed from the uMkhomazi River into the Durban supply network involving the construction of Smithfield Dam and associated transfer infrastructure. Along with limited water quantity, **water quality** is a further significant problem. Water quality impacts from urban settlement, industrial and agricultural areas are high. Of strategic importance is the quality of the water in: (1) the uMsunduzi River as this is heavily impacted by sewage and industrial waste originating from the greater Pietermaritzburg area. This river has downstream impacts on the communities dependent on it and on the uMngeni River as well as on the Inanda Dam; (2) the uMngeni River from below Midmar Dam is impacted by wastewater and industrial effluents from Howick and by agricultural effluents below Albert Falls Dam. This impact directly affects the quality of water stored in Albert Falls Dam and abstracted at Nagle Dam, a key supply point for eThekweni; (3) the Mthimzima Stream which flows through Mpophomeni settlement and flows directly into Midmar Dam. This stream is heavily impacted by untreated sewage and degrades the quality of water in Midmar Dam. The proximity of this settlement to Midmar Dam and its rapid expansion are significant factors in this issue; and (4) the upper Little Mooi and the upper Mooi rivers are heavily impacted by agricultural activities which result in high nutrient loads entering the rivers. The water from these catchments enters Midmar Dam through the Mooi uMngeni transfer scheme. All planning for development activities should be carefully considered with respect to the potential impact on water quality and quantity availability. This is most critical for developments located in catchments classified by the uMDM EMF as 'very high or high sensitivity catchments', or 'water stressed'.

The environment and humans are co-dependent relying on each other for their well-being. Any unplanned or irresponsible development, and damage to the environment often leads to **human vulnerability**, which will further be exacerbated with climate change affects. Due to there being a high demand for housing in the district, unauthorised, unplanned informal houses are often constructed in

*marginal high-risk areas*, for instance on steep slopes, geotechnically unstable areas, within wetland areas, or within the 1:100-year flood lines of rivers. Settlement in such areas may put residents at risk, creating human vulnerability to flood events or slope failure. Areas of concern include homesteads on the outskirts of Pietermaritzburg in the Msunduzi local municipality; in the Embo Vumukwenza and Embo/Timuni communities, south of Eston within the Richmond and Mkhambathini local municipalities; and in the Maphumulo and Gcumisa communities, north-east of Ashburton in the uMshwathi local municipality.

The Impendle Municipality, the high lying areas of the Drakensberg mountains, the Karkloof and Blinkwater, being more water rich are less sensitive to the water shortage effects of **climate change** than the drier Mooi River, Muden, Eston, Camperdown and the Ashburton areas situated in the Mpfana and Mkhambathini local municipalities. A large percentage of the uMDM falls within the Southern Drakensberg Strategic Water Source Area (SWSA), which extends from the Drakensberg Escarpment in the west to Richmond in the south, to Dalton in the east and Mooi River in the north. *The north-western sector of the district is therefore more likely to be more resilient to the water shortage impacts of climate change than the more vulnerable south-eastern sector.* Demand for water in South Africa is expected to increase, and despite inter-basin transfers, water shortages will be imminent for many areas, particularly vulnerable areas. Climate change projection models suggest that more frequent extreme events can be expected in KZN. This increases the potential for flooding. *Expansion of 1:100yr, 1:50yr and 1:20yr events' risk areas will become necessary to better protect lives and infrastructure. Biodiversity and ecosystem support areas, such as river corridors, as well as agricultural assets need to be managed in such a way that their resilience to extreme events is maintained and enhanced.* Climate change will also *impact agriculture*. Minimum night-time temperatures, especially in the higher altitude central areas are expected to increase, resulting in warmer winters, creating conditions more conducive for pests and disease to thrive; leading to a reduction in productivity of certain crops; and a decrease in frost damage. Maximum day-time temperatures are likewise expected to increase, leading to increased evaporation from soil and water bodies; increased rates of respiration which may exceed rates of photosynthesis; potential heat damage to crops/stress in livestock; and increased irrigation requirements.

### 1.3 Environmental Spatial Development Framework Objectives

A SDF is a legal requirement in terms of the Local Government: Municipal Systems Act, 2000 (MSA) and the Spatial Planning and Land Use Management Act, 2013 (SPLUMA). Environmental sustainability is incorporated into the SDF process via directives contained in national and provincial authority guidelines, which stipulate the need for an, '*environmental vision*', and via adherence to the National Environmental Management Act, 1998 (NEMA), which requires that all spatial decisions promote environmental sustainability.

The Isibuko Development Planners' (2021) Policy Review and Vision Directives Report, defines directives to be addressed in the uMDM SDF (**Table 1**). Directives pertaining to sustainability have been ranked in order of importance, with red being high importance, orange medium, and green low. This ranking has been undertaken so as to assist with the preparation of the sustainability appraisal assessment, particularly to determine if the pre-determined sustainability objectives have been met in the SDF.

**Table 1.** Vision Directives to be addressed in the SDF.

Socio-Economic	Bio-physical	Built Environment	Governance
Build safer communities	Effective management of disaster risks	Access to adequate, safe, and affordable housing and basic services.	Integrated land-use management
Create productive rural regions	Efficient and sustainable use of natural resources	Improve settlement planning	Strengthening national and regional development planning.
Strengthen regional spatial integration.	Respond and adapt to climate change	Promote efficient spatial structure	Coordination, integration, and spatial alignment
Develop an inclusive rural economy – agrarian reform	Protect and conserve water resources	Improve rural mobility and accessibility	Co-ordinated implementation
Support the green economy	Food security	Focus development in strategic areas	
Develop the bio-diversity economy	Protect high potential agricultural land	Cluster public facilities in accessible areas	
Support tourism regions	Sustainable management of water and sanitation	Create compact, connected, and integrated human settlements	
	Create balance between development and conservation – sustainability	Revitalise small towns	
	Protect core bio-diversity assets	Upgrade informal settlements	
		Develop and maintain airports, road, and rail networks	
		Develop ICT Infrastructure and connectivity	
		Provide access to affordable, reliable, sustainable energy	
		Strengthen functional rural-urban linkages	
		Improve waste management	



The proposed 2021 draft SDF vision states, “The uMDM strives to spatially transform the district into a unique area where the landscape is spatially integrated, *entrenches sustainable development*, responds to issues of *resilience, water provision and management*, and capitalises on unique attributes and economic opportunities. This taking place in the context of good governance”.

## 1.4 Purpose of this Report

A sustainability appraisal (this report) is a systematic iterative process that is carried out to inform a SDF to promote sustainable development by assessing the extent to which the emerging plan, when judged against established sustainability criteria, will help to achieve relevant environmental, economic and social objectives (Department of Economic Development Tourism and Environmental Affairs, 2017). The process is an opportunity for continuous improvement in environmental, social and economic conditions, as well as a means of identifying and mitigating any potential adverse effects that the plan might otherwise have on the environment. *This report should be viewed as a dynamic living document that will be continuously updated for continual improvement of the SDF.* Two aims are essentially achieved: (1) decision-makers (Municipal Council) are provided information on potential impacts of the SDF on the environment; and, (2) the development of the SDF is guided along a more sustainable path by identifying continual improvement measures to achieve the defined sustainability objectives.

The appraisal can assist with: (1) making sure the proposals in the plan are most appropriate; (2) testing the evidence underpinning the plan; (3) demonstrating how the tests of soundness have been met; and (4) considering the environmental information that has been used to develop the plan and demonstrating how this information has been used to inform and influence the final plan.

Sustainability appraisals are considered to meet the requirements of the **Regulation 2(4)(f) of the Local Government: Municipal Planning and Performance Management Regulations, 2001**, which require the assessment of the effects of SDFs on the environment. The local planning authority must carry out an appraisal of the sustainability of the SDF to assess how the SDF contributes to the achievement of sustainable development.

The document has been structured as follows:

**SECTION 1** provides an overview of the project and study area, an environmental synopsis of the main environmental issues faced within the uMDM, and lastly describes the environmental objectives or directives that were listed in the initiation phase of the project in the Policy Review and Vision Directives Report, that should be addressed.

**SECTION 2** In this section the approach used in the evaluation is described, assumptions and limitations are stated, and the evaluation against set criteria is undertaken.

**SECTION 3** provides a summary of the key findings of the sustainability appraisal and recommendations for continual improvement.

**SECTION 4** provides a list of references used in the report.

## 2. SUSTAINABILITY EVALUATION

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### 2.1 Approach to Evaluation

The methodology described by the Department of Economic Development Tourism and Environmental Affairs (2017) was used in the preparation of this sustainability appraisal report. The methodology is subjective and is based on the expertise of the report’s authors; Dr Vanessa Weyer, Mr Leo Quayle & Mr Jon McCosh, who have extensive experience in environmental management, sustainable development, biodiversity, ecological, hydrological, and agricultural focus areas. The SDF

planner and GIS specialist further contributed to the appraisal where required. Available supporting information was further examined. Assessments have been made on how the SDF is aligned with set Sustainability Criteria contained in a Sustainability Appraisal Tool, which is based on the criteria and objectives of the National Strategy for Sustainable Development (NSSD). Prior to assessment, sustainability targets were set for the uMDM.

**Scores** of 1 to 5 were awarded, with 1 being a very good score and 5 being a very poor score, based on the SDF's conformance to best practice and its potential impact or effect of the proposed SDF against each Sustainability Criteria statement. The Department of Economic Development, Tourism and Environmental Affairs (2017) guide for scoring was used (**Table 2**).

**Table 2:** Score Ranking Definitions as applied for scoring of Sustainability Criteria (Source: Department of Economic Development Tourism and Environmental Affairs (2017))

Score	Definition
1	<ul style="list-style-type: none"> <li>The development of the SDF has used <b>all relevant and current guidelines, norms &amp; standards and policies</b> related to the sustainability criteria</li> <li><b>All the issues</b> related to the sustainability criteria and that are relevant to the local municipality have been considered and fully integrated into the SDF and associated policies.</li> <li><b>Clear and concise policies, strategies and actions</b> are included to address the issues related to the sustainability criteria</li> <li><b>All relevant environmental impacts</b> related to the sustainability criteria have been identified and the plan adheres to the mitigation hierarchy (i.e., impacts are avoided, or, where they cannot altogether be avoided, are minimised and remedied).</li> <li>The SDF makes use of the <b>most relevant, accurate and up-to-date spatial and other datasets</b>.</li> <li>There is <b>detailed and comprehensive analysis of the information and spatial data</b> and this is integrated into and used to inform the desired spatial form depicted in the SDF.</li> </ul>
2	<ul style="list-style-type: none"> <li>The development of the SDF has used <b>most of the relevant and current guidelines, norms &amp; standards and policies</b> related to the sustainability criteria</li> <li><b>Most of the issues</b> related to the sustainability criteria and that are relevant to the local municipality have been considered and fully integrated into the SDF and associated policies.</li> <li>Clear and concise policies, strategies and actions are included to address most of the issues related to the sustainability criteria</li> <li><b>The majority of the relevant environmental impacts</b> related to the sustainability criteria have been identified and the plan adheres to the mitigation hierarchy (i.e., impacts are avoided, or, where they cannot altogether be avoided, are minimised and remedied).</li> <li>The SDF makes use of <b>relevant spatial and other datasets however some may be inaccurate and outdated</b>.</li> <li>There is an <b>analysis of the information and spatial data</b>, and this is in parts integrated into the SDF.</li> </ul>
3	<ul style="list-style-type: none"> <li>The development of the SDF has used <b>some of the relevant and current guidelines, norms &amp; standards and policies</b> related to the sustainability criteria</li> <li><b>Some of the issues</b> related to the sustainability criteria and that are relevant to the local municipality have been considered and or may only be partially integrated into the SDF and associated policies.</li> <li>Policies, strategies, and actions may be included to address the issues related to the sustainability criteria but are not clear and concise or address all the issues</li> <li><b>Some of the relevant environmental impacts</b> related to the sustainability criteria have been identified and the plan adheres to the mitigation hierarchy (i.e., impacts are avoided, or, where they cannot altogether be avoided, are minimised and remedied).</li> <li>The SDF makes use of <b>spatial and other datasets however some may be inaccurate and outdated</b>.</li> </ul>
4	<ul style="list-style-type: none"> <li>The development of the SDF has used <b>very few of the relevant and current guidelines, norms &amp; standards and policies</b> related to the sustainability criteria</li> <li><b>Very few issues</b> related to the sustainability criteria and that are relevant to the local municipality have been considered and or may only be partially integrated into the SDF and associated policies.</li> <li>Policies, strategies, and actions are very limited address the issues related to the sustainability criteria and are not clear and concise or address all of the issues</li> </ul>

Score	Definition
	<ul style="list-style-type: none"> <li>• <b>Very few of the relevant environmental impacts</b> related to the sustainability criteria have been identified and the plan adheres to the mitigation hierarchy (i.e., impacts are avoided, or, where they cannot altogether be avoided, are minimised and remedied).</li> <li>• The SDF makes poor use of <b>spatial and other datasets, and the majority are inaccurate and outdated.</b></li> </ul>
5	<ul style="list-style-type: none"> <li>• The development of the SDF <b>has not considered any of the relevant and current guidelines, norms &amp; standards and policies</b> related to the sustainability criteria</li> <li>• There has been <b>no consideration of the issues</b> related to the sustainability criteria and that are relevant to the local municipality.</li> <li>• There are <b>no clear and concise policies, strategies and actions</b> included to address the issues related to the sustainability criteria</li> <li>• <b>No environmental impacts related to the sustainability criteria have been identified</b> or considered.</li> <li>• Spatial and other datasets use are <b>significantly out-of-date, irrelevant or inaccurate.</b></li> </ul>

Neutral or No Impact statements, direct and in-direct impacts, recommendations for impact avoidance/mitigation, recommendations for continual improvement, and supportive justification descriptions for scoring were provided.

The significance of impacts or effect of the SDF on each Sustainability Criterion were recorded using the following measures:

**Scale of effect:** Will any effect be marginal or significant?

**Timing of effect:** Will the effect manifest itself in the short term or the long term?

**Geographic scale:** Will there be any trans-boundary effects (for example impacts on adjoining Municipalities, Provincially or Nationally)?

**Rural / urban:** Will there be differential impacts for rural and urban environments?

**Cumulative effects:** Will there be any cumulative, secondary, or indirect effects arising from the interactions of policies and proposals.

The outcomes of the appraisal for each Sustainability Criterion were analysed and interpreted considering the following:

- What are the potential direct and indirect outcomes of the proposal?
- How do these outcomes interact with the environment?
- What is the scope and nature of these environmental interactions?
- Can the adverse environmental effects be mitigated?
- What is the overall potential environmental effect of the proposal after opportunities for mitigation have been incorporated?

Sustainability Criteria were further evaluated on achieving their trend towards sustainability and their sustainability targets, i.e., providing an indication of whether the SDF is moving along a continual improvement trajectory towards promoting environmental sustainability or moving away from its objectives.

The Sustainability Appraisal Tool can further be adapted to provide a graphic presentation of the performance of the SDF against its defined sustainability targets.

## 2.2 Assumptions and Limitations

The assessment team ideally should be independent of the drafters of the SDF, however this was not specified in the SDF Terms of Reference and not budgeted for. The appraisal has therefore been done in-house by the SDF environmental specialists.

## 2.3 Evaluation Against Sustainability Criteria

**Table 3** contains the sustainability appraisal evaluation, where assessments have been made on how the SDF is aligned with set Sustainability Criteria contained in a Sustainability Appraisal Tool, which is based on the criteria and objectives of the NSSD.

**Table 3:** Sustainability Appraisal Evaluation

Ref.	Criterion	Evaluation	Scores	Key Risks	Recommendations
1	<p><b>Environmental sustainability parameters</b></p> <p>Have environmental sustainability parameters and impacts on the natural environment been identified, and have the risks and opportunities been used to inform strategies in the municipal plan?</p>	<p><b>Positive/Negative:</b> Both. Positive applies if natural areas are viewed as assets for tourism and visual quality.  <b>Neutral/No Impact:</b> N/A  <b>Direct/Indirect:</b> Both  <b>Scale of Effect:</b> Marginal to significant  <b>Timing of Effect:</b> Short to long-term  <b>Geographical Scale:</b> Municipal, district and provincial influence  <b>Rural/Urban:</b> Both  <b>Cumulative Effects:</b> Yes  <b>Notes:</b> The Status Quo report describes the state of the environment in the uMDM and the pressures and impacts currently being faced. The report further describes opportunities for planning using the natural assets to enhance development and risks to these assets to be minimised. This has been carried through into the spatial proposals mapping.</p>	<p><b>Sustainability:</b> 2</p> <p><b>Trend Towards Sustainability:</b> 2</p> <p><b>Sustainability Targets:</b> 1</p>	<p>Key risks include unregulated / unauthorised development (primarily housing) as is being seen in a number of areas in the district. These developments do not take environmental sustainability or the SDF into account.</p> <p>An important risk to sustainability is the lack of fine scale spatial information being made available to the public / developers as the EMF decision support platform on which much of the SDF is based is not currently accessible.</p>	<p><b>Avoidance:</b> Ongoing  <b>Risk Mitigation:</b> Ongoing  <b>Continual improvement strategies:</b> Improve district and municipal policies and planning approval protocols. The mapping should be applied to planning development approval applications. Policies should be strengthened in the uMDM and integrated into planning approvals to ensure that mapped sensitive areas are developed sensitively and protected to enhance natural assets. Strengthening and enforcement of policies regarding unauthorised developments and developments outside of the planning framework is required.</p> <p>The EMF decision support platform should be reactivated to provide fine scale spatial information to developers and the public in general.</p>
2	<p><b>Water resource features</b></p> <p>Have important water resource features been identified and the potential impacts of existing and proposed settlement patterns on the water resource (water availability and quality) been evaluated to inform strategies?</p>	<p><b>Positive/Negative:</b> Both  <b>Neutral/No Impact:</b> N/A  <b>Direct/Indirect:</b> Both  <b>Scale of Effect:</b> Marginal to significant  <b>Timing of Effect:</b> Short to long-term  <b>Geographical Scale:</b> Municipal, district and provincial influence  <b>Rural/Urban:</b> Both  <b>Cumulative Effects:</b> Yes  <b>Notes:</b> The status quo report and spatial mapping proposals describe and map water resource features and the pressures and impacts currently being exerted on these. Attention has been paid to water quantity issues and it is noted that although the district is a water rich area with water assets such as</p>	<p><b>Sustainability:</b> 2</p> <p><b>Trend Towards Sustainability:</b> 2</p> <p><b>Sustainability Targets:</b> 1</p>	<p>Key risks include water quality impacts to critical water supply dams and rivers related to urbanisation impacts and lack of or poorly functioning wastewater infrastructure as is evident in the Mthimzima River above Midmar Dam.</p>	<p><b>Avoidance:</b> Ongoing  <b>Risk mitigation:</b> Ongoing  <b>Continual improvement:</b> The SDF should continually aim to direct development into appropriate areas based on specific development's potential impacts on water resources. In support of this, development planning approvals should carefully consider potential impacts on water quality and quantity availability. Particularly for developments located in 'very high or high sensitivity catchments', or 'water stressed' catchments. A focus on stormwater and waste</p>

Ref.	Criterion	Evaluation	Scores	Key Risks	Recommendations
		Strategic Water Resource Areas, water scarcity will likely still be faced in the future. Water quality has further been discussed and impacts emanate from urban settlement, industrial and agricultural areas.			water management is required for all developments.  Strengthening and enforcement of policies regarding unauthorised developments and developments outside of the planning framework is required.
3	<p><b>Protected areas and buffer areas of statutory protected areas</b></p> <p>Have Protected Areas and the buffer areas of statutory protected areas been identified and the potential impacts of existing and proposed settlement patterns in such areas been evaluated to inform strategies?</p>	<p><b>Positive/Negative:</b> Both. Positive applies if these areas are viewed as assets for tourism and visual quality.  <b>Neutral/No Impact:</b> N/A  <b>Direct/Indirect:</b> Both  <b>Scale of Effect:</b> Marginal to significant  <b>Timing of Effect:</b> Short to long-term  <b>Geographical Scale:</b> Municipal, district and provincial influence  <b>Rural/Urban:</b> Mostly rural in northwestern sector but can be urban in other sectors.  <b>Cumulative Effects:</b> Yes  <b>Notes:</b> The Status Quo report and spatial proposals and mapping describe, and map protected areas and buffer areas and the pressures and impacts currently being exerted on these. The uKhahlamba Drakensberg Park World Heritage Site, and other Protected Areas are included.</p>	<p><b>Sustainability:</b> 2</p> <p><b>Trend Towards Sustainability:</b> 2</p> <p><b>Sustainability Targets:</b> 1</p>	Unregulated development (primarily housing) is a key threat to buffer areas. This is a clear risk to sustainability given that the developers do not consider the SDF. Also, mineral and gas prospecting and mining is a threat to protected areas and buffer zones that is not addressed in the SDF process.	<p><b>Avoidance:</b> Ongoing risk  <b>Mitigation:</b> Ongoing  <b>Continual improvement:</b> Improve district and municipal policies and planning approval protocols. The mapping should be applied to planning development approval applications. Strengthening and enforcement of policies regarding unauthorised developments and developments outside of the planning framework is required.</p> <p>Development planning approvals should carefully consider potential impacts on protected areas and buffer areas. Particularly for border-line developments.</p>
4	<p><b>Priority biodiversity areas</b></p> <p>Have Priority Biodiversity Areas including Critical Biodiversity Areas (CBAs) and Ecosystem Support Areas (ESAs) (Landscape Corridors) been identified and the impacts of existing and proposed settlement patterns on biodiversity planning priorities been evaluated to inform strategies?</p>	<p><b>Positive/Negative:</b> Negative  <b>Neutral/No Impact:</b> N/A  <b>Direct/Indirect:</b> Both  <b>Scale of Effect:</b> Marginal to significant  <b>Timing of Effect:</b> Short to long-term  <b>Geographical Scale:</b> Municipal, district and provincial influence  <b>Rural/Urban:</b> Both  <b>Cumulative Effects:</b> Yes  <b>Notes:</b> The Status Quo report and spatial mapping and proposals describe and map CBAs/ESAs and the pressures and impacts currently being exerted on these.</p>	<p><b>Sustainability:</b> 2</p> <p><b>Trend Towards Sustainability:</b> 2</p> <p><b>Sustainability Targets:</b> 1</p>	Unregulated development (primarily housing) is a key threat to priority biodiversity areas. This is a clear risk to sustainability given that the developers do not consider the SDF. Also, mineral and gas prospecting and mining is a threat to priority biodiversity areas that is not addressed in the SDF process.	<p><b>Avoidance:</b> Ongoing risk  <b>Mitigation:</b> Ongoing  <b>Continual improvement:</b> Improve district and municipal policies and planning approval protocols. The mapping should be applied to planning development approval applications. The Biodiversity Land Use (BLU) coverage published by EKZNW should be consulted as a reference for continual improvement.</p> <p>Strengthening and enforcement of policies regarding unauthorised developments and developments outside of the planning framework is required.</p> <p>Development planning approvals should carefully consider potential impacts to CBAs and ESAs. These</p>

Ref.	Criterion	Evaluation	Scores	Key Risks	Recommendations
					areas are often of a micro to medium spatial scale and therefore would require decision-making to occur on a case-by-case site basis.
5	<b>Threatened Ecosystems</b>  Have Threatened Ecosystems been identified and the potential impacts of existing and proposed settlement patterns in such areas been evaluated to inform strategies?	<b>Positive/Negative:</b> Negative <b>Neutral/No Impact:</b> N/A <b>Direct/Indirect:</b> Both <b>Scale of Effect:</b> Marginal to significant <b>Timing of Effect:</b> Short to long-term <b>Geographical Scale:</b> Municipal, district and provincial influence <b>Rural/Urban:</b> Both <b>Cumulative Effects:</b> Yes <b>Notes:</b> The Status Quo report and spatial proposals and mapping note that the uMDM is located within the Maputaland-Albany-Pondoland-Albany biodiversity hotspot, a globally recognised biogeographic region of significance, which contains unusually high numbers of endemic species, as well as globally unique ecosystem diversity in terrestrial, fresh water and marine systems. The area contains listed 1 threatened ecosystems, which are included in the district's Biodiversity Sector Plan. The uMDM is one of four districts prioritised by the South African National Biodiversity Institute's (SANBI) Biodiversity and Land Use Project for 'mainstreaming biodiversity' as a key strategy for addressing issues of biodiversity loss and ecosystem degradation.	<b>Sustainability:</b> 3	Unregulated development (primarily housing) is a key threat to threatened ecosystems. This is a clear risk to sustainability given that the developers do not consider the SDF. Also, mineral and gas prospecting and mining is a threat to threatened ecosystems that is not addressed in the SDF process.	<b>Avoidance:</b> Ongoing risk <b>Mitigation:</b> Ongoing <b>Continual improvement:</b> Improve district and municipal policies and planning approval protocols. The mapping should be applied to planning development approval applications. Consultation should occur with EKZMW on a regular basis.  Strengthening and enforcement of policies regarding unauthorised developments and developments outside of the planning framework is required.  Development planning approvals should carefully consider potential impacts to Threatened Ecosystems. This would require decision-making to occur on a case-by-case site basis.
			<b>Trend Towards Sustainability:</b> 2		
			<b>Sustainability Targets:</b> 2		
6	<b>High potential agricultural land</b>  Have areas of High potential agricultural land been identified and have the potential impacts of existing and proposed settlement patterns on this scarce commodity been evaluated to	<b>Positive/Negative:</b> Both <b>Neutral/No Impact:</b> N/A <b>Direct/Indirect:</b> Both <b>Scale of Effect:</b> Marginal to significant <b>Timing of Effect:</b> Short to long-term <b>Geographical Scale:</b> Municipal, district and provincial influence <b>Rural/Urban:</b> Both <b>Cumulative Effects:</b> Yes <b>Notes:</b> The Status Quo report and proposals note that the uMDM is endowed with vast tracts of high potential agricultural land (comprising of mostly	<b>Sustainability:</b> 3	Development within high potential agricultural land areas is subject to the Subdivision of Agricultural Land Act 70 of 1970, which requires a formal application to subdivide agricultural land or rezone agricultural land for other	<b>Avoidance:</b> Ongoing risk <b>Mitigation:</b> Ongoing <b>Continual improvement:</b> Improve district and municipal policies and planning approval protocols. The mapping should be applied to planning development approval applications. A high value should be placed on the district's agricultural assets. Agricultural land once disturbed, altered, or destroyed is difficult to rehabilitate, and can never fully be returned to its prior
			<b>Trend Towards Sustainability:</b> 2		

Ref.	Criterion	Evaluation	Scores	Key Risks	Recommendations
	inform strategies?	sugarcane, forestry, annual crops, irrigated vegetables, irrigated pastures, and natural grassland for cattle grazing) to the north and south, categorised mostly as 'irreplaceable' and 'threatened' agricultural land.	<b>Sustainability Targets:</b> 2	purposes. In addition, the soon to be legislated Preservation and Development of Agricultural Land Framework Bill (PD-ALF) aims to preserve high potential agricultural land for agricultural purposes to sustain long-term food security.	productive state. Anticipated pressure points include 'urban sprawl' areas on the outskirts of towns, nodal areas and along transportation corridors. The SDF should endeavour to enhance measures for promoting food security in the district as ongoing policy and continuous improvement. Policy should be focused not just on large-scale agricultural production, but also on small-scale growers and subsistence agriculture. This would apply to both urban cities and rural areas.
7	<b>Terrain susceptibility to erosion and Land degradation</b>  Have areas of terrain susceptibility to erosion been identified and have the impacts of existing and future settlement patterns on land degradation been evaluated to inform strategies?	<b>Positive/Negative:</b> Negative <b>Neutral/No Impact:</b> N/A <b>Direct/Indirect:</b> Both <b>Scale of Effect:</b> Marginal to significant <b>Timing of Effect:</b> Short to long-term <b>Geographical Scale:</b> Local and municipal influence <b>Rural/Urban:</b> Both <b>Cumulative Effects:</b> Yes <b>Notes:</b> The Status Quo report and spatial proposals and mapping have mapped and discussed land degradation and erosion at a broad level. Land cover change/ land transformation maps have been provided.	<b>Sustainability:</b> 3  <b>Trend Towards Sustainability:</b> 2  <b>Sustainability Targets:</b> 2	The land cover change mapping is at a broad level. No soil erosion maps have been provided.	<b>Avoidance:</b> Ongoing risk <b>Mitigation:</b> Ongoing <b>Continual improvement:</b> Soil erosion mapping could be undertaken in the future. Proposed development sites should be evaluated at a site-specific level for potential erosion risks. This could be included in planning approval policies.
8	<b>Service infrastructure</b>  Has an assessment of the availability, capacity and upgrading cost of service infrastructure been undertaken to ensure that there is sufficient infrastructure to mitigate potential adverse effects on natural resource quality (particularly water quality)?	<b>Positive/Negative:</b> Negative <b>Neutral/No Impact:</b> N/A <b>Direct/Indirect:</b> Both <b>Scale of Effect:</b> Marginal to significant <b>Timing of Effect:</b> Short to long-term <b>Geographical Scale:</b> Provincial, district and municipal influence. <b>Rural/Urban:</b> Both <b>Cumulative Effects:</b> Yes <b>Notes:</b> The Status Quo report and spatial proposals and mapping have included an assessment of electricity and energy supply, public facilities, as well as bulk water and sanitation. Emphasis has been placed on the prevention of pollution and contamination of the environment. Re-use strategies are further suggested. Service delivery needs have been evaluated.	<b>Sustainability:</b> 3  <b>Trend Towards Sustainability:</b> 2  <b>Sustainability Targets:</b> 2	The water resources in uMDM are under intense pressure. For this reason, waterless and alternative sanitation solutions are suggested in the SDF. This will be an ongoing concern that will require continual attention.	<b>Avoidance:</b> Ongoing risk <b>Mitigation:</b> Ongoing <b>Continual improvement:</b> Alternative Nature-based solutions should be sought and promoted.

Ref.	Criterion	Evaluation	Scores	Key Risks	Recommendations
9	<p><b>Open space systems and Critical ecological infrastructure</b></p> <p>Have Open Space Systems and Critical Ecological Infrastructure been identified and the impacts of existing and proposed settlement patterns on these areas been evaluated to inform strategies?</p>	<p><b>Positive/Negative:</b> Both  <b>Neutral/No Impact:</b> N/A  <b>Direct/Indirect:</b> Both  <b>Scale of Effect:</b> Marginal to significant  <b>Timing of Effect:</b> Short to long-term  <b>Geographical Scale:</b> Provincial, district and municipal influence.  <b>Rural/Urban:</b> Both  <b>Cumulative Effects:</b> Yes  <b>Notes:</b> The Consolidated SDF map has included open space systems and critical infrastructure.</p>	<p><b>Sustainability:</b> 2</p> <p><b>Trend Towards Sustainability:</b> 2</p> <p><b>Sustainability Targets:</b> 1</p>	<p>Although provision has been made for the inclusion of open space systems and critical ecological infrastructure in the SDF, as development increases these areas will come under continued pressure. Policies should be strengthened to ensure that these areas are protected and that ecological corridors remain functional and viable.</p>	<p><b>Avoidance:</b> Ongoing risk  <b>Mitigation:</b> Ongoing  <b>Continual improvement:</b> Development approval policies and procedures should continuously be strengthened.</p>
10	<p><b>Green economy</b></p> <p>Have socio-economic opportunities for the green economy been identified and have strategies to promote the green economy been used to inform existing and proposed socio-economic development?</p>	<p><b>Positive/Negative:</b> Positive  <b>Neutral/No Impact:</b> N/A  <b>Direct/Indirect:</b> Both  <b>Scale of Effect:</b> Marginal to significant  <b>Timing of Effect:</b> Short to long-term  <b>Geographical Scale:</b> Provincial, district and municipal influence.  <b>Rural/Urban:</b> Both  <b>Cumulative Effects:</b> Yes  <b>Notes:</b> Green economy issues are discussed in the spatial proposals at a broad level.</p>	<p><b>Sustainability:</b> 3</p> <p><b>Trend Towards Sustainability:</b> 3</p> <p><b>Sustainability Targets:</b> 2</p>	<p>The green economy is often overlooked in favour of basic development needs.</p>	<p><b>Avoidance:</b> Ongoing risk  <b>Mitigation:</b> Ongoing  <b>Continual improvement:</b> Green economy policies should continuously be promoted. Key catalyst projects should be promoted.</p>
11	<p><b>Climate change related impacts and risks</b></p> <p>Have climate-related impacts and risks on existing and proposed settlement patterns been identified and evaluated to inform strategies?</p>	<p><b>Positive/Negative:</b> Negative  <b>Neutral/No Impact:</b> N/A  <b>Direct/Indirect:</b> Both  <b>Scale of Effect:</b> Marginal to significant  <b>Timing of Effect:</b> Short to long-term  <b>Geographical Scale:</b> Provincial, district and municipal influence.  <b>Rural/Urban:</b> Both  <b>Cumulative Effects:</b> Yes  <b>Notes:</b> Climate change has been discussed in the spatial proposals at a broad level.</p>	<p><b>Sustainability:</b> 3</p> <p><b>Trend Towards Sustainability:</b> 3</p> <p><b>Sustainability Targets:</b> 2</p>	<p>More specific climate adaptation policies strategies are required for the district.</p>	<p><b>Avoidance:</b> Ongoing risk  <b>Mitigation:</b> Ongoing  <b>Continual improvement:</b> Climate change adaptation strategies should continuously be included in policies.</p>



### **3. SUMMARY SUSTAINABILITY PERFORMANCE KEY FINDINGS AND RECOMMENDATIONS**

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#### **3.1 General Comments and Recommendations**

The sustainability appraisal has revealed that the uMDM SDF is aiming to achieve environmental, economic, and social sustainability objectives.

For sustainability, a score of 2 was achieved for: environmental sustainability parameters; water resource features; protected areas and buffer areas of protected areas; priority biodiversity areas; and open space systems and critical ecological infrastructure. These criteria were extensively mapped and analysed with parts integrated into the SDF. Most of the relevant environmental impacts were identified and issues were considered and included in policies and the SDF. Relevant guidelines, norms and standards and policies were further used. The remaining criteria namely: threatened ecosystems; high potential agricultural land; terrain susceptibility to erosion and land degradation; service infrastructure; green economy and climate change scored 3 for sustainability, indicating that in future SDF iterations greater detail is required. This is particularly relevant to the green economy, climate change and erosion and land degradation, where these criteria were discussed at a broad level with limited mapping and analysis being undertaken.

An important common issue that the sustainability assessment has revealed is that any policies developed for the criteria need to be strengthened in the uMDM SDF and integrated into planning approval processes, so that proposed directives are put into action and implemented. The spirit and intent of the SDF suggests high degrees of sustainability for the most part, but it is critical that these policies are adopted, implemented, and enforced effectively to achieve sustainable development within the municipality.

It should however be emphasised that the uMDM SDF, inclusive of this Sustainability Appraisal is a dynamic process with living documents, continuous improvements are therefore anticipated with each subsequent review process.

## 4. REFFERENCES

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Department of Economic Development Tourism and Environmental Affairs, 2017. Sustainability Appraisal: Guideline on using sustainability appraisal for the development and assessment of Spatial Development Frameworks, Department of Economic Development Tourism and Environmental Affairs, KwaZulu-Natal.