

Appendix 1: The local context: An endangered grassland ecosystem in Durban, KwaZulu-Natal, South Africa

The KwaZulu-Natal Sandstone Sourveld Grassland Ecosystem

The KwaZulu-Natal Sandstone Sourveld (KZNSS) grassland ecosystem is recognized as a distinct vegetation type in South Africa, which is endemic to KwaZulu-Natal (Mucina & Rutherford 2006, Jewitt 2011). It is a short, species-rich grassland with scattered low shrubs (for example members of the family Proteaceae) and woody plants with underground rhizomes. The KZNSS landscape is dominated by plateau tops forming characteristic 'table mountains' formed from erosion-resistant Natal Group Sandstone (NGS). Soils are shallow, nutrient poor and sandy, and underlain with NGS. A number of endemic plant species occur within this vegetation type (for further details refer to Mucina & Rutherford 2006). The primary drivers of loss in this ecosystem are agriculture (mostly sugarcane and timber plantations), the urban sprawl of the eThekweni Municipal Area and densely populated subsistence farming areas (Mucina & Rutherford 2006). The KZNSS is listed as a threatened ecosystem and considered endangered nationally and critically endangered at a provincial and local level (Jewitt 2011). As at 2008 only 11.4% of this vegetation type remained as natural habitat and only 194 ha (0.1%) is formally protected (Jewitt 2011). At a local level, only 116 ha i.e. 0.74%, of the area of KZNSS is locally protected in the eThekweni Municipality, and the total remaining area of KZNSS in the eThekweni Municipal Area (3259 ha) is below the conservation target for this vegetation type (3920 ha), as determined by the Systematic Conservation Planning process (eThekweni Municipality 2012).

Incorporating biodiversity management and climate change adaptation into local land-use planning in Durban

Durban, an urban metropolitan area governed locally by eThekweni Municipality, covers an area of almost 2300 km² and is home to approximately 3.5 million people (eThekweni Municipality 2012). The ongoing influx of unemployed migrants from rural areas, along with endogenous growth, movement out of the CBD and land tenure complexities continue to put pressure on certain city resources, notably land (eThekweni Municipality 2014). As a result, Durban's natural ecosystems, and the services they provide, are under considerable strain (eThekweni Municipality 2012, Roberts et al. 2012).

eThekweni Municipality is one of the few municipalities in South Africa to have included environmental issues in its Integrated Development Plan (Cilliers et al. 2014, eThekweni Municipality 2014). It is also recognized as a leader in the development of policy to support implementation of sustainability issues in local governance and spatial planning among developing countries (Cilliers et al. 2014). eThekweni Municipality has developed a Municipal Climate Protection Program, which emphasizes ecosystem-based adaptation and has raised the profile of natural ecosystems within the city, by demonstrating the important links between healthy ecosystems and human well-being (Roberts et al. 2012). The city also has in place a spatial planning layer called D'MOSS (Durban Metropolitan Open Space System), the basis of which is a fine-scale systematic conservation plan (SCP) (Roberts et al. 2012). D'MOSS is used as a city-wide spatial planning and management support tool, which seeks to inform decision makers, citizens and land managers about the city's globally significant biodiversity. It also helps to ensure that the ecosystem services provided by these open spaces are not lost to urban development (Roberts et al. 2012). The need for relevant and scientifically sound, evidence-based knowledge is particularly important in the context of environmental impact assessments which are required by law in South Africa (Cilliers et al. 2014). Listed critically endangered ecosystems trigger environmental impact assessments prior to development, and are thus afforded some legal protection (National Environmental Management: Biodiversity Act No. 10 of 2004 and National Environmental Management Act No. 107 of 1998).

LITERATURE CITED FOR APPENDIX 1

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