

## **Lessons from the impacts of an Environmental Offsets on the Durban Aerotropolis Master Plan from a Spatial Planning perspective.**

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### **Introduction**

The City of Durban within eThekweni Municipality is located on the east coast of South Africa in the province of KwaZulu Natal (Figure 1). Durban is a modern multi-faceted fast growing metropolitan city within eThekweni Municipality. King Shaka International Airport is situated within the Northern Municipal Region and it is the core of the proposed Durban Aerotropolis City. The Durban Aerotropolis Master Plan is in the process of being developed. This plan seeks to promote the appropriate development of land around the airport and to ensure planning alignment between various government departments. The Durban Aerotropolis Master Plan is founded on a series of different study areas ranging from a 1 hour travel distance to King Shaka International Airport, to a series of Satellite Zones, to the Aerotropolis “core”, which is also referred to as the Aerotropolis City. The focus area for this paper will be the Aerotropolis City with King Shaka International Airport (KSIA) as the core of the Aerotropolis City.



Figure 1: The location of Durban within the eThekweni Municipal Area in the province of KwaZulu Natal, South Africa (Source: EThekweni Municipality)

Figure 2: The location of the proposed Durban Aerotropolis Core (highlighted in Blue below) in relation to the Northern Municipal Region.



Source: Final Durban Aerotropolis Masterplan Executive Summary Revision 1, (2018).

The receiving environment of the Durban Aerotropolis is home to a multitude of natural habitats at the centre of the Maputaland-Pondoland-Albany global biodiversity hotspot, which form a critical structuring element to future regional planning; furthermore these habitats provide a range of critical ecosystem services and critical biodiversity (McLean *et al.*, 2016). However, agriculture and urban development has placed pressure on natural capital in Durban such that land use change appears to be one of the drivers for loss of biodiversity at the local level (Newbold *et al.*, 2016).

The northern region of the City of Durban has been growing in the last decade through land use change from sugarcane farming to urban development, which has seen the expansion of uMhlanga and the introduction of areas such as Sibaya, Cornubia, Dube Trade Port and the King Shaka International Airport. The King Shaka International Airport (KSIA) has been operational since May 2010, after receiving a positive environmental Record of Decision which detailed the need for a mitigation plan through a rehabilitation and restoration plan, forming a conservation area, over a large portion of the site. The setting aside of conservation area at the King Shaka International Airport has implications on Aerotropolis Master Plan and other regional spatial planning processes undertaken by eThekweni Municipality. It is through significant developments such as the Aerotropolis that economic growth can be stimulated to ensure poverty alleviation and wealth creation. However, this needs to be done in an appropriately managed manner, and this is where land use control plays a key role.

To that end, eThekweni Municipality's Environmental Planning and Climate Protection Department, Dube TradePort and Tongaat Hulett Developments have defined receiving areas to offset the residual impact of another 7 development projects proposed by Tongaat Hulett Developments and Dube TradePort in the Tongaat, Mdloti and Ohlanga Catchments through innovative response to wetland management (Douwes *et al.*, 2018). The offset receiving areas

are focused on Wetland systems. The offset areas have been incorporated into the open space network as part of the development of the Spatial Development Framework and associated lower level spatial planning and land use plans. A principle of an effective offset is that the site is secured for conservation purposes through an appropriate mechanism e.g. as a Nature Reserve or Protected Environment through the Protected Areas Act (EKZNW, 2010, DEA, 2016).

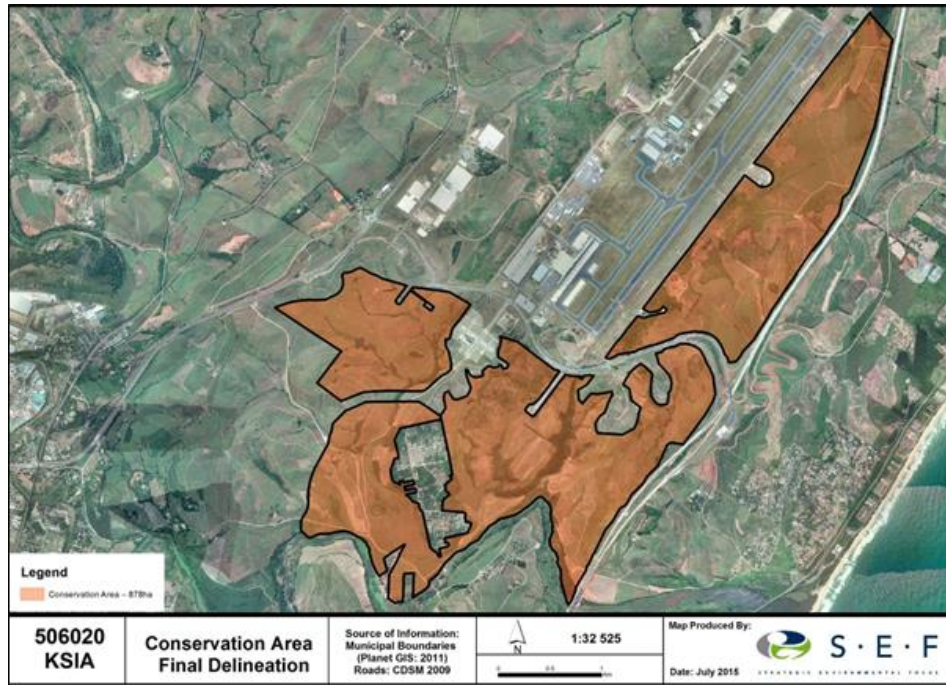
### **Incorporating Environmental Sustainability into Spatial Planning Processes**

The environmental analysis of the Aerotropolis City Core area concluded that existing levels of ecosystem functioning are currently having a negative impact on the socio-economic components of the planning and adjoining or downstream areas. This situation also presents a significant risk to the sustainability of the area. It therefore becomes imperative to incorporate the environmental sustainability into detailed design and land use management. The remaining natural systems in the Aerotropolis areas will come under increasing pressure in the form of transformation, fragmentation and pollution from increased development both in these areas and in adjacent areas. Climate change adds a further risk and pressure through increased occurrence and intensity of extreme events.

Natural systems are linked and land-use within the planning area transfers negative impacts on downstream assets, e.g: Estuary, associated beaches an inshore marine habitat. Therefore natural systems need to be restored where 'lost' and enhanced where they remain. Planning has a major role to play a role in redressing the current negative impact on these key assets. Firstly this is done in part as an overlay of the Durban Metropolitan Open Space System (DMOSS) to the Spatial Development Framework.

Secondly, the Airports Company South Africa and Dube TradePort Corporation appointed Strategic Environmental Focus with GroundTruth Wetlands CC, to formulate a conceptual ecological and wetland rehabilitation and restoration plan for the undeveloped areas around King Shaka International Airport. These areas were identified for conservation purposes during the original Environmental Impact Assessment as compensation for the loss of biodiversity during the construction phase, and were specified in the Environmental Authorization. A thorough review and assessment of the biodiversity offset process and careful analysis of the conservation area was undertaken and presented in an Offset Review Report.

**Figure 3: Final conservation area outline (June 2015)**



Source: Airports Company South Africa SOC Ltd. 2015. King Shaka International Airport – Phase 1 Biodiversity Offset Management Plan and Conceptual Rehabilitation and Restoration Plan.

This entailed a review and assessment of the impacts and mitigation sections of the Environmental Impact Report pertaining to biodiversity, a comparison of the biodiversity currently on the site with the pre-construction biodiversity, and a review of national guidelines as well as international best-practice guidelines for biodiversity offsets. The review also included an analysis of the areas delineated for conservation purposes in the Environmental Impact Report and the area in hectares actually available on the ground for rehabilitation.

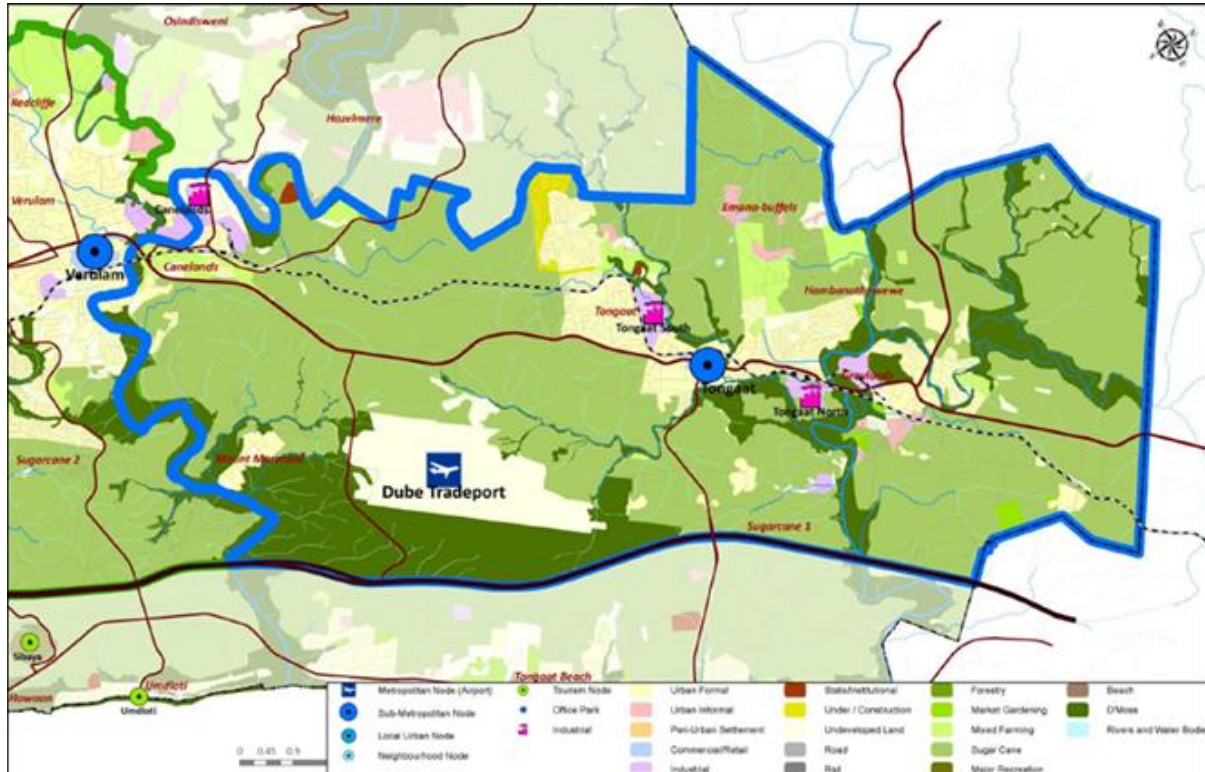
The assessment also found the areas situated in the north to be unsuitable for rehabilitation as they tend to be higher risk for air strikes with avifauna considering the topography of the landscape. If rehabilitated, the habitat would attract wildlife and birds that may pose a risk to strikes by aircraft. The northern areas were also fragmented by current and future development key to the Dube TradePort Master Plan, and it was suggested that these areas be excluded from the conservation area delineation. One of the recommendations from this assessment was to consolidate the conservation area by incorporating portions of land to the south of the site boundary, down to the uMdloti River. This would ensure a protective conservation buffer around the ecologically important Mount Moreland Wetlands and would add ecological integrity to the landscape and to the conservation area, by increasing connectivity and re-instating many ecosystem services to the area. The inclusion of areas to the south would also increase the overall number of hectares rehabilitated, which would help mitigate the additional residual impacts caused by the delay in implementing the rehabilitation and restoration plan.

The long-term protection of the offset through the formal protection of the Conservation Area is key as the offset must be in place as long as the impact is in place. Should this not be realized, an increase in size of the Conservation Area proposed would be necessary. The



overall objective for the Aerotropolis City core site will be to improve existing important habitats on site, and through restoration, to recreate habitats and ecosystems. The most important objective would first be to achieving protection status for these as conservation area. The location of these areas provide opportunity to reconnect with surrounding ecologically important habitat in the landscape and therefore reinstating connectivity, ecosystem services and adding to the ecological value of the landscape as a whole.

Figure 4: Core Aerotropolis (Dube Trade Port) Spatial Structure



Source: Northern Urban Development Corridor Ultimate (> 50 YRS) Land and Activity Framework, (2011).

As part of the development planning process the Strategic regional environmental assets were identified and excluded from developable land portions. A compact urban form working harmoniously with an integrated open space system functioning at the sub metropolitan level was set aside to ensure catchment health and offer local recreational and amenity value. Furthermore, environmental assets are incorporated into larger sites and maintained with agricultural land, Open Space system are also integrated with public space network. The development planning process also requires from the developers to recognize the value of the wetland or riparian habitat and an appropriate buffer zone, and plan any proposed development to occur outside of these areas. Furthermore, developers are required to consider the implementation of the wetland rehabilitation measures as a component of any proposed development, to address the negative impacts on the fresh water ecosystems-within the Aerotropolis region.

Preceding any land development it is required that green corridors associated with the river catchments that traverse the area be protected, and where possible expanded and enhanced. These ecological assets contained within the Aerotropolis Core City must be protected and enhanced to be able to provide the links between the hinterland and coastal systems and to continue to provide ecological services and concomitant benefits to metropolitan residents. These open space areas will play a crucial role in maintaining social and ecosystem resilience during coming years.

Environmental resources in eThekweni place certain limitations on how and where development can occur. It is therefore necessary for development activities to take place within certain parameters as determined by legislative requirements, the nature of the receiving environment, and the nature of the activity being undertaken.

### **State of Natural Capital in eThekweni Municipality**

The formal protection of the conservation area would contribute to spatial biodiversity and open area planning, as well as meeting conservation targets within the municipality, especially for critically endangered habitats. The establishment of the conservation area would increase the size and quality of the Durban Metropolitan Open Space System which supplies essential ecosystem goods and services to the municipality and provides a significant degree of assurance that Durban will be able to respond to the projected impacts of climate change. The on-going provision of these ecosystem services is essential to sustainable development and is also a key contributor to the city's overall social and economic wellbeing.

In a recent study, the Durban Metropolitan Open Space System was shown to provide R 4.2 million worth of ecosystem flows per year (Turpie et al., 2017). The same study showed that the total asset value of these areas equated to R48 - 62 billion (Turpie *et al.*, 2017). The study focused on the direct values associated with the provision of natural resources (e.g. water supply, food production), indirect use values associated with regulating services generated by ecosystem functioning (e.g. nutrient cycling, climate regulation), and the amenity values generated by ecosystem attributes (e.g. cultural, recreational).

Healthy ecosystems are also critical in helping eThekweni Municipality to deliver on its Strategic Priorities. Clean and functional river systems help reduce the impacts of water-borne and other diseases, thus contributing towards improved health in communities that are dependent on these systems for their water supply; the flood attenuation role that is played by wetlands and grasslands helps to reduce the costs associated with damage to infrastructure and homes, thus contributing towards a more financially sustainable city; while forests are critical in purifying air and sequestering carbon, helping to improve health and mitigate climate change.

In conclusion, environmental sensitivity and environmental offset could have negative impacts on spatial planning and land use management at the local government level unless there is a closer working arrangement between environmental and spatial planners as it has been demonstrated in the City of Durban where environmental features have provided a framework for spatial planning.

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