Innovative responses to biodiversity offsets in Durban

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1. Framing the challenge

The global context

In response to an increasingly unpredictable world and global megatrends (Retief et al., 2016), the concept of 'urban resilience' is gaining traction as a way of articulating how cities prepare themselves for current and future change (eThekwini Municipality, 2015). A critical part of building resilience is ensuring that humanity operates within a safe ecological and social space that reduces risk to both human and natural systems. Already, global science suggests that the world is fast approaching threshold points for critical earth systems (e.g. Rockström et al., 2009; Steffen et al., 2015) which, if crossed, could undermine the sustainability of global earth systems. Already, the 'Biosphere integrity' planetary boundary is estimated to have been exceeded. Similarly, from a social perspective, Leach et al (2013) and Raworth (2012) highlight that exceeding the social boundaries which impact on people's ability to live safe, healthy and equitable lives, could also undermine global sustainability. Therefore, simultaneously recognising the dependence of human wellbeing on natural ecosystems and addressing entrenched inequalities and human wellbeing shortfalls, is central to achieving urban resilience, as is identifying new forms of governance (including new partnerships) to address these challenges.

The local challenge

These resilience challenges are reflected in the local context of Durban, South Africa (Figure 1). From an ecological perspective, already more than 54% of the municipal area has been transformed, with the area of remaining urban green space declining on an annual basis (EThekwini Municipality, 2017). From a social perspective, Durban has amongst the highest levels of inequality in the world (Statistics South Africa, 2011), with an estimated 41% of the population experiencing conditions of poverty. This means that ecological protection and socio-economic development are both critical priorities for the rapidly urbanising city. In areas north of the city centre, addressing these dual challenges has proved difficult, with proposals for land development and job creation often coming into conflict with the need to limit unsustainable transformation of wetland habitats and biodiversity that deliver critical ecosystem services such as improved water quality, flood attenuation and sediment trapping. The conflictual nature of engagements between developers and environmental decision-making

authorities during the Environmental Impact Assessment (EIA) process resulted in developments not being approved. In this context, there is an urgent need to find innovative responses that address ecological and social challenges simultaneously and that explore new forms of governance (e.g. new partnerships and collaborative approaches) to facilitate this.

Figure 1: The location of Durban within the eThekwini Municipal Area in the province of KwaZulu Natal, South Africa (Source: EThekwini Municipality, 2015)

2. Developing a resilience framework for landholdings north of Durban

Building the partnership

In 2013, Durban was selected to participate in the international '100 Resilient Cities Programme' (100RC), providing the city with an opportunity to explore what 'resilience' would mean in the Durban context and to test new approaches that could help address resilience challenges such as those in the north of Durban. On this basis, a working relationship was formalised in 2015 between two significant land-owners and developers (Tongaat Hulett Developments - THD; and Dube TradePort Corporation - DTPC) and eThekwini Municipality (ETM) through a Memorandum of Agreement (MOA), in order to pilot the development of a 'Resilience Framework' for specific landholdings, occupying an estimated area of 7000ha in the north of the city (Figure 2). Each party contributed funds towards this work, with the MOA providing guidelines on the roles and responsibilities of each of the partners, and mechanisms for resolving conflict. The intention was for the Resilience Framework to provide practical guidance on how urban design and planning could consider the role of both natural ecosystems (with a specific focus on the state and dynamics of wetland systems) and the built environment in reducing risk and enhancing resilience whilst providing for the growth and development of the city. This provided the basis for the development of a Strategic Wetland Management Framework to promote urban resilience in the north, given that already 24% of wetlands in the eThekwini Municipal Area have been permanently lost, with 99% of those remaining wetland habitats being classified as degraded and intermediate in condition (Botes, 2014).

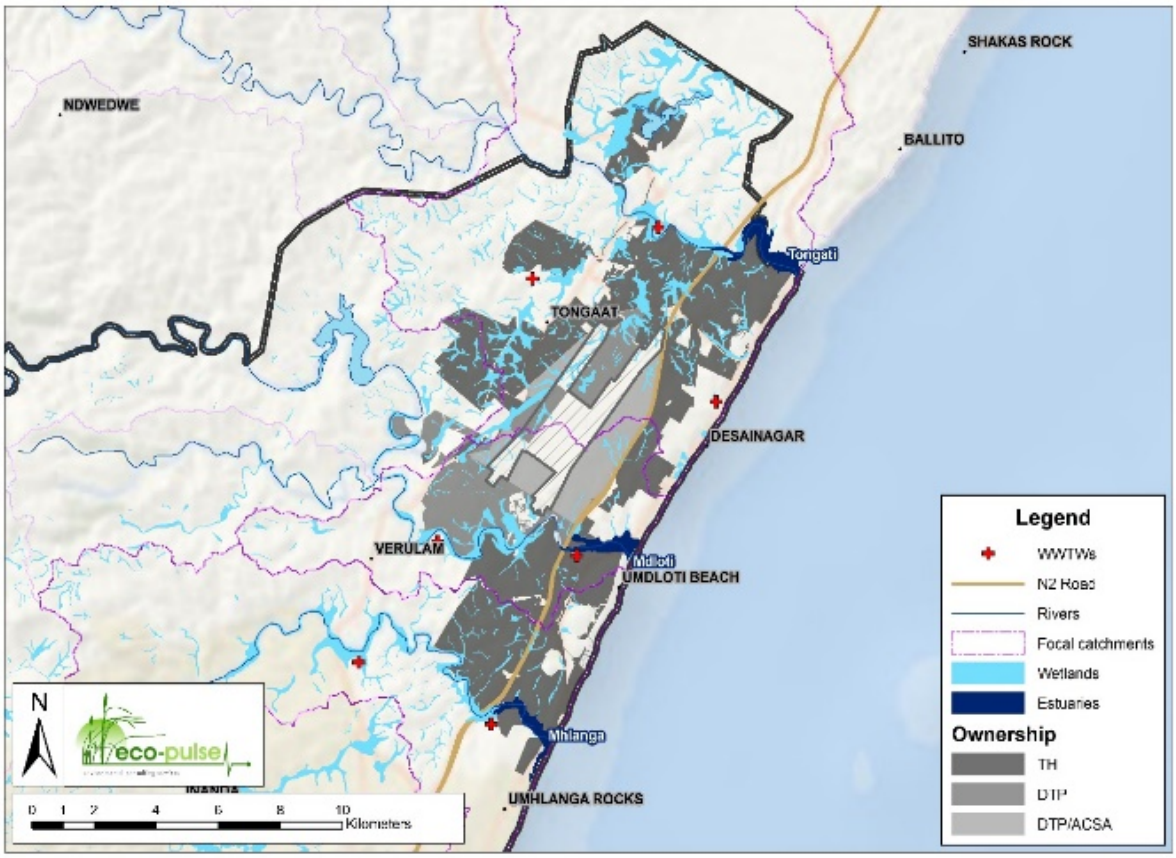

Figure 2: Map showing landholdings for THD and DTPC north of Durban

Developing a Strategic Wetland Management Framework (SWMF)

The Strategic Wetland Management Framework (SWMF) proposes that wetland rehabilitation should be implemented on any new development sites (thereby providing important wetland functionality gains) and that there should be appropriate compensation if wetlands are transformed through infrastructure development following the application of the mitigation hierarchy (Macfarlane, 2016). The development of the SWMF (by a local consultancy in partnership with the project partners) highlighted a number of critical considerations. Firstly, policy responses need to be tailored according to local and regional priorities. In the north of Durban, reinstating wetlands to help address water quality challenges is critical in building urban resilience and therefore needs to be prioritised. Secondly, in areas where the degradation of ecological systems (in this case wetlands) has already exceeded sustainability thresholds, the offset policy should aim for a 'net gain' rather than applying a 'no net loss' policy as currently advocated in national guidelines (SANBI and DWS, 2014). This suggests that offset policies should be responsive to local conditions in order to address sustainable development objectives (Figure 3). Adopting a new offset framework also required the development of new tools and approaches to quantify changes in functional wetland values and to ensure that 'net gains' are achieved through offset activities. A key aspect of this approach, was a decision to assess

residual impacts based on a 'realistic rehabilitated state' rather than 'current state' since most wetlands targeted by development are already heavily degraded. A number of scientific innovations have also underpinned this work, including the updating of a tool to quantify functional values provided by wetlands (Kotze *et.al*, 2016) and the development of a new offset currency that is informed by the specific catchment context.

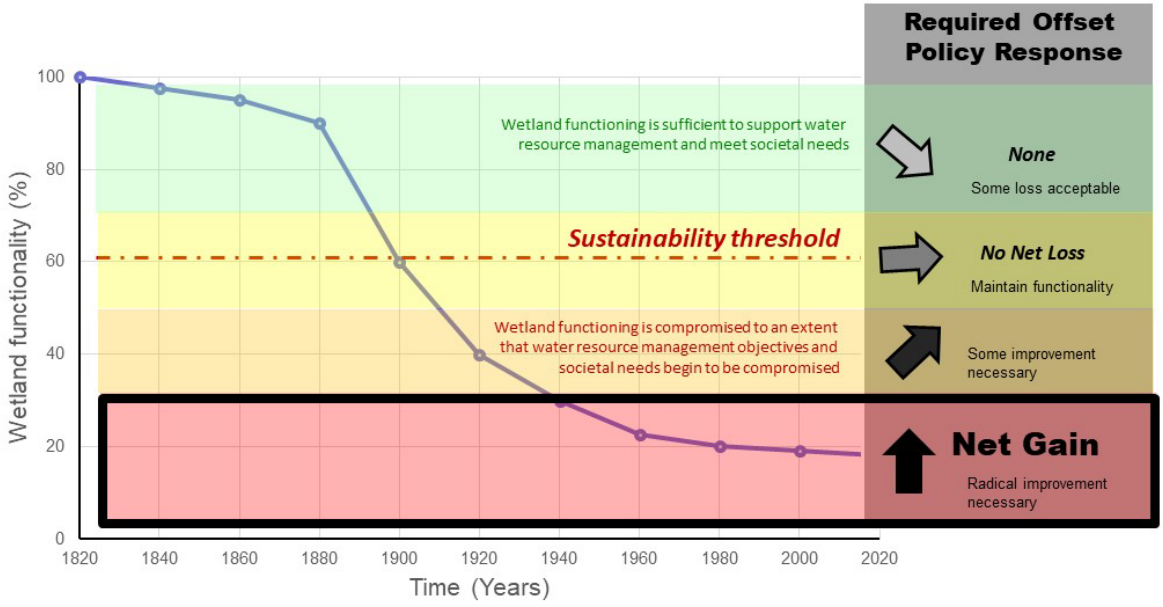

Figure 3: Diagram illustrating how wetland functionality has declined over time in the study area, and indicating the shift in offset policy approaches that are required over time to ensure that sustainability objectives can be achieved.

Thirdly, the SWMF also advocates a composite offset approach and suggests that identifying 'composite offset areas' may be the most appropriate approach in achieving environmental, resilience and development objectives. A 'composite offset' aims to consolidate the required offsets in large land parcels, rather than securing these in an *ad hoc* and fragmented fashion. In the case study, the estimated area of the total composite offset receiving area across the three project catchments is approximately 1200 ha. It is anticipated that these larger composite offset areas will deliver a range of resilience benefits, including landscape level environmental protection and greater economies of scale in terms of financing the rehabilitation, management and monitoring of the area. The SWMF approach differs considerably from the existing provincial and national offset frameworks that specify 'no-net-loss', and therefore has the potential to ensure considerable gains in wetland functionality over time.

The proposed SWMF is supported by eThekwini Municipality because of its potential to achieve meaningful ecological gains at a landscape level, while moving away from the traditional, and often cumbersome approach to the site by site approach to biodiversity offsetting. It has also been supported by the two landowner groups because it provides the basis for negotiating a way forward that has allowed development applications to proceed. Multiple meetings with local government officials, regulatory authorities and conservation advisory bodies have also been required in order to secure provisional support for this new approach to be tested and applied to existing development applications.

3. Translating the Strategic Wetland Management Framework into implementation

Progress to date in implementing the SWMF

Following finalisation and acceptance of the methodology and predicted outcomes, the SWMF has been used in a series of Environmental Impact Assessments (EIAs) initiated by the two landowners. In cases where, after application of the mitigation hierarchy, development applications have required an offset, application of the SMWF has resulted in Environmental Authorisations being granted for two applications under review due to the inclusion of realistic and measurable ecological gains to mitigate development impacts, in an already highly transformed environment. Importantly, these authorisations have been issued on a case by case basis, but with the intention of each contributing towards landscape level biodiversity objectives. This strategic framework is important, given the development pressures in the city, and the need to more proactively identify large areas of land for protection and management, thereby also facilitating reasonable levels of much-needed development. It is acknowledged, however, that implementation of the SWMF is not without its challenges, such as how the offset areas will be managed and financed in the long-term and by whom.

From the landowners' perspective, for example, the offsets agreed to are in excess of the current draft national policy position of 'no net loss', and are based on realistic rehabilitated state, rather than existing state, thus also increasing the offset required. They also argue that their own benefits from the development are a 'once-off' financial payment from the sale of the land, compared to the long-term benefits accrued to the city and society, for example through an enlarged rates base, job creation, housing opportunities and an enhanced open space network. In terms of this perspective, management and financing of the offsets in perpetuity by the original landowners is not seen as practical or feasible, and should be shared with other stakeholders such as local government. From the perspective of the Municipality, the governance of offsets needs to be determined by existing legislation and policies, such as the 'polluter pays' principle of the National Environmental Management Act (Act 107 of 1998), which requires that activities that result in harm to the environment are fully mitigated or compensated for by the responsible party. Offsetting and the management of offset areas in perpetuity or for the duration of the impact is one such application of this principle. There are also significant questions as to what role government can play in the long-term management of a growing number of offset areas, without appropriate finance and tools or legal clarity regarding the long-term liabilities associated with compliance with the conditions of the Environmental Authorisation. This is particularly the case in instances where the land is not owned by the Municipality, as legislation prevents investment on private land. In the current case study, planning tools such as the Durban Metropolitan Open Space System have been applied to the composite offset areas in order to afford them a level of interim protection, and processes are underway (or in some cases complete) to finalise biodiversity offset agreements between the landowners and one of the provincial environmental authorities. The resolution of these matters remains critical to the long-term success of this pilot project and the future opportunities to expand the approach to other projects in Durban.

Important next steps to advance the work

The use of biodiversity offsetting is a relatively new practice in South Africa and has increased in the last decade (Brownlie et al., 2017). Offset principles and processes are applied to varying degrees on a case-by-case basis, often with little measurable success or gain being achieved. To remedy this legislative shortcoming, the National Department of Environmental Affairs is in the final stages of preparing a national Biodiversity Offset Policy aimed at slowing and progressively reversing the erosion and degradation of biodiversity and ecological infrastructure resulting from the residual impacts of development. The draft policy aligns with global best practice and specifies minimum standards for the successful implementation of offsets. However, there is currently no specific guidance on how to ensure the management and financing of offset areas in perpetuity.

Given these challenges, the current work of the partnership is focused on finding suitable solutions, for example, the creation of Wetland Offset Management Trusts and Offset Banks, to help facilitate the financing and ongoing management of offset areas. However, legal opinion obtained by the partners raised concerns around whether a Trust can be held liable for non-compliance with the conditions of an Environmental Authorisation, should these conditions be transferred to it. Further work is now being undertaken to explore various funding and management models, including the feasibility of offset banks in the Durban context, and their potential to help inform the translation of national biodiversity offset policy into practice at a local level.

4. Concluding comments

This pilot project was initiated at a time of conflict between the three partners with each holding different perspectives on priority objectives and implementation responsibilities. The work has raised important questions regarding how to navigate complex partnerships in pursuit of resilience, and the role of science in lending credibility and a 'neutral' voice to a contested process. From the perspective of biodiversity offsets, the work also raises critical questions around: the governance of offsets; how to ensure proper long-term commitments relating to management and financing of these areas; the responsibilities of the public and private sector in fulfilling these long-term commitments; and whether existing regulatory and institutional structures have sufficient capacity to facilitate and monitor such initiatives. Although the work in Durban has not yet delivered clear answers to address these challenges, it is hoped that the pilot project will provide insights into the design of biodiversity offset models that increase resilience and sustainability for human and natural systems.

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