1. VISUALISING GAUTENG’S GREEN INFRASTRUCTURE NETWORK

MAPPING VEGETATION & IMPERVIOUS SURFACES IN GAUTENG

2. GREEN INFRASTRUCTURE IN GAUTENG MAPPED BY TYPE

Green Infrastructure (GI)

GI is the interconnected set of natural and manmade ecological systems and green spaces that can provide services in a similar way to traditional infrastructure. A GI network includes ecological features (e.g., plants, plants, grasses, wetlands) and constructed features such as green roofs, green walls, and bioswales. GIs provide a range of services such as food and water purification, air and water purification, erosion control, temperature regulation, wildlife habitat and ecosystem services, and many more. Through preserving these services GIs help build built-in resilience, improve quality of life, reduce negative impacts of urban development, and mitigate climate change.

GI networks can be designed to support, replace, or be used in tandem with traditional infrastructure networks. Through improved GI planning, GI can be used to protect the existing urban infrastructure and services through preserving, maintaining and investing in urban ecological systems.

Early Mapping Work and its Challenges

The GCRO’s initial work mapped GI across the region to inform decision-makers on where investment in GI would be targeted, and demonstrates the importance of investing in GI to reduce risk. The GCRO's initial work mapped GI across the region to inform decision-makers on where investment in GI would be targeted, and demonstrates the importance of investing in GI to reduce risk. The GCRO’s initial work mapped GI across the region to inform decision-makers on where investment in GI would be targeted, and demonstrates the importance of investing in GI to reduce risk. The GCRO’s initial work mapped GI across the region to inform decision-makers on where investment in GI would be targeted, and demonstrates the importance of investing in GI to reduce risk.

Using High-Res Imagery

Map 3 illustrates the extent of the tree cover within the urban core. The map shows both indigenous and planted trees, and importantly reveals the extent of the tree cover within the urban core. Trees provide a range of ecosystem services, and these urban trees, although the majority are planted and non-indigenous, provide important functions such as shade, air pollution and erosion control. Maps 2 and 3 demonstrate the potential of using high-resolution imagery to map and track GI, and can be done through green infrastructure planning and decision-making.

Mapping Green Spaces Standards

Ensuring access to GI is an important component of GI planning. GI provision is an important component of delivering services and infrastructure, particularly to areas that are historically under-served. Map 4 shows the green space per capita in Gauteng. The green space per capita was calculated using data on the number of under-served areas.

5. VEGETATION AND IMPERVIOUS SURFACES IN GAUTENG

Vegetation and Impervious Surfaces

Vegetation and impervious surfaces are visualized in this layer using existing green infrastructure and satellite imagery. Using high-resolution satellite imagery and remote sensing techniques, the potential to the state of GI to provide insight into the quality of green assets. Map 5 uses the Normalized Difference Vegetation Index (NDVI) to highlight vegetation and impervious surfaces in Gauteng. Green, on the one hand, indicates healthy vegetation, and red, on the other end of the scale, indicates unhealthy or impervious vegetation. The areas mapped in grey represent impervious surfaces.

In many of GI’s previous maps, minimal green assets were visible in core urban areas. However, this map shows a concentration of healthy vegetation in these areas. This map reveals further that areas such as Alexandra and Diepsloot (see map insets) have virtually no healthy vegetation and impervious surfaces.

This image shows also a powerful indication of the impact of past and current land use practices such as mining activities on the surrounding environment (see the zoom to northern Gauteng). In addition, this map provides a clear indication of the extent of tree cover within the urban core.

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Value in Mapping Green Infrastructure

From a planning perspective mapping of green infrastructure is beneficial as it can provide the following information:

- Which areas are being met and areas that do not meet standards are
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For a green city index, a summary of the green city index report for the Gauteng City-Region Observatory. There are three subplaces within the detailed mapping of green infrastructure and services through presenting, maintaining and investing in urban ecological systems.

References