



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Environmental Management Department

Green Infrastructure Programme

Green Infrastructure Network: An Overview

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For more information, please contact:

Joanne Jackson

Email: joanne.jackson@capetown.gov.za

Contact: 021 487 2184 / 084 220 0039

Green Infrastructure (GI) can be defined as “a *strategically planned, designed, and managed network of natural open spaces and ‘engineered’ ecological systems, with other environmental features, which provide ecological, community and infrastructure services.*”

The City has embarked on the development of a [Green Infrastructure Programme \(GIP\)](#), which aims to:

- protect and enhance existing natural assets; and
- promote and create new GI assets

In order to underpin the sustainability of Cape Town, enhance the city's living environment and improve its resilience to the effects of [climate change](#).

One component of the GIP is the preparation of a Green Infrastructure Network (GINet), based on natural assets and green open spaces in the city, the benefits they provide, and the opportunities that they present; in terms of selected predefined ecosystem services (ES). These form a network through connection via existing and potential green corridors.

To map the GINet, we have utilised officials' local knowledge, combined with [CityMap Viewer](#) information, to identify - via a series of questions and criteria - those areas in the city that can be considered to be GI. This is done by qualifying and quantifying their relative ES value for predefined ES. The spaces considered are based on typologies, are generally greater than 1ha in size, and are in both public and private ownership.

The output of that mapping exercise is the Green Infrastructure Network layer on [CityMap Viewer](#). This layer is intended to be an informant when considering land-use and development applications, and should be taken into consideration when preparing and/or evaluating proposals.

Each space - displayed in varying shades of green - can be ‘interrogated’ (by clicking on it) for the information relating to it, and its ascribed value. This space-specific information needs to be considered as an informant for any development that could potentially affect, or be affected by the GI services of the site.

The space-specific information displayed, reflects the responses to nine general questions and 23 ecosystem evaluation questions (see below), that were posed for each space. It also reflects the contribution made to the three ecosystem service themes the questions have been grouped into, namely:

- **Infrastructural questions** relating to water and coastal zone protection aspects, and essentially investigate ES that provide nature-based solutions that support areas which would otherwise need hard or grey infrastructure interventions.
- **Ecological questions** relating to ecological-related ES, e.g. habitat and connectivity; and
- **Social questions** relating to social-cultural ES, including how the space is used.

The evaluation questions are rated in terms of the space providing none, low, medium or high contribution of the service, and the scores from each question are then totalled to provide a Total GI value for the space. The level of Total GI of each space is categorised into low, low-medium, medium, medium-high, high or very high.

It is important to note that the **Total GI** rating is the **cumulative score** of the 23 questions relating to the various ecosystem services. **A lower rating does not imply that a space is not important**; it may be very important for a specific ecosystem service.

Scores have also been normalised to determine the contribution of each theme to the total GI value. Where these contribute more than 10% of the total GI value, they are regarded as being a key service provision component (theme).

The information can also be selected to display as per the ecosystem service provision components or themes.

Potential to improve a space is identified for selected ecosystems services only – indicated by an asterisk (*) on the list of questions below. Where potential is present this is noted, but not allocated a rating. On the viewer, potential is indicated by a cross hatching over the Total GI value. It is important to note that a low GI value does not mean that the space does not have value in terms of its potential - where focussed interventions could improve the space's ES provision and that of adjacent or surrounding GI assets.

Additional information has been captured as relevant from discussion during the evaluation session. Please note that the heritage grades provided, as applicable, are based on the heritage layer on [CityMap Viewer](#), which should be consulted to provide more context- specific information.

See a summary of the questions posed below:

General questions (9)

Q	
a	Does this space have a wetland/seep/stormwater pond/dam, etc.?
b	Is this space within the Coastal Urban Edge?
c	Is this space part of the terrestrial Biodiversity Network?
d	Does this space include a river/stream (natural, semi-natural, canalised, channelised)?
e	Is this space a Nature Reserve / Conservation Area / Protected Natural Environment?
f	Is this space accessible to the public?
g	Does it have the potential to provide industrial and building resources (i.e. coincides with mapped resources – e.g. silica sand, timber, building sand, kaolin)?
h	Is this space perceived as safe?
i	Does this space have trees (>3m in height)? If yes, what is their percentage canopy cover? (None = 0% or negligible; low = 5-15%; medium = 15-50%; high = >50%)

Ecosystems service questions (23)

Q		Infrastructural questions
1	*	Does the space assist with water assimilation and purification? To what extent?
2		Is this space above a sand aquifer?
3		Does the space contribute to water infiltration? To what extent?
4	*	Does the space assist with flood control? To what extent?
5		Does the space provide water? To what extent?
6	*	Does the space offer protection/buffering of built infrastructure against coastal processes or during coastal storm events? To what extent?

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Q		Ecological questions
7		Does this space have indigenous vegetation? What relative percentage do they cover? (None = 0%; low = 5-25%; medium = 25-65%; high => 65%)
8		Does the space have threatened flora? How important is the flora?
9		Is the space evidently used by fauna listed species of conservation concern or large fauna? To what extent?
10		Is this space evidently an indigenous faunal breeding, roosting, nursery, or den site (important for lifecycle / reproduction)? To what extent?
11	*	Is this space used for or does it provide opportunity for ecological connectivity? To what extent?
12		Is this space an area of high conservation value or, if not, does it act as a buffer to areas of high conservation value? To what extent?
13		Does this space support or allow for coastal processes? To what extent?

Q		Social questions
14		Do the trees in this space have a social, economic and/or cultural function? If yes, to what extent?
15		Is this space used for spiritual or cultural rituals and/or activities? If yes, to what extent?
16	*	Is this space being used for general public recreational/activities? If yes, to what extent?
17		Does this space have any cultural or heritage value or significance? What is its relative significance?
18	*	Is this space used for environmental education or research purposes? To what extent?
19		Do tourists visit this space or is it along a significant tourist route? To what extent?
20		Is there a significant viewshed or vista from the space adding aesthetic appeal? What is the relative value of the viewshed?
21		Does this space have aesthetic appeal and/or provide a sense of place or identity? What is the relative value?
22		Are natural resources harvested or extracted from this space for subsistence purposes? (e.g. Sand, medicinal plants, food/fish, kelp, mussels) To what extent?
23		Is the space used for agricultural or producing food? To what extent?

GI mapping and evaluation was undertaken during October 2018 – December 2019, using the February 2018 aerial photography as the basis for delineating spaces for evaluation. Open space that had been subsequently invaded, or for which development was at an advanced stage of planning, was excluded from the mapping exercise. Additional information captured has been edited in 2021, along with an update on the mapping that took place in 2021 and will continue to be updated as needed.

Green corridors provide a range of services to the built and natural environments, providing benefit and opportunities for people and nature. As a component of green infrastructure, corridors ensure connectivity between natural spaces in urban areas.

Potential GINet corridors were mapped in 2020, and updated in 2021. Two green corridor concepts are presented on the [CityMap Viewer](#). 'Major Green Corridors' are represented by a thick solid green line, and indicate existing connections associated with conserved areas or features (e.g. watercourses, road reserves, utility servitudes, tree-lined streets). A dashed green line represents 'Flexible Green Corridors', which indicates that connection is required to be retained or created over that space, but that the actual alignment of the corridor needs definition and to be taken into account during a development/ redevelopment process.