

BEYOND

SMART CITIES

BIODIVERSITY PRESERVATION

FOR ENVIRONMENTAL SPECIALISTS

KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP

ENVIRONMENTAL SPECIALIST CURRICULUM

CHANGING THE WORLD

ONE SMART CITY AT A TIME



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LEARNING OBJECTIVES

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BIODIVERSITY PRESERVATION

Purpose

Context

Guidelines

Assessment Principles

Assessment

BIODIVERSITY PRESERVATION

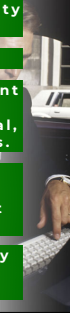
Purpose : To preserve and enhance the natural biodiversity of the site.

Context

✓The increasing rate of development is placing significant stress on the richness of our biodiversity. Lands of habitat for wildlife species are converted into residential, commercial developments, infrastructure and other uses.

✓Alterations to the terrain can negatively impact the ecosystems and biological diversity. The fast-paced development of land destroys and fragments the habitat of a site, impacting its quantity and quality.

✓Development eliminates and significantly changes many important habitat features, thereby altering the habitat value of the site.



CONTEXT+

✓Ecologically sensitive habitats are not limited to the development site and usually extend into adjacent areas and beyond.

✓Therefore, actions taken within the development site should consider consequences that extend well past the boundaries. Furthermore, linear developments are generally responsible for fragmentation of habitats

✓When habitat of ecologically sensitive species is separated by distance, their movement from one area to another can become impossible; which in turn affects their health and the ability to reproduce resulting in fewer species. Examples of sites with high ecological value are, areas containing rare and endangered wildlife species; sites with a high representation of indigenous biodiversity; key biological sites such as wetlands, seagrass beds, and mangroves and areas that could be easily rehabilitated to provide a suitable habitat for wildlife.



CONTEXT+

✓Biodiversity conservation aims to protect and restore habitat areas for wild plants and animals. This especially applies to conservation reliant species to prevent their extinction, fragmentation or reduction in range.

✓Endemic species have a greater risk of extinction relative to those that are common since they only exist in one geographic region. Rare species of organisms are those that are very uncommon, scarce or infrequently encountered in their area of occupancy. They have small populations more likely to be adversely impacted by chance demographic or environmental events. Therefore, endemism and rarity are the factors that confer the greater risk of extinction and thus the rarer and more endemic the species is, the higher the preservation conservation value.



CONTEXT+

✓ **Species richness** is an analysis of the number of different species of organisms present in a specific area. Diversity depends not only on richness, but also on evenness and evenness compares the similarity of the population size for each of the species present.

✓ **Naturalness** is one of the most significant factors in nature conservation. The naturalness of the site can be defined as the degree to which an area is pristine and characterized by native species. It has no human intervention and modification. Developments should protect all-natural habitats, natural vegetation, and wildlife on the site to prevent degradation to these limited resources. In addition, areas of the site that have been identified as ecologically relevant or valuable should be preserved.



GUIDELINES

✓ **Conduct a site assessment** and employ construction processes and practices that protect all habitats, natural vegetation and wildlife on the site to prevent degradation of biodiversity.

✓ **Protect from damage** all the existing features of ecological value, as identified in the site assessment study.

✓ **Designate, where applicable, an ecological zone** to protect habitats from the impact of construction processes.

✓ **Develop, in cases where habitats and vegetation are to be disturbed during construction, a plan to restore the native ecology** by replanting the disturbed vegetation and reintroducing the same species and habitats after construction is complete.



GUIDELINES +

✓ **Create a habitat conservation plan** to maintain and enhance habitats and ecosystems on the site. The plan should catalog all species on-site before and after construction to preserve the biodiversity and encourage the use of native plants. The plan outlines methods to maintain, enhance and protect a given habitat type required to protect species. The plan normally includes measures to minimize any impacts, makes provisions to permanently protect land, restore habitat, and relocate plants or animals to another area.

✓ **Reduce, if possible, the development footprint** by sharing facilities, access roads, walkways within clustered developments and with existing and future buildings on adjacent sites.



ASSESSMENT PRINCIPLES

✓The Project will assess:

- The plants and endangered animals within the site and adjacent areas.
- The post-development conservation, restoration, or enhancement strategy.

✓The Project will prepare a biodiversity inspection report or preservation plan to establish the criterion level.

ASSESSMENT

✓The criterion requires assessing the existence of plants and endangered animals including the habitats within the site and adjacent areas. The investigated plants exclude the low-value shrubs, ground cover, and seasonal and invasive species from the analysis.

✓In development with a large site, the location may impact the habitats of the endangered animals, migration or living patterns, the adjacent areas of the site are subject for analysis and evaluation.

✓Refer to relevant documents from concerned local authorities for more information on endangered animals. The assessment includes preparing an inspection report or biodiversity preservation plan that identifies the post-development conservation, restoration, or enhancement strategies of the site's biodiversity.

ASSESSMENT +

The report demonstrates the following requirements:

✓An executive summary of the inspections conducted at the site with observations and conclusions.

✓Visual evidences demonstrating the existence of plants and endangered animals, including their habitats within the site and adjacent areas.

The biodiversity preservation plan is a comprehensive document prepared by a specialist, which demonstrates the existence, enhancement, preservation, and protection of plant species and endangered animals including its natural habitats during and after construction. The plan includes identifying the types and number of plants and endangered animals and the potential of the development to damage the interaction of the ecosystem with the site and surrounding areas.

ASSESSMENT +



The plan demonstrates the following requirements:

✓The types and number of the endangered animals.

✓The types and number of the plants, excluding the low-value shrubs, groundcover, seasonal and invasive species.

✓The potential impacts of the development to the ecosystem's interaction with the site and its surrounding areas.

✓The measures and strategies for the enhancement, preservation, and protection of plants and endangered animals, including their habitats within the site and adjacent areas.

ASSESSMENT +



The criterion level is established based on the degree of compliance of the report or plan to the requirements of S.3 Biodiversity Preservation.

2.3.5 CRITERION LEVELS

Levels	Requirements
-1	Report or Plan does not demonstrate compliance with the requirements.
0	Report demonstrates the non-existence of plants or habitats of endangered animals.
1	Plan demonstrates partial compliance with the requirements.
3	Plan demonstrates full compliance with the requirements.

2.3.6 SUBMITTALS

Provisional Certification Stage (LOC)	
Types	Descriptions
Documents	A narrative explaining the approach undertaken for the criterion assessment and highlighting the basis of any assumptions.
	Sitemap identifying the location of plants and habitats of endangered animals within the site and adjacent areas.
	List of plants and habitats of endangered animals discovered within the site and adjacent areas.
	Applicable permits from concerned authorities.
Report	Inspection Report.
Plan	Biodiversity Preservation Plan.
Final Certification Stage (CDA)	
Types	Descriptions
Documents	A narrative explaining any updates or changes in the criterion assessment.
	Relevant as-built drawings.
Plan	Updated Biodiversity Preservation Plan, when applicable.

EVALUATION

✓ Partial compliance for this criterion is associated with the plan demonstrates preservation or enhancement of either the plants or habitats of the endangered animals.

✓ Full compliance for this criterion is associated with the plan establishes the inventory of the plants and endangered animals, assesses the potential impacts of the development to the ecosystem, and describes the post-development conservation, restoration, or enhancement strategies of the site's biodiversity.

✓ Engage a specialist in evaluating the site for the existence of plants and habitats of endangered animals.

✓ Determine the potential for the development to damage the ecosystem's interaction with the site and the surrounding areas.



EVALUATION +

✓ Determine the strategies to enhance protect or preserve plant species and endangered animals, including their habitats as a result of the development.

✓ Prepare all applicable documentation and obtain relevant permits.



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