

Sustainable Urban Green Space Assessment Tool (SUGSAT)

STEP 1

PROJECT INFORMATION

PROJECT NAME:

SURVEY SITE LOCATION:

DATE & TIME:

SURVEYOR:

SITE DESCRIPTION

LATITUDE & LONGITUDE:

APPROXIMATE ACRES:

NUMBER OF VISITS:

ATTACHED USGS TOPO MAPS? Yes No

ATTACHED AERIAL OR PHOTOS? Yes No

STEP 2

LAND USE & ZONING

RESIDENTIAL (%):

COMMERCIAL (%):

INDUSTRIAL (%):

MIXED USE (%):

AGRICULTURE (%):

OPEN SPACE-RECREATION (%):

UNDISTURBED (%):

RURAL (%):

URBAN (%):

HISTORIC (%):

SPECIAL PURPOSE (%):

ENVIRONMENTAL (%):

STEP 3

BIODIVERSITY

<https://virtue.gmbi.se/english-content/biodiversity-calculator>

Species Abundance:

Species: _____	Species: _____
Number: _____	Number: _____
Species: _____	Species: _____
Number: _____	Number: _____
Species: _____	Species: _____
Number: _____	Number: _____
Species: _____	Species: _____
Number: _____	Number: _____
Species: _____	Species: _____
Number: _____	Number: _____

Shannon-Wiener Index:

STEP 4

VEGETATION

DOMINANT SPECIES: 1 _____ 2 _____ 3 _____

HEALTH SCORE:

- 3. High Native Presence (Good): More than 75% of the species are native.
- 2. Moderate Native Presence (Fair): 50-75% of the species are native.
- 1. Low Native Presence (Poor): Less than 50% of the species are native

STEP 5

WATER QUALITY INDEX

Streams: Yes No

Ponds: Yes No

Rivers: Yes No

Lakes: Yes No

N/A

Parameter	Measured Level	Target	Weight	Score
pH		6.5 and 9.0	15%	
DO		> 5 mg/L	20%	
BOD		< 5 mg/L	25%	
TSS		50 -150 mg/L	10%	
Nitrates		< 10 mg/L	15%	
Phosphates		< 1 mg/L	15%	

OVERALL SCORE

If N/A, skip this section completely and do not use a score for it (ignore).

Add up each score of 1.

pH	between range = , outside of range = 0
DO	At or above range = 1, below range = 0
BOD	At or below range = 1, above range = 0
TSS	At or above range = 1, below range = 0
Nitrates	At or below range = 1, above range = 0
Phosphates	At or below range = 1, above range = 0

STEP 6

SOIL QUALITY (8 to 12 inches)

Soil Composition and Structure Observed: Yes No
 Soil Fertility Assessed: Yes No
 Signs of Soil Contamination: Yes No
 Signs of Soil Compaction: Yes No

Parameter	
Soil Structure	
Soil Color	
Soil pH	
Soil Health	
Root Development	
Soil Vitality	

HEALTH SCORE Structure, Color & pH / 3
VITALITY SCORE Development & Organisms / 2
ADD BOTH SCORES

Soil Structure

- 5 (Excellent): Well-formed, stable aggregates; crumbly and granular.
- 4 (Very Good): Mostly stable aggregates with some crumbling.
- 3 (Good): Aggregates somewhat stable but break apart easily.
- 2 (Fair): Poorly formed aggregates; soil clumps together.
- 1 (Poor): No aggregates; soil is compacted or powdery.

Soil Color

- 5 (Excellent): Dark brown or black (indicating high organic matter).
- 4 (Very Good): Dark gray or brown.
- 3 (Good): Medium brown.
- 2 (Fair): Light brown or yellowish.
- 1 (Poor): Pale or bleached.

Soil pH

- 5 (Excellent): pH between 6.0 and 7.5 (optimal for most crops).
- 4 (Very Good): pH between 5.5 and 6.0 or 7.5 and 8.0.
- 3 (Good): pH between 5.0 and 5.5 or 8.0 and 8.5.
- 2 (Fair): pH between 4.5 and 5.0 or 8.5 and 9.0.
- 1 (Poor): pH below 4.5 or above 9.0.

Root Development

- 5 (Excellent): Extensive, deep root systems; roots are white and healthy.
- 6 (Excellent): Extensive, deep root systems; roots are white and healthy.
- 7 (Excellent): Extensive, deep root systems; roots are white and healthy.
- 8 (Excellent): Extensive, deep root systems; roots are white and healthy.
- 9 (Excellent): Extensive, deep root systems; roots are white and healthy.

STEP 7

WILDLIFE CORRIDORS & CONNECTIVITY

Connectivity Between Green Spaces and Natural Areas Observed: Yes No
 Wildlife Pathways Identified: Yes No

OVERALL SCORE

- 1: No wildlife corridors, isolated habitats, poor connectivity.
- 2: Limited wildlife corridors, 1-2 pathways, some connectivity but fragmented.
- 3: Moderate wildlife corridors, 3-4 pathways, fair connectivity, some fragmentation.
- 4: Good wildlife corridors, 5-6 pathways, good connectivity, minimal fragmentation.
- 5: Excellent wildlife corridors, >6 pathways, very good connectivity, no fragmentation.

STEP 8

MICRO-HABITATS

Presence of Microhabitats (e.g., Fallen Logs, Rock Piles, Tree Hollows): Yes No

ADD ALL SCORES

Indicator	Measurement Criteria	Score (0-5)
Structural Complexity: Diverse structures present (logs, rocks, plants)		
Water Availability: Presence and quality of water sources		
Micro Climate: Temperature, humidity, shade		
Human Impact: Proximity to human activity and disturbances		

Structural Complexity 5: High complexity: numerous structures 4: Moderate complexity: several structures 3: Low complexity: few structures 2: Very low complexity: minimal structures 1: No structural diversity	Water Availability 5: Stable, large amounts of water sources present 4: Seasonal water sources present 3: Limited water sources 2: Unstable or poor quality water sources 1: No water sources
Microclimate Conditions 5: Ideal microclimate for target species (no stress) 4: Mostly suitable microclimate (extreme temp=stress) 3: Marginally suitable microclimate (Poor growth) 2: Unsuitable microclimate (Visible degradation/disease) 1: Very poor microclimate (Visible death and damage)	Human Impact 5: No human impact (All of the site) 4: Low human impact (Most of the site) 3: Moderate human impact (approximately 50% of the site) 2: High human impact (To most of the Site) 1: Very high human impact (All of the Site)

STEP 9

ECOSYSTEM SERVICES	Ecosystem Service	Indicator	Measurement Criteria	Score (0-5)
ADD ALL SCORES <input type="text"/>	Provisioning	Water Supply		
	Provisioning	Timber Supply		
	Regulating	Climate		
	Regulating	Flood Control		
	Cultural	Recreation		
	Cultural	Aesthetic Value		

Provisioning: Water Supply 5: Constant flow of water 3: Low flows to constant stagnant 1: Intermittent flows that dry up	Regulating: Climate 5: High: >100 tons/year C02 sequestration 3: Moderate: 50-100 tons/year C02 sequestration 1: High: Low: <50 tons/year C02 sequestration
Provisioning: Timber 5: Large stand of large hardwood trees 3: medium size stands of medium hardwood trees 1: Very few hardwood trees	Regulating: Flood Control 5: High: Provides significant protection 3: Moderate: Some protection 1: Low: No significant protection
Recreation 5: Extensive Rec facilities and maintained 3: Minimal Rec facilities and rarely visited 1: No Rec facilities and rarely maintained	Aesthetic Value 5: Unique landscape features or has cultural heritage feature 3: Mediocre landscape or historical facts only about location 1: No unique landscape and no historical information

STEP 10

WALKABILITY (Adjacent areas to the site up to 1/4 miles perimeter)

OVERALL SCORE <input type="text"/>	1: Very low walkability, sidewalks in <25% of the area, amenities >2 km apart. 2: Low walkability, sidewalks in 25-50% of the area, amenities 1-2 km apart. 3: Moderate walkability, sidewalks in 50-75% of the area, amenities 0.5-1 km apart. 4: High walkability, sidewalks in 75-90% of the area, amenities 0.25-0.5 km apart. 5: Very high walkability, sidewalks in >90% of the area, amenities <0.25 km apart.
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STEP 11

LOCAL FLOODING RISKS

OVERALL SCORE <input type="text"/>	1: Very high risk, >4 flooding events per year, severe impact. 2: High risk, 2-4 flooding events per year, significant impact. 3: Moderate risk, 1-2 flooding events per year, moderate impact. 4: Low risk, 0.5-1 flooding events per year, minimal impact. 5: Very low risk, <0.5 flooding events per year, no impact.
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STEP 12

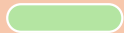
LOCAL AIR QUALITY

OVERALL SCORE <input type="text"/>	1: Very poor air quality, PM2.5 >75 µg/m ³ , significant health concerns. 2: Poor air quality, PM2.5 50-75 µg/m ³ , some health concerns. 3: Fair air quality, PM2.5 25-50 µg/m ³ , minimal health concerns. 4: Good air quality, PM2.5 10-25 µg/m ³ , negligible health concerns. 5: Excellent air quality, PM2.5 <10 µg/m ³ , no health concerns.
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STEP 13

LOCAL HEAT ISLAND SCORE

OVERALL SCORE



- 5: Very high heat island effect, impervious surfaces >75%, minimal vegetation (<25%).
- 4: High heat island effect, impervious surfaces 50-75%, limited vegetation (25-50%).
- 3: Moderate heat island effect, impervious surfaces 25-50%, balanced vegetation (50-75%).
- 2: Low heat island effect, impervious surfaces 10-25%, good vegetation cover (75-90%).
- 1: Very low heat island effect, impervious surfaces <10%, extensive vegetation cover (>90%).

STEP 14

LOCAL EDUCATIONAL OPPORTUNITY

OVERALL SCORE



- 5: Very low educational opportunities, no schools within 2 km or <1 school within 5 km.
- 4: Low educational opportunities, 1 school within 2 km or 1-2 schools within 5 km.
- 3: Moderate educational opportunities, 2-3 schools within 2 km or 3-4 schools within 5 km.
- 2: High educational opportunities, 4-5 schools within 2 km or 5-6 schools within 5 km.
- 1: Very high educational opportunities, >5 schools within 2 km or >6 schools within 5 km.

STEP 15

LOCAL POLLUTION SOURCES

Sources of Pollution:

Industrial Urban Runoff
Waste Disposal Other

Indicator	Measurement	Score
Extent		
Intensity		
Impact		

ADD ALL SCORES



Extent

- 5: Very small area (<5% of the total area)
- 4: Small area (5-15% of the total area)
- 3: Moderate area (15-30% of the total area)
- 2: Large area (30-50% of the total area)
- 1: Very large area (>50% of the total area)

Intensity

- 5: Very low concentration (pollutants within natural background levels)
- 4: Low concentration (slightly above background levels)
- 3: Moderate concentration (noticeably above background levels)
- 2: High concentration (well above background levels)
- 1: Very high concentration (dangerously above background levels)

Impact

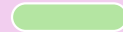
- 5: Negligible impact (no observable health or environmental effects)
- 4: Minor impact (minor effects on health or environment)
- 3: Moderate impact (noticeable effects on health or environment)
- 2: Significant impact (significant adverse effects on health or environment)
- 1: Severe impact (severe and widespread adverse effects)

STEP 16

HUMAN DISTURBANCE

Human Disturbance (e.g., High Traffic Areas, Recreational Sites, Vandalism):

OVERALL SCORE



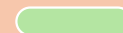
- 5: No human disturbance.
- 4: Minimal human disturbance (<10% of area), minor impact.
- 3: Moderate human disturbance (10-25% of area), noticeable impact.
- 2: Significant human disturbance (25-50% of area), major impact.
- 1: Severe human disturbance (>50% of area), extensive impact.

STEP 17

CLIMATE VULNERABILITY

Climate Vulnerability (e.g., Areas Prone to Increased Temperatures, Changing Precipitation Patterns, Extreme Weather Events):

OVERALL SCORE

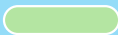


- 5: No identifiable climate risk to the area.
- 4: climate events may occur in a very small part of the area, posing little to no long-term disruption (<10% of area).
- 3: somewhat prone to climate events that occur periodically, with
- 2: Potentially causing substantial damage to the area, with a need for significant intervention and resilience measures.
- 1: could cause severe and widespread damage, requiring urgent and comprehensive protective actions (>50% area).

STEP 18

LOCAL ECONOMY & IMPROVEMENT

OVERALL SCORE



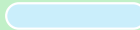
Distance to nearest commercial area, number of businesses within a certain radius

- 5. High Potential: Adjacent to or within 0.5 km of a commercial area, >50 businesses within one km
- 3. Moderate Potential: 0.5-1 km from a commercial area, 20-50 businesses within 1 km
- 1. Low Potential: >1 km from a commercial area, <20 businesses within 1 km

STEP 19

NEARBY UTILITIES AND INFRASTRUCTURE

OVERALL SCORE



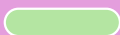
Proximity to major roads, highways, public transportation, and utility services.

- 5. Excellent Access: Adjacent to major road/highway, multiple public transportation options, all utilities available.
- 3. Good Access: 0.5-1 km from major road/highway, some public transportation options, most utilities available.
- 1. Poor Access: >1 km from major road/highway, limited public transportation, limited utility access.

STEP 20

FUTURE CAPITAL IMPROVEMENT PROJECTS (CIP)

OVERALL SCORE



- 5: Alignment with planned or proposed capital improvement projects
- 4: High Alignment: Multiple CIP projects planned, significant infrastructure upgrades.
- 3: Moderate Alignment: One or two CIP projects planned, moderate infrastructure improvements.
- 1: Low Alignment: No CIP projects planned, minor or no infrastructure improvements.

STEP 21

FINAL OVERALL ASSESSMENT SCORE

- A. Assign weights to each step based on its importance.
 - B. Calculate the weighted score for each step.
 - C. Sum the weighted scores to get the final overall assessment score
- * You may choose your own weighting for each or all*

MAX SCORE: 148.5
 MIN SCORE: 28
 WEIGHT = 1/17 = 0.05
 WEIGHTED SCORE = SCORE x WEIGHT
 FINAL SCORE = Sum of (Weighted Score for each)

FINAL OVERALL SCORE

TOTAL PERFORMANCE INDEX

The Performance Index describes the percent of the site from the desired condition.

$$\text{Total Performance Index} = \frac{\text{Your Score} - \text{Minimum Score}}{\text{Maximum Score} - \text{Minimum Score}} \times 100$$

Step	Score (1-5)	Weight (0.05)	Weighted Score
1	NULL	NULL	NULL
2	NULL	NULL	NULL
3		0.05	
4		0.05	
5		0.05	
6		0.05	
7		0.05	
8		0.05	
9		0.05	
10		0.05	
11		0.05	
12		0.05	
13		0.05	
14		0.05	
15		0.05	
16		0.05	
17		0.05	
18		0.05	
19		0.05	
20		0.05	
TOTAL			