URBAN MANAGEMENT GROUP

GREEN INFRASTRUCTURE

FEASIBILITY PLAN FOR SUSTAINABLE URBAN DEVELOPMENT PARTNERSHIP

COLUMBIA SIPA School of International and Public Affairs

RIO

LÍDERES CARIOCAS

1. AREA OF STUDY

. EXTREMELY ENVIRONMENTALLY FRAGILE AREA, PARTIALLY WATERLOGGED

. CITY MAIN URBAN GROWTH REGION

. VERY CLOSE TO NATURAL PROTECTED AREAS (PEDRA BRANCA STATE PARK AND MUNICIPAL PARKS OF CHICO MENDES AND PRAINHA)

. LOCATED AT THE SAME NEIGHBORHOOD OF THE FUTURE MEDIA VILLAGE FOR 2016 OLYMPIC GAMES, WITH BRT MASS TRANSPORTATION SYSTEM AND CROSSED BY IMPORTANT ROADS

. HOLDS SERIOUS URBAN CONFLICTS AND LAND USE PROBLEMS

. HAS A BUILDING REGULATION (LAW 104/2009) WHICH IS UNDER REVISION AND NEW LICENSES ARE SUSPENDED UNTIL MAY 2015

GEOGRAPHICAL LOCATION

ZOOM OF THE STUDY AREA


IRREGULAR OCCUPATION VECTOR
BRT MOBILITY AXIS

2. GOALS

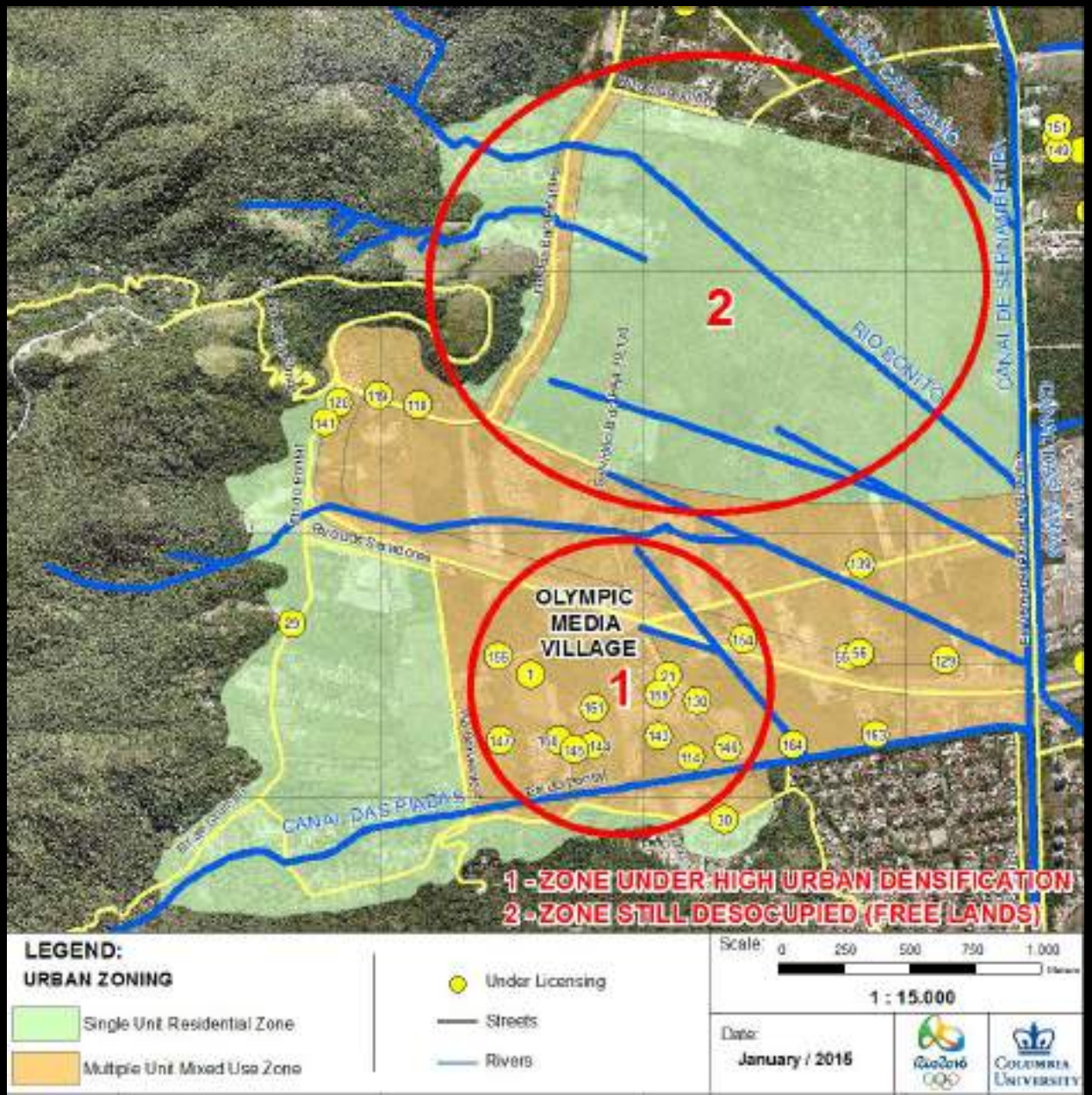
The work intends to model the technical, operational and financial viability to implement green infrastructure solutions, from the definition of a land use plan for a fragile environmental area, with adequate and sustainable technical solutions that respect and value the environmental attributes of the region

. UNDERSTAND THE SELECTED AREA POTENTIALS AND LIMITATIONS FOR URBANIZATION

. SET UP A MASTER PLAN BASED ON SUSTAINABLE GUIDELINES FOR THE LAND USE

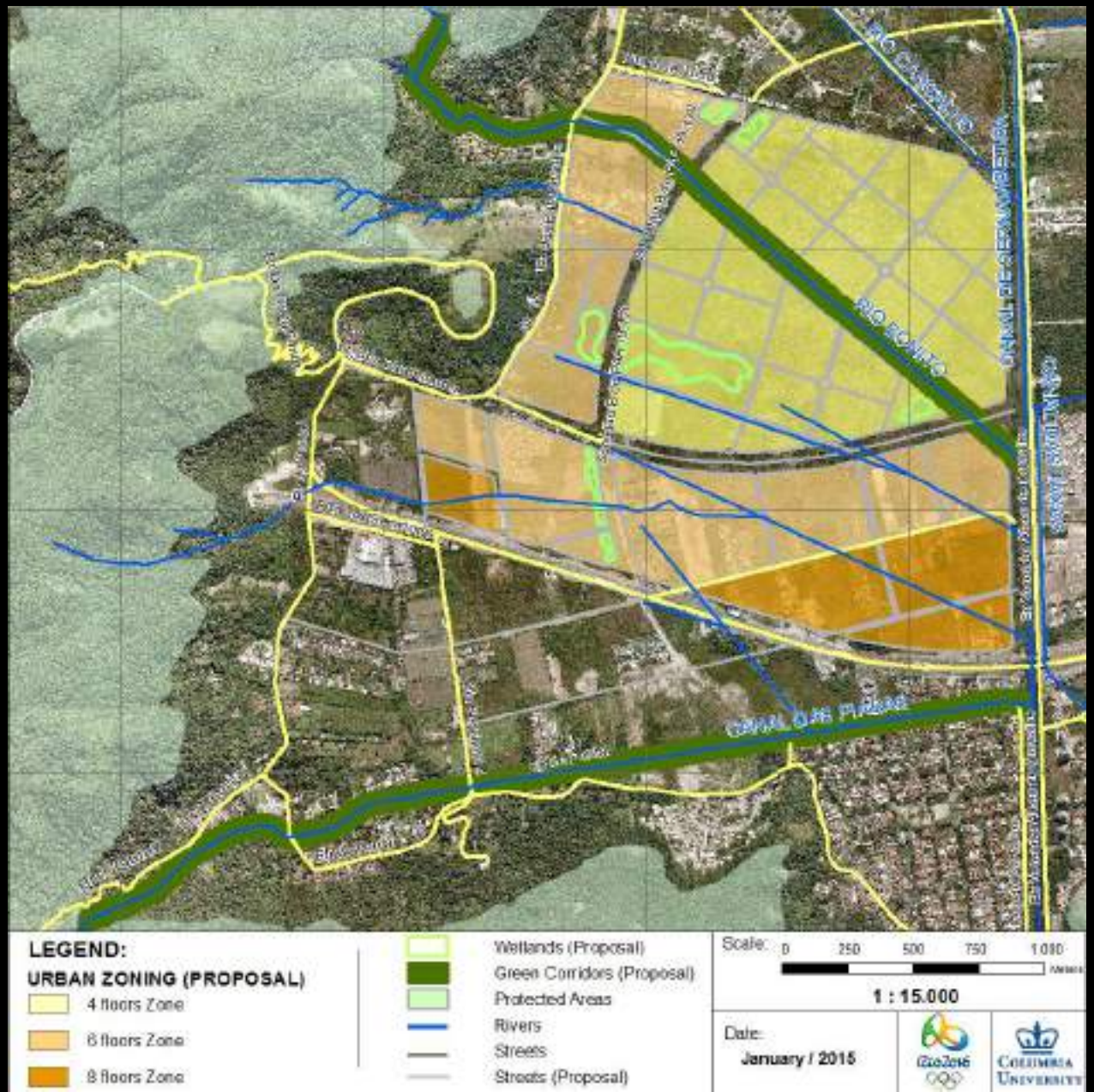
. ESTABLISH AN URBAN OPERATION MODEL CAPABLE TO FINANCE WITH PRIVATE FUNDS THE IMPLEMENTATION OF THE DEVELOPED MASTERPLAN / GREEN INFRASTRUCTURE

LICENSING MAP



IRREGULAR OCCUPATION

GREEN INFRAESTRUCTURE MAP



GREEN INFRASTRUCTURE

WETLANDS

GREEN CORRIDORS

BIKEWAYS

POROUS PAVEMENTS

3. URBAN DESIGN

- LOW-IMPACT INTERVENTIONS IN THE LANDSCAPE AND HIGH PERFORMANCE, MULTIFUNCTIONAL AND FLEXIBLE SPACES

- GREEN INFRASTRUCTURE SOLUTIONS APPROPRIATED TO THE ENVIRONMENTAL FRAGILITY OF THE AREA

- CREATE AN URBAN HIGH QUALITY AND LIVEABLE NEIGHBORHOOD

STRUCTURAL ELEMENTS

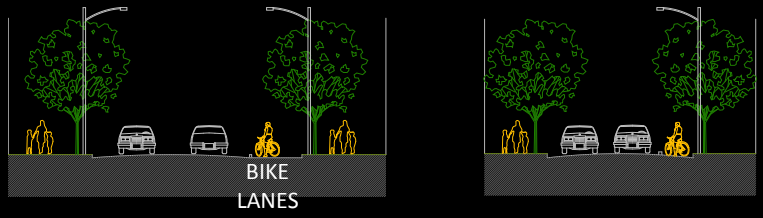

MASSIF OF
PEDRA BRANCA
COLLECTOR ROAD A
BONITO RIVER
SUBAREA 1
COLLECTOR PROJECTED ROAD B
SUBAREA 2
SERNAMBETIBA AVENUE
PIABAS RIVER
0
500

ROAD SECTIONS

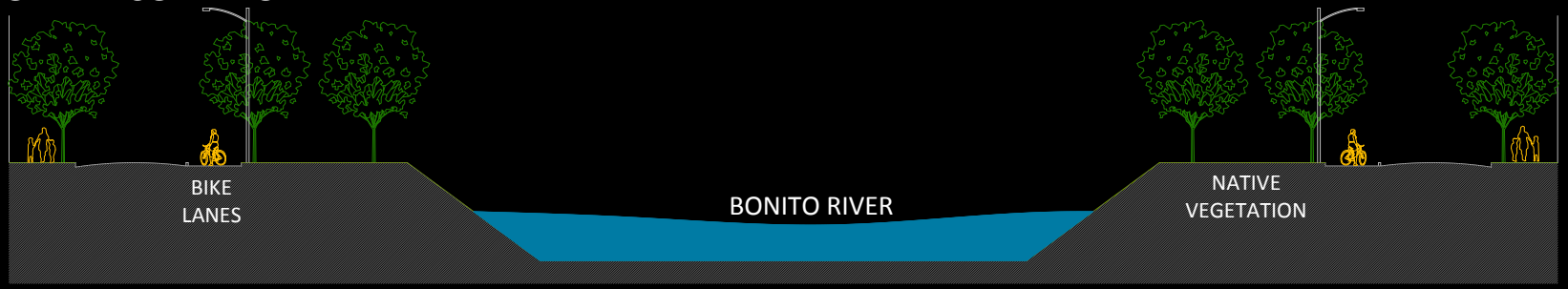
MAIN ROAD

COLLECTOR ROADS

LOCAL ROADS



GREEN CORRIDOR



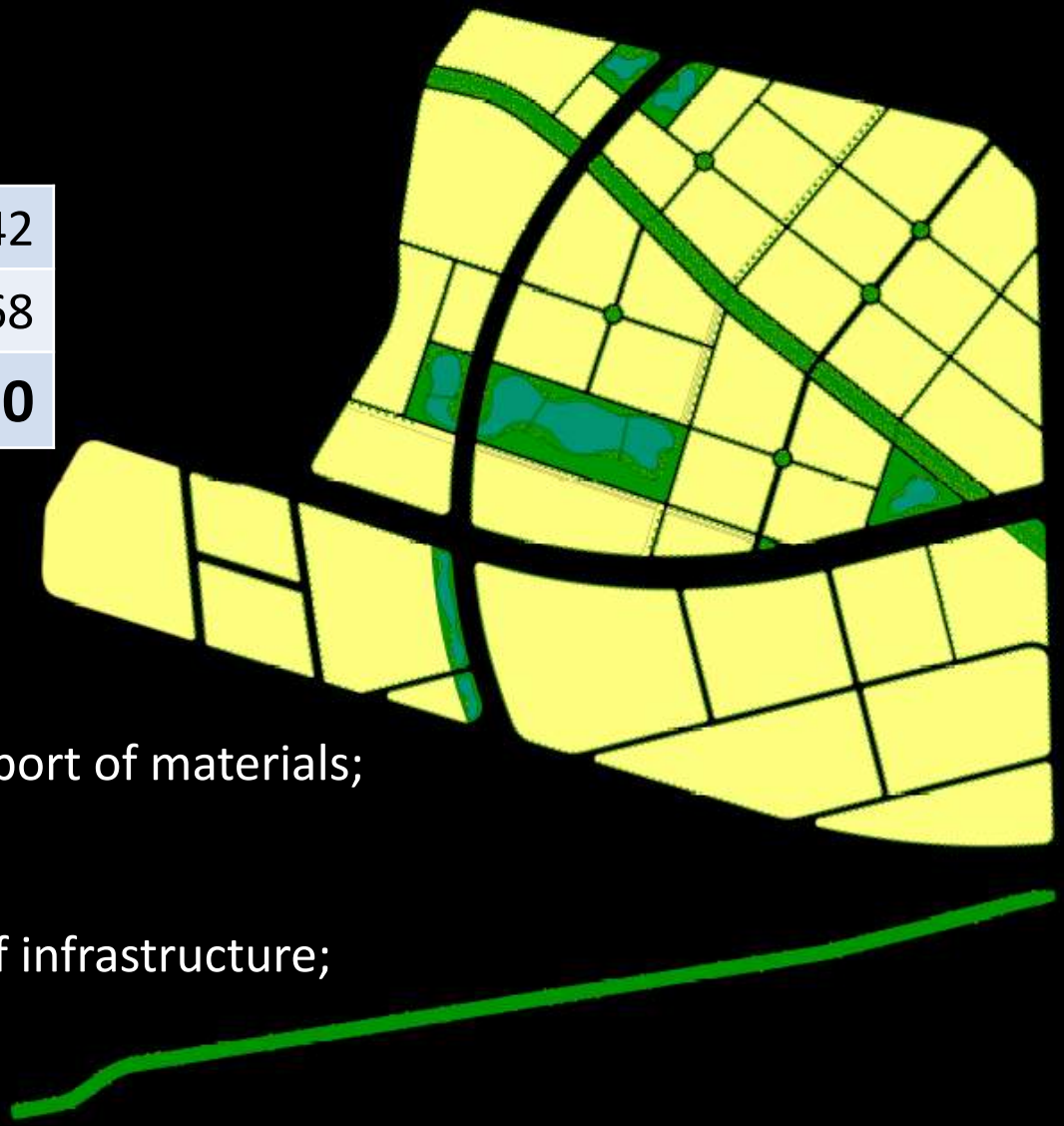
CONSTRUCTED WETLAND SQUARE

GREEN CORRIDOR

4. URBAN OPERATION

IMPLEMENTATION COSTS

SUBAREA 1	US$ 96.478.077,42
SUBAREA 2	US$ 77.871.055,68
TOTAL	**US$ 174.349.133,10**



-Digging, loading, unloading and transport of materials;
-Disposal of waste works;
-Paving with porous pavement;
-Urbanization considering networks of infrastructure;
-Road signs, side walks,
- Accessibility;
- Vegetation recovery.

BUDGET SUBAREA 1

ITEM	AREA (m²)	LENGHT (m)	U$/m²	VALOR (U$)
Streets with infrastructure	84.000,00		208,33	17.500.000,00
Local streets with infrastructure (width=18 meters)	139.400,00		189,39	26.401.515,15
Local streets with infrastructure (width=28 meters)	70.000,00		170,45	11.931.818,18
Works - Rivers project section and canal routes- Bonito river		2.120,00	4.900,73	10.389.541,82
Green corridor - Fencing (Bonito river)		4.240,00	246,21	1.043.939,39
Green corridor - Vegetation recovery	98.800,00		15,15	1.496.969,70
Drainage canals - Local basins		1.600,00	534,66	855.448,48
Constructed Wetlands	81.550,00		123,11	10.039.299,24
Squares	167.400,00		94,70	15.852.272,73
Sidewalks on existing routes without infrastructure	22.800,00		42,42	967.272,73
TOTAL				**96.478.077,42**

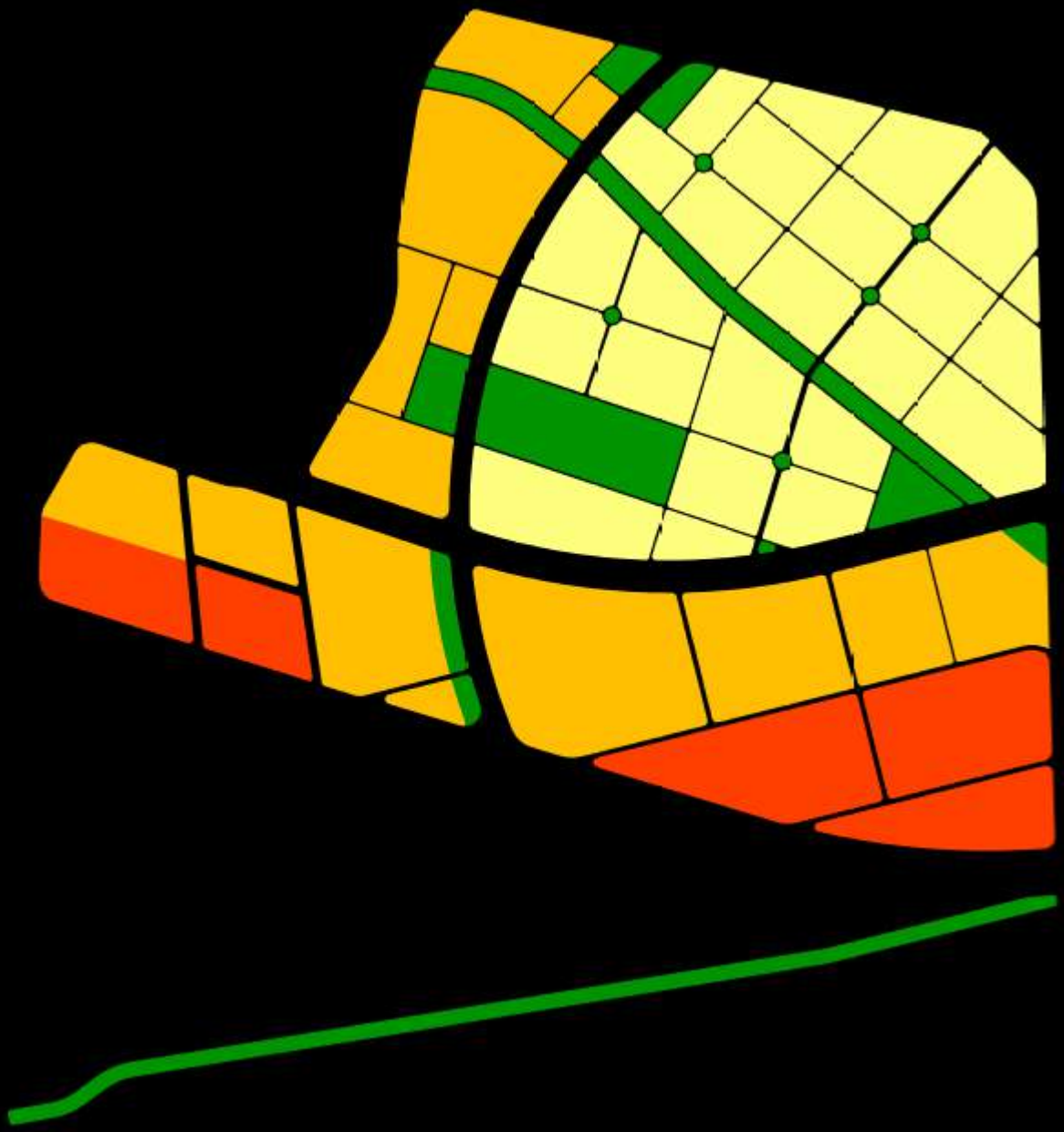
BUDGET SUBAREA 2

ITEM	AREA(m^2)	LENGHT(m)	U$/$m^2$	VALOR (U$)
Streets with infrastructure	218.100,00		208,33	45.437.500,00
Local streets with infrastructure (width=18 m)	63.420,00		189,39	12.011.363,64
Local streets with infrastructure (width=28 meters)	34.440,00		170,45	5.870.454,55
Works - Rivers project section and canal routes- Piabas river		2.260,00	3.677,75	8.311.706,44
Green corridor - Fencing (Piabas river)		4.520,00	246,21	1.112.878,79
Green corridor - Vegetation recovery	112.000,00		15,15	1.696.969,70
Drainage canals - Local basins		1.800,00	534,66	962.379,55
Constructed Wetlands	10.600,00		123,11	1.304.924,24
Squares	12.280,00		94,70	1.162.878,79
TOTAL				**77.871.055,68**

PUBLIC PRIVATE PARTNERSHIP PRINCIPLES

- Land value capture concept as funding source;
- Additional index constrution;
- No costs to the City Hall;
- Balance point among additional construction, financial needs and environmental issues.

URBAN ZONING



Public Spaces

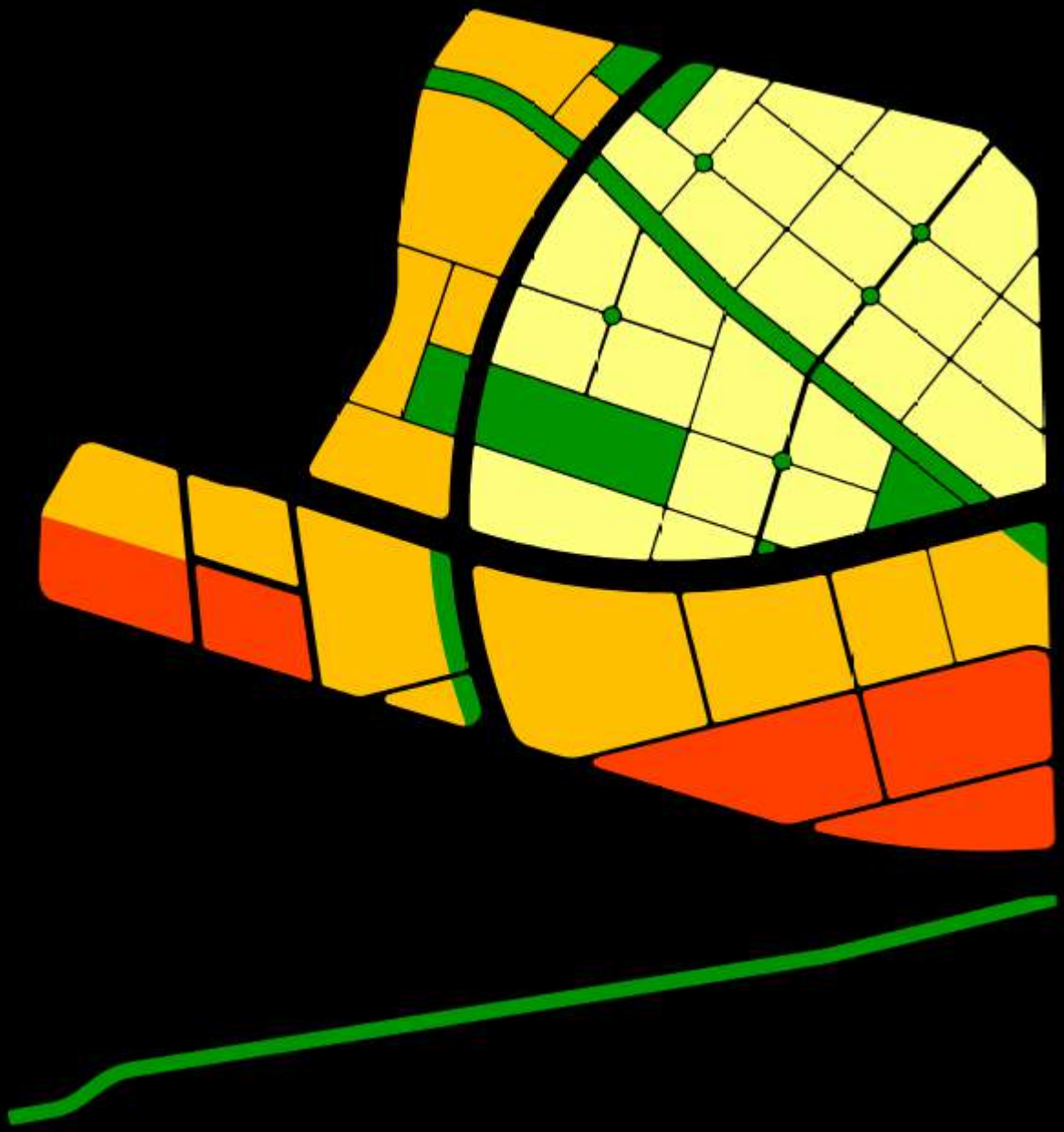
Residential Zone
BCI=0,2
MCI=0,4
4 floors

Mixed Use Zone
BCI=1,0
MCI=1,2
6 floors

Commercial Zone
BCI=1,0
MCI=2,0
8 floors

BCI – Basic Construction Index
MCI – Maximum Constr. Index

ADDITIONAL CONSTRUCTION



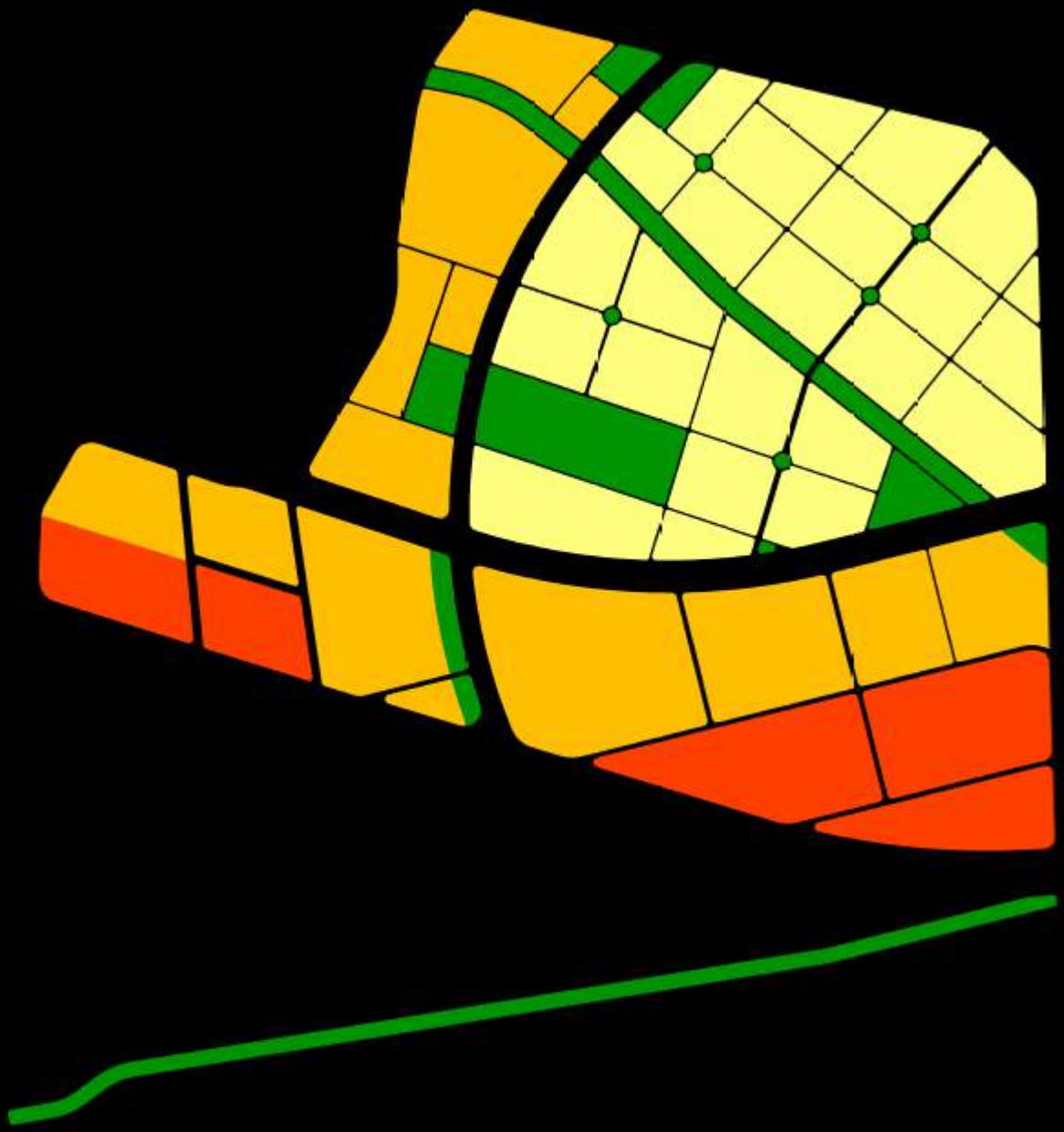
Residential Zone
226.747,40m²

Mixed Use Zone
172.516,80m²

Commercial Zone
332.879,00m²

*Considering only available land (already built or licensed areas and favelas will not be considered)

ADDITIONAL CONSTRUCTION VALUE

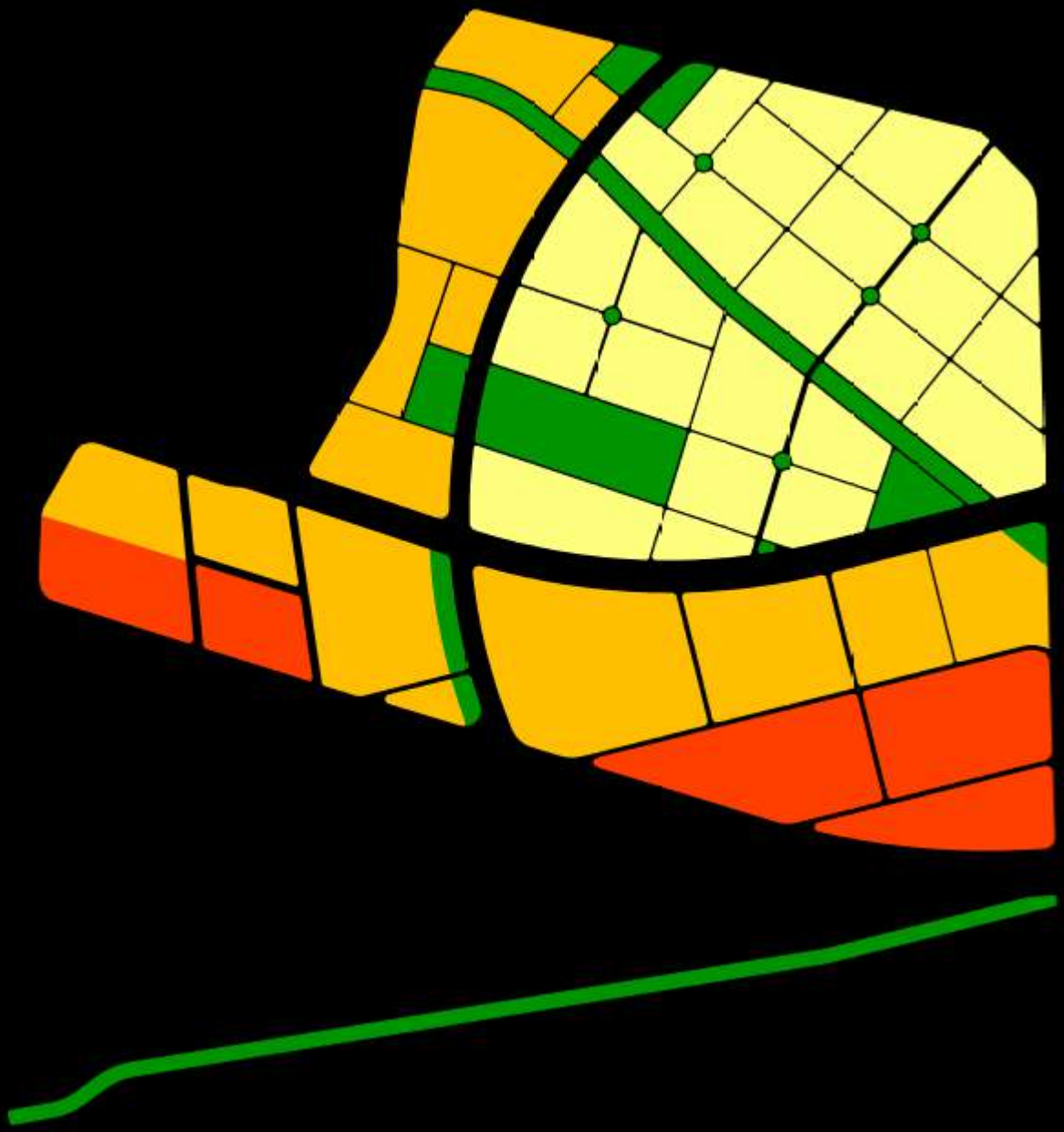


Residential Zone
226.747,40m²
US$ 516.984.072,00

Mixed Use Zone
172.516,80m²
US$ 393.338.304,00

Commercial Zone
332.879,00m²
US$ 758.964.120,00

CAPTURED ADDICTIONAL CONSTRUCTION VALUE

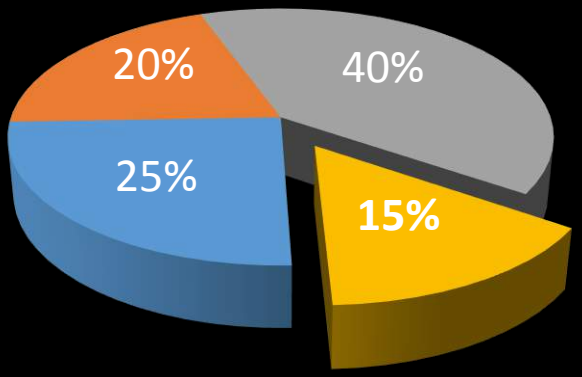


Residential Zone
226.747,40m²
US$ 516.984.072,00
US$ 77.547.610,00

Mixed Use Zone
172.516,80m²
US$ 393.338.304,00
US$ 59.000.745,00

Commercial Zone
332.879,00m²
US$ 758.964.120,00
US$ 113.844.618

PARTNERSHIP RESUME



FROM EACH ADDITIONAL SQUARE METER (US$ 2.280,00)

- Construction - US$ 570,00
- Services and Taxes - US$ 456,00
- Constructor's profit - US$ 912,00
- **City Hall's capture - US$ 342,00**

Additional constructive	732.143 m²
Additional constructive value	US$ 1.669.286.500,00
Implemention costs	**US$ 174.350.000,00**
Value capture	**US$ 250.393.000,00**

5. THE MODEL

THE MODEL CAN BE APPLICABLE ON OTHER AREAS OF THE CITY THAT HOLD THE SAME FRAGILE CONDITIONS, WITH LOW LAND LEVELS AND A STRONG POTENTIAL FOR URBANIZATION

EXAMPLES:

Guaratiba neighborhood (Piracão hydrographic basin) and Vargens (Cortado and Portelo canals hydrographic basins).


VARGENS
AREA OF STUDY
GUARATIBA
Rio de Janeiro - R

URBAN MANAGEMENT GROUP

AIRTON MELGAÇO - SMAC

ALINE XAVIER - IRPH

LELIO POLESSA - SMU

LUCIENE ARDENTE – RIOURBE

PAULO FONSECA – RIO-AGUAS

PEDRO ROLIM - SMU

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MR. PEDRO RIVERA

STUDIO X

MRS. ELAINE BARBOSA AND THE GREEN CORRIDOR PROGRAM STAFF

GREEN AREAS COORDINATOR (SMAC)