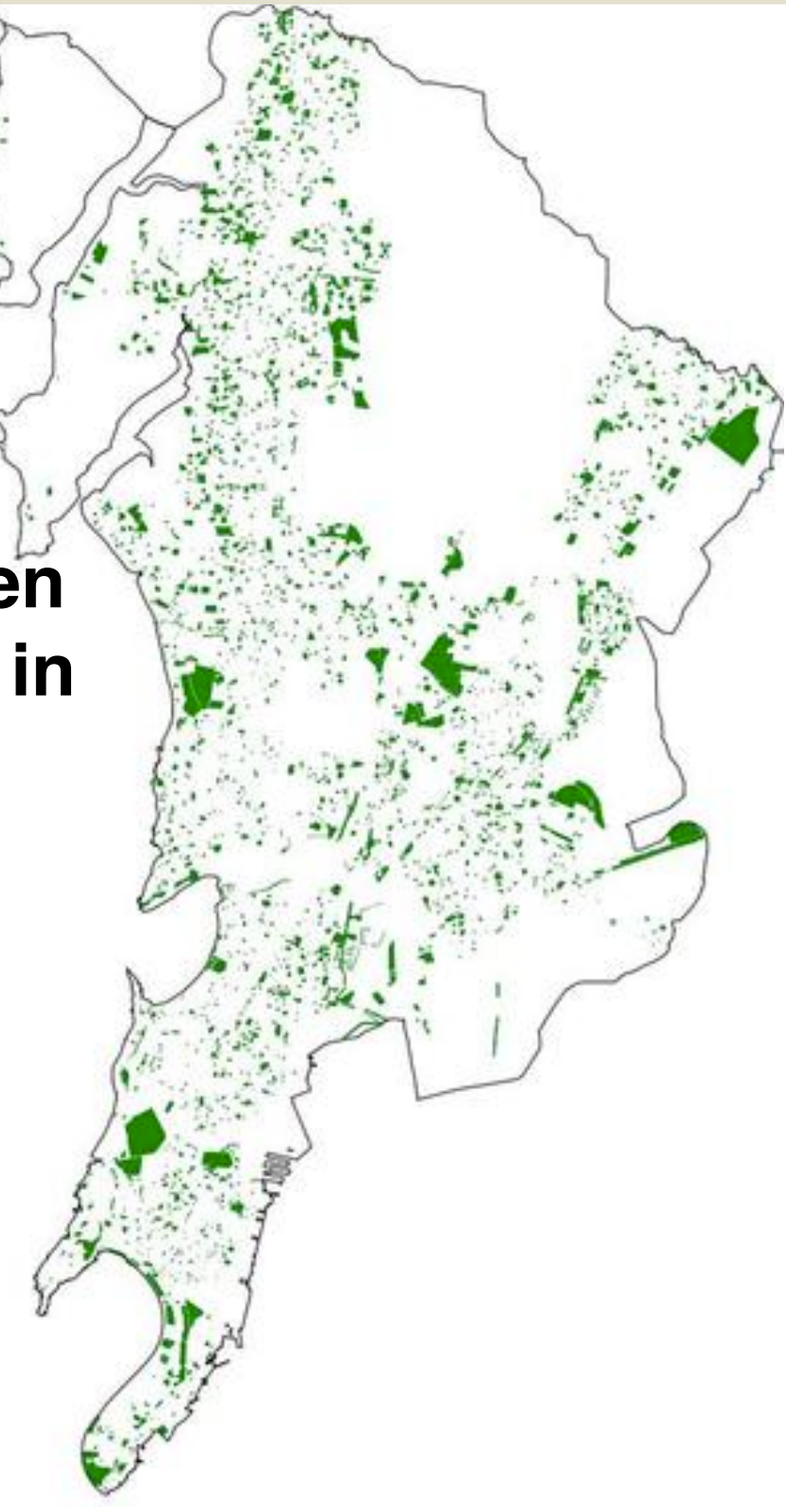
Accessibility of designated open spaces to informal settlements in Mumbai

A ward-wise study of designated open spaces

Abhijit Ekbote



KRVIA

Local Dissemination Workshop

15th and 16th September, 2017. KRVIA, MUMBAI

BUILDING INCLUSIVE URBAN COMMUNITIES

DONAU UNIVERSITÄT KREMS

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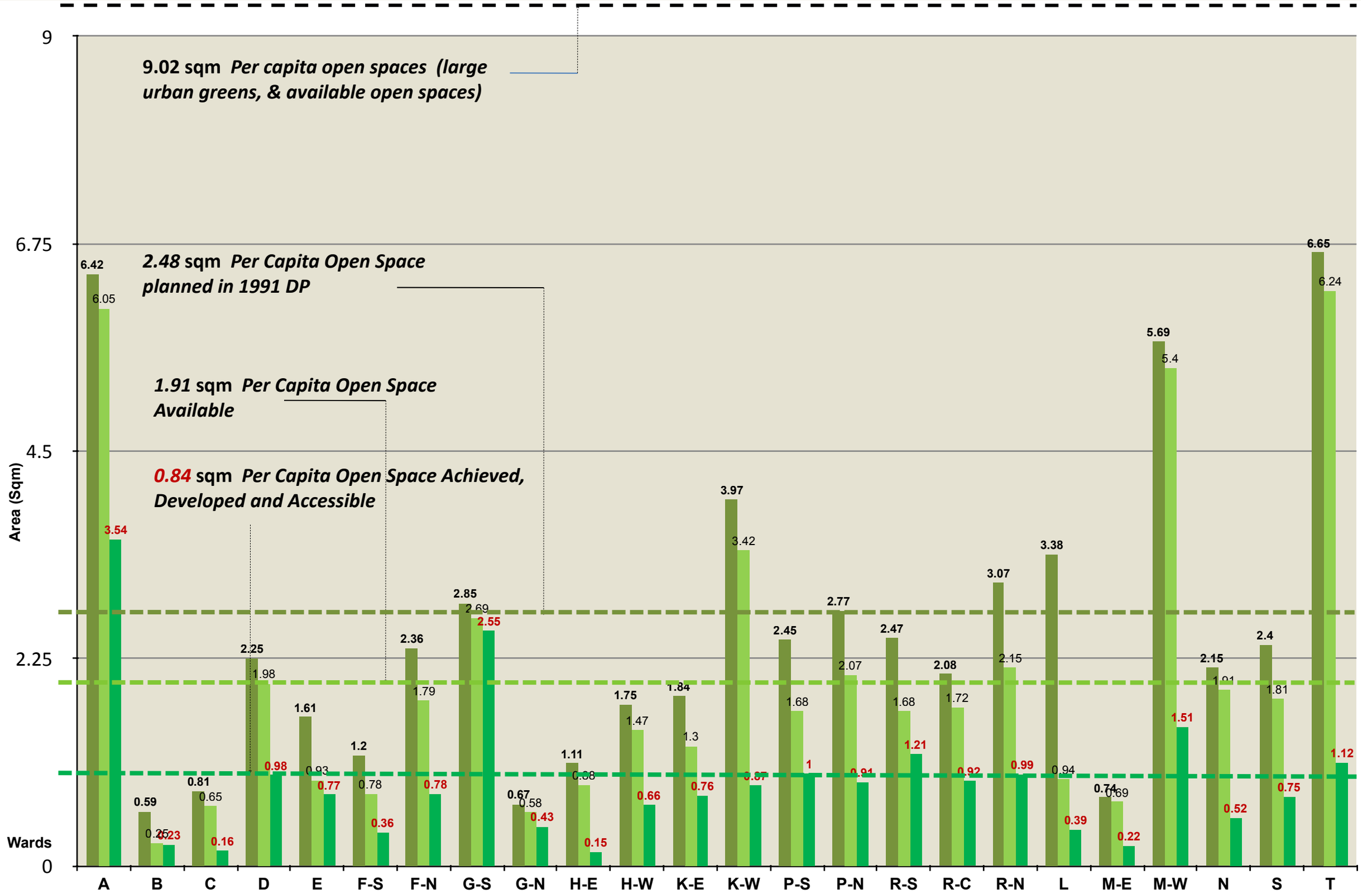
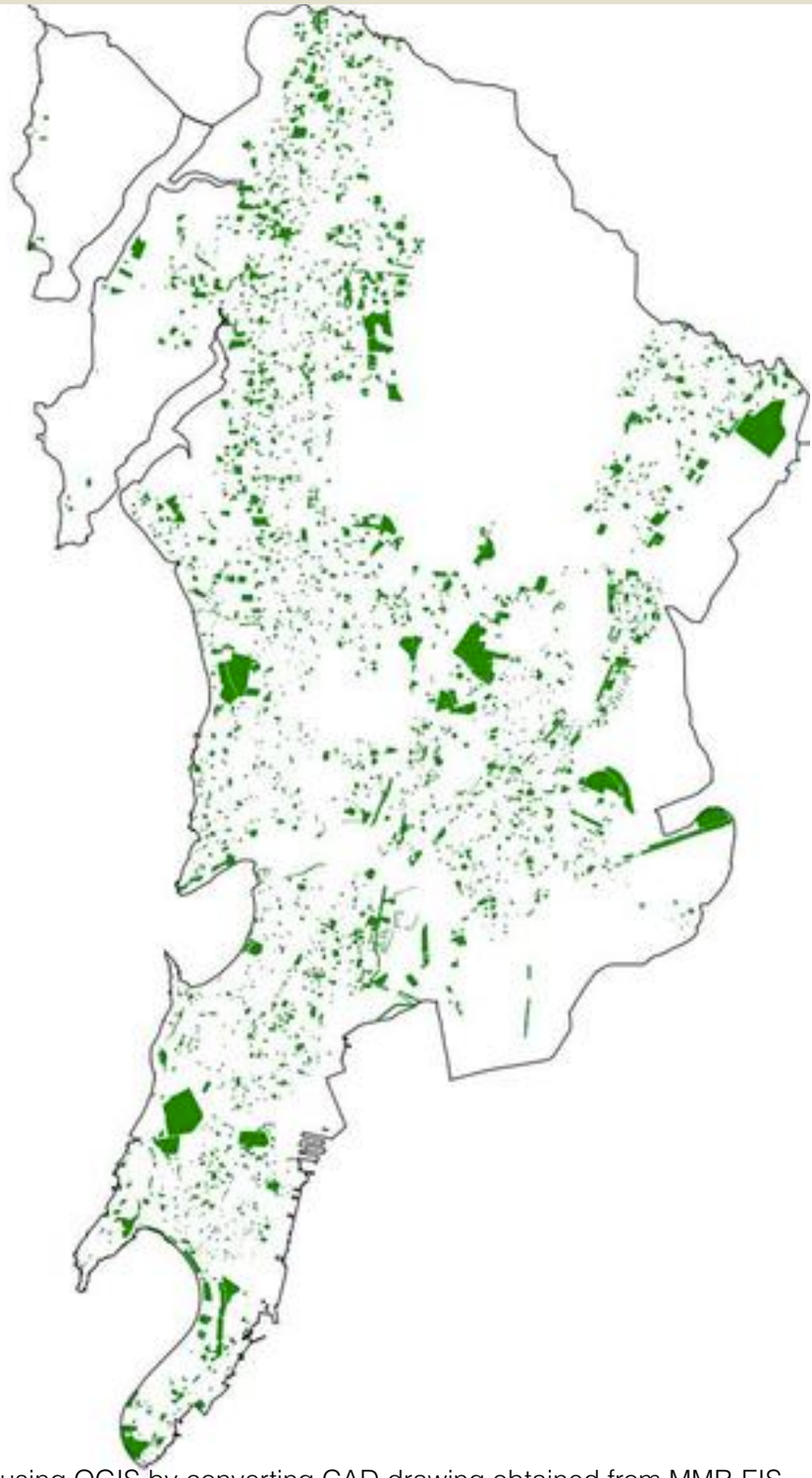


Source: As per MMR-EIS report on Open Spaces and Water Bodies of Mumbai by Adarkar Associates

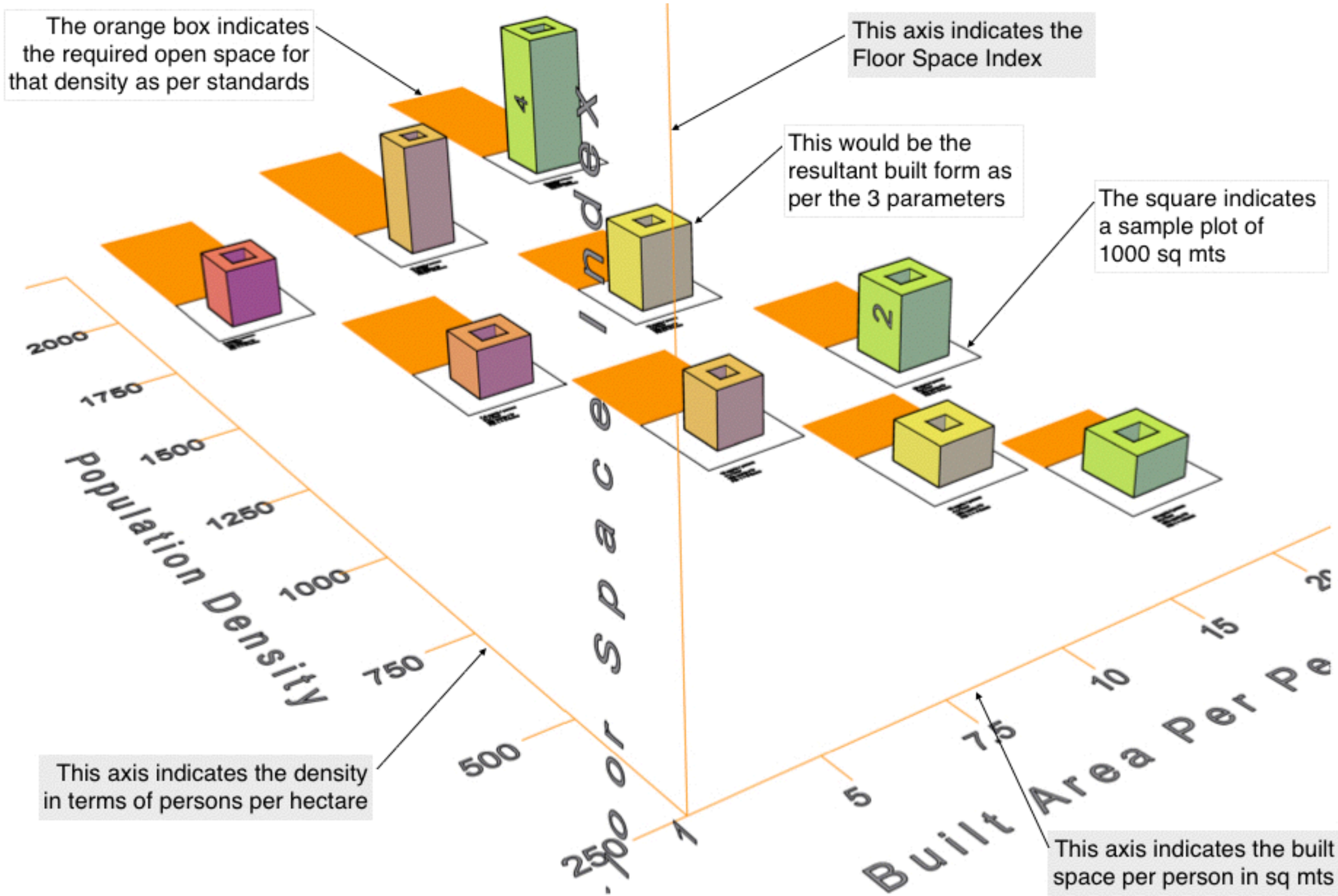
Per Capita Open Space

< 0.9 sq.mts?

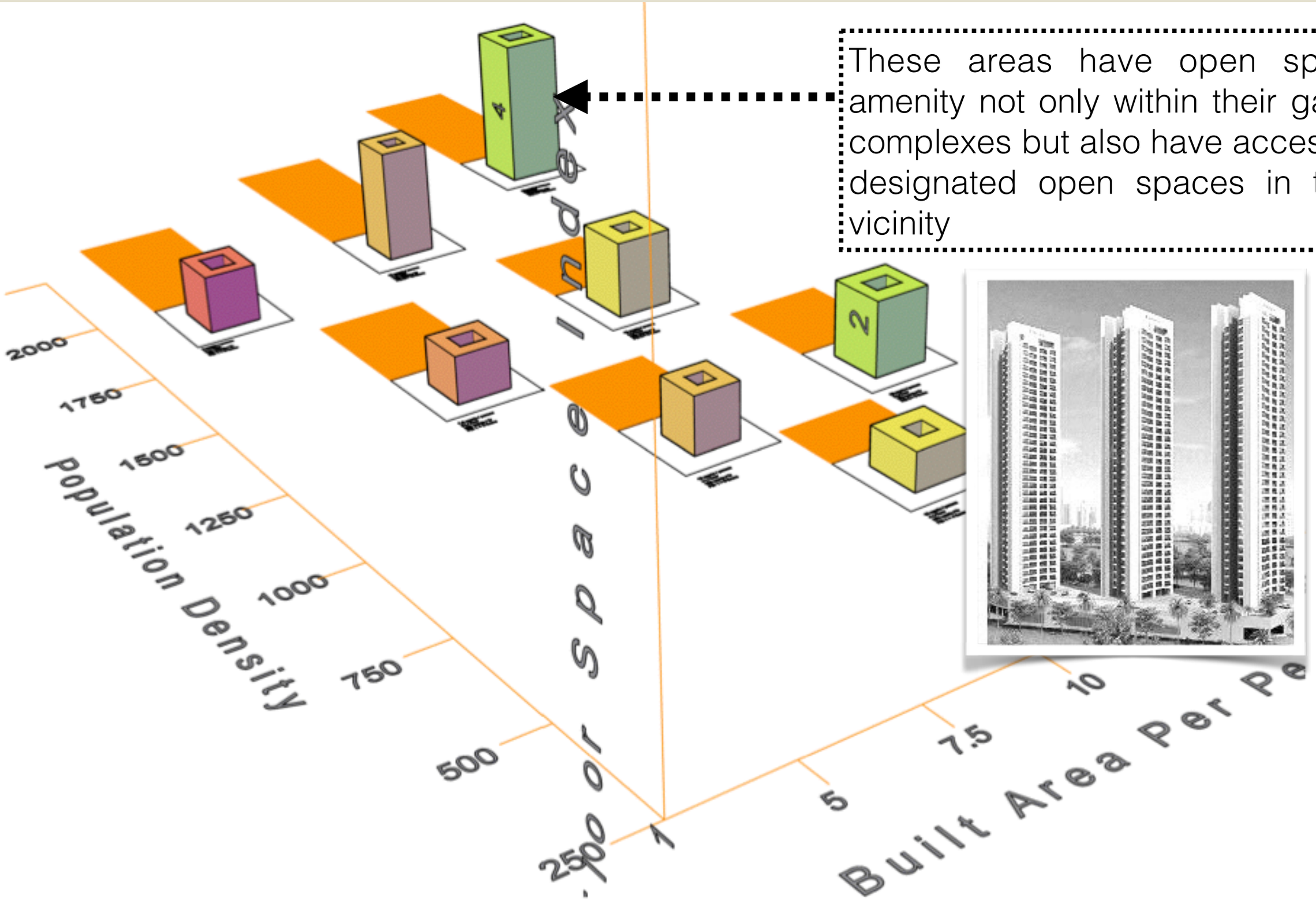


Source: Map created by Abhijit Ekbote using QGIS by converting CAD drawing obtained from MMR-EIS
*As per MMR-EIS report on Open Spaces and Water Bodies of Mumbai by Adarkar Associates

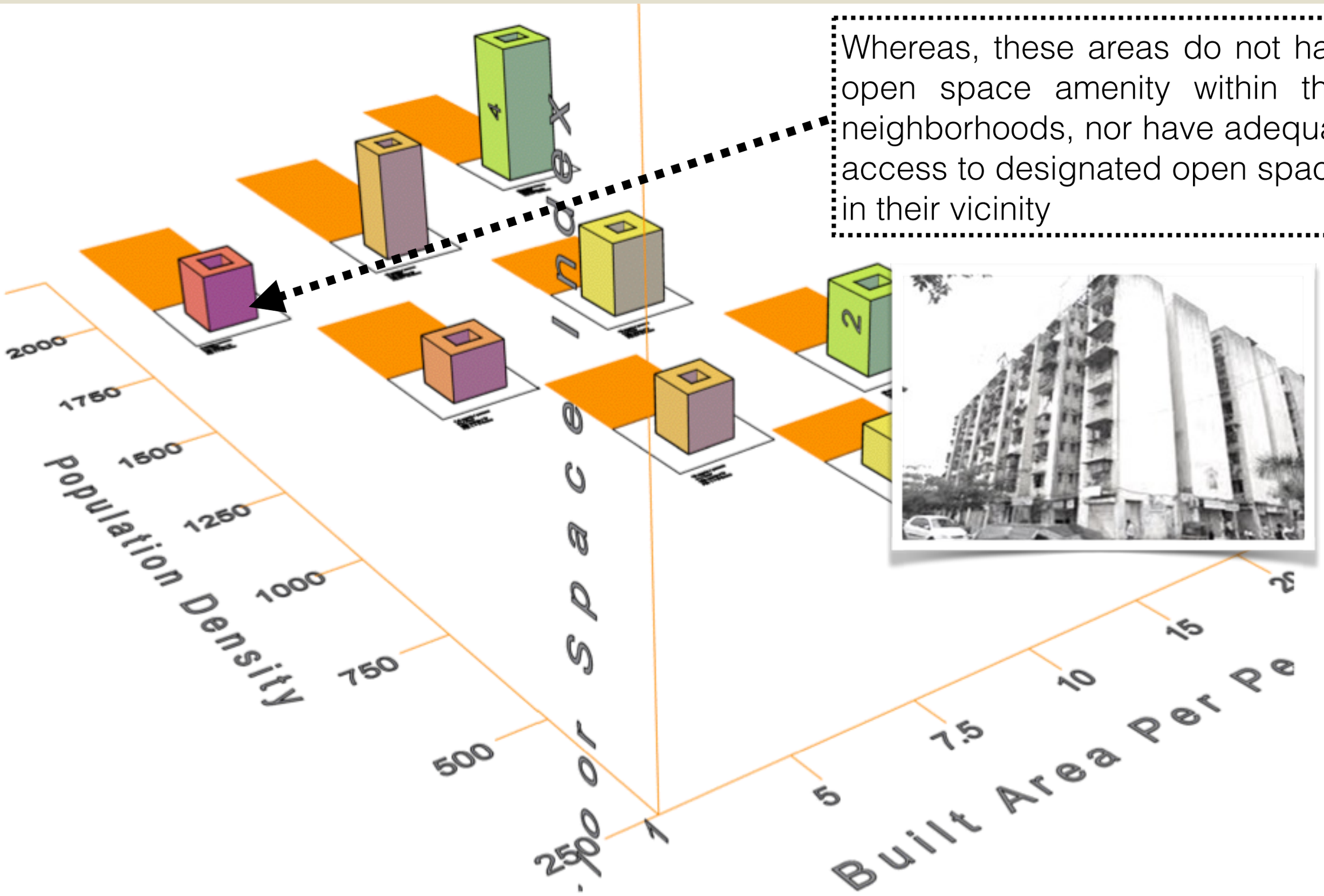
In the case of Dharavi, the required open space as per standards is more than the area of Dharavi itself, indicated by the dotted square.


The orange box indicates the required open space for that density as per standards
This axis indicates the Floor Space Index
This would be the resultant built form as per the 3 parameters
The square indicates a sample plot of 1000 sq mts
This axis indicates the density in terms of persons per hectare
This axis indicates the built space per person in sq mts
Population Density
2000
1750
1500
1250
1000
750
500
250
Floor Space Index
4
2
1
Built Area Per Person
5
10
15

These areas have open space amenity not only within their gated complexes but also have access to designated open spaces in their vicinity



Whereas, these areas do not have open space amenity within their neighborhoods, nor have adequate access to designated open spaces in their vicinity



Issues and Concerns of the Study

What

The protected open spaces
Informal Settlements
Nature of Linkages

How

Mixed methods & strategies of mapping can be applied so that the parameters affecting accessibility are documented
Designing a toolkit to understand the accessibility of protected open spaces

Why

Gauging the present status of accessibility
Arriving at possible strategies for increasing the Accessibility Index of protected open spaces, by informal housing areas

Project Schema

Converting the existing raw data in GIS.

Identifying and collecting data for additional qualitative parameters indicating degree of accessibility.

Developing a WebGIS Tool for representing and publishing the degree of accessibility of open space data for Mumbai.

1

Project Method

Sorting of existing available data on the open spaces in a ward.

Geo-referencing the ward sheets showing open spaces with site numbers.

Vectorizing open spaces and entering respective site numbers as attribute.

Joining CSV data table to the vector file and cleaning the parameter names.

Compiling the existing MMR-EIS data for all open spaces in the ward.

Intended Learnings

Data Organization

Method of creating a base layer

Design of Attribute Structure

Vector Data Creation

The method and intended learnings through the curriculum of GIS

Project Schema

Converting the existing raw data in GIS.

2

Identifying and collecting data for additional **qualitative parameters** indicating degree of accessibility.

Developing a WebGIS Tool for representing and publishing the degree of accessibility of open space data for Mumbai.

Project Method

Identification of Qualitative Parameters which will be mapped through cognitive mapping.

Visualizing a list of Qualitative Maps which would be required to understand Degree of Accessibility.

Visiting the designated open spaces, mapping the qualitative parameters and entering them in the existing database.

Intended Learnings

Using GIS to document softer and non-measurable parameters.

Relationship between the desired maps for the argument and creation of data structure.

The method and intended learnings through the curriculum of GIS

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Project Schema

Converting the existing raw data in GIS.

Identifying and collecting data for additional **qualitative parameters** indicating degree of accessibility.

3

Developing a WebGIS Tool for representing and publishing the degree of accessibility of open space data for Mumbai.

Project Method

Learning HTML & Javascript coding languages, along with open source WebGIS platforms such as OpenLayers, Leaflet and GeoServer.

Conceptualizing modes of visually representing degree of accessibility.

Publishing data.

Intended Learnings

Degree of accessibility can inform the nature of strategies to ensure equitable distribution of open space amenity.

The method and intended learnings through the curriculum of GIS

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The first stage was divided in 3 parts, Geo-referencing, Vectorization & Joining Data

Converting the existing raw data in GIS.

Part 1

Sorting of existing available data on the open spaces in a ward.

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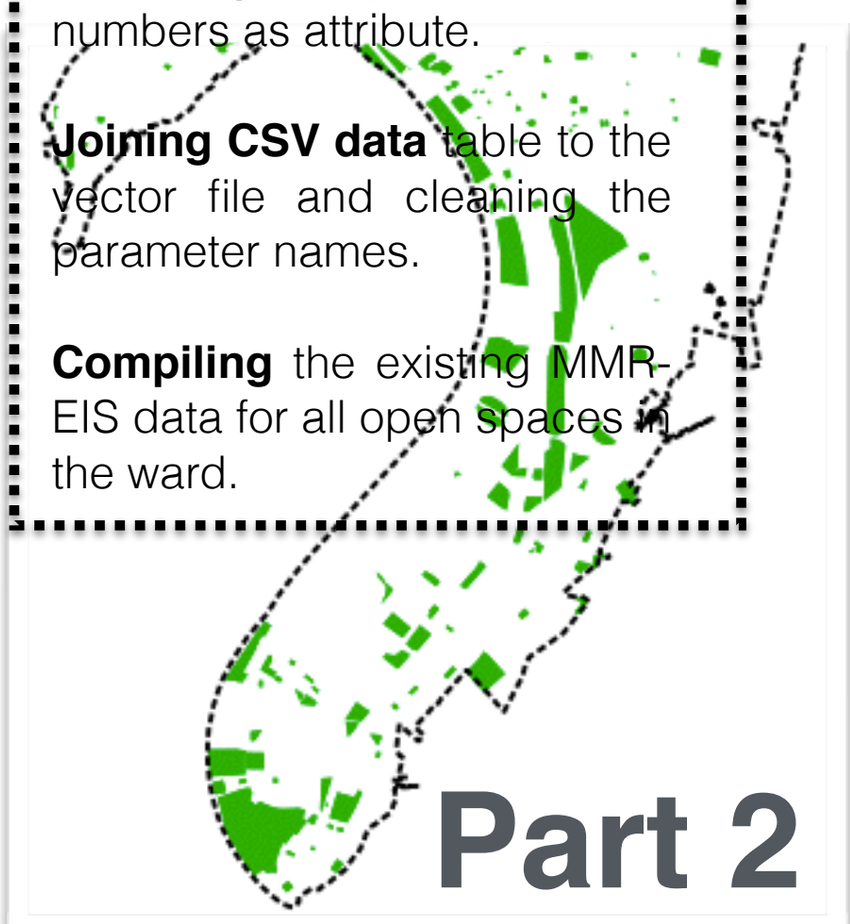


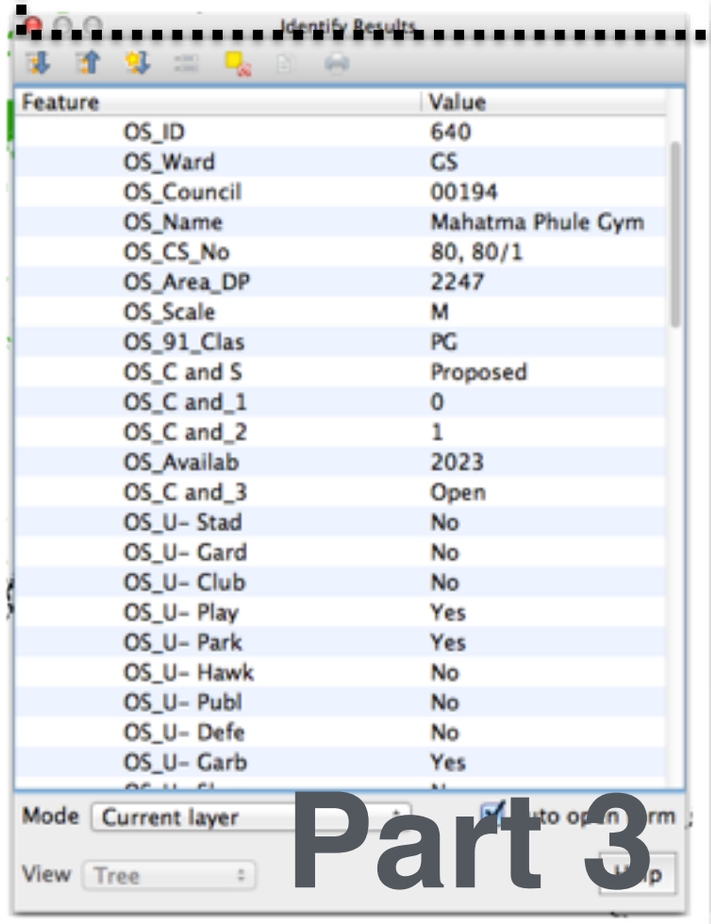
Part 2

Data Organization

Method of creating a base layer

Design of Attribute Structure

Vector Data Creation



Part 3

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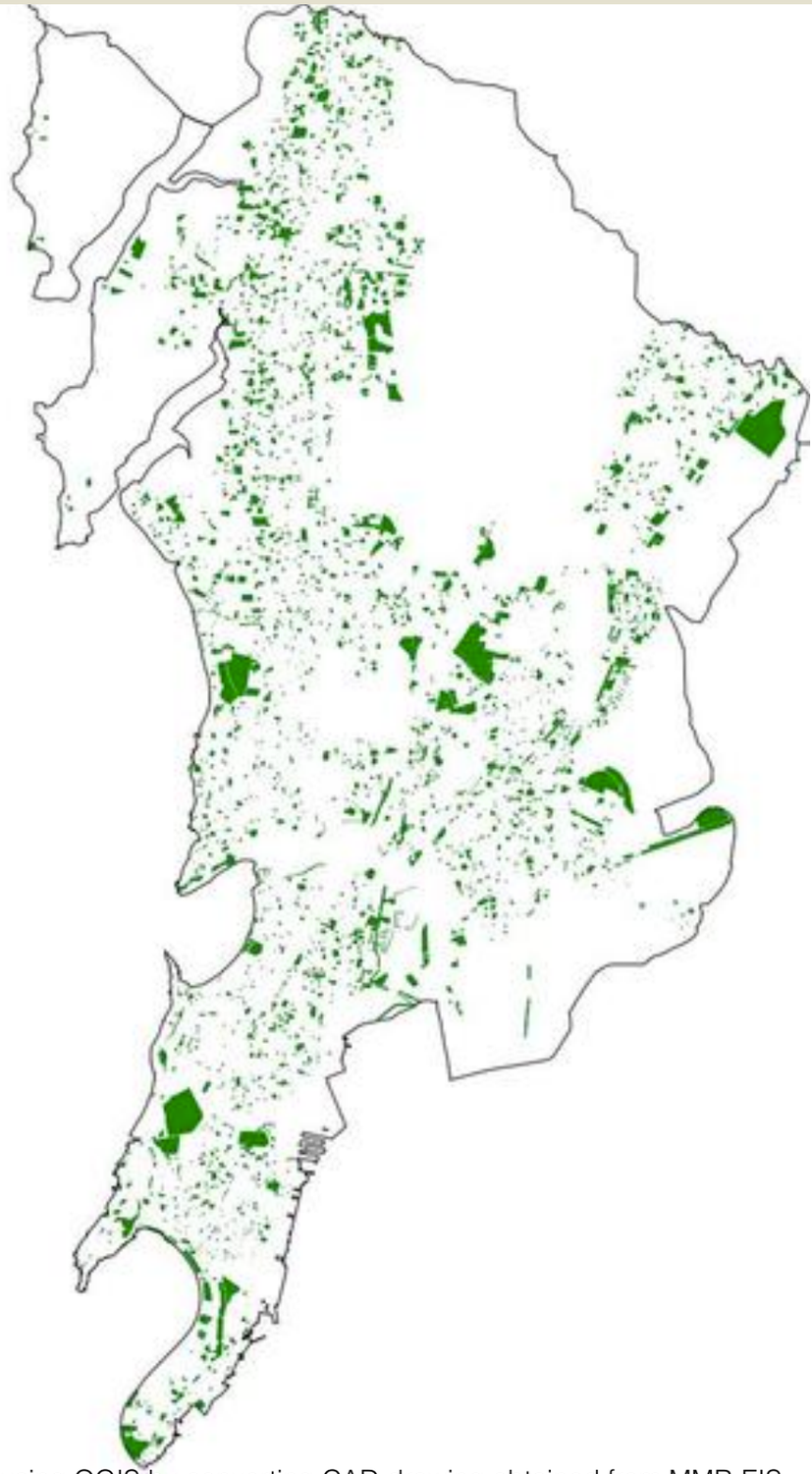
At present the 2nd part of study is under compilation, so that the 3rd Part can begin, which is **identification of qualitative parameters.**



Source: Map created by Abhijit Ekbote using QGIS by converting CAD drawing obtained from MMR-EIS
*As per MMR-EIS report on Open Spaces and Water Bodies of Mumbai by Adarkar Associates

Activity for Local Dissemination Workshop

Accessibility of Designated Open Spaces to Informal Settlements
Case: K West Ward

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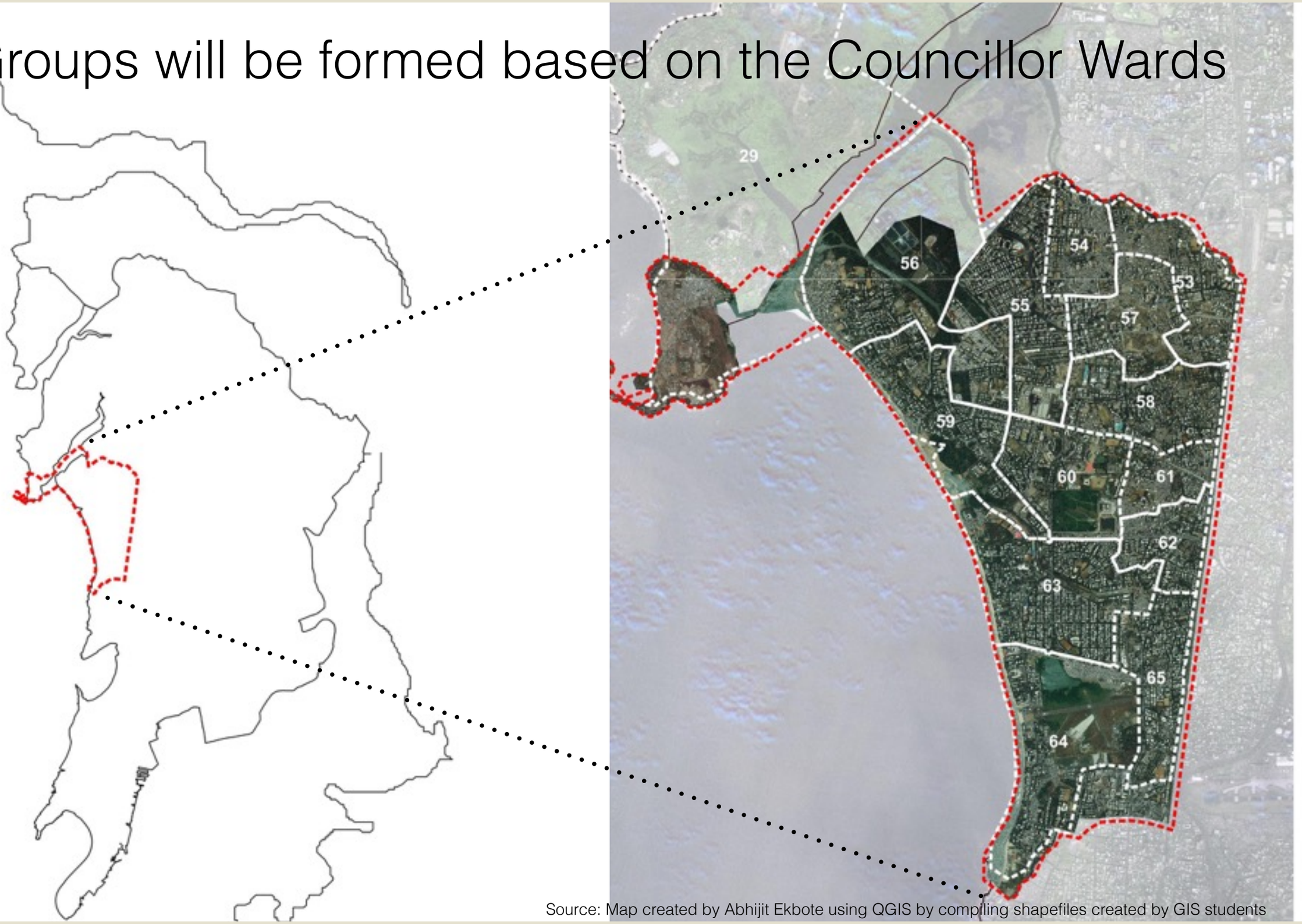
K West Ward of Mumbai will be taken as a study area

Source: Map created by Abhijit Ekbote using QGIS by compiling shapefiles created by GIS students

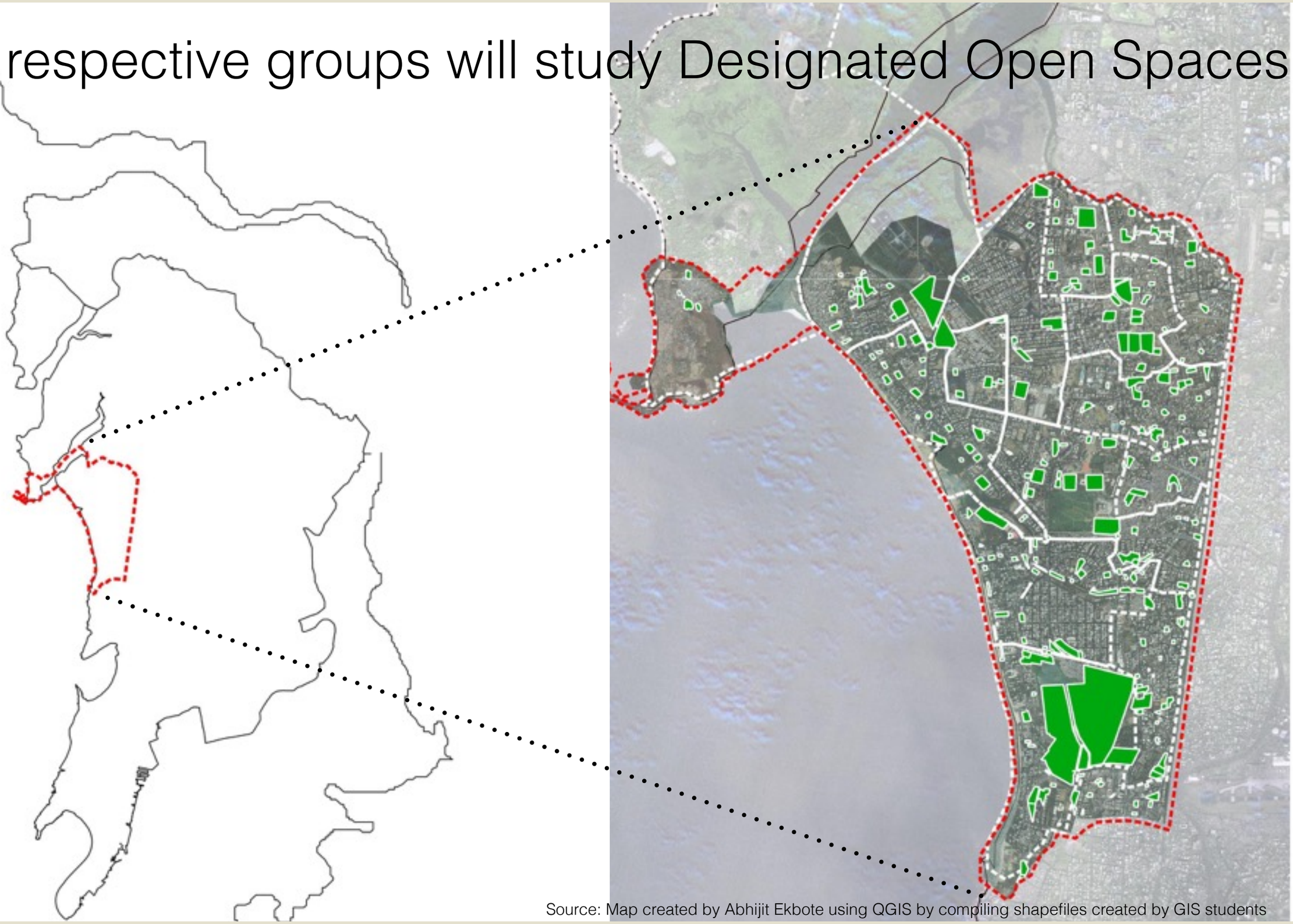
Funded by the Erasmus+ Programme of the European Union

Groups will be formed based on the Councillor Wards



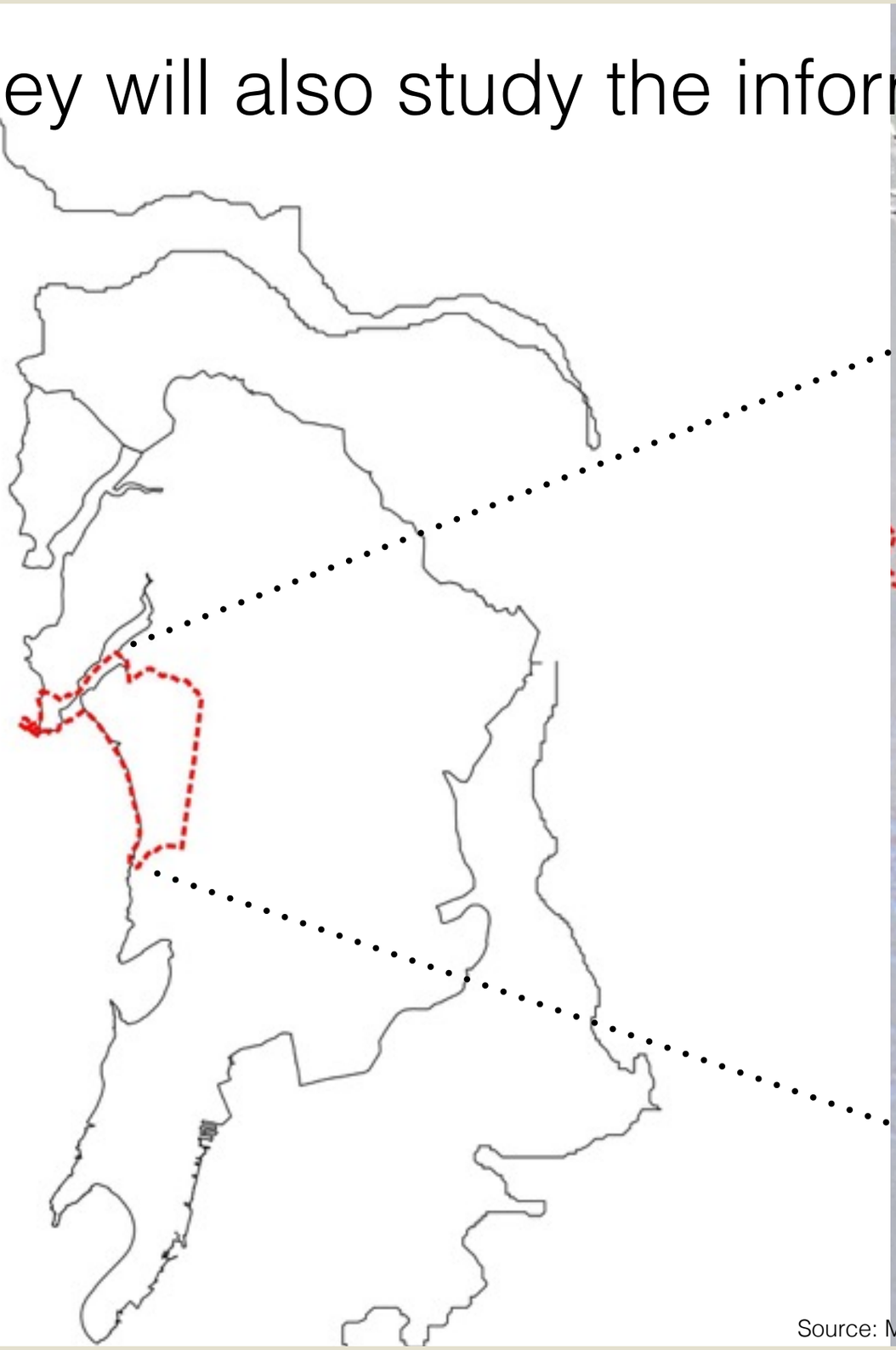
Source: Map created by Abhijit Ekbote using QGIS by compiling shapefiles created by GIS students

The respective groups will study Designated Open Spaces



Source: Map created by Abhijit Ekbote using QGIS by compiling shapefiles created by GIS students

They will also study the informal settlements in the ward



Source: Map created by Abhijit Ekbote using QGIS by compiling shapefiles created by GIS students

Each group will put together their learnings about Designated Open Spaces & Informal Settlements

Source: Map created by Abhijit Ekbote using QGIS by compiling shapefiles created by GIS students

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The workshop will focus on the councillor wards with respect to the relationship between the designated open spaces and their accessibility by informal housing areas.

Part 1: Assessing the current situation from the available open space data of MMREIS

Part 2: Creating a broad outline of parameters which are responsible for quality of life and wellbeing before visiting the sites.

Part 3: Visiting the councillor wards in groups and carrying out mapping exercise using simple mobile devices / GPS / questionnaires / etc.

Part 4: Compiling the learnings through analytical maps.

Format for on-site Data Collection to be used by each group

Ward No	
Site No	
Area of Ward	
Total Population	
Total Informal Settlers	
Total Area of Designated OS	

Data collection sheet for on-site documentation of open spaces and informal settlements

No.	PARAMETERS	SUB-PARAMETERS	ATTRIBUTES	Values	Value of accessibility based on access by informal settlers	Remarks
1	**Scale**		Small			
			Medium			
			Large			
2	**Classification & Status**	DP Classification	RG			
			PG			
			G			
			Other			
		DP Condition	Existing			
			Proposed			
		% Built-up	10%, 20%, etc			
		Existing Condition	Open			
			Semi-occupied			
			Occupied			
3	**Usage**	Stadium	Yes / No			
		Garden	Yes / No			
		Club	Yes / No			
		Playground	Yes / No			
		Parking	Yes / No			
		Hawking	Yes / No			
		Public Utilities	Yes / No			
		Defecation	Yes / No			

Format for on-site Data Collection to be used by each group

No.	PARAMETERS	SUB-PARAMETERS	ATTRIBUTES	Values	Value of accessibility based on access by informal settlers	Remarks
		Garbage	Yes / No			
		Slums	Yes / No			
		Land not in use	Yes / No			
		Construction on site	Yes / No			
4	**Occasional Use**	Recreational	Yes / No			
		Religious	Yes / No			
		Sports	Yes / No			
		Political	Yes / No			
5	**Ownership**	Owner	MCGM			
			MHADA			
			Defence			
			MMRDA			
			BPT			
			Private			
		Maintained by	Owner			
			Current User			
			Any Other			
			None			
6	**Maintenance**	Extent of Maintenance	Good			
			Fair			
			Poor			
			None			
		Staff Employed	Security Guard			
			Gardener			
			Both			
			None			
7	**Predominant User**	Age Group	Children			

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Format for on-site Data Collection to be used by each group

No.	PARAMETERS	SUB-PARAMETERS	ATTRIBUTES	Values	Value of accessibility based on access by informal settlers	Remarks
			Youth			
			Adults			
			Senior Citizens			
			All			
		No of People Daily	Upto 200			
			200 to 500			
			Above 500			
		Socio-economic Group	Poor			
			Middle Class			
			Rich			
			All			
		Gender	Male			
			Female			
			Both			
		Catchment Area	Upto 2 km			
			2 to 5 km			
			Above 5 km			
		Time of the day used	Morning			
			Afternoon			
			Evening			
			Morning & Evening			
			Whole Day			
8	**Infrastructure & Facilities**	Water Supply	Good / Fair / Poor / None			
		Drainage	Good / Fair / Poor / None			
		Lights	Good / Fair / Poor / None			
		Toilets	Good / Fair / Poor / None			
		Garbage Bins	Good / Fair / Poor / None			

Format for on-site Data Collection to be used by each group

No.	PARAMETERS	SUB-PARAMETERS	ATTRIBUTES	Values	Value of accessibility based on access by informal settlers	Remarks
		Jogging Track	Yes / No			
		Play Equipment	Yes / No			
		Sitting Area	Yes / No			
		Nursery	Yes / No			
		Caretaker's Room	Yes / No			
9	**Accessibility**	Knowledge about site	Known			
			Not Know			
		Visibility	Visible from 50m			
			Not visible			
		Edge Condition	Defined			
			Not Defined			
		Entry to site	Free			
			Fee charged			
			Restricted			
			Inaccessible			
10	**Surrounding Land Use**	Predominant Land Use	Residential			
			Commercial			
			Industrial			
			Religious			
			Institutional			
			Slums			
			Mixed			
		Population Density	Low			
			Fair			
			High			
		Flooding	Yes / No			
		Landslides	Yes / No			

Format for on-site Data Collection to be used by each group

No.	PARAMETERS	SUB-PARAMETERS	ATTRIBUTES	Values	Value of accessibility based on access by informal settlers	Remarks
		Defecation	Yes / No			
		Garbage dumping	Yes / No			
		Sewage disposal	Yes / No			
		Debris dumping	Yes / No			
		No of OS in 1km Radius	0 / 1 / 2 / 3.....			
		Predominant OS in vicinity	RG / PG /			
11	**Threats**	Private Appropriation	Yes / No			
		On-going Construction	Yes / No			
		Acquired for Infrastructure	Yes / No			
		Unwanted Activities	Yes / No			
12	**Environment**	Vegetation Type	Dense			
			Fair			
			Sparse			
			Barren			
			Open Scrub			
		Low Lying	Yes / No			
		Salt Pans / Mangroves	Yes / No			
		Rocky / Steep Slopes / Hill	Yes / No			
Accessibility Index						

The workshop will conclude with identification of Accessibility Indices and additional Qualitative Parameters to be included and mapped.

Learnings from the Local Dissemination Workshop

Reviewers:- Neera Adarkar, Sitaram Shelar, Javier Martinez & Jeroen Verplanke

'Qualitative Parameters' to be added :-

1. Income Group
2. Land Rate
3. Intimidation
4. Vacant / Un-built Areas with Informal Settlements
5. Citizen Group Awareness
6. Community Perception
7. Community Structures
8. Political Will of the Councillor

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Learnings from the Local Dissemination Workshop

Reviewers:- Neera Adarkar, Sitaram Shelar, Javier Martinez & Jeroen Verplanke

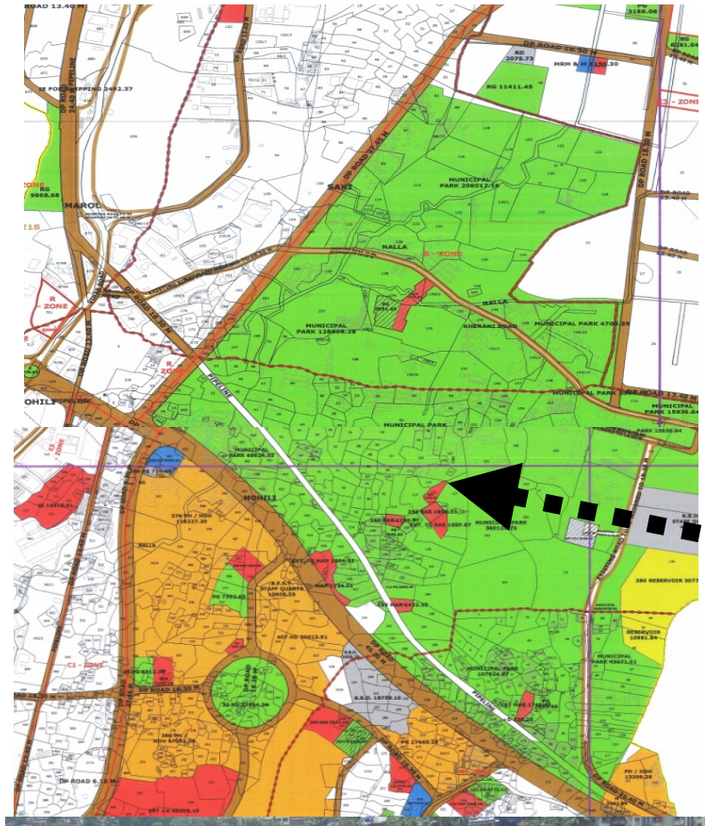
Suggested Method :-

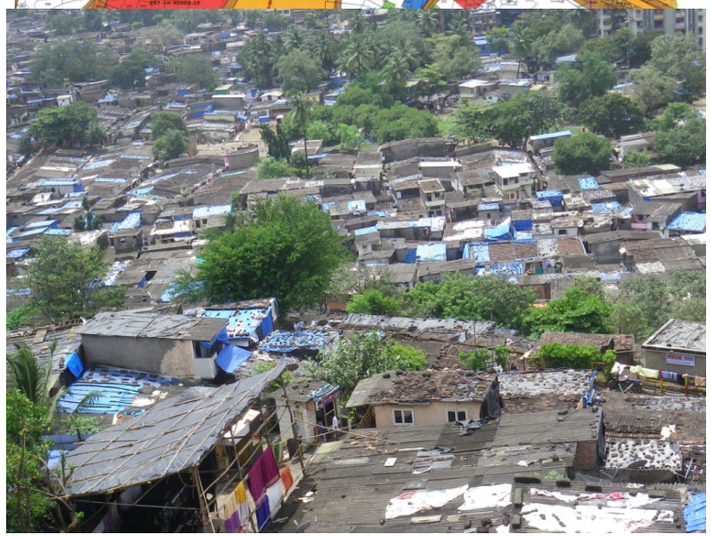
1. Focus the study on Designated Open Spaces marked on informal settlements.

2. Then apply the ‘Qualitative Parameters’ using GIS to understand the typologies emerging.

Learnings from the Local Dissemination Workshop

Reviewers:- Neera Adarkar, Sitaram Shelar, Javier Martinez & Jeroen Verplanke





1. Income Group
2. Land Rate
3. Intimidation
4. Vacant / Lived Open Spaces within Informal Settlements
5. Citizen Group Awareness
6. Community Perception
7. Community Structures
8. Political Will of the Councillor
9.

Source: Map & Photo from MMR-EIS report on Open Spaces and Water Bodies of Mumbai by Adarkar Associates

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Thank you

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