



AHMEDABAD URBAN DEVELOPMENT AUTHORITY

Our initiative towards a
sustainable tomorrow



GOAL



Increase Green Cover in AUDA area

OBJECTIVES

High Density Plantation Programme by **Miyawaki** and Traditional methods to Increases the Green Cover in the Urban Areas.

The High Density Plantation helps in improving Bio Diversity, Control Pollution and Reduce Co₂ in the Atmosphere.

The High Density Plantation can be done in **BLOCK** or **LINEAR** mode to utilised undeveloped pockets also

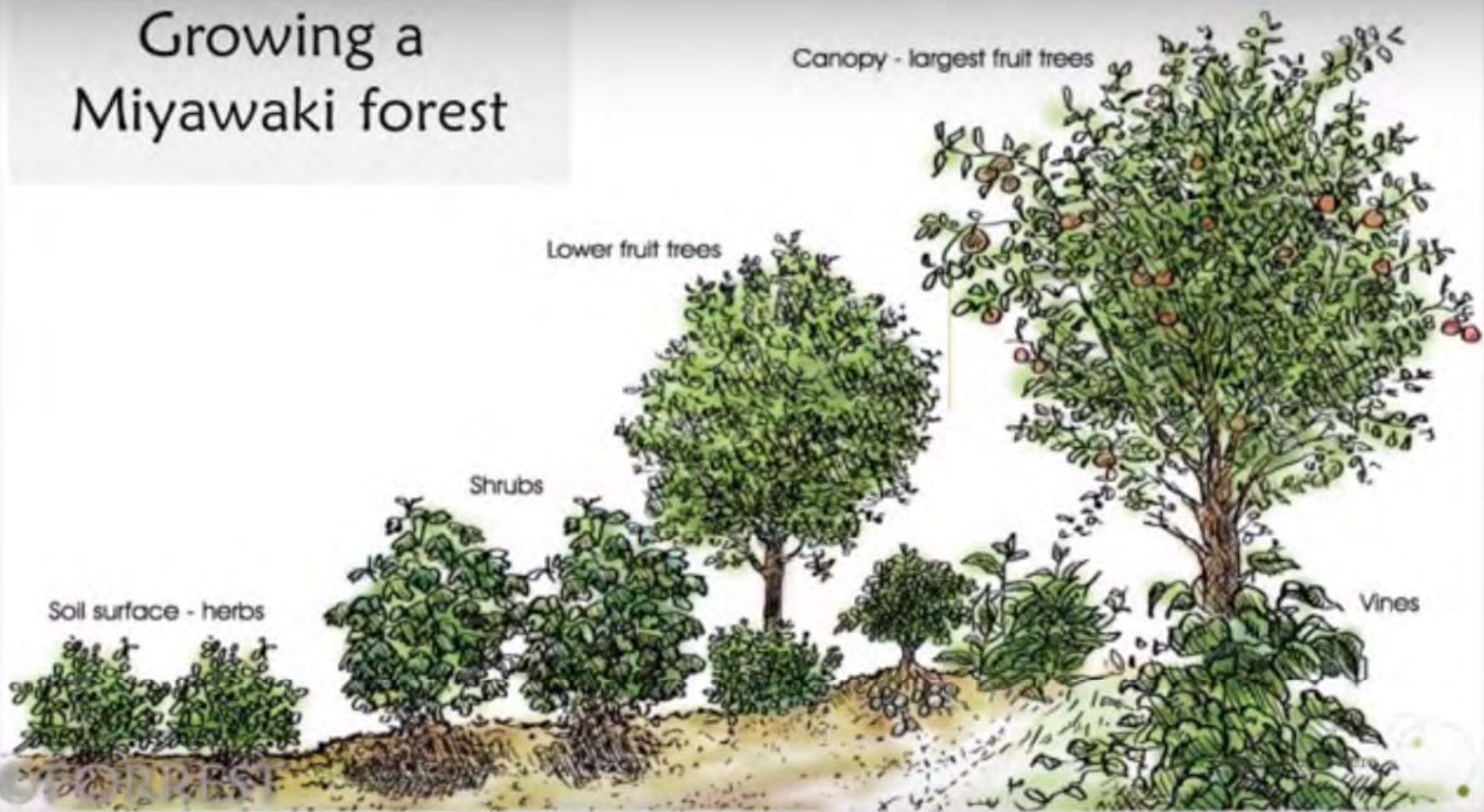
Plantation can be chosen from 50 common local species

MIYAWAKI METHOD FOR DENSE FOREST

THE ANSWER TO CITIES WHICH ARE TURNING TO CONCRETE JUNGLES



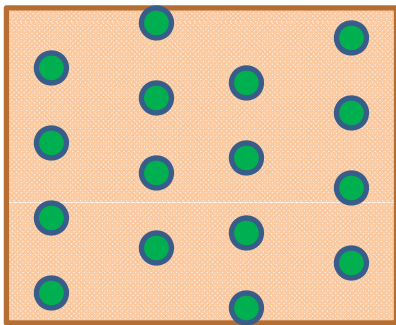
Growing a Miyawaki forest



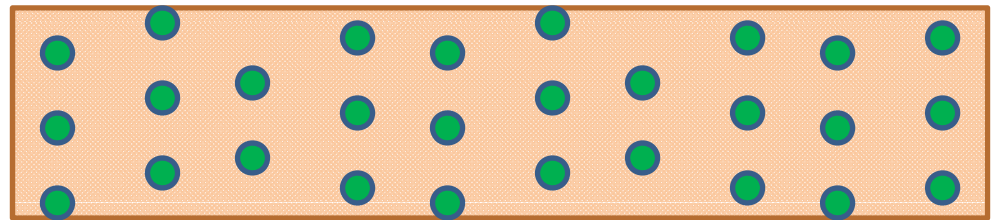
PLANTATION AREA

Block/Linear

Sr. No.	Units	Block (mt.)	Linear (mt.)
1	Width	2	1
2	Depth	0.6	0.6
3	Length	Depends on the site	



Block



Linear

1.5 feet space b/n Plants to Plants and Row to Row uniformly

30 trees per 100 sq.ft

CASE EXAMPLES of linear Area

Ahmedabad

Creating usable green community spaces– including oxygen parks and forest trails, small forest plantations in industrial areas and open plots

1. OXYGEN PARKS

These parks would be dense parks with approximately 80% of the park area covered in dense plantation and basic walking tracks provided for the community. Acacia Eco is in discussion with AMC and other institutions for developing such parks.



Layout for Proposed Oxygen Park near Science City

2. PLANTATIONS IN DIFFICULT AREAS

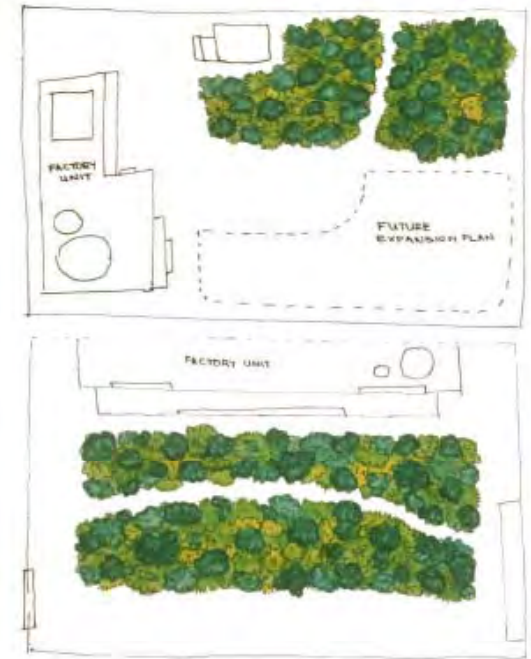
Acacia Eco is looking at executing projects in difficult areas – with arid soil and climate, high toxicity and lack of irrigation facilities. Currently the pipeline includes Little Rann of Kutch, around Pirana and Dholera smart city.



Sample roadside plantation near Pirana Dumping Ground

3. INSTITUTIONAL PLANTATIONS

Acacia Eco reaching out to educational industrial institutions (factories, GIDCs) to insert small plantations on the campuses – this would include boundary plantations, replacing lawns with forest plantations, and inserting forests in available spaces.



Plantation Layout for Factory Plantations done





20 Months



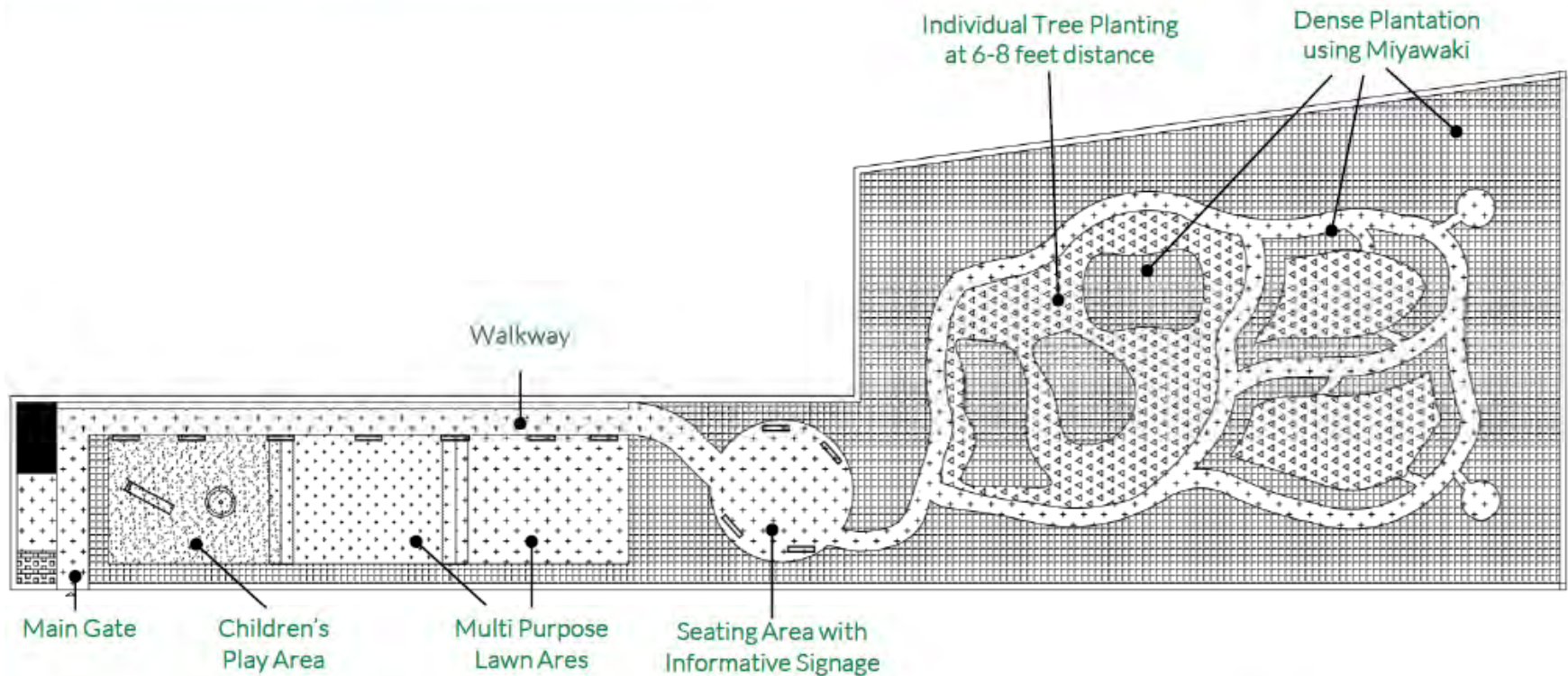
Affores 木木
Native. Wild. Forever.

CASE EXAMPLES of Block Area

Ahmedabad

Eco- Plan Oxygen Park Development

Park Design for Oxygen Park with amenities at Ugati Lake, Science City... Final design for each park would be done based on size and layout...



UGATI LAKE, SCIENCE CITY OXYGEN PARK HIGHLIGHTS

- This park will have around 25,000 trees!
- There will be lawn areas for morning activities, children play area etc
- There will be a 250m long forest walk surrounded by combination of forestation and individual trees (flowering and fruiting tree orchards)

MIYAWAKI FOREST		5757 SQ MT
WALKWAYS		2600 SQ MT
INDIVIDUAL TREES		1625 SQ MT
SAND AREA		535 SQ MT
LAWN AREA		535 SQ MT

CASE EXAMPLES



CASE EXAMPLES

Ahmedabad



OUTCOME

10 X Growth

Grow a 100 year old forest in 10 years

30 X Dense

30 times more dense forest area

100 X Biodiverse

More biodiversity in the area

100% Organic

Need of the hour

CASE EXAMPLES

Ahmedabad

List of native tree species used in forests. We use a minimum of 30 species in each forest based on soil type and plantation purpose

Diversity in tree species is a crucial element of the Miyawaki method and hence we try to use as many species as possible (usually at least 30 species). The final list and proportions of each species are determined based on soil type, purpose of plantation and availability. Proportions of species is determined based on purpose of plantation, for example

- Higher proportions of trees with maximum carbon absorption capacity are used in areas with high pollution and toxicity like factories, plantations in industrial areas etc.
- Higher proportion of flowering trees used in areas where aesthetics is important, like schools, parks, roadside plantations, community spaces etc.
- Higher number of fruiting and flowering trees are used in plantations at sites with security and maintenance like private residences, educational/industrial campuses etc.

Native Tree Species used for Plantation

Adusa	Gultora	Karanj	Raktchandan
Arjun	Gunda	Kodia	Saptapani
Ashok	Imli	Limbu	Saru
Badam	Jambu	Liso Shimdo	Sisu
Bahedo	Jamfal	Mahuda	Spethodia
Bili	Kachnar	Nagod	Setur
Borsali	Kadam	Neem	Sevan
Dadam	Kanja	Peltoforum	Tabubia
Garmalo	Kanji	Pink cassia	
Desi Saag	Karan	Ragatraydo	
Gulmohor	Kashid	Rain Tree	



Potential areas/spaces

Sr. No	Liner	cluster
1	Complete Green Streets	<ul style="list-style-type: none">•Parks,•Open Spaces•Gardens
2	Authority Public Purpose Plots including township public purpose plots	Contribution of land in Non TP area
3	Administrative Constrain Underutilized spaces	Grazing Land

Linear area/ space

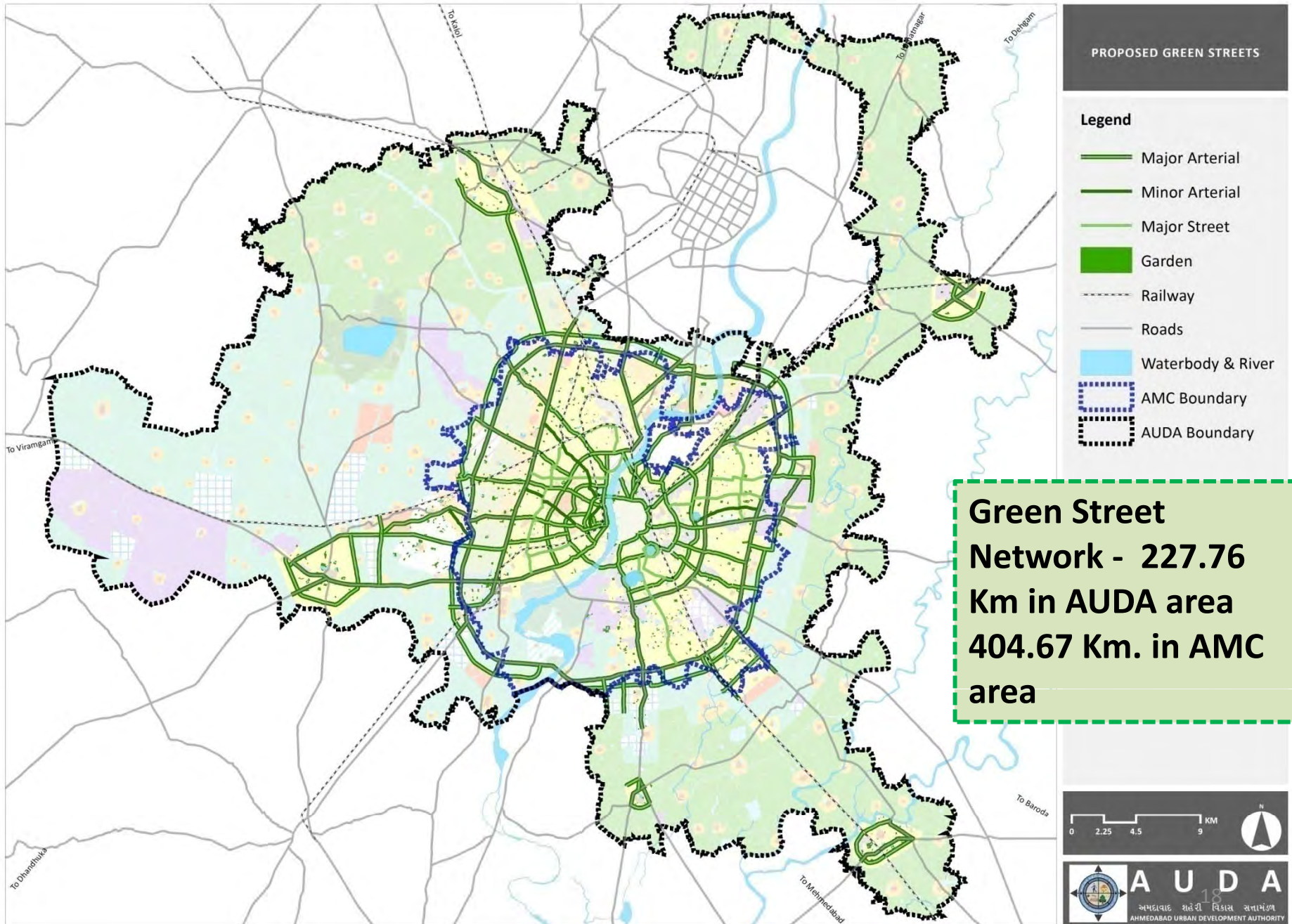
Green Street

Green Streets

- Green streets can behave as green public spaces where a variety of recreational and leisure activities can take place.
- These should be planned to connect multiple significant parks, plazas and open spaces within the city and to form a citywide “green network”.
- **Planned green streets:**
These include streets that have planned tree plantation and street landscaping elements.
- **Unplanned green streets:**
These include existing streets that have extensive tree cover which is unplanned and unprotected.



Green Street Network in AUDA area

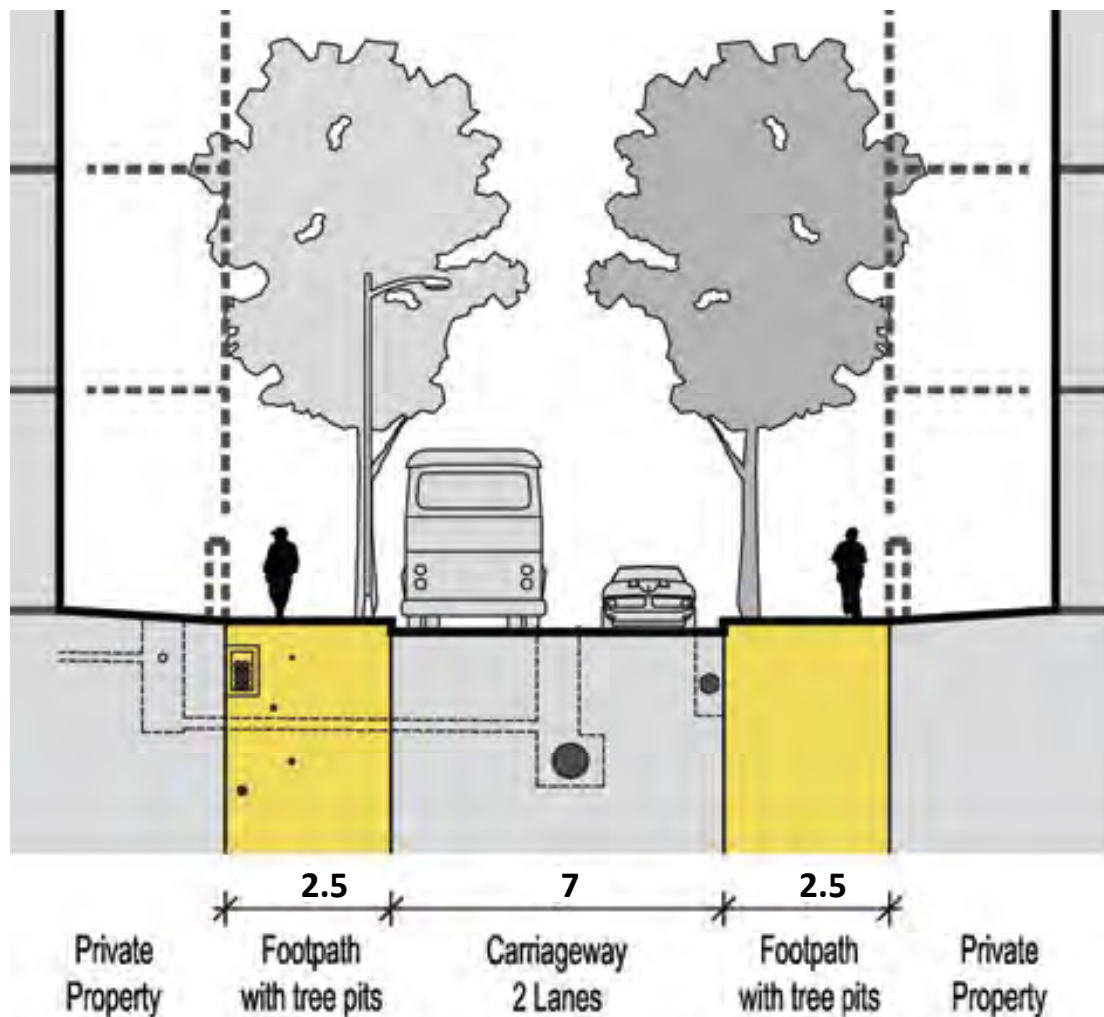


Existing Green Street in Ahmedabad



Location: Shahibag

12 m Street Section



Total no. of trees can be planted on both the side of the road – 400 per 1 Km (Shaded)

Total Existing Road Length: 78.483 Km

Total No. of Trees can be planted on existing road: **31,393**

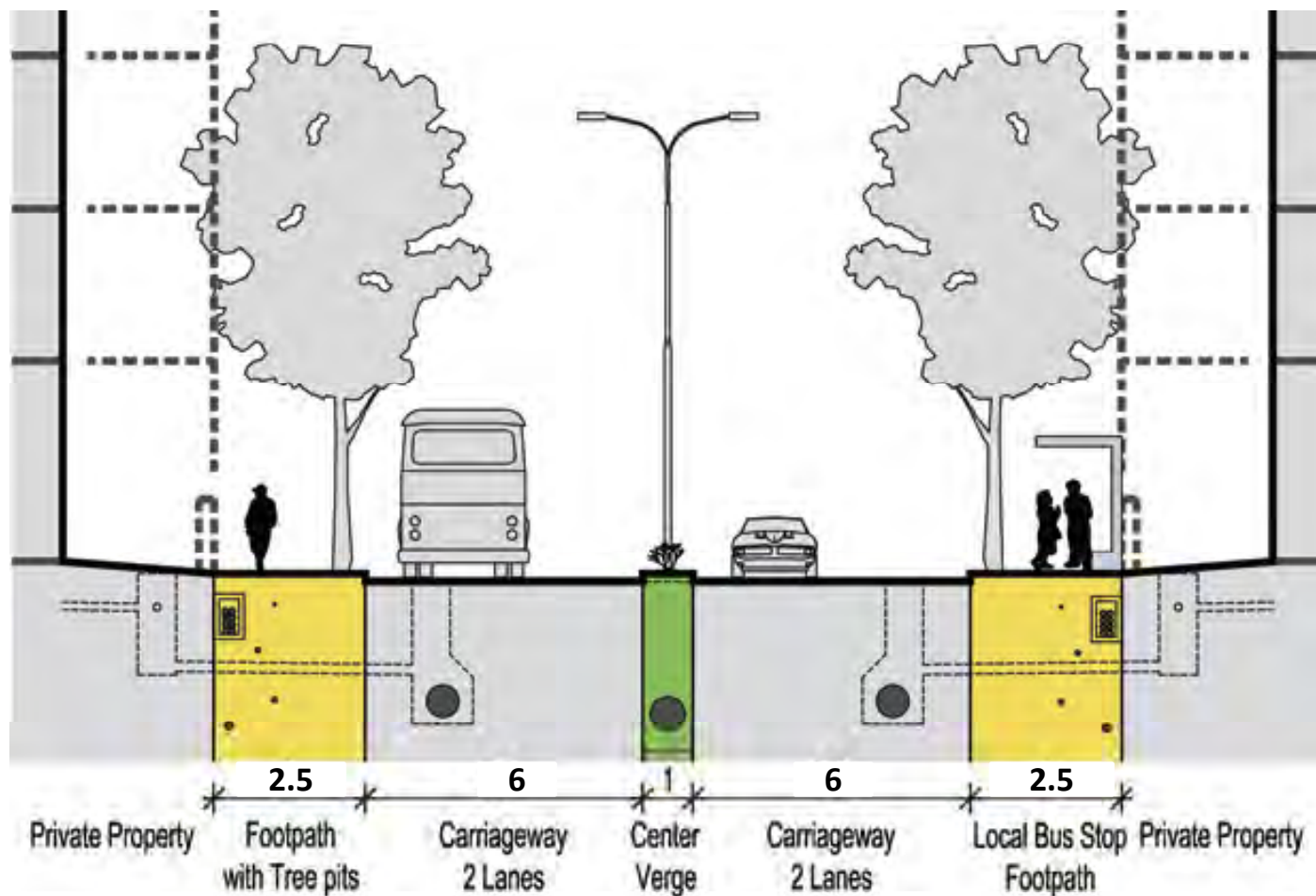
3D View of 12 m Street Section



3D View of 12 m Street Section



18 m Street Section



Total no. of trees can be planted on both the side of the road – 400 per 1 Km (Shaded)

Total Existing Road Length: 92.85 Km

Total No. of Trees can be planted on existing road: **37,140**

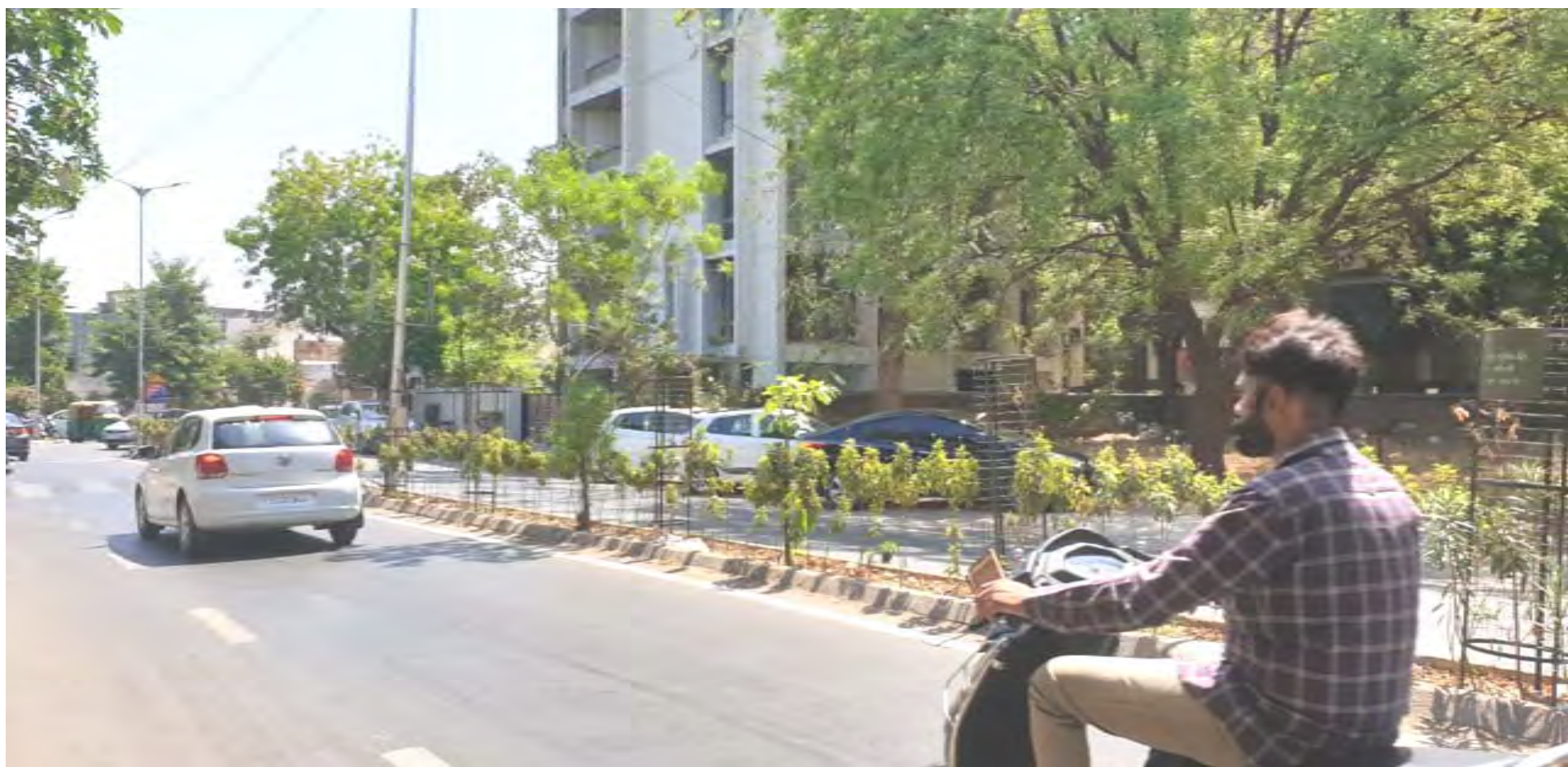
18 m Street at Bodakdev



**Plantation on Side
Margin**

**Plantation on
Central Verge**

18 m Street at Bodakdev



18 m Street at Bodakdev - Landscaping on street



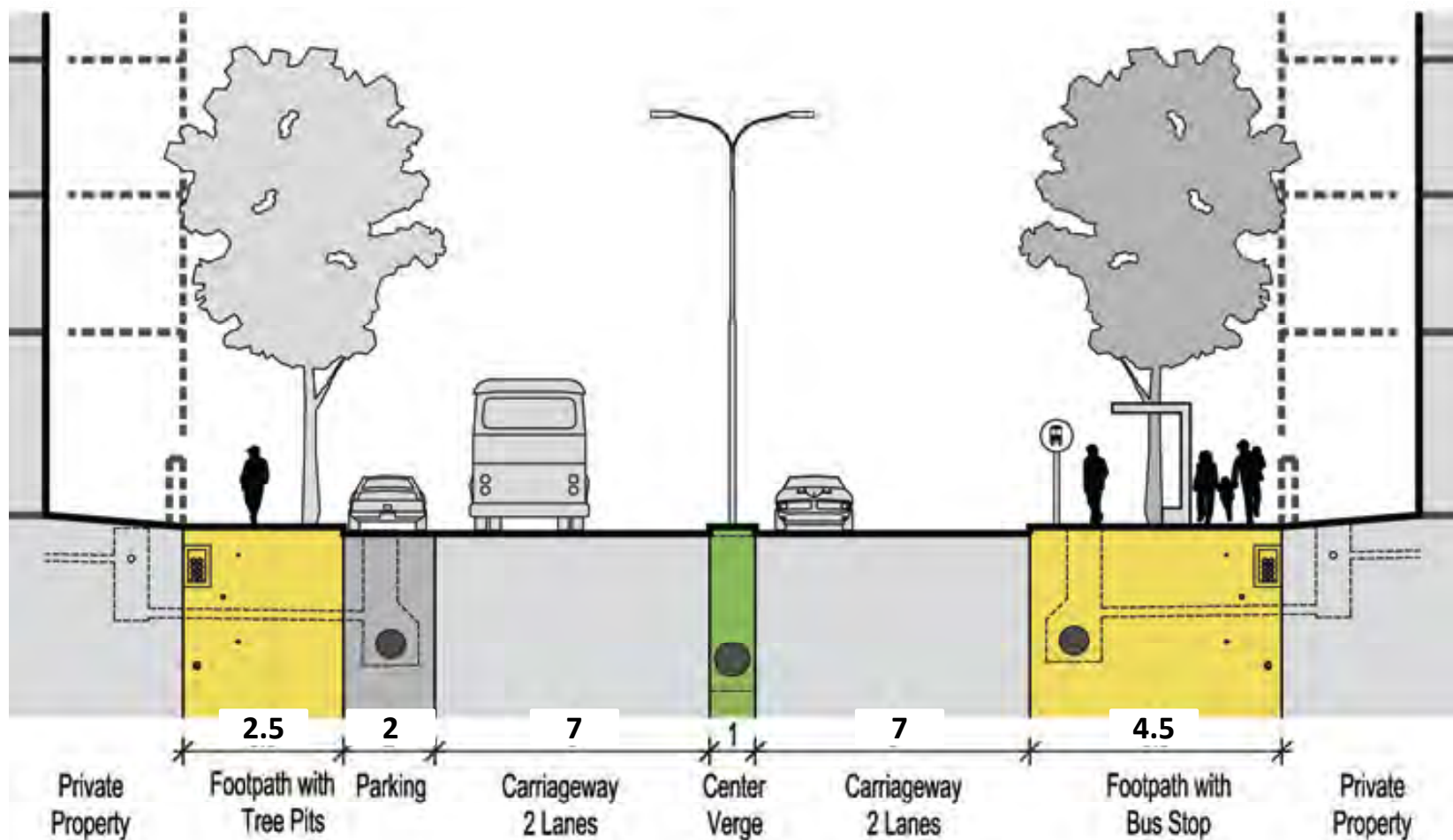
3D View of 18 m Street Section



3D View of 18 m Street Section



24 m Street Section



Total no. of trees can be planted on both the side of the road – 400 per 1 Km (Shaded)

Total no. of trees can be planted on center verge of the road – 500 per 1 Km (Shrub)

Total Existing Road Length: 48.16 Km

Total No. of Trees can be planted on existing road: **43,344**

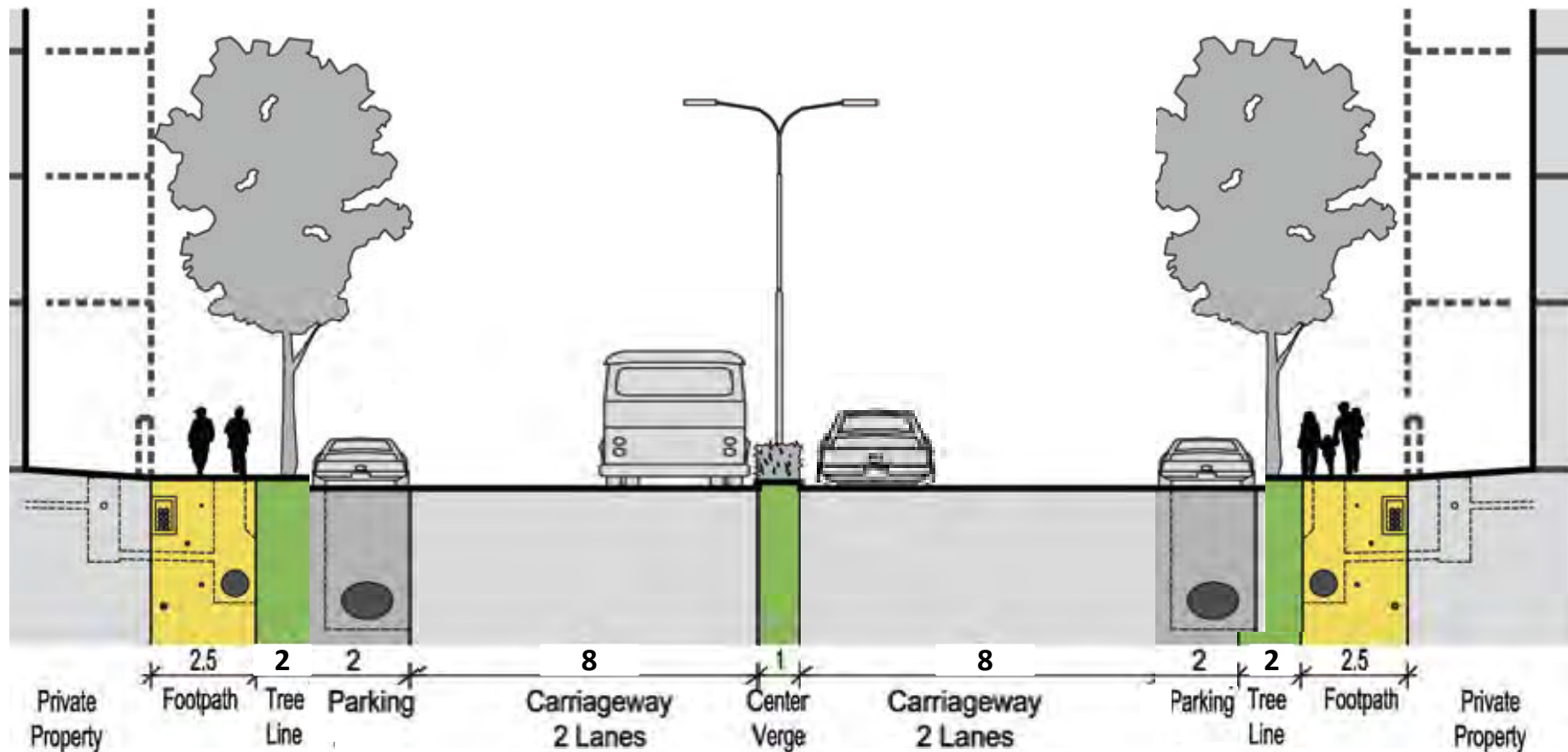
3D View of 24 m Street Section



3D View of 24 m Street Section



30 m Street Section



Total no. of trees can be plant on both the side of the road – 400 per 1 Km (Shaded)

Total no. of trees can be plant on center verge of the road – 500 per 1 Km (Shrub)

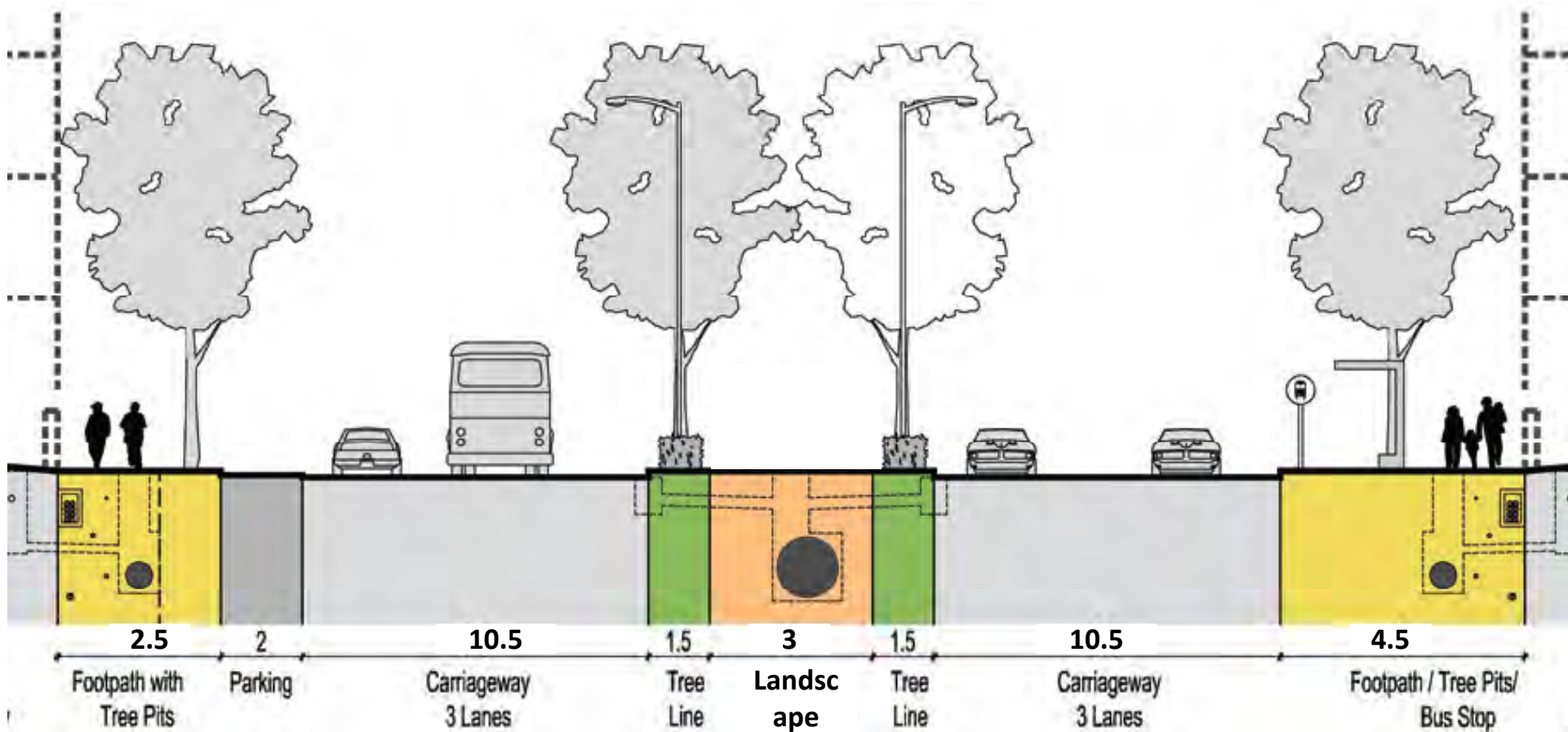
Total Existing Road Length: 42.27 Km

Total No. of Trees can be planted on existing road: **38,043**

3D View of 30 m Street Section



36 m Street Section



Total no. of trees can be planted on both the side of the road – 800 per 1 Km (Shaded)

Total Existing Road Length: 12.17 Km

Total No. of Trees can be planted on existing road: **32,421**

3D View of 36 m Street Section



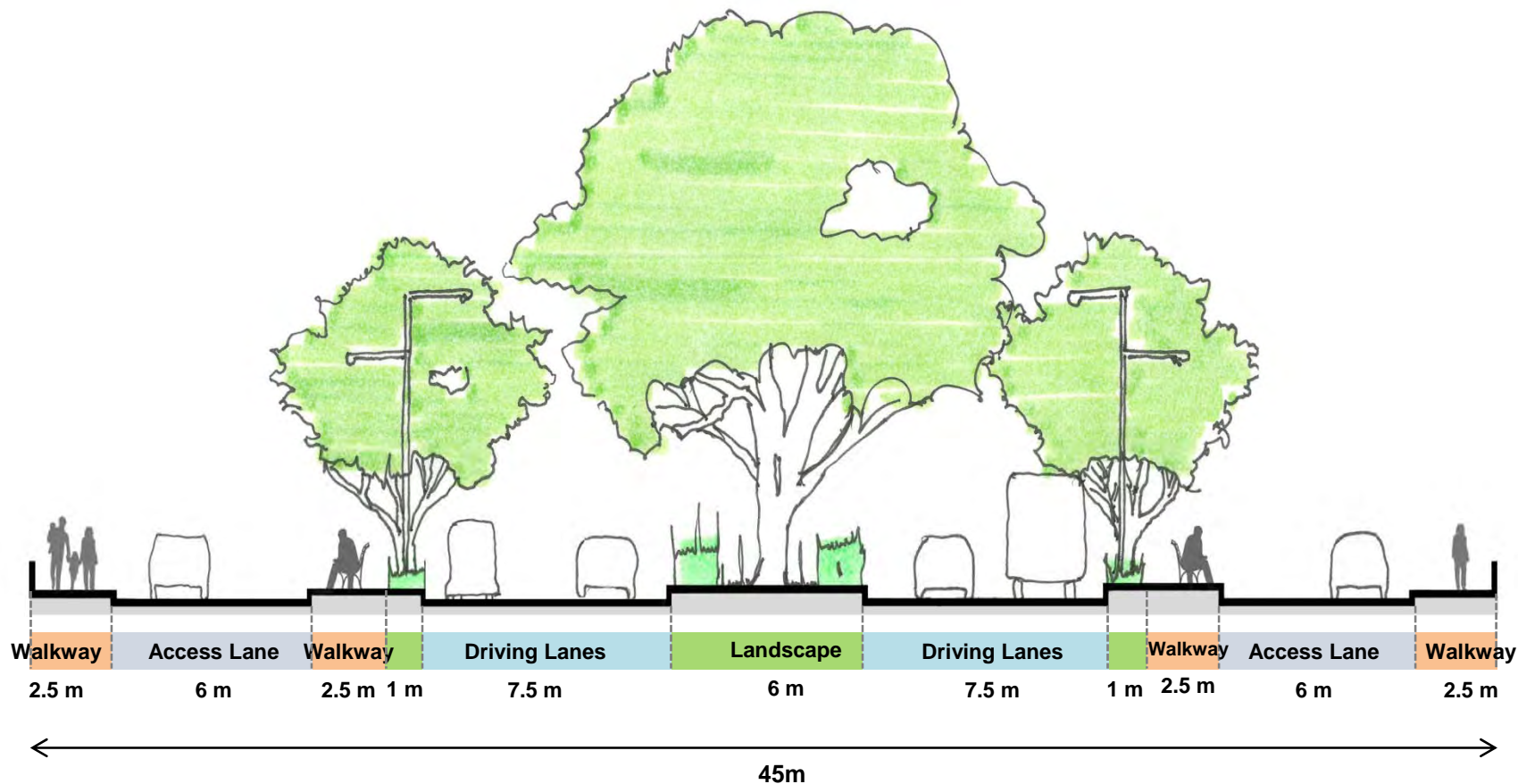
3D View of 36 m Street Section



3D View of 36 m Street Section



45 m Street Section



Total no. of trees can be planted on both the side of the road – 600 per 1 Km (Shaded)

Total Existing Road Length: 11.34 Km

Total No. of Trees can be planted on existing road: **6,804**

Under process:- 45 m Street at Santej Road

Tree Plantation in Rotary



Under process:- 45 m Street at Santej Road



**Shrub Plantation
in Central Verge**

Under process:- 45 m Street at Santej Road



Under process:- 45 m Street at Santej Road



**Tree Plantation in
Side Margin**

45 m Street Section



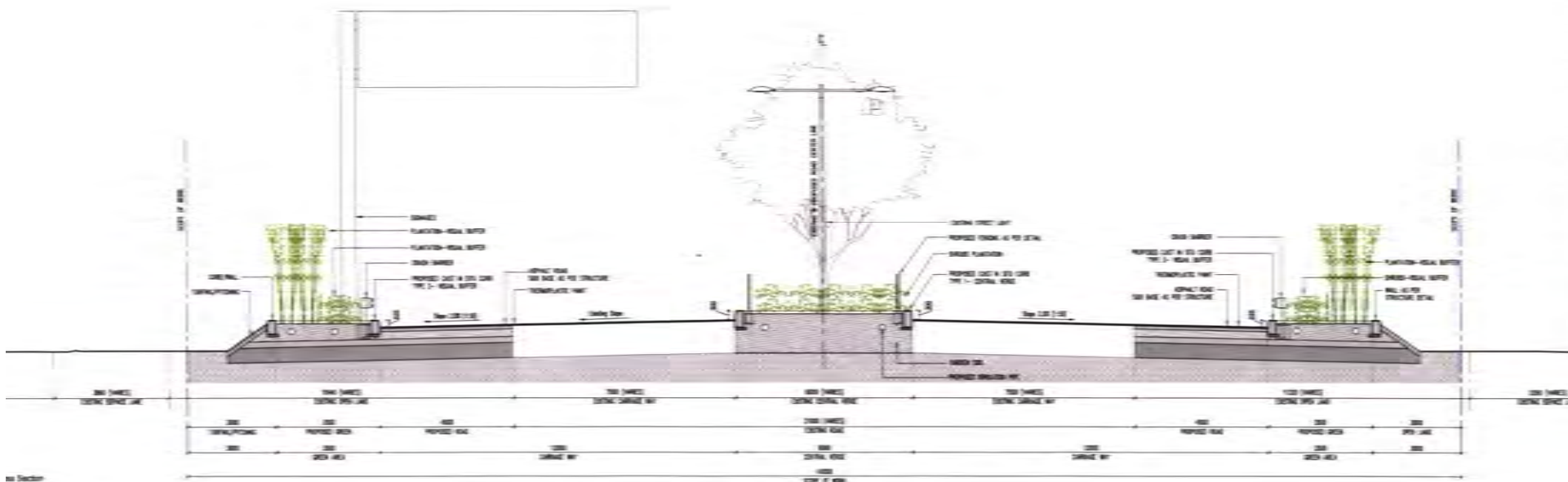
45 m Street Section



45 m Street Section



60 m Street Section



Total no. of trees can be planted on both the side of the road – 600 per 1 Km (Shaded)

Total no. of trees can be planted on center verge of the road – 1000 per 1 Km (Shrub)

Total Existing Road Length: 76 Km

Total No. of Trees can be planted on existing road: 1,21,600

Near Nirma collage on S.G.Highway



60 m Street Section



60 m Street Section



60 m Street Section



Tree Plantation on Existing Roads of AUDA area

Road Width	Road Length (In km)	No. of Trees can be planted
12	78.483	31,393
18	92.85	37,140
24	48.16	43,344
30	42.27	38,043
36	12.17	9,736
45	11.34	6,804
60	76	1,21,600
Total	361.273	2,88,060

Tree Plantation on Future Roads of AUDA area (Excluding Existing Roads)

Road Width	Road Length (In km)	No. of Trees can be planted
12	141.229	56,492
18	210.23	84,092
24	45.95	41,355
30	30.371	27,334
36	44.164	35,331
45	9.789	5,873
Total	481.733	2,50,477

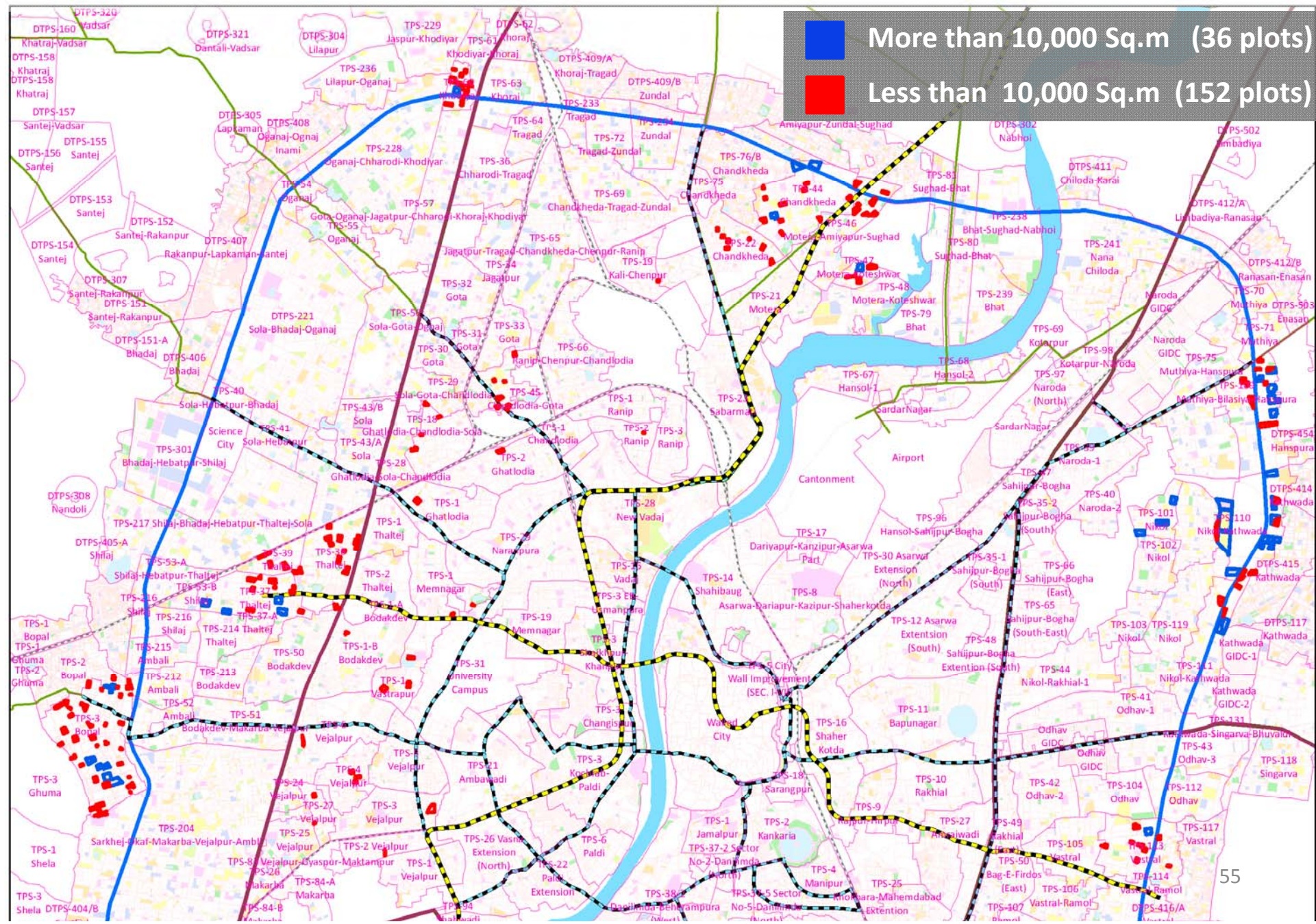
Total No. of Trees will be after Plantation on all Roads of AUDA area (Existing roads + Future roads)

Road Width	Road Length (In km)	No. of Trees can be planted
12	219.712	87,885
18	303.08	1,21,232
24	94.11	84,699
30	72.641	65,377
36	56.334	45,067
45	21.129	12,677
60	76	1,21,600
Total	843.006	5,38,537

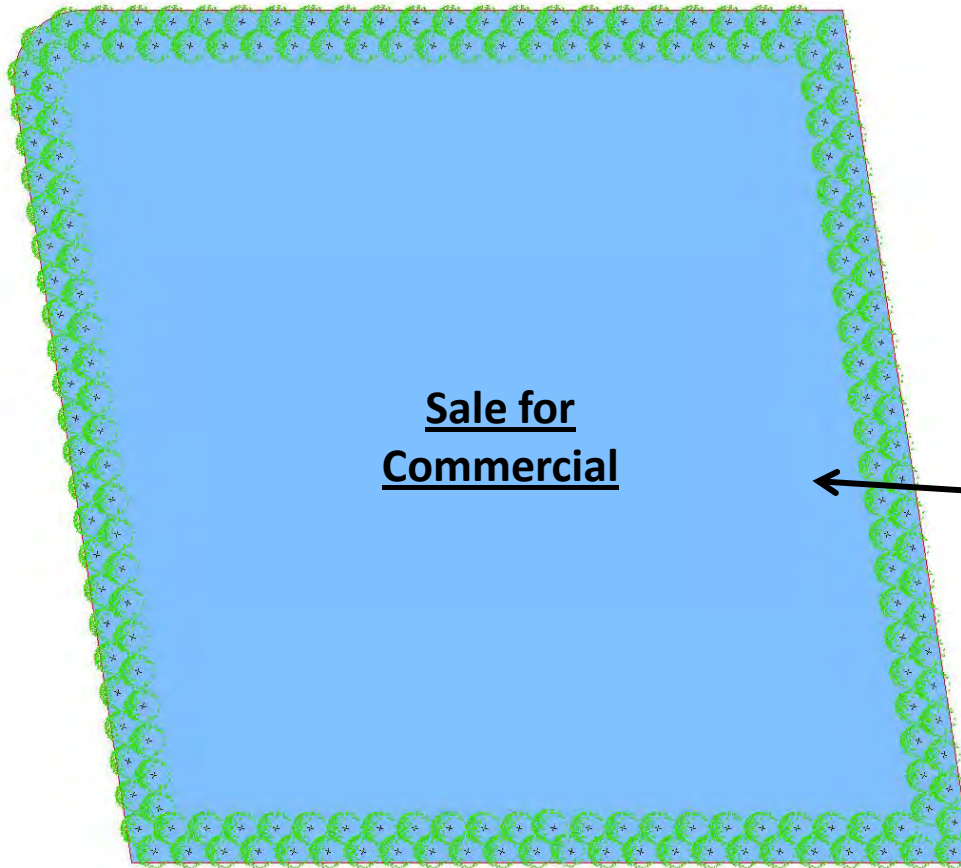
Linear area/ space

Public Purpose Plots

Location of Public Purpose Plots



Example : Plot Area More Than 10,000 Sq.m.

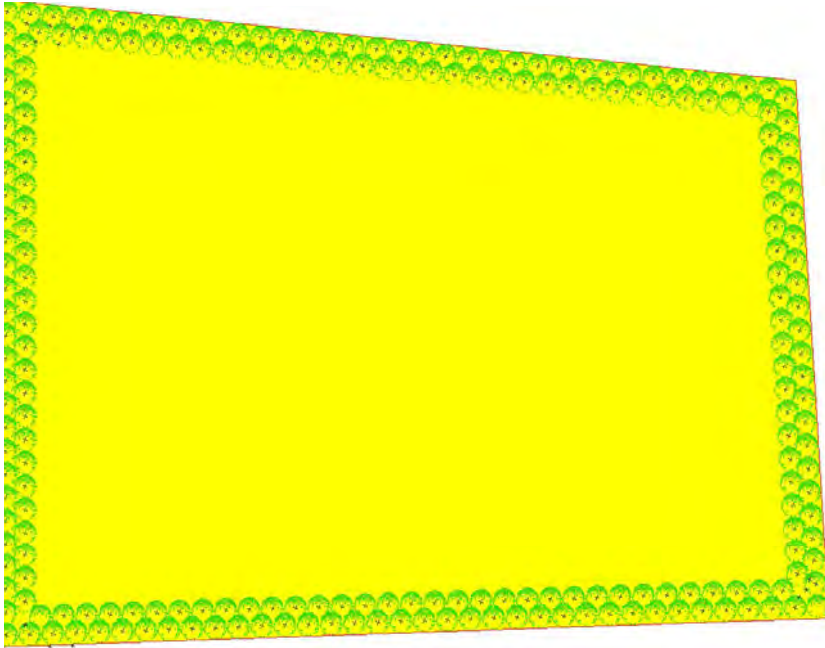


**Trees can be planted
in Miyawaki Method
at the periphery of
the plots**

**Plot Area: 10,658 Sq.m
No. of Trees can be plant: 2704**

Example: Plot Area Less Than 10,000 Sq.m.

**Trees can be planted
in Zigzag Pattern at
the periphery of the
plots**



Sale for E.W.S

**Plot Area: 6010 sq.m
No. of Trees : 107**



**Sale for
Neighborhood Centre**

**Plot Area: 902.8 sq.m
No. of Trees : 38**

Live Example : Near IIM, Ahmedabad



Live Example : Near IIM, Ahmedabad

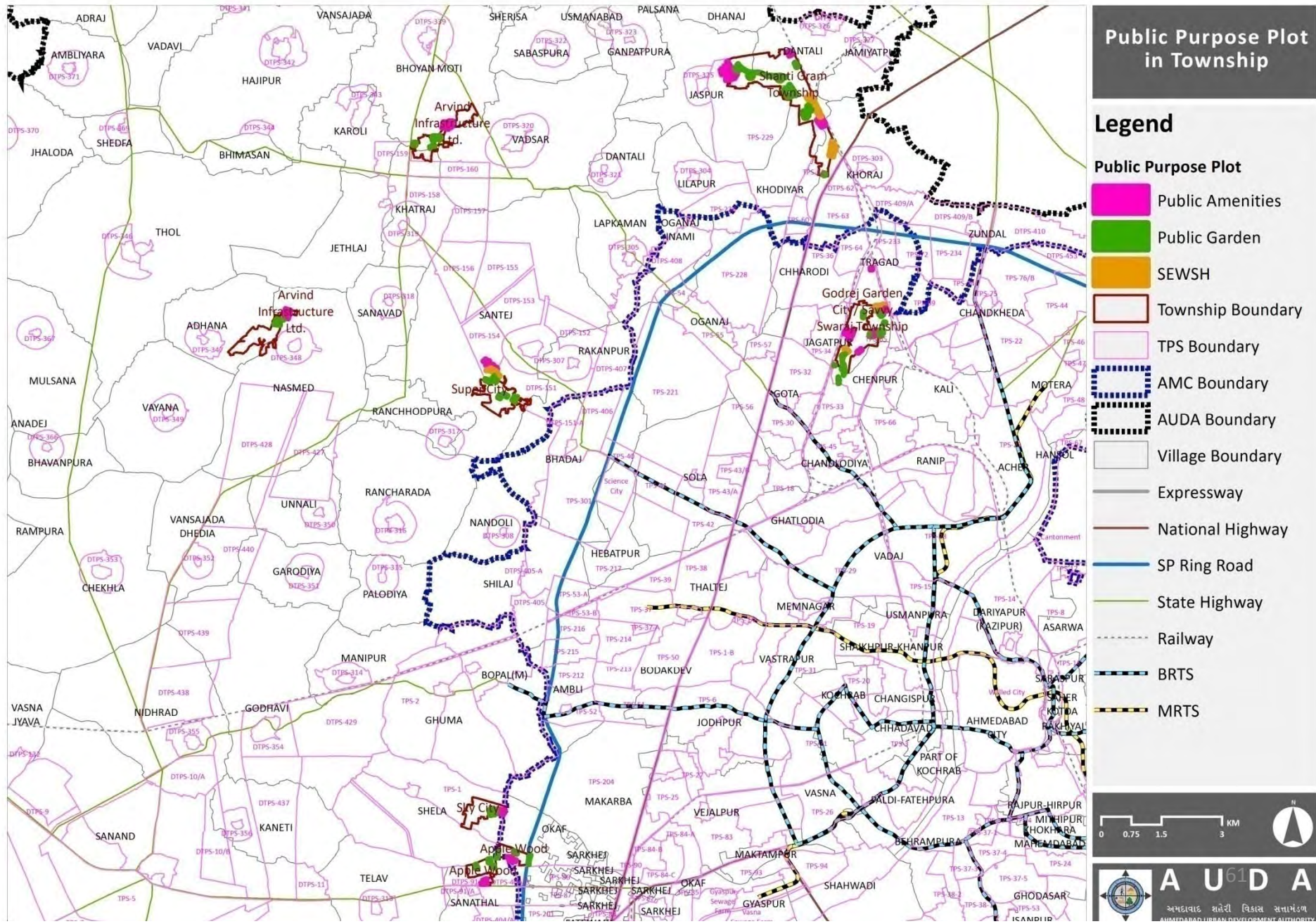


No. of trees can be planted in public purpose plots

S.No	Plots Size	No. of Plots	No. of Trees
1	< 10,000 Sq.m	152	13,247
2	> 10,000 Sq.m	36	14,082
Total		188	27,329

Note: Excluding Gardens

Township Public Purpose plots



Township Public Purpose plots

No. of trees can be planted in Township Public Purpose Plots

S.No	Plot Size	No. of Plots	No. of Trees
1	< 10,000 Sq.m	42	4,521
2	> 10,000 Sq.m	25	13,296
Total		67	17,820

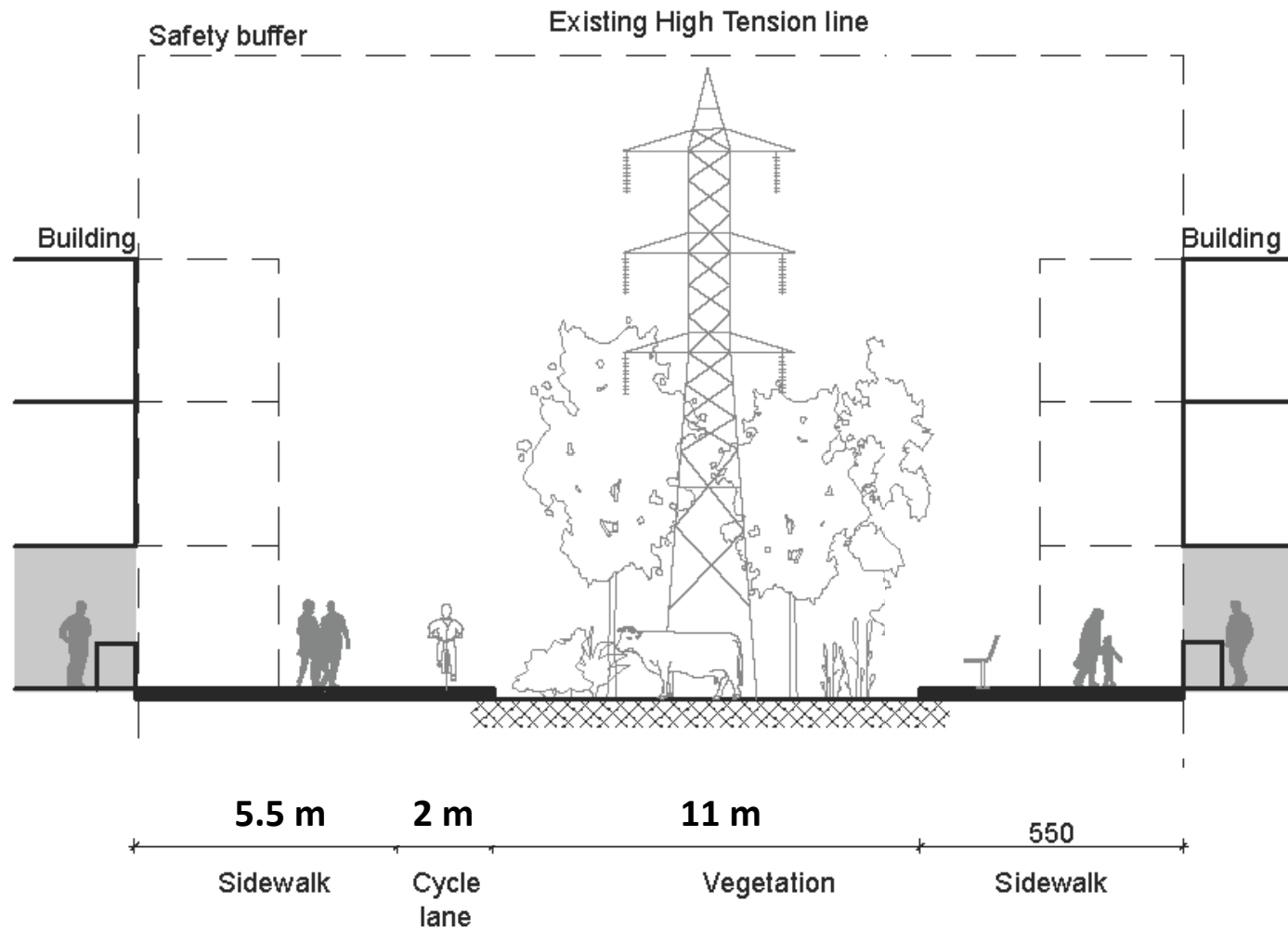
Linear area/ space

**Administrative Constrain
Underutilised Spaces**

HIGH TENSION LINE

Total Length of High Tension : **431.407 Km**

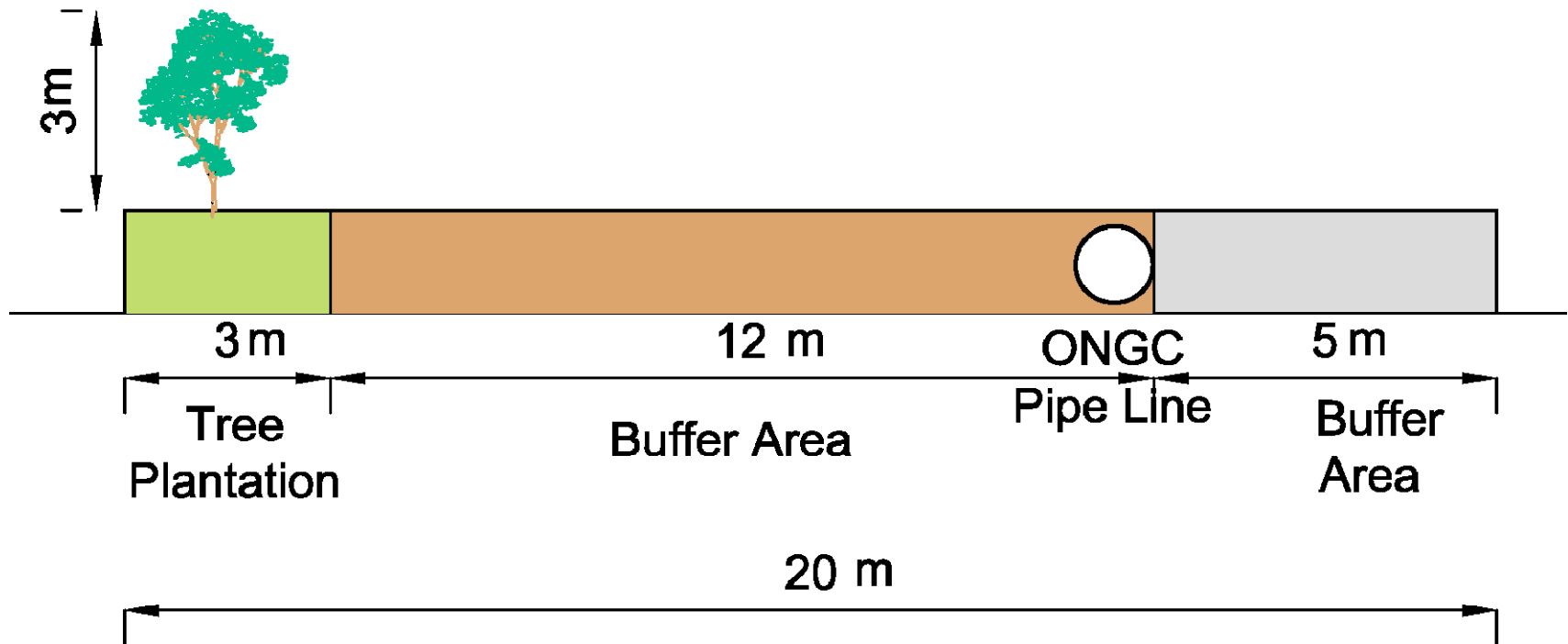
Total No. of trees that can be planted : **2,15,703**



ONGC LINE

Total length of ONGC Line : **121.74 Km**

Total No. of trees that can be planted : **60,871**



Block area/ space

Parks, Open Spaces and Gardens

Categorization of Parks & Gardens Based on Size, Location & Use

Category	Area (Ha)	Pedestrian access	Catchment
Pocket Parks	<0.1	200m	Upto 3 min walk
Neighborhood Parks	0.1 – 0.4	400 m	Upto 5 min walk
Community Parks	0.4 – 2.0	600 m	Upto 10 min walk
City Parks	2.0 – 80.0	800 m	Upto 10 min drive
Regional Parks	>80.0	-	Upto 1 hour drive



Neighbourhood park
(AUDA garden, Thaltej)

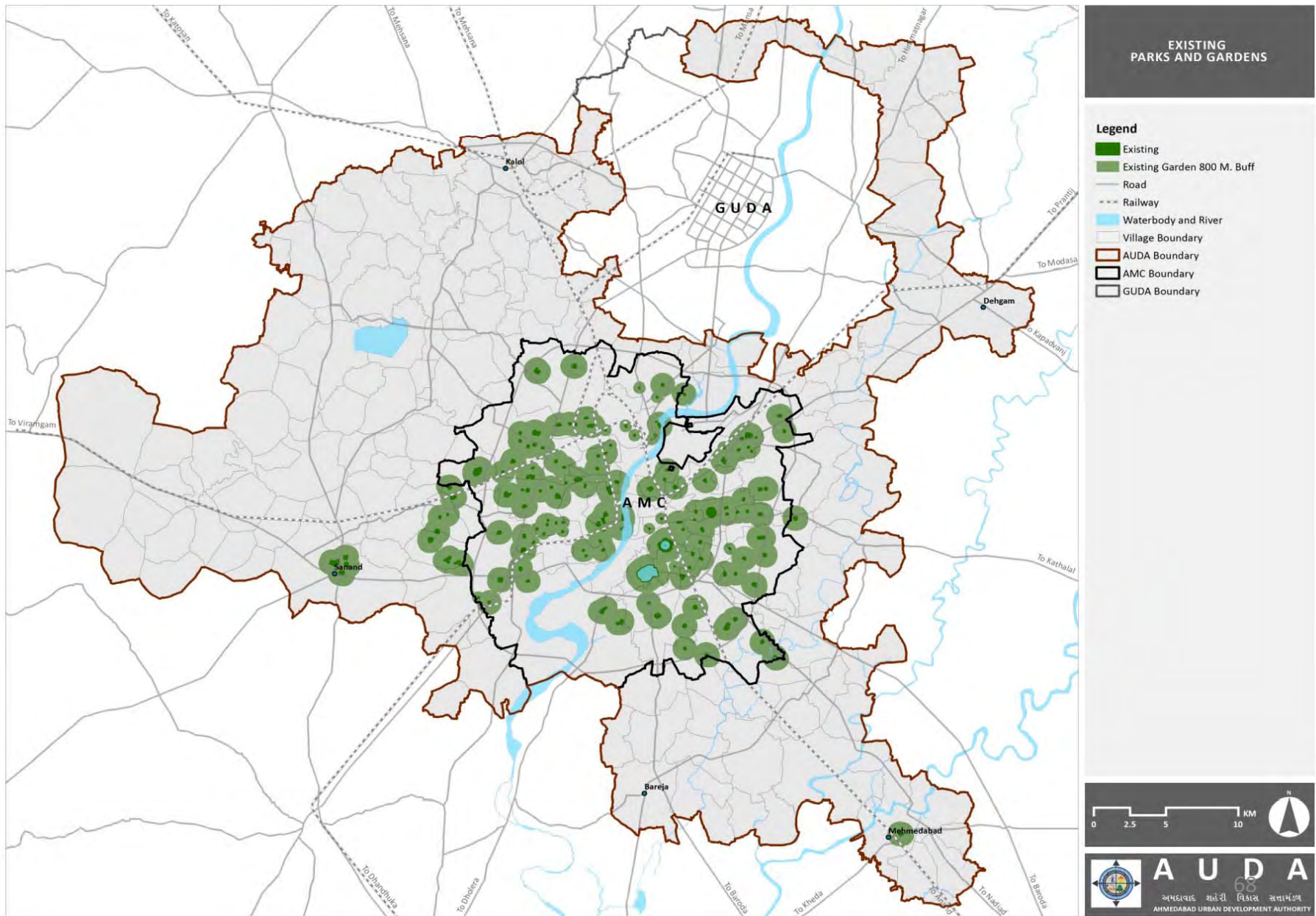


Community Park
(Prahladnagar)

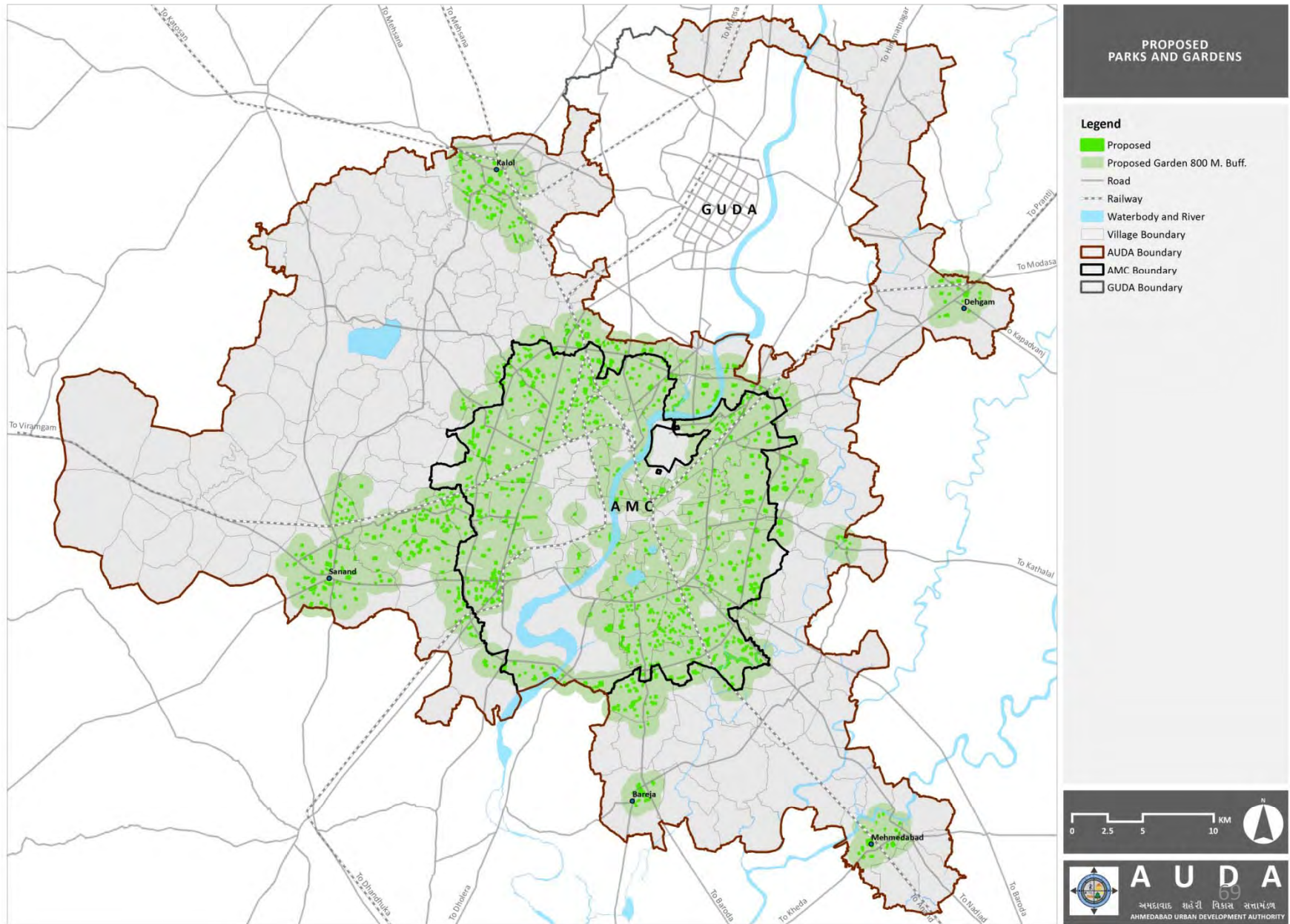


City Park
(Law Garden)

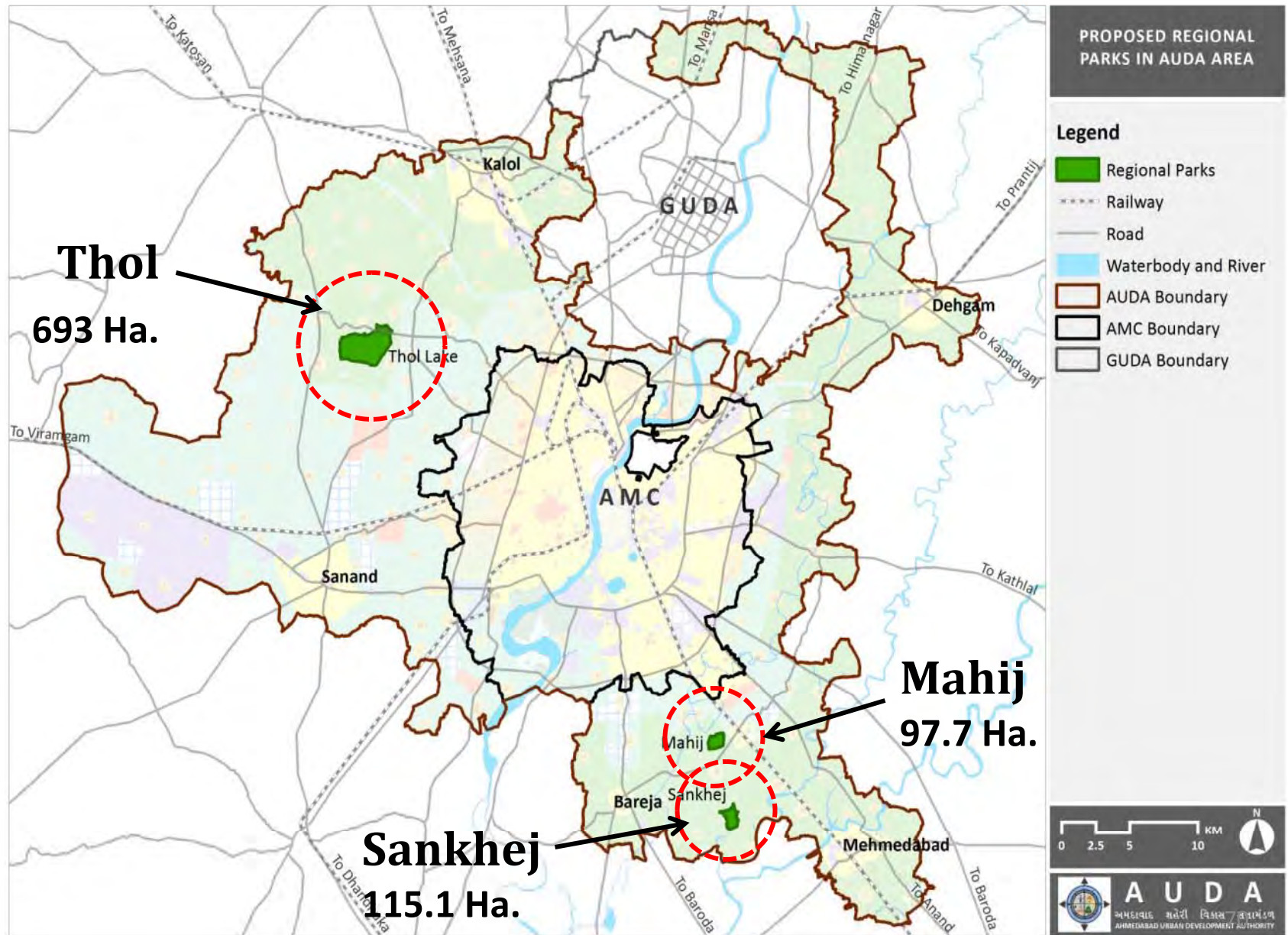
Existing parks and gardens



Proposed parks and gardens



Proposed Regional parks in AUDA area

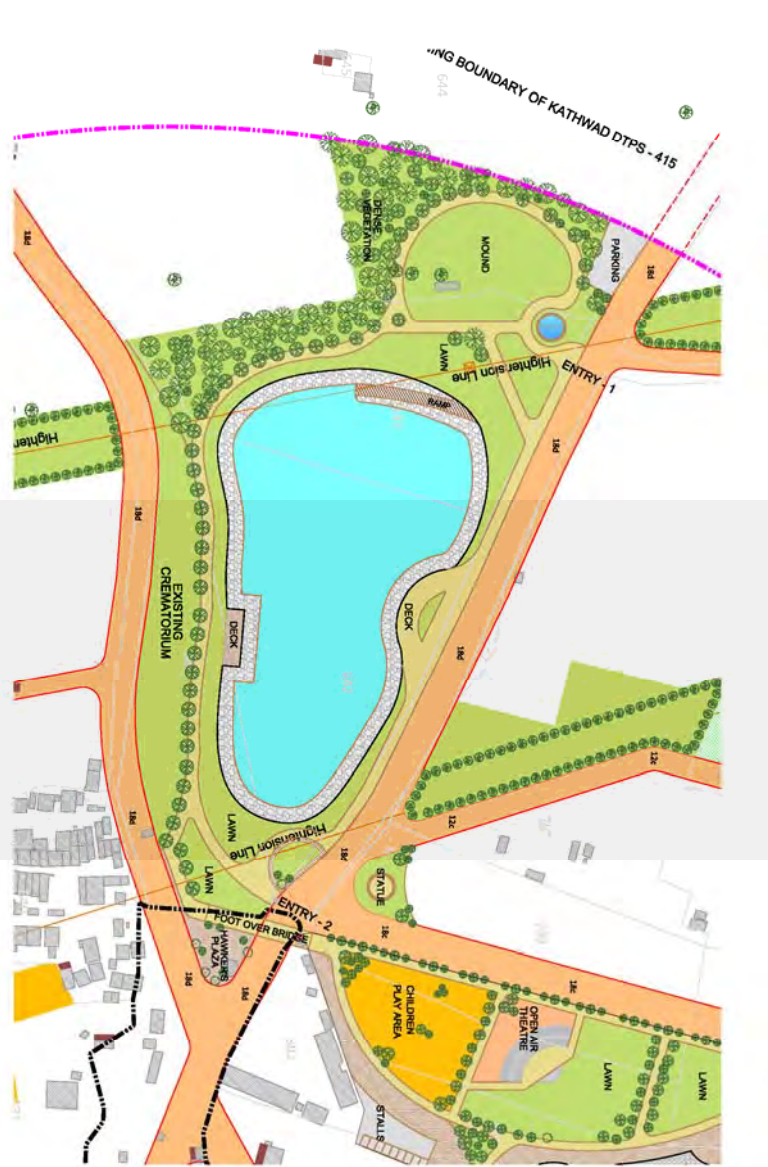


No. of trees can be planted at various location

S.No	Location	Plot Size	No. of Plots	No. of Trees
1	Gardens	< 10,000 Sq.m	272	28,330
2		> 10,000 Sq.m	74	40,171
Total			346	68,501
3	Lakes	< 10,000 Sq.m	17	1,767
4		> 10,000 Sq.m	18	7,192
Total			35	8,939

Kathwada Lake Development

1



Block area/ space

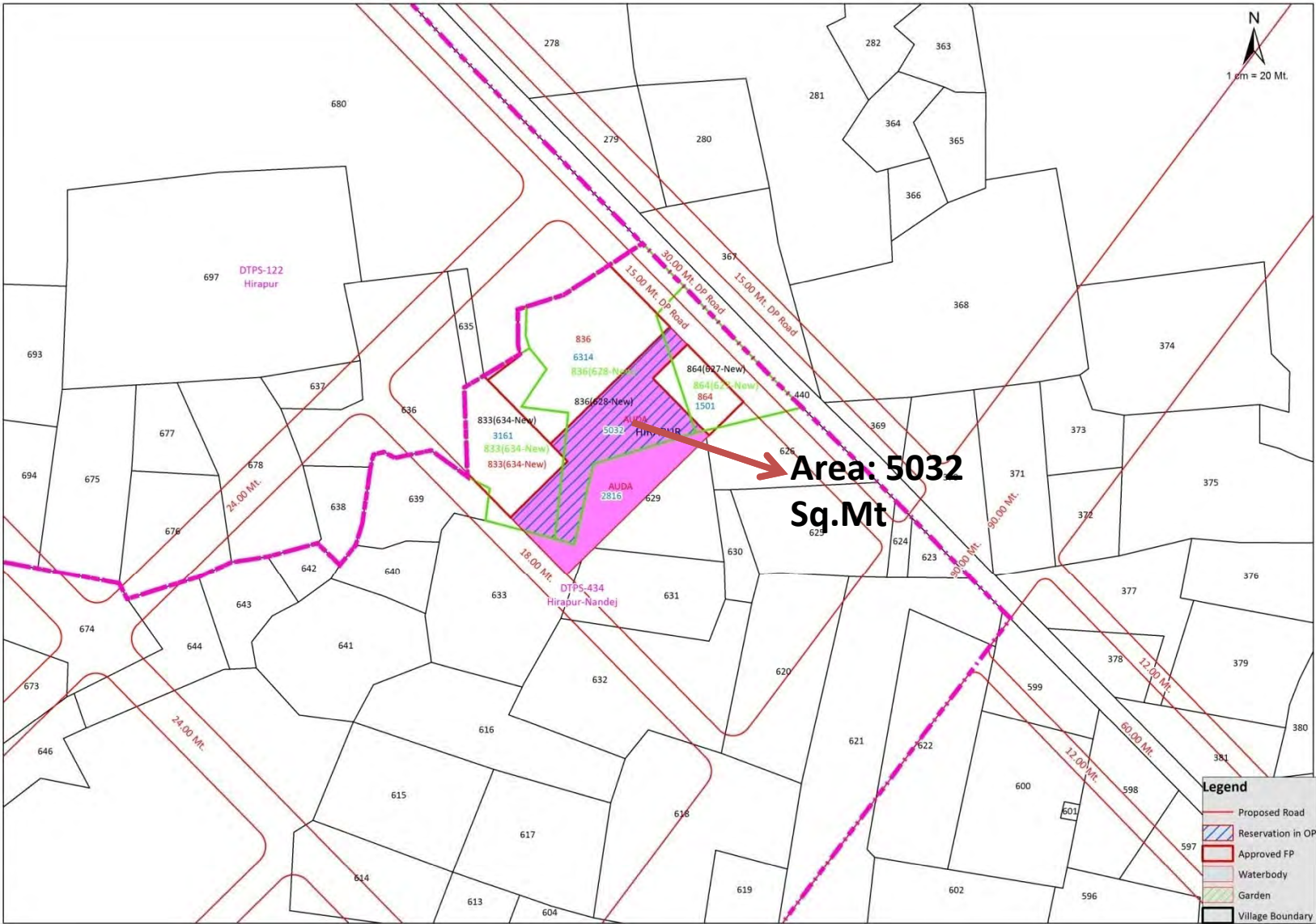
**Contribution of land in Non TP
area**

Chharodi



Contribution of land in Non TP area

Hirapur



Kalana

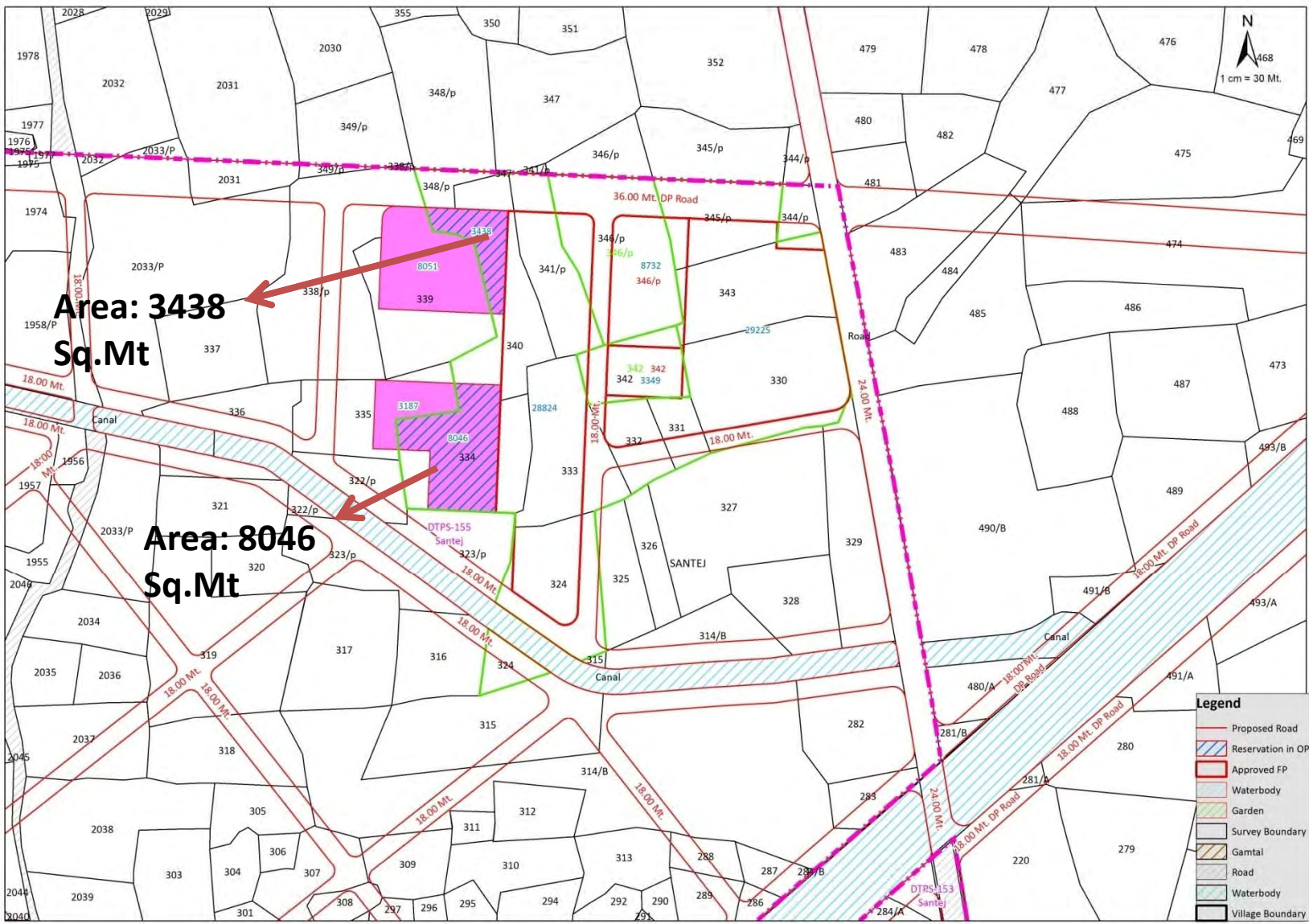


Khoda



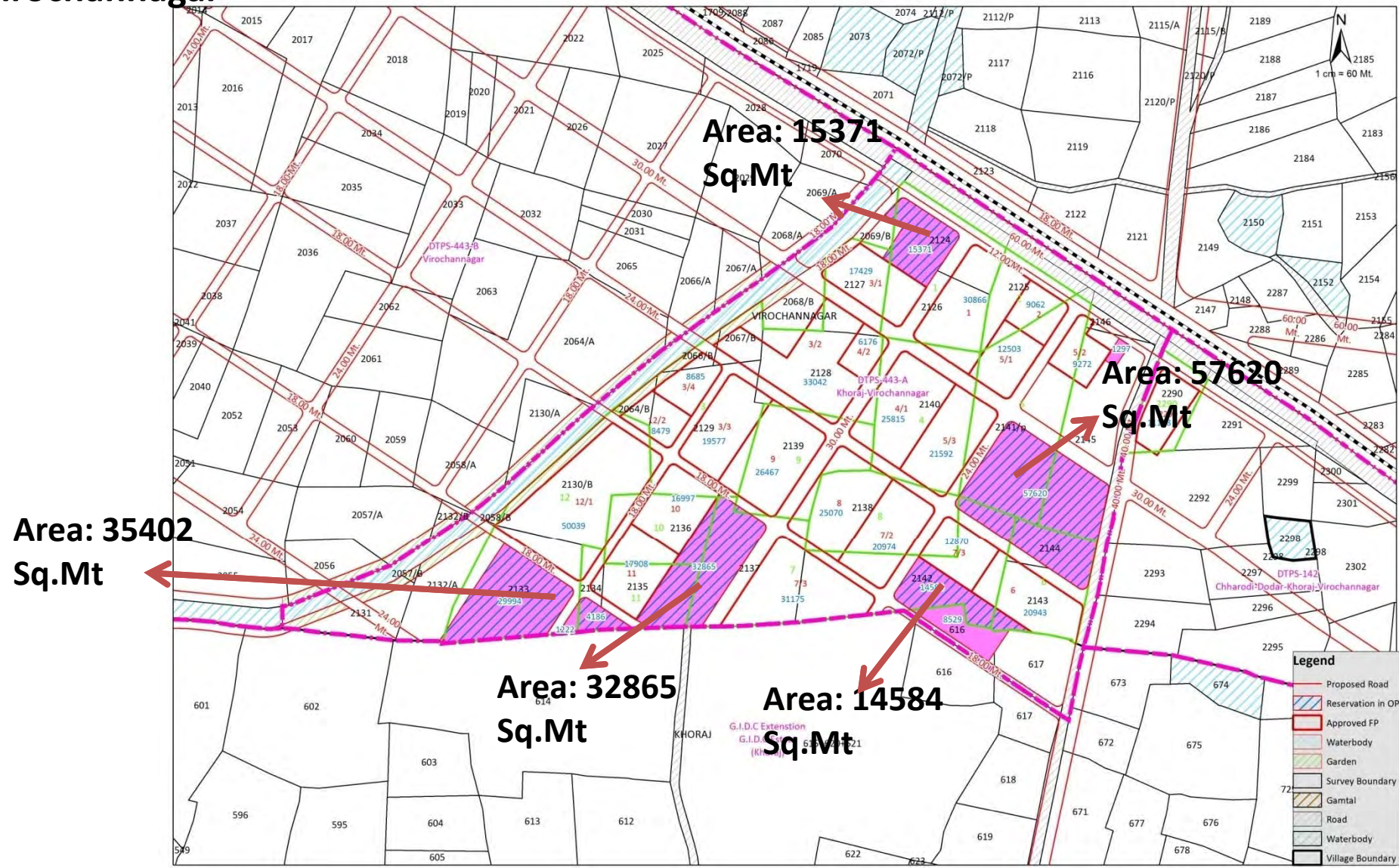
Contribution of land in Non TP area

Santej



Contribution of land in Non TP area

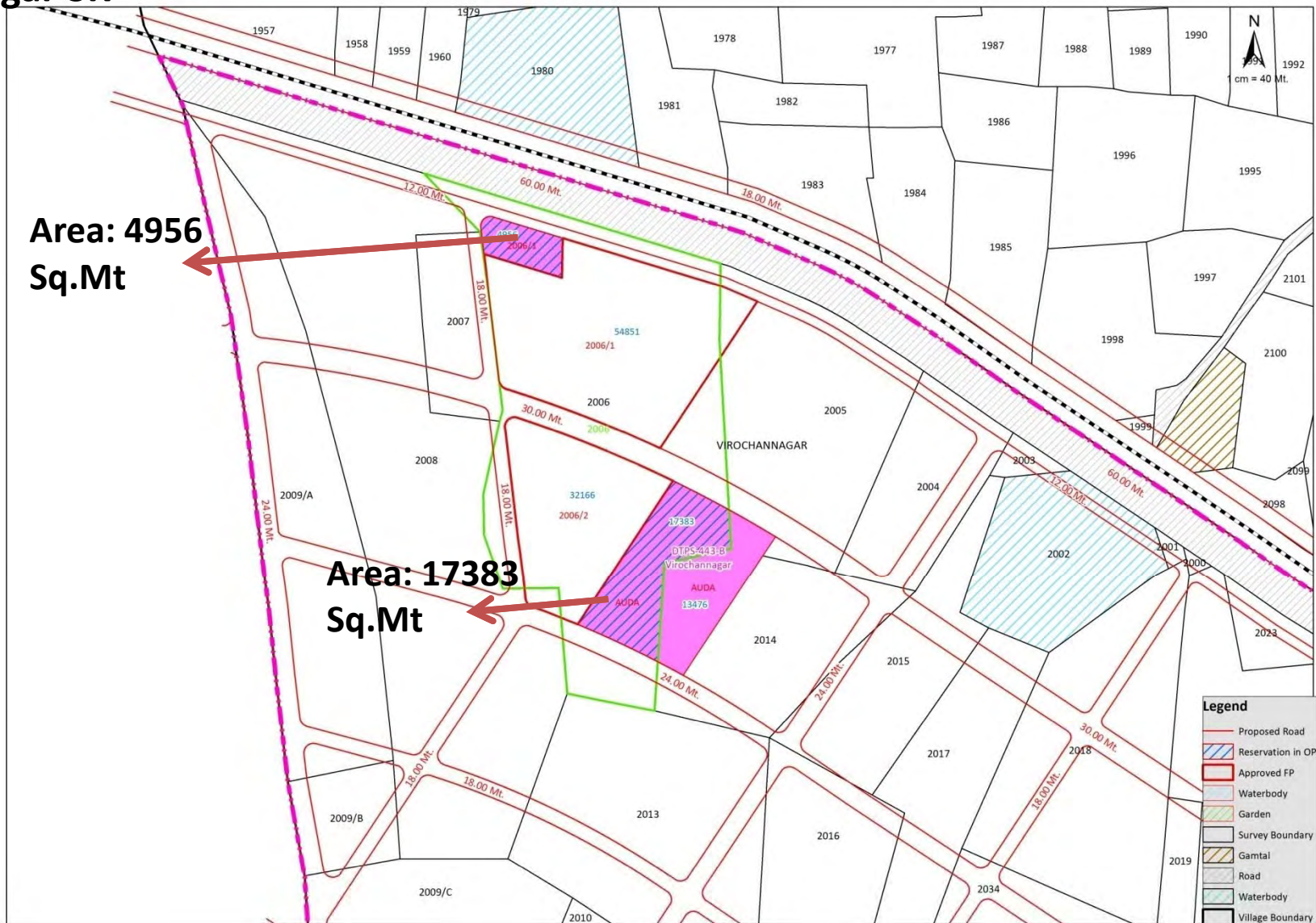
Virochannagar



Contribution of land in Non TP area

Virochannagar SR

NO-2006



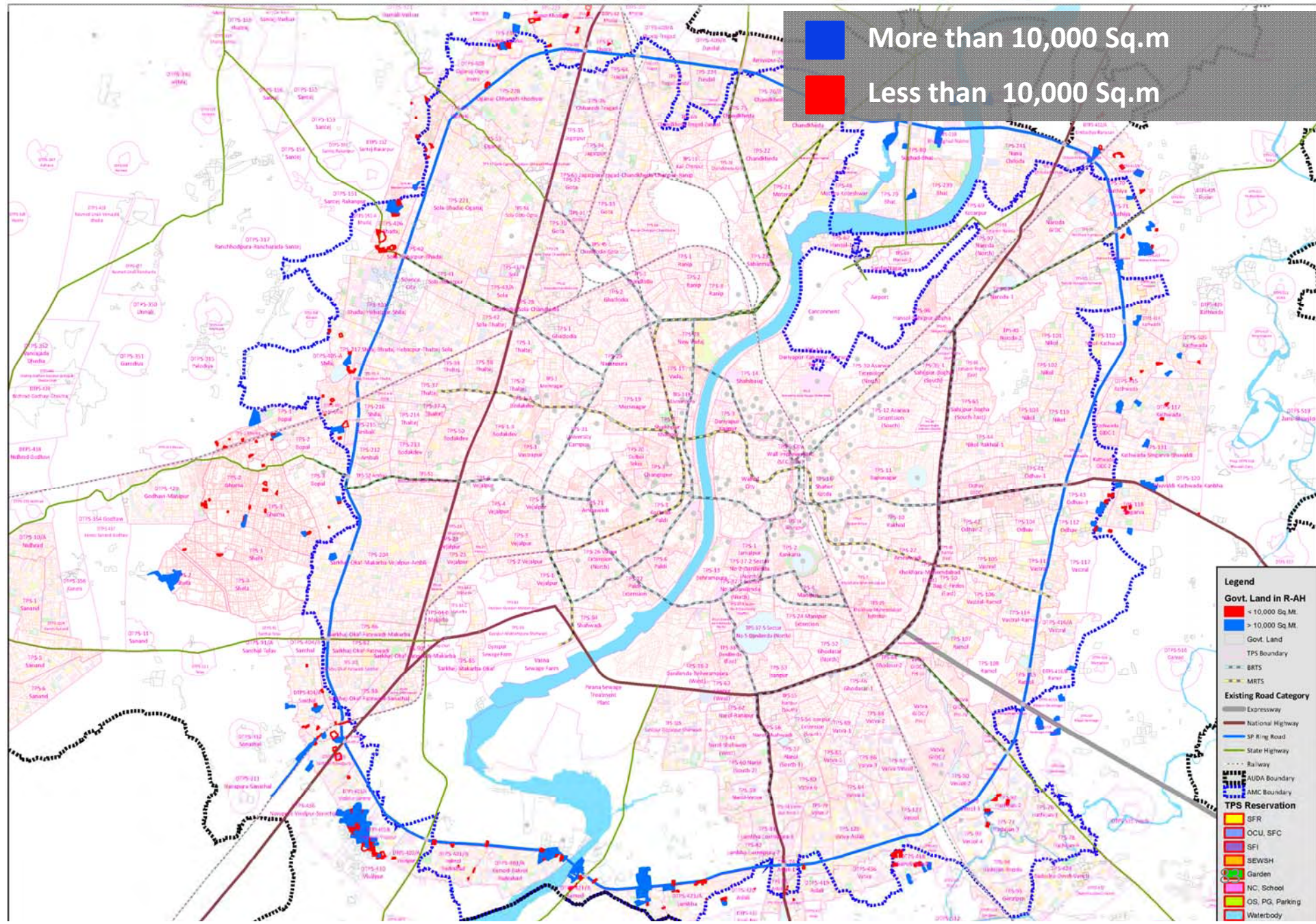
Contribution of land in Non TP area

Non TP Areas	Area in Sq.m
Chharodi	15532
Hirapur	5032
Kalana	13847
Khoda	44215
Santej	11484
Virochannagar	155842
Virochannagar SR NO-2006	22339
TOTAL	268291

Cluster area/ space

Grazing Land

Location of Grazing land of RAH Area



No. of trees can be planted in Grazing land of RAH Area

S.No	Plot Size	No. of Plots	No. of Trees
1	< 10,000 Sq.m	99	11,473
2	> 10,000 Sq.m	66	33,400
Total		165	44,900

TYPE OF TREES THAT CAN BE PLANTED

Type of Trees V/S Trees Height

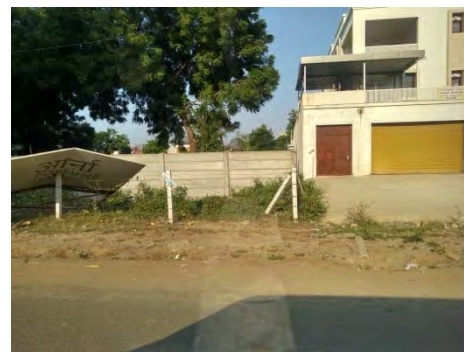
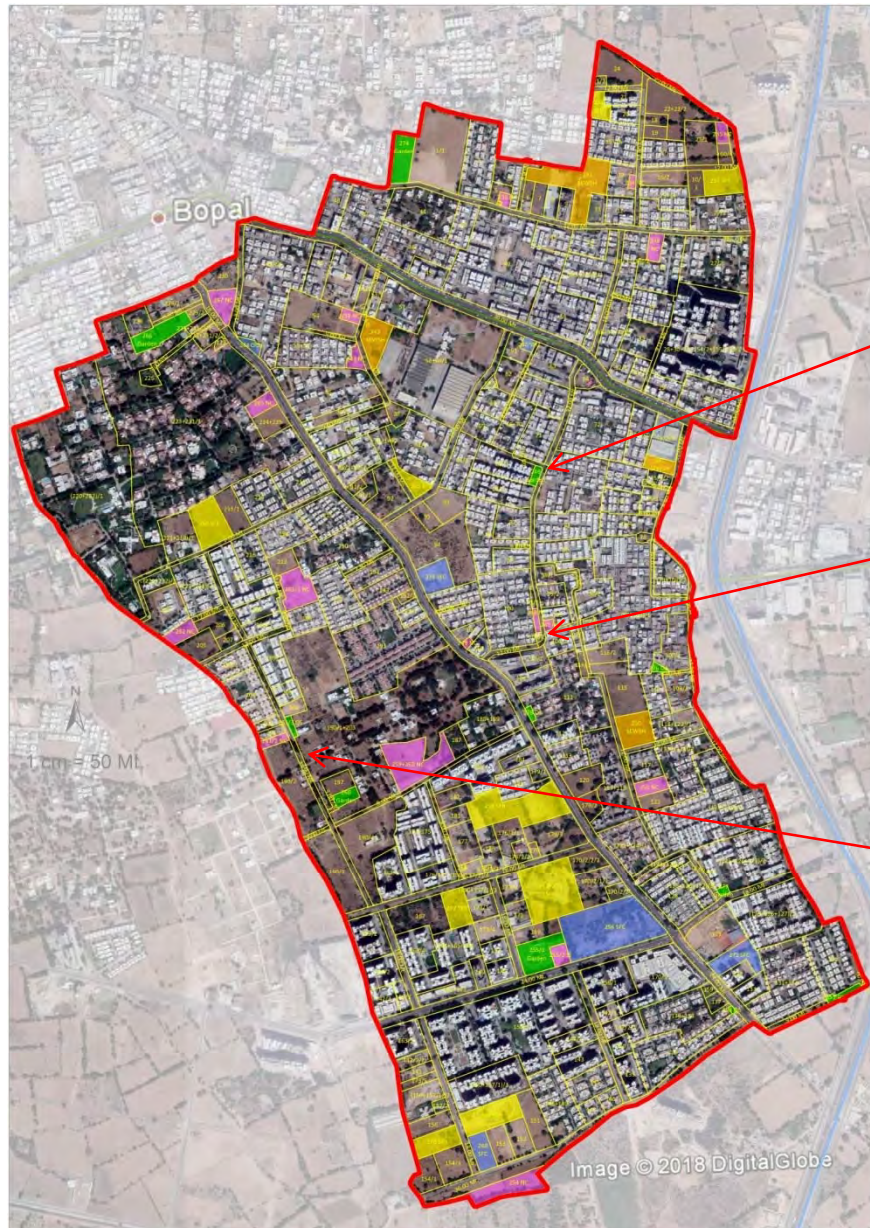
Type of Trees	Trees Height		
	6m to 8m height	8m to 12m height	12m height
Quick Growing Sun Growing Ecology		✓	✓
Shade Ecology	✓	✓	✓
Road Median Ecology	✓	✓	✓
Fragrant	✓	✓	✓
Fragrant Spread	✓	✓	✓
Good Screening Ecology		✓	✓
Ecology		✓	✓
Evergreen Trees		✓	✓
Avenue planting Ecology	✓		✓
Fruit Bearing			

Note: Type of trees [hyperlink](#)

Example of Bopal and Ghuma Area

In AUDA Area

Bopal TP -3



In AUDA Area

Bopal TP -3

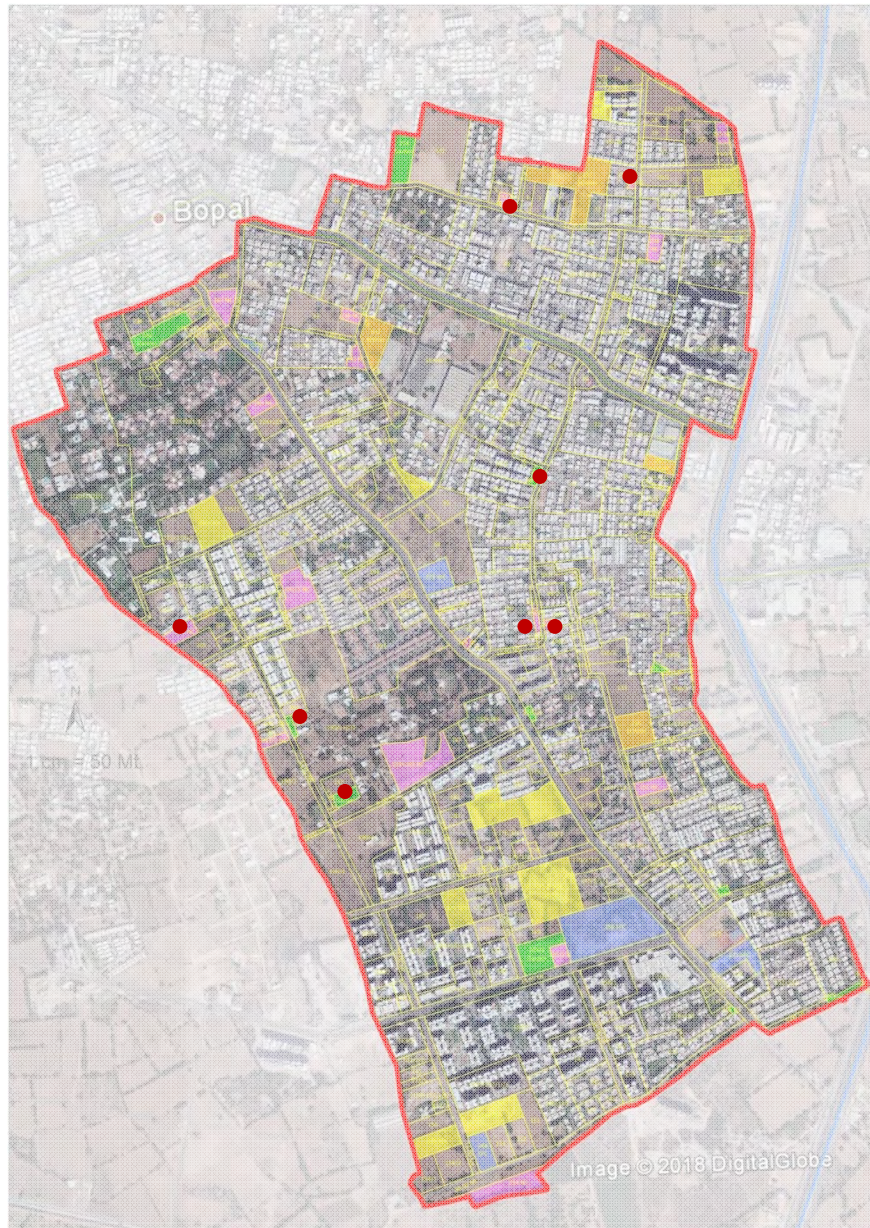
4 NC Plots = 59685 sq.ft.

3 Garden Pots = 36758 sq.ft.

Total Area = 96443 sq.ft.

30 trees per 100 sq.ft.

28932 trees in 96443 sq.ft. Area



In AUDA Area

Bopal TP -3

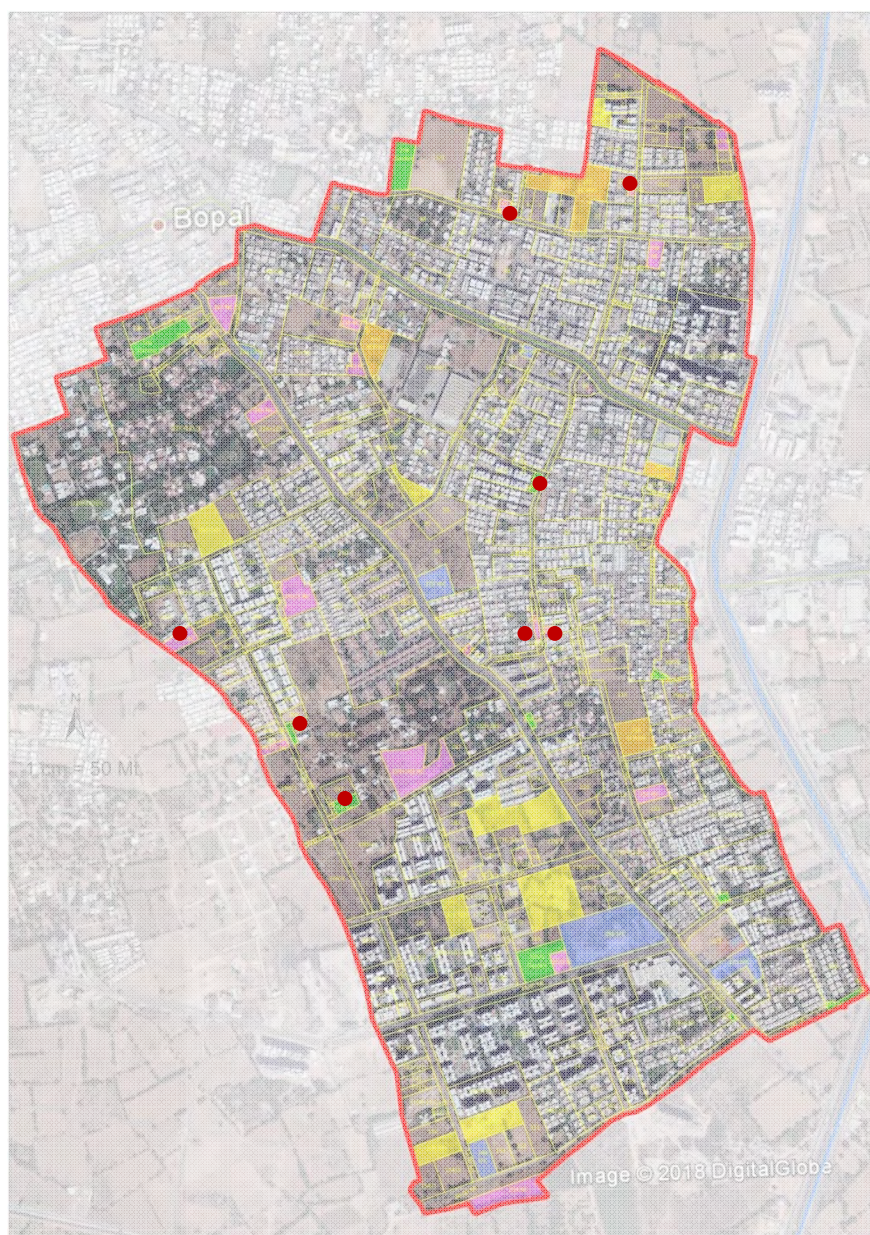
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28932 trees in 96443 sq.ft. Area



Sr no.	Area	Name of builder/Developer	Tree plantation on final plot	Tree plantation on road	Nos of tree
1	TPS 1(Bopal)	GICEA		Boath the side of all the TPS Road	5265
2	Khoraj,Khodiya	Siddhi Developers			100000
3	South Bopal	Green South Bopal		Road side dividers	2430
4	Zundal TPS 234	Sangath IPL (Sanjy Jain)		On Service Road	3000
5	Sanand	Gurukrupa Developers			5000
6	Sanand	Aakar Project			4000
7	Sanand	Aakar Project			3000
8	TPS-236(),TPS-228(),TPS-229()	Mukesh Sheth (Sheth Builders)			11111
9	Santej-Rakanpur	Shrinivas Organisor Pvt.Ltd (Super City)		45 Mt & 18 Mt	5000
10	Khoraj	Cadila Healthcare Ltd.			1000
11	TPS 3 (Bopal)	Nitin trivadi			1001
12	TPS 1 (Bopal)	Sunbuilders Pvt Ltd.			5000
13	TPS 1 (Sanand)	Yuvraj sing Sisodiya			1500
14	TPS 429 (Godhavi)	Durgesh Agarwal		36.0 Mt	15000
15	Bopal	J P Iscone PVT.LTD		Bopal Nr. S G Highway	15000
16	Thol	Arvind Smart Space		Nasmed Cross Road to Thol Road	1000
17	TPS 1 (Shela)	Swati Construction	72/2,78/2,81/2,87/2		1000
18	TPS-238,TPS-239,TPS-80 (Bhaat)	Shyamal Developers			500
19	TPS-131 (kathwada-Singarwa-Bhuvaldi)	Maize Product		30 Mt & 18 Mt	5000
	TPS-3 (Kalol Saij)			24 Mt	
20	TP-234 (Zundal)	Atul N Shah			500
21	TPS-3 (Ghuma)	Shaligram Group)		24Mt	1000
22	Shela	Vishwanath Builders		45 Mt & 18 Mt	1000
23	South Bopal	Manish Bhai Vala			101
24	TPS-63 Khoraj	Vinod R Patel	56/1,56/2		90 1000
Total					188408

THANK YOU