



SMART GROWTH AND EVALUATING INFRASTRUCTURE COST IN TOWN PLANNING: TOWN PLANNING SCHEME PROPOSAL FOR PALANPUR CITY NEAR LUNAVADA VILLAGE

Shivani G. Chauhan

Assistant Professor, Department of Civil Engineering Government Engineering College Palanpur, Banaskantha, Gujarat, India

ABSTRACT Palanpur city is the administrative headquarters of Banaskantha district. Palanpur town has been witnessing a rising urban population and the growth of urban areas, both in number as well as geographical area – over last more than two decades. Palanpur faces rapid urbanization, housing shortage, lack infrastructure facilities. This paper includes Town planning scheme at Lunavada proposals. By using TCPO norms and “The Gujarat Town and Urban Development Act, 1976” and implementing TP Scheme, the build ability of the reconstituted plot increases with regular shape, improvement in accessibility, increased potential of development, availability of social and physical infrastructure in the neighborhood, better linkage with other part of the city and improvement in living environment.

KEYWORDS : Town planning Scheme, Infrastructure, Housing Accommodation, Land readjustment, TCPO Norms, GTPUDA, GIS.

1. INTRODUCTION

This paper represents proposals of Town planning scheme for human settlement in fringes area of Palanpur city including the objectives, Methodology, TCPO norms, GTPUDA Act 1976, existing study area data collection and analysis etc. The proposals of town planning scheme, Lunavada T. P. Scheme which Area is 102 ha.

2. Objectives

Objectives: The objectives for the paper are discussed as follows:

- To prepare planning proposals for town planning schemes in the expanded area.
- To prepare Town planning proposals with using TCPO norms.
- To prepare Town planning proposals for better infrastructure facilities and basic public amenities of Palanpur city based for future requirement.
- To Provide affordable housing facilities for future population.

3. Methodology

Methodology used in this paper is at first survey the Palanpur city and then after deciding aim and objectives, to Fulfill objectives review literature from the internet and books, then visited the site and collected field data and also inventory data collected from municipalities and town planning office, Data collection methods like surveys, GIS mapping, government office records, Field observation etc. At last planning framework use by zoning, Town and country planning organization norms, UDPFI guidelines for Town planning scheme planning's proposals for Palanpur town.

4. Literature review

4.1 GTPUDA Act 1976

Province of Act

The Act GTPUDA Act 1976 provides for an effective two-stage techno-legal process of urban planning and implementation through the 'DP-TP Scheme' mechanism.

- The first stage involves the preparation and rectification of a strategic, citywide Development Plan.
- The second stage involves the preparation and implementation of one or more TPSs to realize proposals of the Development Plan.

4.2 Town Planning Schemes & Development Plan

The TP Schemes are basically areas remarked in the Development Plan. The Development Plan is a broad- brush development vision for the city a dynamic document which then is detailed gradually. The new areas for growth for development are clearly marked and divided into smaller areas of about 100 to 200 hectares. Each such area is called a TPS. The TPS are micro plans prepared for about 100 to 200 hectares typically involving 100 to 250 landowners. The TPS is numbered starting from one, two, three, etc., and are usually named after the “village” they fall in.

A development plan is a blue print of various future proposals that are purposely to improve or redevelop the existing situation and to command for future growth of the town in a systematic manner.

Development plan is a comprehensive document and makes specific proposals with respect to each. These include Land development—

zoning by land use, open area for new growth, regulation of development control (which determine the built form), and allocation of public uses. The DP is revised every 10 years and is varied (updated) in the interim whenever a need arises to respond to the changing context.

5. Field Study & Analysis of Existing Area

5.1 Site Visit- The existing area of proposed T.P. Scheme is visited & surveyed and to collect the data and information's based on the spot observation & to draw a mental feature of the site, the whole area is agriculture, also use GIS/Satellite for measure existing area of Proposed town planning scheme. The Lunavada and Sonagadha village at near the TPs. NH-14 passes some distance away from the town planning scheme.



Fig-1 Existing Plots of Proposed T.P. Scheme.

5.2 Land Price in Fringe Segments

Table: 1 Land Price in Fringe Segments

Sr No.	Description	Land Price (Sq.Mt.)
1	NH-14 road side	4250
2	Minor road side	2225
3	Internal road side	5700

Comment; - The Jantri price at an average Rate in this area is found to be Rs. 4060/- per sq.mt. of the open land and Rs. 10,000/- per sq. mt. for residential area. Land price so high because this T.P is near NH-14, and also surrounding area is developing very fast.

5.3 Infra - structure Facilities & Commercial Facilities

All basic facilities like water supply, drainage line and telephone and gas line are not present in this area because it is not developed portion and it is agriculture land. The electricity facility is given by the

UGVCL (Uttar Gujarat Vij Company Ltd.). There are not more commercial facilities available but at near NH-14 some Hotels and commercial complex are available. This area is under development commercial building and residential in the near future.

5.4 Analysis of Existing Area

The T.P. Scheme Proposed by the local authority is to be analyzed with different aspect to study & understand the important features of the proposal.

Plot Analysis: Plot Analysis Area wise: Plot Analysis is done on the basis of the individual plot area. It is classified into 2 categories such as

- Major plot i.e. >10000 Sq.mt.
- Medium plot i.e. 2001 to 10000 Sq.mt.

Table-2 Plots Area Less Than 10000Sq.mts.

Sr.no.	Original Plot No.	Area in Sqm.
1.	5	4742.4268

Comment; - Above table shows the minimum plot area of original plots, which is less than 10,000 Sqm.

Table: -3 No of Plots Area Less Than and More Than 10000 Sq.mt.

Particular	Area of Plot	No of Plot
Medium Plot	2001 – 10000	1
Major Plot	>10000	26
Total		27

Comment: - Maximum Original plots in the T.P scheme are major and 1 no medium size plot. So, it is help full to deduct the area from major plots and used to provide green space, Road network and Services.

Road Analysis

Table: 4 Features of Road

Road Width in mt.	Road Length in mt.
30	1092.6392
Total	3266.934

Comment: There is only 1 type of road hierarchy in the existing scheme as mentioned in the table. The total road length is found to be 1.09 km. Average width of road from the table is 30 mt.

Orientation of the Road: -

The Road widths according to their Orientation are mentioned in the table.

Table: 5 Orientation of Road in Existing Area

Sr. No.	Road Width	N-S	E-W
1	30	-	1

Comment: - Major road are oriented in E-W direction but it is approximate inclined 35 degrees. There is only 30m wide one road available and it is located in E-W direction.

6. Planning Proposals

Town Planning Scheme

Existing area of proposed TP scheme area is 102 Ha. The whole land use structure in Proposed town planning Scheme is as per TCPO norms.

6.1 Salient Features of Proposal

The Proposed T.P. Scheme is prepared with due care to overcome all the disabilities of Existing area & hence the planning was given micro attention to minor details.

6.2 Plot Analysis:

In proposing TP Scheme only one plot area is less than 10,000 sq mt.

Table: 6 Plot Analyses of Proposed TPS

Sr.no.	O.P.No.	Area in Sq.mts.	Deduction	Final plot Area
1.	5	4742.4268	30.18%	3311.0468

Comment: Above table indicates plot area of less than 10,000 sq. m. After deduction of original plots, final plot area in proposed TPS is 3311.0468.

Table: 7 Calculation and Deduction of Plot in Town Planning Scheme

Plot no.	Original plot (m)	Deduction (%)	Final plot (m)
1	39901.8823	34.23	26241.5380
2	28770.4613	34.47	18852.6501

3	39199.0624	34.20	25789.7714
4	32327.2321	32.55	21803.0197
5	4742.4268	30.18	3311.0468
6	16837.9026	32.56	11354.7463
7	87826.5888	35.82	56366.5601
8	19722.6780	32.16	13378.5477
9	66431.2463	35.13	43090.7545
10	52982.3638	33.84	35049.6340
11	57313.3840	32.93	38439.2820
12	59685.1391	33.60	39626.9635
13	25385.4158	34.30	16676.3330
14	22800.0694	34.31	14976.6512
15	52462.1175	35.26	33958.9982
16	25398.1553	33.26	16949.8002
17	37115.6695	32.71	24972.1400
18	39641.7328	33.11	26512.5850
19	16509.1558	30.42	11486.0348
20	33874.5908	32.20	22966.7860
21	60529.6199	35.10	39281.8060
22	26297.1298	32.13	17845.5778
23	32399.8730	32.59	21838.7042
24	27164.6068	32.30	18388.4963
25	12052.8042	31.48	8257.8987
26	31853.3956	32.86	21383.7707
27	39297.0213	34.31	25811.4451
Total	988521.7252		654611.5413

Comment: Above table indicates land readjustment in which deduction of the original plot area. Deduction of every plot between 30 to 35 % and average deduction of all plots is 33.77%.

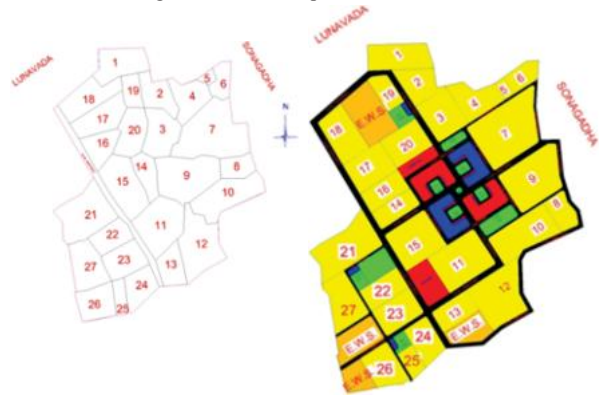


Fig -2 Shows Original Plots Area & Proposed Lunavada Draft TPS-1

6.3 Land Use Structure

Comparisons are made to prove that the drawbacks of existing areas of proposed T.P. Scheme are modified in the Proposed T.P. Scheme Under the Gujarat Town Planning & Urban Development Act. The Proposed Land use structure satisfies all the required norms as per UDPFI Guidelines.

Table: 8 Land Use Structure (All Terms in %)

Particulars	Colour code	Guideline	Existing area of proposed T.P.S.	Proposed T.P. Scheme
Residential	Yellow	60 – 70	-	63.78
Roads	Black	15 -17	3.19	15.38
Open spaces	Green	3 – 5	96.81	3.29
Public amenities	Red	5 – 10	-	6.71
Commercial	Blue	2 – 5	-	2.82
EWS reservation	Orange	7-10	-	8.02
Total TP area	-	100	100	100

Comment: The Table shows that, In the existing area of proposed T.P. Scheme, they have retained the existing roads and Agriculture land; hence the road percentages are very less say 3.19% instead of 15% which is required.

The residential & commercial plot areas and EWS plot areas are zero percentage in existing area. The Proposed T.P.S area Table shows that, the Road Area, The Residential & Commercial Plots, the Open Space & Public amenities Reservations are satisfied as per UDPFI Guideline.

The EWS reservations are also satisfied 8.02%.

6.4 Road Analysis

Table:9 Features of Road

Road Width in mt.	Road Length in mt.	Area in sqm.
24	3282.1845	78772.428
15	3201.6508	48024.762
9	2262.1	20358.9
Total	8745.9353	147156.09

There are different types of road hierarchy in a proposed scheme as mentioned in the table. The total road length is found to be 8.74 km. Average Width of the road observed from the table is 16 mt.

Comment: - Major roads are provided in the west to east approximately 35 degrees inclined. Width and length of road is more provide for better accessibility in T.P. Scheme. Hence it allows smooth traffic flow. It is most preferred orientation- direction wise. The road pattern at the center of town is Nandyavarta type. The Intermediate roads are very well provided in grid form covering north to south as well as east to west direction not properly but inclined. It also gives easy access on inner plots of entire T.P and gives rise to smooth and continuous traffic movement.

Orientation of Road:-

The Road widths according to their Orientation are mentioned. The Road Hierarchy used is 24 mt, 15mt, & 9 mt. Wide roads to avoid future congestion. The Major Road of 24 mt. Wide is provided in E-W direction. The Arterial Roads are in N-S direction and E-W direction. All the plots are in rectangular form & perpendicular to roads. The final plots are located in its original position. The availability of Major plots in different parts helped to provide the reserved plots throughout the different parts of the schemes.

The Reserved plots are allotted with different amenities & activities. Garden areas distributed in the entire area with easy access from main road & allowing the view from main roads.

Important reservations are made for Educational Purpose from Pre-Primary to college level including playground & garden. So that the students may not have to travel very far.

6.5 Reserved Plot

The draft T.P. scheme includes different types of reserved plots to serve the community with better recreational facilities & public amenities.

Residential & Commercial Purpose- It includes housing for E.W.S for poor people, also salable residential & commercial plots.

Institutional Purpose - It includes school & college for educational purpose.

Daily Needs - Municipal shopping centers which are must for daily needs.

Recreational Purpose - It includes a library, swimming pool, health Centre, playground & sports complex for better health & education of residents.

Health - It also includes a hospital.

7. Infrastructure Cost Estimate

Table:10 Estimate Cost of Infrastructure

Infrastructure Component	Unit of Measurement	Estimated Quantities	Cost per Unit in rs.	Total cost in lacs
Road	Length & width in mt.	147156.09 (Area in sqm)	1600	2354.49
Water Supply Network	Length in Running mt.	8745.9353	3150	275.49
Sewerage System	Length in Running mt.	8745.9353	2100	183.66 + 9.04(113 no. Manhole cost) = 199.66
Electric pole at 30 m distance	Poles	583 no	11550	67.33

Parks and Green spaces	Sqm	33808.7362	550	185.94
Total cost of T.P. Scheme				3082.91

Comment: Table No: shows total cost of project including Road cost, Infrastructure cost and Open space of town planning schemes which is 3082.91 Lac.

$$\begin{aligned}\text{Overall cost of per Hector} &= \text{Total Cost/ Hector area} \\ &= 3082.91/102 \\ &= 30.22 \text{ Lac per hector.}\end{aligned}$$

According to current price the approximate cost of the T.P. Scheme is 3082.91 lacs and cost per hector is 30.22 lacs.

8. CONCLUSION

One Town Planning scheme have been proposed in Palanpur City namely the "Lunavada Town planning schemes" of 102 Ha. This Proposed TP scheme would lead to urban development in fringes area of Palanpur City. With the analysis of Proposals of TPS one can get an idea about the process of town planning scheme, how to convert agricultural land parcel into manageable urban land with respect to a good quality of life, better infrastructure facilities as well as social amenities to satisfy the daily requirement of the people.

9. REFERENCES

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