

Understanding the Character of Open Spaces of an Urban Village on the Urban-Rural fringe of a City, to derive Design Strategies for its Longevity: Nanded Village, Pune

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Abstract: *Urban villages are hinterlands trapped in an urban premise; which are engulfed in the surrounding development. Their association with the natural parameters, which initiated their settlement, are lost. Nanded village on the fringes of Pune city is one such settlement, which in spite of having historical significance, productive soil with association of water bodies like river and stream, is facing similar issues of surviving in the peripheral development. The paper aims to analyse the condition of existing open spaces left in the village for deriving workable strategies, to determine its permissible usage and establish a role in the village upliftment.*

Keywords: hinterlands, urban premise, fringe, engulf, strategies, upliftment

I. Introduction

A specific category of settlements of the urban poor in the city can be termed as *the urban villages* or *the gaathan areas*. They grow like fungus in an otherwise manicured landscape in the vicinity. Their association with the natural parameters, which initially embarked their settlement, are lost, and they inhabit in isolation. These are dense settlements with intense issues related to the livelihood. They are original villages that have adapted to the current development pattern in their vicinity and have submitted to the paradigm shift. The cities spread out gradually to the hinterlands due to the increasing pressures of population; the villages on the urban-rural fringe transform at a slower pace. This extension engulfs the villages, acquiring their agricultural lands and bringing change in the occupational pattern of the villagers. This leads to a revolutionary change in the economic base of the community. In India, the urban villages are existing pockets of villages which have got cramped among the rapidly rising city around them, leaving these villages at the mercy of their own growth. They lack in basic facilities such as roads, water and sanitation, haphazard construction with buildings serviced by narrow streets. The urban village is where the prime change happens in the landscape component. The main areas where the transformation is seen are:

- Transformation of major landscape elements (water body, hills, natural flora & fauna, soil, etc.)
- Transformation of infrastructure elements (schools, commercial centres are built in the urban village)
- Transformation of land uses (change from agricultural land-use to residential/industrial/recreational land use)

- Transformation in occupational structure (people shift from working in agricultural field to working in the informal sector in the city)

- Transformation in social structure^[1]

One of the approaches to organise the development and transformation of such villages is by adopting green infrastructure (GI) networks. This study of the village is a representative case of developing strategies for the existing open spaces in such left out patches of settlements. This would give the village an identity which would minimise the social barrier they face with the inhabitants in the surrounding new development.

Aim:

To develop strategies for the different character of open spaces found in the urban village through green infrastructure methods for making the village self sufficient, improving the quality of life.

Objectives:

- To study the evolution of Nanded Gaathan
- To understand user preferences by conducting interviews of the residents
- To understand the suitable green infrastructure methods which can be adopted considering the requirements of the open spaces

Scope:

The open spaces of micro to macro scales are identified within the village, the characters are studied and strategies are suggested for it to become self-sufficient.

Limitations:

- The study is limited to the extent of Nanded Gaathan.
- The strategies are given catering the entire gaathan and considering the requirements of the villagers.
- The proposals are given at the strategic locations after analysing the site and considering the constraint of open spaces.

II. Methodology

Literature Review	Case Studies	Observations
<ul style="list-style-type: none"> Referring to published articles and books exploring the concept of 'The Urban Village' Studying policy framework for Green Infrastructure in India 	<ul style="list-style-type: none"> Three cases of different contexts <ul style="list-style-type: none"> a) 2 of Model Villages <ul style="list-style-type: none"> Ralegan Siddhi Hiware Bazaar b) 1 of Project 'Garbage to Gardens' by Manda Karlsson and Annie Soder Inferences 	<ul style="list-style-type: none"> Photographic documentation Interview of Villagers Data procured from site, summarised in sheet Site Analysis Identifying potentials for landscape interventions List of requirements from the site Policy framework and Design strategies for the Site Design intent, landscape proposal

Figure 1 – Methodology Table

- Literature study:**
 Studying the concept of Urban Village through research articles and books; understanding Green Infrastructure techniques.
- Case Study:**
 Three case studies were selected, two based on model villages and one based on transition of an open space used for sorting garbage into a garden.
- Observational study:**
 Analysis of site through Photographs, Interviews, Natural parameters, Manmade parameters, Activity mapping, Identifying open space structure and its analysis

On the basis of literature review, case study and site analysis, giving demonstrative design strategies for the identified open space structure was the next stage.

i. Literature Study:
Green Infrastructure ^[2]

Table 1: Attributes of Green Infrastructure

Natural ecosystem values and functions [biodiversity, ecological processes, and ecological services]		
Attributes	Examples of places	Examples of functions provided
Fish and wildlife resources	Wildlife refuges, landscape linkages / wildlife corridors, ecobelts, streams and lakes	Provide habitat for wildlife, support animal migration, maintain population health
Watersheds or water resources	Riparian or stream buffers, wetlands, flood plains, groundwater recharge areas	Protect and restore water quality and quantity, provide habitat for aquatic and wetland organisms
Associated benefits to human population [ecological services,		

societal values, and economics]		
Recreation and health resources	Parks, greenways, blue ways, trails	Encourage exercise and active lifestyles, provide space for outdoor activities, create places for solitude and respite, connect communities, connect people with nature, provide alternative transportation
Cultural resources	Historic or Archaeological sites, educational sites / facilities, town / country open spaces	Preserve link to cultural and natural heritage, foster education through 'nature classrooms', protection of cultural site / integrity
Working lands with economic values	Farms, orchards, ranches, managed forests	Protect working lands as a business as well as a place; maintain rural character and traditions, support sectors of the economy.

ii. Case Studies:

Two case studies representing Model Villages were referred, namely Ralegaon Siddhi and Hiware Bazaar both from Ahmednagar. Issues faced by the village then were:

- Acute water crisis, reason being village cited in drought prone and rain shadow region
- Limited seasonal agriculture
- Unavailability of fodder and fuel wood
- Forced migration of the farmers to surrounding towns and cities in search of work
- Deprived of its only source of income – agriculture
- Residents turning to local liquor production, giving rise to vandalism
- Lacked in basic facilities of primary education and health

To mitigate these issues the principles enforced and implemented in both the villages were:

- Watershed Management
- Use of non-conventional energy resources
- Shramdan
- Ban on Grazing
- Ban on Tree cutting
- Ban on Liquor
- Family Planning
- Voluntary Labour

Another case study referred to was a study done by Manda Karlsson and Annie Söder, who gave design proposals for two decentralised waste management units in Pune, India and

published their work under the title ‘Garbage to Gardens’. One of their sites in Pune was a small area currently used as sorting space for the disposed household dry waste. The main approach was to improve the work conditions of the rag pickers, by providing a substantial shade to protect from sun and rains, and give it a tidy appearance to improve the hygiene of the place^[3].

III. Site Survey

About the Site:



Figure 2 - Nanded Gaathan Boundary: 25 acres

Pune’s urban area has been expanding on an average rate of about 500m per year for the last two decades or so. Human habitations are encroaching upon the farm land, orchards on fringes, affecting the riverine habitat the most. In this rapid urbanization, the villages on the fringes get transformed, forming urban villages or gaathan. One such urban village is Nanded Gaathan, in the vicinity of the upcoming Magarpatta’s Nanded City township situated 8kms towards South from Pune City. The area is 25 acres catering 2669 households. The site gradually slopes towards the river. In the past peoples association has been the strongest towards the river and the stream.

The Surveys:

The surveys were conducted at two levels, for children and adults. The conclusions brought a better understanding of the association of the people with the different forms of water bodies in their vicinity; their lifestyle and their preferences of the activities at the river front. People’s choice of activities and their understanding of the current open spaces helped derive the strategies.

Percentiles of people’s opinion on the kind of riverfront activities

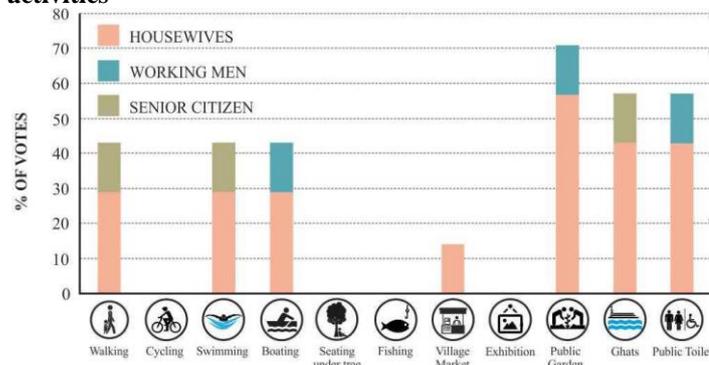


Figure 3 – Bar Chart showing people’s preference

The graph represents the activities given to the people for choosing their preferences, the group was deliberately categorised as ‘Housewives’ ‘Working Men’ & ‘Senior Citizens’.

A cumulative highest vote came for ‘Public Garden’ followed by ‘Ghats and ‘Public Toilets’ It was concluded from the survey that people need allocated open spaces apart from recreation as it forms an integral part of their everyday life.

Percentile of students’ preference on the kind of riverfront activities

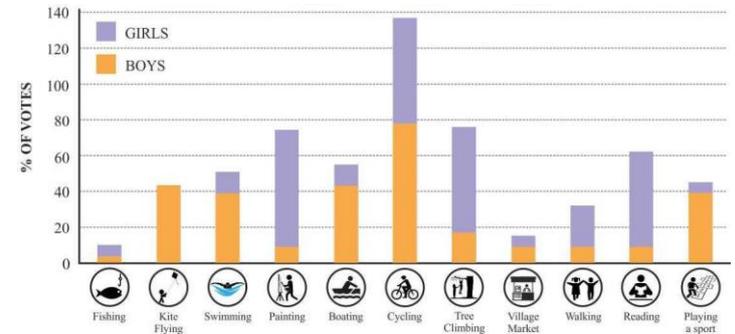


Figure 4 – Bar Chart showing students’ preference

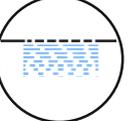
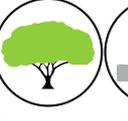
The survey was conducted to understand what children preferred the most if the existing river front was restored. A mixed age group of 10 years was selected from the Zilla Parishad School, the only one in the vicinity. The cumulative vote went to ‘Cycling’, followed by ‘Tree climbing’ and ‘Painting’ chosen by the Girls and ‘Kite Flying’ and ‘Boating’ chosen by the Boys. Many students shared how these activities were once a part of their growing up years, which now has faded since degradation of natural resources and infrastructure.

IV. Results and Tables

Table 2 –

Open Space Character Analysis with Proposed Strategies

1) TYPOLOGY		RIVER	
Available Open Spaces		River & Riverfront	Pot-holes
Ownership		Irrigation Department	Irrigation Department
Existing Use		Seating spaces, Crematorial activities and Visarjan activities	Drying of clothes & cow dung cakes
Approximate Area		0.53 km stretch	-----
Concern	Functional	●●●●	
	Social	●●●●	
	Visual	●●●●	
	Environmental	●●●●	
Policy	Activities	Ban on polythene bags, Ban on dumping waste into the river, Provision of bio gas plant, Ghats, Fine levied, Restricting air pollution, Restricting noise pollution, Maintenance of Public Toilets, Cow dung collection Bank, Public Garden, Collection bank for Nirmalya, Ban on cattle washing, Fishing, Bio swale along the streets, Cycle track, Domestic waste water segregation at the point of generation	

	Techniques	  Waste Water Treatment Rain Water Harvesting   Weed Management, Removal of pollution tolerant species Stormwater Management
	Built	Prohibition of built spaces in between the 25 year flood line, Low rise built spaces, Maximum 6m height, in the upland area of the river
	Material	  Eco-friendly Materials Pervious Materials
	Planting	   Large Canopy Evergreen Floriculture & Hydrophytes Flowering Fragrant Species
2) TYPOLOGY		STREAM
Available Open Spaces		Open Spaces Along The Stream
Ownership		Irrigation Department
Existing Use		Stream, Resting place, Fishing
Approximate Area		0.4 km stretch
Concern	Functional	●●○○○○
	Social	●○○○○○
	Visual	●●○○○○
	Environmental	●○○○○○
Policy	Activities	Creating buffer corridor through plantation, Ban on polythene bags, Ban on discharge of waste water into the stream, Ban on washing clothes, Ban on cattle washing, Introducing fishing
	Techniques	  Stream Restoration Techniques Soil Stabilisation Techniques
	Built	-----
	Material	-----
	Planting	  Water Retaining Species Hydrophytes - Submerged, Emerged & Floating
3) TYPOLOGY		EXISTING OPEN SPACES
Available Open Spaces		Vacant Plots Incidental Open Spaces
Ownership		Private Private
Existing Use		Parking and storage Seating areas, Disposal of

		untreated & unsegregated waste (turned into Garbage Depot)
Approximate Area		18000 sqm = 4.45 acres 1786 sqm = 0.4 acres
Concern	Functional	●○○○○○
	Social	-----
	Visual	●●○○○○
	Environmental	●○○○○○
Policy	Activities	Community Open Space, Retaining cultivable land, Provision for Village Market, Open spaces for events & festivals, Local species Floriculture, Community Supported Agriculture (CSA) Spill over space for Crematory activities, Nursery, Seed Banks, Play area within the school premise, Segregation and Treatment of collected waste
	Techniques	-----
	Built	No built structures on agricultural plot, Built space required should not be more than 3 m Built space required should not be more than 3 m.
	Material	----- Use of eco friendly building materials, Earth bags used for the sorting and collection area, Prohibition on concrete, Organic fertilisers – by product of waste
	Planting	Crops - okra, fenugreek, spinach, Sugarcane. Fruit trees - mango, sapota, guava, tamarind, Custard apple, jambhul. Floriculture with plants like marigold, kagda, mogra, gerbera, Hedychium  Large Canopy Evergreen  Floriculture & Hydrophytes

		<p><i>coronarium</i>, were cultivated in the past by the settlement. Large canopy evergreen trees should be used in community spaces</p>	 <p>Flowering Fragrant Species</p>
4) TYPOLOGY		FARMLANDS	
Available Open Spaces		Farmlands	
Ownership		Private	
Existing Use		Residential	
Approximate Area		33600 sqm = 8.3 acres	
Conce rn	Functional	●●●○	
	Social	●●●○	
	Visual	-----	
	Environmental	●●○○	
Policy	Activities	Agro forestry	
	Techniques		
	Built		
	Material		
	Planting		
5) TYPOLOGY		INFRASTRUCTURAL OPEN SPACES	
Available Open Spaces		Streets and Nodes	
Ownership		Gram Panchayat	
Existing Use		Junction or Cross-over spaces	
Approximate Area		5000 sqm = 1.2 acres	
Conce rn	Functional	●●●○	
	Social	●●○○	
	Visual	●●○○	
	Environmental	●●○○	
Policy	Activities	-----	
	Techniques	  <p>Stormwater Management Waste Water Treatment</p>  <p>Rain Water Harvesting</p>	
	Built	-----	
	Material	  <p>Prohibition on use of Concrete Pervious Materials</p>  <p>Eco-friendly Materials</p>	
	Planting	<p>The plantation for Bio swale : <i>Cynodon dactylon (retz) Trin</i>, <i>Saccharumarundinaceum Retz</i>, <i>Saccharum spontaneum Linn</i>, <i>Vetiveria zizanoides Stepf</i>, <i>Ludwigia parviflora Roxb</i>,</p>	

		<p><i>Oldenlindia corymbosa Linn</i>, <i>Rungia repens Nees, Karanj</i>, <i>Taman</i></p>
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V. Conclusion

In a transformed setting land use, open spaces, mature trees etc should be preserved. Commercial activities like mills, barber shop, vegetable market should merge in the village setting rather than cafes, retail outlets, boutiques, etc reflecting on the facade, signages and building heights. Waste segregation and treatment area can be transformed into a garden sufficing the need of recreation.

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