

EXPLORING THE VULNERABILITY OF AN URBAN SLUM IN CHENNAI

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ABSTRACT

Sukumar, a fisherman, narrates a story, “After the tsunami of December 2004, the State government decided to rebuild the Srinivasapuram tenements. There were also proposals to relocate the community, amalgamate the community in high-rise housing to free up land for commercial development, and several other proposals supported by the World Bank. But, we, the fishermen and environmentalists, have suggested to the government not to relocate 1,356 slum tenements and not to evict 3,000 hutments in Srinivasapuram. We want to live in this same place. Besides tsunamis and cyclones, this area has also been designated as an earthquake prone zone. We are also concerned about sea-level rising with climate change.” Ms. Blessy, a journalist-social researcher tells us, “There has also been a proposal to create a park near Adyar Creek. The coastal community has expressed their objection to a 45-lakh square-foot commercial hub – proposed to have multiplexes, hotels and theatres at Foreshore Estate.” This paper aims in analyzing the various conditions in the existing site of Srinivasapuram , their way of life and assess the housing needs and their criteria in the context of natural disasters.

SRINIVASAPURAM - ITS LOCATION AND FABRIC



Fig1 - Entry points to Srinivasapuram

Srinivasapuram (Mullikuppam) is a part of Foreshore Estate popularly called as ‘Pattinapakkam’ is located at 80 deg 16’35” E to 80 deg 16’40”E longitude and 13 deg1’00” to 13 deg 10’00”N Latitude of Chennai, TamilNadu. Physiographically, it is located on the Northern bank of Adyar River and estuary. Sandy beach and sand dunes are the prominent geomorphological features found in this field site and as a matter of fact, settlements are located on the sand dunes.

BACKGROUND

SETTLEMENT PATTERN IN SRINIVASAPURAM



Fig. 2 Settlement Pattern in the settlement

ANALYSIS OF SRINIVASAPURAM

The following conditions were analyzed in the existing site of Srinivasapuram

- ✓ Family size and occupation, way of life, vehicles, etc.
- ✓ Shops in the area
- ✓ Ancillary activities happening on the beachfront and fishing related activities, market, how fish caught, stored, distributed and sold chain, etc.
- ✓ Study of existing dwellings and their organization and their vulnerability to disaster.
- ✓ Weather conditions through out the year and how sea behaves, how the creek works, etc.
- ✓ Electricity and sewage system, garbage disposal, transport links

DEMOGRAPHY OF THE SETTLEMENT

The site hold approximately 18,000 population which includes encroachment in the settlements. Majority of the people residing in these settlements belong to the Fisherman Communities. Their livelihoods and socioeconomic condition delineated their poverty and utter deprivation in the slums

1	Total Population	18000
2	Total Households	4000
3	Slum population	1356
4	Fisher folk	40%
5	Others	60%
6	Literacy Rate	60%

Table 1 Demography of the settlement

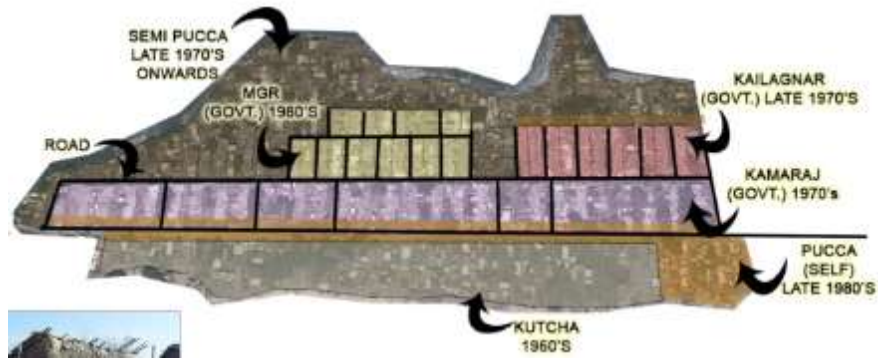
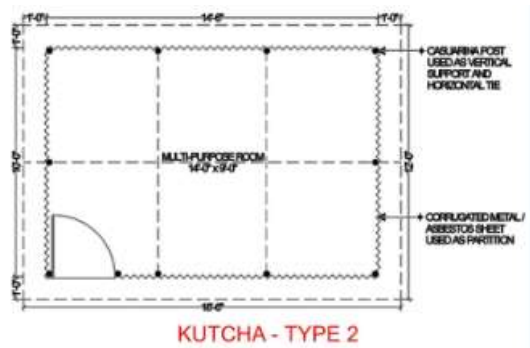
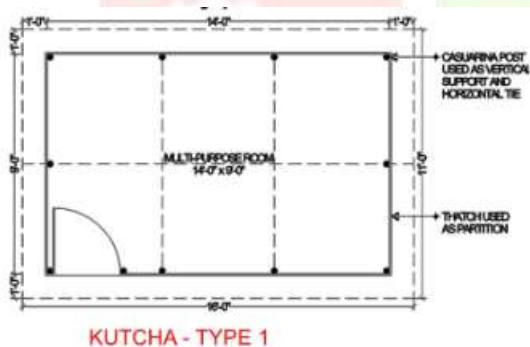


Fig 3. View of settlement showing the various types of settlements

TYPE OF SETTLEMENTS EXISTING IN SRINIVASAPURAM

- ✓ Kutcha
- ✓ Semi-Pucca
- ✓ Pucca
- ✓ Pucca Multi-Level Housing (Govt. Provision)
- ✓ Pucca Multi-Level Housing (Individual)

Kutcha Houses:



These are houses which are found on the shoreline whose primary occupants are fisherman. These are people who are allotted to Govt. Housing Board with 200 - 250 sq.ft unit. But they have made themselves a kutcha house and given out

their allotments for rental and make their living out of rental and fishing. Water provision is through hand pumps and metro water lorry provision. No latrine is available. Open roof bath alone is available. Electricity is tapped from nearest power source. The houses have very shallow foundations that are not more than 900mm deep and 150 to 300mm high plinth size. The houses are finished with mud mortar, steel corrugated sheets and plastic sheets. Room sizes vary from 10 to 15 square meters.

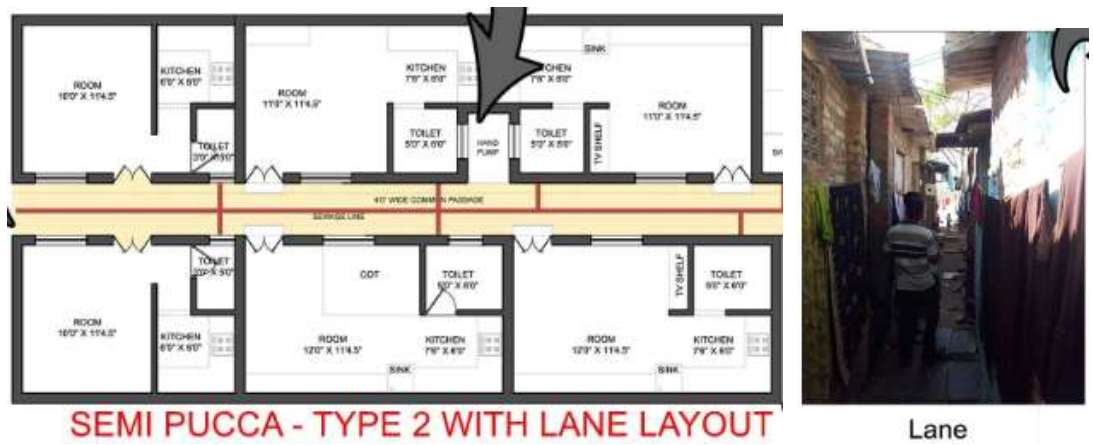


Fig 4
a. Stacking and storage
b. Inner partition wall

Semi pucca houses:

These are houses occupied on the rear side of the Govt. Housing provision towards the backwater of the adyar river. The occupants are primarily immigrants from other locality or state. Their occupation is basically either being building maistry or carpenter or any other infrastructure related occupation. These are basically built by themselves without proper govt. Provisioning or legalizing.





The planning involved single multifunction hall with a kitchen and toilet provision. Initially these were kutcha houses but with the development in their financial status they renovated their houses stage by stage and now almost everyone who is occupying this region has a semi-pucca house (masonry wall with asbestos sheet) Along the same region, we did see new developments cropping up along the periphery of the banks with dumped waste landfills who are well equipped to build their house with reinforced structure. Water provision is through hand pumps and metrowater lorry provisions. Latrine and bath are available. Electricity is provided through Govt. Provision. Drainage is enabled by themselves on a joint group affair to the backwater or personal effort to connect themselves to the existing drain line of the housing board development.



Fig 5

- a. The multi purpose room which functions as a private and a public space
- b. Entry into the house with jali opening behind the entrance
- c. Cold storage facility to improve their economic condition

Pucca houses

The multi-purpose room has been divided into a bedroom and a hall with a small dwarf wall. The entire structure is 4'0” high wall with a thatch roof on top. These structures were very close to the shore line and they belong to the fishermen who rent it out to other people for Rs. 2500 p.m There is no water connection and they depend on pot water. Electricity is also tapped illegally.

The front space of the entry is used for storage and washing activities. They have a common toilet for both houses. A staircase leads to the terrace which is used for sleeping. The space inside the house is zoned with different activities in each area. There is a multi purpose hall with a space for kitchen. No water connections are available. The pathway is covered by a sheet and there is a window which provides very least ventilation for the entire house. A small pooja space in the multi-purpose hall shows the usage of multiple spaces within a single hall.

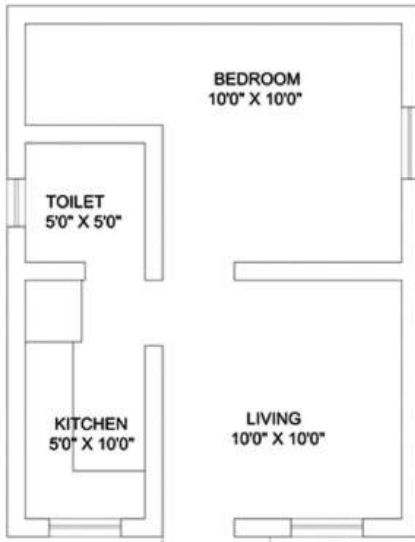
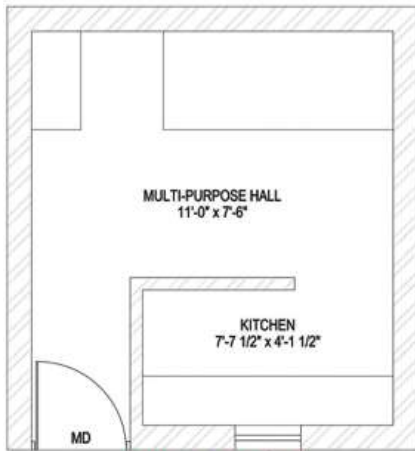


Fig 6

- a. Toilet with water storage
- b. Kitchen with good lighting



PUCCA - TYPE 2



Fig 7

- a. Entry to the house
- b. A small pooja space

Pucca multi - level housing (govt provision)

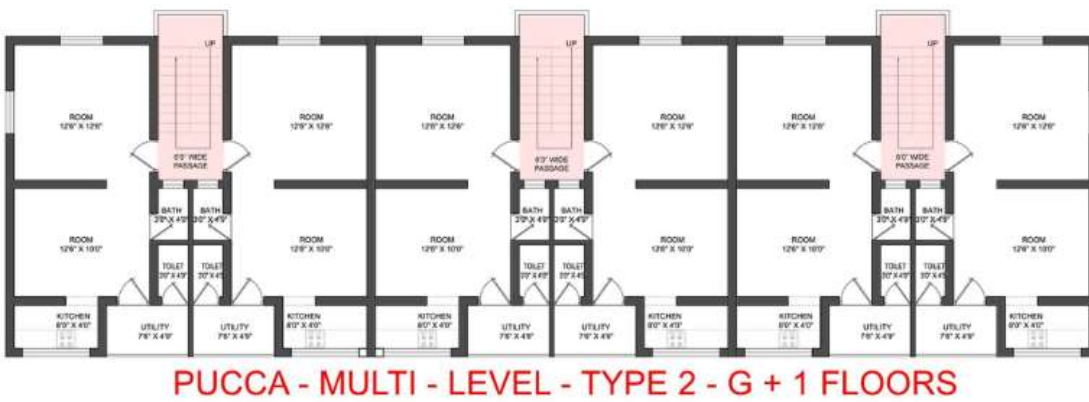
These are Govt. Oriented programmes targeting the fisherman’s community in the region done in three phases with different Govt. provisioned only for the fisherman. These are single bedroom, kitchen, bathroom, latrine & multi-functional hall provision. These are occupied on rental basis because the fisherman owner can generate revenue from the infrastructure provided to them by the Govt. As they were able to generate better revenue with their provision and could make extra with their fishing provision.



PUCCA - MULTI - LEVEL - TYPE 1 - G + 1 FLOORS



Fig. 8 a. A big parking space encroached on the outside b & c .Interior views of the house d. Kolam drawn on the exterior space that is encroached, used as a transition space by the user.



PUCCA - MULTI - LEVEL - TYPE 2 - G + 1 FLOORS



Fig 9 a. Bedroom with a sufficient storage space b. Sufficient lighting with a storage space c. A small kitchen with a countertop and water for cleaning is also provided. D. Living room as constructed by TNHB

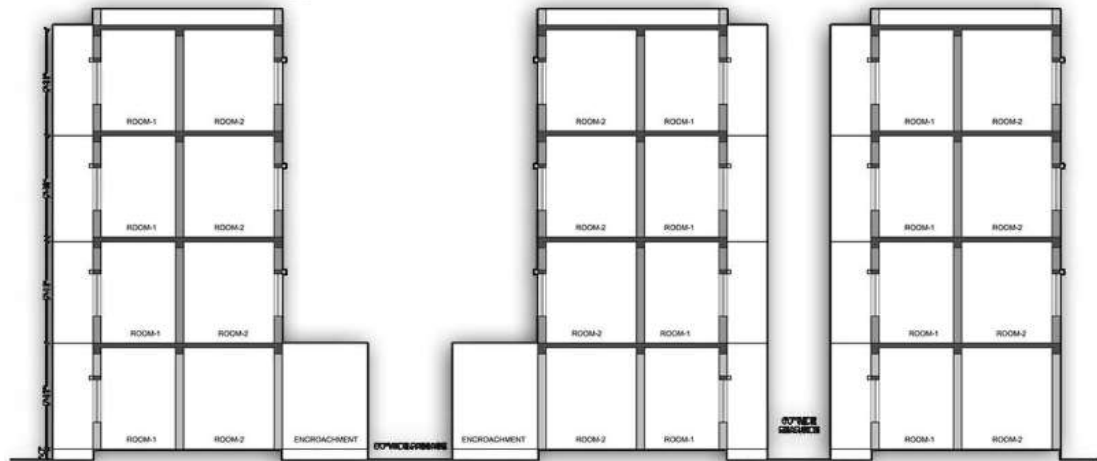
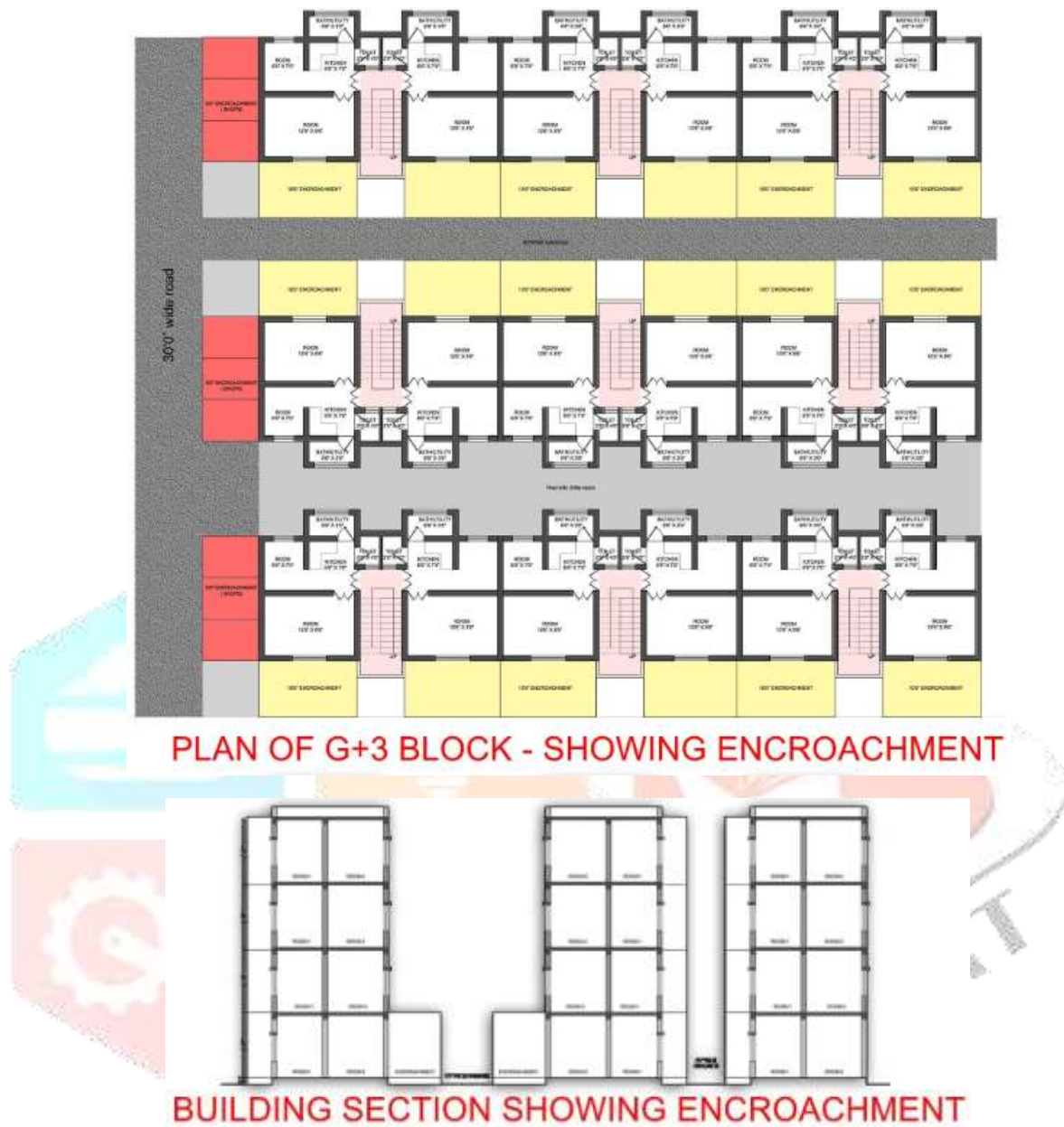


Fig 10 a. Section showing multi level type 3 house b. Exterior elevation c. Extra kitchen added to the house d. Kitchen converted into a room

Encroachments:

On the back side of the G+1 and G+3 block (In between the two blocks) the ground floor alone is renovated which opens to outside with a variety of usage of spaces like storing, hand pump, drying clothes, having a separate muttram for kolam and also for recreation for women during day time. Grooming was a part of activity done outside the house. All these activities are separated by means of levels in the pavements. On the periphery of the Govt. Provided shelter encroachments are widely seen. Similarly along the backwaters, the full stretch has been encroached.



PLAN OF G+3 BLOCK - SHOWING ENCROACHMENT

BUILDING SECTION SHOWING ENCROACHMENT



Fig. 11 Encroachment on back waters b. Encroachment along G+1 blocks
c. Pucca structure built on encroached land next to G+1 Block.



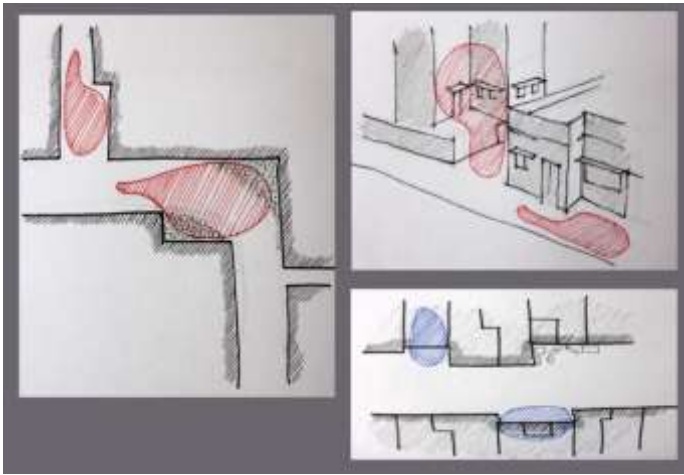
Fig. 12. Encroachment on the front yard of the blocks b. Encroachment behind the housing blocks

ACTIVITIES OF PUBLIC SPACES

SLUMSCAPE



ANALYSIS OF STREET SCAPE - RESIDUAL SPACE



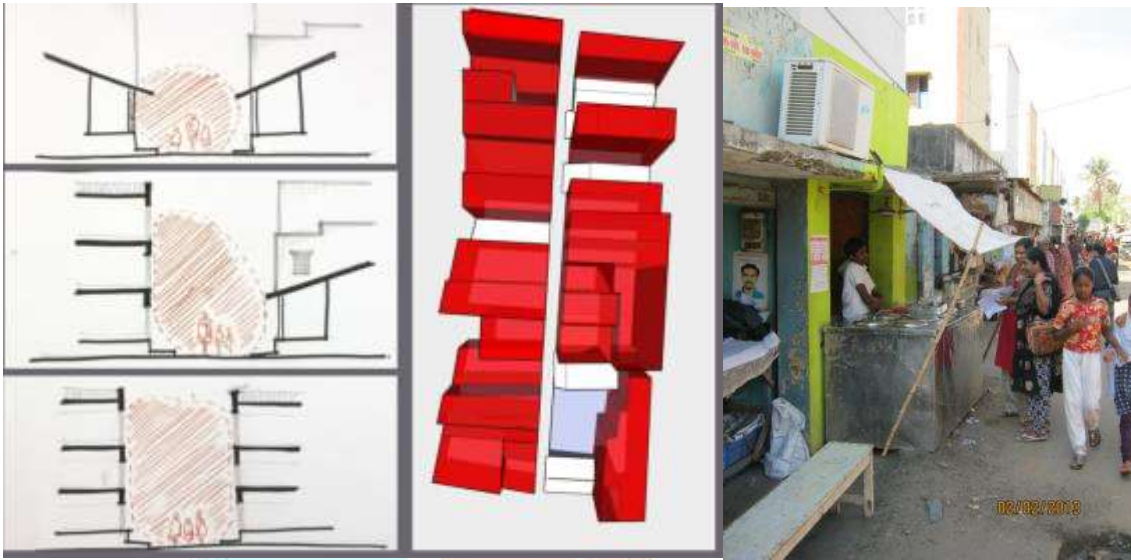
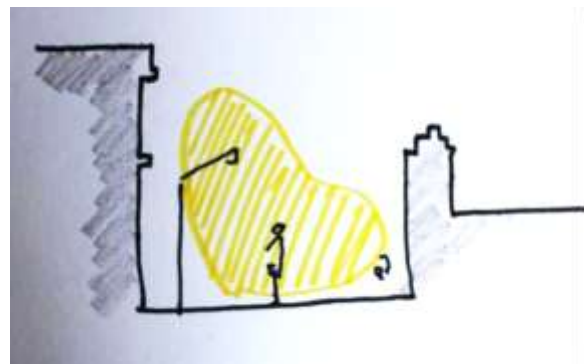


Fig 13 showing the streetscape and slumscape in sections and photos





AMENITIES

1. Community centre

Community centre is located at the entrance of the settlement. The community centre can accommodate about 300 people. It doesn't have separate dining room, bride and bridegroom room. It lies in the temple property. All functions in this slum is only conducted in this community centre and it cannot accommodate the sensitive population of the settlement. Dining space is a major problem in this community centre.

Community Hall	1
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Public Toilet	1
Anganwadis	3
Playground	1
School	1
Library	-
Health Centre	3
Marketing Centre - Fish Market	1
Shops	110
Temple	1
Church	1
Mosque	1
Fire fighting	-
Police station	-
Ration shop	1
Self help group center	1

Table 2 Amenities in the settlement

2. Education

Schools are located at the entrance of the slum supported by the NGO. It is an evening school. Students from neighboring villages come here for learning basics of computer.

Nursery school -- 3 Nos.

Elementary School -1 No. Govt. Kadal Karai Aramba Palli (Classes 1 to 5th std) Located next to EB office.

Primary school - 1 No. There is no provision of schools for children inside the slum. They have to walk away from slum for their education.

3. Water supply

Existing source of water supply is through OHT's and hand pumps located within the slum. Metro water is available in the hand pumps. Chlorinated potable water is available with no pay for water. Rain water harvesting is done in each slum board building. The lack of toilet in the slum has polluted the water. The water quality of Adyar creek is presently polluted due to the uncontrolled discharge of sewage from point sources and indiscriminate dumping of garbage. As the project envisages organised collection, transportation and disposal of garbage through Corporation of Chennai and sewage through internal network of UGS and there is every likelihood of improvement of the Adyar creek in terms of quality of water and ecological quality of the creek.



Fig 14. Water supply through tanks and stand pipes.

4. Roads

There are two main roads: Srinivasapuram Beach road which is 21.5 ft wide and the road parallel to the beach road which is 26.5 ft wide. The road that connects these two roads are 18 ft wide. Financial assistance for the roads are from Town and Country Planning Development.

5. Fishing

They are of two groups. One group goes into the sea for fishing whose boats are worth 5 Lacs. The other group is a economically weaker section who goes minimum of 2-3 times into the sea.

6. Electrical

They usually tap electricity illegally though some houses have electricity. Sodium Vapor lamp street lights (53 nos) are available in the settlement. There is no parking provision

7. Vegetation

There is no landscape in the settlement. Even if any landscape is found, it is removed and encroached by the people for their living. They use those wood for building their encroaching habitat. Some trees are existing in the settlement in between blocks. These are used as parking spaces or a temporary mechanical shed under them.



Fig 15 Services like garbage and electricity

SITE ANALYSIS:

The site is isolated due to its unique position between the shore and the backwaters of the foreshore estate. The only link to the site is from Kamarajar salai via new coastal road. Foreshore Estate has proposals for several high rise blocks being

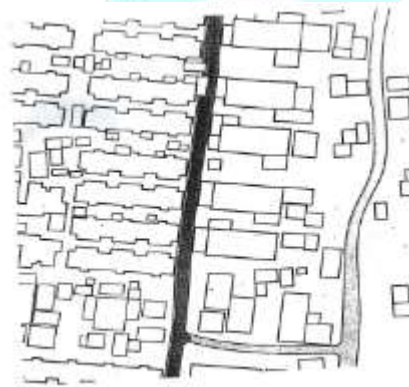
a prime property; lying between them and the beach including two IT parks and a five star hotel. The activities of the surrounding areas, the high court, college campuses and the recreational stretch of the marina are largely ignored by the people.

OPEN SPACES

Spaces are used within the settlement to different use based on their relative position within the settlement which have grown to a larger extent from the usage, the usage of space shows great flexibility and the character of each space is defined purely by usage. Multiple functions occur in common spaces, a quality that can be exploited during the re-densification. Concepts of public, private and semi public space exist in different types from other areas of the city. Important areas within this settlement include religious and secular community spaces, the main ‘commercial’ street and the three basic ‘edges’ to the settlement. Conversion and modification of public space into private or semi-private spaces for usage, both for the purpose of extending the home and domestic activities as well as for the occupational purposes is very common and offers scope for design application.

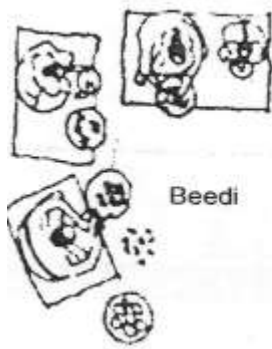
CENTRAL STREET:

Both edges of this street is that of a bustling public one, different from the rest of the domestic spaces of the settlement.

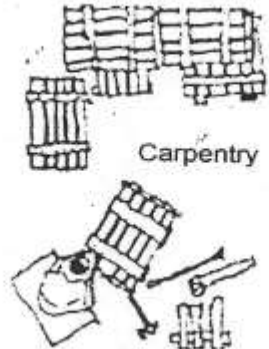


PARALLEL INNER ROADS:

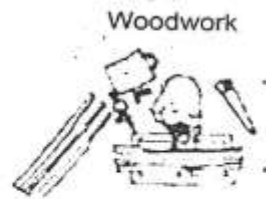
The grid iron planning of the tenemental scheme has imposed an overall order upon the settlement. The inner street branching out from the main street are more or less parallel, broken only by informal structures constructed by people who live nearby. The character of these streets is markedly different from that of the main street, with spaces being converted for domestic activities that are brought outside the house, as well as for small areas of occupation; such as rolling beedi, carpentry, tailoring and embroidery.



Beedi



Carpentry



Woodwork

Fig 16
Character of streets with various domestic activities outside

COMMUNITY AND PUBLIC SPACES

Community and public spaces exists in two forms: Religious and secular. Religious spaces include gathering areas around the temples, the yard in front of the church, other community spaces of importance, other than commercial areas, include informal ones such as gathering spots under trees; as well formal meeting places for self help groups and the unorganised worker union.

ACTIVITY	GENDER/TIME	4.00 - 6.00 a.m	6.00 - 7.00 a.m	8.00 - 10.00 a.m	10.00 - 3.00 p.m	3.00 - 5.00 p.m	5.00 - 9.00 p.m
	MALE	Fishing	Arriving with their catch	Own their business			
	FEMALE	Household work and sending their kids to school		Segregating the catch and selling	Help their husbands in their business		
	KIDS	Getting ready for school		School activities		Playing with other children	Helping the parents in their business

Table 3 Activity Pattern of users in the settlement

Structure type	No. of Floors	Water facility	Toilets	Organisation of spaces	Materials used
Kutchra	Ground	Hand Pump and metro water from lorries	No latrines. Open roof bathing	Bedroom, a hall and a toilet without door in front	Mud mortar, steel corrugated sheets and thatched roofs
Semi-Pucca	Ground	Hand pumps and metro water from lorries	Latrines and bath available	Multi-purpose hall with a kitchen and a toilet	Masonry walls with asbestos sheet covering
Pucca Govt	Ground + One & Ground + Three	In multi level housing taps were provided	Latrines and baths available	Hall, Bedroom, Kitchen with utility and a bath and toilet seperately. No access to terrace.	Masonry walls with RCC roof.

Pucca Self	Ground & Ground + One	Own tanks in their houses	Latrines and bath available seperately	Multi-purpose hall with a kitchen and a toilet	NGO based construction with tiled roofing and also masonry walls with RCC roofing for some houses.
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Table 4 Facility Chart

INFERENCES:

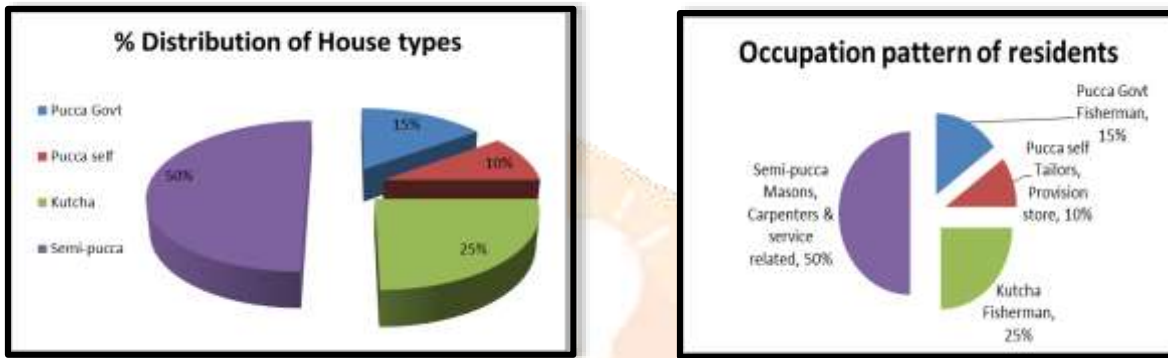


Fig 17 Chart showing the distribution of houses & occupation pattern of residents

S.NO	TYPE	AREA
1	PUCCA (Ground + 3	300 sq.ft
2	PUCCA (Ground + 3	350 sq. ft
3	PUCCA - Ground Floor	160 Sq. ft (Kitchen + Multi-purpose Hall)
4	PUCCA - Ground Floor	200 sq.ft (Living, Bedroom, Kitchen, Toilet)
5	PUCCA - Ground Floor	420 sq.ft (Kitchen + Multi-purpose Hall)
6	SEMI - PUCCA	200 to 250 sq. ft
7	KATCHA	125 to 200 sq.ft

Table 5 Area statement of the existing settlement

From the above study women take up various designations like housewives, carrying out business with their fisherman husband, grocery shop and tailoring etc.,. The average size of the family is from 3 to 6. The primary settlement consists of

fisherman and the secondary settlement are relatives of fisherman and people migrating on occupation basis initially unto the periphery of the housing board with their extended family occupying the neighboring places.

CONCLUSION

The people in the hamlets are not definitely happy with the amalgamation of existing community into one large cluster or a housing project. Each kuppam has their own traditional fishing practices as well as sea rights. So any redevelopment planned along this corridor should keep their way of life in mind. According to the study there are so many other activities taking place in the open spaces like parking their boats, repairing and mending their nets, drying fish, selling fish and storage. The design consideration and planning should also look into integrating their changing way of life according to the development of the city, their basic needs, other amenities like markets, schools, playgrounds etc., Currently the creek is facing major pollution due to uncontrolled discharge of sewage from point sources and indiscriminate dumping of garbage. So we as responsible Architects should evolve development initiatives for the poor to combine commercial development with housing and an integrated plan of Ecological systems of waste water management and recycling for the existing families.

REFERENCES:

<http://www.tnscb.org/housing-for-all/>“Structure of Chennai”

“Designing our future: sustainable landscapes Sidwell friends school, Washington, D.C”, U.S.A American society of landscape architects

Urban climate mapping for supporting urban planning in Chennai, India – Horrison, Ebin and Lilly rose

“A Fishermen oppose move to relocate slum tenements” – THE HINDU web, srivatsa

