THE American Journal of Humanities and Social Sciences Research (THE AJHSSR) ***2021***

E-ISSN:2581-8868

Volume-04, Issue-06, pp-20-37

www.theajhssr.com

Research Paper Open Access

Urban Renewal Plan for Old areas of Sonipat, Haryana, India

Moushila De

PhD Scholar, School of Planning and Architecture, New Delhi, India

ABSTRACT

Every city is affected by trends of transformations or the process of change. The term decline in the context of urban development is used to describe undesirable changes. Local policies and strategies designed to deal with urban decline, decay or transformation are termed as urban renewal.(Preeti Onkar, 2008)Urban renewal is a dynamic term, which is evolved with reference to transformations of city and its economy. It refers to the various attempts to reverse the decline in cities that have been worst hit by the capitalist urbanization. The paper is an attempt to study in brief the evolution function and the changing profile of the Sonipat City and analyze the characteristics of the ward 3 old city and its comparison with the whole city. The paper also identifies the existing problems and issues in the ward 3 old city of Sonipat. The paper further recommends the ways in promoting sustainable development and inclusive planning, providing open space and community/welfare facilities, providing basic physical and social infrastructure facilities in ward 3 of Sonipat.

Keywords: *Regeneration, Revitalization, Land Pooling, Floor Area Ratio, Smart Infrastructure*

1. Background

Urban renewal, which is generally called urban regeneration ("regeneration" in the UnitedKingdom), "revitalization" in the United States, is a program of land redevelopment in areas ofmoderate to high density urban land use. Renewal has had both successes and failures. Itsmodern incarnation began in the late 19th century in developed nations and experienced anintense phase in the late 1940s – under the rubric of reconstruction. (Chigbu, 2012)The process has had a majorimpact on many urban landscapes and has played an important role in the history anddemographics of cities around the world.

The process where an urban neighborhood or area is improved and rehabilitated. The renewalprocess can include demolishing old or run-down buildings, constructing new, up-to-datehousing, or adding in features like a theater or stadium. Urban renewal is usually undergone forthe purposes of persuading wealthier individuals to come live in that area. Urban renewal is oftenpart of the gentrification process. A comprehensive and holistic approach should be adopted torejuvenate older urban areas by way of redevelopment, rehabilitation, revitalization, and heritagepreservation (the 4R business strategy).

Different definitions given by planners,academicians and researchers aim at sustainabilityby integrating the different dimensions of urban renewal. (Preeti Onkar, 2008)These are:

- Physical renewal leads to improvement of urban fabric
- Social renewal leads to improvement of community and housing.
- Cultural renewal promotes enhancement of culture and traditions.
- Economic renewal leads to new generation of employment and revenue.
- Environmental renewal leads to minimizing ecological imbalances in urban environment

Urban Renewal seeks ways to improve disadvantaged places and the lives of people who live and work there. Regeneration and renewal activities are varied and may reflect joined-up holistic or relatively less integrated programmes of physical, social, and economicchange. Most of the cities have large, blighted areas, with severe stress on the existing, aged infrastructure and services. Many of them have lost businesses and are functioning at sub-optimal productivity levels. Notwithstanding the valuable land on which such areas stand, they contribute little to city finances. Maintaining them in their present state without any returns has become a liability.

2. Need of the Study

Today many cities have fallen into disuse or decay as cities have grown without any boundary limits. Rapidly rising road congestion, slums, Deteriorating or Deteriorated Structures, Defective or Inadequate Street, Unsanitary or Unsafe Conditions etc. Urban Renewal is of growing importance because of:(Renewal, 2009)

- Urban areas are becoming larger and older, so more and more renewal of urban fabric has to take place.
- Constant expansion of urban areas into agricultural hinterland, while large quantities of urban land and buildings are abandoned and left dilapidated.

The ward 3 of municipal corporation of Sonipat is described as the most congested and oldest area still experiencing densification along with concentration of trade, commerce, and other servicesectors. During the last two to three decades, increasing pressure and concentration of diverse activities in the core are creating a situation of over pressure and over usage of its entities. Many obvious threats and problems have been identified in ward 3 old area of Sonipat city such as - Congestion, thickly built-up area, traffic on the roads have immensely increased, rapid commercialization, encroachments on roads and streets etc. Ward 3 Old area of Sonipat despite of its commercial and strategical importance is getting neglected. Therefore, it is necessary to improve the area.

3. Aim and Objectives of the Study

The aim of this study was to prepare a comprehensive urban renewal proposal plan for the ward 3 old area of Sonipat city. In order to achieve this aim, the following objectives has been selected for this study: -

a) To study in brief the evolution function and the changing profile of the city. To analyze the characteristics of the ward 3 old city and its comparison with the city as a whole.

b) To identify the existing problems and issues in the ward 3 old city of Sonipat. To recommend planning policies, guidelines required for the urban renewal and the area-based development of the old area of Sonipat.

c) Restructuring and replanning of old areas of Sonipat city, designing more effective and environmentally friendly local transport and road networks, car free zone within the old area.

d) Promoting sustainable development and inclusive planning, providing open space and community/welfare facilities, providing basic physical and social infrastructure facilities in ward 3 of Sonipat.

Due to limitations of time and workforce, it is not possible to complete the micro analysis of the entire city. Thus, this study was focused to the core area of Sonipat city under municipal limits. The renewal Programme was prepared by conducting detailed study in the part of the core area.

4. About Sonipat city

The area of town is 181.3 Sq. kms and is the largest town of the district. The Municipal Committee Sonipat was establishment in the year1933, and the population of the town was 15050. The area of Municipal Committee at that time was very small.

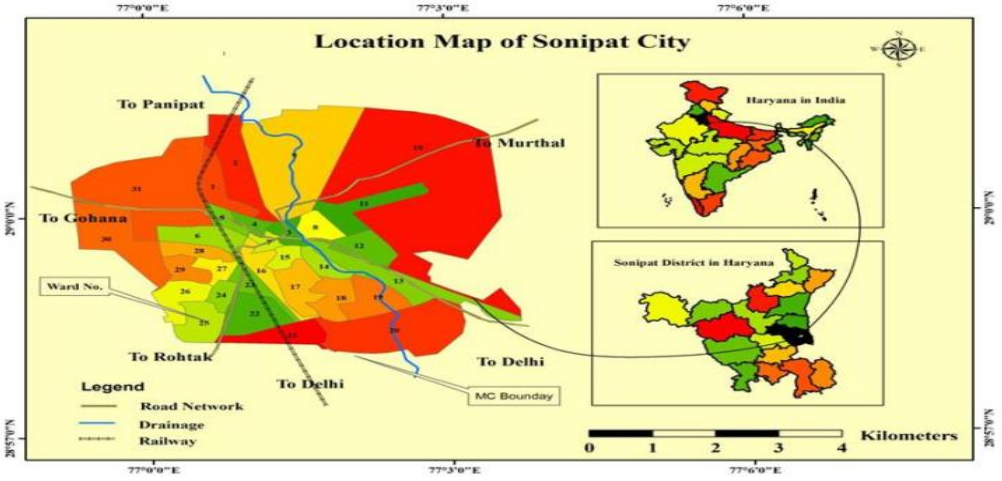


Fig 1: Location Map of Sonipat city

Source: - Analysis of Urban Land Use Changes: A Case Study of Sonipat City in Haryana, India

The town has also well connectivity with the interior of the Haryana State as well as the neighboring State of Uttar Pradesh. National Capital Regional Plan 2021 has identified Sonipat- Kundli Complex as one of the Metro Centers of National Capital Region (NCR) and Sonipat town has also been selected as satellite town by Govt. of India. Sonipat is also spelled as Sonipat and is an ancient town.

5. Study area – Ward 3 Sonipat

The ward 3 of Sonipat town has been selected for urban renewal study area. Rapid urbanization in Sonipat has resulted in various problems like traffic congestion, dilapidated housing conditions, decrease in quality of lift, narrow lanes, lack of basic facilities, no availability of parking spaces etc. During the last few years, ward 3 Sonipat of municipal corporation has been facing these typesof problems. This area is termed as old as well as core area of Sonipat and known as the main commercial hub of Sonipat. Ward 3 Sonipat starting from the point where Murtha Chowk Adda begins, thence going along with Murthal road towards crossing drain No. 6 along with boundary wall of G.V.M Girls college towards right side up to point where Sharma hospital street junction exist (which is also village Prem Nagar Gounda), thence going towards left side uptoSaneh Girls Hostel street thence going crossing the street to Adarsh Nagar towards Northern side upto the point which is situated on thestreet vintage Printer shop in street coming to Adarsh Nagar from Baba – Tarana cinema road.

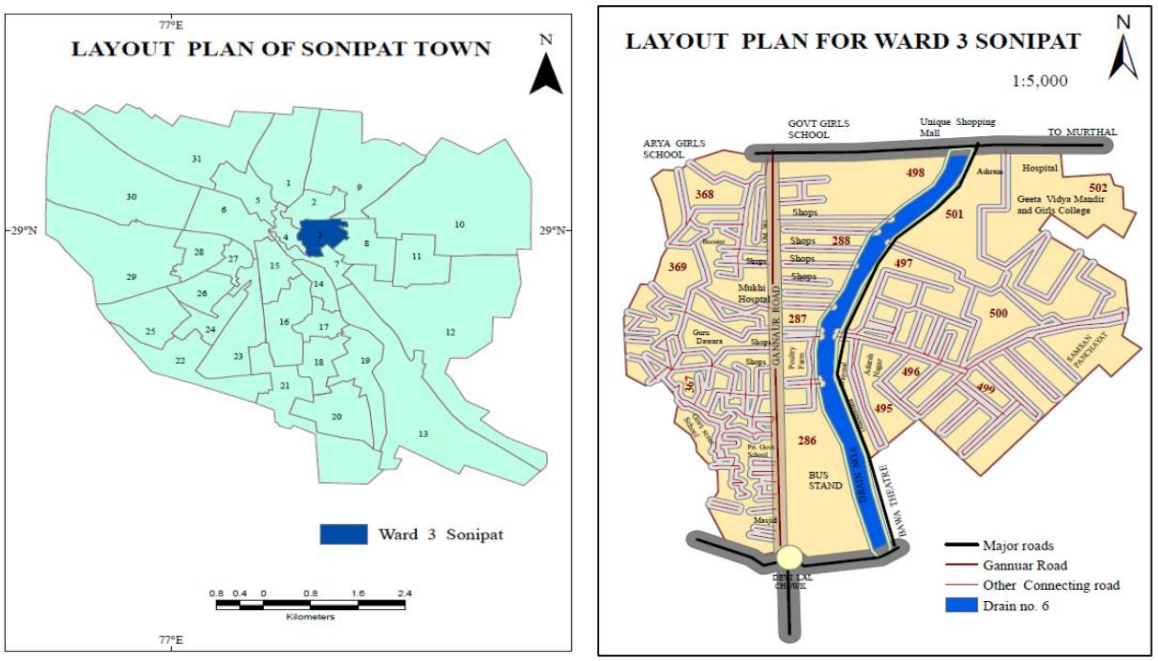


Fig 2: Layout plan of Ward 3 Sonipat

Source: -Municipal Corporation, Sonipat, map compiled by Author

Thence going towards right side via BaljeetMor house upto drain No. 6 Junction, thence thispoint upto the Pulia which is situated behind bus stand on Baba- Tarana Road, thence crossing,Devi Lal Chowk and M.C. Market uptoLaxmanExporium shop no. 11, Gol market, thencegoing towards MohallaKot Ram Mandirupto street of Gurudwara, thence street of Gurudwarato hose of Dr. Vas Dev, thence moving towards left upto which T – point from this point goingtowards right side, kot school upto point of boundary of ward no. 2, thence moving downwardsin street of water supply to Mukhi hospital and then crossing the road uptoMurthalAddaChowk, that is the starting point.

5.1 **Population:** The total population of these ward is 10109 including 4121 general population, 3669 scheduledcaste population and 2319 other backward class population according to census 2011 andmunicipal corporation, Sonipat and the total area of these region is 394498 sq.m. (39 hectares/97 acres). Therefore, density of ward 3 is 259 pph.

5.2. Streetlight: There are 224 streetlights in ward 3 Sonipat, out of which 206 are CFL Streetlight, 2 are SPL

streetlight, 16 are TL4 streetlight.

5.3. Waste Generation: There are 100 to 120 ton of waste are generated by ward 3 on a per day basis.

5.4 Water Supply and Boosting Station: A tube well based boosting station no. 2 is located near Mukhi hospital in ward 3. A branch of400mm dia, bifurcated from 600mm dia is feeding to boosting station no-2 while a branchhavingdia of 300mm is feeding to boosting station no-1. A Conveyance main of 350mm diafrom boosting station no-2, caters the flow to boosting station no-7 by pumping. A pipe of250mm dia from boosting station no-1 caters the flow to boosting station no-1A located at Kot Mohalla area of the town. This area is situated at approximately 20m higher elevation than average ground level of the town.

Table 1: Capacities of Existing Boosting Stations and Pumps

SL.NO.	Location	Capacity of CWR	Capacity of pumping plants
1	Mukhi hospital	450 KL	100 BHP, 4840 Ipm, 42 m Head
2	Kotmohalla	900 kl	3 nos submersible pumping plants each 15 BHP, 1500 Ipm, 30 m head

Source: - Data collected from DPR Sonipat and Municipal Corporation Sonipat

Fig 3: shows water supply in ward 3 Sonipat. From the map, it is depicted that the black lines are existing rising main line, that can be seen almost all the roads or colonies of ward 3 Sonipat whereas green lines are proposed water pipelines, and the blue lines are existingpipelines. Existing tube wells, existing boosting stations are also marked in the map andproposed boosting station with the help of Renny wells. Tube well no. 64, 23,27,38,39, 63 areexisting tube wells in ward 3 Sonipat. Groundwater is the main source of water supply in ward 3, Sonipat. Groundwater is extracted through a few bore wells drilled in various parts of the town by PWD-WSSD.

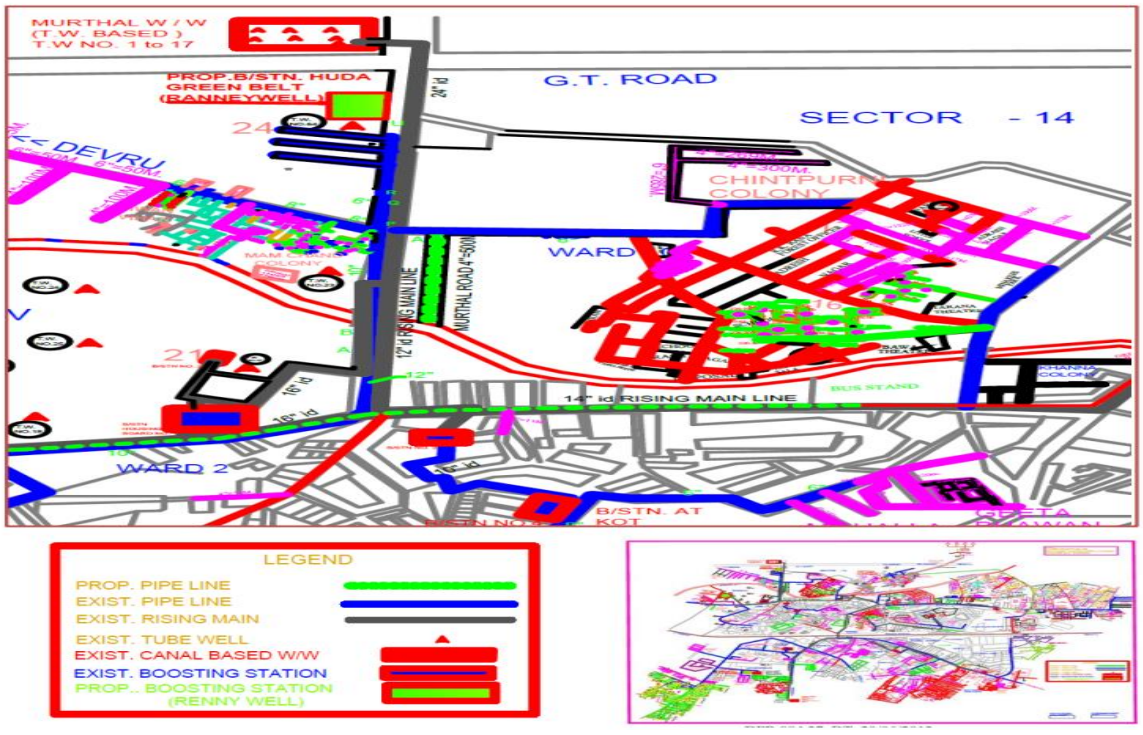


Fig 3: Water Supply in Ward 3 Sonipat

Source: -Data collected by Author from Public Health Engineering Division, Sonipat

Water is supplied through underground pipelines and house service connections are provided to each consumer at household level. In the areas uncovered with this system, people depend mostly on groundwater through individual hand pumps and tube wells.

5.5. Sewerage network: -Slope is generally running from northwest to southeast with a level variation of 13 degree inSonipat.In ward 3 Sonipat, drainage systems are open, and people are generally use septic tank intheir home and all the waste reach to drain no. 6 which is created or developed by irrigationdepartment and passes through ward no. 3 Sonipat. A main drain – known as Drain No. 6, flows across the town in north- south direction and meets Drain No. 8 at about 10 km down south. Drain No. 6 enters the town in the north and flows through the town.

Fig 4: Drain 6, Sonipat

Source: - Construction of Storm Water Drainsin Sonipat

This drain is about 4-6 m wide, and carries mainly, except during the rains, domestic wastewater and as well as industrial wastewater (partially treated/untreated), which enters it illegally.Almost the entire town drains into Drain No.6. Due to encroachments, the drain size is notuniform through its length. Solid waste disposal into the drain is prevalent. The water quality ofDrain No. 6 is presented in the following Table.

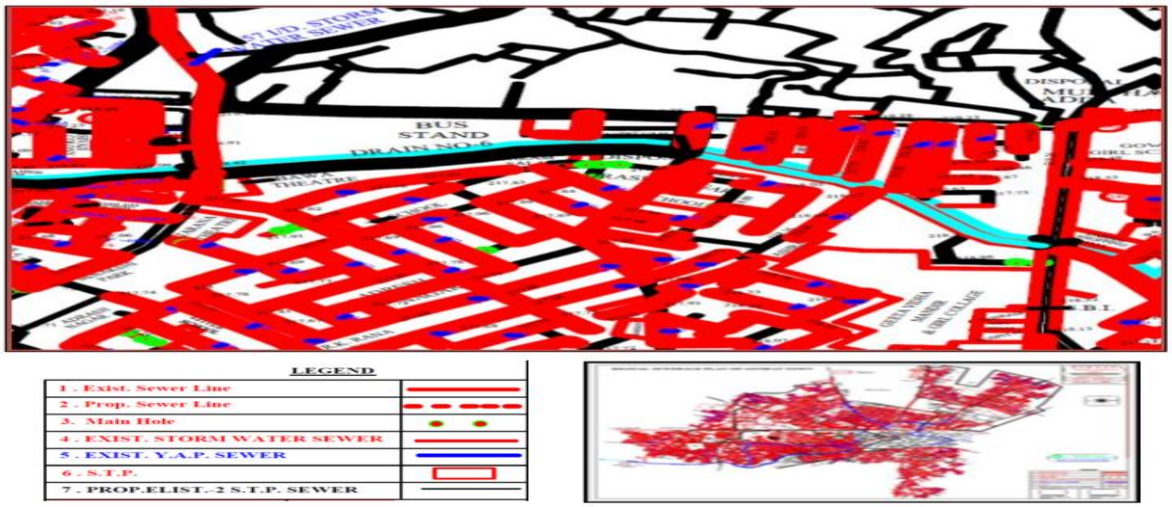


Fig 5: Sewerage Network in Ward 3, Sonipat

Source: - Data collected by Author from Public Health Engineering Division 2, Sonipat

In Sonipat, most of industries are engineeringbased units followed by food and agro-based industries. No industrial effluent is generated byengineering units, while food industries generated wastewater that is very high in BOD. Thewater shows the presence of BOD and Oil & Grease, indicating the polluted nature.
Fig 5shows the sewerage network in ward 3, Sonipat. Existing sewer line are shows here withred line, whereas proposed sewer line are shown here with red dotted line. Existing main hole, storm water sewer, Y.A.P sewer, existing S.T.P and proposed STP sewer are also showing in this map. Existing sewer lines are available in Adarsh Nagar, Durga Colony, whereas proposal is given forproposed sewer STP in Jamalpura and Balmiki Basti.Due to lack of proper system, wastewater mostly enters Drain No. 6 and flows further down to Drain No. 8.

5.6. Heritage site: -There is one heritage site in Court Mohalla in ward 3. The British created the city's coat Mohalla for punishing culprits and this heritage site has been renovated during the last few months. This heritage site is the Symbol of torture of Britisher to the common people. The history of the fort isvery old. In British times, these forts were famous for jail and the cases were heard and the criminals were sentenced to jail in these forts. Different barracks were available for men and women.

5.7. Transportation: -Sonipat is located very advantageously – proximity to national capital Delhi and its location along a very important national road transport corridor – NH 1. Sonipat is well connected with other parts of the State and Country.

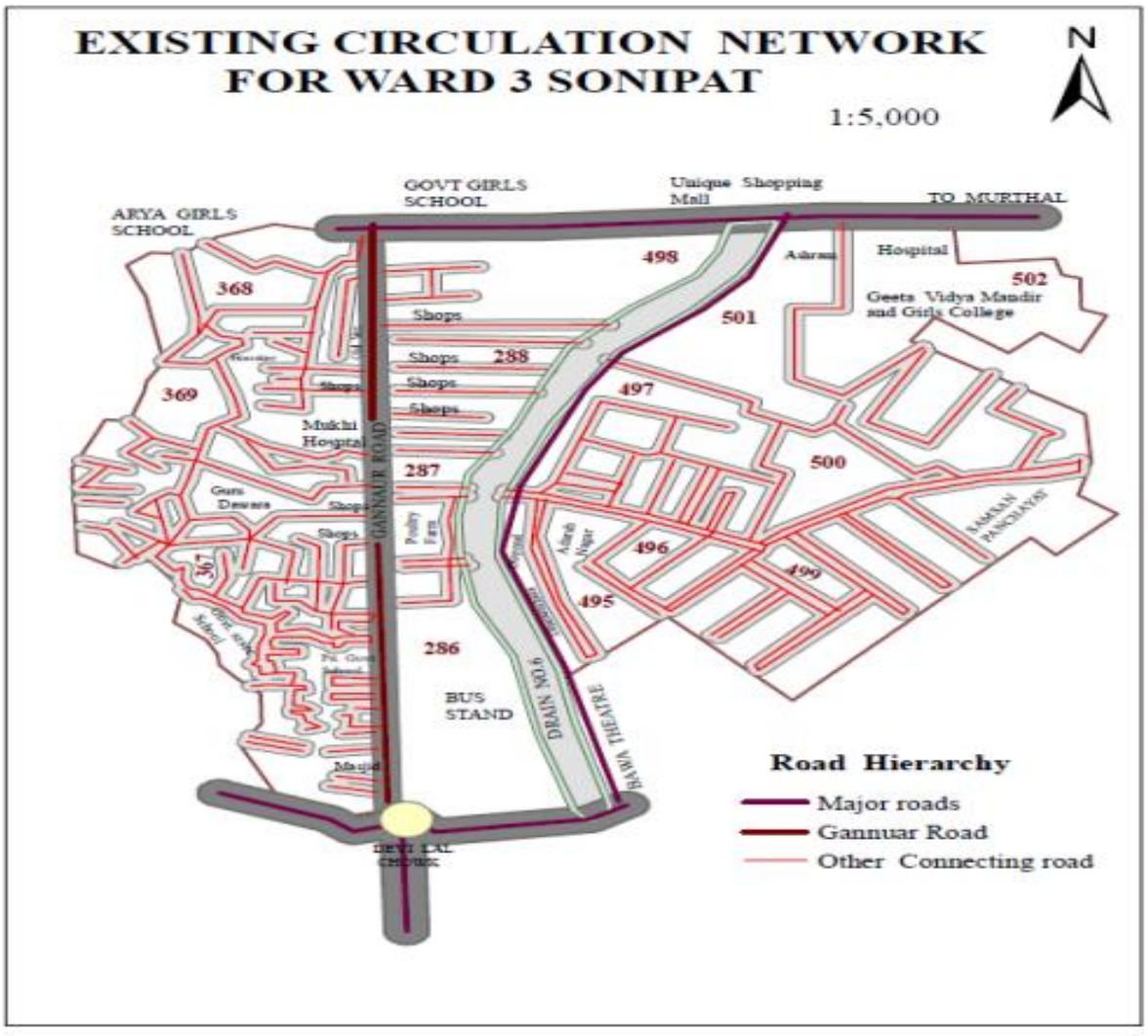


Fig 6: Main roads in Ward 3 Sonipat
Source: - Public Work Department, Sonipat

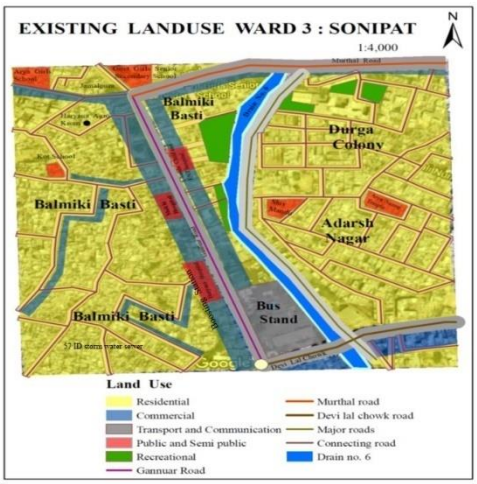
Within the Sonipat town, commuters mainly depend on IPT modes of Auto Rickshaw's and Cycle Rickshaw's, besides the private vehicles for intra-city travel. Even ward 3 Sonipat is well connected with IPT and NMT modes of transport. The situation however is different in the oldtowns specially in ward 3, Sonipat where roads are narrower and more congested (with both traffic and pedestrians), and the roads are not well maintained.
Fig 6. shows road network in ward 3 Sonipat, following roads are existed in these wards. The name of roads and their width are as follows: - Gannuar road (11 m), Murthal road (16 m), road between Gandhi Chowk and Devi level chowk (17 m), and all the local roads in these ward connecting all the residential areas are almost 6 to 7 m width but due to encroachment , these roads are 4 to 5 m i.e. they are narrower and more congested (with both traffic and pedestrians),now a days. Bus stand is also existed in ward 3 Sonipat. There are regular bus services to Delhi and other towns and cities and hinterland in Haryana and as well as in neighboring states operated both by state-run and private transport services. Buses generally starts from 5 am in the morning to 7 pmin the evening. Every 20 minutes arrive and depart from these bus stand. Not only these, dailytotal 118 local, state, interstate buses arrived and departure from these bus stand in ward 3Sonipat, which further results in congestion in the roads.

Fig 7: Sonipat bus stand
Source: Picture clicked by Author

In old town area specially in ward 3 Sonipat, the street pattern is organic and does not follow any pattern. Lack of adequate parking space in the commercial area, bus stand is leading to the roadside parking of vehicles in the bazaar and other commercial areas causing traffic problems and degradation of the environment.

5.8. Green Space: -Few green patches or small vegetation are found near the drain no. 6, near bus stand and aroundthe Gannuar road. Only one park i.e., housing colony park is existing in Ward 3 Sonipat alsoknown as Housing colony parks and the area of housing colony park also known as city park is3,591.23 m².

5.9. Existing land Use: -According to HUDA, the existing land use of these ward 3 is residential but, thissite is used as a mixed land use i.e., used as a residential as well as commercial activities. The existingland use has been classified into following categories: - Residential, Commercial, Transport and Communication, Public and Semi Public and Recreational. Residential area includesBalmiki Basti, Jamalpura, Durga Colony, Adarsh Nagar. Commercial markets are found almost both the sides of Gannuar roads, also found in Jamalpura and near Devilal Howk. On bus stand is also existed in ward 3 Sonipat. One drain i.e., drain no.6 passes through the center of ward 3 Sonipat and few openspaces are also found near drain. Few schools and hospitals are also existed in ward 3 Sonipat. Fig 8 a and b shows the existing land use of Ward 3 Sonipat that has been shown here with the help of images taken from google earth and the calculation has been done using the area that has been calculated from ArcGIS software.



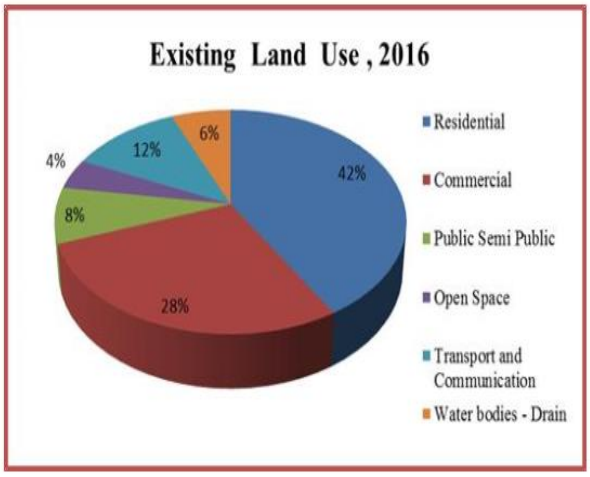
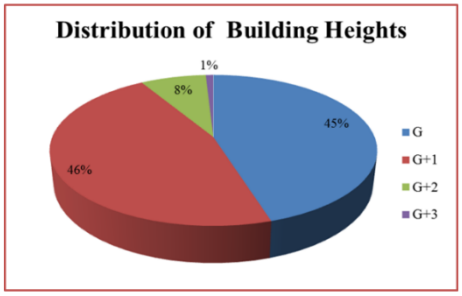
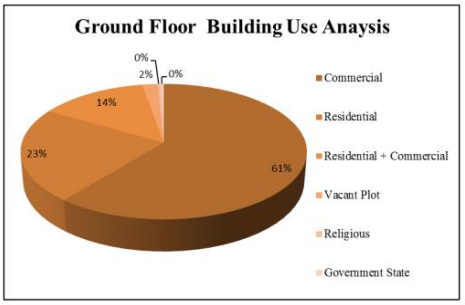


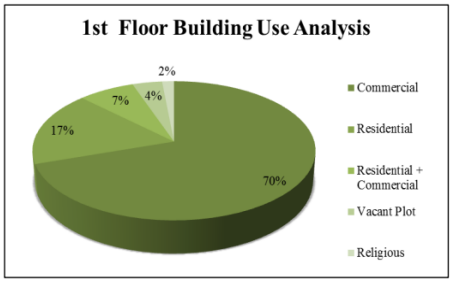
Fig 8 (a and b) Existing Land use of Ward 3, Sonipat
Source: -Google Image and Calculated using ArcGIS 10.2

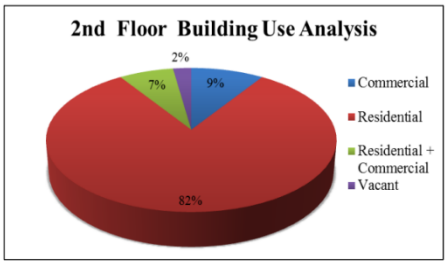
Ward 3 Sonipat is comes under municipal boundary and it is considered as one of the old areas of Sonipat town and the total area of these ward is 394498 sq.m. (39 hectares/ 97 acres) and the density of ward 3 is 259 pp. Due to its location, this area is considered as main commercial hub of Sonipat town. But various upcoming problem, this area loses its charm. Therefore, it is necessary for redevelopment of the area to conserve it identify and solving various problems like congestion, parking problem etc.

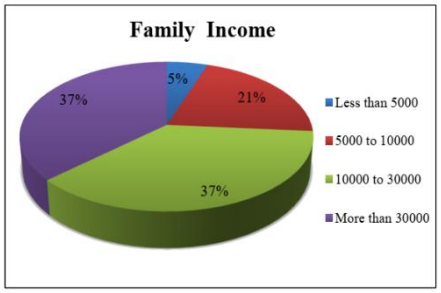
6. Data collection and analysis for Ward 3 Sonipat: -For understanding the existing scenario and conditions of ward 3, Sonipat a field survey was conducted in that location where questionnaire were filled, and interviews were taken from shopkeepers and residents of that area so that it will be easy for the redevelopment of that area.

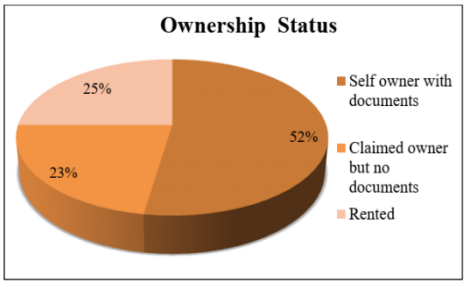




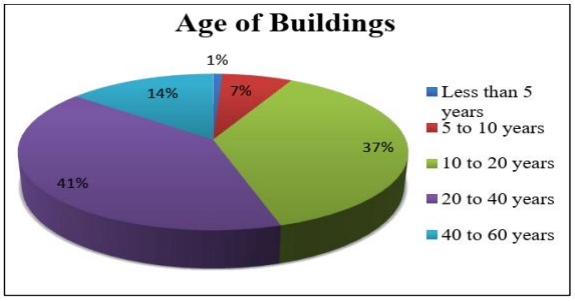


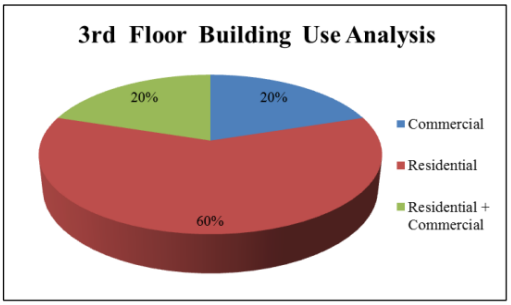


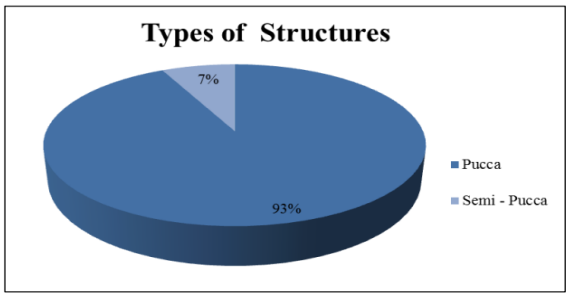


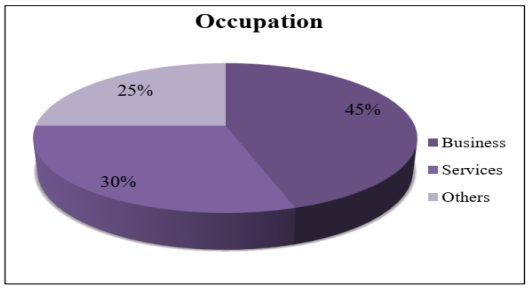


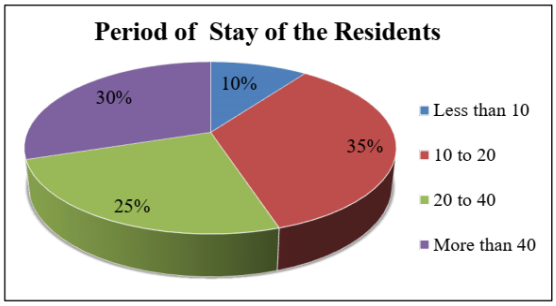
t

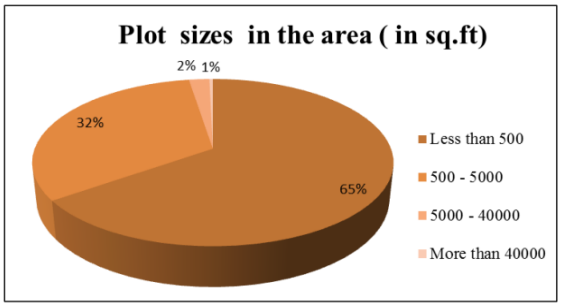


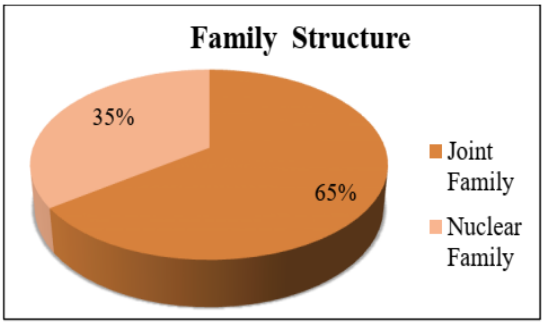


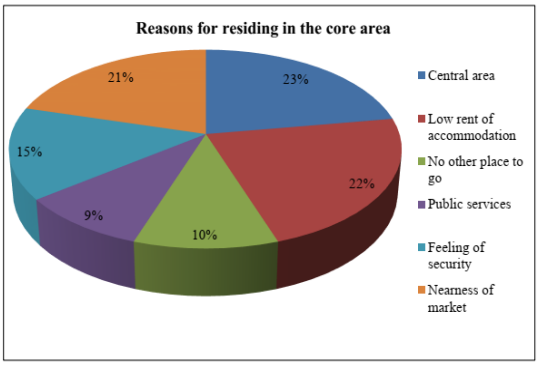


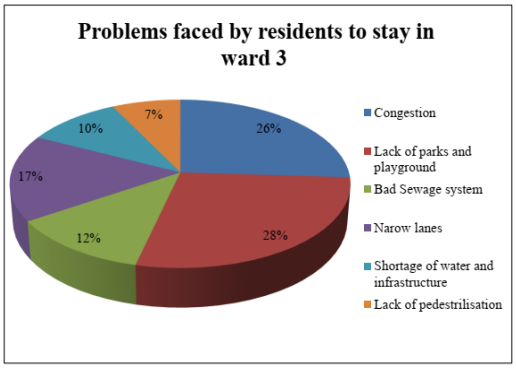












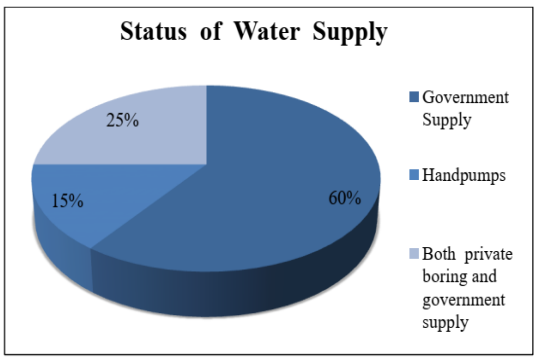


Fig 9 (a to p) Existing Situation in Ward 3 Sonipat

Source: - Primary Survey

The common problems of a core such as urban blight, environmental degradation, lack of openspaces and problems in traffic and transportation condition can be seen in the core area of Sonipat specially in ward 3 Sonipat. The development in the area is mostly organic, many structures have crossed 40 years and in a poor condition. Some of the structures need to be demolished while some requires substantial repair works. Open drains, lack of underground sewerage system has created unhygienic conditions and environmental problems in the area.

If these will not be responded to immediately, may cause serious health and sanitation problem inthe area. Pedestrian and vehicular conflict is very common in the area, no space for parking leads to encroachment of roads, resulting in decreased capacity of roads. Parking and circulation problem needs to be addressed with the segregation of pedestrian and vehicular traffic. The major constraint in upgrading infrastructure and improving environment is narrow lanes with no scope of laying down sewerage or water pipelines and lack of open spaces.

7.Recommendation and Proposals for the Renewal Scheme: -Different approaches are recommended for the pocket depending upon the existing trends and character of the area. The micro – level study of Ward 3, Sonipat which is done to analyze the detailed issues and constraints existing in the study pocket area, one approach is proposed for its renewal which is framed using techniques of land pooling / readjustment. These recommended approaches are illustrated in detail in the subsequent sections: -

7.1. Approach 1 Land Pooling / Re – Adjustment technique: -In this approach, plot shapes are regularized, and public roads access is provided to each plot. Byproviding mixed use along the major streets the employment opportunities and the mixed-usecharacter of the area can be enhanced. The redevelopment of the area will take place in stages asshown below: -

1) **Stage 1**: - Redevelopment of areas having dilapidated buildings into LIG group housing and MIG group housing.
2) **Stage 2**: - Rehabilitation of people living in that area into LIG group housing, families willingto move to MIG and families willing to takes incentives of TDR and move out of the area.
3) **Stage 3:** - Preparation of land servicing and development of the area. Plot shapes regularized,public road access provided to each plot and provision of open spaces.
4) **Stage 4**: - Some of the developed plots are sold to recover cost of development and the rest ofthe land is returned to the owner in proportions to their original holdings. In continuation to thestages proposed above a detailed plan is made for different uses which exist in the area as well asthe uses which are required to be provided.

7.2. Proposals: -

7.2.1 Proposed Land use: -The proposed land use is prepared by including people perception, by evaluating problems through field survey, taking recommendation from City development plan Sonipat, Water supply development project report Sonipat, Final development plan for Sonipat - Kundli multifunctionalurban complex 2021 and Draft final report for preparation of sub – regional plan for Haryana sub– region of NCR.

Proposed population and density have been calculated with the help of 2021population projection of Sonipat town that has been mentioned in draft final report for preparation of sub – regional plan for Haryana sub – region of NCR.

- Proposed Population: - 13774
- Proposed Density: - 352 persons per hectares (142persons per acre)

Existing total number of households: - 1111. By the year 2021, it may be reached 1200or 1300 depends on persons or residents living in that area.

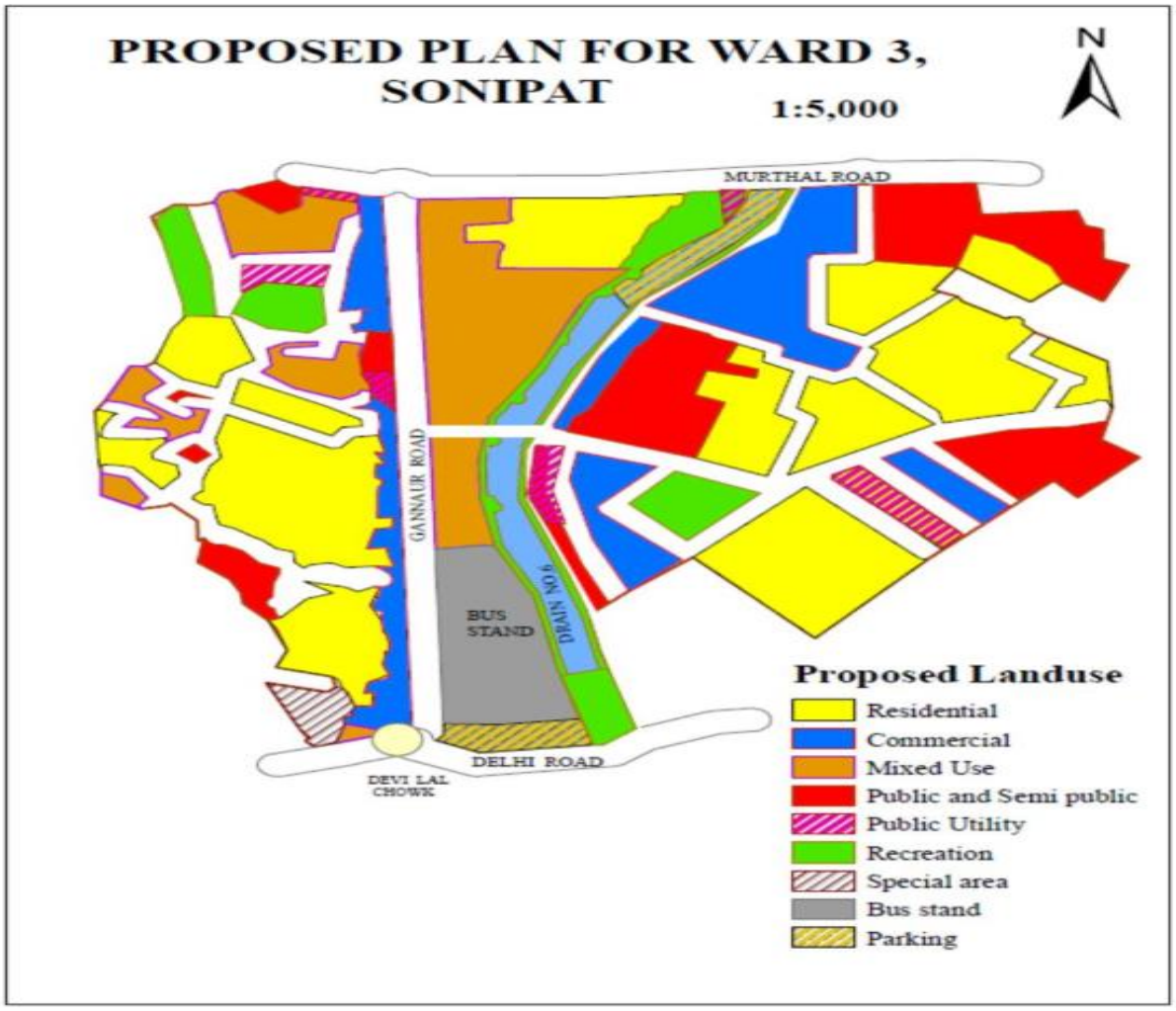


Fig 10: Proposedland use plan of Ward 3, Sonipat

Source: - Prepared by Author

Fig 10 shows the proposed land use plan for ward 3 Sonipat. Retrofitting has been chosen for these urban renewal plan. Demolition can be done for buildings that are in a dilapidated condition and the land that are vacant that can be used for recreation, public semipublic or public utility purpose or accommodation reservation can be used for these purposes.

7.2.2. Proposed FAR: -The proposed population of these site up to 2021 is 13774 and the proposed density is 352persons per hectares. For residential area the maximum FAR, that has been proposed is 220% and maximum permissible height is 16.5 meters proposed on a minimum 12 m wide road and FAR ofmaximum 200% is proposed on a 9 m wide road and maximum permitted building height is13 m wide road. For commercial areas, maximum FAR proposed on a 12 to 15 m ROW is 240%The proposed population of these site up to 2021 is 13774 and the proposed density is 352persons per hectares. For residential area the maximum FAR, that has been proposed is 220% and maximum permissible height is 16.5 meters proposed on a minimum 12 m wide road and FAR of maximum 200% is proposed on a 9 m wide road and maximum permitted building height is13 m wide road. For commercial areas, maximum FAR proposed on a 12 to 15 m ROW is 240%

7.2.3. Proposed Social Infrastructure: -According to URDPFI guidelines, the quality of life in any urban center depends upon the availability of and accessibility to quality social infrastructure. These include the following infrastructure: a) Education facilities, b) Healthcare facilities, c) Socio Cultural facilities, d) Recreational facilities, e) Sports Facilities, f) Distribution Services, g) Police Safety. The facilities that include here are – Education facilities (pre – primary, primary,and senior secondary school), healthcare facilities

(dispensary), Socio-cultural facilities (Aaganwadi,Community room, Community Hall, Religious place, Crematorium), Recreation (Housing areapark,NeighborhoodPark), Sports facilities (Residential unit play area), Distribution services (petrol filling station, CNG filling station and milk distribution).

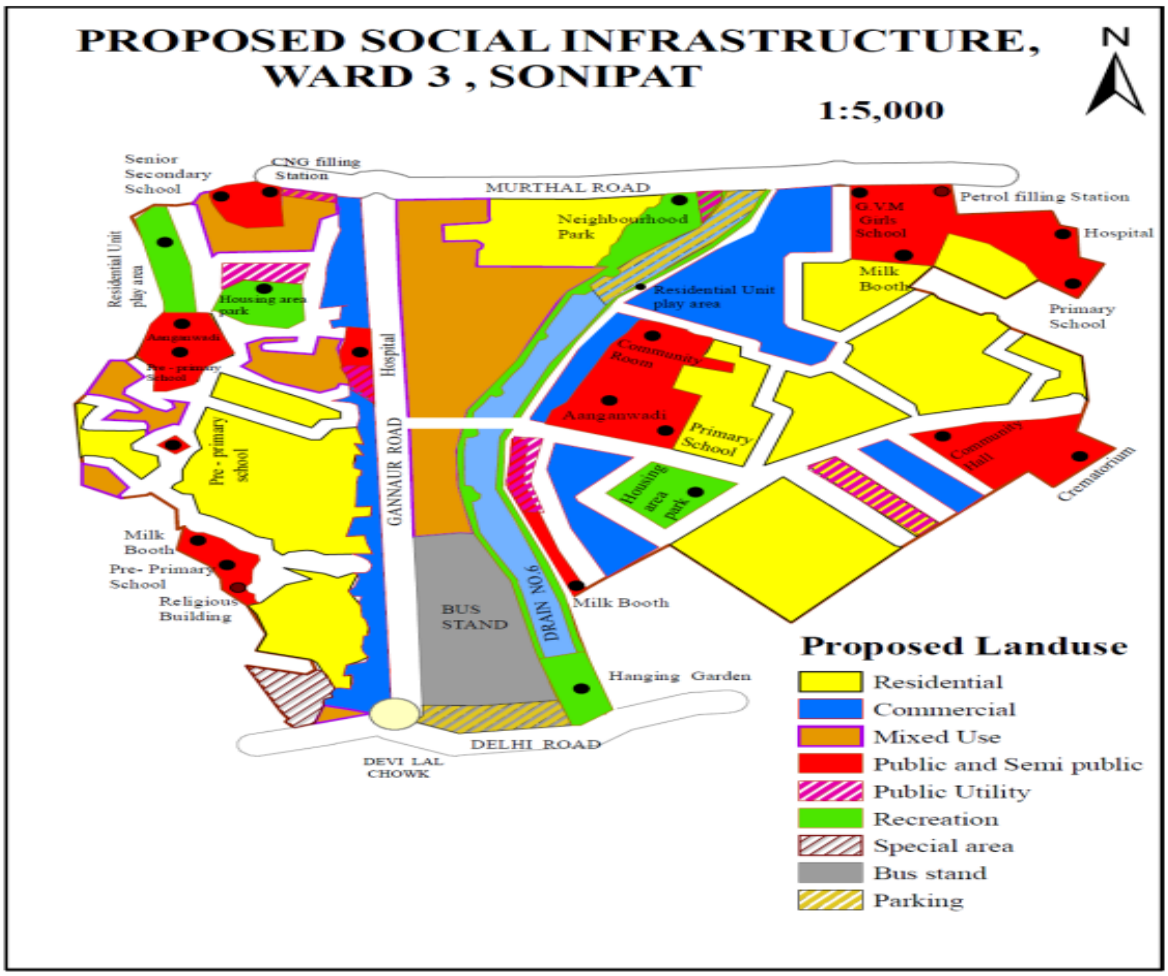


Fig 11: Proposed Social Infrastructure plan of Ward 3, Sonipat
Source: - Area calculated with the help of URDPFI Guidelines

Fig 11. shows the proposed socio – infrastructure plan for ward 3, Sonipat, the facilities of schools, healthcare facilities, socio- cultural facilities, recreational facilities, sports facilities, distribution centers are provided with the help of existing situation as well as requirement given in URDPFI guidelines, and the area has also been distributed with the help of these norms and guidelines.

7.2.4. Recreation: -As the total proposed population of ward 3 Sonipat is 13774, following recreational facilities hasbeen proposed according to URDPFI guidelines which are as follows: -2 Housing area park, 1Neighborhood area park, 1 Residential unit play area. One garden both side of drain is also proposed in the site and one WTP is also proposed near the park, that WTP will recycle the water and that water will be used for gardening and other purposes.

7.2.5 Proposed Physical Infrastructure: -

a) Water Supply: -

Existing water supply conditions is not so good. Water will be provided by underground pipelines. Presently 2 tube wells are available in the site area. The construction of Ranney wells (3 Nos. 10 MLD each) will also fulfill the requirement of water.

Portable water will be supplied by tube wells boosting station, proposed Ranney well water supply. Rainwater harvesting system will also been provided on the site which will act as a portable water supply.

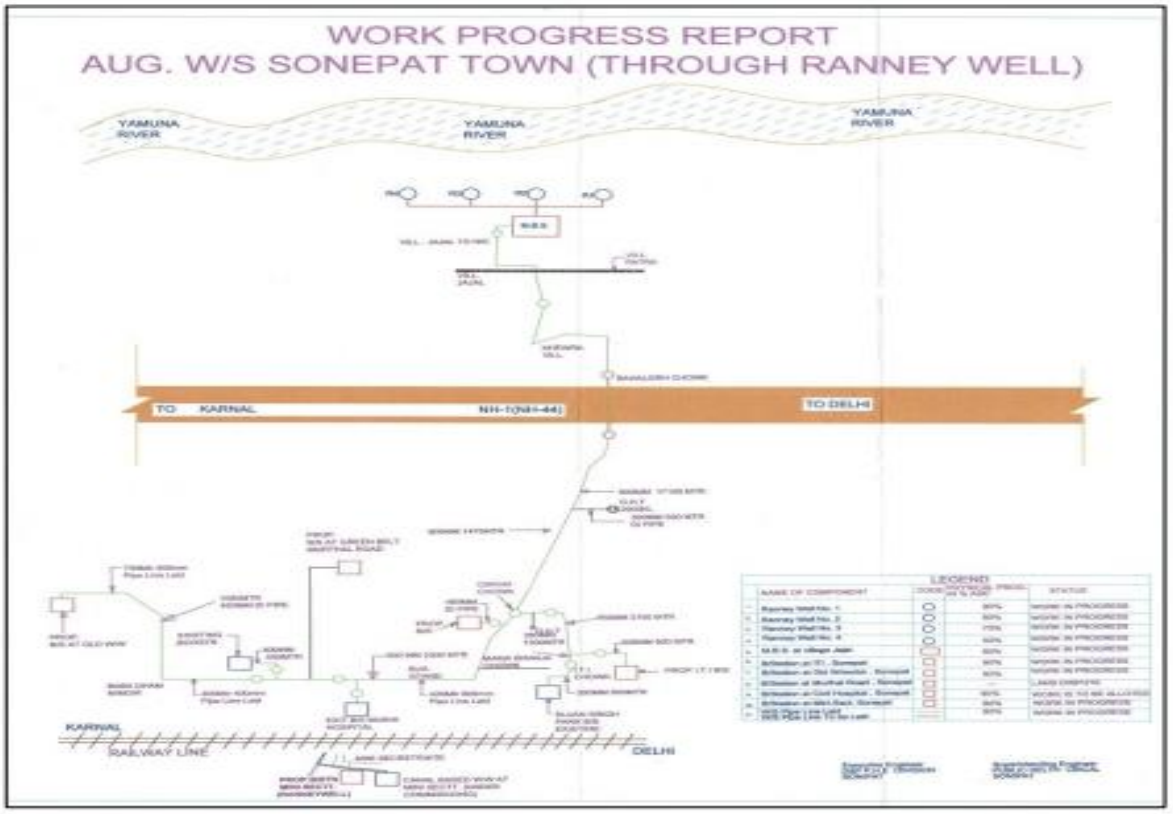


Fig 12: Future water supply source

Source: - Public Health Engineering Division water supply division A, Sonipat

Proposal for WTP (Wastewater treatment plant) is also given in the study area which willtreat water both black and grey water and will be supplied back in the site and will be used in Non-Potable Uses like Toilet Flushes, maintaining Parks and Playground, Gardening, Non-Potable use in industrial use as Sonipat is known as Industrial town, therefore, it is necessary to use non – potable source of water in industrial use. Per capita water requirement for population below 1lakh is 135 IPCD.Therefore, the demand for domestic and non – domestic water use are as follows: -

Table 2: Total Water requirement of Ward 3, Sonipat

Type	IPCD	Population	Requirement (Litres)
Domestic Use	135	13774	1859490
Non- Domestic Use	25	13774	344350

Source: - NCRPB report and URDPFI Guidelines.

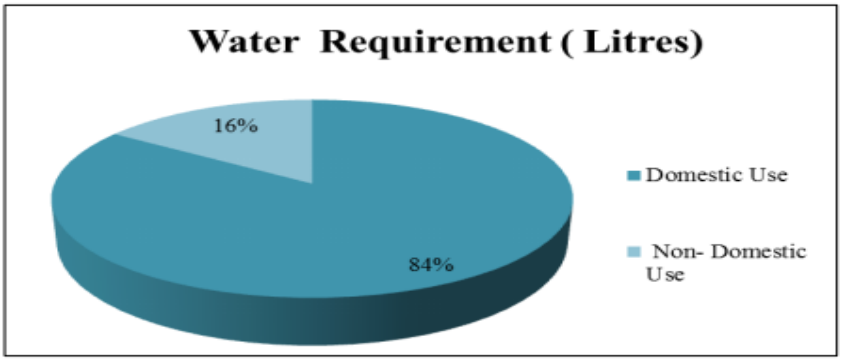


Fig 13: Water requirement of Study area

Source: - NCRPB report and URDPFI Guidelines

Fig 13.shows water requirement of study area, 84% of the water is used for domestic use and16% of the water is used for non – domestic use and the water requirement will be fulfilled byboth portable and non – portable source of water.

b) Rainwater harvesting: -Rainwater harvesting is a simple, economical, and eco-friendly technique of preserving every drop of water by guiding the rainwater that falls to borewells, pits and wells through small diameter pipes. It will help in overcome the problem of water scarcity in Sonipat specially in study area by harvesting this precious bounty of nature. Every building either it's a residential or commercial having a plot/property of size 500 sq meter or more should have a provision for rainwater harvesting for covering the entire plot area. Few techniques of rainwater harvesting are Roof top rainwater harvesting through recharge pit, roof top rainwater harvesting through recharge trench, roof top rainwater harvesting through existing tube wells and rooftop rainwater harvesting through trench with recharge well.

c) Sewerage and Drainage: -In ward 3, Sonipat drainage network has been laid along main roads. However, care has not been taken in case of internal roads in most of colonies. The primary drains are inadequate to handle the flash floods as they are not systematically designed and are not fully constructed in most of the sections. The sewerage is estimated at the rate of 80% of the water supply demand. The total proposed sewerage estimated is 1763072 liters at the rate of 80% of the total water supply demand. A waste treatment plan of 10 MLD of 0.19 hectares has been proposed near drain no.6 to improve or to treat water both black and grey water and will be supplied back in the site and will be used in Non-Potable Uses like Toilet Flushes, maintaining Parks and Play Ground and various purposes.

d) Electricity: -Based on the estimated requirements of power supply as per the National Electricity Policy published in 2005, the recommended consumption is 1000units per Capita per year or 2.74 kWh per capita per day demand which included domestic, commercial, industrial, and other requirements. The provision of one electric substation of 11KVfor a population of 15,000 has been given as a proposal in urban renewal plan. The total electricity demand is37740.76 KW (i.e.13774* 2.74) The electricity demand can be fulfilled by both renewable as well as non –renewable sources of energy.

e) Solid Waste: -The municipal Council of Sonipat generates around 73 MT of solid waste every day. The precipitate generation rate of Sonipat town is 324 gms/ cap/ day. This is very high as per standard ofCPHHEEO.The major sources of solid waste generation in town specially in ward 3 Sonipat are household domestic waste, commercial establishments, markets, Vegetable mandi, sweets shop and restaurants etc. Although, the council is responsible for collection, transportation, and disposalof Solid waste, storage, and segregation of waste at source is not very prominent in study area. Inthe absence of practice of segregation of waste at source, rag pickers pick up part of its waste inpoor condition and spread the contents around for sorting and collection. Currently, there is no arrangement for doorstep collection of waste. Some of the local inhabitants throw waste in the nearby vacant plots or on the streets. There is a need to provide to its citizens an environmentally friendly and sustainable waste management system with complete safe disposal facilities by putting in place waste reduction and recovery mechanism.

- **The strategies that should be followed are as follows**: -

1) Door to door collection of waste, Introduction of twin based system at storage, Source segregation, Mechanism of transportation, Fleet management system, Development of compost plan of scientific landfill sites.

2) Waste generation bins, separately for segregation of wastes into biodegradable and nonbiodegradable needs to be placed at various collection sites. Institutional capacity building measures are required to be taken to improve the efficiency and effectiveness of solid waste management at each stage such as waste generation, transportation, disposal, and treatment. The combination of private sector and public sector in proportionate ratio will be right option.

f**) Safety and Security: -**Safety is the prime concern for any city, ward or Mohalla. For the safety of women,

children and elders, there should be the provision for CCTV throughout the study area and police check post every1 to 2 km and PCR van should be there in every half km. So, that people feel safe in their homes. Fire stations should be in or near the study area so that the fire tenders are able to reach any disaster site within 3-5 minutes. Fire stations should be located on corner plots as far as possible and on main roads with minimum two entries. Necessary provisions for laying underground/ over ground firefighting measures, water lines, hydrants etc. may be kept wherever provision of fire station is not possible especially in narrow lanes.

Fig 14 shows proposed public utility plan for ward 3 Sonipat. Although total number of dustbinsproposed is not mentioned in plan, but disposal site, site for proposed WTP is also mentioned inthe plan. All the service lines such as water, sewer line, telephone line etc. should be planned underground only in the form of integrated pipeline system.

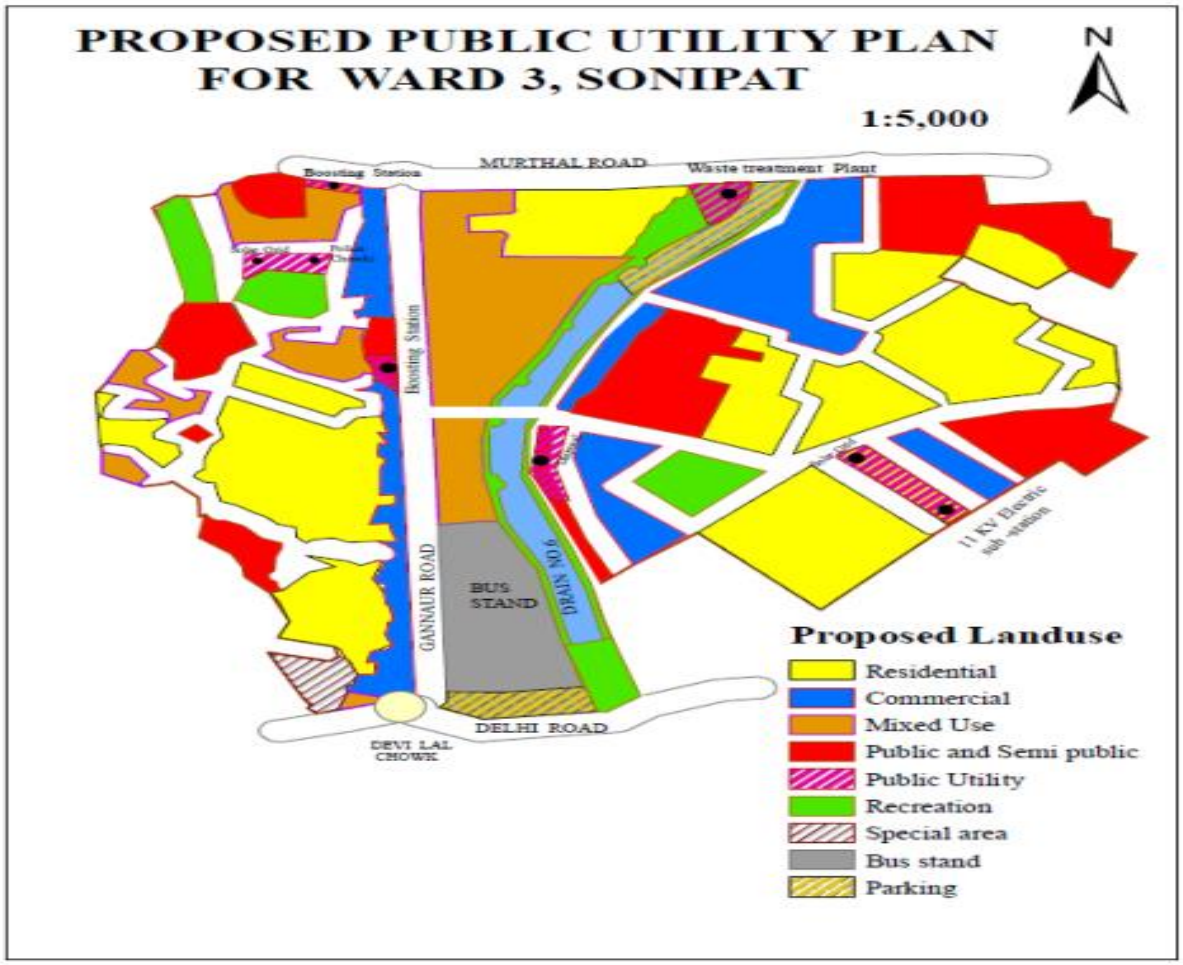


Fig 14: Proposed Public Utility plan for ward 3 Sonipat

7.2.6 Transportation and Parking: -In ward 3, Sonipat the street pattern is organic and does not follow any pattern. Lack of adequateparking space in the commercial area, bus stand is leading to the roadside parking of vehicles inthe bazaar and other commercial areas causing traffic problems and degradation of the environment. Identification of roads for widening: - Gannuar road, Delhi Road and Murthal road. To remove congestion on roads, it is necessary to give provision for bicycle and rickshaw friendly roads. Bicycle and cycle rickshaw must be promoted because they provide environment friendly and affordable mobility to large section of society. Encroachment on all roads needs to be removed for better flow of traffic specially at the intersections of roads. Space for pedestrilisation should beprovided on all roads and roads below 5 m vehicles and cars should be strictly prohibited and NMT, cycles should be promoted. Streetlights, signage, and road markings to be introduced on all roads and intersections. Parking lots should be provided on the strategic location in commercial areas in easy flow of traffic.

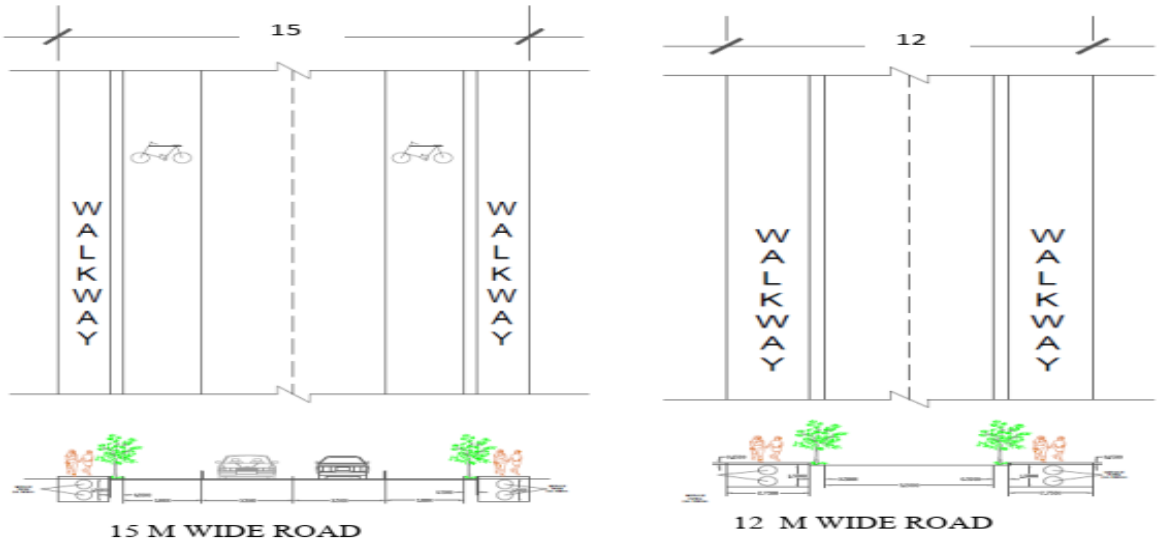


Fig 15: Proposed Road Cross Section (15 m and 12 m)

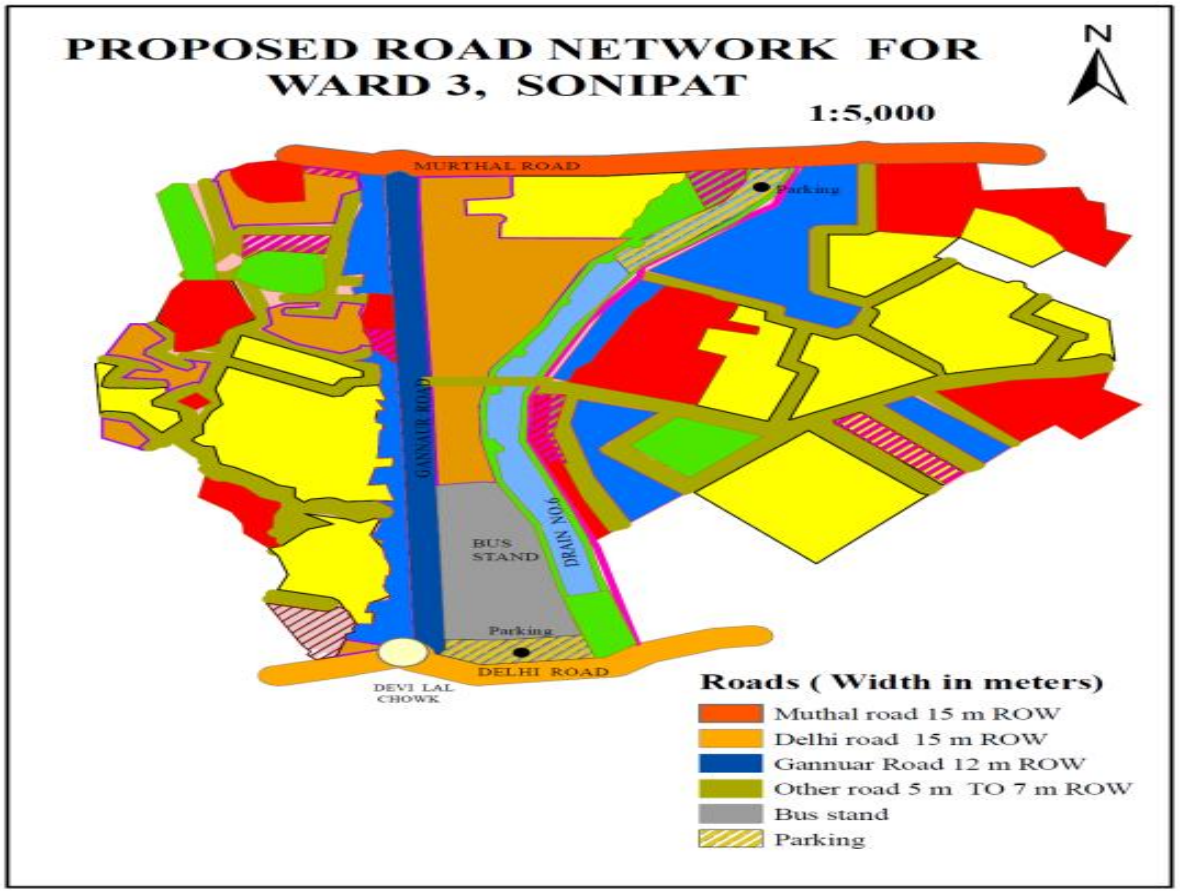


Fig 16: Proposed and existing road network

In Ward 3, Sonipat parking is not existed in any of the area. Parking spaces must be provided at appropriate locations, on – street or off – street with proper management. Appropriate parking fees should be levied to manage the demand and reflect the cost of the urban land use for the purpose. 10000 sq.m. Of area is proposed for multi- level parking. Two siteshave been proposed for multilevel parking one just behind the bus stand and other site on the drain no. 6.

7.2.7 Street Vendor: -Spatial planning should take into account the natural prosperity of street vendors by providing locations in response to the patterns of demand for their goods/ services. A policy for regulating entry

of street vendors into the identified street vending zones on time sharing basis shall be formulated by Municipal Authorities.

The following basic civic facilities shall be provided in Vending Zones/ Vendor's markets: a) Solid waste disposal; b) Public toilets to maintain cleanliness; c) Aesthetic design of mobile stalls/ push carts; d) Electricity; e) Drinking water; f) Protective covers to protect wares of street vendors as well as themselves from heat, rain, dust etc; g) Storage facilities including cold storage for specific goods like fish, meat and poultry, h) Parking areas.

The vendor markets should to the extent possible, also provide for crèches, toilets, and restrooms for female and male member. These facilities can be provided near Devi Lalchowk and Murthal adda for street vendors.

7.2.8 Special area: -

There is a heritage site existed in Kotmohalla, that area has been termed as special area inproposed land use. These sites can be developed as a tourist destination sites and commercial development can be done around the heritage and provision should be given to develop the site as no congestion and non – vehicle zones. The provision for heritage walk should be given in the site.

7.2.9 Smart Infrastructure: -

Smart Meters used for metering of power, water and gas that can provide real time measurement of energy consumption.

- High Speed Internet services such as Fiber to the Home. PublicWi-Fi services for mobile Internet access in public locations.
- Energy monitoring systems that can measure calculate and report on the consumption ofresources. Renewable energy systems for the generation of power including solar, hydro,thermal and fuel cell technology.
- Smart LED Street lighting that incorporates light sensors and communication devices to allow lights to communicate with other nearby lights and to be controlled at a city level.
- Smart buildings that contain an array of sensors and technologies that improve, safety, security, energy efficiency and usability.
- Waste Management solutions that detect the levels of waste in garbage bins and the effective management of collection.
- Environmental Sensors that detect the condition of air, water, and soil.
- Electric Vehicle charging stations.
- Smart Parking systems for car parks.
- Smart Irrigation systems for automated watering of parks and gardens.
- CCTV systems for public safety, crowd management and people counting. Smart Cards used for identification, travel, and payment.

Fig 17: Essential Components of Area-based Proposal for Ward 3, Sonipat

8. Conclusion: -The whole urban renewal plan is prepared keeping in mind, existing situation, people perception of the area, problems faced by people in the area. After identifying problems, proposal andrecommendations have been proposed based on the existing situation.

References: -

1. About Us. (n.d.). Retrieved March 30, 2021, from http://mcsonepat.gov.in/about_us.aspx
2. Aleti, A. (2013). Construction of Storm Water Drains in Sonipat Draft Initial Environmental Examination (IEE) Report.
3. Aslam A (2009). Lecture 1. Introduction to Urban Renewal & Conservation Definitions Concepts Policies/ Approaches
4. Chigbu, U. E. (2012). Village renewal as an instrument of rural development: Evidence from Weyarn, Germany. Community Development, 43(2), 209–224. https://doi.org/10.1080/15575330.2011.575231
5. Development Plan (n.d.). Retrieved March 30, 2021, from https://tcpharyana.gov.in/Development_Plan/ColouredCopy/SONIPAT_FDP_2021.pdf
6. HARYANA GOVERNMENT THE HARYANA BUILDING CODE. (n.d.).
7. Jain, A., Abdullah, A., Ashraf, K., & Nisar, Z. (n.d.). A Conceptual Approach for Development of KukrailNala, Lucknow.
8. Kumar, S., & Singh Sangwan, R. (2013). Urban Growth, Land Use Changes and Its Impact on Cityscape in Sonipat City Using Remote Sensing and GIS Techniques, Haryana, India. In Cloud Publications International Journal of Advanced Remote Sensing and GIS (Vol. 2, Issue 1). http://technical.cloud-journals.com/index.php/IJARSG/article/view/Tech-157
9. Kumar, S., Sangwan, R., & Singh Suhag, K. (2014). URBAN PLANNING: A CASE STUDY OF SONIPAT CITY IN HARYANA, INDIA. International Journal of Remote Sensing & Geoscience (IJRSG), 3(2), 36. www.ijrsg.com
10. Manual on Sewerage and Sewage Treatment Systems - 2013: Central Public Health & Environmental Engineering Organization (CPHEEO), Govt of India. (n.d.). Retrieved March 30, 2021, from http://cpheeo.gov.in/cms/manual-on-sewerage-and-sewage-treatment.php
11. Population of Sonipat 2021 | Sonipat District Population. (n.d.). Retrieved March 30, 2021, from https://www.findeasy.in/population-of-sonipat/
12. Preet Onkar, K. K. D. and A. S. (2008). Exploring the Concept of Urban Renewal in the Indian Context. Institute of Town Planners India, 5(2), 42–46.
13. Sangwan, S., Singh, B., Singh Suhag, K., & Professor, A. (2014). Analysis of Urban Land Use Changes: A Case Study of Sonipat City in Haryana, India. American International Journal of Research in Humanities, Arts and Social Sciences AIJRHASS, 14–193. http://www.iasir.net
14. Sonipat City Population Census 2011-2021 | Haryana. (n.d.). Retrieved March 30, 2021, from https://www.census2011.co.in/census/city/38-sonipat.html
15. TCPO (2015), "URBAN AND RE GI ONAL DE V E L OP ME NT P L ANS F ORMUL A T I ON AND I MP L E ME NT A T I ON (URDP F I) GUI DE L I NE S". (n.d.)., Ministry of Urban Development, Government of India
16. Urban Renewal The process where an urban neighborhood or area is improved and rehabilitated the renewal process can include demolishing old or | Course Hero. (n.d.). Retrieved March 30, 2021, from https://www.coursehero.com/file/p7uk4p3/
17. Wilson India, S. (1985). Preparation of Sub Regional Plan for Haryana Sub-Region of NCR-2021: Interim Report -II (Issue 1).