Forward

Liases Foras was approached by XYZ DEVELOPER developerto conduct a feasibility study and Design Brief development, which helps them to take decision on future development plan for their land located in Mohali, Punjab. Following are the key statistical details of the project.

- The site is approximately X acres of the continuous land parcel.
- Cumulative development potential of the subject site is X,5X,400 sq.ft. of BUA (Built up area with FSI of X).

While, there are many ways to arrive at the recommendations related to product, price and phasing, we have considered rationales which according to urban economics are most crucial for success of any location. All the recommendations and suggestions mentioned in the report are directly or indirectly governed by scientifically laid down theories and methodologies of Urban Economics. We hope the report will be helpful to XYZ DEVELOPER developerto envisage the project and its future market outlook.

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Contents

DRAFT

DRAFT

DRAFT

DRAFT

List of Tables

DRAFT

DRAFT

DRAFT

List of Maps

DRAFT

List of Figures

DRAFT

DRAFT

Chapter 1- Introduction

Aim

Aim of the study is to conduct the Market study of Chandigarh-Tri City, Recommending development strategy, product mix and consumer perception survey.

Objectives

Objectives of the study are divided into several parts and every part is explained through sub objectives.

City dynamics

To understand the city structure and its spatial mobility through identification of proposed and existing key infrastructure, key business districts and employment profile of the potential buyers.

To determine the proximity of various micro markets from the perspective of their economic activity, demographic profile, housing profile and their relative influence on the subject site.

To analyze the site with respect to location attributes

To assess the present and prospected physical and social infrastructure in the proximity of the subject site and its connectivity to the key business centers, activity centers and transport nodes.

To assess the present and potential private or government development in terms of residential, retail and hospitality sectors in the immediate catchment.

To study the context of the subject site with regards to social economic background

To assess the demographic characteristics around the subject site in terms of population growth, neighborhood characteristics.

To study the socio-cultural behavior of the people recently shifted there to understand the demands of the buyers.

Macro level Residential Real Estate Market Overview

To analyze city level trend of the supply and absorption by QoQ for last 4 quarters in terms of suburb wise (XYZ , Panchkullaetc) trends of supply absorption and prices, macro level completion offering and perceptions related to key players and key market players and their offering into the markets.

Micro Market assessment

Definition of the Macro Market: Chandigarh, XYZ , Panchkula, including areas of Mullanpur and Zirakpur

To understand the typology wise housing supply and absorption trend, price range assessment, cost range assessment, product range assessment and to arrive on the recommendations on the product and cost range.

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Evaluation of the price at the subject site	To assess the price with the help of absorption trends of the catchment along with calculating the price from the distance band theory with competitive project benchmarking.
To assess Competitive Projects for esteem Factors.	To assess the competitive projects for esteem factors by breaking down the study to unit configurations and master plan design along with amenities and specifications in each product.
Recommendations on development mix.	To arrive on the recommendation on the relative shares of residential, retail and other supporting land uses at the subject site, phase wise development strategies, specific recommendations regarding products, price and amenities and breakup of each product layout and proposed sizes and unit design configurations of each room.
Design Positioning	To arrive on the recommendation on the design guidelines based upon the study of the similar development across the nation and international case to recommend the esteem parameters, which can be incorporated to enhance the project positioning.
Testing on financial model	To arrive on the specific timelines and sales velocity and corresponding price for various development elements in each phase along with detailed financial model for various options to calculate: (Total Revenue, Total Cost, Monthly Cash flow, Peak Negative Cash flow, Equity & Debt component, Return on Investment, Return on Equity, NPV, IRR)
Study Approach	Approach to study has been divided into ten key steps or components. This includes macro and micro assessment of gross supply, sold unsold, product, off take velocities, of residential market in the catchment through primary surveys.

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Step 1	•Spatial Quantum Analysis
Step 2	•Demography Study
Step 3	•Definition of geographical catchment
Step 4	•Socio Economic Study (Qualitative)
Step 5	•Formulation of Hypothesis
Step 6	•Analysing the Residential market dynamics at Macro and Micro level
Step 7	•Competitive Project Benchmarking
Step 8	•Competitive Project Assessment for Esteem Factors/Unit configuration
Step 9	•Development mix Recommendations and financial scrutinization
Step 10	•Qualitative discussion with brokers, sales executives and architects

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Study Components

In this section the major components of the study as defined in the study approach section are described briefly.

Spatial Quantum Analysis

Geographic mapping of surrounding social infrastructure including schools, colleges, hospitals, retail along with the carrying capacities along with physical infrastructure mapping in terms of roads, connectivity, and future infrastructure and other influencing factors.

Identifying the projects which are not yet open for booking but are into the pipe line of launching.

Demography Study

Study of Census data at the city level, municipality and ward in which the project is to be located.

Study of the migration pattern within the city with the help of census data to understand the Housing demand situation along with projecting the housing demand for coming years.

Definition of geographical catchment

Define the geographic catchment area that will form the base of the analysis with carefully carving out the catchment by including competitive locations, which will ensure that we do not undermine or overestimate our subject site.

The catchment will not be constrained to a radius, but will be defined by natural boundaries, similar socio-economic neighborhoods, elements of psychological identity, and ease of travel.

Socio Economic Study (Qualitative)

The study is conducted with the help of focus group discussion, wherein the analysts have visited to different strategic locations and projects within the catchment and interview residents; thus understand preferences of the residents.
The objective of the focus group discussion will be as follows:

- Assessment of Persons who bought the flats in last five years in Tri-City to derive the following inferences.
- What is the Income profile of persons who bought the flats?
- What are the age group and profession of the flat buyer?
- Understand the migration trend and reason for migrating to Tri-City
- Location of Workplace
- Average Household Income in City.

Formulation of Hypothesis

The data collected through the qualitative research is used to formulate hypothesis. This hypothesis is then tested on the market dynamics analysis to arrive to a logical and more scientific conclusion.

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Analyzing the Residential market dynamics at Macro and Micro level

This includes macro and micro assessment of gross supply, sold unsold, product, off take velocities, of residential market in the catchment through primary surveys.

Price range assessment:

Analysis is done to assess the price trends on the prevailing trends of past eight quarters within the catchment with understanding the price range at road level with the help of heat map. Also, the sales percentage in each price range are analyzed.

Cost range assessment at macro and micro level:

Cost range assessment of analyze the supply – demand across various price brackets and identification of most popular price brackets based on the analysis of last 12 months sales, current closing stock, its efficiency ratios and gestation period. Thus, understanding the affordability pattern and the off take velocities of each cost bracket.

Product Assessment at macro and micro level:

Product Analysis demand across typologies (1BHK, 2BHK, XBHK, 4BHK,Villas) and identification of attractive and risky product categories based on the analysis of last 12 months sales, current closing stock and off take velocities.

Product Breakup Assessment at micro level:

Further breaking down this into assessment into what cost bracket is performing well in the better forming product eg: 2BHK assessment across different cost brackets.

Absorption trend of Key projects:

Enlisting the key projects in the location, track their absorption trend, and price to understand the price at which they sold the maximum units supporting the pricing rationale.

Pricing Rationale:

The price of the location is scientifically determined considering the co-relation it shares with the distance from CBD and the supporting price trend from CBD. The pricing obtained is further graded on basis of the site attributes, product, and economic density of the subject site. The suggested price thus obtained is then tested on competitive project grading model.

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Competitive Project Benchmarking

Using competitive project grading to scientifically derive the product rating of subject site.

The key points considered are mentioned below:

- Identifying top 5 competitive projects
- Grading the projects with ranking method with the help of various attributes like distance from CBD, social infrastructure, physical infrastructure, developer's good will, product amenities etc. as mentioned in scope of work.
- Inferences highlighting where does subject site stand with respect to these projects and support the pricing rationale.

Competitive Project Assessment for Esteem Factors/Unit configuration

Evaluating and grading the esteem design factors in top ten projects at master plan and layout level to derive the suggestions for unit configuration and design.
The grading will be done under various architectural parameters like

- Volume and massing
- Segregation of pedestrian traffic
- Open space configuration
- Activity areas
- Provision of natural light and ventilation
- Sizes and ratios of room
- Privacy factor of the layouts
- Amenities
- Specifications and Provisions

Break down study of the amenities across the projects to benchmark the facilities/Amenities that we can provide at the subject site.

Development mix Recommendations and financial scrutinization

Based on juxtaposition of all the above analysis options of development strategy is evolved and tested on financial model to generate a profitable strategy.

These options are developed with detailed timelines and phase wise development.

- Recommendations on optimum type of development mix i.e. the relative share of Residential, Retail etc. and its corresponding price in each phase
- Suggestions on the best product mix (1BHK, 2BHK, Villas, etc) for the residential development and suggestions on their respective sizes, common amenities, etc
- Recommendations on amenities and product Specifications
- Recommendations on unit design and configurations

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The recommendations are tested on the financial model to give total revenue, total Cost, monthly Cash flow, peaknegative cash flow, and equity & Debt component, return on investment, return on equity, NPV, and IRR).

Qualitative discussion with brokers, sales executives and architects

Objective:
To understand the current perception and the basis of the same at the Proposed location: XYZ
To capture the willingness and intention for the proposed development at the same.

Key Information Areas
Understanding the current perception of the proposed location, in the view of consumers:

- Infrastructure, Facilities, Connectivity, Security (Law & Order), Rental Value, Neighborhood profile (corporate / market etc), Capital Value Appreciation, Risk Assessment
- Reasons for perception

Exposure of Concept- Proposed Developments
Willingness for such project

Sample size and selection criteria
Identification is from the first three days of the site visit and from the FGD of the sales executives.

Due to unavailability of the structured database on the Brokers and Architects in the town, we had adopted the criteria where, we cumulatively conducted approximately X5 to 40 Focus group discussion.

Brokers :
Total numbers of brokers surveyed are approximately 12 to 15.
Survey includes the Top Five brokers of the town who help us to gain the information on the location advantages and investor profiles along with the issues concerning to investors can be raised and discussed.

Architect:
Top 10 architects based upon the supply and quality of design.

Sales executives:
Only those who are selling the projects into the catchment and executives of the large group housing projects.

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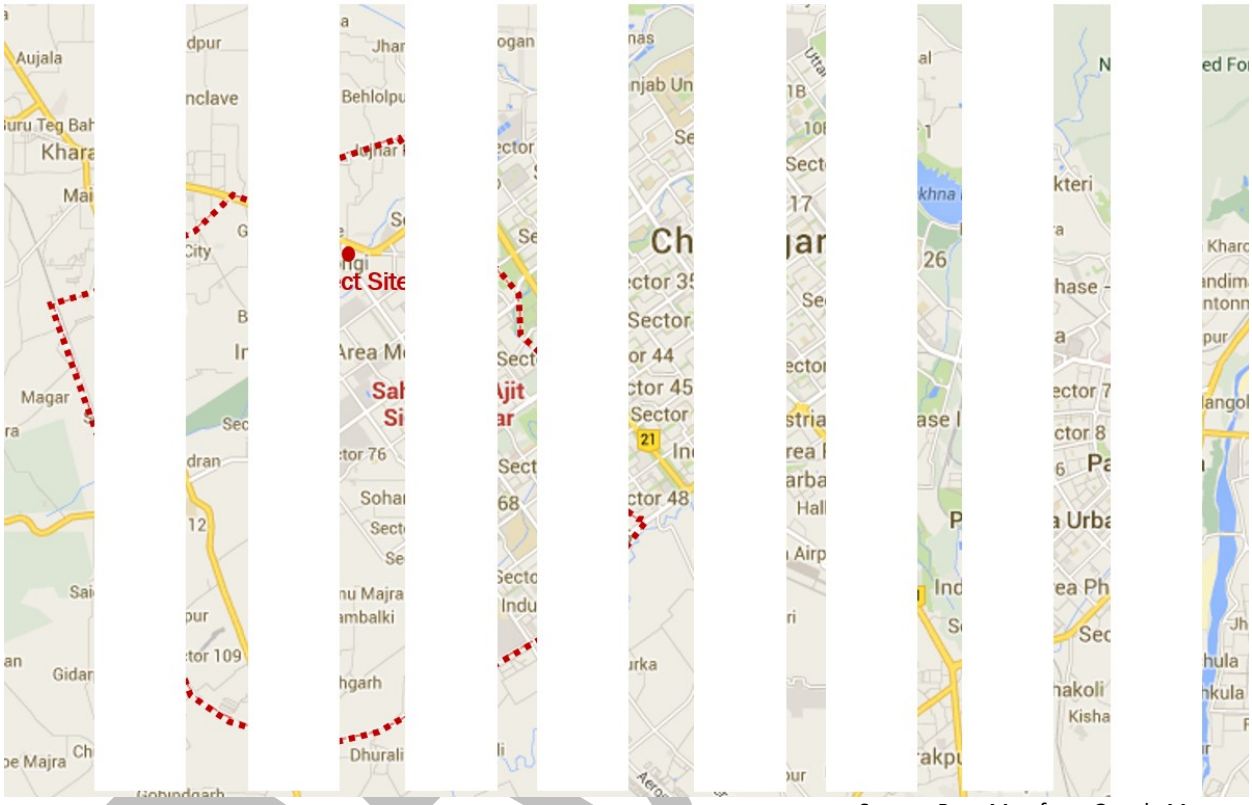
Chapter 2- Site and Surroundings

Location

This section gives a brief about the site at micro level, XYZ , and Tri-city along with the general growth directions.

Map 1 Location of XYZ in the Tri-City region



Source: Base Map from Google Maps

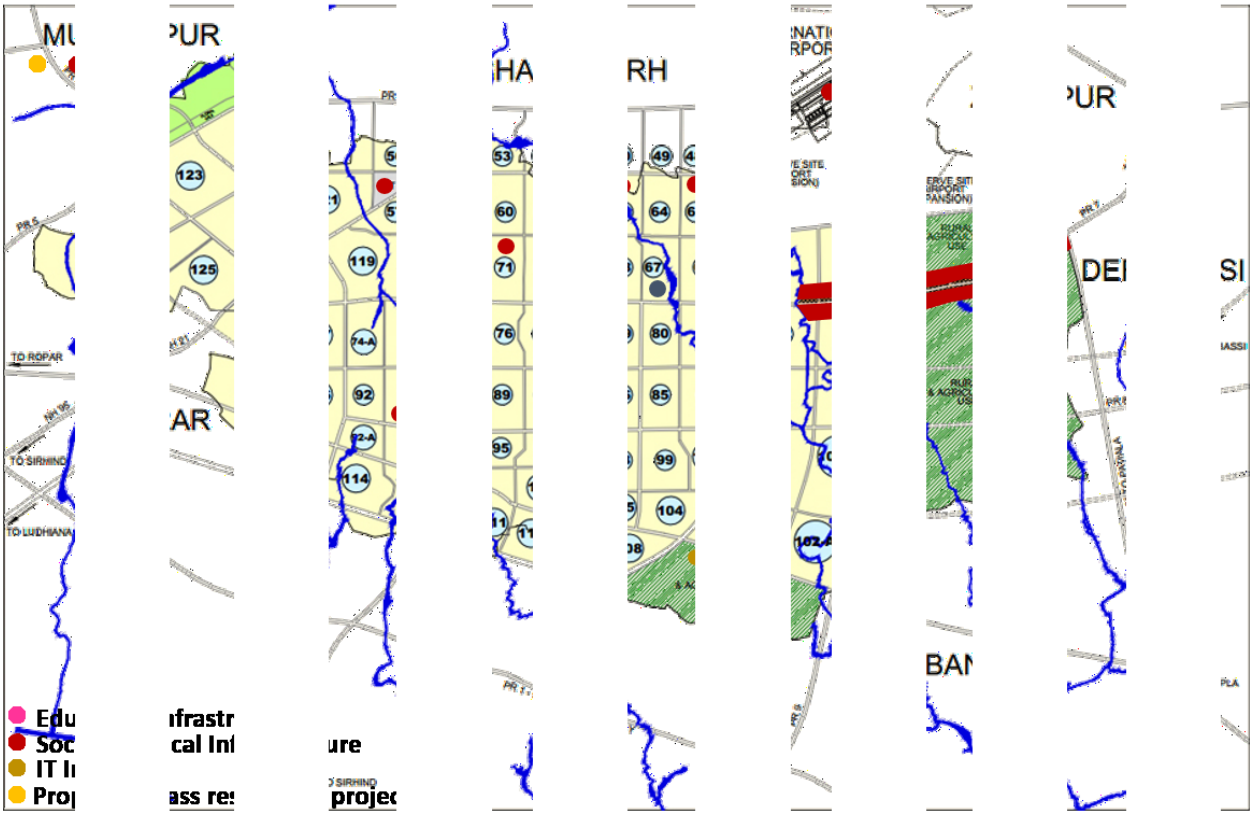
XYZ , a twin city of Chandigarh is also known as the Sahibzada Ajit Singh Nagar and is a part of the tri-city region besides Chandigarh and Panchkula. It is strategically situated immediately to the south – west of the capital for the state of Punjab and Haryana in Chandigarh, which is also an administrative centre for both the states of Punjab and Haryana.

XYZ and its Growth Directions

Most of the developments within the Greater XYZ Region are concentrated around the Southern periphery of Chandigarh, which has experienced the spillover effect of a highly urbanized Chandigarh. XYZ is one of the most developed areas as well as the main urban centre of the Greater XYZ Region. Based on the inherent qualities as well as the stage of development in the local planning area, S.A.S Nagar being the largest and most urbanized town, has assumed the status as the central business and financial district of Greater XYZ Region.

Under master plan of XYZ there are many land parcels which has been auctioned and given to the developers to develop as residential or industrial spaces. New sectors in the southern side of the city have been opened up for development by the authority.

Map 2 Up-coming Development in Mohali



Source: Base Map from GMADA

On Going Projects

Around 2,200 acres of land is acquired for Educity, Medicity and Ecocity projects and for widening of roads. The sectoral grid is refined and planned roads widened from 100 ft to 200 ft. For a better connectivity to XYZ , Chandigarh, Panchkula, Zirakpur and Airport, the town have four main roads. There will be one main metro junction and two metro stations. New Chandigarh is divided into 20 sectors.

Eco City, New Chandigarh, Mullanpur

The scheme launched in the year 2011 for the allotment of 8X6 residential plots evoked overwhelming response as approximately 1, 60,000 applications were received. Spread over an area of 412 acres, Eco City Phase-I, is the upcoming Ultra modern Township at Mullanpur, New Chandigarh. Synonymous to its name, it is surrounded by lush green areas.

Development works are on a spree at the site and are likely to be completed by January 2014. Development is being carried out by Larsen & Toubro Ltd. Total area under development of the scheme is

400 acres and the total project cost of development is Rs. 151 crores, out of which Rs. 50 crores have already been spent on the construction of roads and providing PH , Electrical & Horticulture services etc.
Process of acquiring around 450 acres of land for Eco City, Phase-II is under process. Compensation will be paid as per the policy to the landowners whose land will be acquired for the project.

Medicity, New Chandigarh, Mullanpur

Located in the vicinity of ECO City, land measuring about 100 acres stands acquired for developing the Medicity. Out of total area, 50 acres has already been allotted for the construction of Tata Cancer Hospital. Land owners of Medicity would be allotted residential and commercial plots/sites in Eco City as per their entitlement under the land pooling scheme. Civil works are in progress at the site and target is to finish the project by 2015. The project so completed would provide facilities for clinical research, training and education. In phase-II of the scheme land measuring 160 acres would be acquired and Section 4 of the Land Acquisition Act, 1894 stands notified.

Education City, New Chandigarh, Mullanpur

Land acquisition process is underway for setting up of proposed Education City over an area of 1700 acres at Mullanpur. Land will be made available for setting up schools, colleges and universities offering excellent state of the art facilities. The project so completed would offer education facilities in courses like Engineering, Management, Bio tech, Tourism, Hospital, Multimedia, pharmaceuticals etc.

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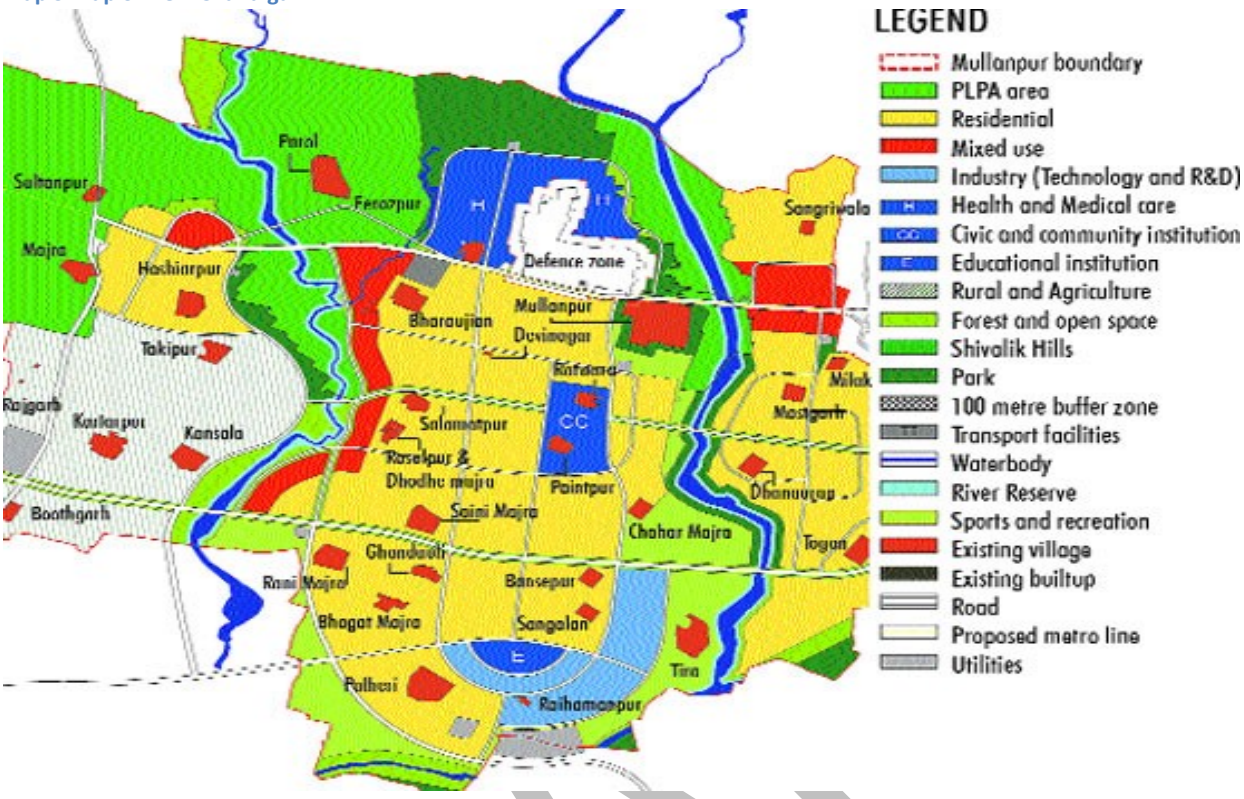
Map 3 Map of New Chandigarh



Source: GAMADA

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Aerocity, XYZ

Land measuring 800 acres (approx.) on both sides of the approach roads of the upcoming International Airport, beginning from Sector 66/82 to Village Chatt was acquired for the development of state of the art aerotropolis comprising institutional/commercial and residential use. Around 5000 residential plots are planned in Aerocity. M/s Larson & Toubro Limited has completed 80% of development works including construction of roads, water supply, electrical and public health works etc. Target is to complete the project in December 201X.

The total project cost of the development on the right side of the airport road is Rs. 141.X0 crores, out of which approximately Rs. 90.X4 crores have already been spent on various development works. On the left side, an amount of Rs. 65.1X crores has been spent on development, while the total amount earmarked for the development works is Rs. 12X.71 crores.

Purab Premium Apartments, XYZ

Work has been allotted to M/s Simplex Infrastructure for construction of 1620 apartments in Sector 88, XYZ . It will include X00 apartments of category-I, 600 apartments of category-II and 720 apartments of category-III. The total project cost is Rs. 800.00 crores and the construction is proposed to be completed by September 2015. The scope of work includes construction of Community Centre, convenient shopping booths, UGSR, a swimming pool, 2 basketball courts, 2 volley ball courts, a skating rink, provision of lifts, fire fighting equipments and piped metered LPG/NPG. The work of preparing the structural designs of these apartments was entrusted to M/s Mahimtura Consultabts Private Ltd., Mumbai. GMADA possess 50 acres of land for the project, which is likely to take off in July 201X.

IT City / Knowledge Park, XYZ

Land measuring around 1700 acres was acquired for development of IT City/ Knowledge Park close to Sector 66, 82 and 101 on Kharar-Mullanpur road. The facility being developed on land worth Rs. X000.00 crore would offer Industrial, Institutional, Commercial and Residential property. The township being near the proposed International Airport is expected to cater to huge demand for variety of properties, the city intended to offer. The Knowledge Park consists of residential plots, commercial establishments those including hotels, expo centre and group housing, EWS and area for setting up of various institutions.

Development works worth Rs. 450 crores are expected to start here from October 201X and proposed to be completed in May 2015. The scope of work includes laying of roads, PH & Elect. Works etc.

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Knowledge City, XYZ

Land measuring 45X acres stands acquired for setting up Knowledge City in Sector-81. Renowned educational groups such as IISER, Institution of Nano Technology, NABI and MNCS have shown interest in expanding their activities in the State by setting up campuses here. Recently, the campus of Indian school of Business was inaugurated here.

Golf Academy and Golf Club, XYZ

Around 85% developments of Golf Academy and Golf Club have been completed. The academy is coming up in Sector 65 and the project is worth Rs. 8.52 crores. The construction kick started on 6-5-2010 is nearing completion.

Bus Terminus-cum-Commercial Complex, XYZ

The project of construction of the Bus Terminus-cum- Commercial Complex worth Rs. X55 crores, over 7.00 acres in phase-VI, Sector 57 is nearing completion. The Bus stand may be completed by September 201X; however, the commercial towers would be ready by September 2014. Brickwork is being carried at the first floor of the complex. Work of MEP services and façade is also in progress.

Sports Complexes, XYZ

To cater to the recreational needs of the city residents sports stadiums are being constructed at a cost of Rs. 66.00 crore in Sectors 59, 61, 6X, 65, 69, 71 & 78. The construction of these stadiums is expected to complete soon. Stadiums so completed will offer various indoor and outdoor sports facilities including badminton, table tennis, gymnasium, squash, skating rink, football, swimming, basketball, volleyball etc.

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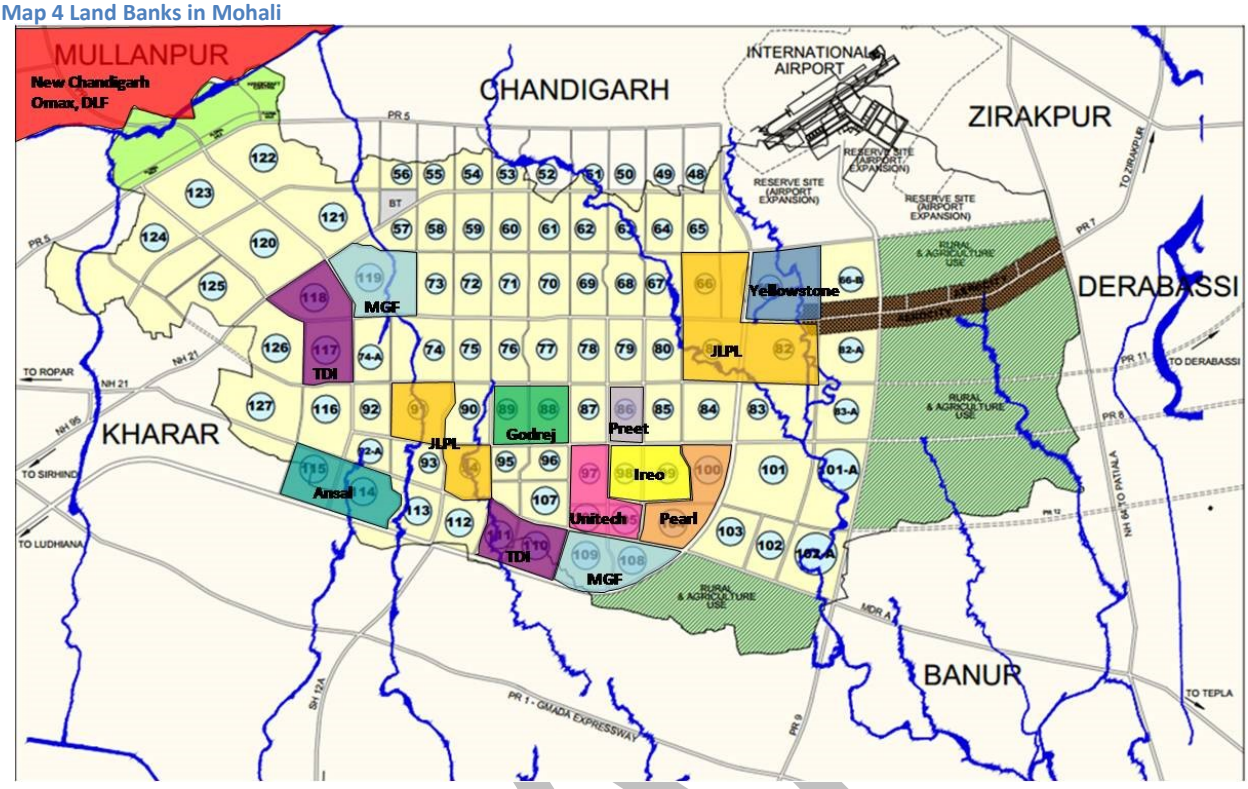
Map 4 Land Banks in Mohali



Source: Base map from GMADA

All the major land banks are on the southern portion of the city and around the proposed commercial city centre. These land banks are majorly with local builders like JLPL, TDI and MGF which are expected to develop in next 7 to 10 years.

The supply in New Chandigarh is also coming at the fast rate. DLF has already developed its parcel and Omax has also launch its township.

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Road Network

Construction of 200' wide road from NH-22 to NH-64 is underway. The app. Cost of construction of this X.50 km road is Rs. 27.6X crores and the target is to complete the construction in September 201X. Construction of balance work of 200' wide and 8 km long road from Sector junction 66/67/80/81 to NH-64 is going to start soon.
Construction of 200' wide road from junction Sector 7X/74 to NH-21 (Chandigarh Kharar Road) is underway. The app. Cost of construction of X.5 km road is Rs. 64.25 crores.
Construction of 200' wide road PR-9 (From Aerocity Jn. to Kharar-Banur road):- about 12% work of construction of this 6.10 KM long road has been completed including Civil, PH and electrical works. The target is complete the project in May 2014.
Construction of 200' wide Mullanpur-UT Boundary to T Junction of Kurali Siswan road. The total cost of construction of 8 KM long main carriage way is 71.00 crore. Work of construction of road was allotted to M/s Omax Infrastructure Ltd.

Up Coming Projects

IT City, Sector-82, 8X-A

Scheme for the allotment of residential plots to the oustees farmers is to be launched in near future. The Letters of Intent to all the land pooling farmers of these sectors have been issued.

Group Housing Sites

Auctions of Group Housing Sites located in Sector 65 & 88 are proposed to be held between June 201X to October 201X. The Authority recently auctioned a multi – storey housing site in Sector-70. The auction of the site fetched Rs. 98.X0 crore.

Subject Site

Site is a land parcel is admeasuring 5 Acres and falls under sector 119 of XYZ 's master plan -20X1 under mixed land use and is adjoining to the village Balongi. An under construction mall is just opposite to the site with a regional level bus terminus. There is a Verka milk plant at 200 meters and a government college at 600 meter's distance.
In present context the location is lower-middle and middle in terms of existing demography but with the type of development in surroundings one can expect it to be upper-middle in few years time.

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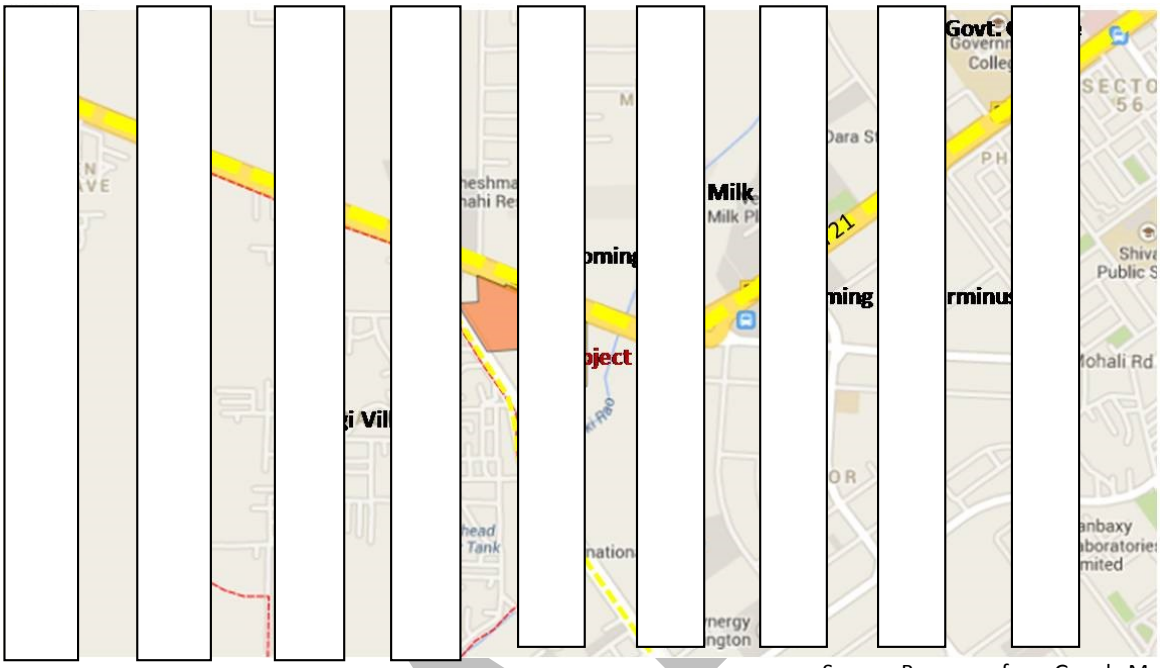
Map 5 Location of Subject Site

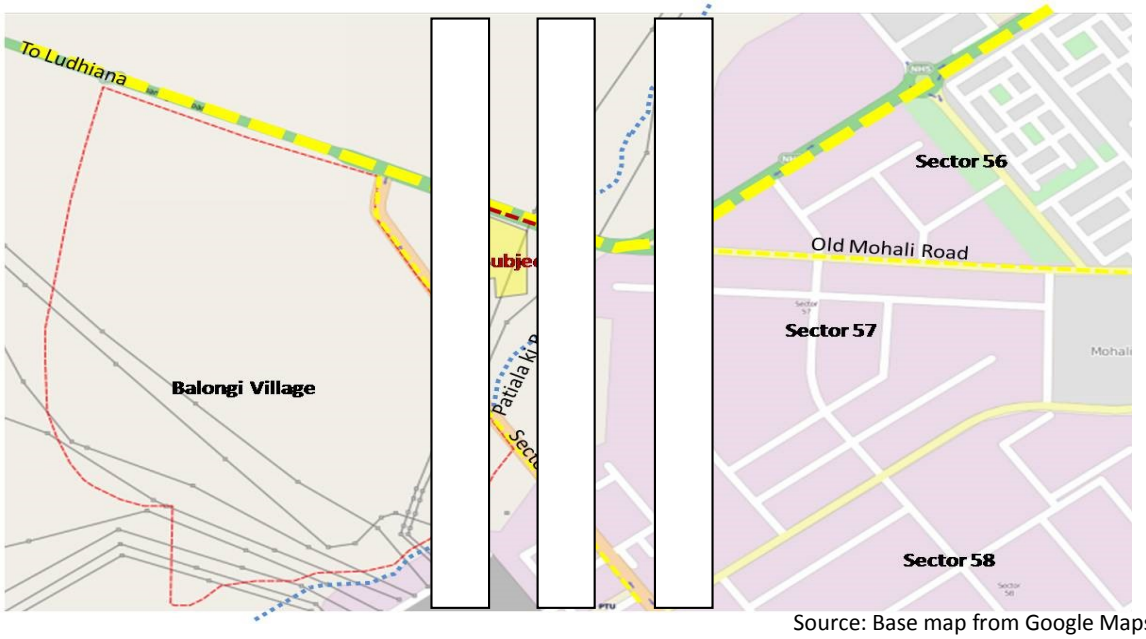


Source: Base map from Google Maps

The site is located at the corner of NH 21 and sector road, which connects the area to industrial sectors 57, 58, 7X, 72 and to other residential sectors further down.

The Site has a direct access from National Highway no.21 that connects Chandigarh to Ludhiana.

Map 6 Subject Site



Source: Base map from Google Maps

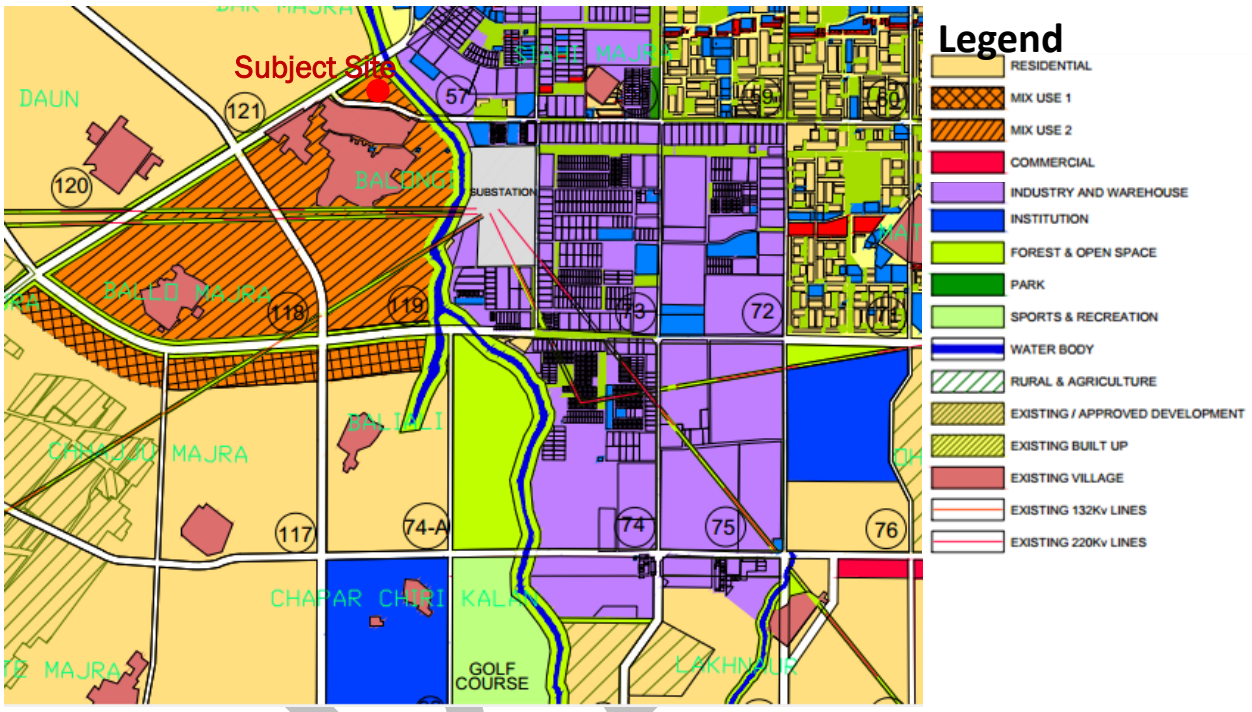
A rivulet called Patiala ki Rao is running beside the site, which is mostly dry, and a High-tension line is passing through it.

Surrounding landuse

The subject site is under the mixed-use 2 category under the XYZ Master Plan- 20X1.

Industrial sectors adjacent to the site have green and orange industries like Dell, Quark and Ranbaxy. This Industrial area has 75% occupancy level.

Map 7 Surrounding Land-Use



Source: Base map from GMADA

Building Regulations

The site is in the vicinity of High Tension Electricity transmission lines. Besides taking other safety precautions, a minimum safety distance (both vertical and horizontal) of X m (10 ft.) shall be maintained between the buildings and the High Tension electricity lines, and 1.5 m for Low Tension Electricity lines.

The space to be left from the defined boundary of the Nallah bed width and alignment shall be minimum 2 m. This may be developed as Green Buffer/recreational and/or utilized for road of minimum 9m width, wherever feasible.

In Mixed Use 2 category, commercial and residential use is allowed. In commercial Shopping malls, Multiplex, Offices, Hotels, Serviced Apartments, Retail and Marriage places are allowed. In residential Cluster Housing, Group Housing is allowed.

X FSI will be allowed on site as it has an access from the National Highway 24 having width of 200 ft.

Chapter X: Market Dynamics

Introduction

In this chapter, the residential market dynamics is discussed in detail to find out the most feasible product and cost range for the subject site. Detailed surveys of the residential market were carried out in the Tri City region, which includes the catchment area. There were some 127 projects in the whole region, i.e. Chandigarh, XYZ , Panchkulla and Derabasi. There are more projects in XYZ as compared to any other location in the tri-city because of its proximity to the city of Chandigarh and higher development potential due to release of land from the government. However, there were no new projects found in the city of Chandigarh as it is an already developed location and there is very little scope of re-development yet.

The residential market is studied at four levels so that the inferences are neither biased as per the micro trends nor inconsiderate of the local conditions & location characteristics. These four levels are:

Macro Level:

1. Tri-city- overall:
   This analysis includes the projects in all the locations existing in the region of tri-city.
   Locations: New Chandigarh, XYZ , Panchkulla, Zirakpur, Mullanpur, Derabasi.

2. Distance Band Analysis from Chandigarh: The subject site is at a travel distance range of 10 Km-15 Km from sector 17, City Centre of Chandigarh. Therefore, the analysis of best product, size and cost range is done on the projects falling in this distance band.

3. Catchment Level: This analysis includes the projects in all sectors of XYZ city.

Micro Level:

4. Location Level: We analyzed the market in the sector 60-70-75 and sector 90-91, as they are in close proximity to the subject site. However, they are relatively more developed. The objective of the analysis is to understand the dynamics of these markets since subject site will be competing with these locations

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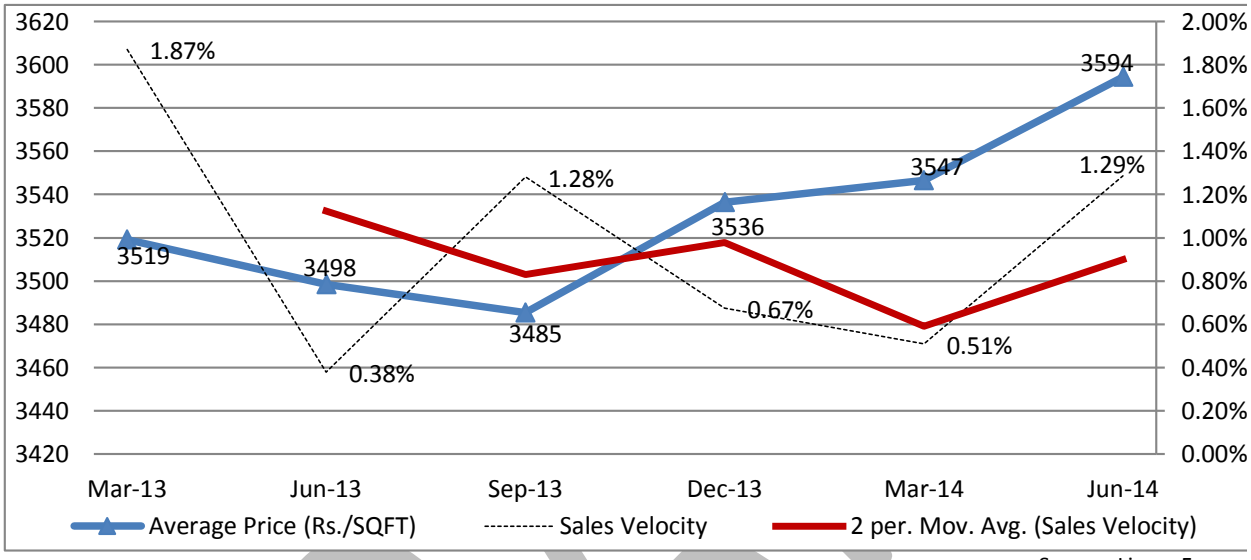
Tri-City Market Dynamics

To understand and project the growth and future of the city affecting the real estate of different regions the basic character of the real estate market of Tricity is studied in the section below.

The graph below shows the trends of average price and sales velocity from March 201X of the tri city region.

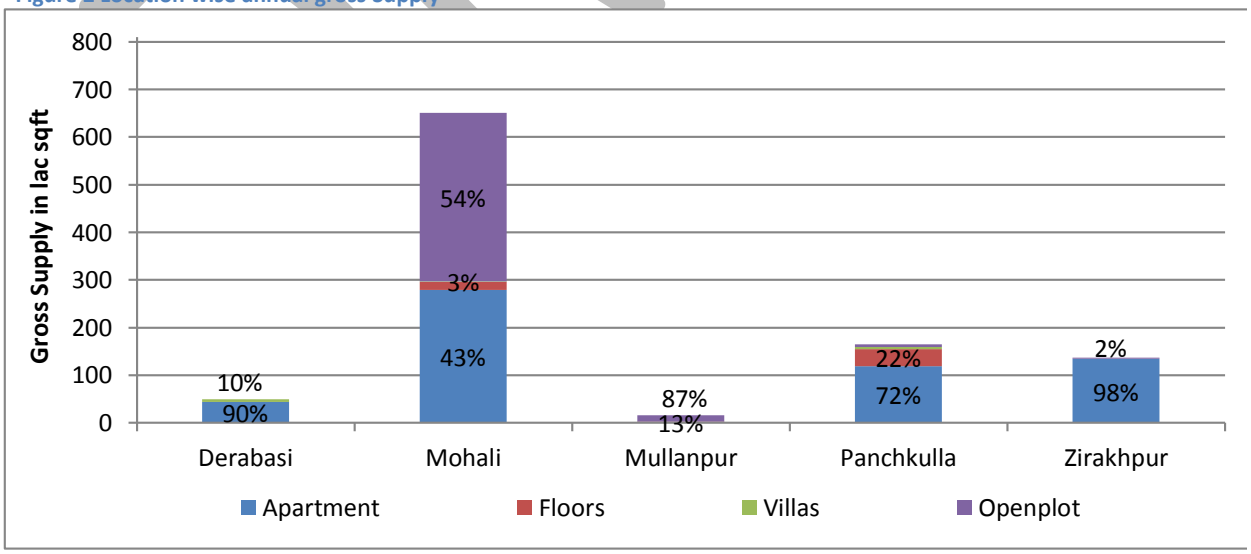
Figure 1 Price and sales velocity trend in XYZ



Source: Liases Foras

There is negative correlation between prices and sales velocity. Ideally, the market should maintain 2.75% sales velocity.
Sales velocity in June 2014 is 1.29% translating sales gestation of 76 months.

Figure 2 Location wise annual gross Supply



Source: Liases Foras

Table 1 Location wise annual gross Supply

Suburbs	Apartment	Floors	Villas	Open plot	Grand Total
Derabasi	X6	0	X	0	X9
XYZ	1X7	9	1	192	XX9
Mullanpur	1	0	0	10	11
Panchkulla	X8	5	4	0	47
Zirakhpur	80	0	0	1	81
Grand Total	291	14	7	20X	516

(Figures in Lac Sqft) Source: Liases Foras

Chandigarh market has 127 projects with marketable annual supply of 516 lac sq.ft.

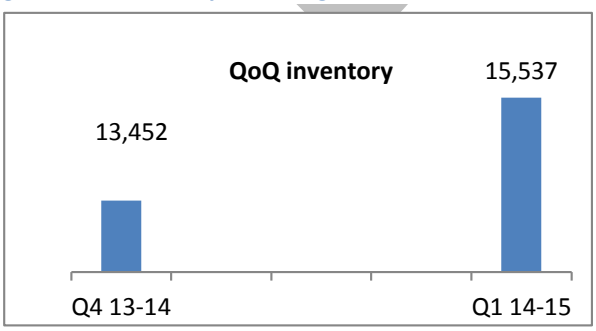
XYZ has the maximum supply of XX9lac sqft in the Tri-city region of which 54% are open plots and 4X% are apartments following floors and then villas. XYZ has the maximum supply because government has released a huge chunk of land under the master plan and XYZ 's proximity to the city of Chandigarh is a plus point. Zirakpur has also developed as a complimentary residential location, especially VIP road due to proximity to XYZ , Panchkulla amd Chandigarh. Derabasi is the next upcoming location because of the new proposed aero city road and ring road, which will greatly improve the connectivity from Zirakpur and XYZ .

Table 2 Chandigarh Market Summery

Particulars	Sept 12-Jun1X	Sept 1X-Jun 14	Mar-14	Jun-14	QoQ Change	YoY Change
Inventory (Lac SQFT)	842.9X	981.15	242.60	278.84	▲ 14.94%	▲ 16.40%
Net Sales (Lac SQFT)	78.94	58.79	7.54	24.79	▲ 228.66%	▼ -25.52%
Business Turnover (Rs. Cr.)	247X.89	20X8.17	245.1X	867.55	▲ 25X.91%	▼ -17.61%
Price (Rs./SQFT)	X469	X545	X547	X594	▲ 1.X5%	▲ 2.19%
Flat Cost (Rs. Lac)	59.2X	6X.16	6X.81	64.45	▲ 1.01%	▲ 6.64%
Months Inventory (Months)	116	188	9X	X1	▼ -66.84%	▲ 62.10%
Sales Velocity (%)	1.69%	0.95%	0.51%	1.29%	▲ 15X.05%	▼ -4X.75%

Source: Liases Foras

Figure 3 QoQ Inventory in Chandigarh



Source: Liases Foras

2,085 units were launched in this quarter compared to only 785 last quarter.

QoQ inventory level rose from 24X lac sqft. to 279 lac sqft which shows stagnant market with only 1% price escalation.

Sales were increased in this quarter but it also shows 26% decrease on yearly basis.

Overall, the last quarter has performed well but last year was not a very good year for the real estate market in the Tri-city region.

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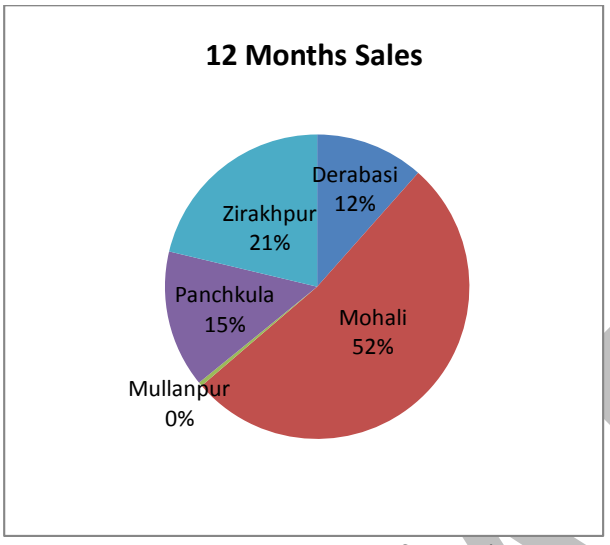
Inter Location Market Trend

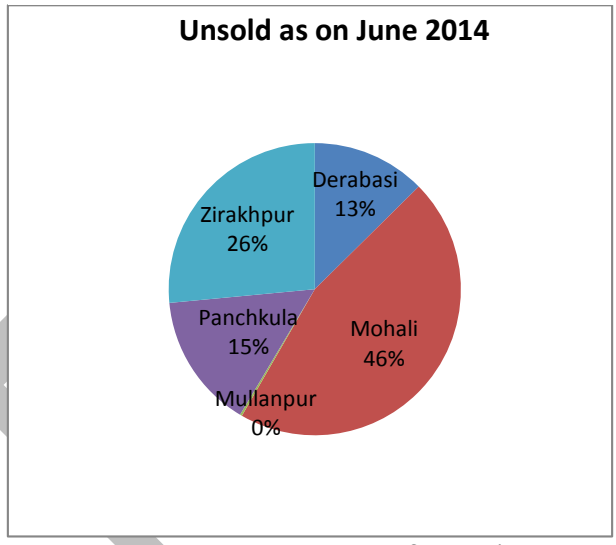
In this section the distribution of the Chandigarh market supply and last 12 months' sales within different suburbs is looked into so as to understand which area in the region is performing well in terms of both supply and sales and hence the growth directions of the region.

Figure 4 Last 12 Month sales



Source: Liases Foras

Figure 5 Unsold in the last quarter



Source: Liases Foras

The share of XYZ (which contains the catchment and the subject site) is the highest in terms of sales as well as unsold stock which is 52% in sales 46% in unsold stock followed by Zirakpur.

Table 3 Comparative Sales & Unsold

	Net Sales (Lac Sq.Ft.)		Price (Rs./Sq.Ft.)		Unsold (Lac Sq.Ft.)		Months Inventory (Months)	
Suburbs	**Sept 12-Jun 1X**	**Sept 1X-Jun 14**	**Jun-1X**	**Jun-14**	**Jun-1X**	**Jun-14**	**Jun-1X**	**Jun-14**
Derabasi	2.56	6.79	2,8X7	2,767	17.08	X2.02	80	57
XYZ	55.79	79.2X	X,209	X,56X	241.44	259.X1	52	X6
Mullanpur	.19.84	0.45	X,750	4,515	12.90	10.27	8	272
Panchkulla	9.59	7.8X	4,462	4,497	X4.75	X9.18	4X	60
Zirakhpur	21.19	12.75	X,672	X,524	47.71	68.40	27	64
Grand Total	**108.96**	**107.06**	**X,498**	**X,594**	**X5X.89**	**254.05**		

Source: Liases Foras

Derabasi shows a lot of increase in sales with slight decrease in prices as projects; SBP housing park and ATS Golf Meadows has been able to sell close to 1X0 units cumulatively.

Zirakpur shows minor decrease in prices but that does not show any influence on sales. The sales have dropped drastically from last year.

Whereas XYZ and Panchkulla shows increase in price with sky-high unsold stock and months inventory.

Typology Wise Analysis

In overall Chandigarh, X BHK sales are the best with high efficiency ratio following 2 BHK. 1 BHK sales are very less in comparison with 2 and X BHKs with less supply and high months inventory makes it a very less efficient product. High-end products like 5 and 6 BHKs, Duplex have very high months inventory with less efficiency in the market.

Table 4 Best performing product in Chandigarh

Row Labels	Sales (Jun-14)	Unsold (Jun-14)	Months Inventory (Jun-14)	Supply (Jun-14)	Efficiency Ratio
1 BHK	0.24	1.8X	2X	2.07	1.21%
2 BHK	4.02	X6.22	27	40.24	24.14%
X BHK	12.X8	148.X6	X6	160.74	100.00%
4 BHK	X.4X	X2.68	29	X6.11	21.8X%
5 BHK	0.22	4.08	55	4.X1	2.79%
6 BHK	0.10	X.26	102	X.X6	2.25%
Duplex	1.X2	8.85	20	10.17	5.81%
Floors	2.22	12.22	17	14.44	7.9X%
Studio	0.01	0.17	62	0.17	0.11%
Villa	0.85	6.X9	2X	7.25	4.22%
Grand Total	**24.79**	**254.05**	**X1**	**278.84**	

(Figures in Lac Sqft) Source: Liases Foras

Cost Range wise Analysis

Cost range of 50 lac to 60 lac is the most efficient one with highest sales and good supply follows with cost range 60 lac to 70 lac in overall Chandigarh.

Table 5 Best Performing Cost Range in Chandigarh

Cost Ranges	Sales (Jun-14)	Unsold (Jun-14)	Months Inventory(Jun-14)	Supply (Jun-14)	Efficiency Ratio
Less than 20 lac	0.12	2.47	60	2.60	4.76%
20 lac -X0 lac	0.9X	5.99	19	6.92	11.05%
X0 lac -40 lac	X.08	28.68	28	X1.77	5X.88%
40 lac -50 lac	2.96	29.90	X0	X2.86	56.X8%
50 lac -60 lac	4.29	52.66	X7	56.95	100.00%
60 lac -70 lac	4.57	41.54	27	46.12	77.97%
70 lac -80 lac	1.58	19.41	X7	20.99	X6.86%
80 lac -90 lac	2.07	11.66	17	1X.7X	21.X2%
90 lac -1 Crore	0.56	7.59	41	8.15	14.46%
1 Crore -1.25 Crore	1.5X	20.X5	40	21.88	X8.76%
1.25 Crore -1.50 Crore	1.2X	16.X5	40	17.59	X1.14%
1.50 Crore -1.75 Crore	0.X5	X.X6	29	X.71	6.X2%
1.75 Crore -2 Crore	0.40	5.XX	40	5.7X	10.14%
2 Crore -2.25 Crore	0.58	5.X0	27	5.89	9.95%
2.25 Crore -2.50 Crore	0.04	0.48	40	0.52	0.92%
2.50 Crore -2.75 Crore	0.00	0.14		0.14	0.28%
More than 2.75 Crore	0.48	2.8X	18	X.X1	5.19%
Grand Total	**24.79**	**254.05**	X1	**278.84**	

(Figures in Lac Sqft) Source: Liases Foras

New Launch Trends

By the analysis of new launch and sales velocity of top five projects, it is seen that in the first three months of launch the sales velocity shows positive response due to low launch price and pre launch discounts. Gradually after which the sales velocity starts decreasing.

Table 6 New Launch Sales and Supply in Chandigarh

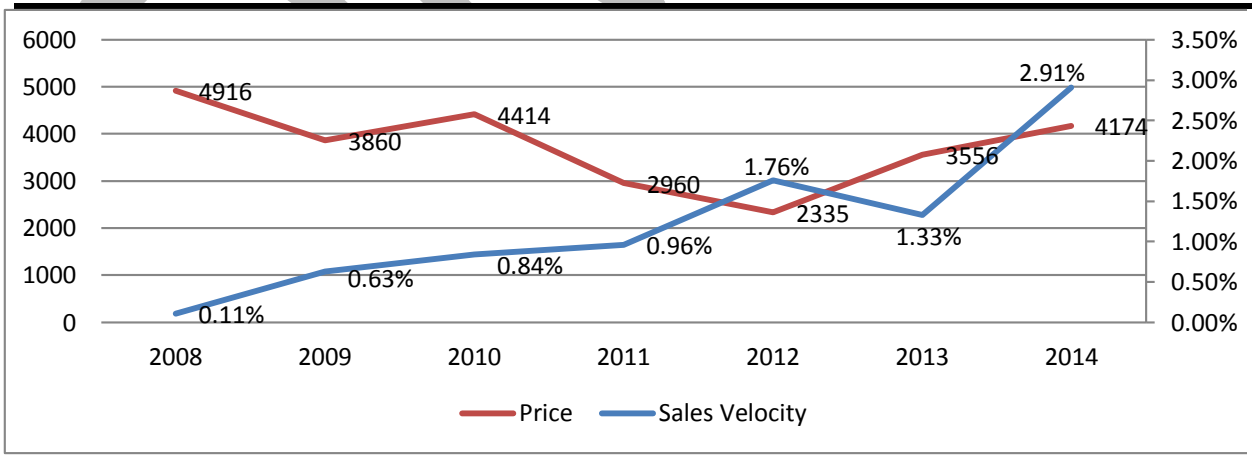
Sales	2011	2012	201X	2014	YoY Change
Chandigarh	X8.48	1X8.61	17.69	2.09	-87.24%
XYZ	16.56	97.81	10.06	1.24	-89.72%
% of Chandigarh	4X%	71%	57%	59%	-19.40%
Supply	**2011**	**2012**	**201X**	**2014**	**YoY Change**
Chandigarh	47X.64	2001.11	X4X.45	16.X4	-82.84%
XYZ	12X.48	1574.1X	161.91	12.22	-89.71%
% of Chandigarh	26%	79%	47%	75%	-40.07%

(Figures in Lac Sqft) Source: Liases Foras

In New launches, as well the price and sales velocity shows the typical market situation where, there is negative Correlation between prices and velocity.
Except for in 2014, the sales velocity has jumped due to sales in some bigger projects in Derabasi.

Table 7 Launch year wise sales and sales velocity

Launch Year	Sold till Date (%)	Launch Sales Velocity	Current Sales Velocity
Dec-1X	4.44%	1.42%	0.00%
Sep-12	42.5X%	9.95%	0.X8%
Dec-1X	2.27%	0.68%	0.44%
Mar-1X	10.77%	X.24%	0.00%
Dec-12	1X.52%	X.97%	0.71%
Sep-12	14.15%	2.97%	0.1X%



Source: Liases Foras

XYZ Market Dynamics

Now that the overall Chandigarh market is explained, we zoom down to the micro market i.e. XYZ market in which our site is located. This section explains the apartments in XYZ Market. Detailed analysis on Location wise sales, unsold, average price and months inventory is done along with product and cost-range wise analysis.

Table 8 XYZ market summery

Location	Sales		Unsold Stock		Weighted Average Price		Months Inventory	
	Sep 2012-Jun 201X	Sep 201X-Jun 201X	Jun-1X	Jun-14	Jun-1X	Jun-14	Jun-1X	Jun-14
Chandigarh - Kharar Highway	11.09	8.01	26.2X	X4.44	2888	XX40	28	52
Kharar-Landran Road	15.84	10.X9	X8.44	X7.10	278X	2947	29	4X
Sector 126	4.92	2.01	4.59	X.45	280X	2705	11	21
Sector 66-70-75	7.0X	X.69	1X.60	16.20	4011	4819	2X	5X
Sector 86, 88, 97, 99, 104, 105	2.45	X.74	8.60	14.X0	X626	X926	42	46
Sector 90-91	0.92	2.84	11.99	10.64	422X	4X10	157	45
Total	**42.26**	**X0.67**	**10X.44**	**116.14**	**X209**	**X56X**	**29**	**45**

(Figures in Lac Sqft) Source: Liases Foras

Product Analysis

The section will discuss the available and efficient typologies in the XYZ market, their supply, sales, price, size, etc. and the best projects offering them in the catchment.

First to have an understanding of the best performing product the supply and sales of the major typologies are given below for XYZ . This will show that how the different typologies are performing. At this stage studying the whole Chandigarh market is not very sagacious because of its geographic span, variety of cost and typology across, etc. hence the XYZ market is studied to have a better understanding of the typology and its cost range.

It was observed that **XBHK is the most supplied and sold typology** followed by 2BHK apartments. It comprises almost 50% of the XYZ market, and 2 BHK comprises of about 25% of the market in terms of supply and sales.

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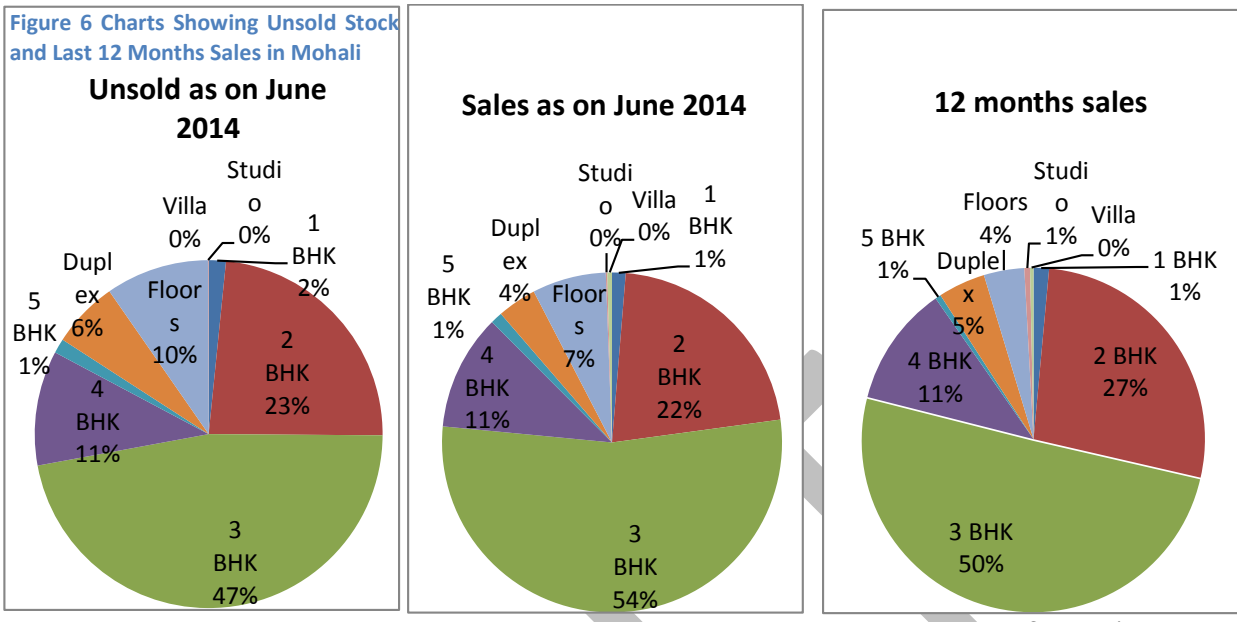
Figure 6 Charts Showing Unsold Stock and Last 12 Months Sales in Mohali



Source: Liases Foras

Table 9 Product Summery in XYZ

Flat Type	Annual Sales (In lac sq.ft.)	Sales in Jun 2014 (In lac sq.ft.)	Unsold as on June 2014 (In lac sq.ft.)	Months Inventory (Months)	Efficiency
1 BHK	0.45	0.19	1.50	40	X%
2 BHK	8.XX	2.86	25.0X	X6	55%
X BHK	15.44	5.72	62.X2	48	100%
4 BHK	X.49	1.X0	12.79	44	2X%
5 BHK	0.17	0.17	1.X2	96	1%
Duplex	1.X7	0.75	4.XX	X8	9%
Floors	1.17	1.17	8.16	84	7%
Studio	0.16	0.01	0.17	12	1%
Villa	0.10	0.00	0.51	62	1%
Grand Total	**X0.67**	**12.18**	**116.14**	**45**	**100%**

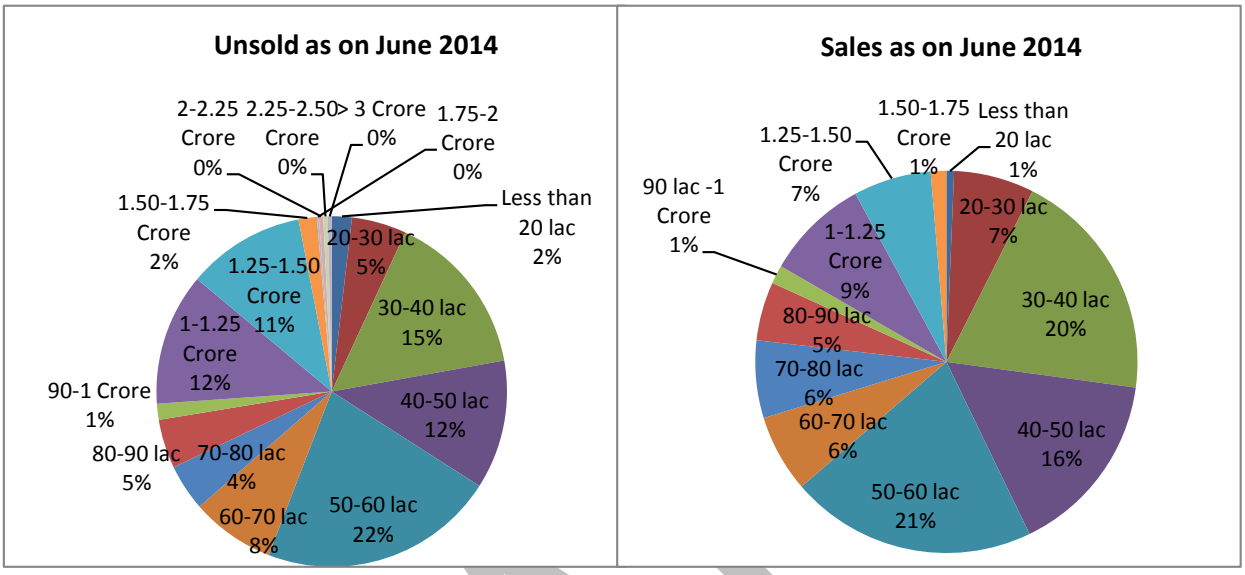
Source: Liases Foras

The table above gives the market breakup of sales of last quarter and the unsold stock among major typologies being offered. It can be observed that the XBHK apartments are performing best in XYZ market comprising 50% of the sales in last 12 months and about 54% in last quarter. It has about 47% of the unsold stock. These are followed by 2BHK apartments, which comprise 22% of sales and 2X% of unsold stock of the market. Other typologies are 1 BHK, 4 BHK, 5 BHK, duplexes, floors, studios and villas.

Cost Range wise Analysis

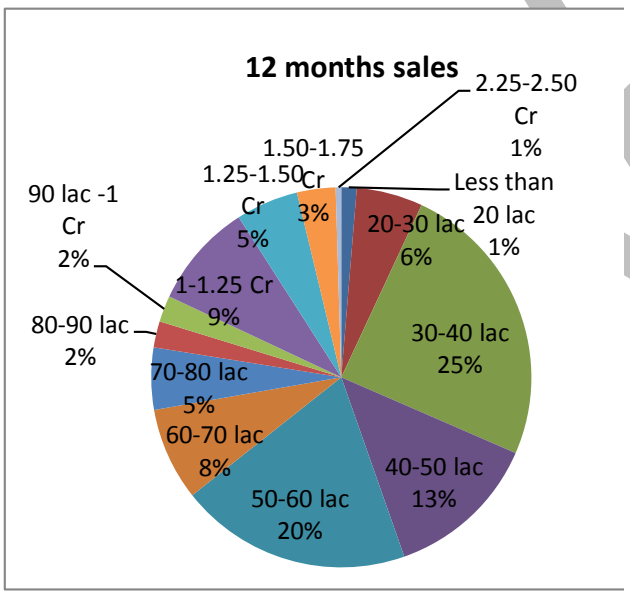
There are about 16 cost ranges were found in entire XYZ market ranging from 20 lac to X Cr.

Figure 7 Charts Showing last quarter's Sales and Unsold Stock of Apartments in Mohali



Source: Liases Foras

Figure 8 Chart Showing Last 12 Months' Unsold Stock of Apartments in XYZ



Source: Liases Foras

The charts represent the sales, unsold stock in last quarter and unsold stock in last 12 months and the unsold stock as on June 2014 of the apartments in the XYZ market. From these charts, it can be observed that the cost range of Rs.50-60 lacs is performing well in the market followed by apartments with costs in between Rs.X0 lacs to Rs. 40 lacs and Rs. 40 lacs to Rs. 50 lacs.

Table 10 Cost Range wise XYZ market summery

Cost Range	Annual Sales (In lac sq.ft.)	% of total Sales	Sales in Jun 2014 (In lac sq.ft.)	Unsold as on June 2014 (In lac sq.ft.)	% of Unsold	Months Inventory Months	Efficiency
Less than 20 lac	0.40	1%	0.08	2.15	2%	65	5%
20 -X0 lac	1.72	6%	0.81	5.86	5%	41	2X%
X0 -40 lac	7.50	24%	2.X6	17.7X	15%	28	100%
40 -50 lac	4.00	1X%	1.88	1X.80	12%	41	52%
50 -60 lac	6.02	20%	2.50	25.XX	22%	51	78%
60 -70 lac	2.41	8%	0.79	8.99	8%	45	X1%
70 -80 lac	1.61	5%	0.79	4.97	4%	X7	21%
80 -90 lac	0.68	2%	0.60	5.25	5%	9X	9%
90 lac -1 Crore	0.68	2%	0.19	1.72	1%	X0	9%
1.0 -1.25 Cr	2.7X	9%	1.05	14.15	12%	62	X5%
1.25 -1.50 Cr	1.62	5%	0.79	12.6X	11%	9X	21%
1.50 -1.75 Cr	1.00	X%	0.16	1.96	2%	24	1X%
1.75 -2 Cr	0.07	0%	0.07	0.22	0%	40	1%
2.0 -2.25 Cr	0.09	0%	0.09	0.45	0%	60	1%
2.25 -2.50 Cr	0.15	0%	0.04	0.48	0%	40	2%
More than X Cr	0.00	0%	0.00	0.42	0%	-	-
Grand Total	**X0.67**	**100%**	**12.18**	**116.14**	**100%**	**45**	**100%**

Source: Liases Foras

After calculating the efficiencies of each cost range in the XYZ city, it is observed that cost range of Rs. X0 lac to Rs. 40 lac is the most efficient product. Following cost range is Rs. 50 to Rs. 60 lac with 78% efficiency. Efficiencies are calculated considering the sales and supply of each product.

$$Efficiency = \sqrt{sales^2 + supply^2} * \frac{sales}{supply}$$

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Area Range wise Analysis

Below table shows all the area ranges exists in XYZ city. The product in the area range of 1600-1800 sqft which makes a X BHK in the best performing area range following the area range of 1000-1200 sqft and 1200-1400 sqft which makes a 2 BHK.

Table 11 Area Range wise market summery of XYZ

Area Range (Sq.Ft.)	Yearly Sales	% of total sales	Unsold as on June 2014	% of total unsold	Months Inventory	Efficiency Percentile
600 - 800	0.60	2%	1.60	1%	X2	9%
800 - 1000	0.40	1%	2.XX	2%	69	6%
1000 - 1200	4.54	15%	5.68	5%	15	7X%
1200 - 1400	4.81	16%	21.1X	18%	5X	72%
1400 - 1600	1.72	6%	12.XX	11%	86	25%
1600 - 1800	6.67	22%	2X.28	20%	42	100%
1800 - 2000	X.15	10%	12.97	11%	49	47%
2000 - 2200	1.7X	6%	5.69	5%	X9	26%
2200 - 2400	2.X6	8%	8.07	7%	41	X5%
2400 - 2600	0.99	X%	5.58	5%	67	15%
2600 - 2800	0.05	0%	0.44	0%	102	1%
2800 - X000	0.61	2%	X.2X	X%	64	9%
X000 - X200	0.48	2%	1.40	1%	X5	7%
X200 - X400	0.66	2%	8.21	7%	150	10%
X400 - X600	0.67	2%	1.61	1%	29	10%
X600 - X800	0.79	X%	0.48	0%	7	14%
4000 - 4200	0.17	1%	0.8X	1%	60	2%
4200 - 4400	0.18	1%	0.X5	0%	24	X%
4400 - 4600	0.09	0%	0.45	0%	60	1%
Total	X1	100%	116	100%	45.440	100%

(Figures in Lac Sqft) Source: Liases Foras

Location Level Price Movement

The prices have remained mostly constant owing to reduction in sales and reduced investors participation. Reduction in price was seen in around 20% of the projects. Price can be negotiated to a range of 10-15 % with the brokers and the underwriters.

Location	Sep-12	Dec-12	Mar-1X	Jun-1X	Sep-1X	Dec-1X	Mar-14	Jun-14
Chandigarh - Kharar Highway	2,912	X,0X4	X,194	2,888	2,922	2,948	2,890	X,X40
Kharar Landran Road	X,022	2,905	2,809	2,78X	2,80X	2,784	2,771	2,947
Sector 126	2,905	2,770	2,770	2,80X	2,959	2,928	2,962	2,705
Sector 66-70-75	4,010	4,050	4,009	4,011	4,040	4,686	4,644	4,819
Sector 86,88,97,99,104,105	X,707	X,755	X,762	X,626	X,771	X,700	X,770	X,926
Sector 90-91	4,705	4,169	4,219	4,22X	4,201	4,054	4,211	4,X10
Grand Total	X,196	X,21X	X,X18	X,209	X,2X7	X,465	X,46X	X,56X

Summary of XYZ Market

Below table summarizes the overall market of XYZ based on best product, size and cost range. There are majorly three product types which has came up as good products in the city. The price ranges from Rs. 2600 to Rs. 4000 per sqft. The cost ranges from Rs. X0 lac to Rs. 1.5 cr and the area ranges from 1100 sqft to X650 sqft.

Table 12 XYZ Overall Market Summery

Typology	Months Inventory (Months)	Most Efficient Area Range (sq.ft.)	Most Efficient Cost Range	Most Efficient Rate Range (Rs./sq.ft.)
2 BHK	X6	1100 - 1150	X0 lac -40 lac	2600 - 2800
X BHK	48	1750 - 1800	50 lac -60 lac	2800 - X000
4 BHK	44	X600 - X650	1.25 Cr -1.50 Cr	X800 - 4000

Source: Liases Foras

Out of all three good products X BHK has come up as the best performing product and its cost ranges from Rs. 50 lac to Rs. 60 lac, coming up as the best performing cost range. The product in the area range of 1600-1800 sqft is the best performing area range.

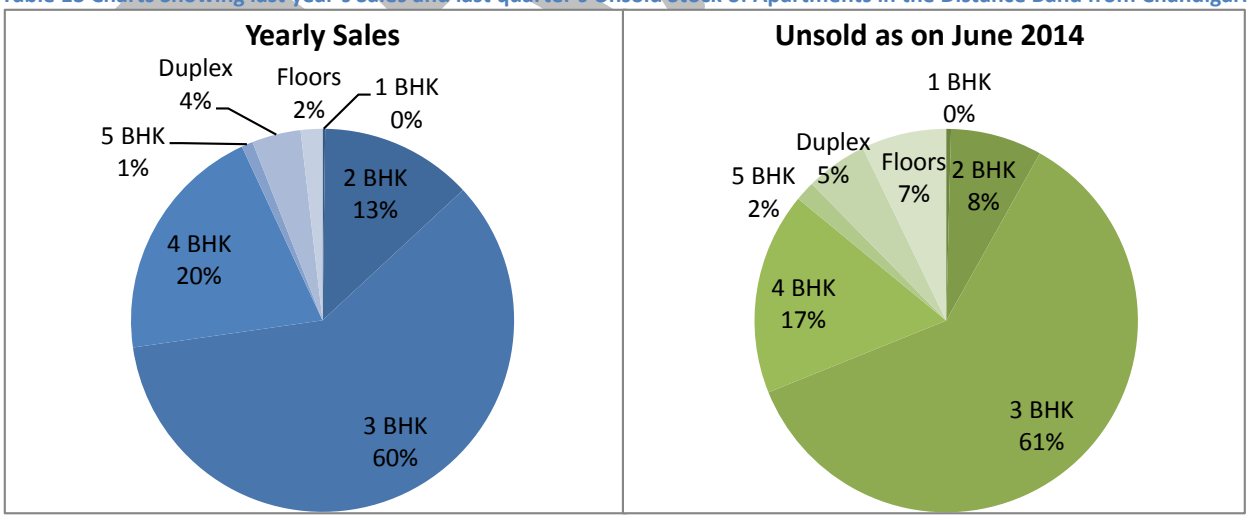
Distance Band Product Analysis from Chandigarh

The subject site is at a travel distance range of 10 Km-15 Km from sector 17, City Centre of Chandigarh. We will analyze the market in the distance band to answer the following questions:

Which is the best performing product?

Which is the cost range, Area Range and the rate range?

Table 13 Charts Showing last year's Sales and last quarter's Unsold Stock of Apartments in the Distance Band from Chandigarh



Source: Liases Foras

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The above graphs show typological distribution in the distance range of 10 Km-15 Km from sector 17. It is seen that X BHK has a good market and sold 60% of all the typologies in comparison to other typologies existing in the distance band. X BHK is followed with 4 BHK with 20% of sales in last year.

Table 14 Product wise analysis in the Distance Band

Row Labels	Yearly Sales	Unsold as on June 2014	Yearly Supply	Months Inventory	Efficiency Percentile
1 BHK	0.04	0.X5	0.X9	11X	0%
2 BHK	2.21	6.75	8.97	X7	22%
X BHK	10.24	5X.1X	6X.X7	62	100%
4 BHK	X.49	14.92	18.42	51	X4%
5 BHK	0.17	1.46	1.6X	106	2%
Duplex	0.71	4.55	5.26	77	7%
Floors	0.X2	6.27	6.58	2X8	X%
Grand Total	**17.18**	**87.44**	**104.62**	**61**	**100%**

Sales & unsold figures in Lac sq.ft. Source: Liases Foras

Only X BHK has captured 60% of total sales within all the typologies. Following X BHK is the 4 BHK.X BHK is the most efficient product in the distance band considering its sales and supply.

Distance Band Cost Range Analysis from Chandigarh

50-lac to 60 lac is the best performing cost range in the distance band. It has sold X.47 lac square feet, which is 20% of the total sales in last year. It also has the highest unsold stock of 21.77 lac square feet, which is 25% of total unsold stock in the distance band.

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Table 15 Cost Range wise analysis in the Distance Band

Cost Range	Yearly Sales	% of total sales	Unsold as on June 2014	% of total unsold	Yearly Supply	Months Inventory	Efficiency Percentile
20 -X0 lac	0.04	0%	0.X5	0%	0	11X	1%
X0 -40 lac	1.X4	8%	4.X8	5%	6	X9	X9%
40 -50 lac	0.X9	2%	1.04	1%	1	X2	12%
50 -60 lac	X.47	20%	21.77	25%	25	75	100%
60 -70 lac	0.5X	X%	5.25	6%	6	120	15%
70 -80 lac	0.45	X%	6.24	7%	7	165	1X%
80 -90 lac	2.98	17%	5.65	6%	9	2X	90%
90 lac -1 Cr	1.XX	8%	X.9X	4%	5	X5	X9%
1.0-1.25 Cr	2.50	15%	18.06	21%	21	87	72%
1.25 -1.50 Cr	2.X0	1X%	15.2X	17%	18	80	66%
1.50 -1.75 Cr	1.55	9%	X.X6	4%	5	26	46%

Table 15 Cost Range wise analysis in the Distance Band

Cost Range	Yearly Sales	% of total sales	Unsold as on June 2014	% of total unsold	Yearly Supply	Months Inventory	Efficiency Percentile
1.75 -2 Cr	0.07	0%	0.10	0%	0	18	2%
2 -2.25 Cr	0.09	1%	0.54	1%	1	72	X%
2.25 -2.50 Cr	0.15	1%	0.48	1%	1	40	4%
2.50 -2.75 Cr	0.00	0%	0.14	0%	0		0%
More than X Cr	0.00	0%	0.91	1%	1		0%
Total	17.18	100%	87.44	100%	105	61	

Sales & unsold figures in Lac sq.ft Source: Liases Foras

Distance Band Area Range Analysis from Chandigarh

The area range 1800 square feet to 2000 square feet is coming out to be the best area range in the distance band making a X BHK. It has the maximum sales of X.72 lac sqft and maximum supply of 16 lac sqft making it the most efficient area range followed by 2200 square feet to 2400 square feet having the efficiency of 77%. This area range makes a 4 BHK.

Table 16 Area Range Analysis in the Distance Band

Area Range	Yearly Sales	% of total sales	Unsold as on June 2014	% of total unsold	Yearly Supply	Months Inventory	Efficiency Percentile
600 - 800	0.04	0%	0.X5	0%	0	11X	1%
1000 - 1200	1.X5	8%	0.52	1%	2	5	44%
1200 - 1400	1.X6	8%	9.20	11%	11	81	X6%
1400 - 1600	2.02	12%	16.12	18%	18	96	5X%
1600 - 1800	0.4X	X%	8.80	10%	9	244	11%
1800 - 2000	X.72	22%	12.09	14%	16	X9	100%
2000 - 2200	1.69	10%	6.8X	8%	9	49	45%
2200 - 2400	2.89	17%	11.09	1X%	14	46	77%
2400 - 2600	0.79	5%	5.40	6%	6	82	21%
2600 - 2800	0.00	0%	0.00	0%	0		0%
2800 - X000	0.14	1%	X.45	4%	4	298	4%
X000 - X200	0.45	X%	1.28	1%	2	X4	12%
X200 - X400	0.40	2%	7.66	9%	8	2X2	10%
X400 - X600	0.67	4%	1.61	2%	2	29	18%

Table 17 Area Range Analysis in the Distance Band

Area Range	Yearly Sales	% of total sales	Unsold as on June 2014	% of total unsold	Yearly Supply	Months Inventory	Efficiency Percentile
X600 - X800	0.79	5%	0.6X	1%	1	9	24%
4000 - 4200	0.17	1%	0.71	1%	1	51	4%
4200 - 4400	0.18	1%	0.X5	0%	1	24	5%
4400 - 4600	0.09	1%	0.45	1%	1	60	2%
4800 - 5000	0.00	0%	0.00	0%	0		0%
6000 - 6200	0.00	0%	0.X0	0%	0		0%
6200 - 6400	0.00	0%	0.19	0%	0		0%
7000 - 7200	0.00	0%	0.42	0%	0		0%
Grand Total	17.18	100%	87.44	100%	105	61	100%

Sales & unsold figures in Lac sq.ft Source: Liases Foras

Rate Range Analysis

The rate range X400 Rs./sqft to X600 Rs./sqft is coming out to be the best rate range in the distance band. It has the maximum sales of 2.67 lac sqft and maximum supply of 16 lac sqft making it the most efficient rate range. Presently it has 1X.5X lac sqft of unsold inventory with months inventory of 61 months.

Table 18 Rate Range Analysis in the Distance Band

Rate Range	Yearly Sales	% of total sales	Unsold as on June 2014	% of total unsold	Yearly Supply	Months Inventory	Efficiency Percentile
2400 - 2600	0.07	0%	0.24	0%	0	X9	0%
2600 - 2800	0.00	0%	0.00	0%	0		0%
2800 - X000	1.04	6%	4.85	6%	6	56	X9%
X000 - X200	0.24	1%	1.09	1%	1	56	9%
X200 - X400	1.45	8%	X.40	4%	5	28	56%
X400 - X600	2.67	16%	1X.5X	15%	16	61	100%
X600 - X800	1.1X	7%	9.17	10%	10	97	42%
X800 - 4000	1.70	10%	4.51	5%	6	X2	65%
4000 - 4200	0.90	5%	10.55	12%	11	141	XX%
4200 - 4400	2.54	15%	18.84	22%	21	89	95%
4400 - 4600	1.47	9%	4.1X	5%	6	X4	56%
4600 - 4800	0.64	4%	X.52	4%	4	66	24%

Table 18 Rate Range Analysis in the Distance Band

Rate Range	Yearly Sales	% of total sales	Unsold as on June 2014	% of total unsold	Yearly Supply	Months Inventory	Efficiency Percentile
4800 - 5000	0.5X	X%	0.00	0%	1	0	28%
5000 - 5200	0.08	0%	0.00	0%	0	0	4%
5200 - 5400	-0.12	-1%	0.00	0%	0	0	6%
5400 - 5600	0.25	1%	0.10	0%	0	5	12%
6000 - 6200	0.15	1%	2.95	X%	X	2X6	6%
6400 - 6600	0.57	X%	0.12	0%	1	X	27%
6600 - 6800	0.16	1%	0.00	0%	0	0	0%
7000 - 7200	1.67	10%	9.X5	11%	11	67	62%
7200 - 7400	0.00	0%	0.00	0%	0		0%
9000 - 9200	0.0X	0%	1.08	1%	1	480	1%
Grand Total	**17.18**	**100%**	**87.44**	**100%**	**105**	**61**	**100%**

Sales & unsold figures in Lac sq.ft Source: Liases Foras

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Unit Wise Analysis in the distance band of 10km-15 KM

This section explains major typologies in the category of area range analysis. The analysis is done for different area ranges for each product and the best area range is thus achieved as the best area range.

Analysis of 2 BHK

The area range of 1200 sqft to 1400 sqft is the best performing area range with highest annual sales and supply for a 2 BHK in the distance band of 10 km to 15 km from sector 17. The average most efficient area of a 2 BHK is 1272 sqft.

Table 19 Area Range analysis for 2 BHK

Area Range	Avg Size (Sqft)	Annual sales (in lac sqft)	Unsold Stock as on June 2014 (in lac sqft)	Yearly Supply	Efficiency Percentile	Average Realisation Price	Sales Velocity	Months Inventory
800 - 1000	9X7	0.4	2.X	2.7X	11%	2,588	0.67%	69
1000 - 1200	1,094	X.1	5.2	8.X4	88%	2,809	1.X5%	20
1200 - 1400	1,272	X.7	14.X	18.00	100%	X,050	0.8X%	46
1400 - 1600	1,501	0.2	1.4	1.52	4%	X,150	0.96%	98
1600 - 1800	1,750	0.0	0.1	0.09	0%		0.00%	
1800 - 2000	1,800	0.X	1.0	1.XX	9%	X,150	1.25%	X7
Grand Total	**1,201**	**7.7**	**24.X**	**X2.00**	**100%**	**2,88X**	**0.99%**	**X8**

Source: Liases Foras

Analysis of X BHK

The area range of 1600 sqft to 1800 sqft is the most efficient area range with highest annual supply and sales ratio for a X BHK in the distance band of 10 km to 15 km. The average most efficient area of a X BHK is 1716 sqft.

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Table 20 Area Range analysis for X BHK

Area Range 2	Avg. Size (Sqft)	Annual sales (in lac sqft)	Unsold Stock as on June 2014 (in lac sqft)	Yearly Supply	Efficiency Percentile	Average Realisation Price	Sales Velocity	Months Inventory
1200 - 1400	1,292	1.X	X.5	4.8X	1X%	X,820	1.86%	XX
1400 - 1600	1,510	1.5	6.4	7.92	15%	X,086	0.80%	49
1600 - 1800	1,716	10.1	40.0	50.11	100%	X,171	0.90%	48
1800 - 2000	1,888	5.8	20.9	26.74	58%	X,081	0.86%	4X
2000 - 2200	2,098	-1.7	5.8	4.06	-18%	X,169	-1.11%	40
2400 - 2600	2,450	0.1	0.6	0.69	1%	X,650	1.19%	100
Grand Total	**1,742**	**17.1**	**77.2**	**94.X5**	**100%**	**X,184**	**0.77%**	**54**

Source: Liases Foras

Analysis of 4 BHK

The area range of 2000 sqft to 2200 sqft is the most efficient area range with highest annual sales for a 4 BHK in the distance band of 10 km to 15 km. The average most efficient area of a 4 BHK is 2148 sqft.

Table 21 Area Range analysis for 4 BHK

Area Range 2	Avg. Size (Sqft)	Annual sales (in lac sqft)	Unsold Stock as on June 2014 (in lac sqft)	Yearly Supply	Efficiency Percentile	Average Realisation Price	Sales Velocity	Months Inventory
2000 - 2200	2,148	0.8	1.8	2.6X	100%	2,804	2.X5%	27
2200 - 2400	2,270	0.4	2.2	2.59	47%	X,516	1.X7%	68
2400 - 2600	2,421	0.4	X.X	X.68	47%	X,744	0.X6%	100
2600 - 2800	2,654	0.1	1.1	1.20	16%	X,475	0.85%	96
2800 - X000	2,870	0.2	0.0	0.17	29%	4,150	5.56%	0
4000 - 4200	4,000	0.6	1.6	2.20	74%	5,5XX	1.42%	X2
Grand Total	2,5X0	**2.5**	**10.0**	12.47	100%	X,850	**1.07%**	48

Source: Liases Foras

Assessment of the market in sector 66-70-75 and sector 90-91

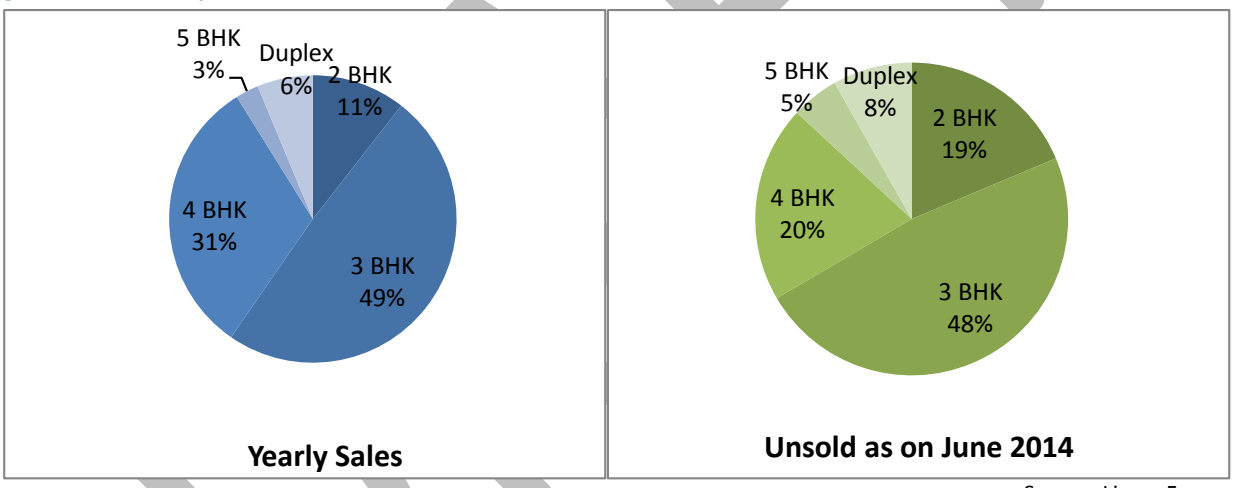
Now, the analysis narrows down to the immediate catchment. We have analyzed the market in the sector 60-70-75 and sector 90-91, as they are in close proximity to the subject site; however, they are relatively more developed.

The objective of the analysis is to understand the dynamics of these markets since subject site is to compete with these locations.

Product Wise Analysis

In the immediate sectors, X BHK is coming out as the best product with the maximum sales of 49% of the total sales. Until the last quarter, X BHK had the 48% of unsold inventory. Following X BHK, 2 BHK and 4 BHK are going hand in hand and are performing well with 11% of annual sales and 19% of unsold inventory; X1% of the annual sales and 20% of the unsold inventory consecutively. Duplex market is performing well but has a small market, which makes it a very risky product. 5 HK has no market at all and is the most inefficient product in the surroundings.

Figure 9 Product analysis in immediate catchment



Source: Liases Foras

Table 22 Analysis of typologies in the immediate catchment

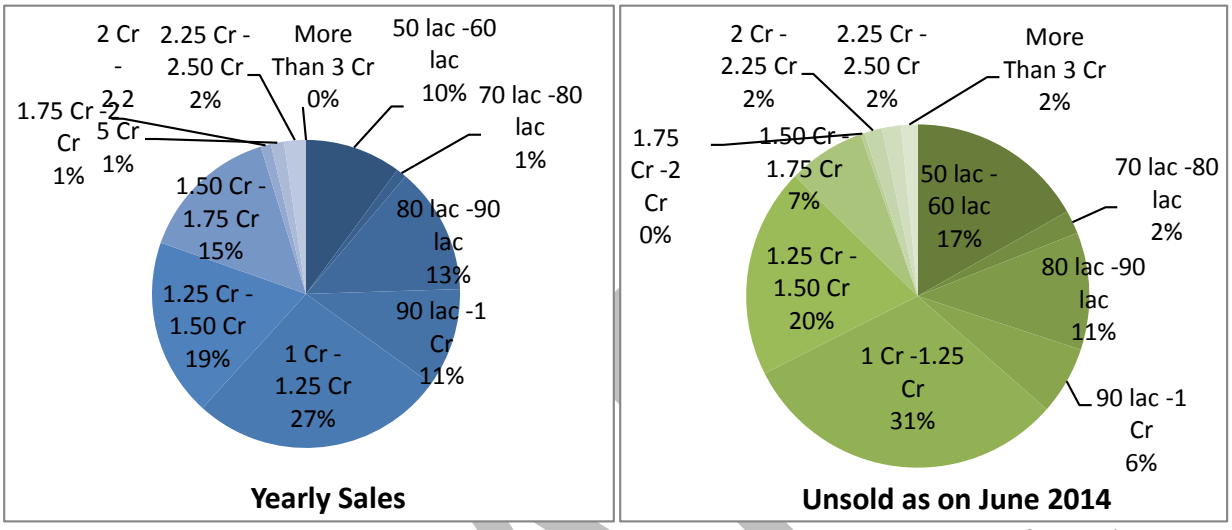
Flat Type	Sales in 12 months	% of total sales	Unsold as on June 2014	% of total unsold	Months Inventory	Efficiency percentile
2 BHK	0.69	10%	5.01	19%	88	21%
X BHK	X.21	49%	12.85	48%	48	100%
4 BHK	2.06	X2%	5.46	20%	X2	65%
5 BHK	0.17	X%	1.X2	5%	96	5%
Duplex	0.41	6%	2.20	8%	64	1X%
Grand Total	**6.5X**	**100%**	**26.84**	**100%**	**49**	**100%**

Sales & unsold figures in Lac sq.ft. Source: Liases Foras

Cost Range Wise Analysis

1 Cr to 1.25 Cr is the best performing cost range in the immediate catchment. It has sold 1.75 lac square feet, which is 27% of the total sales in last year. It also has the highest unsold stock of 8.X4 lac square feet, which is X1% of total unsold stock.

Figure 10 Distribution of cost ranges in the immediate catchment



Source: Liases Foras

Product in the cost range of Rs. 1 Cr to Rs. 1.25 Cr is performing the best in these locations, but they have huge stock of unsold stocks with them and have high month inventory of more than 50 months.

Figure 11 Cost Range Analysis in the immediate catchment

Cost Range	Sales in 12 months	% of total sales	Unsold as on June 2014	% of total unsold	Months Inventory	Efficiency
50 lac -60 lac	0.66	10%	4.51	17%	82	X8%
70 lac -80 lac	0.07	1%	0.59	2%	96	4%
80 lac -90 lac	0.87	1X%	2.97	11%	41	51%
90 lac -1 Cr	0.68	10%	1.72	6%	X0	40%
1 Cr -1.25 Cr	1.75	27%	8.X4	X1%	57	100%
1.25 Cr -1.50 Cr	1.22	19%	5.X0	20%	52	70%
1.50 Cr -1.75 Cr	0.97	15%	1.96	7%	24	58%
1.75 Cr -2 Cr	0.07	1%	0.10	0%	18	4%
2 Cr -2.25 Cr	0.09	1%	0.45	2%	60	5%
2.25 Cr -2.50 Cr	0.15	2%	0.48	2%	40	8%
More Than X Cr	0.00	0%	0.42	2%		0%
Grand Total	6.5X	100%	26.84	100%	49	100%

Sales & unsold figures in Lac sq.ft. Source: Liases Foras

Area Range Wise Analysis

The area range 2200 square feet to 2400 square feet is coming out to be the best area range in the immediate catchment. It has the maximum sales of 2.X4 lac sqft and maximum supply of about 8 lac sqft making it the most efficient area range followed by X600 square feet to X800 square feet having the efficiency of X9%. This area range makes a 4 BHK.

Table 23 Analysis of Area Ranges in the immediate catchment

Area Range	Sales in 12 months	% of total sales	Unsold as on june 2014	% of total unsold	Months Inventory	Efficiency
1200 - 1400	0.69	10%	5.01	19%	88	29%
1400 - 1600	0.02	0%	0.60	2%	480	1%
1600 - 1800	0.02	0%	0.0X	0%	24	1%
1800 - 2000	0.21	X%	1.76	7%	101	9%
2000 - 2200	0.15	2%	2.5X	9%	202	6%
2200 - 2400	2.X4	X6%	7.9X	X0%	41	100%
2400 - 2600	0.58	9%	0.00	0%	0	X4%
2800 - X000	0.20	X%	X.02	11%	185	8%
X000 - X200	0.45	7%	1.19	4%	X1	20%
X200 - X400	0.17	X%	1.45	5%	106	7%
X400 - X600	0.67	10%	1.61	6%	29	29%
X600 - X800	0.79	12%	0.48	2%	7	X9%
4200 - 4400	0.18	X%	0.X5	1%	24	8%
4400 - 4600	0.09	1%	0.45	2%	60	4%
4800 - 5000	0.00	0%	0.00	0%		0%
6000 - 6200	0.00	0%	0.00	0%		0%
7000 - 7200	0.00	0%	0.42	2%		0%
Grand Total	6.5X	100%	26.84	100%	49	

Sales & unsold figures in Lac sq.ft. Source: Liases Foras

Rate range wise analysis

The rate range X800 Rs./sqft to 4000 Rs./sqft is coming out to be the best rate range in the immediate catchment. It has the maximum sales of 1.70 lac sqft and maximum supply of 4.51 lac sqft making it the most efficient rate range in the surrounding sectors. Presently it has 4.51 lac sqft of unsold inventory with months inventory of X2 months.

Figure 12 Rate Range Analysis in the immidiate catchment

Rate Range	Sales in 12 months	% of total sales	Unsold as on June 2014	% of total unsold	Months Inventory	Efficiency percentile
X600 - X800	0.94	14%	2.15	8%	27	56%
X800 - 4000	1.70	26%	4.51	17%	X2	100%
4000 - 4200	0.74	11%	4.X4	16%	70	42%
4200 - 4400	0.68	10%	4.67	17%	82	X9%
4400 - 4600	1.4X	22%	X.54	1X%	X0	84%
4600 - 4800	0.X2	5%	X.X8	1X%	129	18%
5000 - 5200	0.08	1%	0.00	0%	0	6%
5200 - 5400	-0.12	-2%	0.00	0%	0	9%
5400 - 5600	0.25	4%	0.10	0%	5	18%
6000 - 6200	0.15	2%	2.95	11%	2X6	9%
6400 - 6600	0.17	X%	0.12	0%	9	11%
6600 - 6800	0.16	2%	0.00	0%	0	1X%
9000 - 9200	0.0X	0%	1.08	4%	480	2%
Grand Total	6.5X	100%	0.00	0%	0	

Sales & unsold figures in Lac sq.ft. Source: Liases Foras

Unit Wise Analysis in sector 66-70-75 and sector 90-91

This section explains major typologies in the category of area range analysis in the surrounding sectors. The analysis is done for different area ranges for each product and the best area range is thus achieved as the best area range.

Analysis of 2 BHK

2 BHK in the area range of 1200 sqft – 1400 sqft is the best performing area range

Table 24 2 BHK Area Range Analysis

Area Range	Avg. Size (Sqft)	Annual sales (in lac sqft)	Unsold Stock as on June 2014 (in lac sqft)	Yearly Supply	Efficiency Percentile	Average Realisation Price	Sales Velocity	Months Inventory
1200 - 1400	1,X40	0.69	5.01	5.70	100%	4,087	1.25%	88
Grand Total		0.69	5.01			4,087	1.25%	88

Source: Liases Foras

Analysis of X BHK

X BHK in the area range of 2200 sqft – 2400 sqft is the best performing area range in the immediate catchment.

Table 25 X BHK Area Range Analysis

Area Range	Avg Size (Sqft)	Annual sales (in lac sqft)	Unsold Stock as on June 2014 (in lac sqft)	Yearly Supply	Efficiency Percentile	Average Realisation Price	Sales Velocity	Months Inventory
1400 - 1600	1,500	0.02	0.60	0.62	1%	9,000	0.8X%	480
1600 - 1800	1,748	0.02	0.0X	0.05	1%	6,600	0.10%	24
1800 - 2000	1,9X4	0.21	1.76	1.97	9%	4,940	0.44%	101
2000 - 2200	2,1X6	0.15	2.5X	2.68	6%	6,120	0.58%	202
2200 - 2400	2,290	2.X4	7.9X	10.26	100%	4,254	1.12%	41
2400 - 2600	2,408	0.48	0.00	0.48	28%	4,045	1.50%	0
Grand Total	2,195	X.21	12.85	16.06	100%	4,X89	0.96%	48

Source: Liases Foras

Analysis of 4 BHK

4 BHK in the area range of X600 sqft – X800 sqft is the best performing area range in the immediate catchment.

Table 26 4 BHK Area Range Analysis

Area Range	Avg Size (Sqft)	Annual sales (in lac sqft)	Unsold Stock as on June 2014 (in lac sqft)	Yearly Supply	Efficiency Percentile	Average Realisation Price	Sales Velocity	Months Inventory
2400 - 2600	2,409	0.10	0.00	0.10	15%	6,565	0.51%	0.0
2800 - X000	2,800	0.20	X.02	X.22	21%	4,050	0.97%	185
X000 - X200	X,02X	0.45	0.82	1.28	52%	X,905	0.58%	22
X400 - X600	X,500	0.67	1.61	2.28	75%	4,X65	1.86%	29
X600 - X800	X,607	0.65	0.00	0.65	100%	X,898	0.90%	0
Grand Total	X,200	2.06	5.46	7.52	100%	4,189	0.92%	X2

Source: Liases Foras

Analysis of High End Market in Chandigarh

In this section, the analysis of the projects having more than X00 units and at least more than 10% of total units in the cost range of 1 Cr and above is done. This analysis is done to understand the overall high end market of the Tri-City region and to understand if the high end segment will work at the site.

Table 27 Cost Range wise project distribution

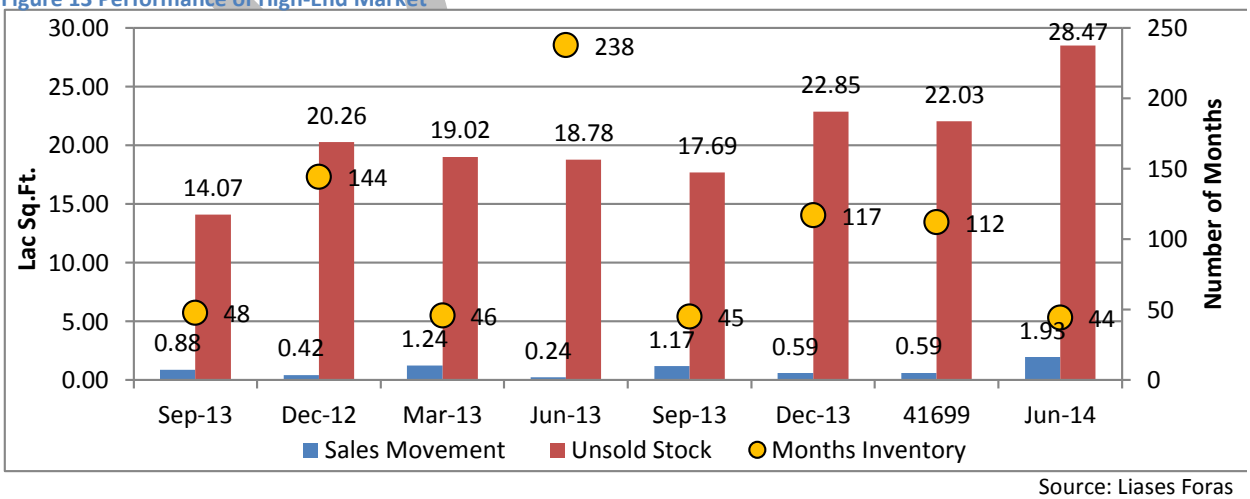
Project	Less than 1 Cr	1 Cr - 1.25 Cr	1.25 Cr - 1.50 Cr	1.50 Cr - 1.75 Cr	1.75 Cr - 2 Cr	2 Cr - 2.25 Cr	2.25 Cr - 2.50 Cr	2.50 Cr - 2.75 Cr	More Than X Cr	Total no of units
DLF The Valley	88%	12%								**2012**
Parikrama	0%	X0%	41%	26%		1%		1%	**1%**	**18X4**
Falcon View	27%	44%	25%		1%		X%			**1020**
Ess Vee Apartments	15%	85%								**780**
ATS Casa Espana	0%	55%	45%							**550**
Home Land Heights	0%	29%	66%		2%		X%			**518**
Gillco Towers	64%	X6%								**XX6**
Dream Homes	77%	2X%								**XX2**

Source: Liases Foras

Performance of High End Market

Limited sales and piling unsold stock with months inventory not less than 45 months across every quarter indicating sluggishness in this segment.

Figure 13 Performance of High-End Market

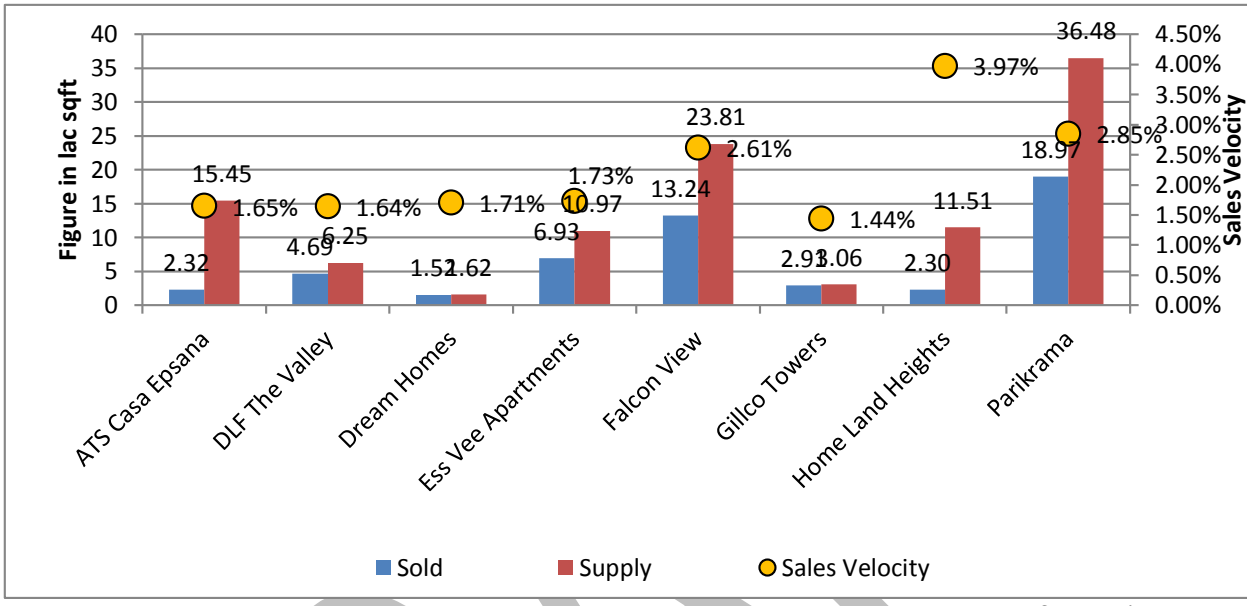


Source: Liases Foras

Project Level Performance

Home Land Heights and Parikrama could achieve appreciable sales velocity owing to their location and developed economic density. ATS Casa Espana opposite to subject site could manage the sales velocity of 1.65 %.

Figure 14 Project level performance



Source: Liases Foras

Table 28 Top Project level information

Project	Location	Location Grading	Distance Band	Average Realisation Price (Rs. Psf)	Sales Velocity Attained
ATS Casa Espana	Sector-119	60%	10 KM -15 KM	X,750	1.65%
DLF The Valley	Near Kaushalya Dam, Panchkula	40%	15 KM -20 KM	X,250	1.64%
Dream Homes	Sector - 20, Panchkula	65%	15 KM -20 KM	5,604	1.71%
Ess Vee Apartments	Sector - 20, Panchkula	65%	10 KM -15 KM	5,500	1.7X%
Falcon View	Sector - 66 A, XYZ	55%	10 KM -15 KM	X,750	2.61%
Gillco Towers	Sector - 127, XYZ	52%	15 KM -20 KM	X,500	1.44%
Home Land Heights	Sector - 70, XYZ	75%	10 KM -15 KM	5,500	X.97%
Parikrama	Sector - 20, Panchkula	65%	10 KM -15 KM	X,850	2.85%
Subject Site	Sector-119	60%	10 KM -15 KM		

Source: Liases Foras

Rental Yield

In an efficient market, the rental yield for the high-end product should be 6% and for mid products, it should be X.5%. The pressure of rising price is having impact on the rental yield. On an average, it is at 2.10%.

Developed areas in XYZ attain a rental yield of 2-X%, whereas the peripheral areas along with Panchkula have a rental yield of 1-2%.

Zirakpur being an affordable location has slightly higher rental yield of X.1%. It also has locational advantage of being centrally located from Chandigarh, XYZ , Panchkula and Dera Bassi.

Table 29 Rental summery in Tri-City

Competitive Location	Rental Rate (Rs. Psf)	Rate (Rs. Psf)	Rental Yield
Sector 66	10	4,250	2.8%
Sector 70,71	11	6,200	2.1%
Sector 90, 91	9	5,000	2.2%
NH 21 (XYZ Kharar Highway)	4	X,000	1.6%
Panchkula Sector 20	8	6,500	1.5%
Mani Manjara	16	1X,500	1.4%
Zirakpur	8	X,100	X.1%

Rental Yield = Average yearly rental/ Average cost of the flat Source: Liases Foras

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Chapter: 4: Design Considerations

Introduction

This chapter discusses the design parameters of the unit as well as the master plan based on some case studies, local product offerings of XYZ market and discussions with market stakeholders. The following section gives a brief about the discussions with some market savvy people (majorly architects).

Design Considerations- Architects' Perception

A discussion with Architects, brokers and sales executives was held to assess the local preferences of buyers in term of design and specifications. This discussion also focused on local design elements and the lifestyle of people that defines the spaces of a house in Chandigarh or XYZ . We discussed the festivals and daily routines of the localites and their impact and design and special requirement of space if any.

From the discussions, it was realized that the Punjabi culture is very much focused on the social life and revolves around spaces where social activities can take place. A Punjabi family spends a lot of time together in the common space usually a *CHOWK* or *verandah*. In modern houses this chowk is generally represented by the living room so living / drawing room. Considering that a lot of time is spent in the living room the size is also preferred to be larger in proportion as compared to other rooms of the house. Also it was highlighted that they have the meals together traditionally in the *chowk* or the room attached to kitchen. In modern translation, the dining room is given attached to the kitchens, but since the privacy is also required it is preferred that the living/drawing room and dining area should be in L-shaped to keep the dining room visually separate. For them the semi private and pubic spaces of their houses are have more significance and hence should be bigger in size as compared to other private spaces.

For any Punjabi family, three meals of a day are very important so the females of the family spend considerable time in kitchens. So the kitchen is preferred to be decent sized and it should not be NARROW with minimum width more than 7.5 feet. Although not much in Punjab, some sales executives had mentioned the *parda* system and said that kitchen should not be open and have a visual separation from drawing/ living room. In practical terms as well if a kitchen is being used multiple times a day then having a visual separation is better. In Punjab, usually people store the grain for whole year for which a kitchen store is required where all the dry grains and all can be stored. Other than this also a separate storage space is preferred in a house. In apartments which are designed now-a-days, this storage space is such given that it can be used as a pooja room as well or as an extension of family room or something.

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A toilet on entrance is preferred since as per their tradition they like washing hands and feet before entering the house. In apartments, this toilet is usually accompanied with a WC and is treated as a powder room. But at the same time the toilet should not open directly in the entrance lobby and have a visual barrier (like a small lobby).

They have importance of veranda as it is another common space used as a sit out and act a semi open space or a transition space. In case of apartments, balconies act as a verandah. It also play an important role since it is a vertical semi open space stacked and can act as a point to socialize among multiple levels.

Chandigarh is usually considered a plush city with number of government officials and army people staying there. The city itself was established as a state capital for two states and hence has a lot of government offices are there. This class of people mostly has a household help and other than that there is a trend of keeping a household help in north India. This renders servant room as a must considering the lifestyle of people who have a permanent household help. Also it is preferred to have direct connectivity from servant room to the kitchen.

From the discussions, it was observed that the planning or the unit design should be based on Indian principles mixed with conveniences of modern day designs. Accessories should be modern and of international standards considering the large NRI base as buyers.

Number of car parks should be more than one per flat considering there people are fond of cars and usually own more than one car. As a result the norms itself specifies car parks based on the area of flat which is kind of a reflection of affordability.

As discussed the public areas of a house should be more spacious than the private areas like bedrooms. The beds should be king sized generally people in that region have good height.

Bar would be a pompous statement considering the culture in Chandigarh where drinking is a part of luxury and culture both.

Above given point are the ones to be remembered while designing a unit. Other than these there are a number of other spaces and amenities required as a part of their daily lifestyle.

- Gym is a necessity since they are fond of keeping themselves healthy.

- The whole house revolves around the kid of the house hence: Very well defined areas for age group of < 8 years and > 65

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years are required like: kids play area, splash pool, senior citizen corner/ garden, etc.

- Space for parties, kitty parties, *jagrata*, etc. in the society is well utilised. So a common hall like a multi-purpose hall can work well with proper location so as to make it more viable in all functions.

- Crèche- since there are lot of working couples shifting to the city and are prospective buyers at the site.

Competition for design assessment

Based on the inferences from the discussions with market stakeholders (architects, brokers, sales executives and consumers) 2-X plans of each typology is evaluated in this section. Each design is evaluated based upon their sizes, proportion and quality of life offered by them and according to these parameters, the grades are given to the important elements or rooms of the units. All these plans are then compared so as to arrive at an ideal size with all the aspired spaces in a unit. These derived sets of spaces along with their sizes are then modified where possible to reach at the area range that should be given on the site (based on the market dynamics and product analysis done in the previous chapters).

2BHK- Design-

In this section, designs of 2BHK and 2BHK+Utility or 2BHK+Servant rooms are studied. Plans of three projects- Wave Garden, TDI Willington Heights and DLF Valley are looked at, whereas some other projects with similar kind of development or similar scale, etc are also considered to get a better base to compare. While selecting these projects it was considered that a mix of local as well as national level developers are taken, all the projects selected are in XYZ itself except DLF Valley which is on the outskirts of Panchkula. The projects selected include: Ireo Rise, Bestech Park View Residency, TDI Willington Heights, Paras Panaroma, Wave Garden, Mayfair Soul Space and DLF Valley, Panchkula.

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Wave Garden

Wave Garden is a project by Wave Group, which is a Delhi-based developer. The table below gives the area statement of this unit typology in which it can be seen that a loading of -X9% is there on SBUA.

Table 30 Area Statement of 2BHK in Wave Garden

Carpet (Sq.Ft.)	Balconies (Sq.Ft.)	Additional including wall area, etc.	BUA (Sq.Ft.)	SBUA (Sq.Ft.)	Loading on SBUA
84X	18X	11%	11X9	1X80	-X9%

If one evaluates the plan from the above given perspective it can be seen that in this plan the dining and living are in L-shape and are not in the same hall. The entrance to the house is such that the privacy in the dining area is not there. One has to cross the dining area to go to the living area. So although the L-shaped living-dining relationship is maintained the whole purpose of it is not justified. The image below gives the plan of a 2BHK in Wave Garden.

Figure 15 Plan of 2BHK in Wave Garden

There is a decent sized store provided with the kitchen but the kitchen itself is not of a regular shape. A lot of space is wasted in circulation in kitchen and the fridge is placed in such a way that renders a part of platform unusable. A utility balcony is provided.

It can be seen that a lot of balcony space is given. The balcony with living area is such provided that it extends the living space and gives a feel of a *veranda* kind of space.

The table below gives the sizes and areas of all the rooms and other spaces of a 2BHK unit in Wave Garden.

Table 31 Room Sizes of 2BHK in Wave Garden

Area	Length	Breadth	Area (Sq.Ft.)	Area	Length	Breadth	Area (Sq.Ft.)
Foyer	4’4”	X’0”	12.99	**Bedroom 2**	1X’2”	11’10”	155.80
Living	16’10”	11’2”	187.99	**Dresser 1**	5’6”	4’6”	24.75
Dining	10'7"	9’6”	101.X7	**Toilet X**	7’0”	5’11”	41.44
Balcony 1	17’1”	5’11”	101.11	**Balcony 2**	6’9”	5’11”	X9.96
Bedroom 1	11’2”	11’0”	122.87	**Kitchen**	11’6”	8’6”	97.75
Toilet 1	7’0”	5’6”	X8.50	**Store**	8’6”	X’11”	XX.X2
Toilet 2	5’2”	5’1”	26.26	**Balcony X**	6’8”	6’4”	42.22

TDI Willington Heights

This project is located very near to the subject site, in between Kharar and the site. It is an affordable housing kind of project. The image given below is the plan of 2BHK units in TDI Willington heights. This plan is analysed based on the points discussed above.

Table 32 Area Statement of 2BHK in TDI Willington Heights

Carpet (Sq.Ft.)	Balconies (Sq.Ft.)	Additional including wall area, etc.	BUA (Sq.Ft.)	SBUA (Sq.Ft.)	Loading on SBUA
726	120	19%	1008	1186	-X9%

Figure 16 Plan of 2BHK in TDI Willington Heights

L-Shaped living and dining room is given but like in Wave Garden here also the relation is not enough to keep the privacy of the dining space.

The kitchen is very narrow with a width of just 6'-10" provided with a space for single door fridge and platform on three sides. There are only two toilets in the unit with one attached to the master bedroom.

No servant room is provided which keeps the NRIs (intending to buy for their parents) out of the purview. Also since this is a very affordable kind of unit with inferior location (in terms of proximity to city center) the prospect buyers are mostly from Kharar side or nearby locations or people working in this area.

The tables below give the area statement of 2BHK in TDI Willington Heights. The loading which is -X9% on SBUA is marketed as -15% (which gives the BUA).

The table below gives the sizes and areas of all the rooms and other spaces of a 2BHK unit in TDI Willington Heights.

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Table 33 Room Sizes of 2BHK in TDI Willington Heights

Area	Length	Breadth	Area (Sq. Ft.)	Area	Length	Breadth	Area (Sq. Ft.)
Foyer	6'0"	4'5"	26.52	**Toilet 1**	7'6"	5'6"	41.25
Living	1X'0"	12'0"	156.00	**Bedroom 1**	1X'0"	11'0"	14X.00
Dining	9'9"	9'2"	89.41	**Bedroom 2**	12'8"	12'5"	157.X6
Balcony 1	12'0"	4'10"	57.96	**Toilet 2**	8'0"	5'6"	44.00
Kitchen	10'0"	6'10"	68.X0	**Balcony 2**	1X'8"	4'6"	61.52

DLF Valley- 2BHK + Utility

The Valley is a project by DLF Group and is situated on the peripheral areas of Panchkula after the toll on the Shimla road. It consists of only independent floors (2BHK, XBHK & 4BHK) and plots.

In the 2BHK independent floor they have provided a utility with attached toilet with the living room. This utility can be used as a servant room as well. In case a separate entry is to be provided to this servant room, a door can be placed from the lobby.

The large sized hall is given to be used as living and dining room. Even though there is no L-shaped living dining area but the size itself gives openness to the house.

There are four toilets provided with the 2BHK flat- attached toilets are given to both the bedrooms along with a separate powder room for dining area.

Access to open green spaces for the ground floor units from the bedrooms and living room gives a feel like a bungalow (kothi).

The table below gives the area statement of 2BHK with utility (or servant) quarter in DLF Valley.

Table 34 Area Statement of 2BHK in DLF Valley

Carpet (Sq.Ft.)	Balconies (Sq.Ft.)	Additional including wall area, etc.	BUA (Sq.Ft.)	SBUA (Sq.Ft.)	Loading on SBUA
965	225	15%	1X21	1475	-X5%

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Figure 17 Plan of 2BHK in DLF Valley

The table below gives the room sizes and their areas of 2BHK with utility (or servant quarter) in DLF Valley.

Table 35 Room Sizes of 2BHK in DLF Valley

Area	Length	Breadth	Area (Sq. Ft.)	Area	Length	Breadth	Area (Sq. Ft.)
Living Dining	22'11"	15'1"	X45.6X	**Toilet X**	7'10"	5'10"	45.65
Kitchen	11'6"	8'4"	95.80	**Bedroom 2**	14'0"	11'0"	154.00
Servant Room	7'11"	4'11"	X8.97	**Toilet 4**	8'6"	5'0"	42.50
Toilet 1	5'1"	X'8"	18.64	**Balcony 1**	1X'0"	4'11"	6X.96
Toilet 2	5'6"	4'5"	24.X1	**Balcony 2**	25'6"	4'11"	125.46
Bedroom 1	15'4"	11'6"	176.X0	**Balcony X**	8'4"	4'X"	X5.40
Dresser 1	5'10"	4'0"	2X.X2				

Unit Design Assessment – 2BHK

This section gives the grading of the above explained projects along with a few other to access and derive the ideal room sizes and important areas in an ideal 2BHK unit in XYZ .

Table 36 Room Sizes of 2BHK in competitive project

Project	Ireo Rise		Bestech Park View Residency		TDI Wellington Heights		Paras Panorama		Wave Gardens		Soul Space Mayfair		DLF The Valley (2BHK +Utility)	
	L	B	L	B	L	B	L	B	L	B	L	B	L	B
Foyer	5.42	5.08	-	-	6	4.42	-	-	4.XX	X	-	-	-	-
Living	16.XX	12.17	1X.5	15.25	12	1X	-	-	11.17	16.8X	14	19.67	-	-
Dining	7.92	12.17	10.8X	1X.17	9.75	9.17	-	-	10.67	9.5	9.XX	9.45	-	-
Living/Dining	-	-	-	-	-	-	11	20	-	-	-	-	15.08	22.92
Kitchen	10	8.2X	11	8.25	6.8X	10	7.5	10	11.5	8.5	7.25	9.8X	8.XX	11.5
Bedroom	1X.75	10.75	12	15.17	11	1X	10.5	12	11.17	11	11.8X	1X.5	11.5	15.XX
Dresser	7.5	5.42	-	-	-	-	6.17	X.58	5.5	4.5	-	-	5.8X	4
Toilet	8	5.42	6.17	8.58	7.5	5.5	7.58	5	7	5.5	5.42	9	5.8X	7.8X
Bedroom	1X.25	10.75	12.08	1X.XX	12.42	12.67	11.17	14	11.8X	1X.17	10.8X	1X	14	11
Toilet	8	5.42	6.17	8.58	8	5.5	9	6	5.17	5.08	7.25	7	8.5	5
Toilet	-	-	-	-	-	-	-	-	5.92	7	5.42	9	5.5	4.42
Balcony	-	-	6.08	8	1X.67	4.5	10.58	5	6.75	5.92	6	11	1X	4.92
Balcony	5.5	4	5	10	12	4.8X	10.5	4	6.67	6.XX	5	5	25.5	4.92
Balcony	5	1X.42	5	2.5	-	-	-	-	17.08	5.92	5	10	8.XX	4.25
Balcony	-	-	8.5	6	-	-	-	-	-	-	-	-	-	-
Store	-	-	-	-	-	-	-	-	X.92	8.5	-	-	-	-
Servant room	-	-	-	-	-	-	-	-	-	-	-	-	7.92	4.92
Toilet	-	-	-	-	-	-	-	-	-	-	-	-	5.08	X.67
Base Carpet (Sq.ft.)		908		1048		845		786		1026		1025		1190

Length & Breadth in Decimal feet

Based on these sizes the projects are graded and based on these grading, ideal sizes for the rooms are derived. The grading achieved by the areas in each projects are given in the table below.

Table 37 Grading of 2BHK units in various projects

Project	Ireo Rise	Bestech Park view Residency	TDI Wellington Heights	Paras Panorama	Paras Panorama	Wave Gardens	Soul Space Mayfair	DLF The Valley (2BHK +Utility)
Balcony 1	2.68%	0.51%	X.15%	5.08%	6.26%	1.17%	0.98%	1.81%
Balcony 2	1.8X%	1.20%	X.14%	0%	0%	0.6X%	0.80%	0.56%
Balcony X	0%	1.00%	0%	0%	0%	0.47%	1.60%	1.74%
Balcony 4	0%	0.57%	0%	0%	0%	0%	0%	0%
Bedroom 1	7.XX%	7.50%	7.45%	7.20%	7.50%	6.40%	7.19%	7.50%
Bedroom 2	7.2X%	5.91%	5.25%	7.50%	6.18%	7.02%	7.50%	7.50%
Dresser 1	4.55%	0%	0%	X.25%	0%	X.67%	0%	X.5X%
Kitchen	15.04%	17.45%	14.90%	16.X6%	9.00%	18.00%	15.82%	16.66%
Living	1X.42%	9.84%	12.22%	0%	0%	15.00%	10.91%	0%
Dining	4.62%	6.40%	5.1X%	0%	0%	5.62%	4.97%	0%
Living Dining	0%	0%	0%	17.45%	9.66%	0%	0%	9.86%
Toilet 1	5.47%	X.84%	5.05%	5.61%	2.01%	X.14%	6.00%	1.74%
Toilet 2	5.47%	X.84%	5.X9%	4.X4%	X.74%	2.51%	2.21%	1.88%
Toilet X	0%	0%	0%	0%	2.89%	2.XX%	0%	2.49%
Toilet 4	0%	0%	0%	0%	0%	0%	0%	2.77%
Servant Room	0%	0%	0%	0%	0%	0%	0%	7.04%
Grading Attained	**67.6X%**	**58.06%**	**61.68%**	**66.80%**	**47.25%**	**65.96%**	**57.99%**	**65.07%**

It can be seen from the above table that Ireo Rise has achieved highest grading and hence has the best sizes and spaces provided amongst the projects graded followed by Paras Panorama.

2BHK- Size & Area Analysis

This section gives the ideal sizes as derived from the grading done in the previous section and the adjustment required to fit these into the best selling area range as derived from the previous chapters on market dynamics and product analysis.

An ideal product with four balconies and a L-shaped living dining area (separate living and dining) does not fit in the ideal area range. The projects that are providing these are either compromising on other

areas or are available in larger sizes. So to make an ideal typology in the best selling area range reducing some additional areas is required. For example, removing one balcony and giving an attached living cum dining area can help. The table below gives the ideal dimensions as per the grading and the suggested dimension that can be given on the subject site. The size of the balconies can vary as per the design, regulation and the room sizes.

The area that is achieved with the given sizes is a carpet of 8X6 sq.ft. and with the loading of -X5% on SBUA (or a positive loading of approximately 54% on carpet) giving a SBUA of 1286 sq.ft.

Table 38 Room Sizes of 2BHK

Particular	Ideal Length	Ideal Breadth	Length	Breadth	Area
Foyer	5'5"	5'0"	5'5"	5'0"	27.1
Living	16'10"	11'2"	16'10"	11'2"	-
Dining	1X'2"	10'10"	1X'2"	10'10"	-
Living/ Dining	20'0"	11'0"	20'0"	11'0"	220.0
Kitchen	11'6"	8'6"	11'6"	8'6"	97.8
Bedroom	1X'6"	11'10"	1X'6"	11'10"	159.7
Dresser	7'6"	5'5"	5'6"	4'6"	24.8
Toilet	9'0"	5'5"	9'0"	5'5"	48.8
Bedroom	14'0"	11'2"	14'0"	11'2"	156.4
Toilet	8'0"	5'5"	8'0"	5'5"	4X.4
Toilet	7'10"	5'8"	5'6"	4'6"	24.8
Store/ Utility/ Pooja	8'6"	4'0"	8.5	4'0"	X4.0
Balcony	10'7"	5'0"	10'7"	4'0"	42.X
Balcony	1X'8"	4'6"	1X'8"	4'0"	47.X
Balcony	10'0"	5'0"	10'0"	4'0"	44.0
Balcony	8'6"	6'0"	8'6"	4'0"	X4.0

2BHK+Utility

In case of 2BHk + Utility (or servant room) with the above given areas just a servant room or utility should be added which gives a carpet area of 895sq.ft and a SBUA of 1X76 sq.ft.

XBHK+Servant- Design

In this section, designs of XBHK + servant rooms of projects in XYZ are studied. Plans of three projects- ATS Casa Espana, Falcon View and Taj Towers are looked at, whereas some other projects with similar kind of development or similar scale, etc. are also considered to get a better base to compare and get a better idea of the market trend. While selecting these projects it was considered that a mix of local as well as national level developers are taken. All the projects selected are in XYZ itself.

ATS Casa Espana

ATS Casa Espana is a project located almost opposite to the subject site and hence has similar geographical factors and economic density. The major difference in the geographical factor is that the subject site has an advantage of being located on the main highway and also it has an access through the main highway whereas ATS Casa Espana has an indirect access and is situated almost a kilometer inside.

This projects is projected as a high end project and has very large units in terms of sizes and have luxurious kind of unit design. The major features of the unit design are given below:

The drawing and dining are attached and hence do not provide for privacy during meals. But this ensures a larger looking space giving a grand feel to the living room. A long corridor is there in the house that does not look good aesthetically but ensures privacy to the bedrooms.

All the bedrooms are provided with attached dresser or walk-in wardrobe, which adds up as a luxury element to the dwelling unit. There are toilets attached to all the rooms but no common toilet other than the one in utility that will act more like a servant's toilet in the unit.

The size of the kitchen is good with a width of 8'-7" provided with a fridge space to fit a double door fridge.

The table below gives the area statement of XBHK in ATS Casa Espana. The loading which is -X7% on SBUA is marketed as 1X-15% (which just gives the BUA instead of usable carpet.

Table 39 Area Statement of XBHK+Servant Quarter in ATS Casa Espana

Carpet (Sq.Ft.)	Balconies (Sq.Ft.)	Additional including wall area, etc.	BUA (Sq.Ft.)	SBUA (Sq.Ft.)	Loading on SBUA
1517	X15	1X.75%	2084	2400	-X7%

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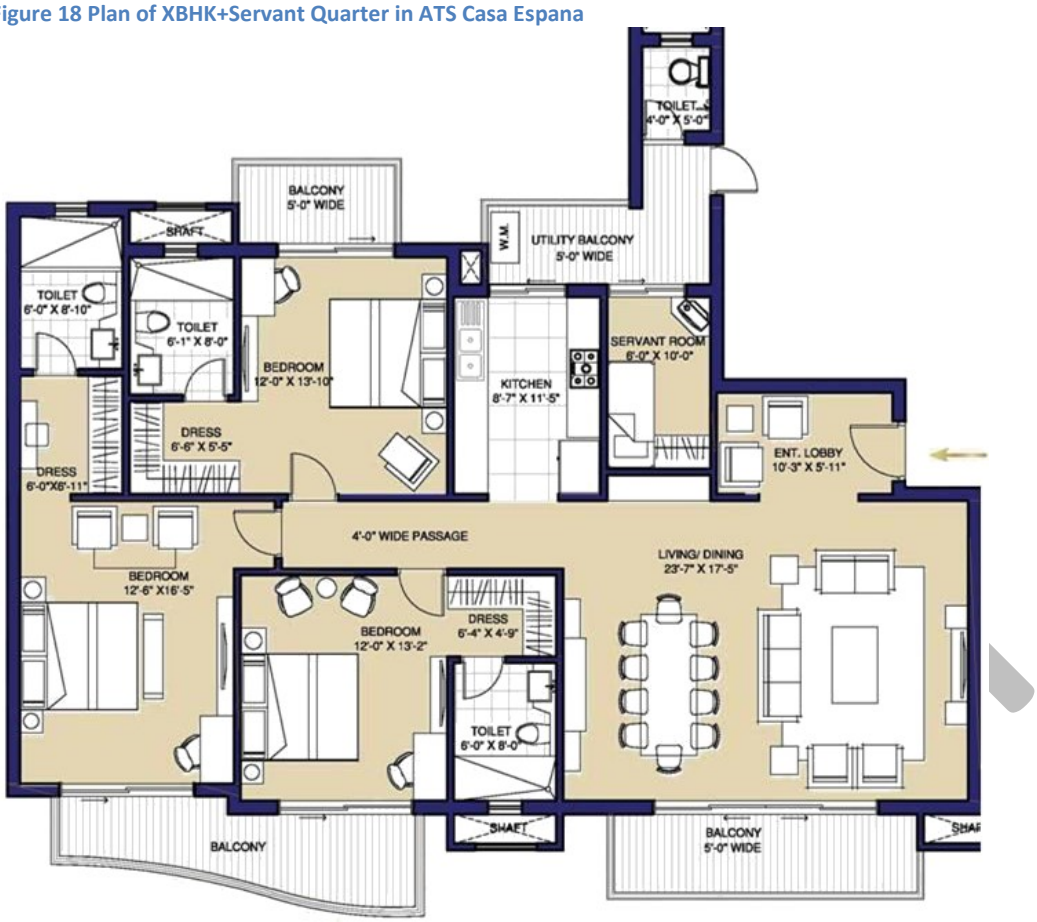
Figure 18 Plan of XBHK+Servant Quarter in ATS Casa Espana



The table below gives the sizes and areas of all the rooms and other spaces of a XBHK with servant room in ATS Casa Espana.

Table 40 Room Sizes of XBHK+Servant in ATS Casa Espana

Area	Length	Breadth	Area (Sq.Ft.)	Area	Length	Breadth	Area (Sq.Ft.)
Foyer	10'X"	5'11"	60.68	**Toilet 2**	8'10"	6'0"	52.98
Living Dining	2X'7"	17'5"	410.77	**Bedroom X**	1X'10"	12'0"	165.96
Passage 1	17'0"	4'0"	68.00	**Dresser X**	6'6"	5'5"	X5.2X
Balcony 1	19'0"	5'0"	100.00	**Toilet X**	8'0'	6'1"	48.64
Bedroom 1	1X'2"	12'0"	158.04	**Balcony X**	10'5"	5'0"	51.40
Dresser 1	6'4"	4'9"	X0.07	**Kitchen**	11'5"	8'7"	97.98
Toilet 1	8'0"	6'0"	48.00	**Balcony 4**	12'7"	5'0"	71.40
Balcony 2	21'6"	4'6"	96.75	**Passage 1**	4'0"	X'5"	1X.68
Master Bedroom	16'5"	12'6"	205.25	**Servant room**	10'0"	6'0"	60.00
Dresser 2	6'11"	6'0"	41.52	**Toilet 4**	5'0"	4'0"	20.00

Falcon View

This is one of the best performing and well talked about project by Janat Land Promoters Ltd. which is one of the best local developers. This is situated in sector 66-A which is on the east of XYZ , which is opposite to the subject site. The unit design, it was observed, covered many points that were discussed by the architects and planners (as discussed in the previous section).

The image below is the plan of XBHK + servant room plan of Falcon view in which it can be seen that the unit has a L-Shaped living and dining room. Also the dining room is provided with a separate sitting which ensures family room kind of setting when required. A separate *pooja* room along with the living room is provided which can even be used as store if required.

A powder room at the entrance is provided (as was seen is required in Punjabi families) although it would have been better if it had some sort of visual barrier.

Guest room right at the entrance makes it a multipurpose area and increases the possibility of using it like a small office, PG or other similar purposes.

The size of the kitchen is good with a width of 9'-5" and is provided with a space for a double door fridge. A separate **store** for the kitchen is an important but usually ignored space.

An attached dresser-toilet in master bedroom is a luxury statement and provides with larger cupboard space. All three rooms have attached toilets along with a powder room.

Separate entry to the servant's room ensures luxury with minimum interaction of servant in the house but at the same time, it is a negative point in terms of safety.

The table below gives the area statement of XBHK in Falcon View. The loading which is -X8.X% on SBUA is marketed as +19% (which is loading on BUA).

Table 41 Area Statement of XBHK+Servant Quarter in Falcon View

Carpet (Sq.Ft.)	Balconies (Sq.Ft.)	Additional including wall area, etc.	BUA (Sq.Ft.)	SBUA (Sq.Ft.)	Loading on SBUA
15X0	2X1	18.17%	2081	2480	-X8.X%

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Figure 19 Plan of XBHK+Servant Quarter in Falcon View

The table below gives the sizes and areas of all the rooms and other spaces of a XBHK with servant room in Falcon View.

Table 42 Room Sizes of XBHK+Servant in Falcon View

Area	Length	Breadth	Area (Sq.Ft.)	Area	Length	Breadth	Area (Sq.Ft.)
Foyer	7'0"	5'0"	X5.00	**Dresser 1**	7'0"	5'0"	X5.00
Powder Room	6'0"	4'6"	27.00	**Toilet X**	7'0"	7'0"	49.00
Living	20'0"	1X'0"	260.00	**Balcony 1**	20'0"	5'11"	118.40
Dining	16'4"	12'0"	195.96	**Balcony 2**	7'0"	5'11"	41.44
Pooja	6'10"	6'0"	40.98	**Balcony X**	12'0"	5'11"	71.04
Bedroom 1	15'0'	11'0"	165.00	**Kitchen**	11'6"	9'5"	108.XX
Toilet 1	8'6"	7'0"	59.50	**Store**	7'6"	5'6"	41.25
Bedroom 2	15'0"	11'0"	165.00	**Utility 1**	7'6"	6'8"	50.0X
Toilet 2	8'0"	5'6"	44.00	**Servant room**	7'5"	6'8"	49.49
Bedroom X	15'0"	12'0"	180.00	**Toilet 4**	6'0"	4'0"	24.00

The Taj Towers

This project is located in sector 104 and is done by another local developer named Universal Infrastructure. The unit plan of XBHK in this project is also covering many points that are required in a unit as per any localite. For example, a foyer before the living room gives an indirect access to the house hence ensures privacy.

A separate dining area and kitchen having no direct view from the living area is the perfect relation between the two areas. The dining area also has a lounge for larger family dinners.

The kitchen has a sufficient width making a perfect regular working area in the kitchen. Also a separate utility space is provided with the kitchen which can act as a wet area.

All the bedrooms are of adequate sizes and have attached toilets. Only the master bedroom is provided with the walk-in wardrobe or a dresser. A servant room such provided that it can be easily converted into a utility space or a library or a half bedroom with attached powder room. A bathroom right next to the entrance serves the Punjabi culture of washing hands and feet before entering into the house but it is also serving one of the bedrooms hence is provided with two doors.

The table below gives the area statement of XBHK in The Taj Towers which has a loading of -29.8% which lowest among the projects studied.

Table 43 Area Statement of XBHK+Servant Quarter in The Taj Towers

Carpet (Sq.Ft.)	Balconies (Sq.Ft.)	Additional including wall area, etc.	BUA (Sq.Ft.)	SBUA (Sq.Ft.)	Loading on SBUA
1510	214	12%	19X2	2150	-29.8%

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Figure 20 Plan of XBHK+Servant Quarter in The Taj Towers

The table below gives the sizes and areas of all the rooms and other spaces of a XBHK with servant room in The Taj Towers.

Table 44 Room Sizes of XBHK+Servant in The Taj Towers

Area	Length	Breadth	Area (Sq.Ft.)	Area	Length	Breadth	Area (Sq.Ft.)
Foyer	9’71/2”	5’X”	51.41	**Toilet1**	8’0”	6’0”	48.00
Living	18’41/2”	12’0”	220.80	**Balcony2**	2X’71/2”	5’11”	121.11
Balcony1	18’X”	5’11”	9X.51	**Bedroom2**	14’0”	12’0”	168.00
Dining	1X’0”	11’0”	14X.00	**Toilet2**	7’9”	5’6”	44.24
Kitchen	11’0”	9’0”	99.00	**BedroomX**	14’0”	11’0”	154.00
Utility	7’0”	5’11”	X5.77	**ToiletX**	8’0”	5’0”	40.00
Lounge	11’41/2”	9’4”	107.16	**Servant Room**	11’0”	9’0”	99.00
Bedroom1	17’0”	12’0”	204.00	**Toilet4**	7’0”	5’0”	X5.00
Dress	5’ 71/2”	5’6”	X1.92	**Storeroom**	5’4”	5’4”	29.16

Unit Design Assessment- XBHK+Servant

This section gives the grading of the above explained projects along with a few other to access and derive the ideal room sizes and important areas in an ideal XBHK with servant room unit in XYZ .

Table 45 Room Sizes of XBHK+Servant in competitive projects

Project	Ireo Rise		Park view Residency		Chandigarh Grande		DLF The Valley		Paras Panorama		Wave Gardens		Parikrama		ATS Casa Espana		Falcon View, JLPL	
	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B
Foyer	5.4	5.4	-	-	4.0	6.0	-	-	-	-	-	-	5.4	11.X	10.X	5.9	5.0	7.0
Living	14.1	12.X	11.2	19.X			12.0	15.X			11.5	19.5	12.8	17.8			1X.0	20.0
Dining	9.8	22.8	1X.5	11.6			15.X	8.9			1X.0	10.5	18.6	12.6			16.X	12.0
Living/ Dining	-	-	-	-	22.X	1X.5	-	-	14.0	24.2	-	-	-	-	2X.6	17.4	-	-
Kitchen	10.8	7.8	8.0	11.6	7.0	11.0	8.7	16.1	12.6	7.8	9.2	1X.X	1X.8	10.7	8.6	11.4	9.4	11.5
Bedroom	1X.8	10.8	11.6	15.5	11.0	14.0	12.0	15.0	14.8	12.7	11.X	1X.7	11.X	15.4	12.0	1X.2	11.0	15.0
Dresser	5.8	7.5			5.0	5.0									6.X	4.8		
Toilet	5.4	7.5	6.0	8.6	5.6	10.0	8.7	5.X	5.5	9.0	5.6	6.9	8.0	5.9	6.0	8.0	7.0	8.5
Bedroom	1X.8	10.X	12.X	11.8	11.0	1X.0	12.0	12.7	14.4	10.0	11.X	1X.7	11.0	15.0	12.5	16.4	11.0	15.0
Dresser	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	6.9	-	-
Toilet	8.0	5.4	6.0	8.0	5.0	8.0	8.7	4.9	10.4	7.X	5.6	6.9	5.6	7.8	6.0	8.8	5.5	8.0
Bedroom	1X.8	10.X	11.4	12.6	11.0	1X.0	10.7	14.9			11.X	14.X	12.8	11.5	12.0	1X.8	12.0	15.0
Dresser											6.0	4.7			6.5	5.4	7.0	5.0
Toilet	8.0	5.4	6.0	8.X	5.4	8.0	4.5	4.4	7.8	5.6	6.0	7.8	5.6	7.6	6.1	8.0	7.0	7.0
Toilet	-	-	-	-	-	-	-	-	-	-	4.8	5.9	-	-	-	-	4.5	6.0
Balcony	5.0	15.8	7.0	4.0	14.4	6.0	18.0	4.2	-	-	17.X	5.9	10.9	6.0	19.0	5.0	20.0	5.9
Balcony	4.0	10.5	8.0	X.5	1X.5	6.0	8.7	X.8	-	-	4.8	4.8	9.X	6.0	21.5	4.5	5.9	7.0
Balcony	-	-	X.0	X.5	5.0	8.X	5.0	X.7	14.0	4.0	-	-	12.5	6.0	10.X	5.0	12.0	5.9
Balcony	-	-	25.0	4.0	17.5	6.0	-	-	8.5	5.0	-	-	1X.2	6.0	14.X	5.0	-	-
Balcony	-	-	-	-	-	-	-	-	8.5	5.0	-	-	5.2	9.1	-	-	-	-
Servant Room	10.8	6.9	8.X	10.1	7.0	6.0	7.X	5.2	7.8	6.9	7.9	7.6	8.8	7.X	6.0	10.0	7.4	6.7
Toilet	5.4	X.4	X.8	4.8	5.7	X.5	4.7	2.9	X.8	5.6	X.9	4.7	5.6	X.2	4.0	5.0	6.0	4.0
Passage	-	-	16.0	4.5	-	-	-	-	14.4	4.0	9.2	X.X	-	-	17.0	4.0	-	-
Store/ Utility	5.X	4.X	-	-	4.4	6.4	-	-	12.5	4.0	-	-	6.0	4.X	-	-	7.5	5.5
Store	-	-	-	-	7.5	5.0	-	-	-	-	-	-	X.X	X.0	-	-	7.5	6.7
Store	-	-	-	-	X.0	11.5	-	-	-	-	-	-			-	-	6.8	6.0

Carpet (Sq.Ft.)	12X0	1281	11X7	1111	1270	1240	1406	1517	15X0

Based on these sizes, the projects are graded and based on these grading, ideal sizes for the rooms are derived. The grading achieved by the areas in each projects is given in the table below.

Table 46 Grading of XBHK+Servant in Competitive projects

Project	Ireo Rise	Bestech Park view Residency	Chandigarh Grande	DLF The Valley	Paras Panorama	Wave Gardens	Parikrama	ATS Casa Espana	Soul Space Mayfair	Falcon View, JLPL
Location	Sector 99, XYZ	Sector 66, XYZ	Ambala Highway	Panchkula	Kharar-XYZ	XYZ	Sector 20, Panchkula	XYZ	Sector 70, XYZ	Sector 66A, XYZ
Balcony 1	X.00%	1.17%	0.80%	1.50%	1.60%	1.74%	0.49%	0.88%	1.76%	1.X9%
Balcony 2	X.50%	1.XX%	0.75%	1.9X%	1.X6%	1.X2%	0.41%	0.65%	1.25%	0.55%
Balcony X	0%	-0.17%	0.8X%	0%	0%	0%	0.56%	0.82%	0.96%	0.94%
Balcony 4	0%	0%	0%	0%	0%	0%	0.59%	1.14%	0%	0%
Balcony 5	0%	0%	0%	0%	0%	0%	0.66%	0%	0%	0%
Bedroom 1	4.89%	5.00%	5.00%	5.00%	5.85%	5.00%	5.00%	4.X9%	5.00%	5.00%
Bedroom 2	4.70%	4.17%	4.7X%	4.22%	5.6X%	5.00%	5.00%	5.00%	5.00%	5.00%
Bedroom X	4.70%	4.41%	4.7X%	4.85%	6.75%	5.00%	4.4X%	4.61%	5.00%	5.00%
Dresser 1	X.4X%	0%	X.0X%	0%	0%	4.00%	0%	1.28%	4.00%	4.24%
Dresser 2	0%	0%	0%	0%	0%	0%	0%	1.28%	0%	0%
Dresser X	0%	0%	0%	0%	0%	0%	0%	1.X1%	0%	0%
Kitchen	15.66%	16.00%	11.46%	10.50%	1X.5X%	18.00%	14.29%	17.16%	17.08%	16.52%
Living	11.45%	1X.96%	0%	12.78%	0%	10.88%	1X.92%	0%	15.00%	15.00%
Dining	2.62%	5.25%	0%	5.20%	0%	6.52%	6.89%	0%	5.58%	6.X5%
Living - Dining	0%	0%	14.X8%	0%	12.05%	0%	0%	6.48%	0%	0%
Toilet 1	2.56%	2.65%	2.7X%	1.60%	X.00%	1.78%	2.50%	2.47%	X.29%	1.59%
Toilet 2	2.7X%	2.47%	1.94%	1.54%	2.10%	1.84%	2.60%	2.7X%	X.49%	2.69%
Toilet X	2.7X%	2.57%	X.00%	2.72%	1.40%	1.84%	2.52%	2.44%	0%	1.X1%
Toilet 4	1.85%	1.65%	2.7X%	0%	2.60%	1.51%	1.75%	1.71%	0%	2.05%
Toilet 5	0%	0%	0%	0%	0%	1.41%	0%	0%	0%	0%
Servant Room	9.56%	8.15%	6.22%	4.25%	8.X5%	8.X6%	7.85%	8.89%	8.X5%	6.60%

Store/ Utility	0%	0%	2.40%	0%	1.27%	0%	0%	0%	0%	2.25%
Grade Attained	**74.2X%**	**68.61%**	**64.7X%**	**56.08%**	**58.75%**	**74.18%**	**69.46%**	**6X.24%**	**75.78%**	**76.48%**

It can be seen from the above table that Falcon View has achieved highest grading and hence has the best sizes and spaces provided amongst the projects graded followed by Mayfair Soul Space.

XBHK + Servant- Size & Area Inferences

This section gives the ideal sizes as derived from the grading done in the previous section and the adjustment required to fit these into the best selling area range as derived from the previous chapters on market dynamics and product analysis.

An ideal product with five balconies and a L-shaped living dining area (separate living and dining) does not fit in the ideal area range. The projects that are providing these are either compromising on other areas or are larger in size. Therefore, to make an ideal typology in the best selling area range reducing some additional areas is required. For example, removing one balcony or areas like dresser attached in some rooms or giving an attached living cum dining area can help. The table below gives the ideal dimensions as per the grading and the suggested dimension that can be given on the subject site. The size of balconies can vary as per design, regulation and room sizes.
The area that is achieved with the given sizes is a carpet of 1192 sq.ft. and with the loading of -X5% on SBUA (or a positive loading of approximately 54% on carpet) giving a SBUA of 18X4 sq.ft.

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Table 47 Room Sizes of XBHK + Servant room

Particular	Ideal Length	Ideal Breadth	Length	Breadth	Area (Sq.Ft.)
Foyer	7’0”	5’0”	7’0”	5’0”	X5.0
Living	20’0”	1X’0”			
Dining	18’7”	12’7”			
Living-Dining	24’2”	14’0”	24’2”	14’0”	XX8.4
Kitchen	11’5”	8’6”	11’5”	8’6”	97.8
Bedroom	14’10”	12’8”	14’10”	12’6”	185.4
Dresser	7’6”	5’10”	6’11”	5’6”	X8.1
Toilet	8’10”	6’0”	7’X”	5’6”	40.X
Bedroom	1X’0”	11’0”	1X’0’	11’0”	14X.0
Dresser	6’11”	6’0”			
Toilet	7’4”	5’6”	7’6”	5’2”	X9.4
Bedroom	1X’7”	11’5”	1X’6’	10’6”	141.8
Dresser	6’6”	5’5”			
Toilet	8’0”	5’5”			
Toilet	5’6”	4’6”	5’6”	4’6”	24.8
Servant Room	10’9”	6’11”	10’0”	7’0”	70.0
Toilet	4’10”	X’10”	4’10”	X’10”	18.5
Store/ Utility	7’6”	6’8”			-
Store	5’4”	4’4”	5’X”	4’X”	2X.1
Balcony	1X’0”	5’0”	1X’0”	4’0”	65.0
Balcony	10’0”	4’0”	10’0”	4’0”	40.0
Balcony	11’0”	4’0”	11’0”	4’0”	44.0
Balcony	11’5”	4’0”	11’5”	4’0”	45.6
Balcony	9’2”	5’0”	9’2”	4’0”	46.0

XBHK + Servant Premium- Size & Area Inferences

Since this is a premium product, it can be larger in size and hence can have some lavish areas like dresser and toilets attached to all the bedrooms, a separate living and dining area, additional stores, etc.

The area that is achieved with the given sizes is a carpet of 1495 sq.ft. and with the loading of -X5% on SBUA (or a positive loading of approximately 54% on carpet) giving a SBUA of 2X00 sq.ft.

Table 48 Room Sizes of 4BHK+Servant room

Particular	Ideal Length	Ideal Breadth	Length	Breadth	Area (Sq. Ft.)
Foyer	7'0"	5'0"	7'0"	5'0"	X5.0
Living	20'0"	1X'0"	18'0"	1X'0"	2X4.0
Dining	18'7"	12'7"	17'6"	12'6"	218.8
Living-Dining	24'2"	14'0"	-	-	-
Kitchen	11'5"	8'6"	11'6"	8'6"	97.8
Bedroom	14'10"	12'8"	14'10"	12'6"	185.4
Dresser	7'6"	5'10"	7'6"	5'6"	41.X
Toilet	8'10"	6'0"	8'10"	6'0"	5X.0
Bedroom	1X'0"	11'0"	1X'6"	11'0"	148.5
Dresser	6'11"	6'0"	6'11"	5'6"	X8.1
Toilet	7'4"	5'6"	7'6"	5'2"	40.X
Bedroom	1X'7"	11'5"	1X'6'	10'6"	141.8
Dresser	6'6"	5'5"	6'6"	5'5"	X5.2
Toilet	8'0"	5'5"	8'0"	5'5"	40.7
Toilet	5'6"	4'6"	5'6"	4'6"	24.8
Servant Room	10'9"	6'11"	10'0"	7'0"	70.0
Toilet	4'10"	X'10"	4'10"	X'10"	18.5
Store/ Utility	7'6"	6'8"	7'6"	6'6"	48.8
Store/Pooja	5'4"	4'4"	5'X"	4'X"	2X.1
Balcony	1X'0"	5'0"	1X'0"	4'0"	65.0
Balcony	10'0"	4'0"	10'0"	4'0"	40.0
Balcony	11'0"	4'0"	11'0"	4'0"	44.0
Balcony	11'5"	4'0"	11'5"	4'0"	45.6
Balcony	9'2"	5'0"	9'2"	4'0"	46.0

4BHK+Servant Room-Design

In this section, designs of 4BHK + servant room of projects in XYZ are studied. Plans of two projects- ATS Casa Espana and Falcon View are looked at, whereas some other projects with similar kind of development or similar scale, etc. are also considered to get a better base to compare and get a better idea of the market trend.

ATS Casa Espana

As explained above, this is a luxury project and the XHK & 4BHK unit plans are very similar with just a room added in case of 4BHK. There is an additional family room and the setting is such that the dining can be shifted in place of family room as per the requirement.

Like in XBHk units, all the bedrooms here also are provided with attached dresser, which adds up as a luxury element to the dwelling unit. There are toilets attached to all the rooms but no common toilet.

The size of the kitchen is good with a width of 9'-11" provided with a space for a double door fridge. The tables below give the areas statement and sizes of rooms of 4BHK+Servant Room in the project.

Table 49 Area Statement of 4BHK+Servant Quarter in ATS Casa Espana

Carpet (Sq.Ft.)	Balconies (Sq.Ft.)	Additional including wall area, etc.	BUA (Sq.Ft.)	SBUA (Sq.Ft.)	Loading on SBUA
2186	X94	1X.75%	29X5	XX00	-XX.8%

Table 50 Room Sizes of 4BHK+Servant in ATS Casa Espana

Area	Length	Breadth	Area (Sq.Ft.)	Area	Length	Breadth	Area (Sq.Ft.)
Foyer	9'10"	6'11"	68.02	Bedroom X	14'8"	12'10"	188.22
Living Dining	26'4"	16'6"	4X4.45	Dresser X	8'0'	5'11"	47.X6
Family room	16'0"	15'1"	241.28	Toilet X	7'7"	6'9"	51.17
Balcony 1	20'0"	5'0"	100.00	Balcony 4	18'10"	5'0'	94.25
Bedroom 1	15'4"	12'0"	18X.96	Bedroom 4	14'8"	11'10"	17X.55
Dresser 1	5'11'	4'11"	29.1X	Dresser 4	5'10"	5'9"	XX.52
Toilet 1	8'6"	5'11"	50.X2	Toilet 4	8'5"	5'10"	49.09
Balcony 2	1X'2"	5'0"	65.70	Kitchen	15'10"	9'11"	157.0X
Master Bedroom	15'9"	12'10"	202.07	Balcony 5	11'5"	6'0"	68.58
Dresser 2	9'4"	5'11"	55.2X	Passage 1	7'5"	2'10"	21.22
Toilet 2	10'X"	7'7"	77.70	Servant room	12'8'	7'11"	100.X5
Balcony X	1X'2"	5'0"	65.70	Toilet 5	5'8"	4'0"	22.68

Figure 21 Plan of 4BHK+Servant Quarter in ATS Casa Espana

Falcon View

This project is also covered in the previous section and the plans of XBHK & 4BHK are similar in this case as well. The only difference is that there is a pooja cum store space added to adjust the fourth bedroom.

The tables below give the area statement and sizes of the 4BHK unit plan in Falcon View.

Table 51 Area Statement of 4BHK+Servant Quarter in Falcon View

Carpet (Sq.Ft.)	Balconies (Sq.Ft.)	Additional including wall area, etc.	BUA (Sq.Ft.)	SBUA (Sq.Ft.)	Loading on SBUA
1827	251	2X.80%	257X	X007	-X9%

Figure 22 Plan of 4BHK+Servant room in Falcon View

Table 52 Room Sizes of 4BHK+Servant in Falcon View

Area	Length	Breadth	Area (Sq.Ft.)	Area	Length	Breadth	Area (Sq.Ft.)
Foyer	9'10"	7'0"	68.81	**Bedroom 4**	18'0"	12'0"	216.00
Powder Room	5'9"	4'6"	25.88	**Dresser 1**	7'0"	6'0"	42.00
Living	20'0"	1X'0"	260.00	**Toilet 4**	8'0"	7'0"	56.00
Dining	12'0"	11'10"	141.96	**Balcony 1**	2X'5"	5'11"	1X8.65
Pooja/Store	7'6"	5'6"	41.25	**Balcony 2**	7'0"	5'11"	41.44
Pooja	8'0"	5'0"	40.00	**Balcony X**	12'0"	5'11"	71.04
Bedroom 1	15'0"	11'0"	165.00	**Kitchen**	11'4"	9'9"	110.47
Toilet 1	8'6"	7'0"	59.50	**Store**	7'6"	5'6"	41.25
Bedroom 2	14'0"	11'6"	161.00	**Utility 1**	9'7"	6'8"	6X.90
Toilet 2	9'0"	5'6"	49.50	**Servant room**	7'5"	6'8"	49.49
Bedroom X	14'0"	11'6"	161.00	**Toilet 5**	6'0"	4'0"	24.00
Toilet X	9'0"	5'6"	49.50				

4BHK + Servant- Size & Area Inferences

This section gives the ideal sizes as derived from the grading done in the previous section and the adjustment required to fit these into the best selling area range as derived from the previous chapters on market dynamics and product analysis.

An ideal product with five balconies and a L-shaped living dining area (separate living and dining) does not fit in the ideal area range. Attached Living and dining room is preferred to fit in the required area range. The table below gives the ideal dimensions as per the grading and the suggested dimension that can be given on the subject site. Balcony sizes can vary as per the design, the regulation requirements and the room sizes. The area that is achieved with the given sizes is a carpet of 1971 sq.ft. and with the loading of -X5% on SBUA (or a positive loading of approximately 54% on carpet) giving a SBUA of X0X2 sq.ft.

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Table 53 Room Sizes of 4BHK+Servant room

Particular	Ideal Length	Ideal Breadth	Length	Breadth	Area (Sq. Ft.)
Foyer	9’10”	6'11"	9'0"	6'0"	54.0
Living	20'0"	1X'0"	20'0"	1X'0"	-
Dining	14’X”	9'0"	14'0"	11'0"	-
Living-Dining	26’4”	16'6"	26'0"	16'6"	429.0
Kitchen	11’4”	9’10”	11'6"	9’9”	112.1
Bedroom	15'0"	11'0"	15'0"	12'0"	180.0
Dresser	8’10”	5'0"	9'0"	6'0"	54.0
Toilet	9'0"	5'6"	9'0"	6'0"	54.0
Bedroom	14'0"	11'6"	14'0"	11'6"	161.0
Dresser	9’4”	5'11"	9'0"	5’9”	51.8
Toilet	9'0"	5'6"	8'0"	5'6"	44.0
Bedroom	15’9”	11'0"	14'0"	11'0"	154.0
Dresser	8'0"	5'11"	8'0"	5’9”	46.0
Toilet	7’8”	5’5”	7'6"	5'6"	41.X
Bedroom	14’9”	11'0"	14'0"	11'0"	154.0
Dresser	5’10”	5’10”	7'0"	5’9”	40.X
Toilet	7’8”	5’5”	8'0"	5'6"	44.0
Toilet	5’10”	4’4”	5’9”	4'6"	26.2
Family Room	15'6"	10'11"	14'6"	11'0"	159.5
Servant Room	12’8”	7'11"	10'0"	7'6"	75.0
Toilet	5’8”	4'0"	5’10”	4'0"	2X.0
Store/ Utility	7'6"	5'6"	7'6"	5'6"	41.X
Store	9’7”	6’8”			
Pooja	7'6"	5'6"	6'0"	4'6"	27.0

4BHK + Servant Premium- Size & Area Inferences

Since this is a premium product, it can be larger in size and hence can have some lavish areas like dresser and toilets attached to all the bedrooms, a separate living and dining area, additional stores, etc.

The area that is achieved with the given sizes is a carpet of 22X9 sq.ft. and with the loading of -X5% on SBUA (or a positive loading of approximately 54% on carpet) giving a SBUA of X445 sq.ft.

Table 54 Room Sizes of Premium 4BHK+Servant room

Particular	Ideal Length	Ideal Breadth	Length	Breadth	Area(Sq. Ft.)
Foyer	9’10”	6'11"	9’9”	7'0"	68.8
Living	20'0"	1X'0"	22'0"	14'0"	X08.0
Dining	14’X”	9'0"	15'0"	12'0"	180.0
Living-Dining	26’4”	16'6"			
Kitchen	11’4”	9’10”	9’9”	12'6"	121.9
Bedroom	15'0"	11'0"	12'0"	15'0"	180.0
Dresser	8’10”	5'0"	9'0"	5'6"	49.5
Toilet	9'0"	5'6"	5'6"	9'0"	49.5
Bedroom	14'0"	11'6"	12'0"	14'6"	174.0
Dresser	9’4”	5'11"	6'0"	9'0"	54.0
Toilet	9'0"	5'6"	5'6"	9'0"	49.5
Bedroom	15’9”	11'0"	11'6"	14'6"	166.8
Dresser	8'0"	5'11"	6'0"	8'6"	51.0
Toilet	7’8”	5’5”	7’9”	5'6"	42.6
Bedroom	14’9”	11'0"	14’9”	11'0"	162.X
Dresser	5’10”	5’10”	8'0"	5’10”	46.0
Toilet	7’8”	5’5”	7’8”	5’5”	44.1
Toilet	5’10”	4’4”	15'6"	12'0"	186.0
Family Room	10'11"	15'6"	6'6"	5'6"	X5.8
Servant Room	12’8”	7'11"	11'0"	9'0"	99.0
Toilet	5’8”	4'0"	6'0"	4'0"	24.0
Store/ Utility	7'6"	5'6"	7'6"	5'6"	41.X
Store	9’7”	6’8”	9'6"	6’8”	6X.4
Pooja	7'6"	5'6"	7'6"	5'6"	41.X

Summary- Unit Design

In the above section covered the unit design of the various typologies and gave the ideal sizes of units and their rooms based on the study of competitive projects. But since these sizes vary as per the design of the product it can be modified considering the design factors but a good ratio should be maintained between the length and breadth of the room. Also the sizes are given as per the sizes achieving best grades.

Balcony sizes can vary as per the norms and what can be achieved free of FSI. A good kitchen should include space for double door refrigerator and proper work triangle.

Service shaft is an important element as all the outdoor units can be placed there and the elevation can be saved from the hanging A.C units.

Since this section dealt with the unit design part the next section covers the broader aspects of planning and covers the master planning features that should and can be taken care of while designing.

Master Planning Brief

This section deals with the broader master planning features that can be taken care of while designing. These are very broad points taken from a few case studies and the general planning and lifestyle requirements. From the literature studies, it was found that there are five basic points that should be considered for the subject site which are given in below.

Opacity

Considering the subject site that lies on a highway, there will be lot of noise pollution and air pollution. So a barrier is required in the front side of the site to block this noise and air pollution. To some extent, the setbacks will act as a barrier. Other than that porosity (fenestrations) on the inside can be given instead of outside. This means providing the openings majorly on the inner side i.e. the central open space of the site. This gives views of the central open space, and provides for fresh air and light to penetrate inside the house.

Connectivity

A considerable part of the site is going under setbacks from highway and the high-tension line that is passing through the site. In this case, if parking is kept on ground, circulation will consume another major part leaving the site concreted and leaving no space for open green areas and parks. So for the subject site, if the front set back is used for a designed open space and parking in given in the basement, there will be a lot of open space and a substantial area to play with the landscape to improve the site attributes. Along with complete basement parking peripheral road network directly connecting to the ramps gives vehicle-free pedestrian friendly layout.

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Central Open Space

With the peripheral layout the central area leaves ample space for a variety of activities giving the designer a sizeable canvas to play on. Although this kind of planning does not allow for the hierarchy of open space which is considered as the best way of giving open spaces and maintains the livability of any space or society but it gives a grandness to the site. It gives space for all sorts of activities in one area stretch accommodating all the age groups. This also turns out to be a complete family space since mothers can leave their children and do their activities while still keeping an eye on the children. This kind of central space can accommodate both soft and hard landscape, the interaction of which creates a dynamism in the space.

Volume

If on a site all the building are of same height and considering a group housing project which has multiple buildings the project becomes very monotonous and massy. On the other hand, varied heights and façades make it look interesting and dynamic giving the whole space an energetic feel.

A play with volumes is necessary to break the repetitiveness and specially in case of peripheral planning the site becomes like an enclosure if the central space is not very big and the buildings are tall. Providing different volumes of construction adds variety of character to space and breaks the uniformity.

Playful Façade

Generally, in a group housing project or an apartment project the site becomes very monotonous due to the repetition of the same dwelling units n number of times creating a repetitive elevation or a dreary façade. So to break the monotony a play in elements of façade can be done. For example by adding balconies (additive or subtractive), playing with fenestrations, material, colors, etc. are the most common methods to do the same.

Balconies are also *verandah* in case of apartments so these can act as interesting elements as they facilitate vertical communication

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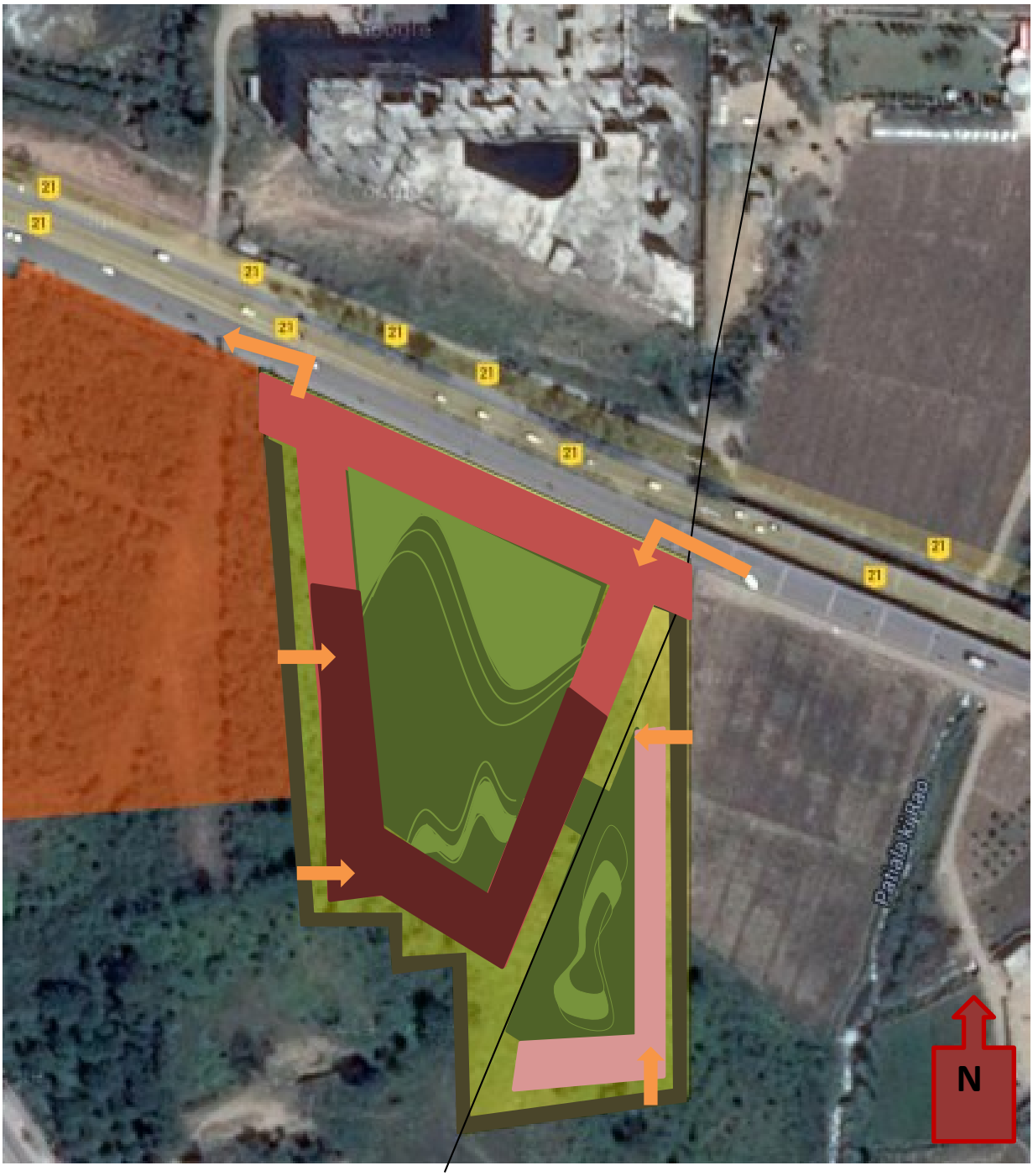
Figure 23 Balconies as Interactive Space in apartments

In the image below, a conceptual layout of the site is given considering the above given factors of volumes, central open space and opacity from the main road and within the site. The shades of red give the buildings or residential towers. The gradations of the color show the height variation with the darkest on being the highest and the lightest one with minimum heights. The patch on the east which is separated by the high tension line is kept as an exclusive area with minimum heights and a complete low rise development. The front blocks are of mid rise development where as the development on the back side is all high rise development. The central open space is provided on the site and also to the low rise development on the east-side.

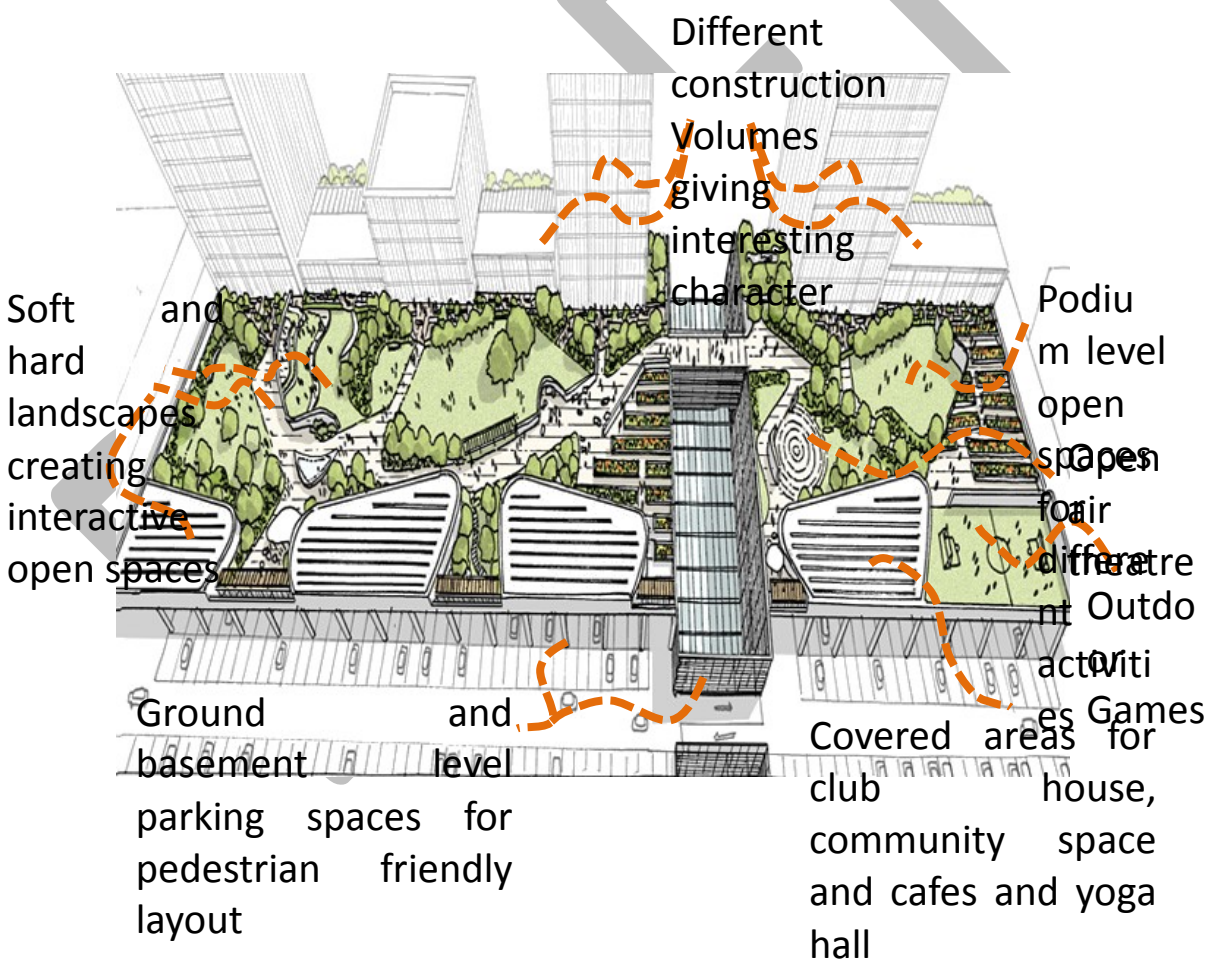
Figure 24Conceptual Site Layout



An example: Westfield Croydon, Central London

This section talks about a case which had similar concept and incorporates more or less all the point discussed in the previous chapter. The case taken is of a project called Westfield Croydon in Central London. This project is very well located and has a plush locality. The image below shows the schematic of the project in which one can see the use of interactive open spaces, variety of construction volumes creating a character of the space, podium level used for open spaces along with some open space on ground floor, etc. The project also had covered areas for clubhouse, community space, cafes and yoga hall creating a decent mix of shared community amenities. The ground level and basement level parking creates a vehicle free podium level, which makes it pedestrian friendly.

Figure 25 Conceptual Site View, Westfield Croydon, Central London



Uppal Marble Arch

A project is also studied locally for the assessment the site layout. For the same Uppal Marble Arch is selected which is a successful project of Chandigarh Tri-City. This project is located in Mani Majra which is on the border of Chandigarh towards Panchkula. Although the units are not planned in a very efficient way and have a high circulation area because of corridor planning, the project got sold fast. It is a high-end project with independent villas as the typology. The good feature about the design is that the plans are not same on all the floors and have exclusivity in that sense giving terrace to some flats and bigger space to others.

This variation in plan also gives a playful elevation that is not monotonous and gives the space a dynamic feel. In terms of layout, not much creativity is seen in the project with blocks placed in a row.

Figure 26 Site Layout- Uppal Marble Arch

Activity Chart- Regular Activities

As per the discussion with architects and planners it was observed that the daily activities also affect the requirements of any project since these specifies the space requirements of each member of the family. The table below gives the activity chart at different time of a day of different age groups of both the genders to understand family requirements better.

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Table 55 Activity Chart of a typical family

Concerned Group	Morning- Before 10.00 AM	Morning- After 10.00 AM	Afternoon	Evening
Kids				
Age- 0-15	Crèche and School	Crèche and School	Lunch, tuitions, homework, sleep	Indoor/Outdoor Games- Children's play area, cricket, football, badminton, basketball, skating, cycling.
Age- 15-25	Jogging, Gym, Badminton, tennis, etc.	School & college	Lunch, tuitions, homework	Same as above Squash, cafeteria, mini theater, swimming, snooker, reading (library)
Females				
Age- 25-50	Cooking, exercise, aerobics, gym, yoga	Household works, chit-chat	Chit chat, kitty party, shopping	Swimming (if separate pool is there with ensured privacy), Gardening, gossiping (*chabootra* or similar outdoor spaces)
Age- 50+	Pooja (area where ladies can sit and do some bhajan kirtan) or household work		Pooja, household work, play with grandchildren	Swimming, knitting and gossiping
Males				
Age- 25-50	Jogging, Gym, games, etc.	Office	Office	Office or indoor outdoor games like snooker, etc.
Age- 50+	Walk or jog with pets	Reading, market	Rest, read	Gossip, laughter club, reading, pooja, watch games, etc

Also along with this the special occasions in the region are listed down to check if any requirements in term of festivals, etc are there.

Table 56 Special Events or occasion in the region

Events	Space requirement
Lohri	Bon Fire Area- sufficient enough to have dancing, eating and other such activities around it.
Weddings	Area for small functions or some small party
Parties	Barbeque or *tandoor* area for the whole society

From the above study and discussions with the architects and planners it was found that additional spaces that can be added are:

- Pets area
- Gazebo or *chabootra* for chit chatting
- Community *Tandoor* or Barbeque area
- Library
- Mini theater
- *Pooja* area, etc.
- Separate pool
- Area for gardening

Amenity Grading

Amenities in all the competitive projects were marked and are graded as per their availability in the projects. The table below gives the amenity mapping- The amenities in green are the most commonly provided ones whereas the ones in red are the least provided amenities.

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Table 57 Amenities Grading in Competitive Projects

Amenities	Grades Attained
DG power Back Up	17
Landscaped Garden	17
Jogging	17
Swimming Pool	14
Gym	14
Children Play Area	12
Indoor Gaming	12
Rain Water Harvesting	12
Outdoor Games Courts	10
Banquet/ Conference/ Meeting Hall	10
Kids Pool	9
Amphitheater	9
Shopping Area	9
STP (Sewage Treatment Plant)	9
Sauna/ Jacuzzi	8
Squash Court	8
Solar Water Heating	8
Senior Citizen Area	7
Cricket Nets/ Pitch	7
Yoga	7
Driver's Rest Area	5
Skating Rink	4
Barbeque	X
Library	X
Wi-Fi	2

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Project Grading

A project grading is carried to understand the competition projects and check the position of the subject site and compare it with some of the good projects in the locality. The projects across XYZ , Panchkula, Mullanpur and Zirakpur have been considered for competition and have been graded on two parameters of Location and Product (since any project sells based on either or both these factors). A project with good location and good product is the best product of the market and will sell fast irrespective of the brand name associated. A product with good location and average product will sell due to the location for example a project situated in the sectors which are centrally located will perform better than the one on the peripheral sectors considering the product is same in both the projects. Similar is the case with product, considering the location to be the same a project with better product will sell faster than the one with inferior product.

The project grading is done with an objective of building the matrix and correlation of the price with the location and the product and find the best and the worst product in the market. It also aims at comparing the best and the worst product in terms of design and location so as to derive the product attributes for the subject site.

Evaluation Criteria

The project grading is done considering the characteristics of the city and the evaluation criteria are selected and given points accordingly. It was observed through the surveys and discussions that for any project its location has higher weightage for the buyers than the product, the ratio was of 60:40, and so the marks are assigned consequently. Within location and product another four factors are identified which includes economic profile (demography in the neighbouring area), availability of social infrastructure and physical infrastructure and the views available from the site for the location grading. For product grading the sub factors includes the timely delivery of the project since that area is prone to delays which is a major setback for the realty there, product attributes in terms of design and specifications, amenities provided within the campus and the green features of the building (in terms of energy saving, etc).

First the projects are graded for location and product separately and then the grades are combined to achieve the final grading for each project which is further used to compare with the project. The project on subject site is assumed to have a good product with decent amenities for the purpose of grading.

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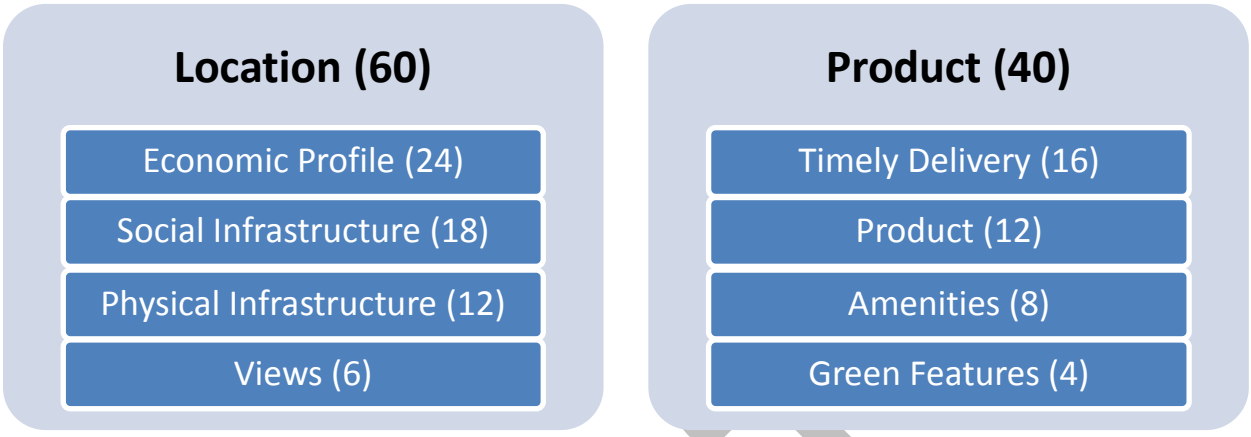
Figure 27 Project Grading Evaluation Criteria



Competitive Projects

As discussed above, projects from XYZ , Panchkula, Zirakpur and Mullanpur (new Chandigarh) are selected for competition analysis and project grading. While selecting it was taken care that a good mix of projects are selected in terms of developers (both local developers and outside developers like DLF, ATS are selected), projects have good mix of product and are comparable to the envisaged project.

For the competition analysis and project grading the projects selected includes the following projects which are shown in the image below:

- Omaxe Mulberry Hills- Mullanpur
- DLF Hyde Park- Mullanpur
- Paras Panorama- Kharar
- TDI Willington Heights- Kharar
- ATS Casa Espana- XYZ
- Quark Residency- XYZ
- Mayfair Soul Space- XYZ
- Homeland Heights- XYZ
- Darshan Vihar- XYZ
- Wave Garden- XYZ
- Ireo- The Rise- XYZ
- Emmar MGF- The View- XYZ
- Falcon Heights- XYZ
- Bestech Park View Residenvy- XYZ
- Uppal Marble Arch- Mani Manjra
- Parikrama- Panchkula
- Chandigarh Grande- Zirakpur

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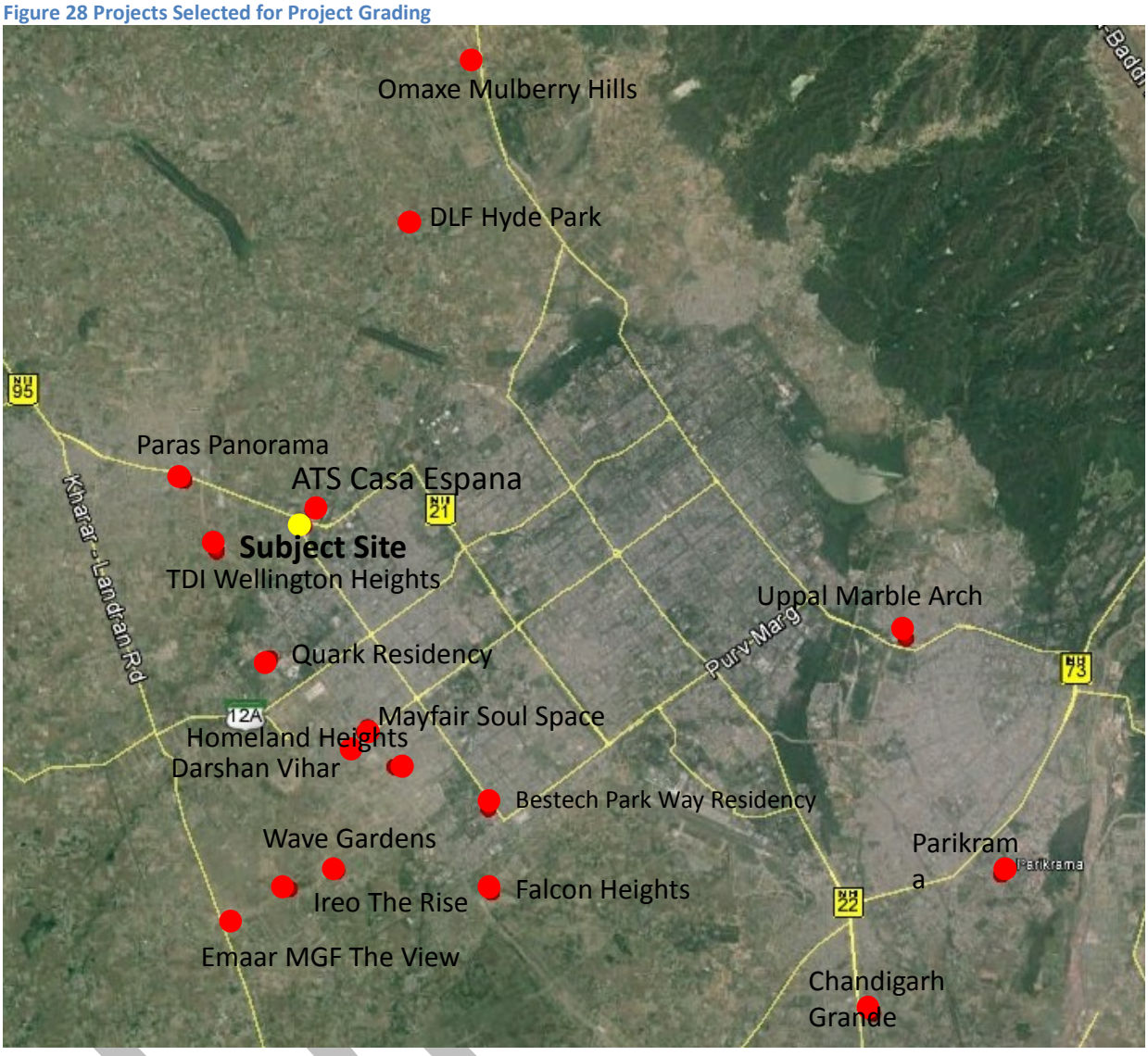
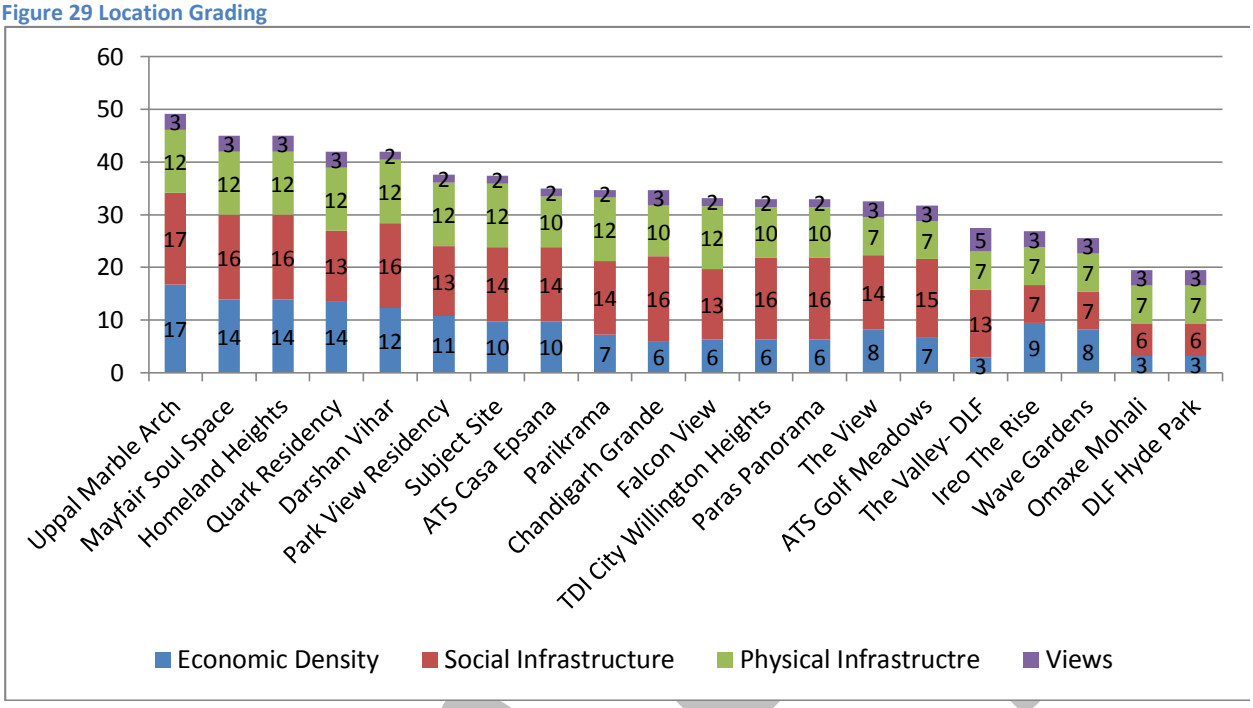
Figure 28 Projects Selected for Project Grading



Location Grading

The selected projects were graded for the location on the basis of the location attributes as seen on site. It was observed that Uppal Marble Arch had the best location as it was located very near to Chandigarh, Had very good views and also good amount of social and physical amenities. DLF Hyde Park on the other hand had the worst location as it is located in Mullanpur which is a developing location and has minimum level of infrastructure and is far from the city center.

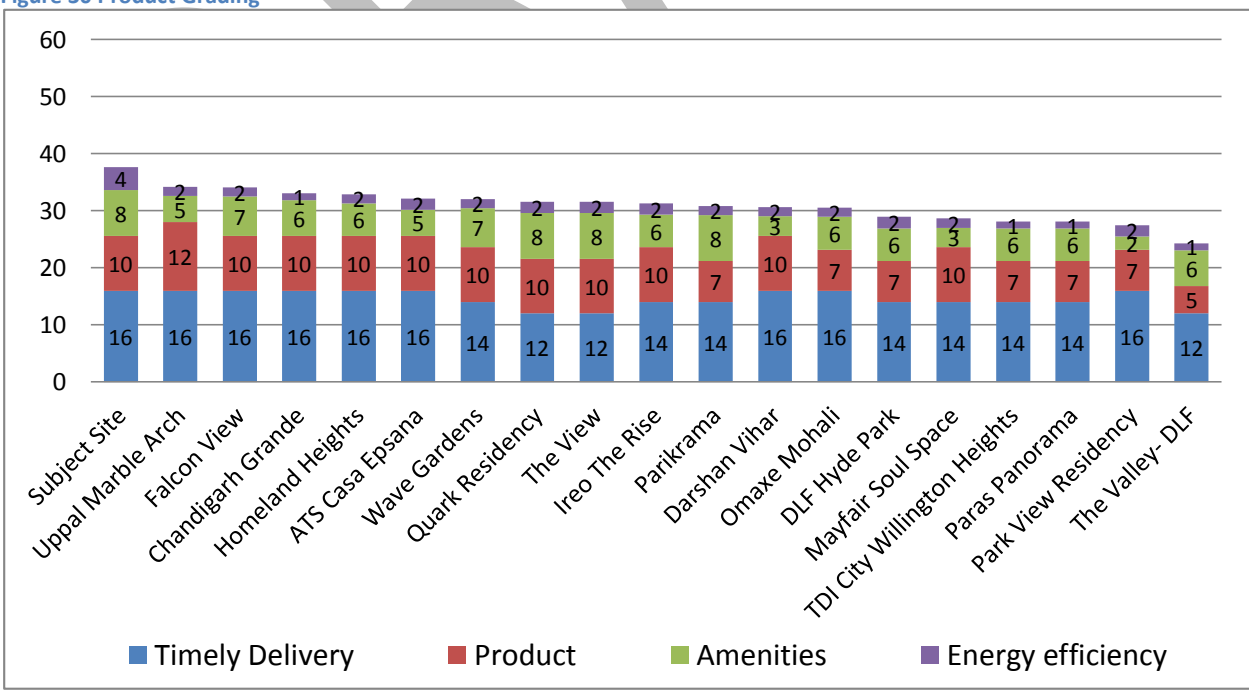
Figure 29 Location Grading



Product Grading

Development at subject site will score the highest if it has the best design, Leeds certified green building, best of specification, all the amenities and possession is given on time. Other than that, Uppal Marble Arch is the best project in terms of attributes selected whereas The Valley by DLF is the worst project out of the selected ones.

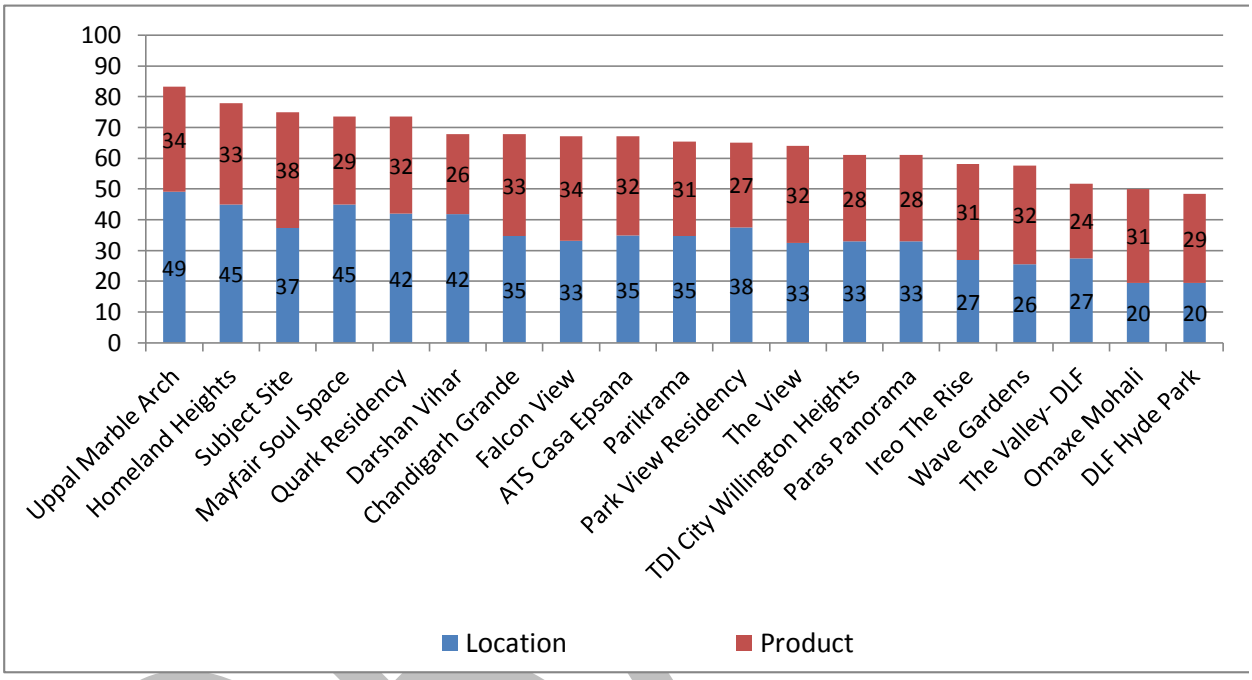
Figure 30 Product Grading



Project Rating

In this section the rating of location and product both are combined to arrive at the final grading of the projects from which it was found that again Uppal Marble arch is the best project whereas DLF Hyde Park is the worst due to the location. Projects like Park View Residency that has higher grades for location and lower grade for product are better in overall grading than other projects like The View, which has better product.

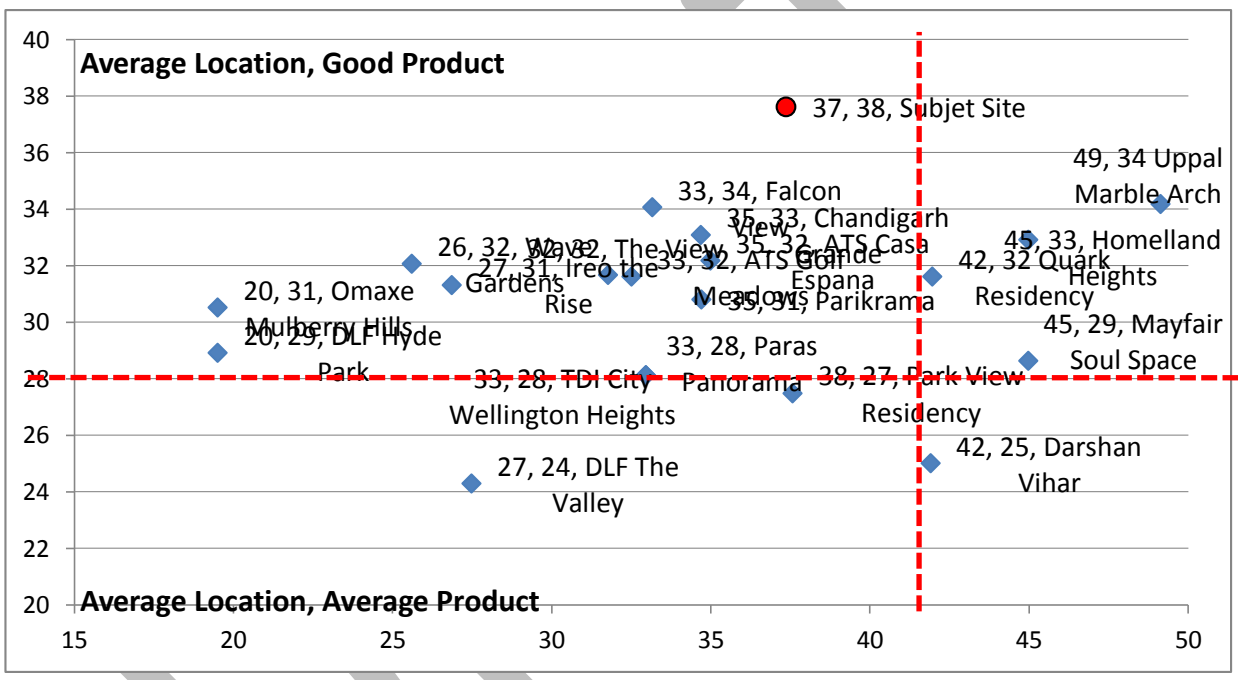
Figure 31 Combined Project Rating



Project Grading Analysis- Product Vs. Location

In the overall grading a project with a location grading of 41 and product grading of 28 is considered as an average product. So accordingly it can be observed that Uppal Marble Arch, Homeland Heights, Quark residency and Mayfair Soul Space are the best projects with good location and good product. The subject site falls under the average location and good product category like other very good and well performing projects like Falcon Heights, Chandigarh Grande and ATS Casa Espana. So if the product is good at the subject site with good design, timely delivery and good specifications and amenities the project can be expected to perform well and can give good competition to these projects.

Figure 32 Project Rating



Price Determination

The price range in the tri city varies from Rs.X,500-Rs.7,000 depending on the location and the builder or the brand name. in some cases where the location and builder are very good (like in the central sectors of XYZ or in Chandigarh) a premium is added to the base price which can increase the price upto Rs.9,000. However, the location at which subject site is located does not demand a premium and is rather situated on a location with slightly lower grades.

Though the location is on the main highway but is slightly on the periphery of the developed location of XYZ and hence the economic density or the demography is slightly on the lower side with a village or town kind of population staying nearby. The development on the east side is going to be of better quality and will be an upper middle

segment due the industrial and IT development there. So pricing can be better than other projects situated on the highway. The project of ATS that is just opposite to the subject site and is recently launched can be compared to arrive at the prices for the subject site. The project is doing pretty well since the time of launch and has got launched recently. Also since the project is by a Delhi based developer, it makes the best comparison for the subject site.

With Subvention Scheme ATS Casa Espana is offering a rate of Rs 4,500. Assuming X years of subvention scheme is equivalent to discount of 25%. So effective realization price (base rate) is Rs X,X50.

A discounting factor has to be applied which will be equivalent to:

= (1+0.25) ^ X = 1.X4

Realization Price = Base price/Discounting factor

= 4,500/1.X4

=Rs X,X25

The subject site is positioned at higher location grading due to better connectivity with the highway and visibility quotient, which commands a premium of 20% over the average realization price, which stands at the price of Rs. 4,020.

So the fair price for the subject site is Rs.4,020. If a premium at this price is to be achieved first the brand name has to be established in the region and the product has to be really good.

Additional Charges on a Unit- Example

Other than the base price there are various other charges that are charged to the buyers like the parking, clubhouse, development charges, etc. An example of these charges is given in the table below.

It was observed in the XYZ market that the parking is usually provided in the basement but the parking cost is very less and ranges from Rs.1,00,000 to Rs.X,50,000. These costs usually do not even make for the construction cost of the basement parking and hence it has to be loaded on the flat cost itself. This the developers usually do by applying a higher loading and giving bigger balconies.

Another very common charge is a FPC or a floor preference charges which is charged for lower floors since these are most preferred in the region. People there like to stay on the lower floors and hence have to pay for it. However, some of the developers are also charging FPC for higher floors in high-rise projects in the name of view from there.

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Other than FPC, PLC or the preferential location charges are also charged for the units facing garden or hill or any such area that is better than the view from other units.

Club house membership in the region varies from Rs.50,000 to Rs.X,50,000 in good projects providing decent amount of amenities.

Table 58 Additional Charges- Example

Categories	Particulars	Unit Type	2BHK/XBHK	XBHK/4BHK Premium
Unit Details	Carpet Area	Sq.Ft.	8X7/1192	1495/22X9
	No. of Car Parks	Rs.	2	X
Base Charges	BSP (on carpet)	Rs. Psf	4020	4200
	PLC (Preferential Location Charges)	Rs. Psf	16X	16X
Floor Preference Charges	FPC on the Ground Floor	Rs. Psf	XX0	XX0
	FPC on the First Floor	Rs. Psf	270	270
	FPC on the Second Floor	Rs. Psf	245	245
	FPC on the Third Floor	Rs. Psf	180	180
	FPC on the Top Floor	Rs. Psf	150	150
	FPC on the Second from Top Floor	Rs. Psf	50	50
Society Charges	One time Interest Free Maintenance Security	Rs. Psf	X5	X5
	Maintenance Charges	Rs. Psf	8	8
Other Charges	IDC	Rs. Psf	100	100
	EDC	Rs. Psf	175	175
	Power Backup	KW	4500	4500
	Club Membership	Rs.	1,00,000	1,00,000
	Additional Covered Car park Charges	Rs.	2,00,000	2,00,000
	Additional Open Car park Charges	Rs.	1,00,000	1,00,000
Total	Maximum Total Cost of the flat after adding all other charges	Rs.	X9,64,X47/ 58,58,412	7X,46,445/ 1,10,00,229

*FPC- Floor Preference Charges

Chapter 5- Recommendations

Chandigarh market has undergone a correction for the fact that the prices were less productive and were not generating enough sales and revenue for the developers. Also the overall real estate market of Chandigarh was going through a slow phase with major delays in the delivery of projects from the developers' end and hence the lack of confidence of buyers in the reality as such. However, the last 2 quarters have witnessed an improvement in market and hence in the sales and the supply considerably. Also with the number of policies and cases happening against delays in projects developers are becoming more watchful of the same. This overall situation can bring in some improvements in the market.

Based on observations from the market dynamics and site analysis, the subject site is best suited for mid-end products with a sprinkling of high-end products; the breakup of which can be decided upon the project duration and the profits. The market in this area is a mix of investors as well as end users but can be considered as largely investor driven rarely any project is properly occupied here. This is majorly because of the trend of owning more than one unit in that region.

Questions	**Answers**
What is the product mix suggested on the subject site?	Being a peripheral location and reasonably good connectivity away from the hustle bustle of the city, the subject site can be developed as a upper mid-end kind of location. But given the size of the project and slow pace at which the off-take happens; other smaller typologies should also be added to the development mix. This addition will reduce the project span/ duration with higher sales velocities of these smaller products. Also since 2BHK is the fastest selling typology, providing it on site will increase the sales volumes hence getting the equity back and reducing the peak negatives.
What product composition is feasible for the subject site?	The composition of the subject site should be based upon the financials and the duration for which developer is ready to be in the project.
What Should be the product mix in terms of percentages or number of units should be given and what should be ideal launch strategy for the same?	As per the scenarios discussed earlier ther are number of options that can be developed on the subject site. The best-suited option will be the one with better financial feasibility as per the financial assessment done in the next chapter. The five options identified are given in the next section and the options type is:

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Option 1- Mid-end with sprinkling of high-end

Option 2- Low to mid end products with sprinkling of high-end

Option X- Upper Mid-end Products

Option 4- High-end Products

Option 5- Same as option 2 but consuming less FSI

The next section gives the development potential of the site that will be further taken to derive the development mix in each option.

Development Potential

As per the brief provided, the subject site is a land admeasuring 5 acres (2,17,800 sq.ft). The FSI and built up area calculations are given in the table below:

Table 59 FSI Calculation

Particulars	Area in Sq. Mts.	Area in Sq.ft.
Land Area (A)	20,2X4	2,17,800
FSI (B) (Option 1-4)		X
Total BUA (C = A * B)	60702.8	6,5X,400
Permissible Ground Coverage	21,246	2,28,690

The next section gives product mix in each of the option. As it was observed in the previous chapters that the units below Rs.75 lacs are moving faster in XYZ market, so their share is mentioned to compare the options. Similarly the product in more than Rs.1Cr bracket are moving really slow and have a direct competition with the local typology called *Kothi* (bungalow). So the options maintains a balance between the two cost ranges to manage the gestation period of the overall project.

Option 1

This is an option with smaller and affordable units. These units sell fast in the market as compared to the large costlier apartments hence this option will get free from the equity faster. Also there is a sprinkling of 4BHK apartments and independent floors to increase the profit margins and also to improvise the image of the site.

As seen from the charts below, this option has 80% of the units that are costing less than Rs.75 lacs, which includes 2.5BHK (or 2BHK+servant quarter) and XBHK+servant quarter units.

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Figure 33 Option 1- Unit wise configuration

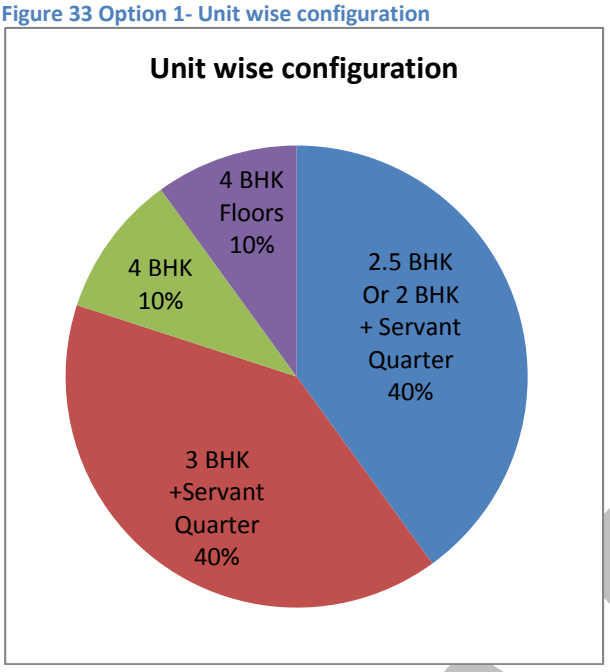
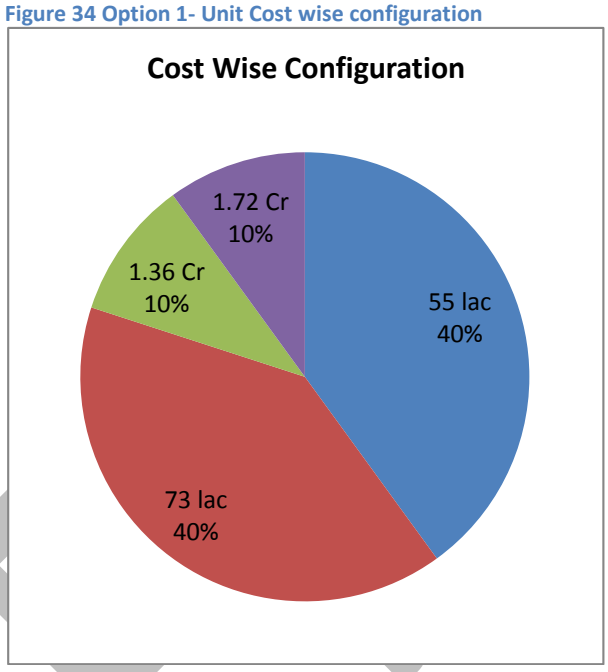


Figure 34 Option 1- Unit Cost wise configuration



The table below gives the detailed product mix of the option. The ground coverage achieved as per the basic calculation is of XX.6X%, which is under the permissible cap of X5%.

Table 60 Product Mix of Option 1

Product	Avg. Size (SqFt)	Loading	Carpet (Sq.Ft)	Cost of 1 unit (Rs.Lac)	Carpet Rate (Rs. Psf)	No. of Floor	No. of Units	No. of Block
EWS	XX6	20%	2X5	0	0	4	45	2
2.5 BHK or 2 BHK + Servant Quarter	1,X78	X5%	896	55	6154	27.5	220	2
X BHK +Servant Quarter	1,8X4	X5%	1192	7X	6154	22	176	4
4 BHK Premium	X,0X2	X5%	1971	1X6	692X	6.5	26	2
4 BHK Floors	X,445	X0%	2412	172	714X	4	24	6
Total							491	16

Option 2

In this option a mix of all kinds of units is given. This option introduces 2BHKs on the site along with the luxury products like 4BHK premium and Independent floors. In this also the share of units above Rs.1Cr. bracket is kept the same as option one. The 2.5 BHK (2BHK+servant Quarter) being a new product is reduced in place of which 2BHKs are

added. This brings the product mix nearer to the projects in the nearby location like Kharar, etc.

Since the site is like a border between XYZ & the peripheral developing areas like Kharar, this product mix is a reflection of the same. It has a mix of affordable and luxury products.

As seen from the charts below, this option has 60% of the units that are costing less than Rs.75 lacs, which includes 2BHK, 2.5BHK (or 2BHK+servant Quarter) and XBHK+servant quarter units.

Figure 35 Option 2- Unit wise configuration

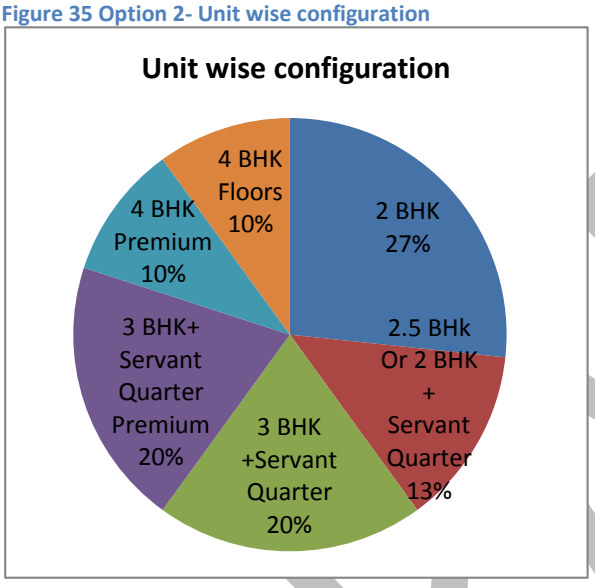
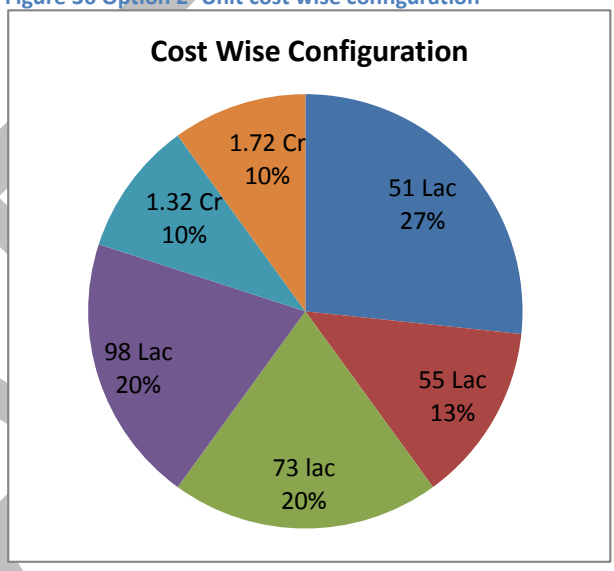


Figure 36 Option 2- Unit cost wise configuration



The table below gives the detailed product mix of the option. The ground coverage achieved as per the basic calculation is of X2.91%, which is under the permissible cap.

Table 61 Product Mix of Option 2

Product	Avg. Size (SqFt)	Loading	Carpet (Sq.Ft)	Cost of 1 unit (Rs.Lac)	Carpet Rate (Rs Psf)	No. of Floor	No. of Units	No. of Block
EWS	XX6	20%	2X5	0	0	4	48	1
2 BHK	1,286	X5%	8X6	51	6154	26	15X	2
2.5 BHK or 2 BHK + Servant Quarter	1,X78	X5%	896	55	6154	26	78	1
X BHK + Servant Quarter	1,8X4	X5%	1192	7X	6154	22	88	1
X BHK+ Servant Quarter Premium	2,X00	X5%	1495	98	65X8	17	68	1
4 BHK Premium	X,0X2	X5%	1971	1X6	692X	6	24	2
4 BHK Floors	X,445	25%	2584	172	714X	4	24	6

Total	479	14

Option X

In this option, the share of units above Rs.1Cr. bracket is increased to X0% (instead of 20% in option 1 and option 2). This option gives a liberty to market the project as a "luxury in affordability" since the 2BHK+servant can be a luxury product and is an affordable unit. It can fit into affordability of the locals and taste of their heirs staying abroad.

As seen from the charts below, this option has 50% of the units that are costing less than Rs.75 lacs, which includes 2.5BHK (or 2BHK + servant quarter) and XBHK+servant quarter units.

Figure 37 Option X- Unit wise configuration

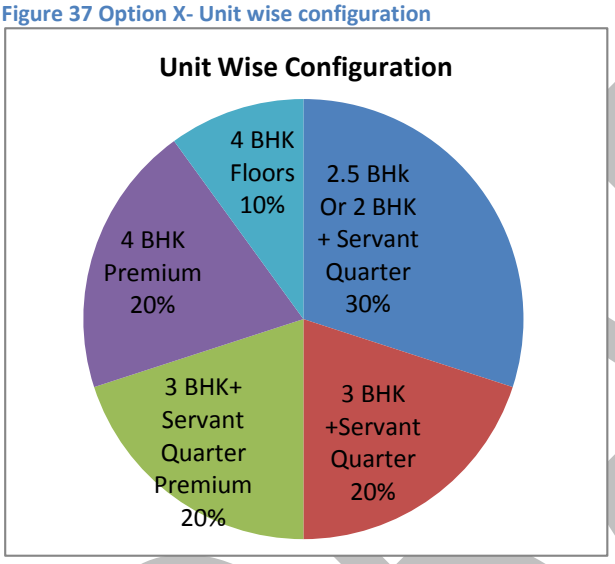
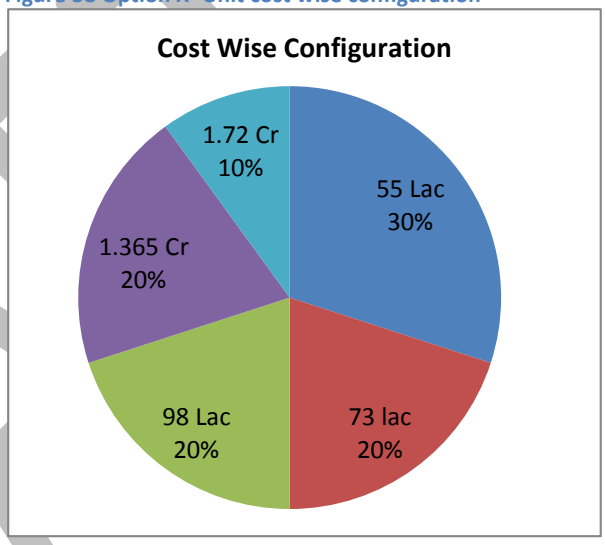


Figure 38 Option X- Unit cost wise configuration



The table below gives the detailed product mix of the option. The ground coverage achieved as per the basic calculation is of X2.45%, which is under the permissible cap of X5%.

Table 62 Product Mix of Option X

Product	Avg. Size (SqFt)	Loading	Carpet (Sq.Ft.)	Cost of 1 unit (Rs.Lac)	Carpet Rate (Rs. Psf)	No. of Floor	No. of Units	No. of Block
EWS	XX6	20%	2X5	0	0	4	40	2
2.5 BHK or 2 BHK + Servant Quarter	1,X78	X5%	896	55	6154	28	165	2
X BHK + Servant Quarter	1,8X4	X5%	1192	7X	6154	22	88	1
X BHK+ Servant Quarter Premium	2,X00	X5%	1495	98	65X8	12	72	2
4 BHK Premium	X,0X2	X5%	1971	1X6	692X	1X	52	5
4 BHK Floors	X,445	25%	2584	172	714X	4	20	2

Total	4X7	14

Option 4

This option is consist of luxury products consisting of only luxury and premium 4BHKs & 4BHKs with servant rooms and independent floors. But since the off takes of luxury products are not very high, this option can take longer gestations.

As seen from the charts below, this option has only 25% of the units that are costing less than Rs.75 lacs that are XBHK+servant quarters.

Figure 39 Option 4- Unit wise configuration

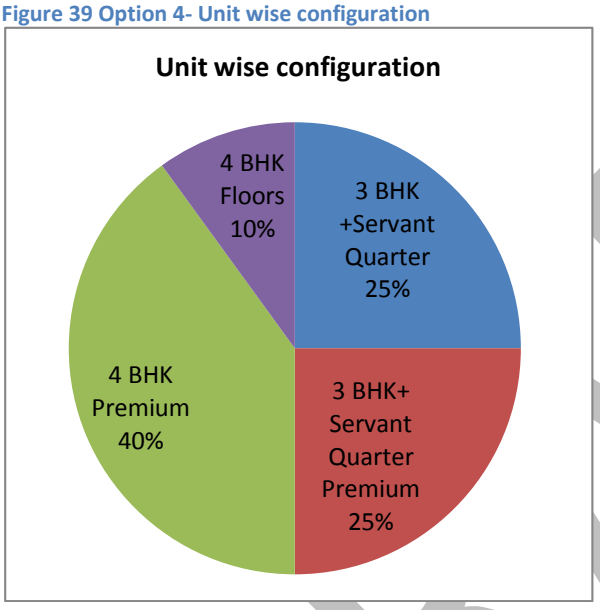
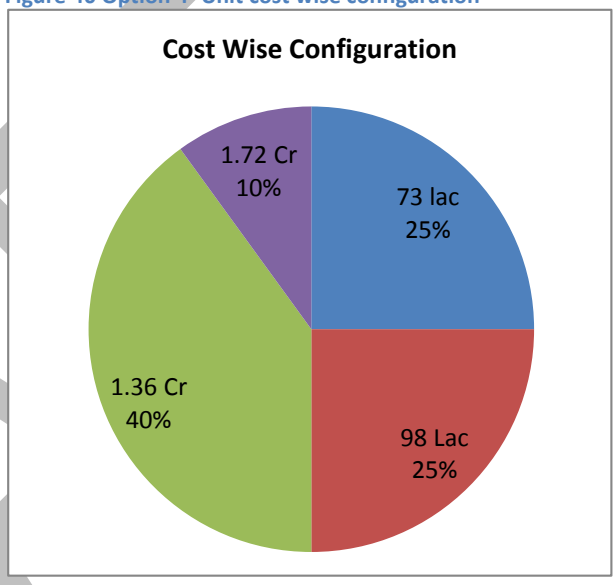


Figure 40 Option 4- Unit cost wise configuration



The table below gives the detailed product mix of the option. The ground coverage achieved as per the basic calculation is of X1.92%, which is just under the permissible cap.

Table 63 Product Mix of Option 4

Product	Avg. Size (Sq.Ft.)	Loading	Carpet (Sq.Ft)	Cost of 1 unit (Rs.Lac)	Carpet Rate (Rs Psf)	No. of Floor	No. of Units	No. of Block
EWS	XX6	20%	2X5	0	0	4	X2	2
X BHK + Servant Quarter	1,8X4	X5%	1192	7X	6154	19	114	2
X BHK+ Servant Quarter Premium	2,X00	X5%	1495	98	65X8	15	87	2
4 BHK Premium	X,0X2	X5%	1971	1X6	692X	18	108	2
4 BHK Floors	X,445	25%	2584	172	714X	4	20	5

Total	X61	1X

Option 5

In this option, the product mix is kept the same as option 2 but the FSI of 2.5 is consumed to reduce the ground coverage.

Like in option 2, this option also has 60% of the units in cost bracket of less than Rs.75 lacs, which includes 2BHK, 2.5BHK (or 2BHK+servant quarter) and XBHK+servant quarter units and 20% of units in more than Rs.1Cr cost bracket.

Figure 41 Option 5- Unit wise configuration

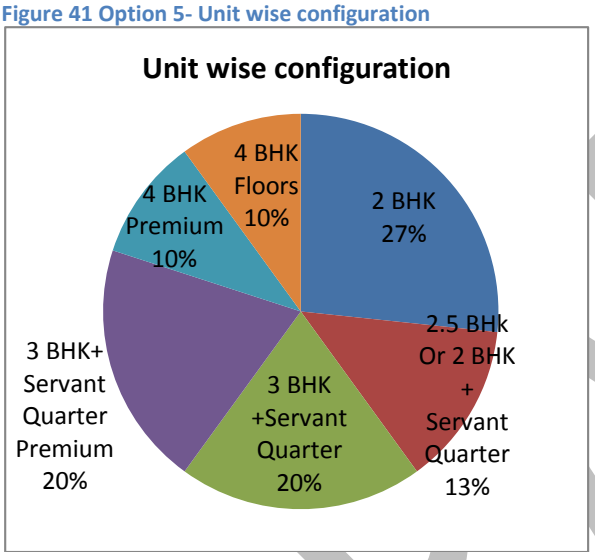
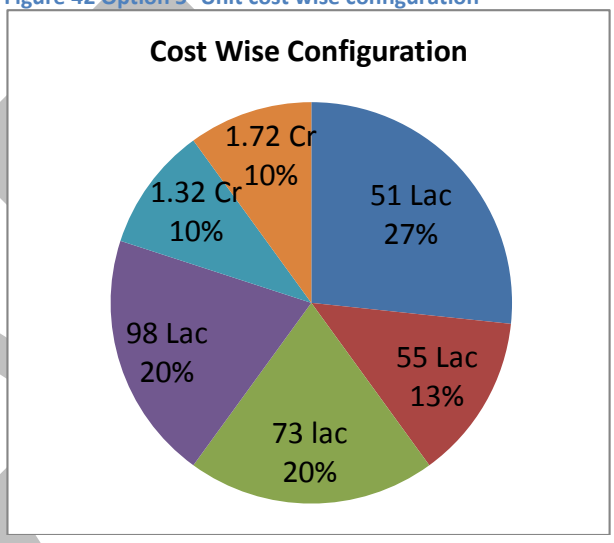


Figure 42 Option 5- Unit cost wise configuration



The table below gives the detailed product mix of the option. The ground coverage achieved as per the basic calculation is of 28.77%, which is minimum of all the options. This can further be reduced by going higher. In the assumptions made the maximum height of any tower is of 22 floors in this option.

Table 64 Product Mix of Option 5

Product	Avg. Size (SqFt)	Loading	Carpet (Sq.Ft)	Cost of 1 unit (Rs.Lac)	Carpet Rate (Rs. Psf)	No. of Floor	No. of Units	No. of Block
EWS	XX6	20%	2X5	0	0	6	X6	1
2 BHK	1,286	X5%	8X6	51	6154	22	1X2	2
2.5 BHK or 2 BHK + Servant Quarter	1,X78	X5%	896	55	6154	22	66	1
X BHK + Servant Quarter	1,8X4	X5%	1192	7X	6154	19	76	1
X BHK+ Servant Quarter Premium	2,X00	X5%	1495	98	65X8	19	57	1

4 BHK Premium	X,0X2	X5%	1971	1X6	692X	7	21	1
4 BHK Floors	X,445	25%	2584	172	714X	4	20	5
Total							**408**	**12**

Chapter 6- Financial Analysis

Introduction

The chapter gives the financial analysis of the various product mixes that can be developed on the site (as given in the previous chapter). These product mixes are derived based on the market dynamics of Tri-city as a whole and XYZ and other micro markets. Financials of total 5 options of product mix are discussed in this chapter and are tested for financial assessment.

Assumptions Made

The feasibility of each of the option is testified keeping the basic assumptions fixed and varying just the product mix. This section gives the cost and revenue assumptions made for financial calculations and assessment of the various options.

As per the assumptions, the campus is provided with a convenient shopping area. The area for which is calculated @200 Sq.ft. per 100 residents. Also a club house @ 25 sq.ft. per household is considered in cost & revenue calculations.

The table below gives the assumption and the parameters to which they are anchored. The first table gives the cost assumptions of the various components and the next one gives the revenue assumptions of the various typologies and the major additional charges that can be charged from a buyer like the club house charges and parking charges.

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Table 65 Cost Assumptions Made for Financial Assessment

Cost Assumptions	Option 1	Anchor
Consultants	X.0%	Construction Cost
Architect	1.0%	Construction Cost
Project Management	1.0%	Construction Cost
Facility Management	1.0%	Construction Cost
Approval Cost	Rs. 40 psf	Saleable Area
Construction Costs		
EWS	Rs.1500 psf	Saleable Area
2 BHK	Rs.2200 psf	Saleable Area
2.5 BHK or 2 BHK + Servant Quarter	Rs.2200 psf	Saleable Area
X BHK +Servant Quarter	Rs.2200 psf	Saleable Area
X BHK+ Servant Quarter Premium	Rs.2500 psf	Saleable Area
4 BHK Floors	Rs.2500 psf	Saleable Area
4 BHK Premium	Rs.2500 psf	Saleable Area
Club House	Rs.2200 psf	Saleable Area
Convenient Shopping	Rs.1500 psf	Saleable Area
Covered Parking	Rs.1000 psf	Covered Parking Area
Open Parking	Rs.150 psf	Open Parking Area
Infrastructure	Rs. 120 psf	Land Area
Interest	14%	Debt
Sales & Marketing	2%	Total Revenue
Planning & Admin	2%	Total Revenue

These are the cost assumptions, the table below gives the revenue assumptions that are common for all the options and are derived from the market study in chapter X. The additional charges are derived as per the market trends and competitive projects that have provided similar amenities as the subject project can provide.

Table 66 Revenue Assumptions Made for Financial Assessment

Revenue Assumptions	Option 1	Anchor
Base Price		
EWS	Rs. 0 psf	Saleable Area
2 BHK	Rs.4000 psf	Saleable Area
2.5 BHK or 2 BHK + Servant Quarter	Rs.4000 psf	Saleable Area
X BHK +Servant Quarter	Rs.4000 psf	Saleable Area
X BHK+ Servant Quarter Premium	Rs.4250 psf	Saleable Area
4 BHK Floors	Rs.5000 psf	Saleable Area
4 BHK Premium	Rs.4500 psf	Saleable Area
Club House Membership	Rs.1,15,000	Saleable Area
Covered Parking	Rs.2,00,000	Per Parking Space
Open Parking	Rs.1,00,000	Per Parking Space

Comparison of Options

As seen from the table below, option-2 has highest NPV and ROE. Also it has minimum gestation period among all the five options. Although option 4 has highest average realization, the highest gestation (and hence the lower NPV) makes it highly unfeasible for the subject site. Also we had discussed earlier that the site does not have the characteristics to be developed as high end due to its location and surrounding demography.

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Table 67 Comparison of Options

Option	Option 1	Option 2	Option X	Option 4	Option 5
Total BUA (in lac sq.ft.)	6.5X	6.X8	6.40	6.45	5.X2
SBUA (in lac sq.ft.)	8.1X	7.99	8.12	8.15	6.77
Monthly Sales (in sq.ft.)	1X,605	14,X51	1X,25X	1X,055	12,15X
Monthly Revenue (in Rs. Cr.)	5.6X	5.98	5.61	5.66	5.07
Overall Revenue (in Rs.Cr.)	416.9	409.1	40X.X	472.2	X49.0
Max. of Gestation Period	66	67	110	221	67
Realization (Rs.psf)	5X66	5X56	5159	5995	5X79
NPV (in Rs.Cr.)	76.5	81.1	49.82	17.2	69.0
Peak Negative (in Rs.Cr.)	X9.15	X2.8	5X.4X	77.8	28.2
Equity (in Rs.Cr.)	19.6	16.4	26.72	X8.9	14.1
NPV/Equity	X.91	4.95	1.9	0.44	4.9

As per the financial assessment, option 2 seems to be the best option for the subject site.

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Annexure

Annexure-1 Financial Calculation of Various Development Mix Options

Financial Calculation- Option 1

This section discusses the cost and revenue of the option as per the assumptions made in the previous section and the product mix. The cost particulars as per the assumed cost values are given in the table below:

Table 68 Cost Particulars of Option 1

Particulars	Total Cost in Rs.	Total Cost in Rs. Crores
Total Cost	2,55X,080,6X0	255.X1
Preliminary Cost	98,496,691	9.8
Approval Cost	X1,075,920	X.1
Consultants	67,420,771	6.7
Construction Cost	2,247,X59,0X6	224.7
EWS	24,4X9,X28	2.4
2.5BHK or 2BHK + Servant Quarter	7X4,475,997	7X.4
X BHK +Servant Quarter	77X,1XX,1X9	77.X
4 BHK Floors	208,657,954	20.9
4 BHK Premium	217,0X2,904	21.7
Club House	X9,124,560	X.9
Convenient Shopping	9,190,186	0.9
Covered Parking	256,X07,400	25.6
Open Parking	9,4X6,896	0.9
Infrastructure	26,1X6,000	2.61
Interest	X4,404,460	X.44
Sales & Marketing	7X,15X,79X	7.X2
Planning & Admin	7X,5X0,650	7.X5

The table below gives the revenue generated by the development mix of this option considering a fixed off take ratio:

Table 69 Revenue in Option 1 as per the Assumptions

Particulars	Total in Rs.	Total in Rs. Crores
Total Revenue	4,168,8X5,626	416.9
EWS	0	0
2.5BHK or 2BHK + Servant Quarter	1,X80,768,164	1X8.1
X BHK +Servant Quarter	1,4X6,4X8,418	14X.6
4 BHK Floors	4X8,097,096	4X.8
4 BHK Premium	402,X85,978	40.2
Club House	45,586,800	4.6
Covered Parking	446,716,X50	44.7
Open Parking	18,842,820	1.9

The table below gives the financial analysis of option-1 considering the same cost and revenues. The profit in this option is Rs.2,080 per sq.ft. of saleable area.

Table 70 Financial Assessment of Option-1

Particulars	Total in Rs.	Total in Rs. Crores
Profit	**1,615,754,996**	**162**
Project Duration	66	
Peak Negative Cash flow	-X91,52X,119	-X9.15
Equity	195,761,560	19.6
Debt	195,761,560	19.6
NPV of Profit	765,205,279	77
ROE	49.9%	

Financial Calculation- Option 2

This section discusses the cost and revenue of the option as per the assumptions made in the previous section and the product mix. The table below gives the cost particulars of the option as per the assumptions made:

Table 71 Cost Particulars of Option 2

Particulars	Total Cost in Rs.	Total Cost in Rs. Crores
Total Cost	2,488,451,X24	248.85
Preliminary Cost		
Approval Cost	X0,548,080	X.1
Consultants	65,889,158	6.6
Construction Cost	2,196,X05,279	219.6
EWS	26,661,085	2.7
2BHK	476,692,269	47.7
2.5BHK or 2BHK + Servant Quarter	260,405,126	26.0
X BHK +Servant Quarter	X91,009,86X	X9.1
X BHK +Servant Quarter Premium	X78,915,576	X7.9
4 BHK Floors	189,689,049	19.0
4 BHK Premium	200,XX8,065	20.0
Club House	X4,708,022	X.5
Convenient Shopping	7,181,057	0.7
Covered Parking	247,971,876	24.8
Open Parking	9,X94,X75	0.9
Infrastructure	26,1X6,000	2.61
Interest	25,710,9XX	2.57
Sales & Marketing	72,188,729	7.22
Planning & Admin	71,67X,144	7.17

This option has a total cost of Rs.248.85 crores approximately as per the cost assumptions.

The table below gives the revenues generated by development mix of this option considering a fixed off take ratio.

Table 72 Revenue in Option 2 as per the Assumptions

Particulars	Total in Rs.	Total in Rs. Crores
Total Revenue	4,090,620,X15	409.1
EWS	-	-
2BHK	885,246,606	88.5
2.5BHK or 2BHK + Servant Quarter	48X,818,257	48.4
X BHK +Servant Quarter	726,129,155	72.6
X BHK +Servant Quarter Premium	747,648,659	74.8
4 BHK Floors	X97,068,477	X9.7
4 BHK Premium	X69,525,295	X7.0
Club House	44,X07,X92	4.4
Covered Parking	4X6,876,47X	4X.7
Open Parking	25,779,266	2.6

The table below gives the financial analysis of option-2 considering these cost and revenues. The profit in this option is Rs. 2,055 per sq.ft. of saleable area.

Table 73 Financial Assessment of Option-2

Particulars	Total in Rs.	Total in Rs. Crores
Profit	1,602,168,991	160.2
Project Duration	67	
Peak Negative Cash flow	-X28,090,X68	-X2.8
Equity	164,045,184	16.4
Debt	164,045,184	16.4
NPV of Profit	811,252,875	81.1
ROE	52.7%	

Financial Calculation- Option X

This section discusses the cost and revenue of option-X as per the assumptions made in the previous section and the product mix. The table below gives the cost particulars of the option as per the assumptions made:

Table 74 Cost Particulars of Option X

Particulars	Total Cost in Rs.	Total Cost in Rs. Crores
Total Cost	**2,618,555,107**	**261.9**
Preliminary Cost		
Approval Cost	X1,270,919	X.1
Consultants	68,405,245	6.8
Construction Cost	2,280,174,820	228.0
EWS	22,217,571	2.2
2.5BHK or 2BHK + Servant Quarter	548,818,X46	54.9
X BHK +Servant Quarter	X87,602,744	X8.8
X BHK +Servant Quarter Premium	X87,602,744	X8.8
4 BHK Floors	207,274,195	20.7
4 BHK Premium	440,457,664	44.0
Club House	X1,5X8,808	X.2
Convenient Shopping	5,926,661	0.6
Covered Parking	261,411,797	26.1
Open Parking	9,541,860	1.0
Infrastructure	26,1X6,000	2.6
Interest	58,269,168	5.8
Sales & Marketing	77,149,477	7.7
Planning & Admin	77,149,477	7.7

The table below gives the revenues generated by development mix of this option considering a fixed off take ratio.

Table 75 Revenue in Option X as per the Assumptions

Particulars	Total in Rs.	Total in Rs. Crores
Total Revenue	**4,0XX,112,522**	**40X.X**
EWS	-	-
2.5BHK or 2BHK+Servant Quarter	1,0X1,74X,587	10X.2
X BHK + Servant Quarter	720,144,X64	72.0
X BHK + Servant Quarter Premium	765,15X,X87	76.5
4 BHK Floors	4X2,7X0,696	4X.X
4 BHK Premium	907,701,8X5	90.8
Club House	40,510,700	4.1
Covered Parking	1X5,127,952	1X.5
Open Parking	16,840,568	1.7

The table below gives the financial analysis of option-X considering the same cost and revenues. The profit in this option is Rs. 1,779 per sq.ft. of residential saleable area.

Table 76 Financial Assessment of Option-X

Particulars	Total in Rs.	Total in Rs. Crores
Profit	1,414,557,414	141.5
Project Duration	110	
Peak Negative Cash flow	-XYZ,X19,X04.50	-5X.4X
Equity	267,159,652.25	26.72
Debt	267,159,652.25	26.72
NPV of Profit	498,217,857.66	49.82
ROE	22.X%	

Financial Calculation- Option 4

This section discusses the cost and revenue of option-4 as per the assumptions made in the previous section and the product mix. The table below gives the cost particulars of the option as per the assumptions made:

Table 77 Cost Particulars of Option 4

Particulars	Total Cost in Rs.	Total Cost in Rs. Crores
Total Cost	**2,698,412,699**	**269.8**
Preliminary Cost		
Approval Cost	X1,505,80X	X.2
Consultants	68,550,58X	6.9
Construction Cost	2,285,019,440	228.5
EWS	18,X29,496	1.8
X BHK +Servant Quarter	486,249,X55	48.6
X BHK +Servant Quarter Premium	486,249,X55	48.6
4 BHK Floors	179,268,964	17.9
4 BHK Premium	884,089,7X7	88.4
Club House	26,47X,490	2.6
Convenient Shopping	4,798,552	0.5
Covered Parking	210,152,454	21.0
Open Parking	7,7X7,5XX	0.8
Infrastructure	26,1X6,000	2.6
Interest	104,250,698	10.4
Sales & Marketing	91,614,076	9.2
Planning & Admin	91,XX6,099	9.1

The revenues generated by the development mix considering a fixed off take ratio are:

Table 78 Revenue in Option 4 as per the Assumptions

Particulars	Total in Rs.	Total in Rs. Crores
Total Revenue	**4,722,125,412**	**472.2**
EWS	-	-
X BHK +Servant Quarter	90X,424,287	90.X
X BHK+ Servant Quarter Premium	959,888,X05	96.0
4 BHK Floors	X72,891,728	X7.X
4 BHK Premium	2,X44,499,459	2X4.4
Club House	X2,790,457	X.X
Covered Parking	108,6X1,175	10.9
Open Parking	1X,898,8X5	1.4

The table below gives the financial analysis of option1 considering the same cost and revenues. The profit in this option is Rs. 2,526 per sq.ft. of saleable area.

Table 79 Financial Assessment of Option-4

Particulars	Total in Rs.	Total in Rs. Crores
Profit	**2,02X,712,71X**	**202**
Project Duration	**221**	
Peak Negative Cash flow	-778,107,454	**-77.8**
Equity	X89,05X,727	**X8.9**
Debt	X89,05X,727	**X8.9**
NPV of Profit	171,667,648	**17.2**
ROE	10.4%	

It can be seen that although the per square feet profit is high the NPV of profit is very low of just Rs.17.2 crores since the project has very long gestation period of 221 months i.e. 18.5 years.

Financial Calculation- Option 5

This section discusses the cost and revenue of option-5 as per the assumptions made in the previous section and the product mix. The table below gives the cost particulars of the option as per the assumptions made:

Table 80 Cost Particulars of Option 5

Particulars	Total Cost in Rs.	Total Cost in Rs. Crores
Total Cost	**2,125,506,414**	**212.6**
Preliminary Cost		
Approval Cost	25,950,820	2.6
Consultants	56,107,459	5.6
Construction Cost	1,870,248,642	187.0
EWS	19,995,814	2.0
2BHK	400,166,029	40.0
2.5BHK or 2BHK + Servant Quarter	214,746,611	21.5
X BHK +Servant Quarter	X22,119,917	X2.2
X BHK +Servant Quarter Premium	X22,119,917	X2.2
4 BHK Floors	172,256,640	17.2
4 BHK Premium	18X,022,680	18.X
Club House	28,9X7,245	2.9
Convenient Shopping	5,976,842	0.6
Covered Parking	212,8X9,X76	21.X
Open Parking	8,06X,X86	0.8
Infrastructure	26,1X6,000	2.6
Interest	24,27X,5X1	2.4
Sales & Marketing	61,616,249	6.2
Planning & Admin	61,17X,712	6.1

The table below gives the revenues generated by development mix of this option considering a fixed off take ratio.

Table 81 Revenue in Option-5 as per the Assumptions

Particulars	Total in Rs.	Total in Rs. Crores
Total Revenue	**X,494,4X2,466**	**X49.4**
EWS	-	-
2BHK	74X,1X2,71X	74.X
2.5BHK or 2BHK + Servant Quarter	X98,987,272	X9.9
X BHK +Servant Quarter	598,196,X24	59.8
X BHK +Servant Quarter Premium	6X5,58X,594	6X.6
4 BHK Floors	X60,XX8,689	X6.0
4 BHK Premium	X44,57X,871	X4.5
Club House	44,X07,X92	4.4
Covered Parking	X69,X12,611	X6.9
Open Parking	22,126,875	2.2

The table below gives the financial analysis of option1 considering the same cost and revenues. The profit in this option is Rs. 2,106 per sq.ft. of saleable area.

Table 82 Financial Assessment of Option-5

Particulars	Total in Rs.	Total in Rs. Crores
Profit	**1,XYZ,X27,787**	**1X6.6**
Project Duration	67	
Peak Negative Cash flow	-XYZ2,062,815	**-28.2**
Equity	XYZ,0X1,408	**14.1**
Debt	141,0X1,408	**14.1**
NPV of Profit	XYZ,90X,894	**69.0**
ROE	52.5%	

Annexure 2 Discussion with Market Stakeholders

Discussion with Market Stakeholders (Brokers, Sales Executives, Architects and Planners)

A detailed discussion with various stake holders of the real estate market of XYZ , Chandigarh and Panchkula (Chandigarh tri city) was conducted. The various stakeholders included- brokers, sales executives, architects, planners, City Town Planner, and a few local people. The discussions focused on basic question related to the market trends of the city and the locality, customer profile- where they belong to, who they are, what they prefer, what their specific requirements are, etc. The inferences of all this is given below under the relevant heads.

Inferences

CUSTOMER PROFILE: This is very much required to understand the mindset of the customer and to derive their specific requirements and hence derive the best product for them.

Origin:

- **Occupation:** The home buyers in Chandigarh Tri-City includes- a lot of army officers, business class people, government servants, doctors from PGI, IT professional, parents of students coming in from nearby cities, etc.

Table 83 Origin of Home Buyers in Chandigarh Tri-City

Origin	Market Share
NRI	5-10%
Army Personnel	15-20%
In-migrants from nearby locations (like Ambala, Karnal, Ludhiana, Amritsar, etc.)	15-20%
In-migrants for job perspectives (major industries like IT/ITES, administrative jobs, etc.)	15-20%
Investors	X0%

- **Income Group:** Average annual income of the buyers is of Rs.15-20 lacs per annum

- **Investors:** There are two types of investors in the market which includes small-scale investors and large scale investors or underwriters.

    - Small Scale investors usually buy 1-2 units in cost range of Rs.55-70Lacs & Rs70-85Lacs

  - Large Scale (underwriter) - Their market has considerably reduced although they are still found in brands like DLF, Homeland, etc.
- Brand Investors: There are investors who are loyal to brands and invest in them irrespective of the product and location. These kinds are majorly found in DLF and MGF.

PRODUCT PROFILE: This sections discusses the preference of customers in terms of typology, locality and cost range:

- **Typology: T**he preference of typology depends on the origin or the place where the customer belongs to. The Local Investors prefer Kothis or bungalows and plots whereas the people from outside goes with 2BHK and XBHK flat (preferably with servant rooms). In flats also either independent floors or lower floors of high rise buildings are preferred in the region (and hence these are chargeable).

- **Society Preference:** Gated communities are getting popular due to security reasons and hence the builders are making bungalows in gated communities.

- **Cost Ranges Preferred:** The most preferred and the fastest selling cost range in the market is that of Rs.55-70 Lac, followed by Rs.70-85 Lac and Rs.40-55 Lac.

PERCEPTION ABOUT TRI-CITY GROWTH & DEVELOPMENT:

- Chandigarh is exhausted and has majorly kothi (bungalow) market that is in rotation.

- So all growth is either in XYZ or Panchkula which are the extensions of the city.

- XYZ is developing in all the directions as it is the exact extension of Chandigarh and has lot of industrial development proposed.

- Also XYZ is developing better because of the active planning and development authority as the complete region has a master plan, the infrastructure is developed faster as compared to other areas, etc.

- Other than this GMADA has also approved major developments like Mega Townships to increase the rate of economic development. (Example Knowledge city, which already has four major institutions functional and the rest, is expected to come up in next X-4 years' time.)

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- Major Growth directions of XYZ : New Chandigarh (Mullanpur), Zirakpur are the two locations which will witness rapid development in next 5-10 years.

- Other than these sectors near the industrial belt in the east, i.e., sectors 81, 82, 8X, 84, 66, 99, 100 and 101 are witnessing lot of private real estate development. Also the consumer response here is reasonably good with people expecting a hike in prices after development of IT parks like Infosys, etc.

- As per the senior town planner, sector 87 is the proposed city center so the neighbouring sector will see a change in profile once it is developed.

MARKET PROFILE OF SECTOR 119:

- The location will come up like a upper middle end kind of a setting in next 5-10 years.

- Presently it has a lower middle and middle end setting since it has a village setting of Balaungi on one side. But with very close proximity to Chandigarh and XYZ and falls on the straight road connecting the airport this profile will change to upper middle and the extensions on Kharar side will serve the lower end demand in this area.

Brokers & Sales Executives who were contacted for the detailed discussion. This is not an exhaustive list and includes only the names with whom the detailed discussions were held.

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Table 84 List of Brokers and Sales Executives surveyed

Name	Company	Type
Gaurav Sharma	GEE AAR Associate	Broker
Naveen Sharma	RPS Realtors	Broker
Dilbagh Singh	Imperial Estates	Broker
Gagandeep Singh	Arsh Properties	Broker
Paramjit Kang	Tolet Solution	Broker
Gurpal Singh	Gurpal Estate	Broker
Harpreet Singh	Property Hunt	Broker
Ajay Gupta	GMR Realty	Broker
Vishv Vijendra Sharma	Ansal API	Sales Executive
Dinesh Pathania	Maya Gardens	Sales Executive
Amandeep Singh Gil	Ireo	Sales Executive
Dherya Singh	Emaar MGF	Sales Executive
Rohit Bajaj	ATS	Sales Executive
Poonam Sood	Wave Estate	Sales Executive
Satwinder Singh	JLPL	Sales Executive
Dalveer Chalal	JLPL (Falcon View)	Sales Executive
Tushar Chuttani	Sushma	Sales Executive
Bhawana Sharma	ATS	Sales Executive
Mani Kaur	Fortune Multitech	Sales Executive
Vimal	Bestech	Sales Executive
Deepak Sabarwal	NK Sharma Group	Sales Executive

Glossary

Inventory (Supply)-	Inventory is the total stock between two dates of survey. It covers all new launches (new additions) as well as carried-forward inventory from the previous quarter/quarters and the sales in the period. It can be simply represented as Unsold as on the end of the period + sales during the period.
Sales / Demand -	Demand is the realty stock sold in a market between the dates of two surveys.
Business Turnover-	It represents the value of the trade or the business done in a certain period. It is calculated by multiplying the total sq. ft. sold during the period with the prevailing prices.
Marketable Supply-	It represents the total marketable stock during the survey period.
Price -	Weighted Average Prices of the unsold stock.
Months Inventory-	Represents the number of months required for the inventory in the market to be absorbed according to the existing demand. It is calculated by dividing the unsold stock by monthly sales.
Sales Velocity per month (or off-take ratio)-	Sales Velocity (SV) signifies demand – supply scenario in a market. It is the ratio between monthly sales and total supply and gives an idea of gestation period of a project as per the existing dynamics.
Typology-	Product type or flat type.

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