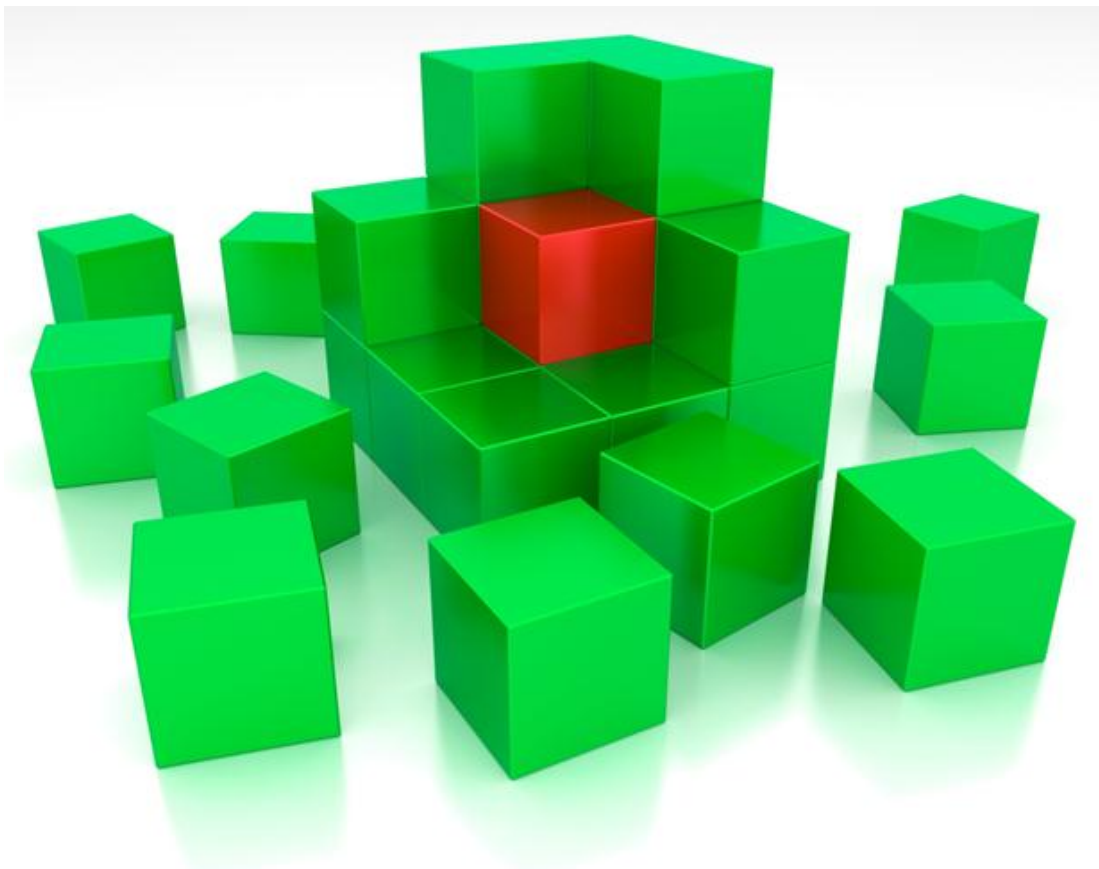




Sector Specific Inventory and Institutional Strengthening  
for PPP Mainstreaming for Bruhat Bengaluru Mahanagara  
Palike (BBMP)

Pre-feasibility Study for Re-development of K R Market:  
Final Report



**Submitted By**  
**Deloitte Touche Tohmatsu India Private Limited**

## ACRONYMS

BBMP	Bruhat Bengaluru Mahanagara Palike
BOO	Build Own Operate
BOOT	Build Own Operate Transfer
BOT	Build Operate Transfer
DBFOT	Design Build Finance Operate and Transfer
DTTIPL	Deloitte Touche Tohmatsu India Private limited
FOB	Foot Over Bridge
Gol	Government of India
GoK	Government of Karnataka
IDD	Infrastructure Development Department
PPP	Public Private Partnership
UDD	Urban Development Department
ULB	Urban Local Body
VGf	Viability Gap Funding
EOI	Expression of Interest
RFQ	Request for Qualification
RFP	Request for Proposal

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## Table of Contents

<b>1</b>	<b>EXECUTIVE SUMMARY.....</b>	<b>5</b>
<b>2</b>	<b>INTRODUCTION.....</b>	<b>8</b>
2.1	BACKGROUND.....	8
2.2	PROJECT IDEA .....	9
2.3	APPROACH & METHODOLOGY, STUDIES, SURVEYS INCLUDING DATA COLLECTION, ANALYSIS .....	11
2.4	STUDY OF EARLIER REPORTS IN THIS SECTOR IN THE RELEVANT AREA .....	14
2.5	SIMILAR CASE STUDIES .....	15
<b>3</b>	<b>SECTOR PROFILE.....</b>	<b>18</b>
3.1	INDUSTRY OVERVIEW .....	18
3.2	REGIONAL PROFILE.....	19
3.3	KEY ISSUES .....	19
<b>4</b>	<b>PROJECT .....</b>	<b>21</b>
4.1	DESCRIPTION OF THE SITE .....	21
4.2	DESCRIPTION & COMPONENTS OF THE PROJECT.....	23
4.3	INTERACTION WITH STAKEHOLDERS .....	25
4.4	STUDIES AND SURVEYS ALREADY AVAILABLE THAT MAY HAVE BEEN CONSIDERED.....	25
4.5	DEVELOPMENT NEEDS, PUBLIC NEEDS & PLANNING CONSIDERATIONS.....	25
4.6	PROJECT DESIGN .....	26
<b>5</b>	<b>PROJECT FINANCIALS.....</b>	<b>28</b>
5.1	ASSUMPTIONS USED FOR THE FINANCIAL FEASIBILITY .....	28
5.2	RESULTS AND OUTPUTS .....	33
5.3	VIABILITY ASSESSMENT .....	36
<b>6</b>	<b>STATUTORY &amp; LEGAL FRAMEWORK .....</b>	<b>41</b>
6.1	APPLICABLE LAWS.....	41
6.2	LEGAL & REGULATORY FRAMEWORK, TARIFF FRAMEWORK ETC. (ANY SUGGESTIONS) .....	45
6.3	KEY ISSUES .....	47
<b>7</b>	<b>INDICATIVE ENVIRONMENTAL &amp; SOCIAL IMPACTS .....</b>	<b>48</b>
7.1	ENVIRONMENTAL IMPACTS & MITIGATION MEASURES .....	48
7.2	SOCIAL IMPACTS & MITIGATION MEASURES .....	51
<b>8</b>	<b>OPERATING FRAMEWORK .....</b>	<b>52</b>
8.1	OPERATING FRAMEWORK AND INDICATIVE PROJECT STRUCTURE .....	52
<b>9</b>	<b>WAY AHEAD.....</b>	<b>53</b>
9.1	PROJECT DEVELOPMENT FRAMEWORK .....	53
<b>10</b>	<b>ANNEXURE 1 – WARD-WISE LIST OF MARKETS IN 8 BBMP ZONES .....</b>	<b>54</b>
	<b>ANNEXURE 2 –SITE MAP &amp; CONCEPTUAL DRAWINGS .....</b>	<b>64</b>
10.1	EXISTING SITE PLAN .....	64
10.2	INDICATIVE LAYOUT/CONCEPT PLAN .....	65

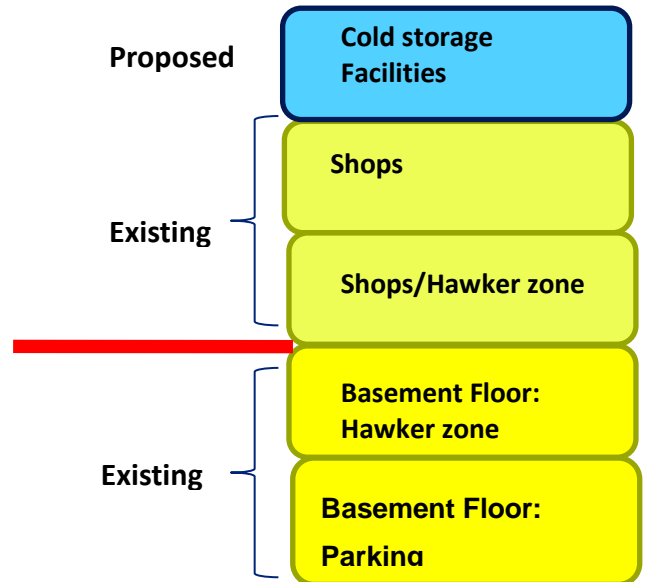
# 1 Executive Summary

1. Bangalore, the capital city of Karnataka is one of the fastest-growing Indian metropolises. The city has seen an unprecedented increase in its population in the last few decades due to IT / ITES and biotechnology sectors, leading to rise in demands and strain in existing public infrastructure.
2. In order to provide adequate commercial facilities to the citizens, BBMP developed several markets in the past within their jurisdiction. While BBMP has taken efforts to provide improved commercial facilities, lack of marketing and proper maintenance has left the markets in poor conditions, in spite of some of them being situated in prime locations. Hence, in keeping with the goal of providing adequate civic amenities to the citizens, BBMP intends to re-develop some of these market areas and develop newer ones. To make these markets commercially viable with shared or little investment from their side, BBMP has decided to take up development/re-development of the markets on a Public Private Partnership (PPP) basis.
3. The project has been envisaged to provide new, better designed and clean public shopping areas. The PPP model is seen as a win-win solution for all the stakeholders. As a strategy towards sustainability for the redevelopment project, the existing shop owners will get the much needed improved infrastructure, the city would get the desired commercial space and BBMP would benefit from saving the money spent on maintenance of the area which can then be diverted for other infrastructure development.
4. This report focuses on feasibility of Re-development of K R Market. K R Market locally known as City Market is Bengaluru's oldest and busiest market place. Apart from shops, street vendors and restaurants, BBMP has a two storey building in the premises. In spite of having a fairly large space, the building remains under-utilised with the top floor still vacant and unoccupied shops in the floors below .The market area itself is highly congested and mobility is extremely difficult.
5. The broad objective of the market re-development project is to utilise the second floor of the existing building into a useful and commercially viable component and invigorate the market area and turn it into a hygienic and clean shopping destination. The design philosophy is

mainly based on strengthening the existing market activity by providing a profit oriented public space that will increase the draw and frequency of shoppers to the area, while creating an outlet for local entrepreneurial activity and a public space for social interaction.

6. K R Market is located at a prime location in Krishnarajendra Road in Central Bangalore. It lies in a thickly populated commercial area and is flanked by roads and shops on all the four sides. At present the market building hosts flower vendors in the semi-basement level, condiments and grocery shops on ground floor and few tool shops on the first floor. The basement of the market, where hundreds of two-wheelers and four-wheelers are parked, doubles up as the dumping yard, where traders dispose of haystack, wooden boxes and waste paper used to pack fruits and vegetables. The market lacks proper sanitation, sewerage connection and solid waste management.

7. The new re-development plan proposes a cold storage unit in the second floor with single or multiple operators, as the demand for the same will be high due to the existence of fruit and meat market in the vicinity. The unit will be divided into 4 sections for a particular category of food products and rented out to cold storage companies for revenue generation. Other components of the facility will be freight lifts to load and unload containers and a booking counter.



8. To mitigate the current situation of redundancy of the upper floors the proposal also suggests solving the ground and first floor circulation by providing traveller or RCC ramp. Once connected by these, the grocery/general stores on the ground floor could be shifted to first floor and the vegetable & fruit vendors outside the building could be shifted within the market building on the ground floor. This will de-congest the market area and improve accessibility.

9. The viability assessment in case of K R Market (given the project structure and other assumptions) estimates equity IRR to the private developer at 16.01 %. It is seen that NPV of the inflows to debt and equity holders (FCF) is around INR 295 lakhs whereas NPV of

the inflows to equity holders (FCFE) is around INR 236 lakhs. The project will give two types of inflows to BBMP. Around 78% of the inflows would come from the private developer as a revenue share from the project calculated as a percentage of gross revenues and rest 22% would come from property taxes on total BUA and parking. NPV of inflows to BBMP is calculated at INR 2375 lakhs using a discounting factor of 8.25%.

10. The Project will conform to rules and regulations laid for development/construction projects under Bangalore Master Plan-2013, Karnataka State Pollution Control Board Rules & Regulations (green category of industry), Bureau of Indian Standard codes (BIS Codes) for construction of a cold storage unit and Bangalore Mahanagara Palike Building Bye-laws 2003.
11. The project will have minimal impacts on the environment during pre and post operation of the envisaged components in the market. However, adequate measures will be taken by the ULB in conjunction with other departments for proper functioning of services and utilities, after the units become operational.
12. With regard to the social impact on the area, the local vendors will benefit from the development of the cold storage as it will help them preserve perishable items like fruits, vegetables and meat for a longer duration, thus ensuring longevity to their products and added income. It is expected that the project and consequent activities will generate additional employment and income opportunities for the local population due to growth of small shops & trading activities. It will also foster economic growth in the area along with providing the residents a complete new dimension to their shopping experience.
13. **The project structure envisaged is on Build-Own –Transfer basis where the private party enters into an agreement with BBMP for providing re-development of market and in turn the private sector developer will share a part of his revenues with BBMP. This provides a win-win solution for both the parties to the agreement.**

## 2 Introduction

### 2.1 Background

- 2.1.1 Bangalore, the capital city of Karnataka is India's third most populous city and fifth-most populous urban agglomeration. It is one of the fastest-growing Indian metropolises and has seen an unprecedented increase in its population in the last decade due to IT / ITES and biotechnology sectors.
- 2.1.2 Bruhat Bengaluru Mahanagara Palike (BBMP), the City Corporation was formed in 2007 by merging the wards of the erstwhile Bangalore Mahanagara Palike, with seven neighbouring City Municipal Councils, one Town Municipal Council and 110 villages around Bangalore. The urban agglomeration with an area of around 800 sq.km now, is divided into 198 wards and an estimated population of 84.74 lakhs, up from 45.92 lakh ten years ago.

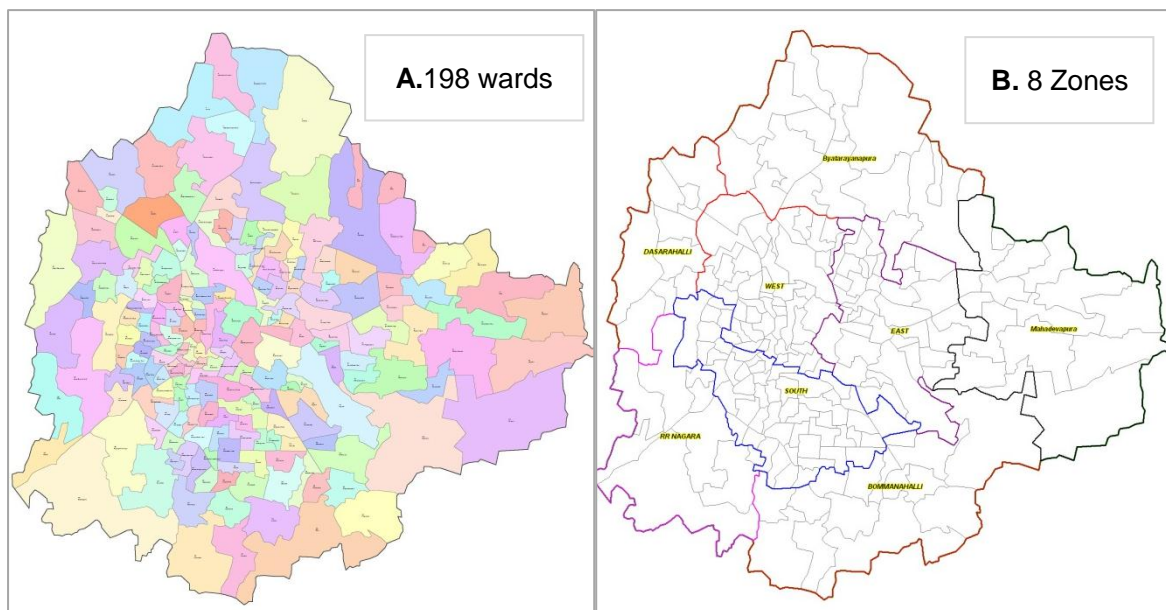


Figure i: BBMP area map A. 182 wards, B. 8 Zones

- 2.1.3 The rapid increase in population has led to rise in demands and strain in existing public infrastructure. In order to provide convenience to citizens to shop for their daily needs at ease, several markets have been developed in the past within BBMP jurisdiction. However, poor maintenance, dearth of basic facilities, absence of power supply, lack of



parking and improper management have led to the downward spiral of these public markets. In addition to this, the cosmopolitan image that the city has acquired in last two decades has further altered the typology of public spaces demands. This has resulted in shifting of consumers from public markets to shopping malls for their needs.

- 2.1.4 While BBMP has taken efforts to provide improved commercial facilities, lack of marketing and proper maintenance has left the markets in poor conditions, in spite of some of them being situated in prime locations. Hence, in keeping with the goal of providing adequate civic amenities to the citizens, BBMP intends to re-develop some of these market areas and develop newer ones. To make these markets commercially viable with shared or little investment from their side, BBMP has decided to take up development/re-development of the markets on a Public Private Partnership (PPP) basis.

## 2.2 Project Idea

- 2.2.1 Public Markets have been defined as markets, in public spaces, where independent merchants sell daily need products to the public. They have been traditionally considered as the best source to get fresh produce and baked goods, locally raised meats and dairy products, and various other food items. These markets are not only an important business and economic contributor in the cities; they also act as an important interactive space for the community. Attracting a wide range of people and acting as an effective place where people mix, public markets have become the heart and soul of a community.
- 2.2.2 There are many old neighbourhood /public markets in the city which if revived can prevent people from not only flocking to farther markets/malls for their basic needs but also add convenience to their shopping. BBMP has thus taken up market re-development projects in the city. Some of these have been planned to be taken up on the PPP model. To prepare feasibilities for these projects, to unlock value and provide better services to citizens, BBMP is working with Infrastructure Development Department (IDD) which was established with a mandate to find efficient ways of sharing risk, joint financing and achieving balanced partnership between private operators and public authorities through Public Private Partnership.

2.2.3 The objective of redevelopment/development of the Markets is to provide a new and better designed market having a clean environment. The PPP model is being envisaged as a win-win solution for all the stakeholders. As a strategy towards sustainability for the redevelopment project, the existing shop owners will get the much needed improved infrastructure, the city would get the desired commercial space and BBMP would benefit from saving the money spent on maintenance of the area which can then be diverted for other services.

2.2.4 This report studies focuses on feasibility of Re-development of K R Market. K R Market locally also known as City Market is Bengaluru's oldest and busiest market place. Apart from shops,



street vendors and restaurants, BBMP has a two storey building in the premises. In spite of adequate space to accommodate the vendors sitting outside, the building remains under-utilised with the top floor still lying vacant. The market area itself is highly congested and mobility is extremely difficult. Hence, the proposal to re-develop the market area has been envisaged.

2.2.5 The re-development initiative is expected to address problems caused by underutilisation of the building with inadequate facilities and unhygienic conditions and enable re-development in a manner that provides a hygienic and clean environment for shopping.

2.2.6 The broad objectives of the market re-development/development project are as follows:

- Ensure that the character of a Public Market is preserved.
- Reinvigorate the market areas as a retail shopping destination for local residents.
- Ensure improved parking and traffic management
- Promote the survival and predominance of small shops, marginal businesses, thrift shops, arts and crafts, and other enterprises, activities, and services which are essential to the functioning of the Market.
- Create a new attraction for a different type of visitor that is not currently drawn to the market.

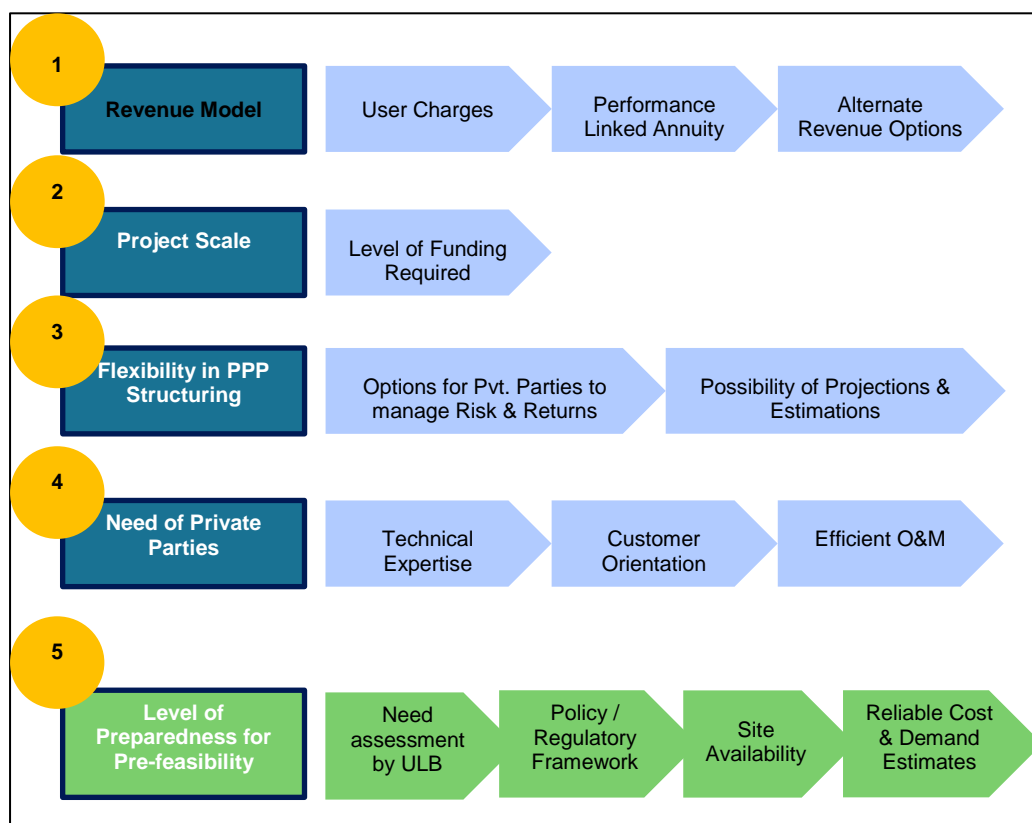
## 2.3 Approach & Methodology, studies, surveys including Data collection, analysis

2.3.1 A workshop was conducted to create a platform for discussing and bringing to fore all market re-development/development projects that BBMP has since conceived. On this basis a sector inventory was developed. The following table provides the list of projects that were discussed during the workshop conducted with BBMP officials.

Sl. No.	Name	Nature	Project components	Project estimate in Rs.lacs	Source of funding envisaged (if any)
<b>Markets Development</b>					
1	K R Market II floor	Market development with Media Hub as main component	2 <sup>nd</sup> floor, Multi-level car parking, separate connectivity	500	Proposed under PPP
2	Johnson Market	Re-development	Re-development	Not available	Proposed under PPP
3	Moore Market	Market cum office complex after dismantling existing market	Basement, Ground, +2 floors	300	Proposed under PPP
4	Yediyur Market	Reconstruction of commercial market	Basement, Ground, +2 floors	221	BBMP Budgetary allocation
5	Lakkasandra Market	Reconstruction of commercial market	Basement, Ground, +2 floors	300	BBMP Budgetary allocation
6	Mavalli Market	Reconstruction of commercial market	Basement, Ground, +2	295	BBMP Budgetary

Sl. No.	Name	Nature	Project components	Project estimate in Rs.lacs	Source of funding envisaged (if any)
			floors		allocation
7	MM Road, Cox Town	Demolition of existing Revenue Office and construction of vegetable and fruit market and office complex	Basement, Ground, +2 floors	350	BBMP Budgetary allocation

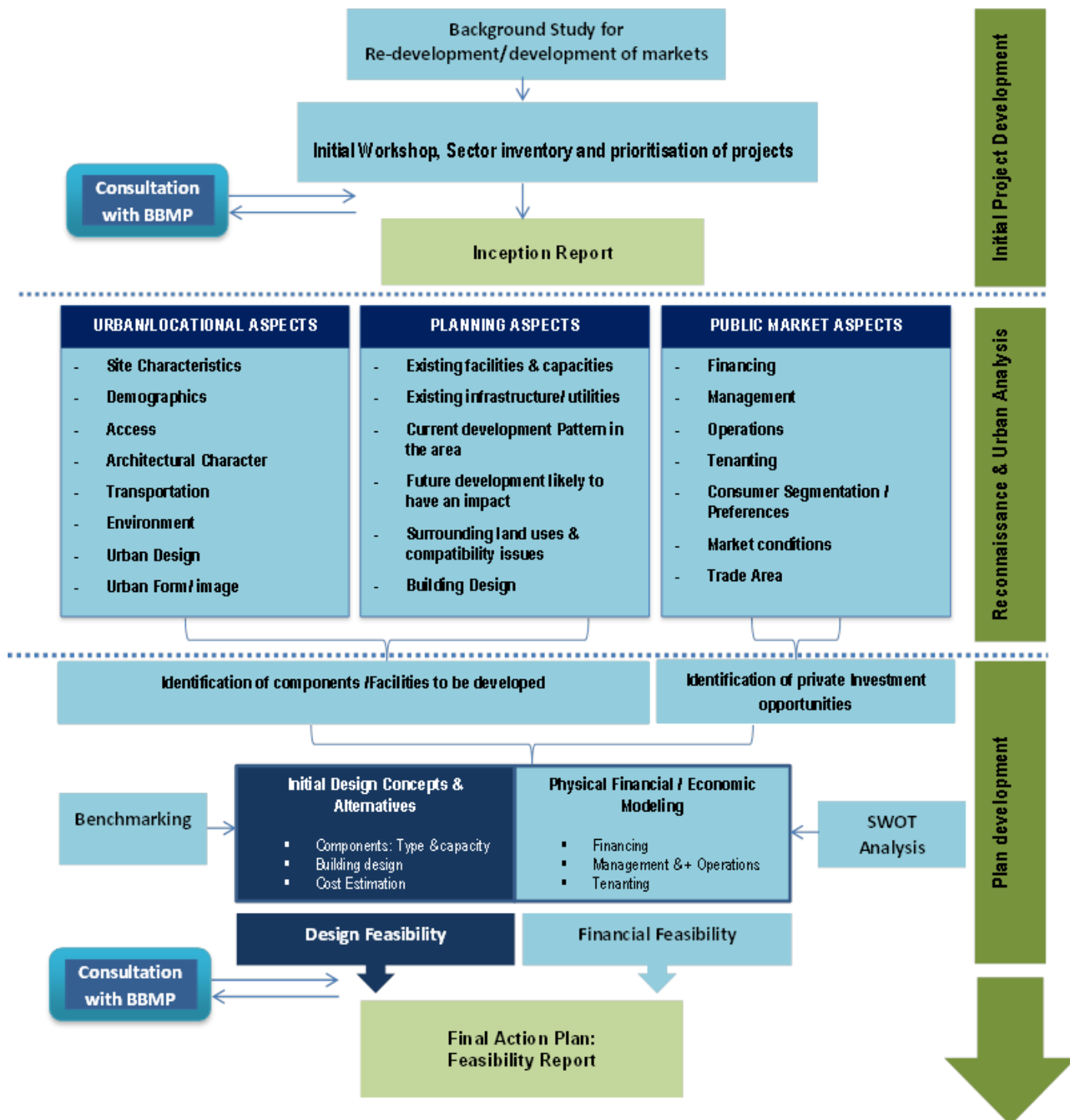
2.3.2 All the seven projects to be taken up under PPP format were analysed on the following criteria.



2.3.3 Based on the above, the projects were prioritised. In addition, the ease of implementation, mitigation of legal, technical and political risks and alignment with Bangalore Master Plan- 2015 by Bangalore Development Authority were also

considered. Accordingly, redevelopment of K R market was chosen as project for which pre-feasibility would be established.

- 2.3.4 The scope of work included creating a re-development strategy, preparing a concept design plan, assessing the viability of the project and developing an operations plan (including financial projections for the redeveloped Market). This report and the attached drawings address the scope of work.
- 2.3.5 Prior to commissioning this study, BBMP had conducted a Topographical Survey for these areas to capture the site features, area of the market, all existing utilities, and details of existing infrastructures which is to be retained because of its heritage value or other legalities, pattern of land slopes, levels for features such as drains and roads.
- 2.3.6 Topographical Survey had been conducted previously to capture the site features. These include area of the market, all existing utilities, and details of existing infrastructures which is to be retained because of its heritage value or other legalities, pattern of land slopes, levels for features such as drains, roads etc. and other physical features of the site.
- 2.3.7 As the first activity of this engagement, the consultants carried out a reconnaissance survey to study the site characteristics, other required features and constraints of the area.
- 2.3.8 Subsequently, a broad study was conducted through a market survey on the existing scenario of the market conditions, shop rentals and other inputs. In addition, interviews with market management and vendors were conducted at a broad level. Subsequently, the consultants involved in information collection through primary and secondary research with respect to the background, types and volumes of customers and the expected rentals in compared to the neighbouring areas.
- 2.3.9 Methodology



## 2.4 Study of earlier reports in this sector in the relevant area

2.4.1 BBMP had earlier prepared re-development strategies for K R market which were not implemented. However, this report is an independent study to analyse the pre-feasibility of the site and has not been influenced by earlier studies.

## 2.5 Similar Case Studies

### 2.5.1 Thimpu Centenary Farmers Weekend Market, Bhutan

2.5.1.1 Thimphu weekend market is one of the largest domestic markets for Bhutanese farmers. The weekend market is crammed into a set of stalls on both banks of the Wang Chhu, just north of Changlimithang Stadium. The market essentially is a farmers market, where every week vendors from throughout the region start arriving by Thursday evening and stay at the market till Sunday. Farmers from all across the country bring their farm products to the market. The two storied building has about 400 stalls for sale of vegetables, fruits, meat and other farm produces. It also houses cafeteria and separate stalls for non- wood forest products.

2.5.1.2 The CFM operates during Fridays, Saturdays and Sundays for Farm Produce, and Tuesdays and Wednesdays for promotional and exhibition activities by any interested party. The market remains closed during Mondays and Thursdays for mass clean up. Strict rules have been made for the vendors of the market. Vendors are allowed to bring in their farm produce to their allotted stalls for storage on Thursday, however no farm produce is allowed for sale during that period. Vendors have to remove their farm produce by 8 pm on Sunday or before 10 am on Monday. No farm produce is allowed for sale during that period. At the end of each market day, a warning siren for closure of the market is given 30 minutes prior to the market closing time. During that time, all vendors ready themselves for the closure of the market. Thirty (30) minutes after the warning siren, the lights are put off and the main gates are closed at 8:00 pm.

2.5.1.3 Stalls are allocated to regular vendors based upon the following criteria:

- Wholesalers of farm produce registered with the Management and stores shall be allotted to them. They shall sign contractual agreement with the Management; Wholesalers allotted with stores shall continue to operate at the existing rental charge upon signing of contractual agreement with the new management
- Cafeteria and glasshouse operators shall be registered with the Management and space shall be allotted to them. They shall sign contractual agreement with the Management; Existing Cafeteria and glasshouse operators shall continue to operate at the existing rental charge upon signing of contractual agreement with the new management



- Regular vendors shall be registered with the Management and the contractual agreement shall be signed. Each registered vendor shall be issued with a CFM Registration number and card; Vendors allotted with stalls shall continue to operate at the existing stalls (except for those vendors required to change their stalls as per product categorization), upon signing of letter of undertaking with the new management

2.5.1.4 The stalls for the farmer vendors are allotted on “first come, first served” basis for the number for days required. Farmer vendors sell their Farm Produce only from the designated stalls;



## 2.5.2 Panjim Market , Goa

2.5.2.1 The Panjim market is located in the heart of the Panaji city. This is the destination for all residents of city and Parvorim for the supplies of fish and vegetables. The design is well planned and a spacious hall for small vegetable sellers and large shops for domestic retailers. The market is planned with sufficient space for customer's circulation and demarcated space for vendors.

2.5.2.2 The Panjim Municipal Market consists of basement with a built up area of 3089 sq.m for parking of 71 cars and 32 scooters. The ground floor has a built up area of 3176 sq.m with A, A1, B, C, D, D1 types of shops and also has a mezzanine area of 534.48 sq.m.



The first floor has a built-up area of 2490.01 sq.m with B, C, D, H, HC types of shops and 2nd floor with a built up area of 678.89sq.m

2.5.2.3 The Market floors were divided to have perishable goods and grocery on ground floor and non-perishable goods on first floor for effective garbage disposal.



## 3 Sector Profile

### 3.1 Industry Overview

3.1.1 Commercial establishments/markets in a settlement are planned according to guidelines laid down under UDPFI (Urban Development Plan Formulation & Implementation). The table below shows the hierarchy of commercial establishments in an urban center according to the population it has to serve.

Planning Unit	Population Served	Hierarchy of Commercial Centre
Housing cluster	1000 - 4000	Cluster Centre
Sector	5000 - 20000	Sector Centre
Community	25000 - 100000	Community Centre
District	125000 - 500000	District Centre
Sub-city	25 lakh - 50 lakh	Sub-city Centre
City	50 lakh +	City Centre

Source: UDPFI Guidelines

3.1.2 UDPFI also highlights the distribution of type of shops in these commercial centers for provision of adequate services to the citizens.

Type of Shops	District Centre	Community Centre	Sector Centre	Cluster Centre
Formal Shops(total)	1250	365	55	24
General Retail	1200	295	35	16
Fruit & Vegetables	Not specified	40	6	3
Service & Repairs	50	30	13	5

<b>Informal Shops</b>	370	110	22	13
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Source: UDPMI Guidelines

## 3.2 Regional profile

3.2.1 The City has been divided into eight zones under the BBMP jurisdiction for provision and maintenance of public infrastructure. There are 1089 markets in the entire BBMP area managed by the Market Department. The total number of markets in each zone is given below.

<b>BBMP All Zones Commercial Establishment Details</b>				
<b>Zone</b>	<b>Population</b>	<b>House Holds including houses in apartments</b>	<b>Shop</b>	<b>Markets</b>
<b>East</b>	955126	224899	20784	48
<b>West</b>	1925301	609146	102578	787
<b>South</b>	1686094	412923	33933	62
<b>Yelahanka</b>	536091	120260	9011	40
<b>Dasarahalli</b>	441072	120514	10132	37
<b>Mahadevapura</b>	1265209	343023	11625	10
<b>Bommanahalli</b>	874179	302615	8787	67
<b>R.R.Nagar</b>	553012	212697	7031	38
<b>Grand Total</b>	<b>8236084</b>	<b>2346077</b>	<b>203881</b>	<b>1089</b>

Source: BBMP

3.2.2 Zone -wise details of all markets and commercial units in BBMP Area is given in Annexure 1.

## 3.3 Key Issues

3.3.1 Several markets exist/ have been developed by the ULB in all the zones. However some of the wards are still devoid of adequate number of markets. Also due to lack of maintenance and poor infrastructure many of these lay in dilapidated state.

3.3.2 There are a number of other old properties owned by BBMP at strategic locations which can also be redeveloped to unlock their potential and provide better services to citizens.

3.3.3 Some of the markets have facilities but remain under-utilized. These potential markets needs to be explored and strategized needs to be devised to ensure their optimal utilisation.

## 4 Project

### 4.1 Description of the Site

**4.1.1 Introduction:** Named after King Krishnarajendra Wodeyar, K R Market is Bangalore's first and oldest market. Strategically located, the market site's proximity to landmarks of downtown provides it with a strong public presence. Everything right from fresh vegetables to dry fruits to everyday grocery to pooja items to hardware items is available in the market. The highlights of the market are the flower vendors occupying a floor of the structure. In the recent times however, in recent times due to mis-management and lack of maintenance, the market has lost its earlier glory. Due to unmanaged crowd and lack of space, it is not an easy place for customers to traverse and do their purchasing anymore. The market lacks basic facilities like drinking water, drainage and solid waste disposal which are either missing or inadequate leading to a chaotic state of affairs.



**4.1.2 Location:** The market is located in Krishnarajendra Road in a prime location in Central Bangalore.

**4.1.3 Connectivity:** The market is well connected with the neighbouring areas and is accessible from all the four sides.

**4.1.4 Urban form:** K R market is the main wholesale market dealing with commodities in Bangalore. It lies in a thickly populated commercial area and is flanked by roads and shops on all the four sides. The market premises and the modern building with aesthetically beautiful skylights not only form an important landmark in the area, but also adds to the character of the place.

4.1.5 **Urban Image:** It is a very busy market with narrow roads and small shops lined on either sides of the road. The roads are packed with traffic almost all the time. The basement of the market, where hundreds of two-wheelers and four-wheelers are parked, doubles up as the dumping yard, where traders dispose of haystack, wooden boxes and waste paper used to pack fruits and vegetables. The market place doesn't have proper drainage system and also lacks cleanliness.

4.1.6 **Existing Site Status:** The existing condition and other important features of the market site are given in the table below.

S. No:	Aspect/Current Site Condition	Remarks
1	Existing land use of site as per Development Plan	Commercial
2	Existing Components of the Market	The basement and the ground floor are being used as a market. The first floor is used as tool market.  The subject site which is the second floor is currently vacant.
3	Name of Planning/ Building Authority's jurisdiction in which site is present	BBMP
4	Is there need for land use conversion?	No
5	Width of approach/ internal road:	10-12 mts
6	Road widening proposals from Road authorities for the roads surrounding the site	No
7	Type and nature of neighboring development	Commercial
8	Is there any building line setback regulation from centre of the existing adjoining main roads	No
9	What are the Planning/Environmental/Building Authorities relevant to site based on location and proposed residential development  (Electricity Board, Water Supply Board, Pollution	KPTCL,BWSSB,PCB

Control Board etc)		
10	Any HT lines running through the site	No
11	FAR Utilisation	NA in this case
12	Nature of services existing •Water, Sewerage, Electricity	Available
13	Status of existing service utilities	Lacks proper sanitation, sewerage connection and solid waste management.

## 4.2 Description & Components of the Project

4.2.1 **Proposed use:** The current situation of redundancy of the second floor and partial first floor can be resolved by providing appropriate use in the second floor and solving the ground and first floor circulation. The proposed use of the second floor is a cold storage with single or multiple operators. The demand for the same will be high due to the existence of fruit and meat market in the vicinity. The proposed vertical circulation is as follows.

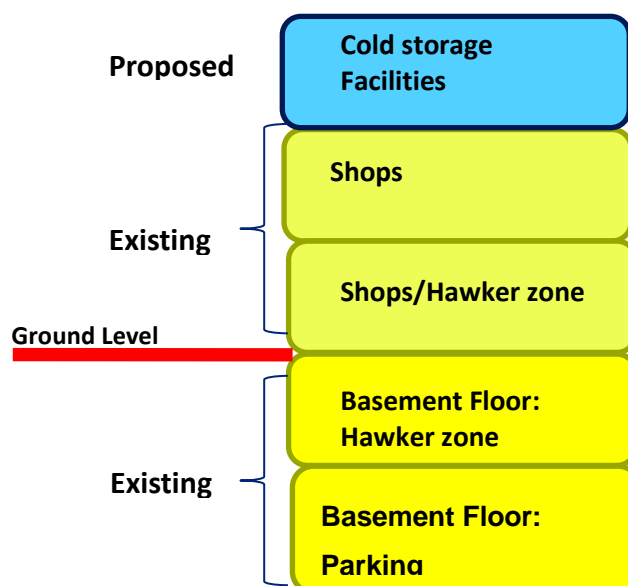
- Ground floor to First floor: Travellator or RCC ramp.
- Ground level to second floor: Goods lift.

4.2.2 The plan also suggests a re-arrangement of the existing set-up of commercial establishments within the market premises. At present the basement hosts flower vendors, the ground floor grocery/general shops and first floor a few hardware & tool shops. The first floor remains a 'not-so-preferred floor' by the consumers. Once connected by Travellators or RCC ramp, the grocery/general stores on the ground floor could be shifted to first floor and the vegetable & fruit vendors outside the building could be shifted within the market building on the ground floor. This will de-congest the market area and improve accessibility.

4.2.3 The premises can then be landscaped and used as a parking zone for two & four wheelers. This will also avoid future encroachment.

#### 4.2.4 Building use and vertical zoning:

- 2 storey, mixed use building fronting Market Street with service / delivery area to the rear.
- Approximately 3,80,000 sq.ft square building with around 95, 000 sq.ft basement, ground floor ,first floor and second floor footprint.
- Existing market/ hawker zone in basement, ground floor and first floor. The floors are proposed to be connected by travellers to enhance mobility and accessibility.
- Cold Storage facility proposed on the second floor to store perishable food products (meats, fruits, vegetables etc.) of the vendors. The cold storage will be divided into 4 sections for a particular category of food products rent out to cold storage companies for revenue generation. Other components of the facility will be freight lifts to load and unload containers and a booking counter.



4.2.5 **Facilities Description and design parameters:** Details of facilities provided with their typology, area and number of units are given in the table below.

S. No:	Use	Nature	Details
1	Vendors Space	Existing market	3 floors
2	Commercial space	Revenue generating facility	2 <sup>nd</sup> floor
3	Basement market space	Existing market	
4	Goods Lift	Mobility within the market bldg.	2 No.s
5	Travellators	Mobility within the market bldg.	2 No.s



### 4.3 Interaction with Stakeholders

4.3.1 As a first step, detailed interactions were conducted with BBMP's market division with regards to identifying and developing the prefeasibility for the market. In addition, a basic market survey was conducted to get an idea of the current scenario. These included interviews with market management and vendors and understanding their needs and views on PPP format.

### 4.4 Studies and Surveys already available that may have been considered

4.4.1 As mentioned earlier, the redevelopment and development of the market has been taken up in consultation with BBMP and this report does not rely on any previous studies or surveys.

### 4.5 Development Needs, Public needs & Planning Considerations

4.5.1 As per the analysis done to make the project financially viable, types of development planned in the proposed development are Retail & Commercial.

4.5.2 The public needs are to provide a safe neighbourhood shopping and generate additional employment and income opportunities for the local population due to growth of small shops & trading activities. The need is also to help the vendors help preserve their products for a longer duration and safer environment.

4.5.3 The following points were considered while planning for the market:

- Permissible FSI for each building type, Permissible building height, plot coverage and Percentage of land parcel to be allocated for Open Spaces/ Civic Amenities is not considered here as the proposal is to enhance the potential of the existing building and use the un-utilized floor.
- Cold storage unit design as per the norms and guidelines under BIS codes ( Bureau of Indian Standard Codes)
- Parking regulations as per local bye-laws: Business: 2 ECS(Equivalent Car Space) for every 100sqm & In case of Retail &Office Space : 1 ECS for every 100sqm.

## 4.6 Project Design

4.6.1 The design philosophy is mainly based on strengthening the existing market activity by providing a public space that will increase the draw and frequency of shoppers to the area, while creating an outlet for local entrepreneurial activity and a public space for social interaction.

4.6.2 **The following design principles have been identified for the market re-development project:**

- 1) Engagement needs of the users have to meet in the design.
- 2) The scheme has to be a very successful integration of public needs and private participation in a compelling and agreeable manner, which would create a meaningful transformation of the dilapidated market buildings to a potential revenue generating and socially successful public market place.
- 3) The design has to be disabled friendly.
- 4) The design should allow flexibility and lend itself to various groups to use it.
- 5) The design should also encourage various user-groups to territorialize areas of the public space designed for them and provide for more vibrant and comfortable gathering spaces.
- 6) Wherever feasible, adaptive re-use of building should be looked into.
- 7) Improve tenant signage, provide updated signage. [Objects, neon, clever painting, etc.-all contribute to the vibrancy of the retailing / entertainment experience] and design guidelines to all tenants.
- 8) Enhanced and improved advertisements provision to attract investors for example installing a retractable decorative banner system for ease of replacement [seasonal banners, city-wide promotions and special event advertising opportunities] etc. The system is potential revenue generation tactics.
- 9) Consider the benefits of the larger anchor tenant opportunities and reconfigure the market layout accordingly.

4.6.3 **As per the needs and requirements, for designing the cold storage unit following considerations have been taken into account:**

- 1) **Commodity Storage Requirements:** Type of Commodities/Produce to be preserved/stored.
- 2) **Storage System:** Types of storage system (Bins/ Crates/Palletization in Racks), Size of Bin/Crates, Material of Construction, Storage Capacity (Kg/Bin/Pallet) and Stack ability required
- 3) **Cold Store Chamber Sizing and Capacity:** Total Capacity of Each Cold Store Chamber (MT), Internal Chamber Dimensions etc.
- 4) **Ante Room & Process Areas:** This includes design and area required for Ante Room, Sorting & Grading Area, Loading / Unloading dock etc.
- 5) **Machine Room & Utility Areas:** This includes design and capacity of Machine Room, Office Area, Toilets & Changing rooms etc.
- 6) **Building & Construction Details:** Type of External walls of cold chambers, Type of Internal / Partition walls, Type of Flooring for forklift/stacker movement, Types of Lighting fixtures in Cold Chambers, Types of Lighting fixtures in Process & Other Areas etc.
- 7) **Insulation and Vapor Barrier:** Type of material, thickness, Total Insulation Thickness (mm), No. of layers etc.
- 8) **Cold Store Doors & Air Curtains:** Type of Insulation Details, No. of Insulated doors , Insulation Material, Thickness of Insulation , Type of cladding ,Size of door opening , Air curtains etc.
- 9) **Material Handling Procedures & Equipments.**
- 10) **Cooling System Design & Equipment Selection:** Type of Refrigerant, System, compressor, capacity control, condenser, defrosting, Humidification System & Control etc. considered
- 11) **Electrical Installation:** Total Connected load , Estimated power requirement at Peak Load Period , Estimated power requirement at Holding Load Period , Estimated power requirement at Lean Load Period , Capacity of Transformer (KVA) proposed, Size of Capacitor for power factor correction & their operation, Make & Capacity of standby D.G.Set etc.
- 12) **Safety Provisions:** Fire Fighting Equipment, Handling Refrigerants & Leaks, Details of Emergency alarm system etc.

## 5 Project Financials

### 5.1 Assumptions used for the Financial Feasibility

#### 5.1.1 Area allocation

5.1.1.1 Total site area for KR Market is 95111 sq. feet all of which is situated on the second floor of the existing market.

5.1.1.2 Allocation of areas to Cold Storage and other spaces is given in the table below. It is assumed that the second floor will be allotted for developing cold storage facility. Other floors will not be considered for this project.

FLOORWISE DESIGNATED AREA (in sq.ft)					
	Ground Floor	First Floor	Second Floor	Third Floor	Total
Commercial / Office Space	0.00	0.00	95110.70	0.00	95110.70
Retail Space	0.00	0.00	0.00	0.00	0.00
<b>Total BUA</b>	<b>0.00</b>	<b>0.00</b>	<b>95110.70</b>	<b>0.00</b>	<b>95110.70</b>
Driveway / Landscape					0.00
Other space					12055.68
<b>Total</b>	<b>0.00</b>	<b>0.00</b>	<b>95110.70</b>	<b>0.00</b>	<b>107166.38</b>

#### 5.1.2 Project Structure

5.1.2.1 Financial assessment was done based on various parameters related to project structure, project financing, cost estimates (both capital and operational expenditure) and revenue estimates for the **project of a duration of 20 years**.

5.1.2.2 The project structure has been proposed to provide optimum returns to the project promoters. It has been assumed that developer would be sharing 56.50% of the gross

revenues with BBMP. Details of various assumptions related to project structure is given in the table below:

<b>PROJECT STRUCTURING ASSUMPTIONS</b>	<b>Units</b>	
<b>Start year</b>	Year	Jan-13
<b>Concession period (inclusive of construction period)</b>	Years	20
<b>Construction period (in months)</b>	Months	6
<b>Delay in Construction (in months)</b>	Months	0
<b>Revenue Sharing (%age of gross revenue)</b>	%age	56.50%

5.1.2.3 The project is expected to start in beginning of 2013. Construction period of 6 months with no delays have been assumed. Since it is already existing market, the construction is assumed to take only 6 months.

### 5.1.3 Project Financing

5.1.3.1 It is assumed that no grant would be provided to support the project. Debt: Equity ratio of 70:30 has been assumed for financing the project. Other assumptions related to project financing is given in the table below:

<b>PROJECT FINANCING ASSUMPTIONS</b>	<b>Units</b>	
<b>Discount Rate for NPV calculation</b>	%age	8.25%
<b>Grant (if any)</b>	%age	0%
<b>Debt</b>	%age apart from grant	70%
<b>Equity</b>	%age apart from grant	30%
<b>Rate of interest for term loan</b>	%age	12.00%
<b>Rate of interest for short term loan</b>	%age	12.00%
<b>Moratorium period</b>	Months	12
<b>Tenure of Debt</b>	months	60

## 5.1.4 Capital Expenditure

5.1.4.1 Detailed breakup of assumptions related to construction of commercial / office space and retail space is given in the table below.

<b>CAPITAL EXPENDITURE ASSUMPTIONS</b>				
<b>Construction Costs</b>	Cold Storage	Retail Space	Driveway / Landscape	Other space
Construction Costs (Rate/sft on total BUA)	200	0	0	1200
<b>Other Costs</b>	number of units	rate per unit (in lakhs)		
Lifts	5.00	8.00		
Escalators	2.00	50.00		
Others	0.00	0.00		

5.1.4.2 Escalation in capital expenditure due to construction delays was assumed to be 5% per year.

## 5.1.5 Operational Expenses

5.1.5.1 Detailed breakup of assumptions related to operational expenses is given in the table below.

<b>OPERATIONAL EXPENSES ASSUMPTIONS</b>	<b>Rs. per sq. feet per month</b>
<b>Electricity costs only for common areas (monthly). Rented cold storage areas not included.</b>	0.80
<b>Other operating costs only for common areas (monthly). Rented cold storage areas not included.</b>	0.50
<b>Marketing costs (annually)</b>	0.20
<b>Maintenance costs (annually)</b>	2.00
<b>Major maintenance costs (once in 5 years)</b>	10.00

5.1.5.2 Electricity costs and other operating costs which include expenses related to manpower, cleaning, security etc. have been taken only for common areas. The same for the rented areas shall be borne by the cold storage owners. Apart from the annual

maintenance costs, major maintenance costs would be incurred once in 5 years for the upkeep of the building/ market.

5.1.5.3 Inflation for operational expenses was assumed to be 5% per year.

### 5.1.6 Taxation

5.1.6.1 The private developer would be incurring two heads under taxation: (1) Corporate Tax / Minimum Alternate Tax and (2) Property Tax.

5.1.6.2 Corporate Tax and Minimum Alternate Tax are assumed at 33.99% and 17.00% respectively.

5.1.6.3 Property tax has been calculated using the Handbook on Property Tax by BBMP. This market is 10-year old market and it falls under Zone-A and the property taxes have been calculated accordingly.

### 5.1.7 Revenue Streams

5.1.7.1 Revenue is divided into four revenue streams:

- Revenue from rentals
- Revenue from advertisement hoardings
- Revenue from parking
- Miscellaneous revenue

5.1.7.2 **Revenue from rentals** – Assumptions related to revenue from rentals of commercial / office as well as retails space is given in the table below. Apart from rentals, Common Area Rentals and Common Area Maintenance have been assumed to be charged from the tenants for usage of common areas. Escalation in rentals was assumed to be 5% per year for all floors.

5.1.7.3 It was assumed that 50% of rentals would be charged during construction since the market is an existing market.

#### REVENUE FROM RENTALS

	Ground Floor	First Floor	Second Floor	Third Floor

<b>Rentals for Commercial space –Cold Storage Facility (Rs. per sq.ft.)</b>	Rs. per sq. feet per month	-	-	30.00	-
<b>Vacancy for Commercial / Office space</b>	%age	0.00%	40.00%	40.00%	0.00%
<b>Vacancy for Retail space</b>	%age	20.00%	0.00%	0.00%	0.00%
<b>Common Area Rental (Rs. per sq.ft.)</b>	Rs. per sq. feet per month	5.00	2.00	2.00	2.00
<b>Common Area Maintenance (Rs. per sq.ft.)</b>	Rs. per sq. feet per month	1.00	1.00	1.00	1.00

5.1.7.4 **Revenue from advertisement hoardings** – Assumptions related to revenue from advertisement hoardings is given in the table below. Slightly higher rates for advertisement on side facing front has been assumed compared advertisement hoardings to inside the market. Escalation was assumed to be 5% per year for advertisement on all floors.

<b>REVENUE FROM ADVERTISEMENT HOARDINGS</b>					
		Ground Floor	First Floor	Second Floor	Third Floor
<b>Advertising front facing outside the market</b>	Rs. per sq. feet per month	100.00	80.00	60.00	-
<b>Advertising inside the market</b>	Rs. per sq. feet per month	70.00	30.00	20.00	-
<b>Advertisement Space front facing outside the market</b>	in sq. feet	-	-	100.00	-
<b>Advertisement Space inside the market</b>	in sq. feet	-	-	50.00	-
<b>Vacancy for Advertising front facing outside the market</b>	%age	10.00%	10.00%	15.00%	15.00%
<b>Vacancy for Advertising inside the market</b>	%age	10.00%	40.00%	60.00%	60.00%



- 5.1.7.5 **Revenue from parking** – Assumptions related to revenue from parking is given in the table below. Slightly higher rates for parking for 4-wheelers have been assumed compared parking for 2 wheelers. Escalation was assumed to be 10% per year.

<b>REVENUE FROM PARKINGS</b>			
		4-wheeler	2-wheeler
<b>Parking charges (outside the market)</b>	per parking	20.00	5.00
<b>No. of parking slots</b>	nos.	-	-
<b>Vacancy</b>	%age	20.00%	40.00%

- 5.1.7.6 **Miscellaneous Revenue** – Assumptions related to revenue from promotions events is given in the table below. Escalation was assumed to be 10% per year for advertisement on all floors.

<b>MISCELLANEOUS REVENUE</b>		
<b>Promotional events - temporary stalls</b>	per day rates	2,000.00
<b>Number of locations for such events</b>	nos.	2.00
<b>Number of event days in a year (weekends + public holidays)</b>	nos.	10.00

## 5.2 Results and Outputs

### 5.2.1 Capital Expenditure

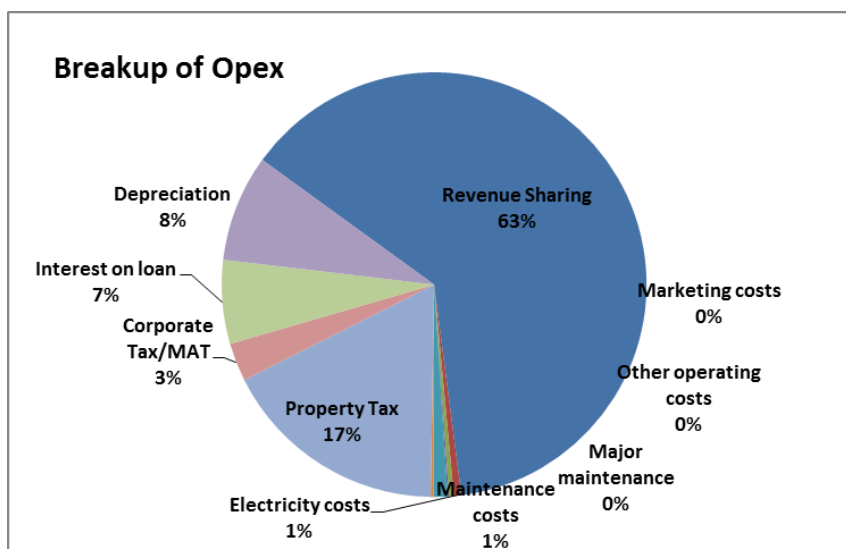
- 5.2.1.1 Based on assumptions given on area allocation and capital expenditure, details of capital expenditure were calculated to be around INR 477 lakhs (pre-interest during construction). The details are presented in the table below.

<b>CAPITAL EXPENDITURE DETAILS</b>	<b>(figures in INR lakhs)</b>
<b>Construction Costs</b>	
<b>Commercial Office (Cold Storage)</b>	
Ground Floor	-
First Floor	-
Second Floor	190.22
Third Floor	-

<b>Total construction costs of commercial space (cold storage)</b>	190.22
<b>Driveway / Landscape</b>	-
<b>Other Space (Common Area)</b>	144.67
<b>Other Capital Items</b>	
Lifts	40.00
Escalators	100.00
Preliminary Expenses	2.00
<b>Total</b>	<b>142.00</b>
<b>TOTAL CAPITAL EXPENDITURE</b>	<b>476.89</b>

## 5.2.2 Operational Expenses

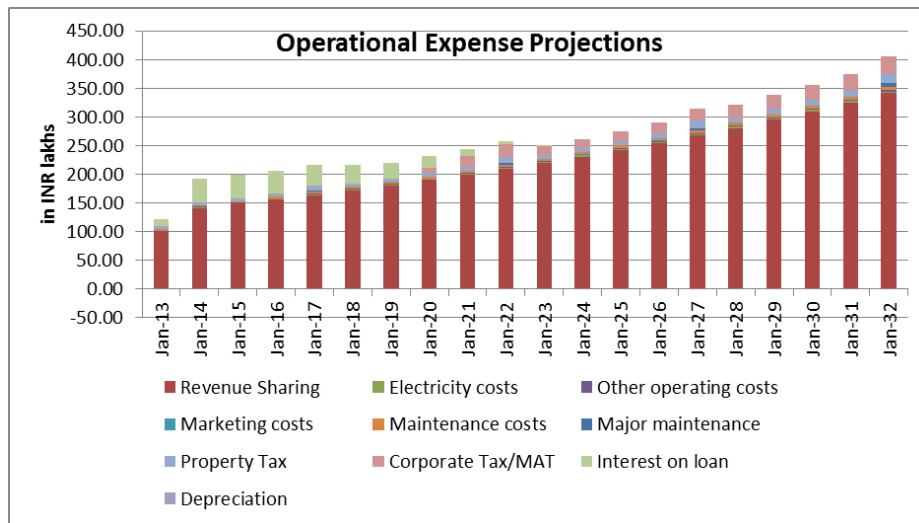
5.2.2.1 Based on assumptions related to revenue sharing, operational expenses, taxation and interest on loan, operational expenses for the private developer have been calculated.



5.2.2.2 It is seen that 63% of the operational costs is charged by BBMP has revenue share (calculated as 56.50% of gross revenues). Other major cost heads are depreciation, taxes and interest on loan. Operational expenses related to actual operations are as low as 2% - which consists of electricity, maintenance, overheads and marketing.

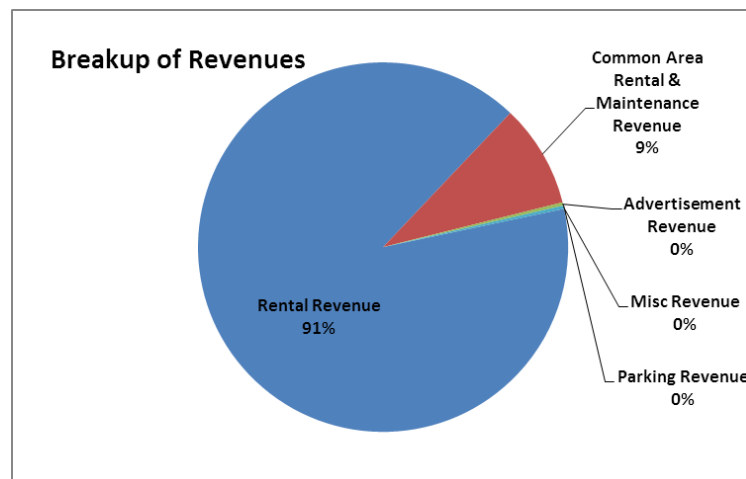
5.2.2.3 Year-wise breakup of operational expenses is depicted by the graph given below. It is seen that major maintenance is incurred once in 5 years. It is seen that interest costs is very high in initial 5 years due to interest on both term and working capital loans. Term

loans expire at the end of 5 years. From 6 years onwards interest costs have reduced considerably due to repayment of working capital loans.



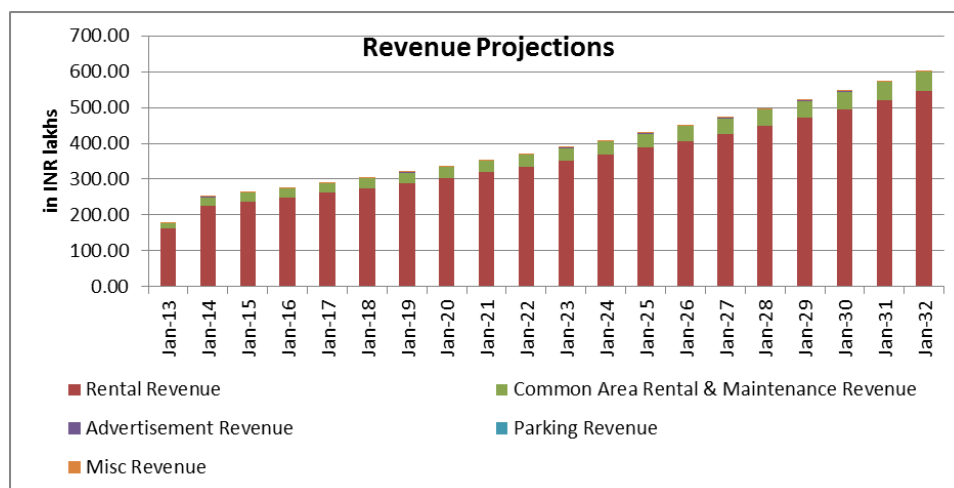
### 5.2.3 Revenue Streams

5.2.3.1 Based on assumptions related to area allocations and revenue streams, revenues for the private developer have been calculated.



5.2.3.2 It is seen that 91% of the revenues come from rentals from cold storage. These tenants also pay common area rental & maintenance charges which amount to another 9%.

5.2.3.3 Year-wise breakup of revenue is depicted by the graph given below. 50% revenues have been estimated in the first 6 months due to construction.



## 5.3 Viability Assessment

### 5.3.1 Viability Assessment for the Private Developer

5.3.1.1 Given the project structure and other assumptions related to the project, equity IRR to the private developer is estimated at 16.01%.

5.3.1.2 It is seen that NPV of the inflows to debt and equity holders (FCF) is around INR 295 lakhs whereas NPV of the inflows to equity holders (FCFE) is around INR 236 lakhs.

#### FINANCIAL VIABILITY

##### Total Project Costs

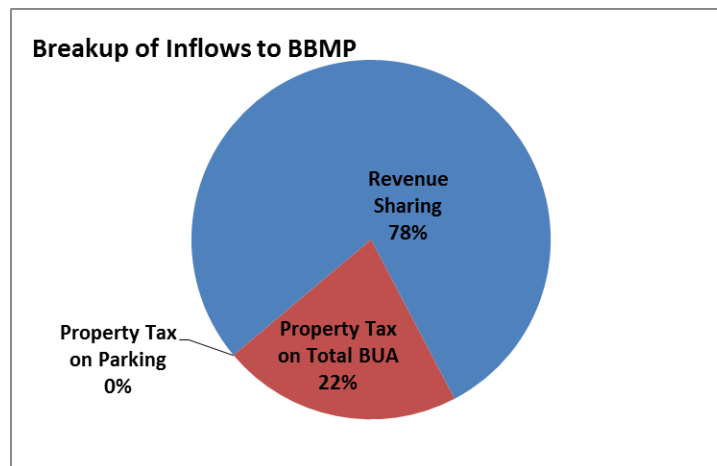
Uninflated TPC without IDC	in INR lakhs	476.89
Uninflated TPC	in INR lakhs	486.27
Inflated TPC	in INR lakhs	510.59

##### INDICATORS

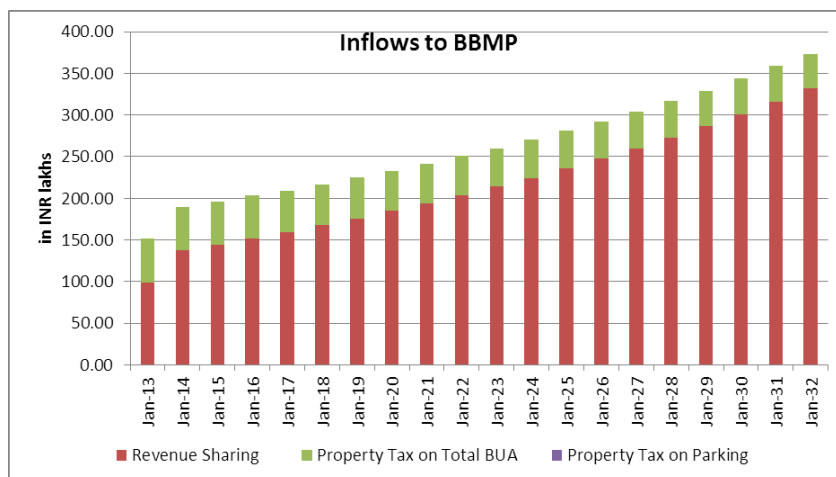
Project IRR (pre-tax)	%age	15.71%
Project IRR (post tax)	%age	14.46%
NPV-FCF	in INR lakhs	294.67
Equity IRR	%age	<b>16.01%</b>
NPV-FCFE	in INR lakhs	236.30

### 5.3.2 Inflows to BBMP

5.3.2.1 Given the project structure and property taxation laws of BBMP, the project will give two types of inflows to BBMP. Around 78% of the inflows would come from the private developer as a revenue share from the project calculated as a percentage of gross revenues. 22% would come from property taxes on total BUA and parking.



5.3.2.2 Year-wise breakup of inflows to BBMP is depicted by the graph given below. It is seen that there are lesser inflows from revenue sharing in the first 6 months for BBMP due to construction activities.



5.3.2.3 NPV of inflows to BBMP is calculated at INR 2375 lakhs using a discounting factor of 8.25%.

## RESULTS

### NPV of INFLOWS TO BBMP

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<b>Revenue Sharing</b>	in INR lakhs	1862.56
<b>Property Tax on Total BUA</b>	in INR lakhs	512.69
<b>Property Tax on Parking</b>	in INR lakhs	0.00
<b>Total Inflows to BBMP</b>	in INR lakhs	<b>2375.25</b>



### 5.3.4 Scenario Analysis

5.1.1.4 As per the financial model, the equity IRR to the private developer is estimated at 16.01%. The table below gives the percentage of revenue sharing between the private developer and BBMP and the total inflow that BBMP will incur at 18% and 20% equity IRR respectively.

Scenarios for Equity IRR	KR market		
	16%	18%	20%
Revenue Sharing (%age of gross revenue)	56.5%	53.5%	50.0%
Total Inflows to BBMP (in INR lakhs)	2375	2276	2161



## 6 Statutory & Legal Framework

### 6.1 Applicable laws

A number of Acts and Legislations govern the planning and development in the Bangalore Metropolitan Region. These are briefly outlined in the following section.

#### 6.1.1 Bangalore Master Plan-2013

6.1.1.1 The Market Re-development project is required to be in tandem with the criteria and strategies accorded by Bangalore Master Plan -2013 in terms of Zoning, land use and sub-division rules that includes occupancy/use, plotting, road space, open space and amenities etc.

6.1.1.2 In case the proposed use of the building on the site does not conform to the land use proposals of the Development Plan or Zoning Regulations, permission from the Bangalore Development Authority (a) for the change of land use and (b) for the sub-division of plot, have to be furnished.

**Since there is no change in land use or zoning and the land use remains commercial no permission is needed from the authority.**

#### 6.1.2 Karnataka State Pollution Control Board Rules & Regulations

6.1.2.1 As per the norms, Ice blocks manufacturing, cold storage & refrigeration rooms falls under the green category of industry under Karnataka State Pollution Control Board. As per GOK Notification (No.FEE 195 ENV 2002 dtd 21.06.2003 & No.FEE 87 ENV 2005 dtd 05.07.2005) license for green category industries shall be issued by the Municipalities/Municipal Corporations after the industry obtains Consent for Establishment (CFE) from Karnataka State Pollution Control Board.

**Since the project envisages building up cold storage facilities on the second floor of KR Market, appropriate permission will have to taken from KSPCB.**

### 6.1.3 Bureau of Indian Standard codes (BIS Codes) for Construction

6.1.3.1 While designing the market, relevant Indian Standard codes have to be followed. These are:

- a) **Structural design and provisions:** Loading capacity of structures, design of Common Facilities and other Engineering specifications

Sl. No.	Code	Description
1	IS:875(Part 5)-1987	Code of Practice for Design Loads (other than Earthquake) for Building & Structures-Unit weights of Building Materials & Stored Materials
2	IS:875(Part 5)-1987	Code of Practice for Design Loads (other than Earthquake) for Building & Structures-Imposed Loads
3	IS:875(Part 5)-1987	Code of Practice for Design Loads (other than Earthquake) for Building & Structures-Special Loads & Load Combinations
4	IS:456-2000	Code of Practice for Plain & Reinforced Concrete
5	IS:1786-1985	Specification for High Strength Deformed Steel Bars & Wires for Concrete Re-inforcement
6	IS:3370(Part 1, 2)-1965	Code of Practice for Concrete Structures for the storage of liquids-general requirements & RCC

**The setting up of cold storage facilities in the second floor of KR Market will not involve any alteration to the existing structural layout of the building. However, based on the design of the facility the construction drawings for the same, will conform to the BIS( Bureau of Indian Standard) codes for design of structures.**

**b) Building/Cold Storage Unit safety**

Appropriate BIS standards will be adopted for selection of design parameters (IS 661:2000) and method of application of Thermal Insulation (IS 661 & 13205). Appropriate BIS standards will also be adopted for Refrigeration Equipment & Systems, Electrical & Mechanical Systems & Food Safety

The facility will have to be planned, designed and constructed to ensure adequate fire safety to the property and inhabitants and this shall be carried out, in accordance with Part IV Fire Protection of the National Building Code of India. The firefighting requirements,

arrangements and installations required in building shall also conform to the provisions of Part IV Fire Protection of National Building Code of India.

**All provisions for the safety of the cold storage unit will be provided in the final design of facility and will conform to the NBC codes.**

#### 6.1.4 Bangalore Mahanagara Palike Building Bye-laws 2003

6.1.4.1 The project needs to be in sync with Bangalore Mahanagara Palike Building Bye-laws 2003 (approved by the Government in their Order No.UDD/223/MNU/2001, Dated 21-02-2004 & published in pursuance of Section 428 of the Karnataka Municipal Corporation Act 1976). These are regulations made by the ULB, with the intention of controlling urban development in harmony with the Master/ Development Plan, which provide zoning rules, land uses allowed and the nature and intensity of development envisaged. They primarily provide guiding principles on which buildings have to be planned and built.

6.1.1.2 Various aspects and parameters of building bye laws as applicable to commercial development are:

**a) Site and building planning:**

*Set Backs:* For any residential /commercial/ semi-public & public building with height more than 9.5 metres a min. of 4.5 metres of exterior open spaces / set-backs is to be left on all sides (Front, Rear and Sides) in mtrs. For buildings above 12 m upto 15 m setbacks of 5metres is to be left on all the sites.

**The setbacks as mentioned in the Bye-laws have been already been followed in existing structure. However, the space is reduced due to encroachment by the vendors.**

**b) Development density (FSI/FAR)**

The FAR (Floor Area Ratio) varies according to the ground coverage allowed, use of building (residential, commercial, public and semi-public, etc) and the planning area they fall into. The local planning area of Bangalore City has been divided into three zones by the Bangalore Development Authority for the purpose of regulating building constructions. 'A' Zone is for intensely developed Area, 'B' Zone for moderately developed area & 'C' for sparsely developed area. For a commercial development in 'intensely developed area' with plot area of more than 1000 sq.metres, maximum FAR allowed is 1.5. FAR is 1.75 for the same, in 'moderately developed area' and 2 for 'sparsely developed area'.

In this case, since no newer construction is taking place FAR and permissible ground coverage is not applicable.

**FAR/FSI will not bear any implication, as the structure is already existing and the project only envisages utilising a floor in the building that is lying vacant.**

**c) Parking:**

Adequate space for the parking of vehicles has to be provided in the sites as per the use of the building. 1 car parking space is to provided for every 50 sq. mtr. of floor area in case of Retail business & office buildings. In case of wholesale and warehouse buildings 1 car parking space for every 150 sq. mtr of floor area plus 1 lorry parking space for every 500 sq.mtr needs to be provided as per the laws. In case of restaurants or establishments serving food and drinks and such other establishments 1 car parking space for every 25 sq.mtr. of floor area is to be provided.

As per the norms, each off street car parking space provided for motor vehicles should not be less than 18 sq.mtrs (3 meters x 6 meters). For motor cycles and scooters, each parking space should not be less than 2.5 sq.mtrs. (1.25 meters x 2 meters) and for cycles it should not be less than 1.5 sq.metres. (0.75 meters x 2 meters).

**As per the parking norms parking facilities have been provided in the basement of the Market area. However, this too remains under-utilised. The project envisages shifting the outside vegetable vendors inside the building. This will allow development of surface parking bays.**

**d) Building norms:**

The sizes and design of the establishments has to be in conformity with the norms set by **NBC (National Building Code)**.

The basement should have adequate drainage, ventilation and lighting arrangements. The basement storey should be atleast 2.4 mtr. in height from the floor to the bottom of the roof slab/ beam / ceiling (whichever is less) and this height of B.F should not exceed 2.75 level.

The height of the plinth at the ground floor level should not be less than 0.45 m.

**The design for cold storage facility will conform to all provisions laid under NBC (National Building Code).**

**e) Building services and amenities:**

The planning, design and installation of water supply systems, drainage, sanitary installations and gas supply installations in buildings, shall be in accordance with Part IX Plumbing Services, section 1 – Water Supply, section 2 – Drainage and Sanitation and section 3 – Gas supply of the National Building Code of India.

The planning, design and installation, of air-conditioning and heating installations of the building shall be in accordance with Part VIII Building Services, section 2 – Electrical Installations and section 3 - Air-conditioning and Heating of the National Building Code of India.

**The service drawings as and when prepared for all the facility will conform to the NBC codes for utilities.**

## 6.2 Legal & Regulatory framework, Tariff framework etc. (Any suggestions)

6.2.1 There are a number of institutions performing municipal and urban development functions in the Bangalore Metropolitan Area. These institutions can be categorized as Urban Local Bodies (ULB), Statutory Authorities, & Government departments. BDA prepares a Comprehensive Development Plan for the city, at an interval of 10 years, while BMRDA prepares a “Structure Plan.” Based on these plans, the development regulation is done by way of plan approvals and land-use. BBMP is the executive body for regulation of bye-laws and any construction activity taking in the city. BWSSB is responsible for providing water supply & maintaining sanitation in the establishments.

**Hence for the project, all the agencies mentioned above will be involved and shall have a major role to play in efficient running of the market.**

6.2.2 Functional Areas of various Institutions related to any urban development activity within the jurisdiction of the ULB is summarized below:

Functions	Agency			Accountability structure
	ULB	STATUTORY BODY	GOVT. DEPT.	
Urban Planning including town planning		BDA, BMRDA		State Government, Board

<b>Regulation of land-use and construction of buildings</b>	BBMP	BDA, BMRDA		State Government, Board, BBMP
<b>Water supply for domestic, industrial and commercial purposes</b>		BWSSB		State Government, Board
<b>Public health, sanitation conservancy and solid waste</b>	BBMP	BWSSB (Sewerage),		State Government, Board, BBMP
<b>Fire services</b>			Fire Department	State Government
<b>Electricity</b>			BESCOM	
<b>Small/Large scale development with a possibility of impacting environment</b>	BBMP		KSPCB	State Government, BBMP

6.2.3 BBMP as the main agency and has various departments which are responsible for the administration of several civic activities. **Market Department** is responsible for the construction, maintenance and regulation of all public markets. The market department also regulates the movement of vehicles outside the markets by way of creating orderly parking arrangements.

6.2.4 As per the provisions of the **Karnataka Municipal Corporation Act,1976**, **BBMP** has been made responsible for all public markets in the city including shops or stalls for the sale of necessities of life to the citizens. The KMC Act 1976, also empowers BBMP to have control over the public markets. They are entitled to collect the license fee and take action for resumption of the market shops/premises in the event of contravention of any of the condition of the license or any regulation or any of by-law including committing default in payment of the fees leviable as provided under the provisions of the Act.

6.2.5 For buildings with ground floor + four floors and above (or height of 15 mtrs and above), clearance of the Director of Fire Services shall be obtained regarding the Fire Protection Provision in building.

6.2.6 For Small/Large scale development with a possibility of impacting environment, Cold Storage facility development in this case, clearance needs to be obtained from **Karnataka State Pollution Control Board.**

### 6.3 Key Issues

6.3.1 There is a plethora of legislations and a number of institutions that operate in the Bangalore Metropolitan area, which impact the process of urban management. Since the jurisdictions, legislative frameworks, and functional areas of the institutions overlap in many cases, there are issues of discord and lack of clarity.

## 7 Indicative Environmental & Social Impacts

### 7.1 Environmental Impacts & Mitigation Measures

7.1.1 Small scale projects like market re-development/re-use of a building has minimal impact on the surrounding environment, hence no EIA study is needed for such studies. However for installing cold storage, Consent for Establishment (CFE) from Karnataka State Pollution Control Board has to be taken by BBMP.

7.1.2 Since the building is already constructed and development that will take place will be of minor scale there will be minimal impact on the air quality, noise, traffic density and socio-economic environment etc. However, adequate measures will be taken during construction phase to minimize the impacts of construction caused by materials and machineries. Contract document should be crafted in a way that the construction does not cause undue non convenience to the residents. The said environmental protection measures, upon implementations, may minimize impacts of noise, waste gas, wastewater and construction refuse during the construction period on ambient environment; those impacts that are of a temporary nature and will disappear upon completion of the proposed project.

7.1.3 The following impacts have been envisaged during various stages of the project. For each of the environmental impacts, the corresponding mitigatory measures for the same are indicated below.

#### A. Wastewater & Solid waste Generation

IMPACT	MITIGATION MEASURES
Cold storage installation process may generate small amount of construction waste in the form of debris and wastewater.	<p>During construction phase, the solid waste generated will be regularly collected and transferred to landfill sites.</p> <p>Post installation, BBMP in conjunction with BWSSB will ensure that the waste water and solid waste generated due to market activities is disposed of safely.</p>



## B. Dust Generation from Construction materials & machineries

IMPACT	MITIGATION MEASURES
<p>Waste gas from the project during its operation period includes construction material dust and exhaust gas from fuel-powered vehicles, of which the leading pollutants are NO<sub>x</sub>, carbon monoxide and hydrocarbons.</p>	<p>Providing protective cover at the construction site and providing protective gear to the workers are some of the measures that will help minimize the impacts. Exhaust gas emissions will have no material impact on atmospheric environment at neighboring areas.</p> <p>On completion of the construction, ambient air quality due to dust generation will itself be eliminated.</p>

## C. Nature of Material

IMPACT	MITIGATION MEASURES
<p>The compressors commonly used in cold storage warehouses to maintain the temperature and materials used for insulation, to reduce loss of cold and to keep different sections of the warehouse at different temperatures might at times be toxic.</p>	<p>Adequate measures will be taken to check the technical qualification of the company that will be engaged for installing the Cold Storage Unit. Care will also be taken to ensure that the refrigeration plant and machinery together with accessories, electrical equipment, insulation materials etc. required for installation of cold storage unit are of standard quality</p>

## D. Power

IMPACT	MITIGATION MEASURES
<p>The installation will lead to an increase in power demand as cold storage facilities need constant source of power. Moreover, due to fluctuation in voltage and frequent tripping, the usefulness of electricity goes in vain.</p>	<p>Post Installation BBMP in conjunction with BESCO will ensure the required power supply is maintained.</p>

For example, when line is there and compressors are made functional, it takes at least one to one and a half hours to get the adequate pressure to bring down the temperature around the bunkers/coil. If in the process, the line is tripped, the whole energy consumed to bring down the temperature is wasted as again the same process and more energy will have to be repeated /consumed, because, the ducts have to be vacuumed again

### E. Noise Generation

IMPACT	MITIGATION MEASURES
There might also be a temporary increase in noise levels at the site due to installation machinery. However, it will not have any adverse on the environment as the amount generated will be insignificant and temporary.	Employees working in the site will be provided with earplugs and measures such as adopting low-noise equipment, emphasizing maintenance and administration of vehicles and facilities etc, will be taken so that noise levels does not cause substantially adverse impact on quality of acoustic environment adjacent to the project site.

### F. Traffic

IMPACT	MITIGATION MEASURES
There will be an increase in traffic density in and around the market once the cold storage becomes operational.	Parking provision will be planned and designed as per the requirements to avoid traffic nuisance once the storage is operational.

### G. Operation Risk

IMPACT	MITIGATION MEASURES
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Facilities like Cold Storage involves many operational risks.

It will be ensured that adequate numbers and technically sound personnel are engaged in operation and maintenance of the Cold storage.

All safety measures will be taken to ensure safety to the vendors and customers. Adequate fire provision will be provided to ensure no fire mishaps takes place.

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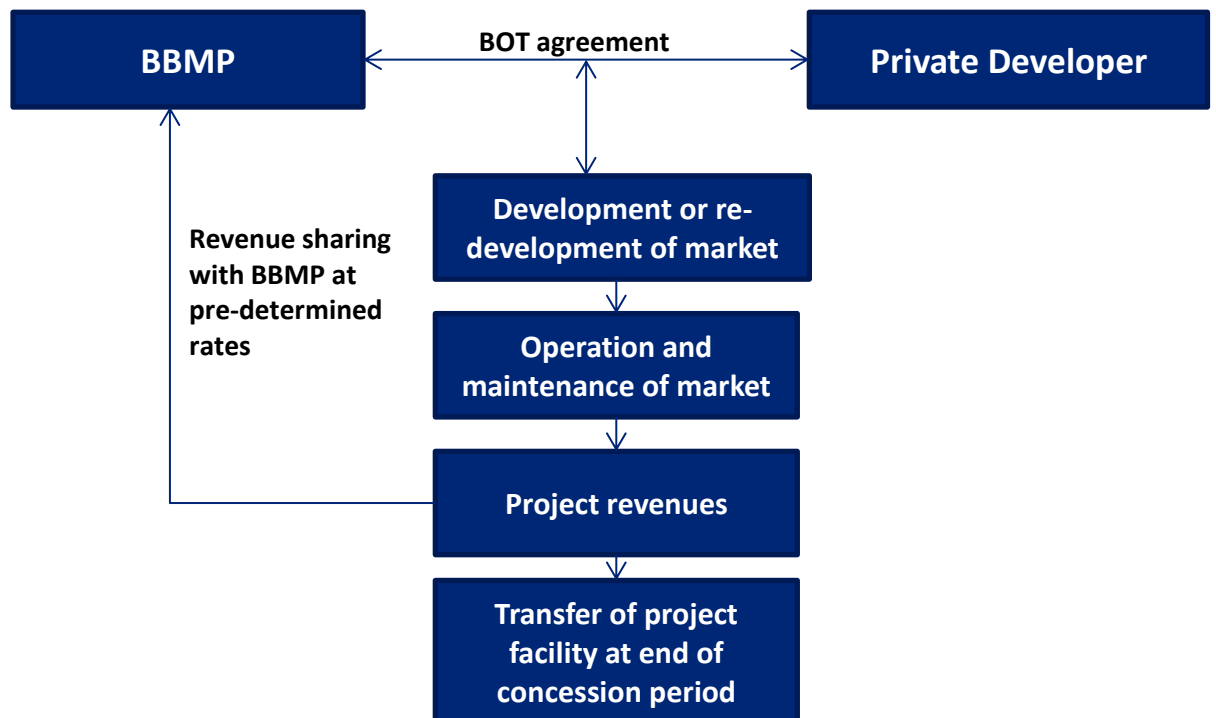
## 7.2 Social Impacts & Mitigation Measures

- 7.2.1 During development of the cold storage, there will be no displacement of vendors as the floor is already vacant. However, during re-arrangement phase there will be temporary displacement of vendors/shopkeepers, but owing to the benefits they will acquire post development; this won't be a critical issue.
- 7.2.2 Apart from employment as skilled and un-skilled after development of the cold storage, it is expected that the project and consequent activities will generate additional employment and income opportunities for the local population and will also lead to due to growth of small shops & trading activities.
- 7.2.3 The local vendors would benefit from the development of the cold storage as it will help them preserve of perishable items like fruits, vegetables and meat for a longer duration, thus ensuring longevity to their products and added income.
- 7.2.4 Also the market re-development/development, supported by infrastructural development will foster economic growth in the area. It will also provide nearby residents with access to fresh, locally grown food and add a new dimension to shopping experience for the locals.

## 8 Operating Framework

### 8.1 Operating framework and indicative Project Structure

8.1.1 The operating framework is provided below:



The operational framework envisages BBMP handing over the site to the selected private developer subsequent to execution of relevant contractual agreements. Subsequently, the private developer will construct, operate and maintain the markets for a period of 20 years. During this period, the gross revenues earned by the private developer in the form of shop rentals and other rentals and income from the market facility will be shared in the agreed ratio (specific to each market as mentioned earlier). At the end of the concession period of 20 years, the project facility will be handed over the private developer to BBMP. The contract entered into with the private sector will specify the details regarding the termination and hand over clause.

## 9 Way Ahead

### 9.1 Project Development Framework

The next activity for BBMP is to float an Expression of Interest to seek private sector interest for development of these markets. As the market is financially viable, BBMP could issue one tender that is, one private developer will develop, operate and maintain all the three markets for a 20 year time frame.

## 10 Annexure 1 – Ward-wise List of Markets in 8 BBMP zones

Ward Name & No.	Population	No. of Households	No. of shops	No. of Markets
<b>EAST ZONE</b>				
18-Radhakrishna Templ	41336	9302	1999	1
19 -Sanjaynagar	31192	8629	1178	2
20- Ganganagar	27120	6513	1417	2
21- Hebbal	31268	8221	246	1
22-V Nagenahalli	51216	12777	754	0
33- Manorayanapallya	48008	10333	671	0
34 Gagenahalli	24253	6114	442	2
6 J.C.NAGAR	31264	8151	856	1
32- Kavalabyrasandra	39167	10907	1500	0
48-Muneshwara Nagara	37000	7599	1100	1
31-Kushan Nagar ,	42584	8247	1475	0
60-Sagayapuram	34270	6977	1250	2
47-Devarajeevanahalli	42263	10455	1500	1
61-S.K.garden	38095	7632	2235	1
78-Pulikeshinagara	26470	6190	1850	1
62- Ramaswamy Palya	32309	6600	1100	6
63- Jayamahal	36800	7000	1040	0

93- Vasanth Nagar,	37809	11000	1650	1
110-Sampangiram Nagar	36506	7000	1530	6
89-Jogupalya	41000	9572	750	7
112- Domlur	29734	7825	825	1
114- Agaram	36000	6474	425	4
115- Honnarpet	24800	6200	259	2
111-Shantala nagara	24800	5200	4350	1
116-Neelasandra	31200	8400	630	1
117 – Shantinagar	24400	6100	600	3
80-Hoysalanagara ,	36718	8900	1485	1
88-jeevanbhimagara	35128	9176	753	0
113-Konena Agrahara	32754	10712	980	0
57-C.V.Raman Nagar	59801	17679	657	4
58-New Thippasandra	43066	12435	728	2
50.Benniganahalli	45746	11745	456	4
79.SarvagnaNagar	37299	9053	269	1
49- Lingarajpuram,	64739	8280	525	1
59- Maruthiseva Nagar	48328	9933	510	3
27- Banasawadi	55116	14270	960	1
28- kammanhalli	47477	11560	652	1
24.H B R Layout	57690	13394	1500	1
29.Kacharakanahalli	32662	8508	740	1
23- Nagavara	61614	12520	800	2

30-Kadugondanahalli	48548	9963	400	1
<b>Total</b>	<b>955126</b>	<b>224899</b>	<b>20784</b>	<b>48</b>
<b>R. R NAGARA ZONE</b>				
129	44148	16980	871	5
160	48253	18559	695	5
69	42141	16208	305	1
73	45367	17449	279	4
38	31668	12180	917	1
42	29336	11283	278	2
16	27461	10562	337	0
17	42786	16456	715	0
37	32659	12561	1183	3
40	49036	18860	252	2
72	42936	16514	537	2
130	46790	17996	194	4
159	29583	11378	277	4
198	40849	15711	191	5
<b>Total</b>	<b>553012</b>	<b>212697</b>	<b>7031</b>	<b>38</b>
<b>DASARAHALLI ZONE</b>				
12	41625	15210	1968	2
13	59685	11599	1050	3
14-Bagalagunte	64331	16820	2280	7
15-T.Dasarahalli	32828	8812	2300	12



39-Chokkasandra	59211	16223	1400	2
41-PeenyaIndustrial Area	56692	16207	800	4
70-Rajagopala Nag.	60616	17306	168	2
71-Hegganahalli	66084	18337	166	5
<b>Total</b>	<b>441072</b>	<b>120514</b>	<b>10132</b>	<b>37</b>
<b>MAHADEVPURA ZONE</b>				
52-K.R.Puram	35071	14212	347	0
53-Basavanapura	48547	14903	291	0
55-Devasandra	32987	12117	223	1
25- Hormavu	93830	33264	1702	0
26- Ramamurthy N.	47307	16800	416	1
51- Vijinapura	46068	17012	647	0
56 A narayanapura	43417	14099	353	0
81 Vignanagara	105628	21848	516	0
87 HAL airport	38885	12520	449	0
54 Hoody	126588	26025	890	1
82 Garudachar Palya	105315	21728	438	0
85 Doddanekkundi	83280	26625	890	0
83- Kadugodi	65805	19364	281	3
84 Hagadur	99534	20451	563	0
149- Varthur	73886	19547	730	3
86	74489	16115	1526	1
150	144572	36393	1363	0

Total	1265209	343023	11625	10
<b>BOMANAHALLI ZONE</b>				
174-HSR Layout	60758	22975	983	12
190-Mangammanapalya	65596	21877	724	9
175-Bommanahalli	45827	15430	541	2
188-Bilekalli	47932	15330	418	2
189-Hongasandra	67422	21378	298	0
186-Jaraganahalli	34409	12022	494	3
187-Puttenahalli	37382	14314	293	1
193-Arekere	55548	20167	920	4
191-Singasandra	68690	26336	828	8
194-Gottigere	48443	17240	458	2
192-Begur	77657	28152	444	10
195-Konanakunte	55605	18506	543	2
196-Anjanapura	44621	14750	535	0
184-Uttarahalli	57036	19486	312	6
185-Yelachenahalli	46011	13887	465	0
197 Vasanthpura	61242	20765	531	6
<b>Total</b>	<b>874179</b>	<b>302615</b>	<b>8787</b>	<b>67</b>
<b>YELAHANKA ZONE</b>				
1-Kempegowda	35678	9500 & 900	900	2
2- chowdeswari	32792	9375 & 200	250	1
3 ATTUR	57202	15502	735	1

04 Yelahanka New town	42263	13052	1603	6
5, Jakkur	51961	12410	825	0
06, Thanisandra	71736	16905	865	5
07, Byatarayanapura	71858	19289	1125	5
08, Kodigehalli	47559	12273	715	5
09 Vidyaranyapura	57175	14570	825	5
10 Doddabommasandra	31197	7597	590	5
11 Kuvempunagara	36670	8662	578	5
<b>Total</b>	<b>536091</b>	<b>120260</b>	<b>9011</b>	<b>40</b>
<b>SOUTH ZONE</b>				
122 Kempapura Agrahara	39744	4993	770	0
123 Vijaya nagar	40995	8814	726	1
124 Hosahalli	38292	8344	1107	1
134 Bapujinagar	50480	9152	1915	1
132	41316	10342	410	0
133	38109	9139	396	0
157	37092	9225	1037	0
158	47362	11807	235	0
155	47295	7659	390	0
156	43669	9000	815	1
162	43770	14691	952	0
163	46849	12900	443	0
164	42296	10296	110	0

18Kumaraswamy layout	42426	14564	1565	0
182 Padmanabhanagar	41371	12056	1217	0
166	29946	11567	634	0
Karesandra	29946	11567	634	0
180Banashankari	35022	11756	657	3
146-lakkasandra	32703	5538	194	0
152- suddaguntepalya	46007	12225	430	0
176-BTM Layout	50897	14009	797	4
172-Madivala	47313	12451	666	1
147- Adugodu	35009	10544	170	1
148- Ejjipura	46540	19388	238	2
151-Koramangala	57076	15115	500	1
173-Jakkasandra	39918	11365	203	0
168-Pattabhiramnagar	32325	8122	2254	1
169-Byrasandra	34656	7925	2365	1
170-Jayanagar 9 <sup>th</sup> block	88000	6859	628	2
171-Bissmilla nagar	85000	8300	855	4
177 J.P.Nagar	42872	13270	675	11
178 Sarakki	39272	12680	625	11
179 Shakambarinagar	37973	12150	650	9
118- SudhamaNagar	35492	15500	2000	0
119- Dharmaraya Swamy Temple	61552	16545	3300	2

142- Sunkenahally	54640	13660	1908	2
143- V.V. Puram	55447	11241	1283	1
145-Hombegowdanagar	31574	5949	575	1
153 Jayanagar 2nd Block	25794	3782	238	1
<b>Total</b>	<b>1686094</b>	<b>412923</b>	<b>33933</b>	<b>62</b>

**WEST ZONE**

64	37200	9300	1900	0
65	45000	10900	1750	3
66	46000	11500	1000	0
67	45000	11250	1500	1
35	45000	10200	1800	0
36	52000	11200	1650	1
45	36000	10000	1200	1
99	51250	12890	1555	2
100	40236	10059	1025	2
101	46000	11500	2500	6
107	48000	12000	1350	7
	14000	3500	13	95
98	60800	12200	2420	6
77	59200	14800	750	0
94	60900	15225	3900	1
95	49380	12345	504	0
96	54600	13650	2500	0

109	42750	12890	17500	1
120	52630	13850	8200	1
121	55860	14700	3200	1
135	52652	11000	2500	143
136	62630	15000	1800	145
137	66652	15000	1500	145
138	51025	13000	3000	131
139	52500	15325	15940	57
140	41728	13980	1360	0
141	47560	135901	789	0
43	56400	14100	1100	10
44	50000	12500	1250	3
68	46950	10500	1600	4
74	44010	12000	1100	4
67	45000	15100	2500	3
75	40000	11000	2750	3
102	33000	10000	2600	3
103	66250	13250	550	1
104	30405	9081	1037	0
105	29972	8700	900	2
106	36225	7245	800	0
125	34520	6904	600	0
126	31532	7883	600	4

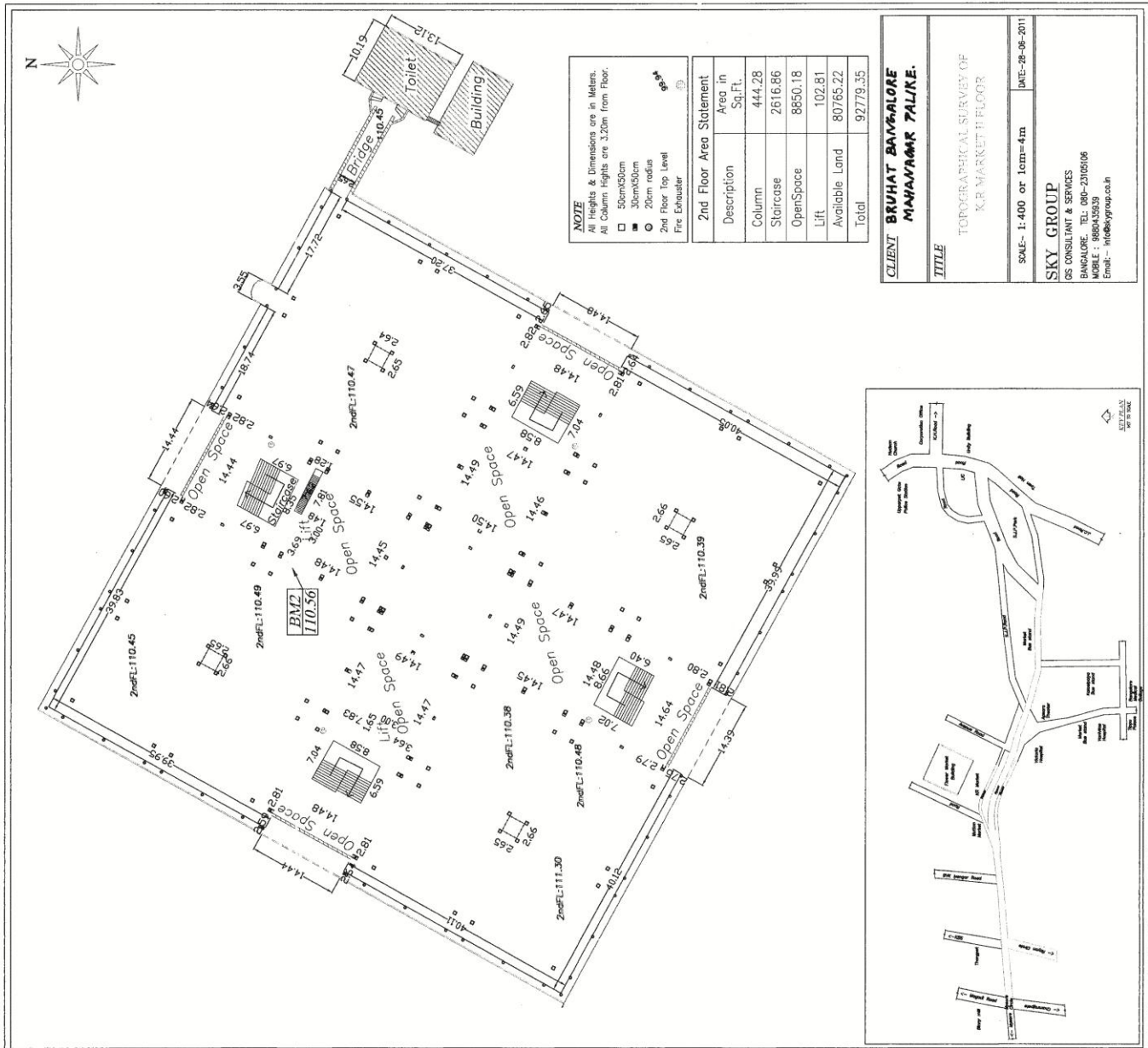
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127	45084	11271	925	1
128	40970	8970	620	0
131	39330	10477	540	0
<b>Total</b>	<b>1925301</b>	<b>609146</b>	<b>102578</b>	<b>787</b>

Source: BBMP

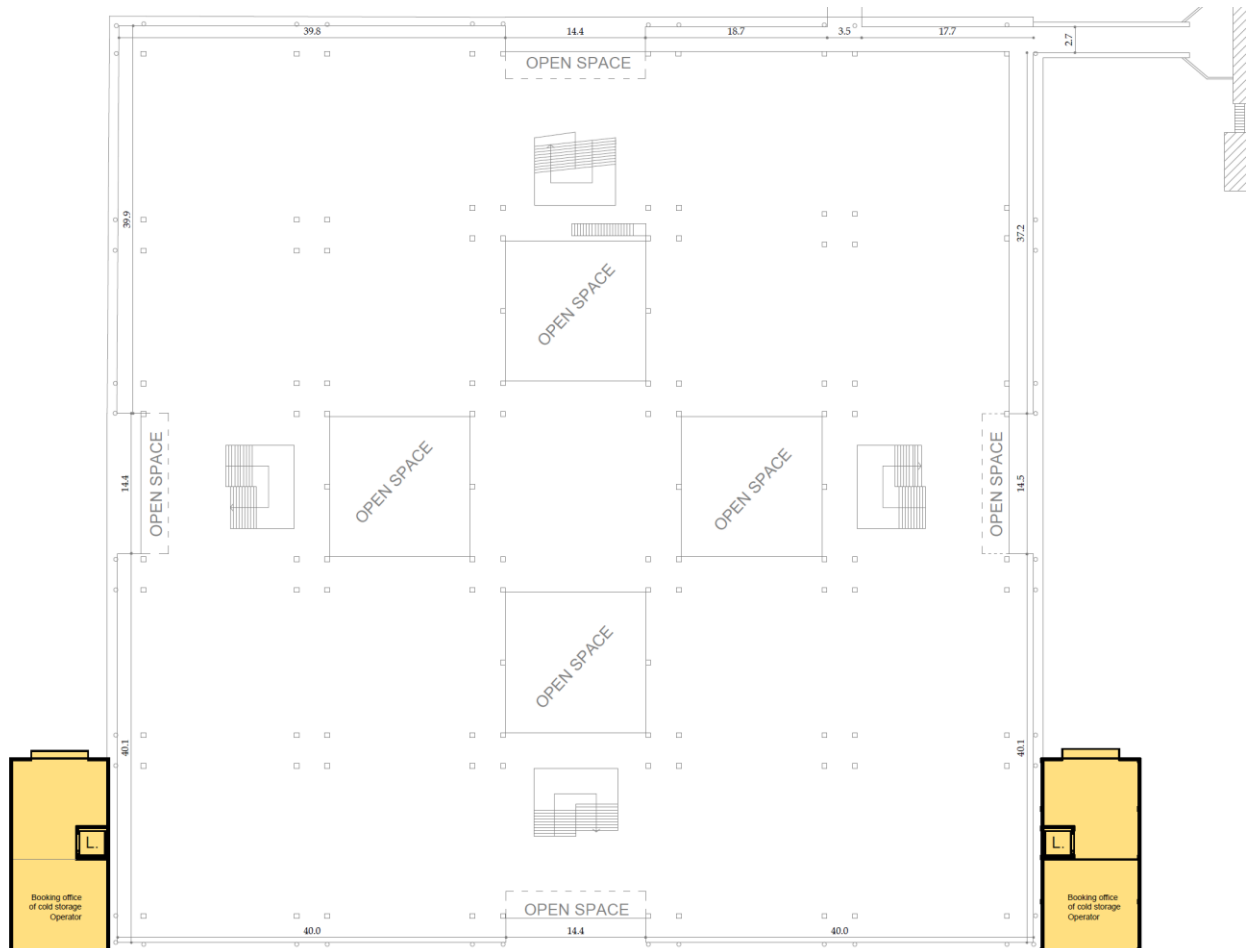
# Annexure 2 –Site Map & Conceptual Drawings

## 10.1 Existing Site Plan

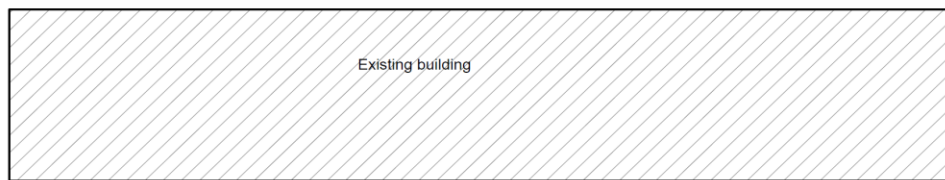




## 10.2 Indicative Layout/Concept Plan



Existing Ground and First floor plan



Second Floor Plan



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