Final Year Project Showcase for Batch-2015

Department of Architecture & Planning

Architecture Programme

1	**Project Idea**	**Integration Of Social And Physical Environment Through Agri-techture:** Having a long term goal to modify the habits of the city inhabitants towards viable nutrition, the aim of this thesis is to reconnect people or urban society with original source of food production that is agriculture and to overcome food insecurity among the citizens of Karachi through architectural intervention i.e. Agri-techture, the horizon this study focuses to expand include the relationship between food production, space, Livability and urban society.
2	**Process**	**PHASE NO 1** **BASIC IDEA** a) **Abstract Formation.** (Problem Identification w.r.t Current Scenario) b) **Hypothesis :** The implementation of agri-techture in Karachi can help overcome the gap between food production and space and encourage healthy and sustainable living among citizens\ **c) Methodology:** • Primary data Primary source of data is to be collected through 1. Market survey and analysis of current condition of food market 2. Interviews with the respected individuals associated with agritechture and other professionals who have knowledge of it. (As per research requires) 3. Asking society (people of Karachi) about their perspective on the topic and questions that will generate through further research. (Questionnaires) 4. Personal observations related to the topic in the context of Karachi. • Secondary data Secondary data includes 1. Understanding related theories that justify the topic 2. Reviewing and analyzing books, article, journals, reports and websites. 3. Watching possible videos and documentaries that help in understanding of the topic.

Research Question Identification

1. How can architecture bridge the gap between agriculture and the close loop system of nature? if yes how
2. How can architecture help solve the socio-economic issues evolved by this gap? How?
3. is it possible to provide better living quality for
4. Urban population through architectural intervention?

PHASE NO 2

RESEARCH

PRIMARY RESEARCH

a) Questionnaires (from general public Of karachi regarding food Insecurity)

b) Asking children (vertical farming and Healthy food activates by progressive Question And answer session).

c) Market survey of Karachi in general. (understanding food Quality in karachi And food chain of karachi)

d) Interviews with Professionals from The respective fields Attached to the topic.

SECONDARY RESEARCH

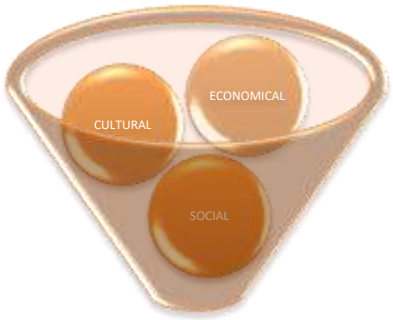
a) International research Journals on Agri-techture

b) Books , reviews ,articles ,published papers ,news Papers on the relevant topic.

c) International case studies on agri-techture (Scenario based) Vertical harvest (for Vertical farm model) Pasona office (office Design study w.r.t. agri-techture.)

PHASE NO 3

Program Brief Selection (Research Conclusions)



FOOD HUB

PHASE NO 4

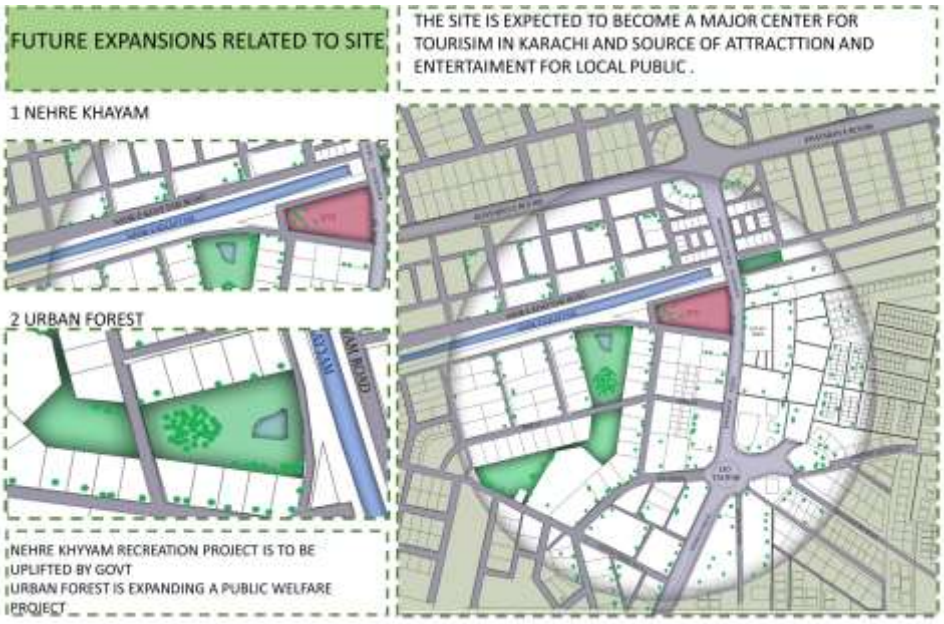
SITE SELECTION AND ANALYSIS (RESEARCH CONCLUCIONS)

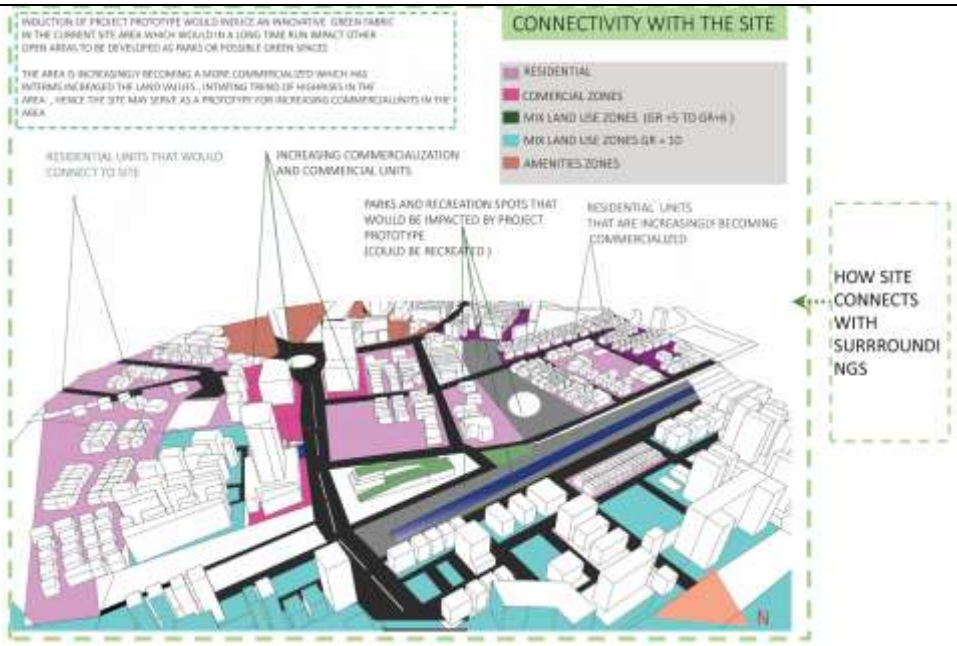
The site is located at a prime space, having direct access and linkages from all the major sites a in Karachi and is very suitable for food hub design also due to water availability w.r.t Nehre Khayyam.

SITE SELECTION CRITERIA :

	MUST HAVE	PREFFERED	CHECK LIST
Physical	High Visibility From Major Roadways And Surrounding Areas To Attract Visitors And Residents.	Highly Accessible By All Modes Of Transportation. Expansion Capability To Grow Long-Term	Yes
	AMPLE AUTO AND BICYCLE PARKING. LOADING AND UNLOADING AREA FOR VENDORS TO BRING PRODUCTS.	CO-LOCATED OFFICE SPACE FOR PUBLIC MARKET ADMINISTRATION AND ADDITIONAL SERVICES, SUCH AS SMALL BUSINESS SUPPORT.	YES
`	POTENTIALLY ADDITIONAL SPACE FOR RESTAURANT PICK-UPS.	PUBLIC SPACES INDOOR AND OUTDOOR FOR PEOPLE TO SPEND TIME WITH FRIENDS AND FAMILY.	YES
	WATER AVAILABILITY (ADDITIONAL)		YES
	MULTI-USE SPACE FOR ENTERTAINMENT AND SOCIAL EVENTS. AMPLE STORAGE SPACE, COLD AND DRY, FOR VENDORS. SPACE FOR A COMMERCIAL KITCHEN USED FOR DEMONSTRATIONS AND COOKING CLASSES.	CONVERTIBLE BUILDING DESIGN TO ALLOW OUTSIDE VENDOR STALLS	YES

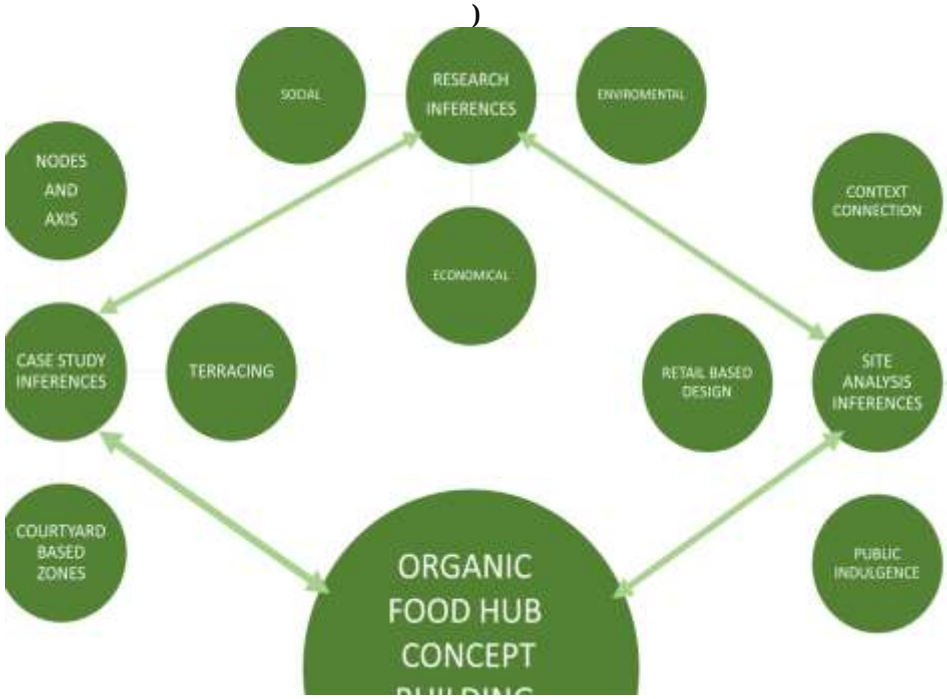
		LEGAL	**APPROPRIATE ZONING ALLOWING A PUBLIC MARKET. COMPLIANCE WITH AMERICANS WITH DISABILITIES (ADA) AND OTHER BUILDING CODES.**	**COMPATIBLE WITH USES LOCATED ADJACENT OR NEAR THE PUBLIC MARKET. FOR EXAMPLE, A MIXED-USE AREA WITH SMALL RETAIL STORES, RESTAURANTS, AND HOUSING.**	**YES**
		FINANCIAL	**PUBLIC/PRIVATE PARTNERSHIPS TO HELP COVER DEVELOPMENT AND OPERATING COSTS.**	**GRANTS AND OTHER FUNDING SOURCES TO HELP COVER DEVELOPMENT AND OPERATING COSTS.**	**YES**

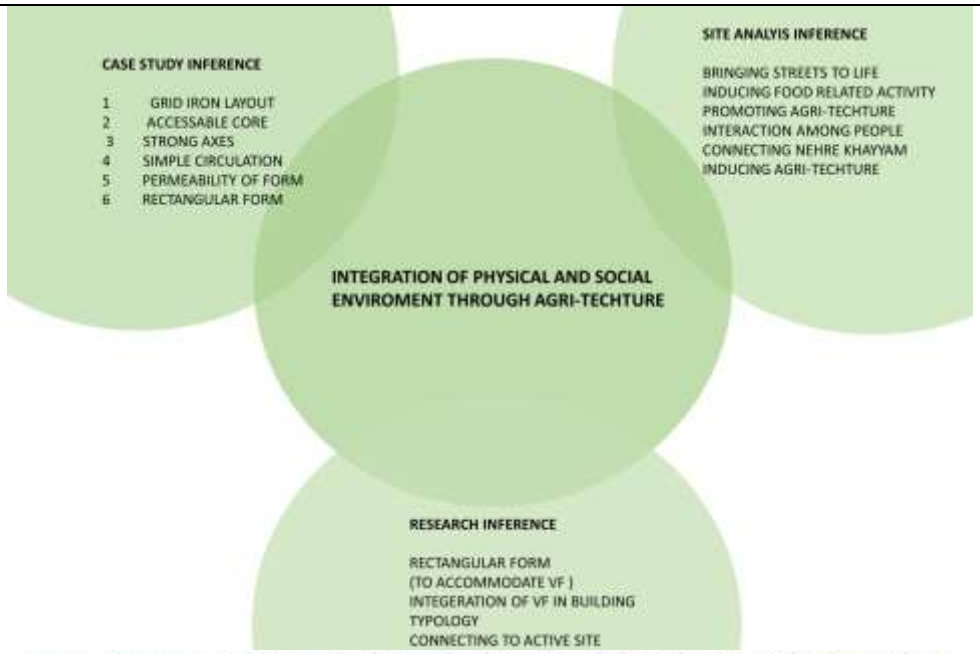


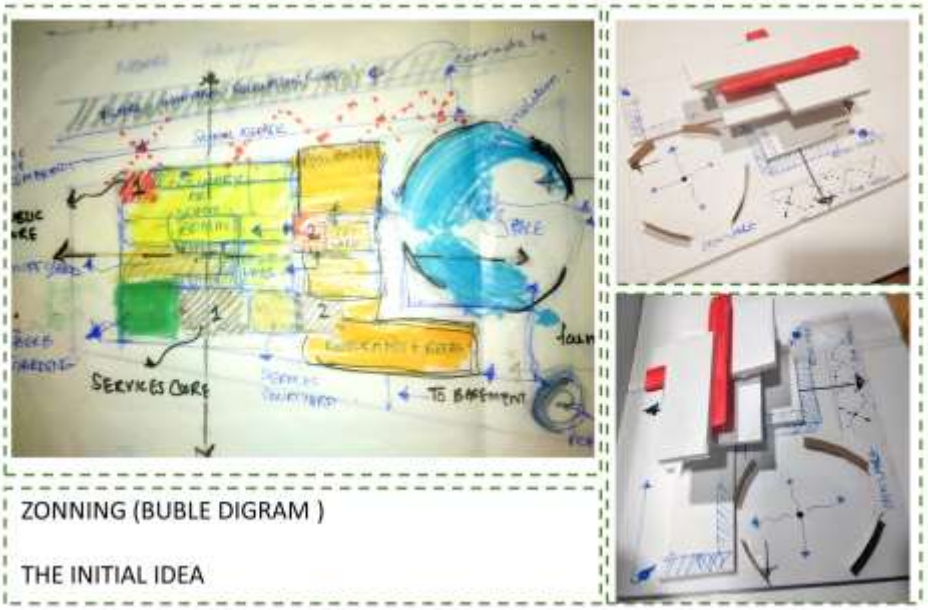


PHASE NO 5

CONCEPT DEVELOPMENT (IN ACCORDANCE WITH BREIF AND INTIAL IDEA)

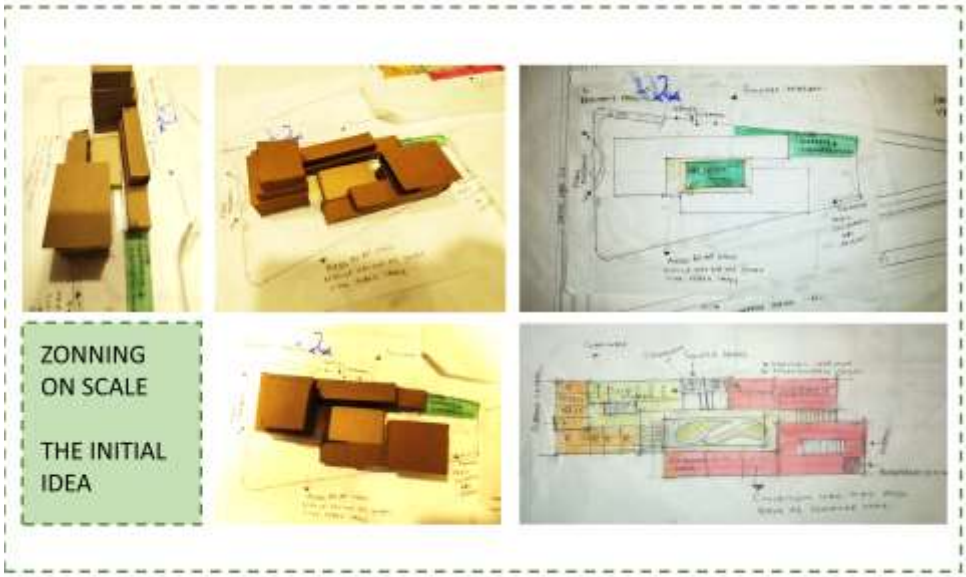


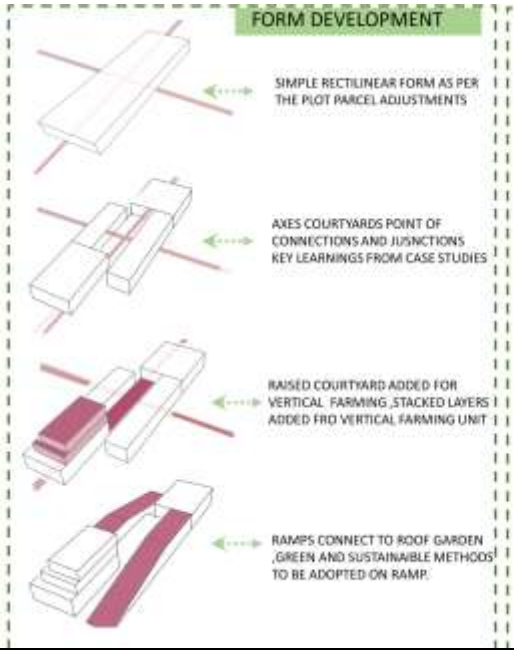


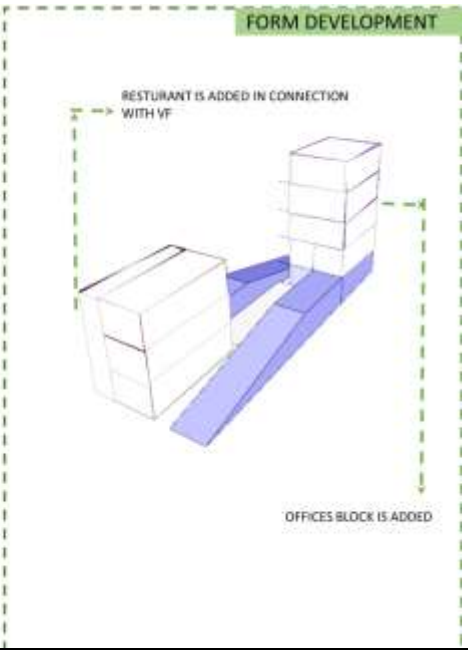


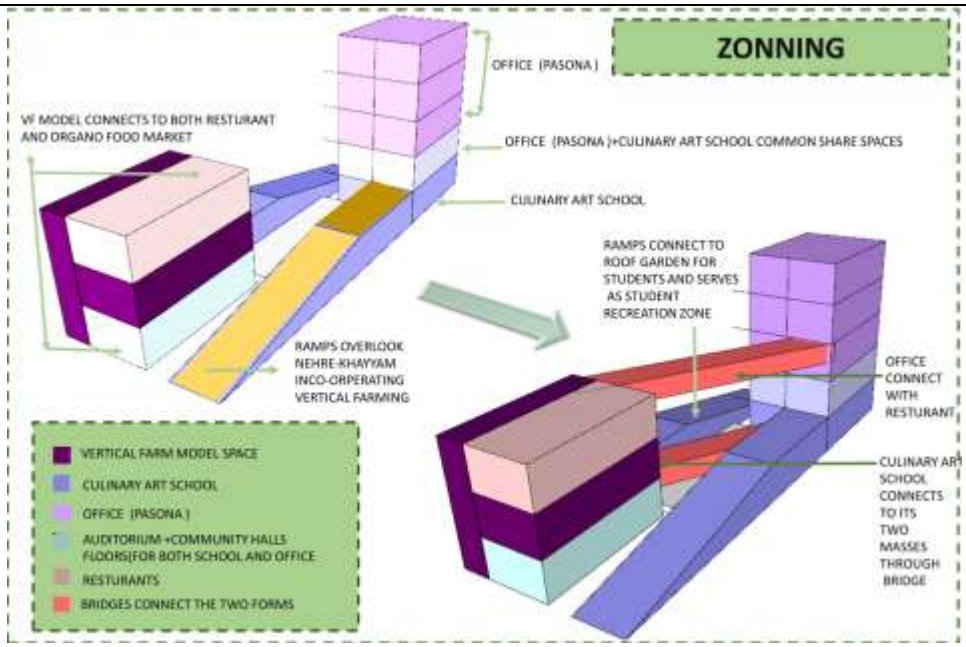
ZONNING (BUBLE DIGRAM)

THE INITIAL IDEA


ZONNING
ON SCALE
THE INITIAL
IDEA

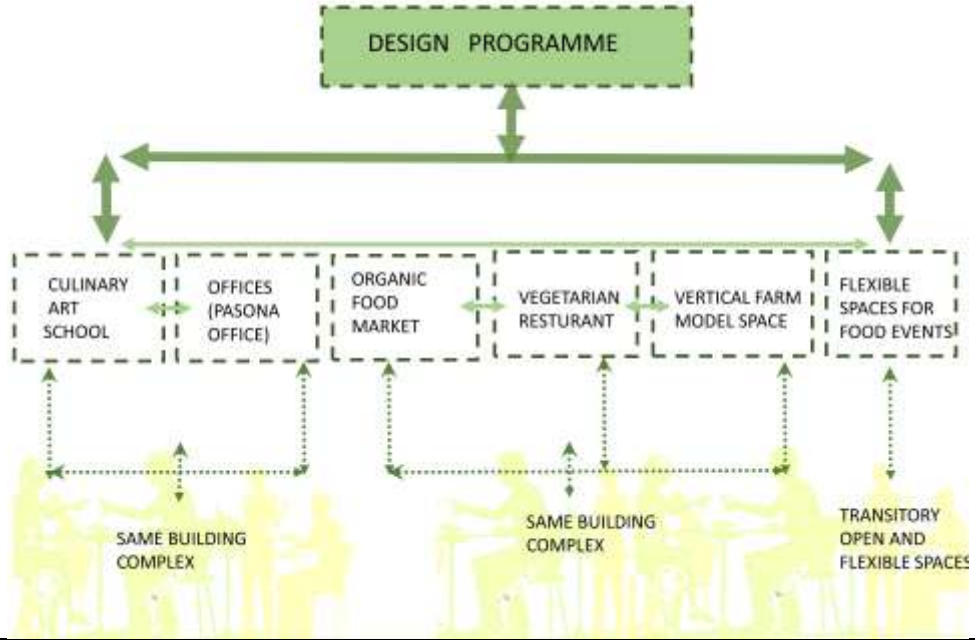

FORM DEVELOPMENT
SIMPLE RECTILINEAR FORM AS PER THE PLOT PARCEL ADJUSTMENTS
AXES COURTYARDS POINT OF CONNECTIONS AND JUSNCTIONS KEY LEARNINGS FROM CASE STUDIES
RAISED COURTYARD ADDED FOR VERTICAL FARMING ,STACKED LAYERS ADDED FRO VERTICAL FARMING UNIT
RAMPS CONNECT TO ROOF GARDEN ,GREEN AND SUSTAINABLE METHODS TO BE ADOPTED ON RAMP.


FORM DEVELOPMENT
RESTURANT IS ADDED IN CONNECTION WITH VF
OFFICES BLOCK IS ADDED



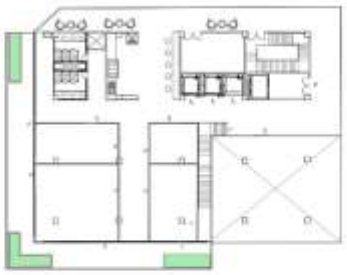
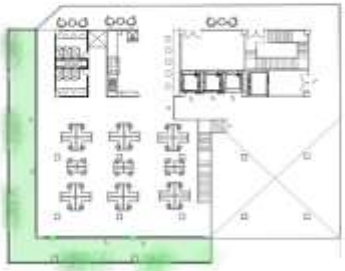
PHASE NO 6

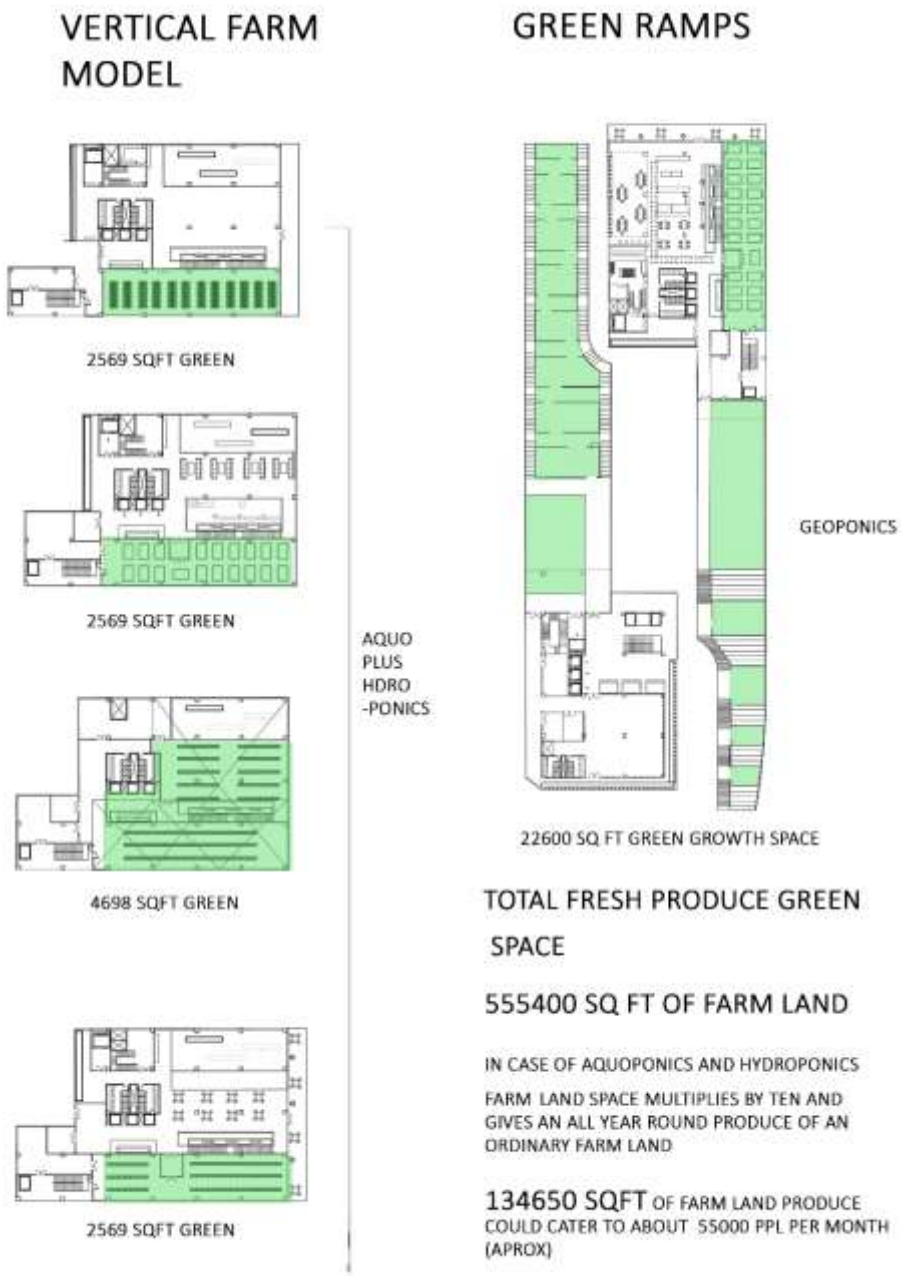
FINAL PROJECT PLANNING (THE OUTCOME)



3	**Outcome**	If the design prototype were to be implemented there could be a positive impact on the entire neighborhood and could inspire a series of green high-rises in the area with a similar concept at large ,promoting sustainable living and environment at the same time catering to the public demand of quality food in karachi at large .

4	**Evidences (Theoretical Basis)**	Although agri-techture has been termed only recently, which means implementing agricultural practice in space (architecture) by means of technology, the research on this particular area had started long before in the year 1982 **by Dr Dickson Despommier** a microbiologists in Columbia university , who came up with effective method to grow food on vertical planes through hydroponic systems which used less water and no soil for plant growth , later in the year 2010 his book "**vertical farming :Feeding the world's 21st century** "came out which became very popular due to its ground breaking revolutions in the field of agriculture. However his concepts were very well received by architects around the world , that believed in the idea that food should be produced in sustainable and organic way .Due to this many Architects started to learn more about both agriculture and agritechture , as a result of which the idea of Agri-techture or farma-techture came into existence in the modern world . **RATIONALE** The population of the world is increasing at alarming rate with increase in population, there will be definite decrease in arable land for agriculture, and hence there is the idea of feeding the future, however in case of Karachi which is estimated to become 7th largest city in the world by 2030, the agricultural land in Karachi that is the Lyari river bed has continued to deprive on a regular bases due to which the land once used for grazing and farming has vanished from the area and is now used for other purposes. Also Karachi has long had the issue of water shortage due to which the agricultural activities in sub-urban areas are also decreasing or have started to experience loses ultimately leading to the scenario of city inhabitants being disconnected from agricultural production and hence the gap between space and food production (the original idea of thesis) However this can largely be catered to by the use of vertical farming which uses 90% less water than traditional farming methods and same is the case with surface area or land , catering to the major issues Karachi is facing with respect to agriculture also connecting its inhabitants to food production also making the mega city more self-sufficient .
5	**Competitive Advantage or Unique Selling Proposition** (Cost Reduction, Process improvement, Attainment of any SDG (Sustainable Development Goal), increase of market share or capturing new market or having superior performance over competitor. In summary, any striking aspect of the project which compels industry to invest in FYP or purchase it. Some detail description is required in terms of how, why when what. You can select one or more from following dropdown and delete rest of them)	

a	**Cost reduction of existing Product**	OFFICES FLOOR PLATES  600 SQFT GREEN  600 SQFT GREEN   1500 SQFT GREEN X2  1500 SQFT GREEN  1500 SQFT GREEN X2

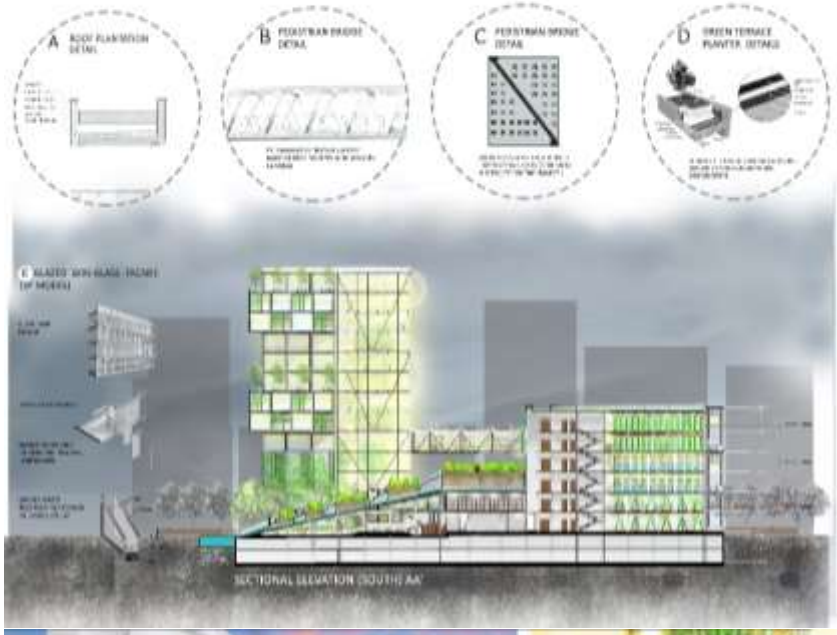
		 The projects aims to sell fresh produce to about 55000ppl per day at the same time operates with both public welfare as well as retail biased design program beneficial to the general public and the possible sponsors.
b	**Process Improvement which leads to superior product or cost reduction,**	The usage of the agri-techture techniques and updating the process keeping track of latest researches in the field will help move the project in right direction and make it even more sustainable with time and more effective water sustainability

	efficiency improvement of whole process (e.g. What is issue is current process and what improvement you suggests)	techniques can also be applied for the project.
c	**Attainment of any SDG** (e.g. How it is achieved and why it is necessary for the region)	1. No poverty, this goal can be achieve if not entirely but partially as Agritechture inco-orperates vertical farming which in terms is seventy percent dependent on labors. Specially in case of Karachi where people are awaiting job opportunities ,also since vertical farming require no proper qualifications even handicapped and uneducated personnel are allowed to engage in it . 2. Food production itself is an initiative to eradicate hunger. 3. As discussed above vertical farming produces healthy nutritious and organic food which is even being delivered to and preferred by hospitals in Karachi. 4. Quality of education is one of the goals of Agri-techture implementation in an urban environment where young minds needs to learn more about Food production and growth something that has become evident as food production and space gap has occurred due to urbanization. 5. Agritechture does not discriminate between genders. 6. It promotes lesser usage of water and recycling as well hence preserving nature. 7. Agritechture uses LED lights however it is appreciated if plants are grown through natural light provided appropriate measures taken ,which the project has kept regard of . 8. Agri-techture implementation in an urban environment will help boost the economy at the same time it is already a multi-millionaire industry at international level. 9. Agri-techture is an innovative approach its self however its implantation is considered healthy to the environment also. 10. Provision of job opportunities to all genders despite of their disabilities is one of the distinguishing feature of Agritechture that promotes equality. 11. Implementation of Agritechture will help gulf the gap between food production and society helping overcoming food insecurity and providing healthy nutritious food to the society especially in case of Karachi. 12. Agri-techture promotes responsible food production and also uses sustainable methods catering to the world wide issue of water insecurity, also providing an opportunity to produce food using only green methods and not depending on fossil fuels as much as possible which becomes otherwise in case of traditional farming . 13. Agritechture is said to be environmental friendly which has been explained before. 14.15. Implementation of agritechture helps save water in terms protecting

		marine life as well as it generates biodegradable waste which is reused in food production if properly inco-orperates leading to environmental friendly design protecting both life above and below water. 16. The entire aim of implementation of vertical farming is to make Karachi self-sufficient and strong and to provide society food from justifiable and healthy sources. 17.Interms as per international understanding vertical farming is not a free standing industry it has with times developed partners with restaurants chains food supply chains and even hospital promoting healthy living among citizens. Hence in the case of Karachi implementation of agritechture is a sustainable approach from all aspects however the issue of its economy and huge financial expense to set up the industry is evident, however it is estimated to be a profitable industry in long terms.
d	**Expanding of Market share** (e.g. how it expand and what is problem with current market	The Project targets current market of the society and aims to create a healthy fresh produce market for the city inhabitants at the same time it aims to establish healthy activities around food production encouraging citizens to grow their own food
e	**Capture new market (**e.g. Niche market or unaddressed segment**)**	The Project targets current market of the society and aims to create a healthy fresh produce market for the city inhabitants with high food quality for the first time in city and through this i.e. agritechture the project aims to integrate physical and social environment.
f	**Any Environmental Aspect** (e.g. carbon reduction, energy efficient etc.)	The project idea promotes sustainability and ultimately reduces carbon emission "green "being the major idea of the project however through the use of bamboo the project can further reduce carbon emission. Water sustainability and gray water usage and rain water collection system adds to sustainability goals achieved in the project Use of photovoltaic cells in the bridge façade provides energy efficiency for the project at large.
g	**Any Other Aspect**	Culinary art school helps promote the food culture and food diversity in karachi creating an interesting theme in the project at large.
6	**Team Members (Names & Roll No.)**	Amatullah Sara Ahmed Ar-015
7	**Supervisor Name**	Internal Advisor Ar-Suneela Ahmed (suneela_mail@yahoo.com) Ar-Rahat Arsalan (rahatarsalan@gmail.com)

		External Advisor Ar-Rafia Dadi
8	**Pictures**	

		 3RD FLOOR PLAN AT GROUND +34'-0" SCALE =   


NEHREKHAYAM RECREATION
NEHREKHAYAM RECREATION
EXIT
ENTRANCE
EXIT
ENTRANCE
MASTER PLAN AT GR +3'
SCALE - 1:16