

DESIGN BRIEF SITOPIA



Design brief. Sitopia

Lyubov Viller

Sitopia is a hybrid typology which combines housing and a Food Hub. Project is implemented in the group strategy of densification the strip of blocks along the Hudson River and creating new links with the waterfront and piers and thus establishing a new relationship between Midtown and the Hudson River. Food hub components are the market and restaurants, urban farm/park-supermarket, e-commerce fresh food distribution center, space for educational programs. One of the main ideas of Sitopia is that food and waste flows are a closed cycle between food hub ingredients and housing and shape a harmonious and sustainable food system. The Site.

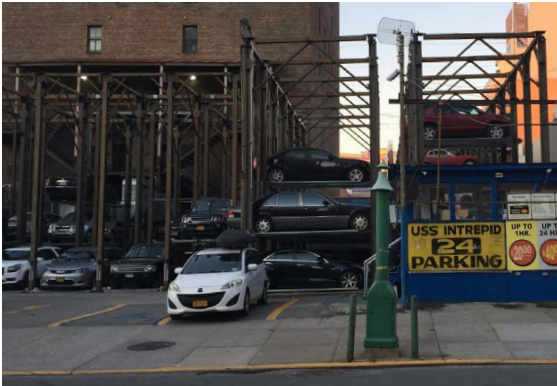
The site is a plot of 8500 square meters located between 50 and 51 streets and 11 and 12 avenues. (Fig.4.2.3.4) The choice of site is determined by few conditions apart from being implemented in group vision. Firstly, it is situated in a Food desert and Fresh tax incentive zone. Secondly, It provides an access to alternative transport systems like piers and NYC Cruise Terminal and new transportation hub with subway station and drone station, Westside highway which influence is going to be reduced but it still remains one of cities transportation arteries. Furthermore 1 million tourists annually arrive at the NYC cruise terminal, thus Food hub is automatically will be oriented not only for community needs but also for tourist audience. Third reason is reinforcing connection with new green public spaces along the waterfront and above the highway. (Fig.4.2.3.5)

Currently the immediate context of this site between 12 and 11 avenues consists of infrastructure and utilities buildings, warehouses and manufacturing and offices in former warehouses. There are few public facilities and institutions and housing between 11 and 10 avenues. The block itself is composed of the parking lots, office building and two warehouses one of them is a car retail facility. The historical office building from 1940-s which is situated in the same block and was recently renovated is going to be preserved. (Fig.4.2.3.6)

The existing build-up area is 28,500 square meters and the block is zoned as M2-4 manufacturing and some commercial uses with FAR 5 is going to be multiplied and densified by three times to a maximum bulk of 85000 square meters and FAR 10 (according to group strategy and A Ten Year Housing Plan). The sky exposure plain should be preserved thus establishing a setback above 29 m height and 3 meters deep. (Fig.4.2.3.7) Moreover, Fresh Zone tax incentive is applied to this area meaning that if developers provide fresh food supermarket the bonus is 1:1 square feet. Providing 9000 square meters of market means +9000 square meters of housing could be added. Second bonus for including 20% affordable housing is 33% is in total 29,000 square meters which can be building above FAR 10 maximum bulk. Total densification of the block is 114,000 square meters. (Fig.4.2.3.8) The design proposal should follow certain rules dictated by a group strategy. Ground floor should interact with the dyke above the highway or create a public plaza which can be used as a market square, densification should not create a wall and block views therefore facade coverage along the avenue should not be more than 50%.



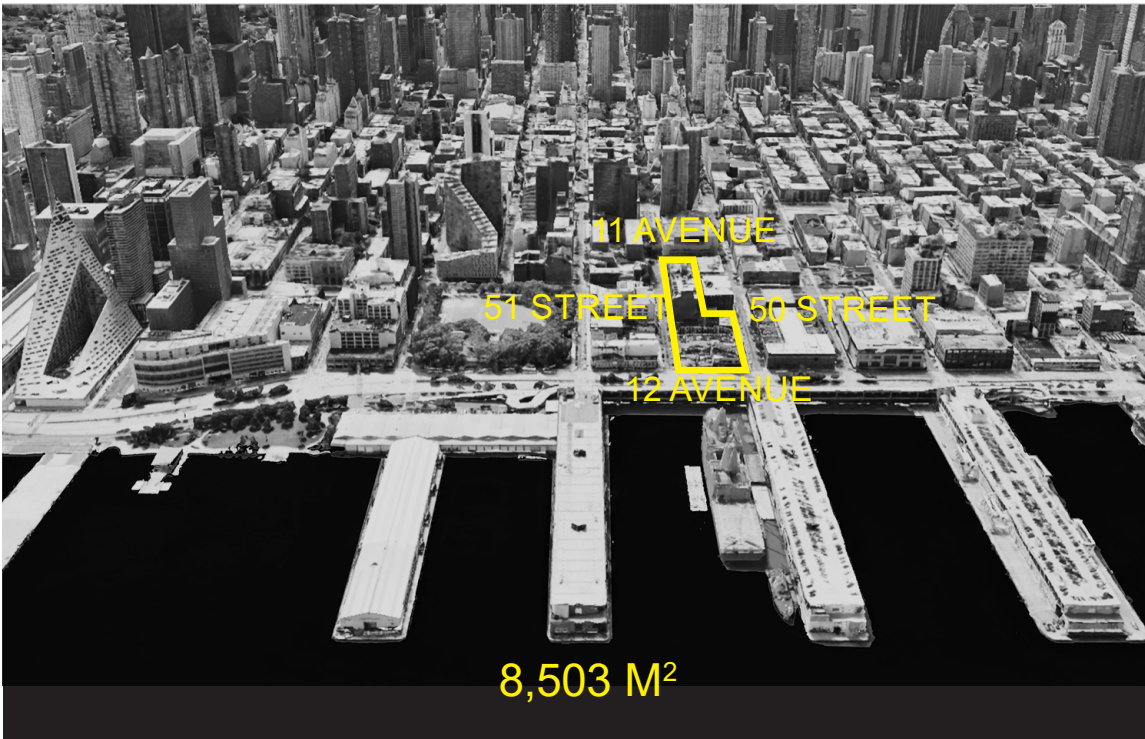
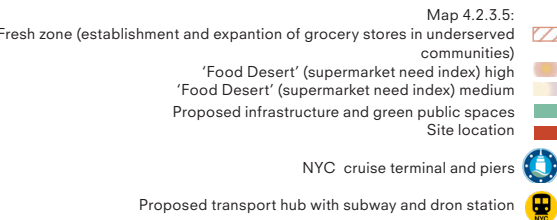
4.02 Existing historical office building on the site (1940) (by Lyubov Viller)



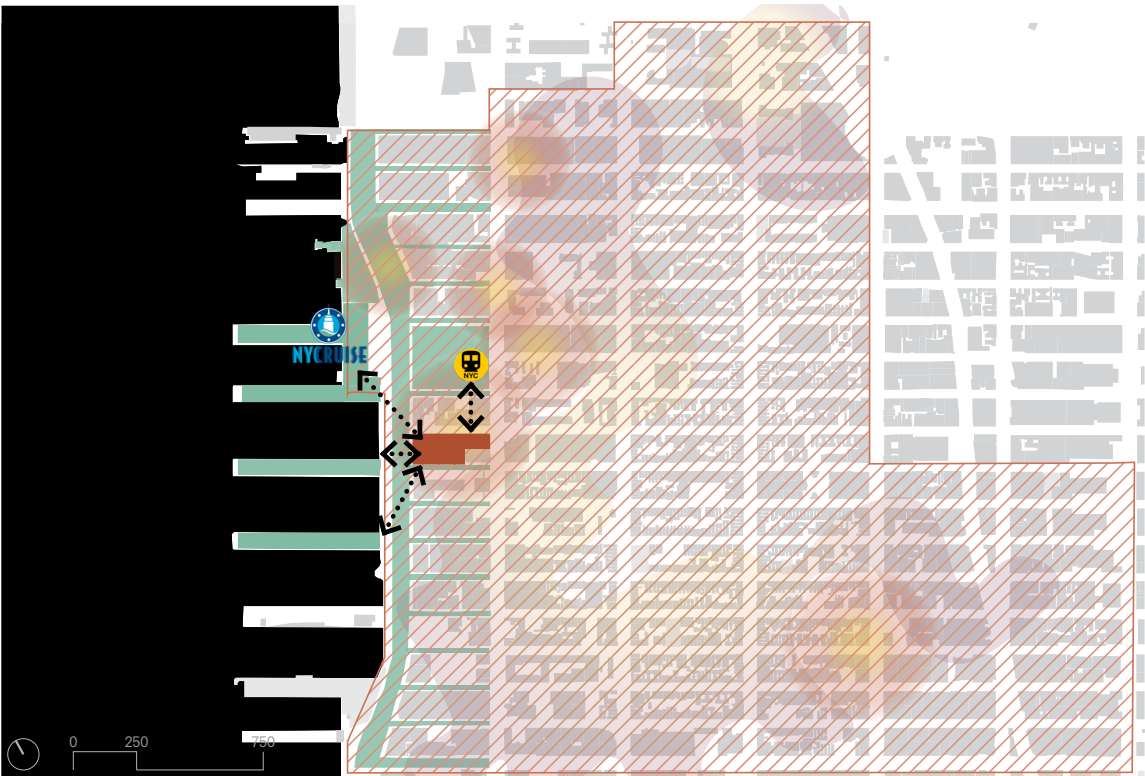
4.03 Existing parking lots on the site (by Lyubov Viller)



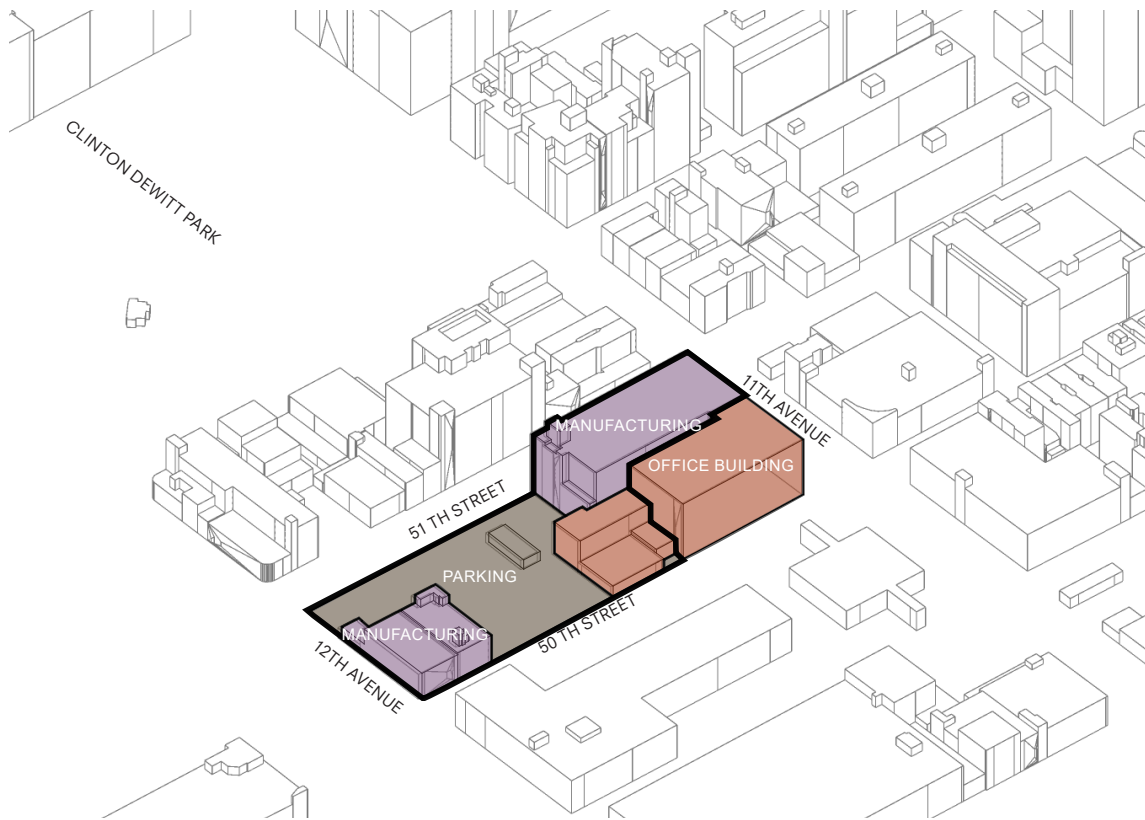
4.2.3.4 Existing warehouse on the site (by Lyubov Viller)



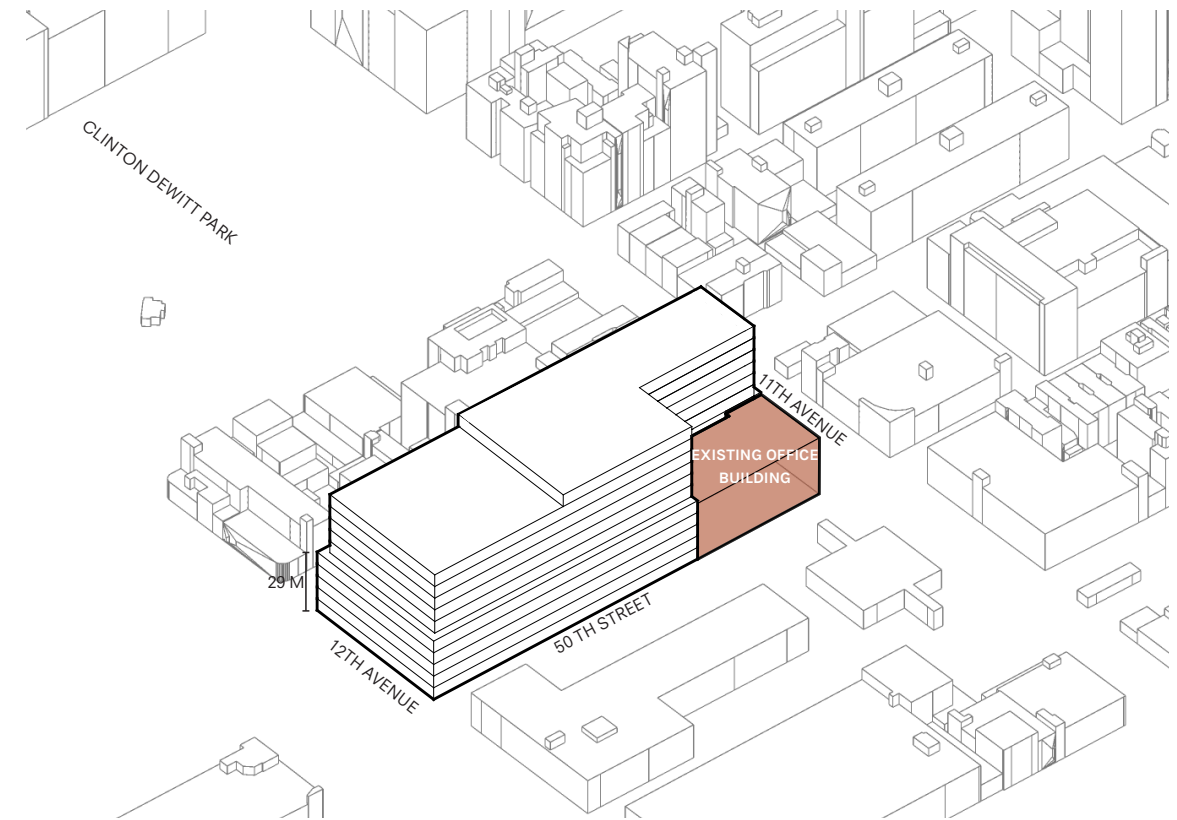
4.04. The site view from The Hudson River (by Lyubov Viller)



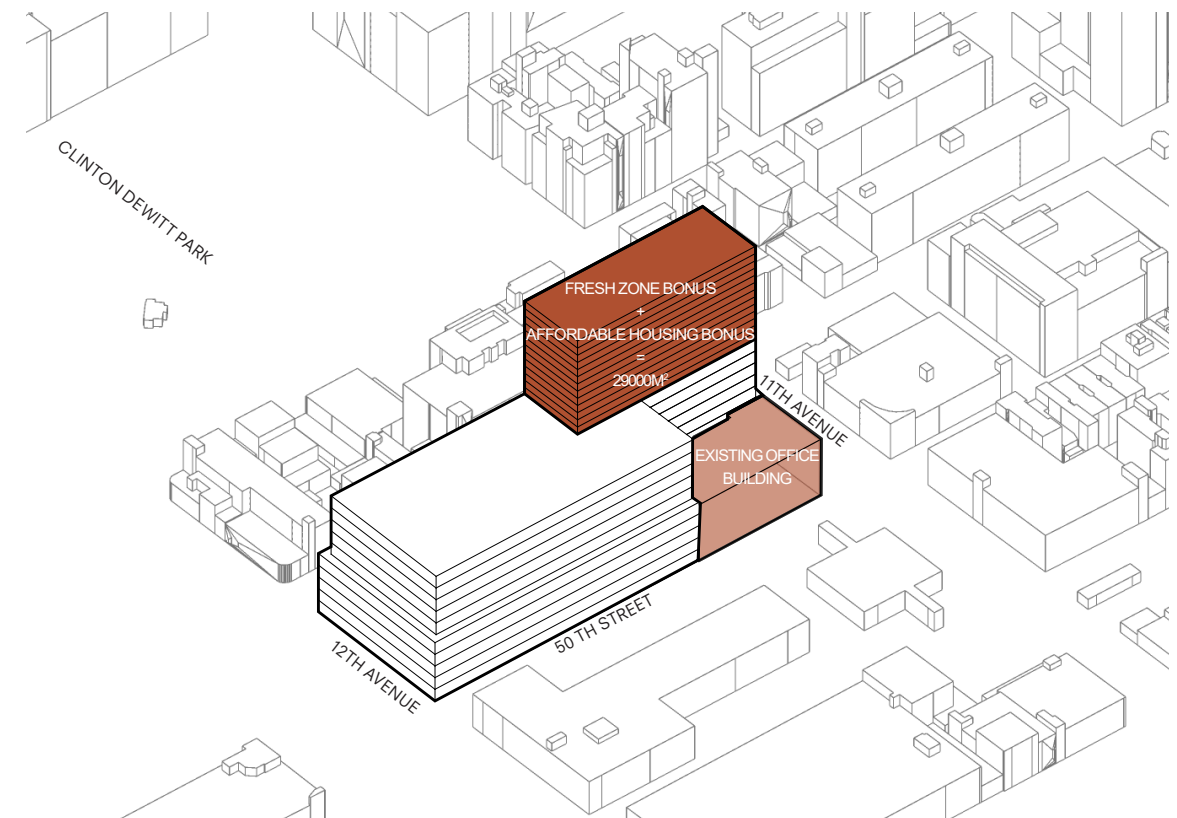
4.2.3.5. Choice of site: Food deserts, Fresh zones, access to transportation hubs, proposed and existing infrastructure and green public spaces 1 (by Lyubov Viller)



4.2.3.6. Existing context and functional zoning of the chosen plot. FAR 5, built-up area 28,5000 m² (by Lyubov Viller)



4.2.3.7. Densification according to the group strategy. From FAR 5 (28,5000 m² to FAR 10 85, 030 m²) (by Lyubov Viller)



4.2.3.8. Rezoning: FAR 10 for residential and commercial use+ Fresh zone and Affordable housing bonuses (29,000m²) = 114,000 (by Lyubov Viller)

Programme

The proposal is aiming to tackle on the Issues of existing NYC foodscapes analyzed in previous article. Firstly, NYC food system is geographically centralized, relies on the track transportation for 95%, thus it is unsustainable and vulnerable especially towards flooding risks due to the climate change or natural disasters like hurricane Sandy.¹ The strategy is to modernize old system and create additional and alternative new system with localized food hubs and infrastructure across the city. Secondly, one of the biggest issues of any modern food supply system is widening the gap between rural and urban and thus the need to increase regional connections. The strategy is a revival of farmers markets and urban agriculture. Thirdly, old models of supermarkets and small grocery shops are closing in Manhattan due to the high rent prices. The strategy is to introduce new types of grocery shopping, urban agriculture and food production, e-commerce grocery shopping logistics and distribution centers. On the scale of Hell Kitchen Foodhub strategies are translated into the shift from industrial past to residential future and results in merging housing and food infrastructure. Food production is a manufacturing which works for community and housing which under Manhattan real estate conditions works as capital generating engine.

The study of food supply systems theory helps to determine the elements of sustainable Food hub: production (e.g. urban agriculture), processing, distribution retail, transportation (last food mile distribution), eating culture (restaurants), educational programs, waste recycling.² Thus the proposed elements of Hell’s Kitchen food hub follow this theoretical approach. Sitopia’s elements are the wholesale market, urban farm/park-supermarket, e-commerce grocery shopping distribution center, restaurants, and educational space.

NYC and international precedence are going to be used to verify the programme ratio. The Essex Crossing and the Market line in Lower Manhattan as a New York precedent of the hybrid complex which combines housing, offices and cultural functions, an urban farm and food distribution in the biggest food hall in New York. Market line area is 14,000 square meters in combination with urban farm, housing which is 50% affordable, offices and culture. market line is retail that takes the whole plinth. Essex market + tower is one of the buildings in the Essex crossing with the new facility for historical Essex market. (Fig.4.2.3.9)

Rotterdam Markthal by MVRDV as a radical typology which combines housing and food market. Where housing is ‘wrapped’ around public space and is an inverted typology of traditional market square.

Abattoir Brussels and BIGH urban farm are the examples of food production and processing combined with food distribution (market) in the residential area of Brussels. BIGH farm is a sustainable and profitable aquaponic urban farm and is situated on the market

building roof. Clustering helps to reduce transportation costs and effects on the environment and lessen the pressure on the infrastructure.³ (Fig.4.2.3.9)

Online grocery shopping is taking pace. Search for new typologies of shopping and alternative ways of last mile food delivery. Examples of Fresh food e-commerce distribution centers such as Ferreteria o’Higgins in Chile (7170 m2), Stringio office building+logistic center (13760 m2) and Petzl headquarters and distribution center (7542 m2) help to determine the size of e-commerce distribution center.

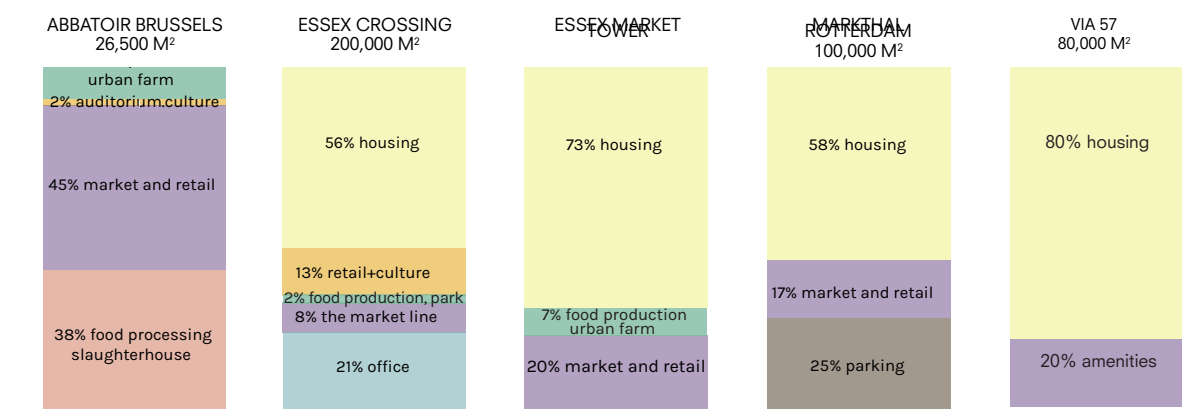
Types and sizes of European markets were studied from traditional ‘roof market’ like Ataranzas Municipal Market. (3375 m2), to postmodernist renovation like Santa Caterina Market in Barcelona (4200 m2) and a radical ‘spiral route typology’ like Abrantes Municipal Market. (1280 m2). Sizes of European markets usually vary from 1000 to 4000 square meters, although Markthal in Rotterdam has a total area of 9000 square meters.

The choice of urban farm technology was determined by the comparison of different Farming methods capacity. For instance 1000 sqm of conventional farming can feed 2 people annually, hydroponic farm can feed 13 people and aquaponic 125 people. On the example of 2000 sqm of aquaponic farm with 450 cubic m water which can feed about 300 people per day. The technology is a circular system of agriculture that uses fish to naturally fertilize the crops, and in turn uses the plants themselves to purify the water, creating a cycle of growth with little to no waste. The system is soil-free. ⁴ Existing aquaponic farm precedences are BIGH urban farm Brussels (4000 m2), Urban farmers in den Hague (2100 m2).

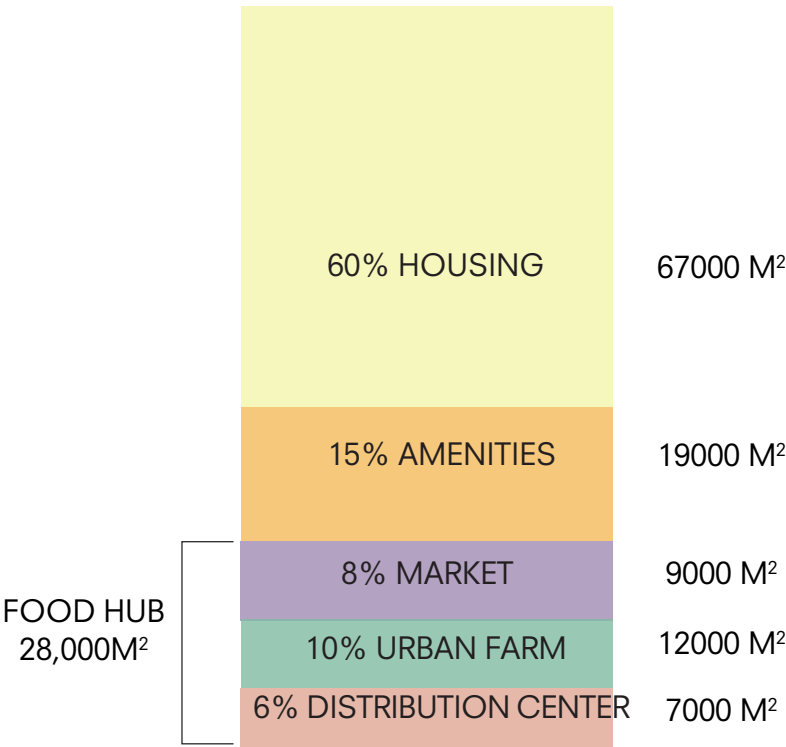
To verify farm size for NYC a few existing NYC urban farms were analyzed such as successful fresh food producer Brooklyn Grange: Long Island City (4.000 M2), Brooklyn Navy Yard (6000 M2), Susnet Park (13.000 M2). Brooklyn Grange is a rooftop farming which uses different farming techniques. It is a commercial farming and it’s usually clustered with wholesale groceries like Whole Foods Market.

Analises of block density and typology for housing in Hell’s Kitchen was conducted comparing housing blocks from different epochs like tenement houses in 1900-s to subsidized housing in 70-s and modern VIA 57 WEST. VIA 57 is the new type of ‘Courtscraper’ of 80,000 square meters with 20% amenities like sport halls, swimming pool and cinema, community garden inside the building. 20 % of apartments are affordable. (Fig.4.2.3.9)

Programme comparison shows that the proportion of housing is usually from 50% to 80% which is a ‘safe’ option as a business case because it generates capital in real estate. Other components are a combination of market and food production and in some cases processing. Analysis of different programs and sizes of precedence, capacity and hell’s kitchen conditions results in Sitopia programme of 114,000 sqm combining 60% of housing with 15% housing amenities



4.2.3.9. Comparison of the precedent program bars (by Lyubov Viller)



4.2.3.10. Proposed programme bar of Sitopia 1144,000 m² (Housing+Food Hub) (by Lyubov Viller)

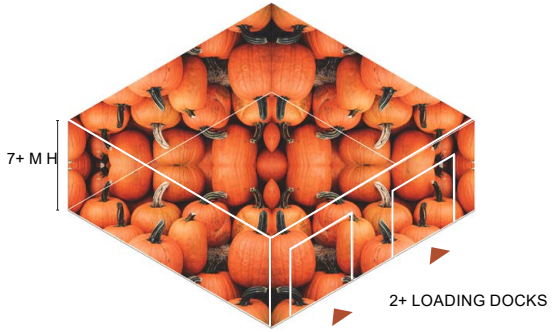
Market spatial organization can combine some functions like loading bay and storage with distribution center parts of market are connected with urban farm (cycle of production, distribution and recycle of waste) together they shape new public space dedicated to food. Housing is integrated in the complex but its private the most important factor that food hub and housing together are integrated into a circular system of food and waste flows.

Technical Requirements

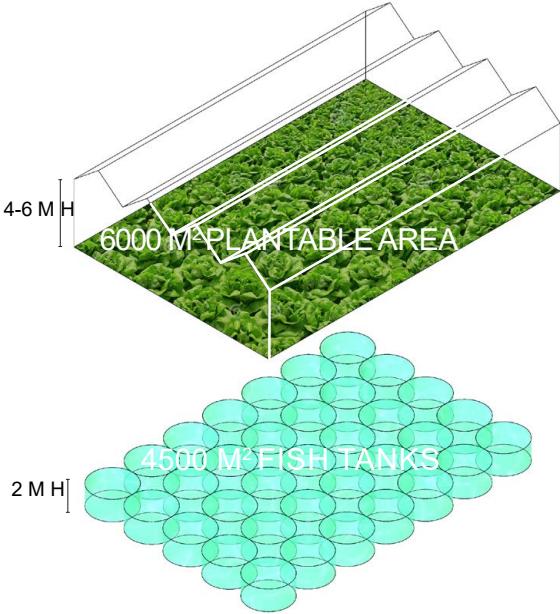
Some technical requirements were studied to determine massing and programme in more detail. Food market usually 3,5-6 meters or more and average dimensions of market stalls are 3X4 meters and aisle width is 3,5-6 meters.⁵ Urban farm technology: correlation between plants and fish is 6000 m2 of plantable area for 4500 m2 of fish tanks or 11,000 m3 of water, ceiling heights are 4-6 meters for a greenhouse and 2 meters for fish tanks.⁶ Distribution centre has to have 7+ m ceiling heights, 2+ loading docks. Housing codes in NYC permit for a minimum of 24 square meters per person and 2,5 m minimum ceiling height for at least 75% of dwelling area. Minimum apartment sizes are: 37 m2 for a studio, 54 m2 for 1-bedroom apartment, 72 m2 for 2-bedroom apartment and 88 m2 for 3-bedroom apartment.



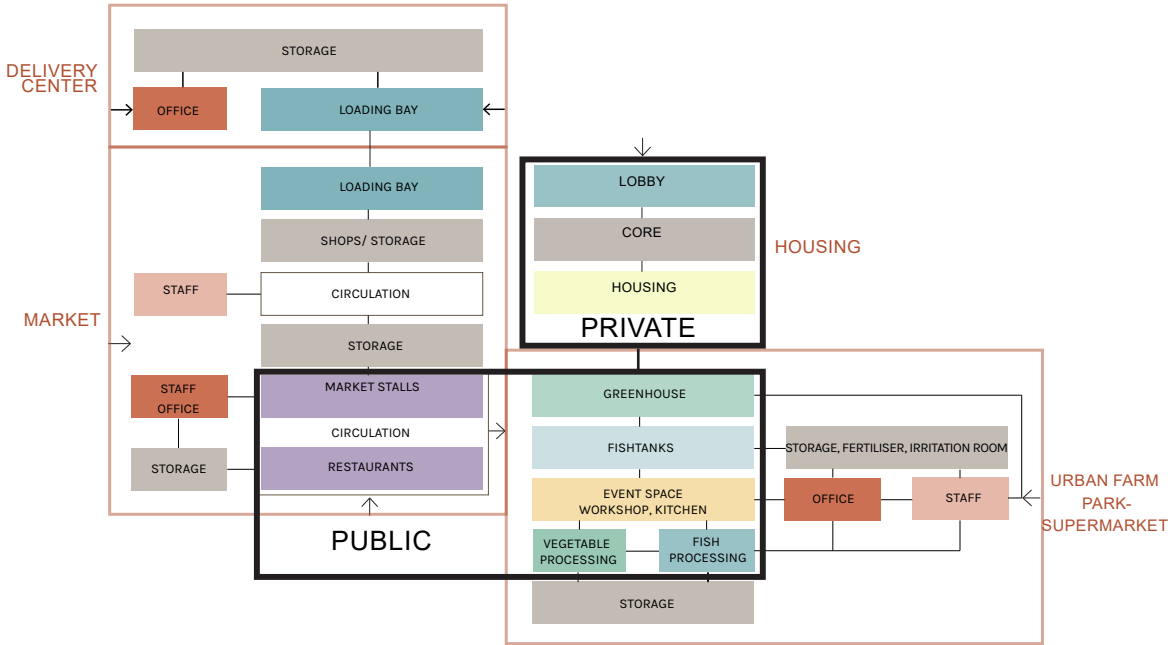
4.2.3.11. Technical requirements for the market (by Lyubov Viller)



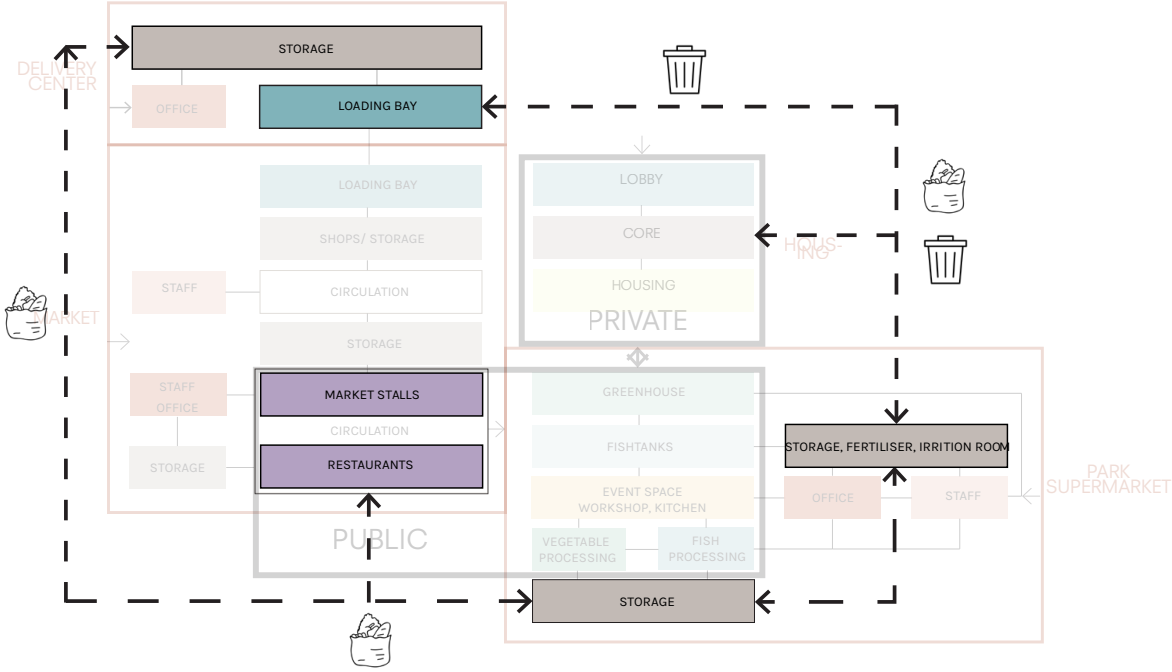
4.2.3.12. Technical requirements for e-commerce distribution center (by L. Viller)



4.2.3.13. Technical requirements for the aquaponic urban farm (by Lyubov Viller)



4.2.3.14. Spatial organisation of Sitopia showing Public and Private spaces and the links between elements (by Lyubov Viller)



4.2.3.15. Spatial organisation of Sitopia showing food and waste flows (by Lyubov Viller)

Ambitions, character, materiality

The design proposal should reflect three identities such as, firstly, to express the NYC character: bigness, dichotomies, layering, NYC industrial aesthetics, brick textures, setback skyscrapers. Secondly, markets are the food palaces they represent the cornucopia the horn of plenty. Thirdly, aesthetics of sustainability and urban farm (fresh building in the fresh zone). The three identities merged together should express project’s ambitions.

The project proposes an alternative framework for the NYC food system as a typology of a decentralized food hub as a new mode of NYC resilient and sustainable food supply system. The current system is geographically centralized and unsustainable because 95% of transportation is conducted by trucks. The system is vulnerable to flooding risks in case of rise of sea level due to climate change or natural disasters which was proved by a hurricane Sandy. Although food infrastructure plays important role in shaping cities food is so vital it stays invisible, most of the food is coming from Hunts Point distribution center where trucks are lost. Making food more visible and integrated element of the built environment makes urban dwellers more aware of it, gives them more control because food can play an almost political role in the society.⁷ To lessen pressure on infrastructure and track way of transportation food hub should use alternative ways of transportation. Clustering helps to reduce transportation costs and thus food costs and environmental pollution.⁸ Aquaponic farm on site can reuse heat from other buildings, saves 90% of water in comparison to other production methods.⁹ On the local scale of Hell’s Kitchen food manufacturing and distribution and creation of new lifestyle and modern ways of grocery shopping produces values for the community and improves the quality of the residential urban environment which means transition for from industrial past to residential future and revival of the waterfront. Project proposes new ways of grocery shopping: e-commerce, merging farm and market= park-supermarket (self harvesting and new green public space for community).



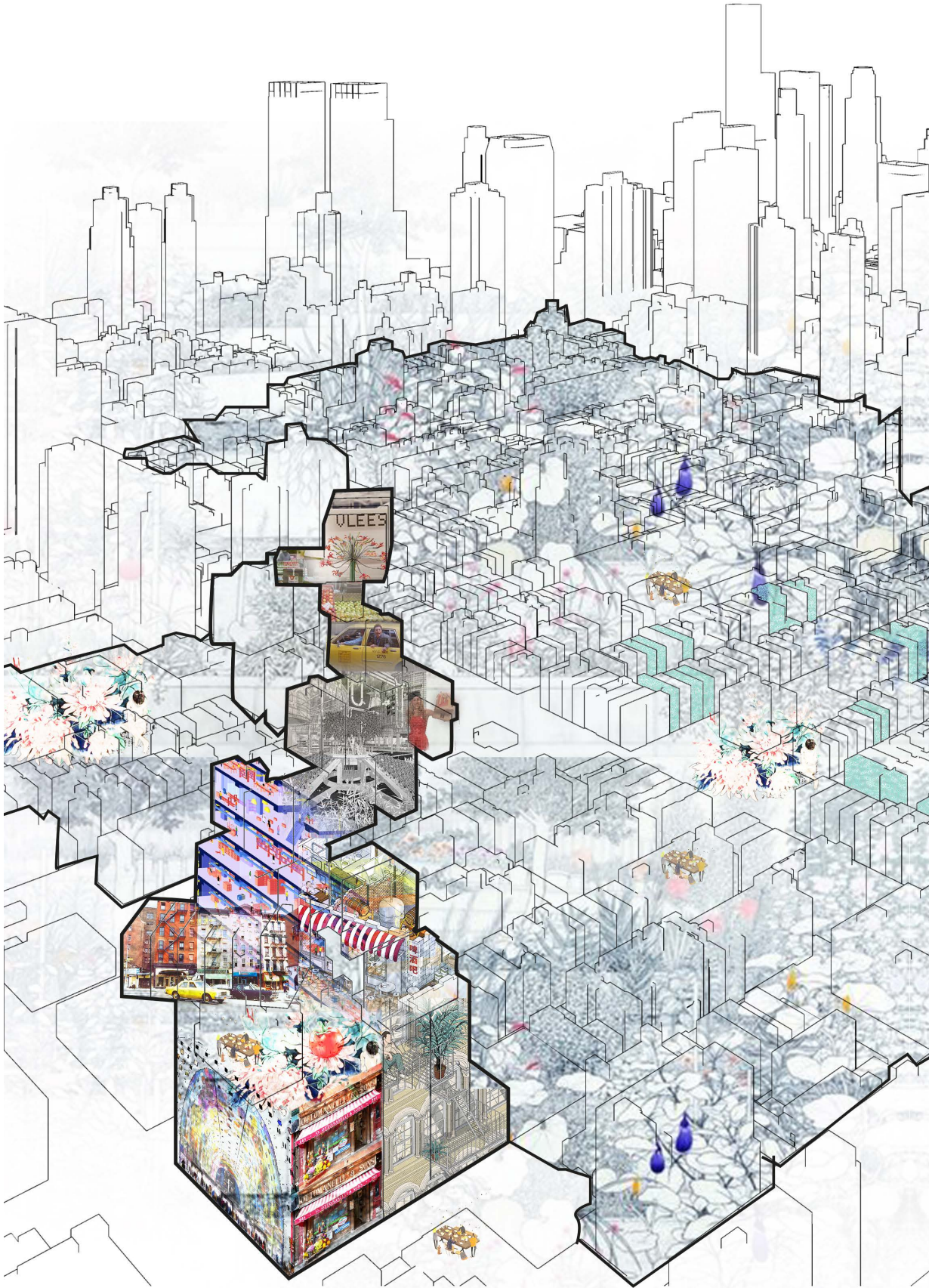
4.2.3.16. NYC 'Industrial aesthetics' (photograph by Lyubov Viller)



4.2.3.17. Abbatoir Brussels (by ORG Architects). Market as a 'Food Palace'



4.2.3.18. Ford Foundation building, NYC (photograph by Lyubov Viller)



4.2.3.19. Collage Sitopia (by Lyubov Viller)

Sources

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2 Ibid.

3 Ibid.

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Image source:

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