

how did the design come into being?

[6]

[Design development]

[6.1]

DESIGN GENERATORS

[6.2]

SKETCH DESIGN

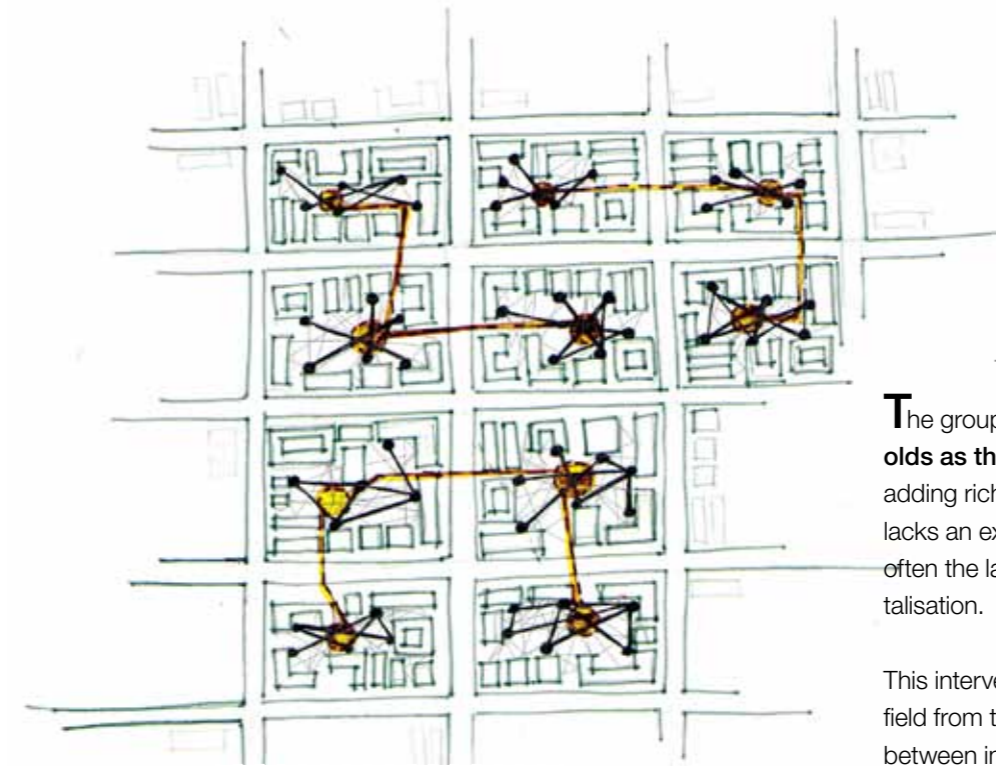
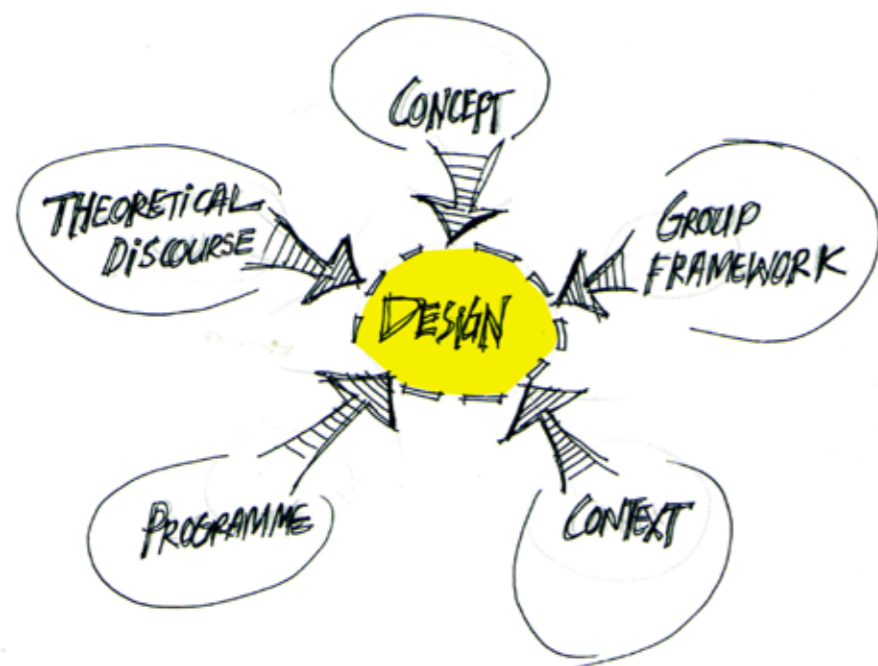
[6.3]

CONCLUSION

## [6.1] DESIGN GENERATORS

The 'design generators' are the main influential factors which govern the initial design decisions. For this project the design generators are:

- \_ 6.1.1 Group Framework
- \_ 6.1.2 Context
- \_ 6.1.3 Theoretical Discourse
- \_ 6.1.4 Concept
- \_ 6.1.5 Programme

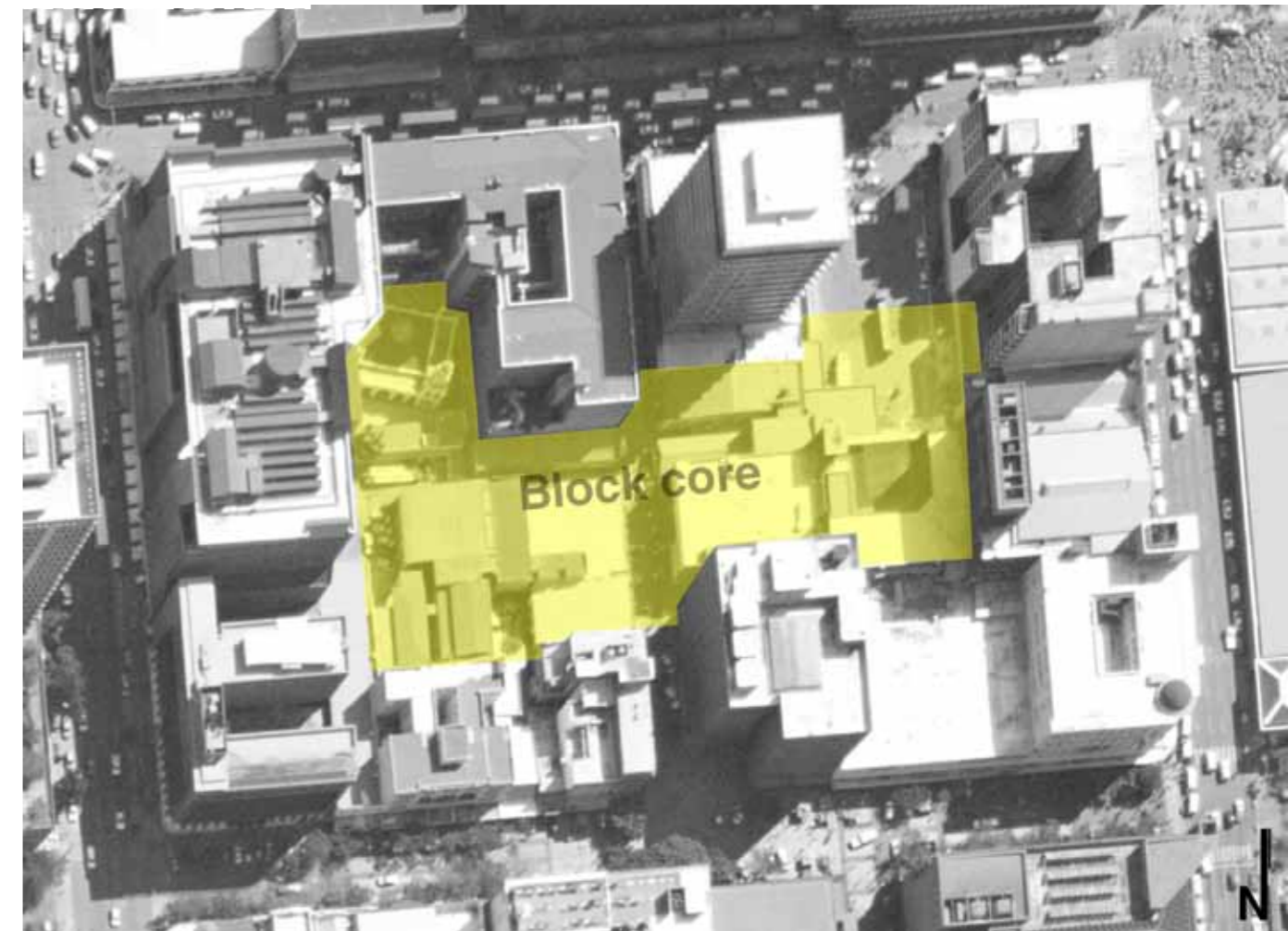


[Figure 6\_1.] Urban scale intervention, the experiential field sparked by 'host' interventions in block cores all over the city.

### \_\_\_ 6.1.1 \_ GROUP FRAMEWORK \_\_\_

The group framework in essence aims to address **thresholds as the most important layer of the experiential field** adding richness and depth to the urban fabric. In a city which lacks an experiential field on many levels, block cores are often the last place where interventions are focused on revitalisation.

This intervention rather focuses on creating an experiential field from the **inside outwards**, instead of being the mediator between inside and outside. Thus the intervention as a whole acts as the threshold between the existing buildings and ultimately becomes the experiential field.



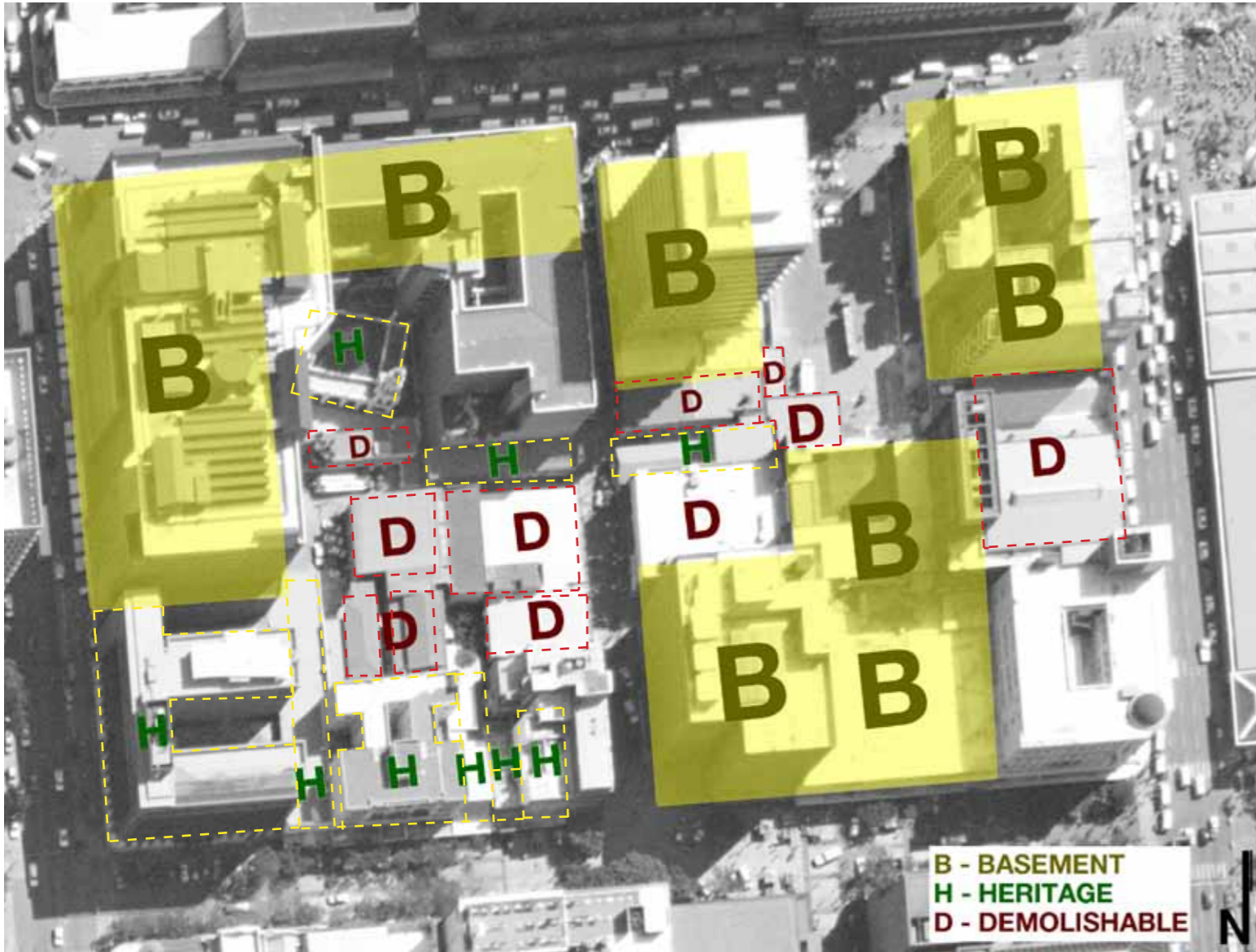
[Figure 6\_2.] Aerial photo of block, yellow highlighted block core as focus area.

6.1.2 CONTEXT

Within the symbiotic relationship between the intervention and the existing fabric, certain responses occur between the context and the design in order to create a base block framework from which the intervention may sprout.

The existing on site basements are one of the main constraints on the block. The basements determine where new development can take place and where expansion will not be possible. The yellow coloured buildings below indicate which buildings on site already have existing basements.

-----BASEMENTS



[Figure 6\_3.] Block plan depicting constraints and opportunities of existing structures.

The existing fabric needs to be considered as to which buildings are worthwhile to be serviced and sustained and which should rather be transformed or demolished.

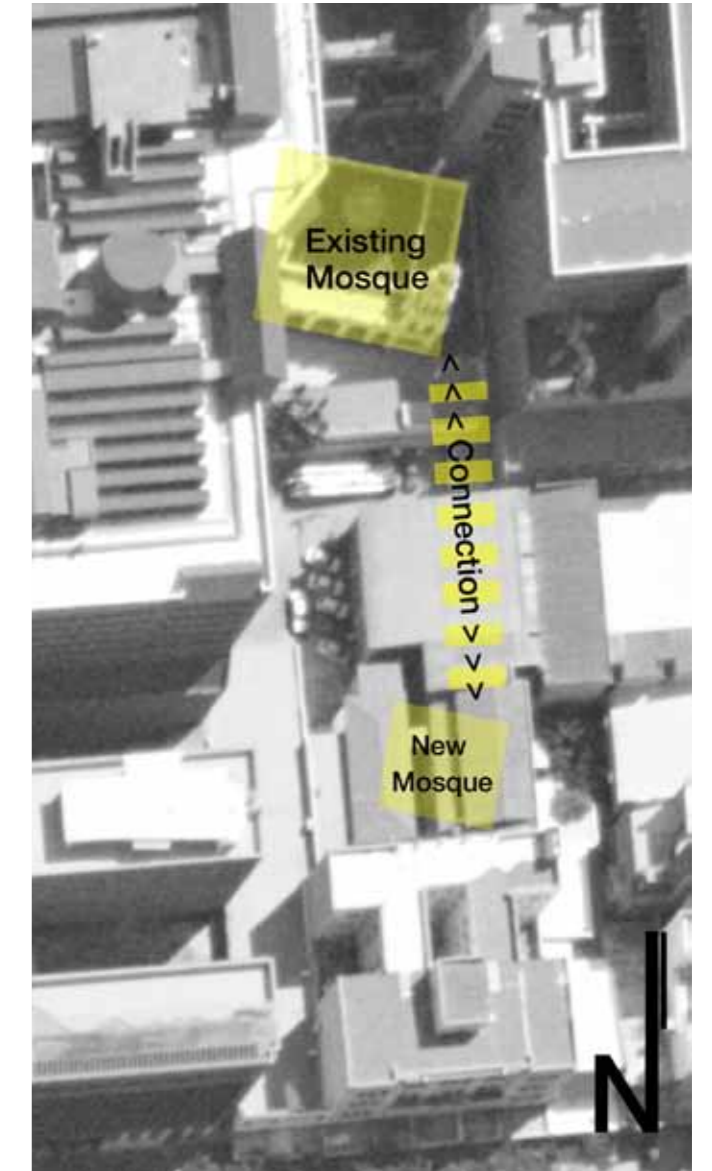
The yellow dashed line in the image above show where there is on-site heritage buildings and the red dashed line indicates which buildings should rather be demolished or transformed. The footprint area of these derelict buildings becomes potential space for the intervention to take place.

-----DEMOLISH

-----HERITAGE

FUTURE-----

Future on-site development needs to be considered, currently the owners of Queen Street Mosque are planning to expand their place of worship by building a Ladies Mosque on a site behind the Libri Building which has been donated to the mosque. The Ladies mosque is thus accepted as a given part of the intervention. The space between the two related but separate buildings thus becomes an important linkage axis which needs to be taken in account in the design of the ground floor square space between the two buildings.

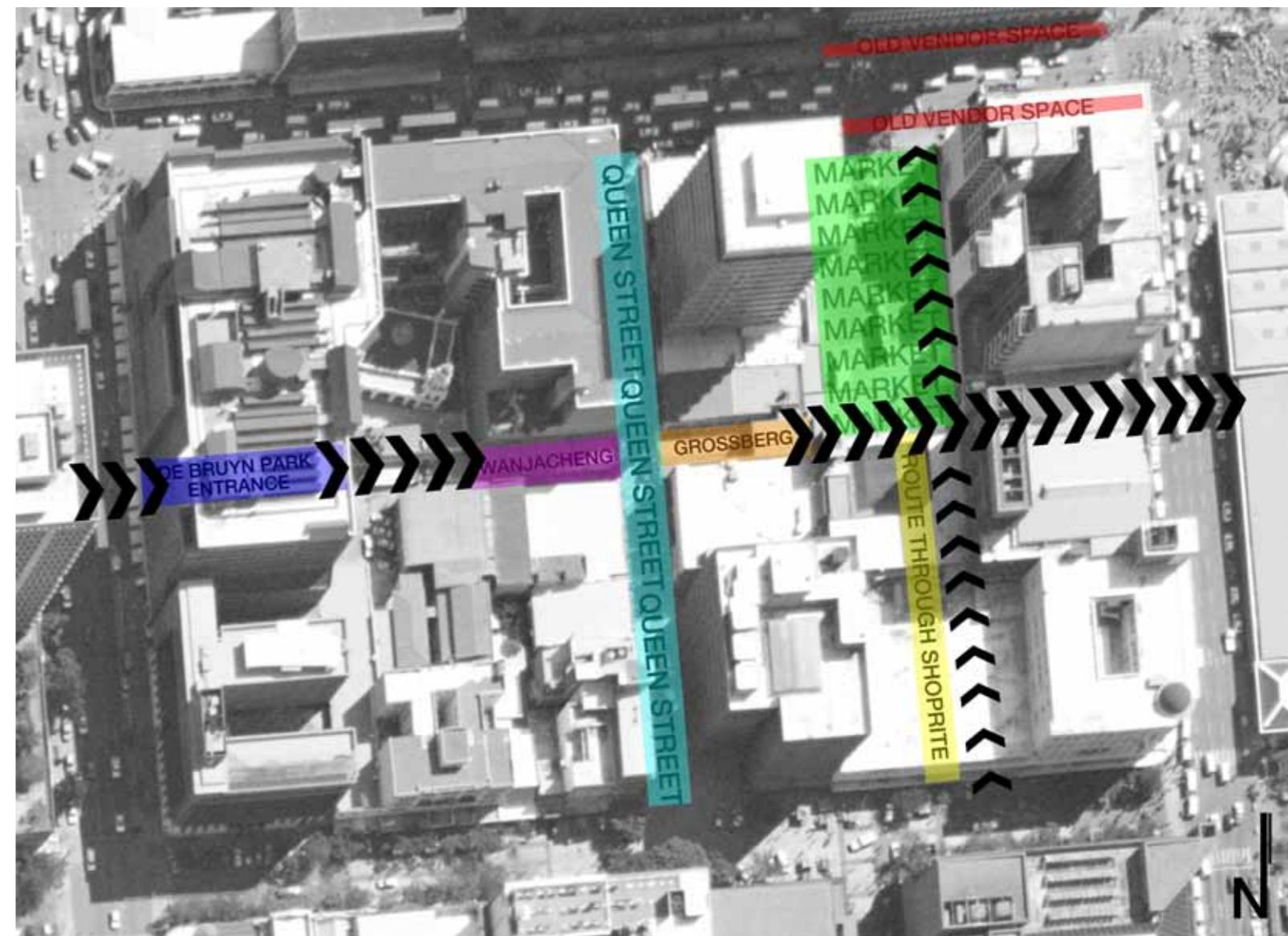


[Figure 6\_4.] Aerial photo showing existing Mosque and proposed Mosque with connection axis.

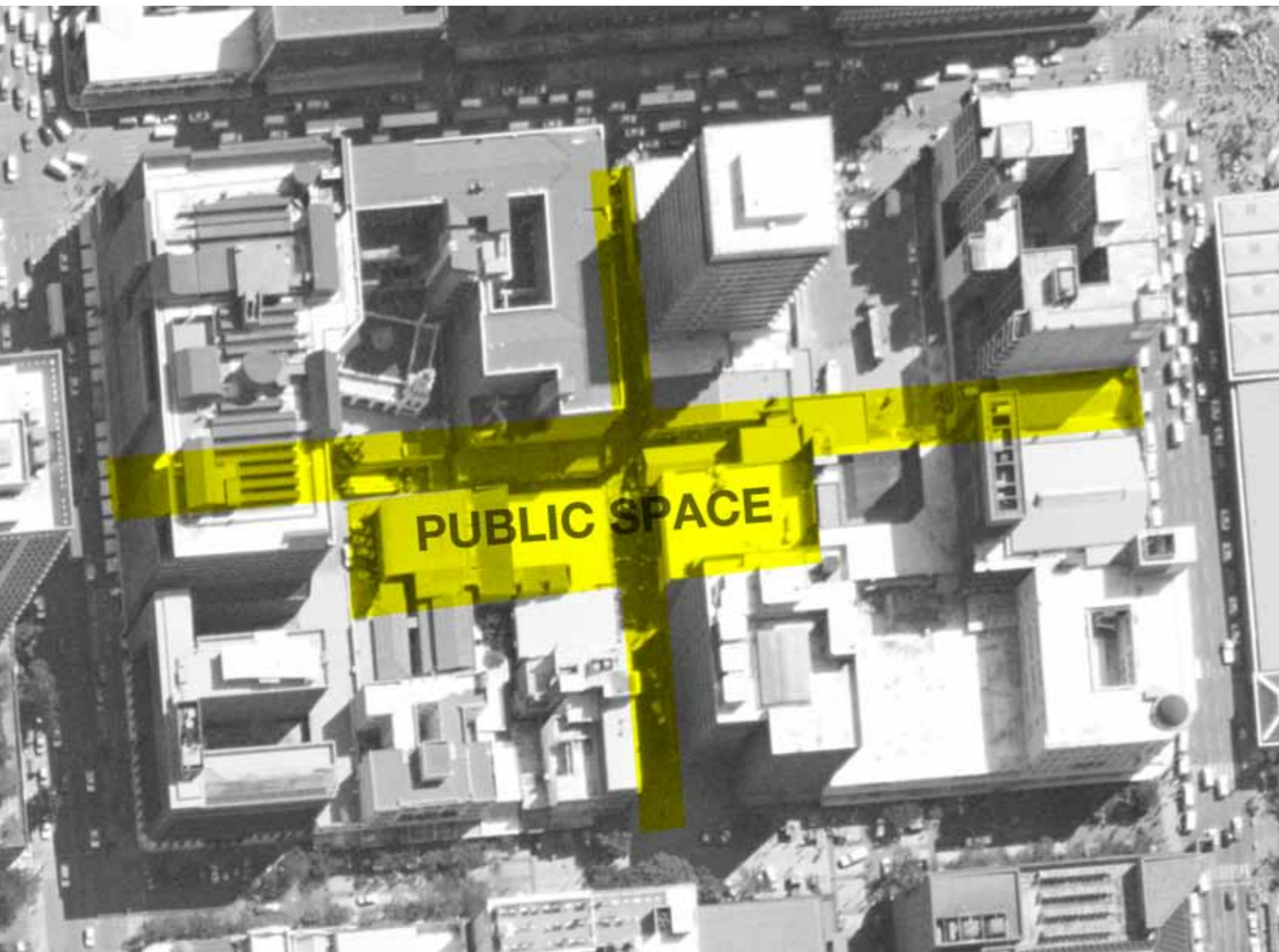
CIRCULATION

The on-site pedestrian circulation flows through Queen street and Church street but potential is lost in two scenarios. The Shoprite has an entrance on both the northern and southern edge, but the entrance on the northern side spills out onto a large loading zone next to Vermeulen street. It is thus proposed that the fruit and vegetable vendors which currently have stalls all along Vermeulen street, rather move their stalls into the open loading zone space. The loading zone is then moved to the basement and the **circulation axis going through Shoprite then moves through the new fruit and vegetable market** and joins up with Vermeulen street .

Secondly the entrance to de Bruyn Park cuts through an **eleven storey void and the abruptly terminates onto a boundary wall**. This access route lines up with two of the heritage buildings on site, Grossberg Traders and Wanjacheng, as well as the walkway in front of Shoprite and the central part of Sammy Marks square. This creates potential for a circulation axis going east west through the middle of the site which could be proposed as an **arcade**.



[Figure 6\_5.] Block aerial photo of intervention's proposed circulation routes through site.



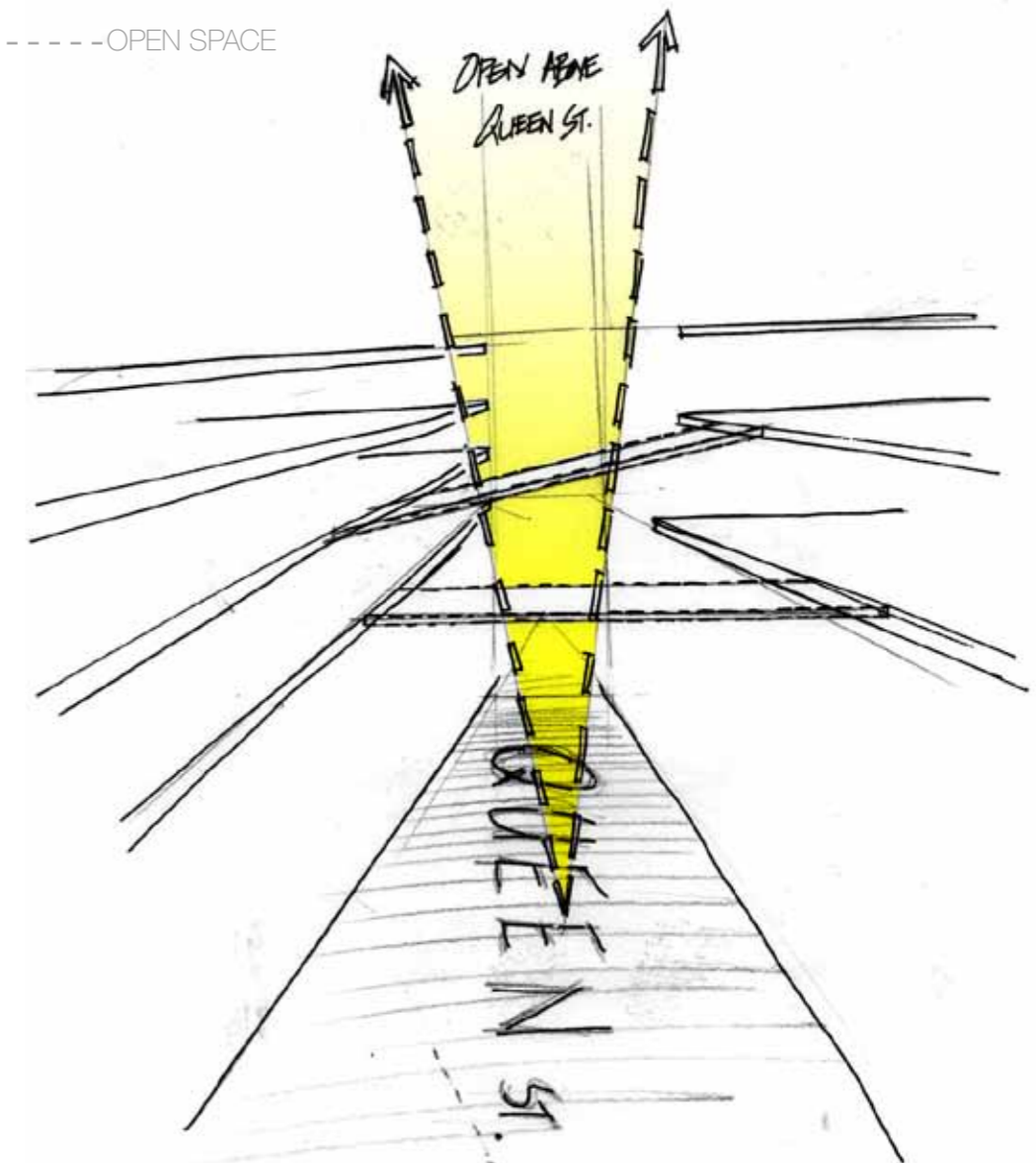
[Figure 6\_6.] Block aerial photo illustrating new proposed public space.

As the block is densely built up and congested, an open public space would be a welcome addition to the existing fabric. The central part of the block where some buildings have been identified as demolishable proves potential to provide such a space.

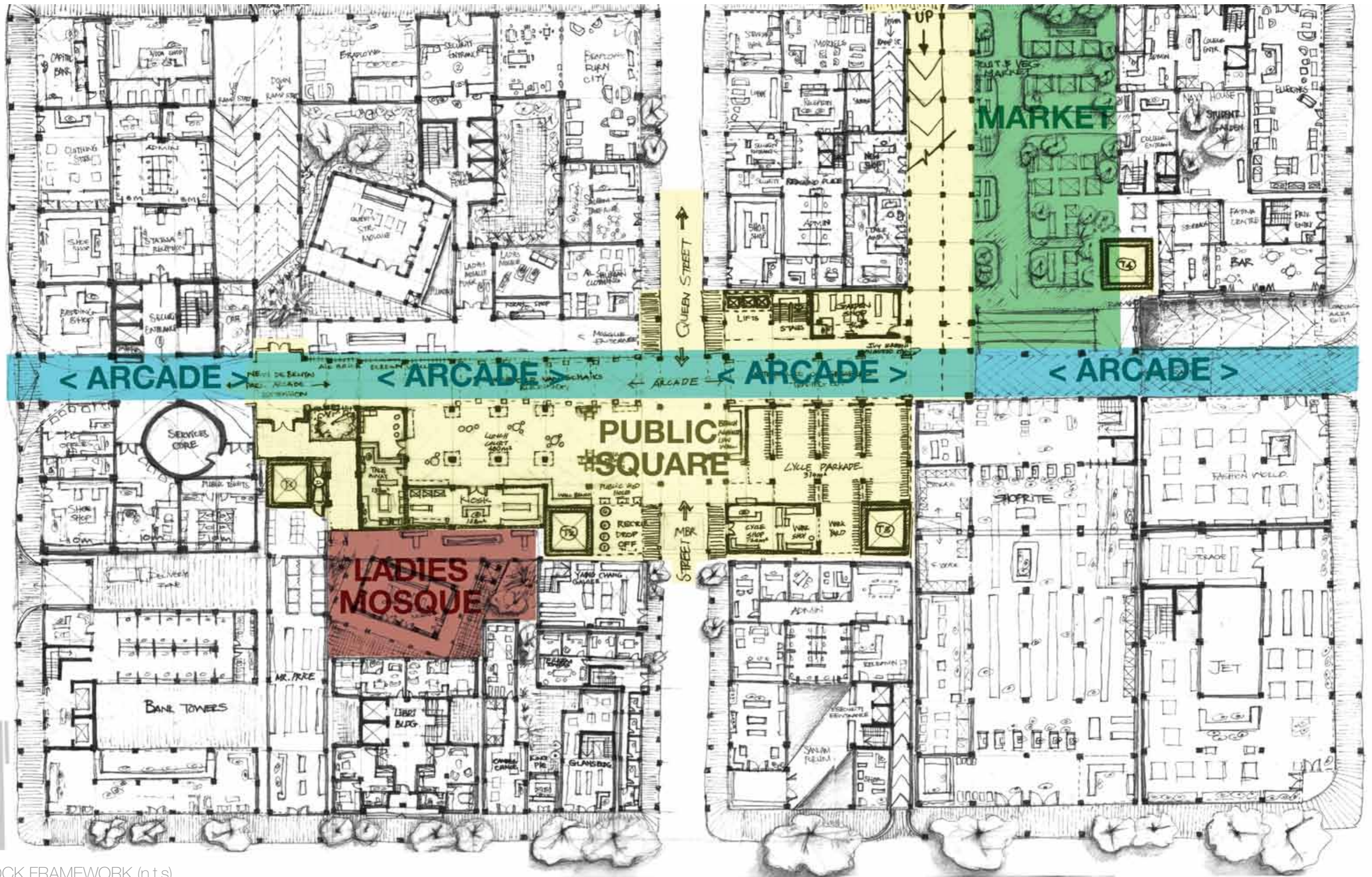
Thus, if possible, the central ground floor portion of the block should be kept as open public space with enough void space above to allow natural light to penetrate into the space.

Because of the tall buildings on the northern neighbouring site, a large portion of the site already does not receive much sunlight. The space above Queen street should thus be kept clear for natural light to fall into the open axis of the street, thus the intervention should straddle Queen street as lightly as possible.

-----OPEN SPACE



[Figure 6\_7.] Clear overhead vertical space over Queen street axis.



BLOCK FRAMEWORK (n.t.s)  
 [Figure 6.8.] Proposed block framework from  
 which intervention will sprout.

6.1.3 THEORETICAL DISCOURSE

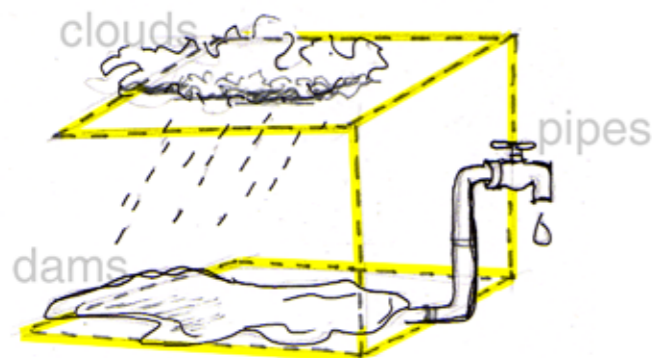
As the argument states; **infrastructure can be envisioned to create place and space.** Thus the infrastructure which the intervention specifically focuses on; **water, energy, waste management, access, public facilities and parking, needs to act in a place-/ space-making manner and not just to suit minimum and practical requirements.**

Each infrastructural system engages in the place-making process as part of the centralised system and cycle. The interface between the system and the user creates awareness and educational opportunity. Once each system is laid out, it provides a base from which development can sprout. **Thus the systems become the organisational structure of the project.**

It would be wise to decide how the systems would be organised on site in order to determine the next level of the design. In the next few pages an exploration of each system as a space making element will be explored.

WATER AS SPACE

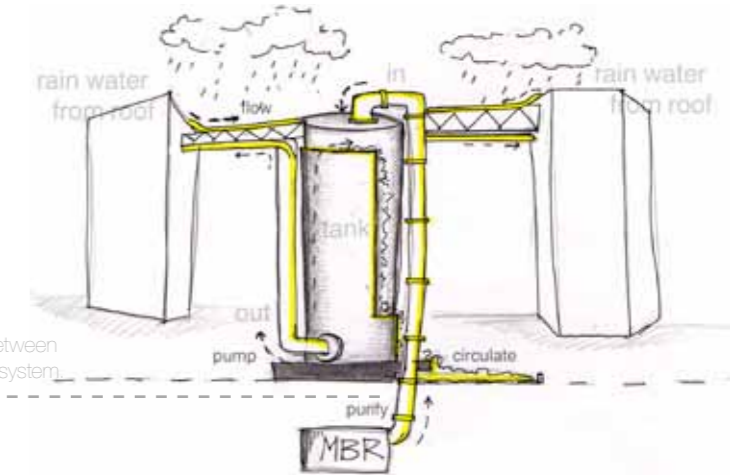
Conventionally water is almost always present in space, its in the air, in clouds, in people, in pipes, in dams, plants etc. One usually, with the exception of rain, experiences water in a contained state eg. in tanks, pools, dams, in a bucket or a glass, mostly becoming part of the planes which gives shape to space.



[Figure 6\_9.] Water interface.

MOVEMENT

Water is a process element which even in a stagnant state poses the **potential of movement**, flowing, filtering, boiling, etc. The image below illustrates how water as a moving element flows, is pumped and circulated between the buildings, spaces and the containment reservoir on site. The water moves back and forth through the different spaces, cooling the site, creating ambience and serving the existing buildings whilst exposing the system to the user as an educational endeavour.

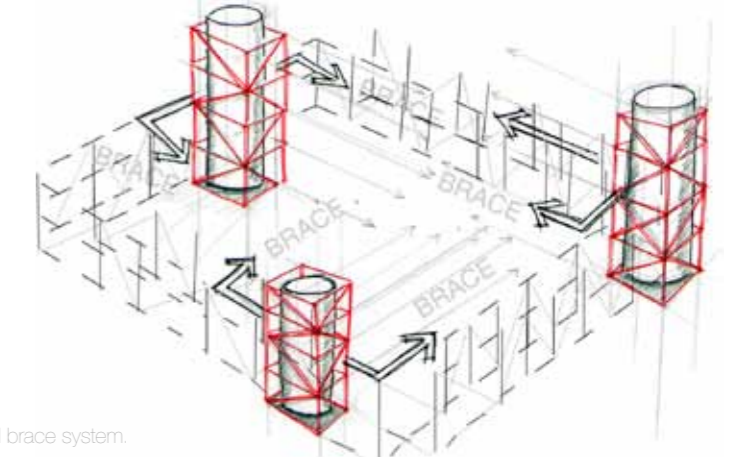


[Figure 6\_10.] Water movement between user, nature and system.

MASS

When contained, the mass of water is constantly pushing against the boundaries of the constraints keeping the water in position. The on-site water is tanked in 3 large 400 KI concrete tanks. The concrete cannot support external forces because of the **shear pressure the water places on the concrete shell.** But the tank as a whole can act as a bracing element for the building, thus **becoming a structural element linked to the structural grid.**

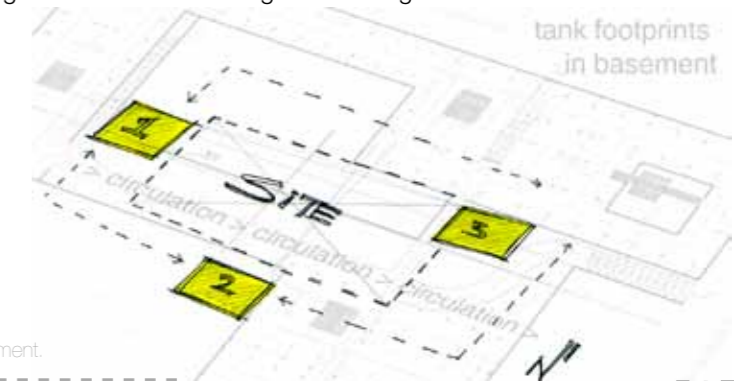
BRACING



[Figure 6\_11.] Water tank structural brace system.

PLACEMENT

The placement of these 3 tanks is crucial to the organisation of the site for two reasons; the tanks need to be **evenly spread out** in order to service the existing buildings and collect water from all of their roofs. Secondly the tanks' footprints need to **work in harmony with the basement design**, not obstructing circulation or interfering with existing basements.



[Figure 6\_12.] Water tank placement.

ENERGY AS SPACE

CONCEALED

Energy as a stored amount of potential is usually concealed from our view, it forms **part of the planes that shape our shelters**, it is in the battery in the basement, it comes from the plant far outside the city, it lives somewhere in the wall and in conduits and fills our spaces with light, heat, sound and picture, etc. There is no space making properties involved in the transmission, production or use of energy, yet it is **present in all spaces**, whether it be in the form of a fossil fuel, kinetic objects or electricity.

PRESENCE

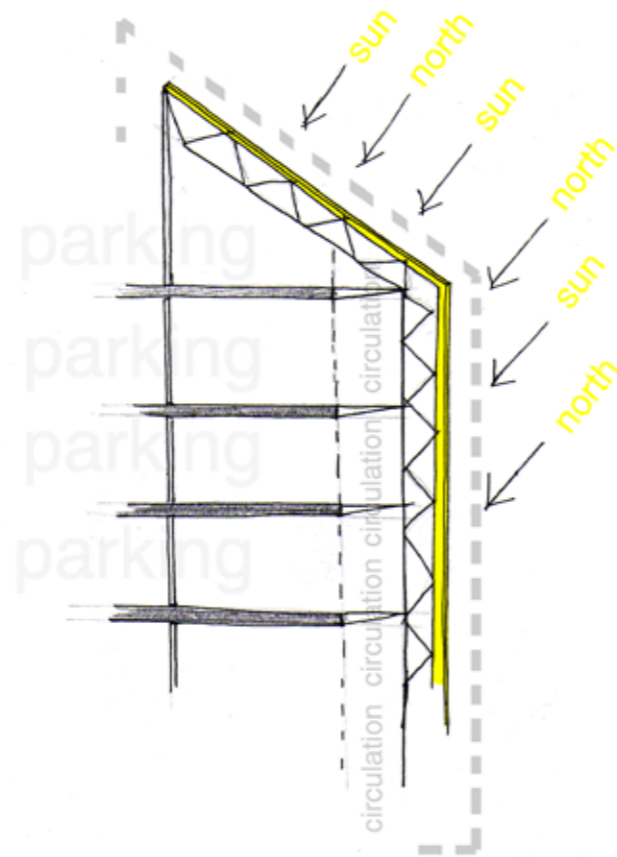
SOLAR

It is proposed that photovoltaic panels and solar vacuum tubes are used for solar water heating and electricity. As stated before the photovoltaic panels will only serve the charging of the **electrical cars and the building's lights**. In order for the panels to perform at full potential they must be fixed at a 30° angle facing north. Instead of just placing the panels like an energy field in the desert, **the potential of the panels to serve as screens on the facade and roof is exploited.**

SCREENS

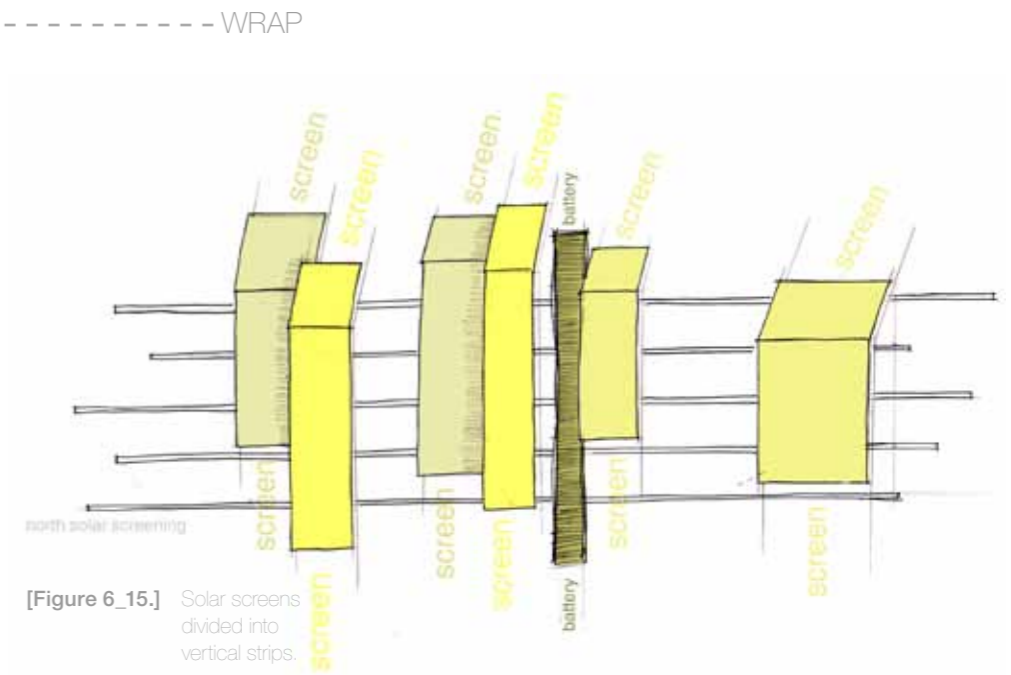


[Figure 6\_14.] Photo collage illustrating the presence of energy in different spaces and applications.



[Figure 6\_13.] Diagram illustrating solar screen wrapping over intervention's Northern face.

The concept is that the panels are **fixed in strips which 'wrap' over the building weaving back and forth, in and out, creating shading, screens for the circulation routes and privacy** for the existing buildings, as well as a trellis for the vegetation from the organic digesters to grow on. The screens are connected to a **battery on each floor** which serves that specific floor's lighting and car charging needs. For future development, when solar technology improves and it is possible for the building to generate enough electricity for the surrounding buildings, the **bridges serve as conduits along which new energy supply is transferred to the existing buildings' service cores.**

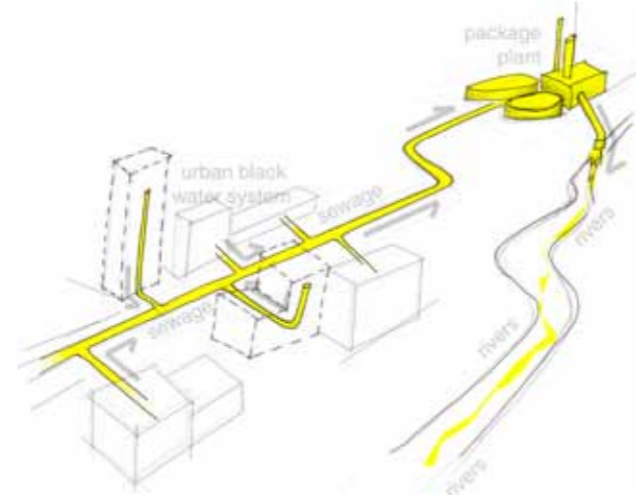


[Figure 6\_15.] Solar screens divided into vertical strips.

CONDUIT BRIDGE



The conventional sewage waste treatment system currently in use can be described as an 'invisible' process; once the waste has been flushed away it 'disappears' into a submerged sewer system which transports the waste to package plants where the waste is treated and released into rivers.

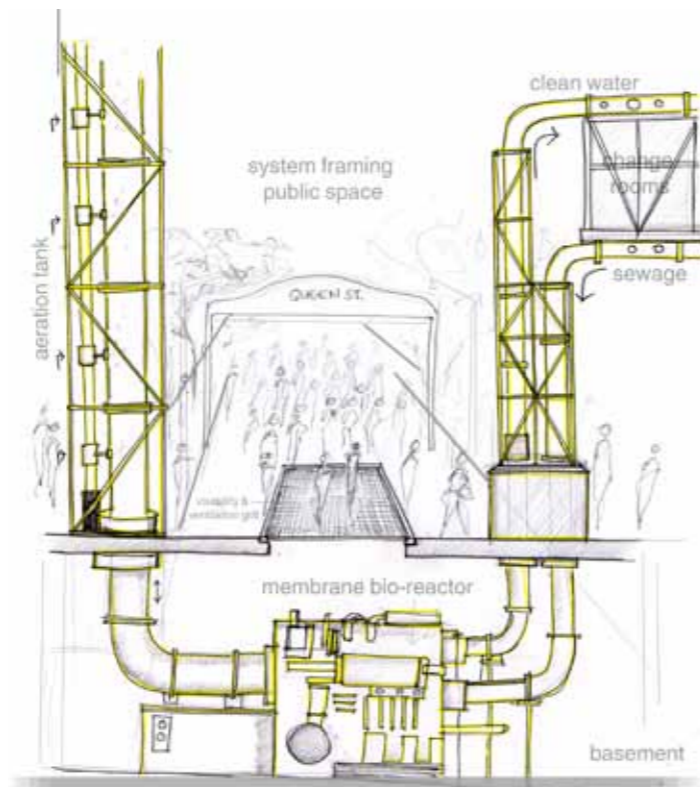


[Figure 6\_16.] Current conventional urban sewer services system.

The proposed system to use a Membrane Bio-Reactor on site to treat the whole site's wastes provides the opportunity to expose the system in order to educate, cycle the resources on site and use the system as an addition to the intervention's aesthetics and spatial ambience. The MBR is a compact machine which can fit into a 11m<sup>2</sup> space. In order to keep the process as efficient as possible most of the process supply relies on gravity feed, the existing sewage pipes gravitate through the centre of the site towards Vermeulen street. Thus it would be wise to place the MBR at a central position where it can be connected to the existing and additional sewage lines.

The machine is not noisy or smelly and thus does not have to be concealed from the public but it would be ideal to place the machine below ground level for gravitational purposes. It would not be ideal though to place the machine in direct public contact in case of malfunction and tampering. It is thus proposed that the machine is placed below the central part of Queen street.

In order to expose the process three functions are extruded above ground level in order to communicate the process. The first part is the aeration tank; it is proposed that instead of a tank the aeration process takes place in a vertical transparent pipe into which air is blown. The second part is the supply of clean water from the MBR to the change rooms and thirdly the flow of sewage from the change rooms back to the MBR. These three processes manifest in vertical emphasized pipes on either side of Queen street creating a 'portal-like' structure in the middle of Queen street. The slab above the MBR is cut open and replaced with mentis grid for ventilation and to make the machine visible.



[Figure 6\_17.] Proposed MBR positioning and extraction of system components to form

INVISIBLE PROCESS

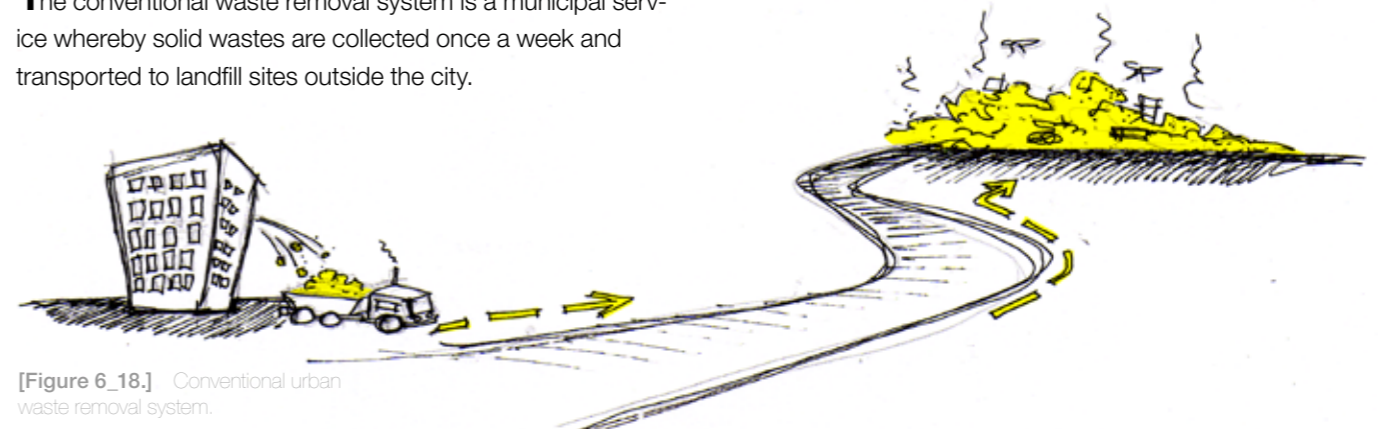
EXPOSED PROCESS

CENTRAL POSITION

EXTRUSION

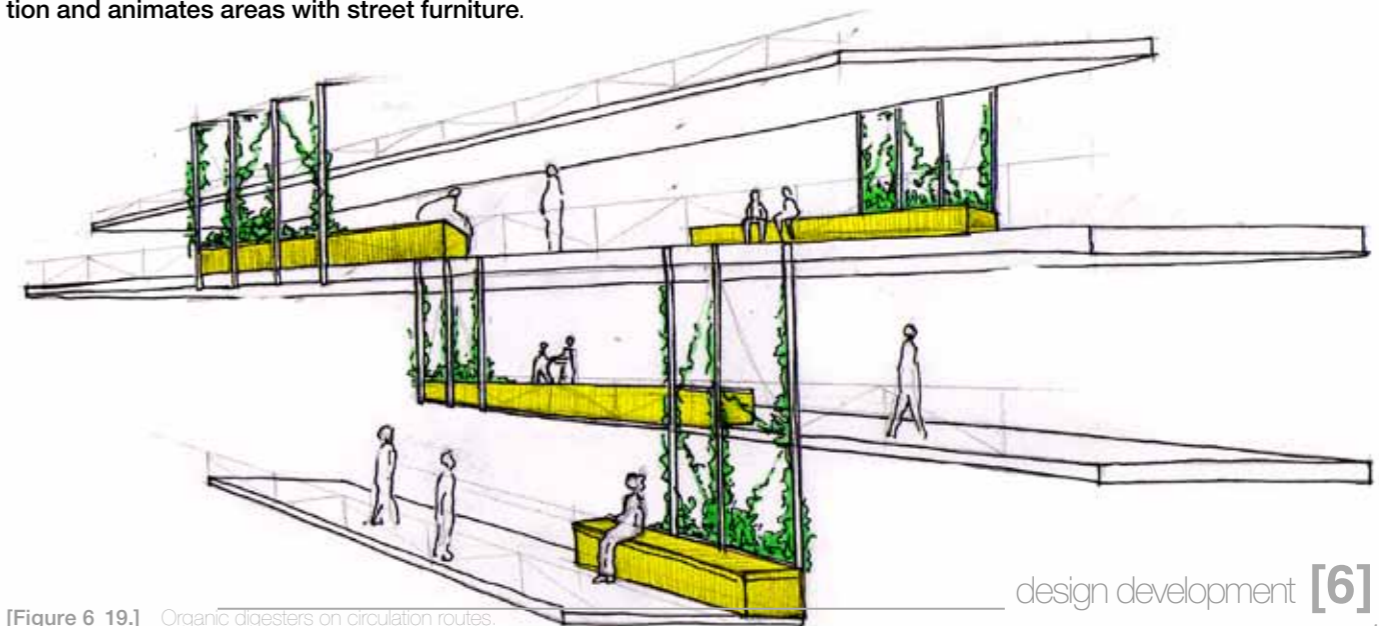
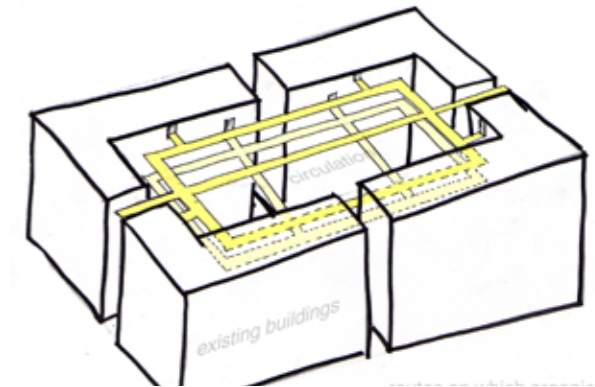
PORTAL STRUCTURE

The conventional waste removal system is a municipal service whereby solid wastes are collected once a week and transported to landfill sites outside the city.



[Figure 6\_18.] Conventional urban waste removal system.

The proposed on site strategy is that all the solid wastes be dealt with on-site, the recyclable wastes are collected and go through an organised recycle system, the organic wastes are digested by patent designed earthworm digestion containers. Because the organic waste system should be accessible to all buildings and users on site, the strategy is that the containers are spread out along circulation routes between buildings and across the site. The containers are adapted to not only act as a 'dustbin' for organic waste but that the fluids and compost produced by the digester be immediately put to use, thus the digester is designed with an incorporated planter hosting creeper plants which grow vertically along a trellis structure which is part of the planter. Because the digester planter is placed along the walkways it is also then adapted to become seating in areas. Thus the spatial contribution of the digesters are that they provide screening and shading along walkways, it softens spaces with the addition of vegetation and animates areas with street furniture.



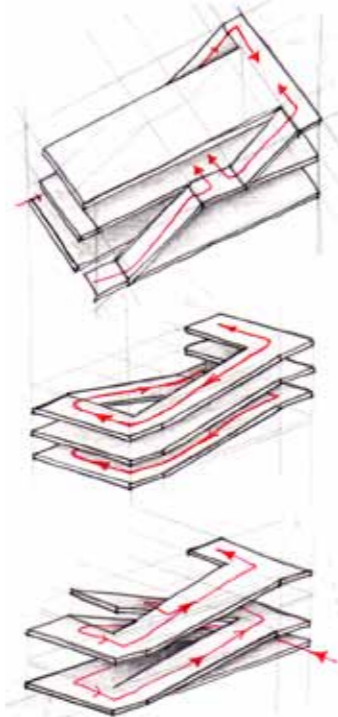
[Figure 6\_19.] Organic digesters on circulation routes.

ACCESS SYSTEM AS SPACE

Access ramps in all their elegant appeal are one of the most difficult and determining elements in a design, **ramps rather take up space than create space**, they are a conduit for movement rather than a place or space. The proposed ramp is **part of the building's shell** for, if in future the building no longer needs upstairs parking and is adapted to adopt a different programme, the ramp could easily be **removed or adapted to the structure**. Because the ramp then circles around the building it starts to **frame a series of spaces** as it **climbs around the central public space**.

CONDUIT FOR MOVEMENT

FRAME



[Figure 6\_20.] 'Framing' ramp systems going around central area.

PARKING SYSTEM AS SPACE

Street space parking **allows vehicles to be a part of the street scape**, they become the buffer between the pedestrian and traffic. Thus the parking is part of the greater whole of the street scape. Parkade areas are usually large **bulk parking spaces which are deserted**, a no-man's land waiting for 5 o'clock to be completely emptied out.

STREET SCAPE

NO-MAN'S LAND



[Figure 6\_21.] Californian urban streets scape with integrated parallel parking.



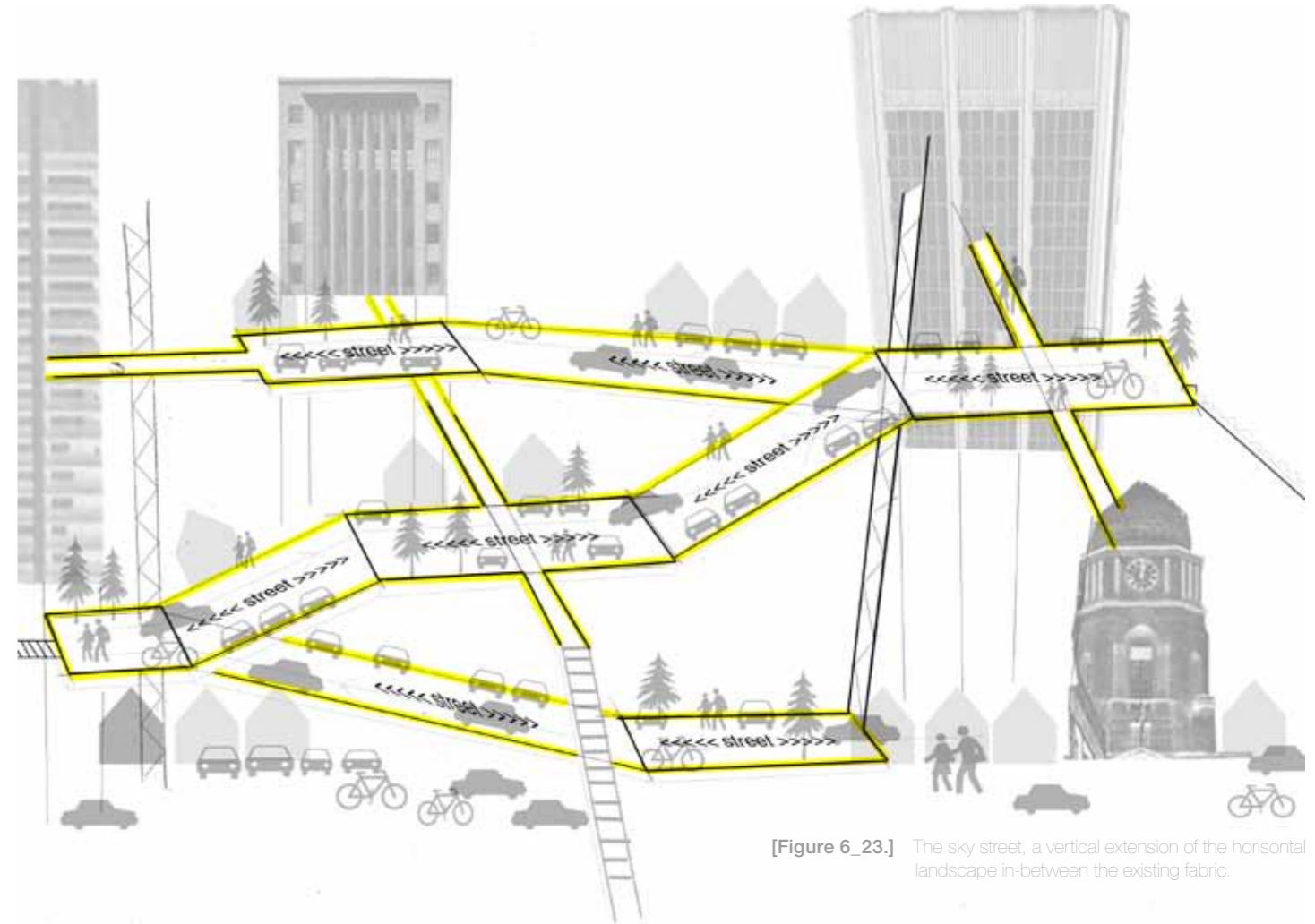
[Figure 6\_22.] Outdoor mass parkade, Toronto.

SKY STREET





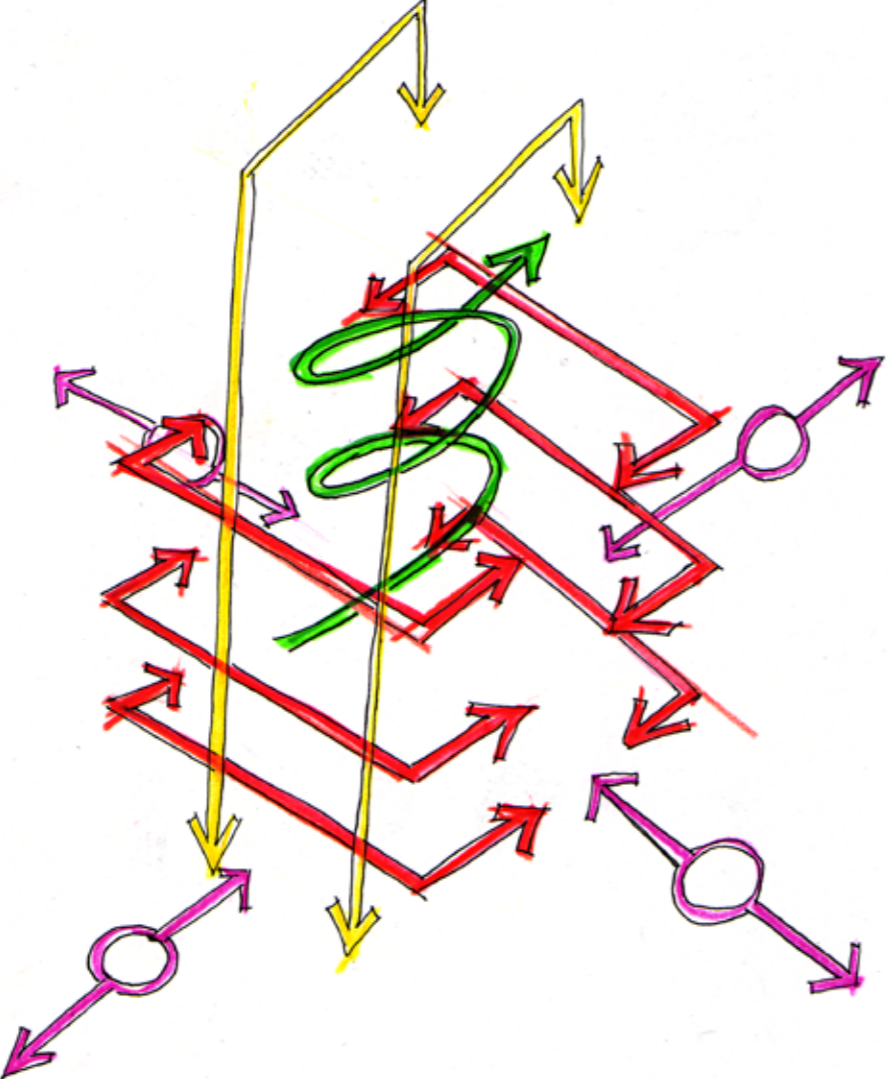
IN-BETWEEN

SPILL OUT

The proposed parking space is thus intended to **serve as a street scape in the sky**, a link between new and old, inside and outside, coming and going. The parkade is adaptable to serve the surrounding buildings as they all have access to alternate floors, eg. the Reg-end Place building has a small gym on the top floor, because of space constraints they now have the **option to use a part of the parking space to present group training programmes** (i.e aerobics) at off peak times. The Sanlam Forum building has large quantities of people coming every day to do paperwork for estate disputes and claims, people que for hours in narrow stuffy corridors. The building could use the extension to the parkade where the proposed pocket park meets the existing structure as an **alternative queuing space**, thus the people stand outside, have a view and seating on the digester planters. The parkade and intervention as a whole also serves as an additional **fire escape and emergency gathering space**.



[Figure 6\_23.] The sky street, a vertical extension of the horizontal landscape in-between the existing fabric.

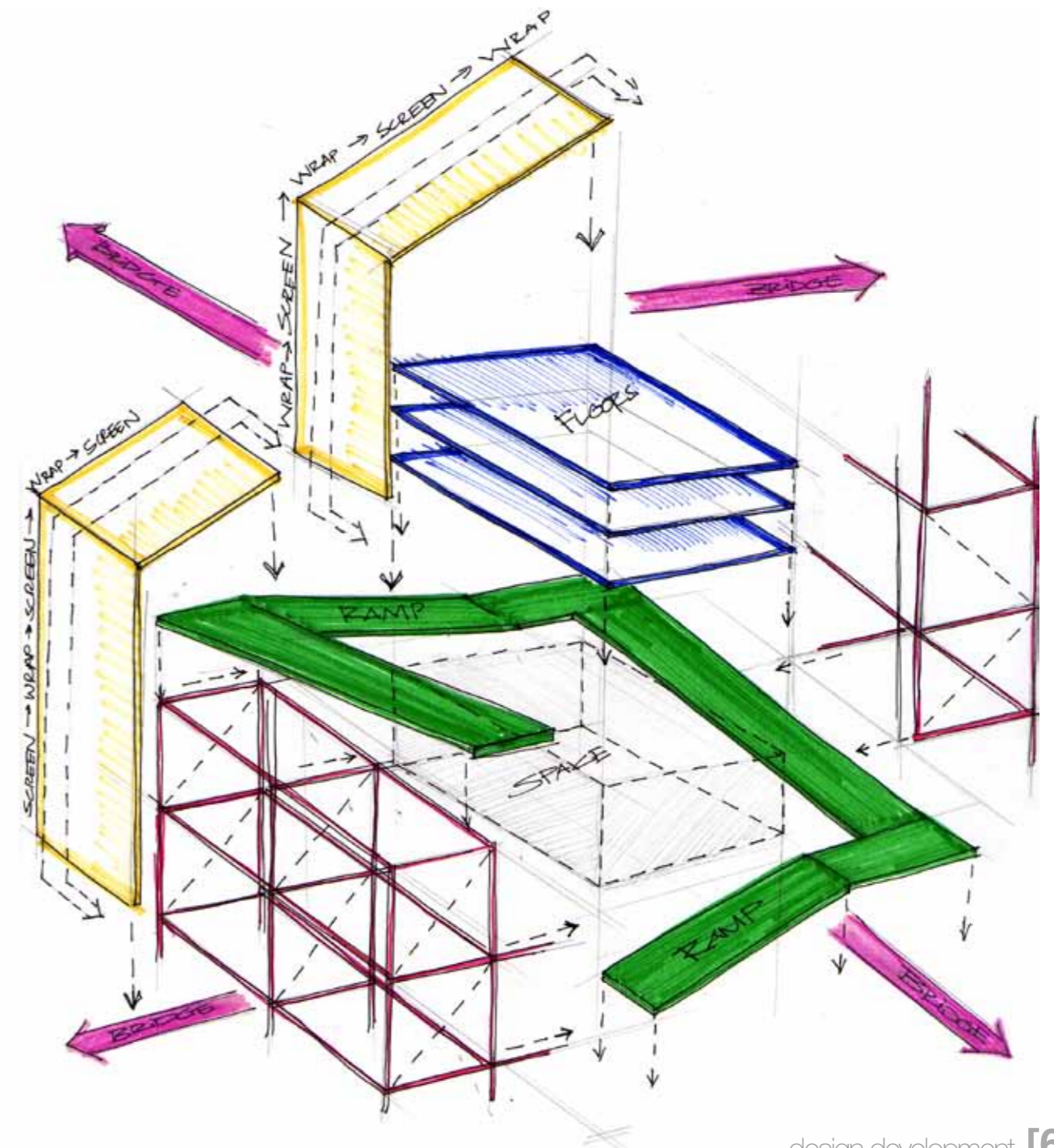
	<b>connect</b> -	bridges connect new spaces to existing spaces, also connecting circulation routes along which organic digesters are placed
	<b>shell</b> -	structure is a shell 'cupping' the space inside, the structure consists of circulation and large bracing tanks and serves as the grid into which the existing buildings
	<b>wrap</b> -	solar screens wraps over space providing electricity, shading, privacy and a trellis for vegetation.
	<b>frame</b> -	the framing of space is achieved by the circulation ramp going upwards towards the parkade, as well as the MBR framing Queen street and the heritage buildings framing the arcade.
<b>space making elements</b>		

[Figure 6\_24.] Summarising diagram of the space making system elements in intervention.

## SPACE MAKING REVIEW

After exploring the space making potential of each system and assigning a characteristic post to them, whether it be in conjunction with other systems or elements or separately, a basic diagram can be drawn of how all the systems can start working together to **give shape to a central public space** and **different scales of circulation, connection and services spaces**.

The diagram below describes how the central space, which is the main focus as public commodity, is firstly framed by the ramp structure which spirals on the periphery of the space. Secondly, the **ramp structure is supported by an exoskeleton structure or 'shell' which houses the water systems, conduit space, pedestrian walkways and vertical circulation**. Thirdly, the space is 'roofed' by the floors above where the sky streets create extrusions and connections to and from the existing fabric's upper floors. Fourth, new spaces are connected to old spaces via sky bridges. And lastly, the building receives a skin by wrapping the solar screens over the northern facades and disperse outward to the rest of the facade.



[Figure 6\_25.] Space making assembly, systems organised around a central space.

6.1.4 CONCEPT

The 'weave' connects different levels, buildings, resources, systems and people whilst creating space and place. Thus it is not a weave creating a flat plane but rather a weave which envelops a space.



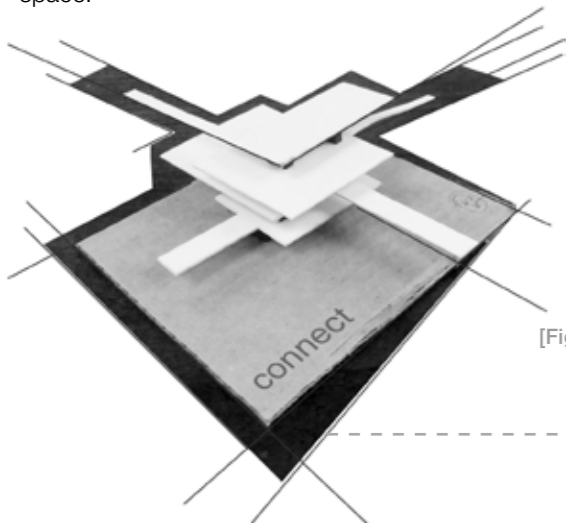
[Figure 6\_26.] A wicker woven plane.



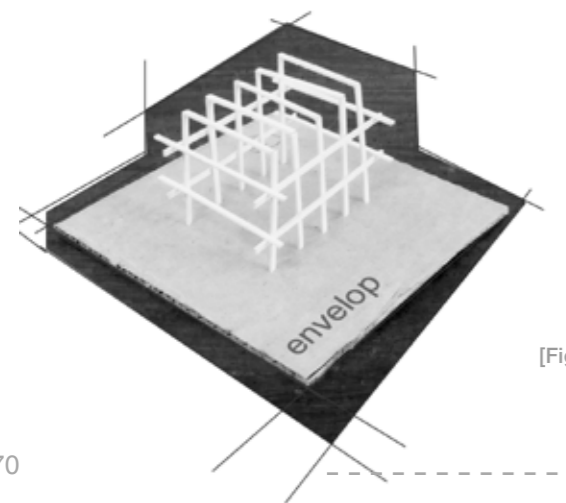
[Figure 6\_27.] Woven space, a grass bird's nest.

WEAVE SPACE

The architecture not only attempts to connect planes but also to envelop the space by using the systems to 'frame' the space.



[Figure 6\_28.] Connecting new and old planes via staggered 'reaching and pulling' levels.



[Figure 6\_29.] Frame structure (exoskeleton/shell) enveloping a central space.

FRAME SPACE

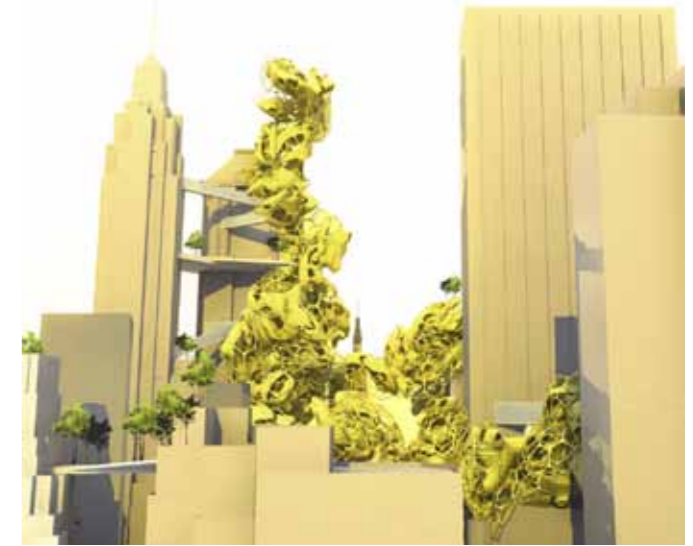
Two precedent projects attempt to illustrate this weaving action in a horizontal and vertical manner respectively. In these scenarios the weave is regarded as a growth which latches onto the existing structures for support.

PARA CITY

**Location:** none (proposal for eVolo Skyscraper competition)

**Architect:** Somnath Ray

**Project:** The competition called for designs of the 'skyscraper of the future' – to which Somnath responded by creating not a new form of skyscraper to be planted on an empty plot of land (like our typical current skyscraper, occupying a footprint and the sky above it), but an **organic, parasitic mass of volumes that inhabits the leftover areas between buildings.** 'With ever-increasing densities and changing programs,' Somnath writes, 'Para-city grows in the entire three-dimensional space of its host: the existing skyscrapers of the present urban landscape' (Ray 2010).



EFFICIENT LIVING MACHINE

**Location:** none (proposal for eVolo Skyscraper competition)

**Architect:** LEDarchitecturestudio & Hiddenoffice

**Project:** Efficient Living Machine project transforms a building into an **infrastructure able to improve and expand the lifestyle of the metropolis.** The firms propose that the skyscraper becomes a **system of overlapping grids upon the existing environment** as a way to read the city differently. These grids contain different layers of programmed activities, ranging from recreational areas to farms, and from public parks to areas of commerce. Although the project offers new nodes of activity, the system **fuses with the existing city's fabric** from the union of the Metro stations, both currently and in anticipation of the future. "This spatial structure increases the density of functions, which also has the ability to be mobile and change their configuration to the internal structure of each individual to follow what are the socio-economic dynamics of a metropolis in constant change and implementing as an **evolution of cross programming**" (Cilento 2010).



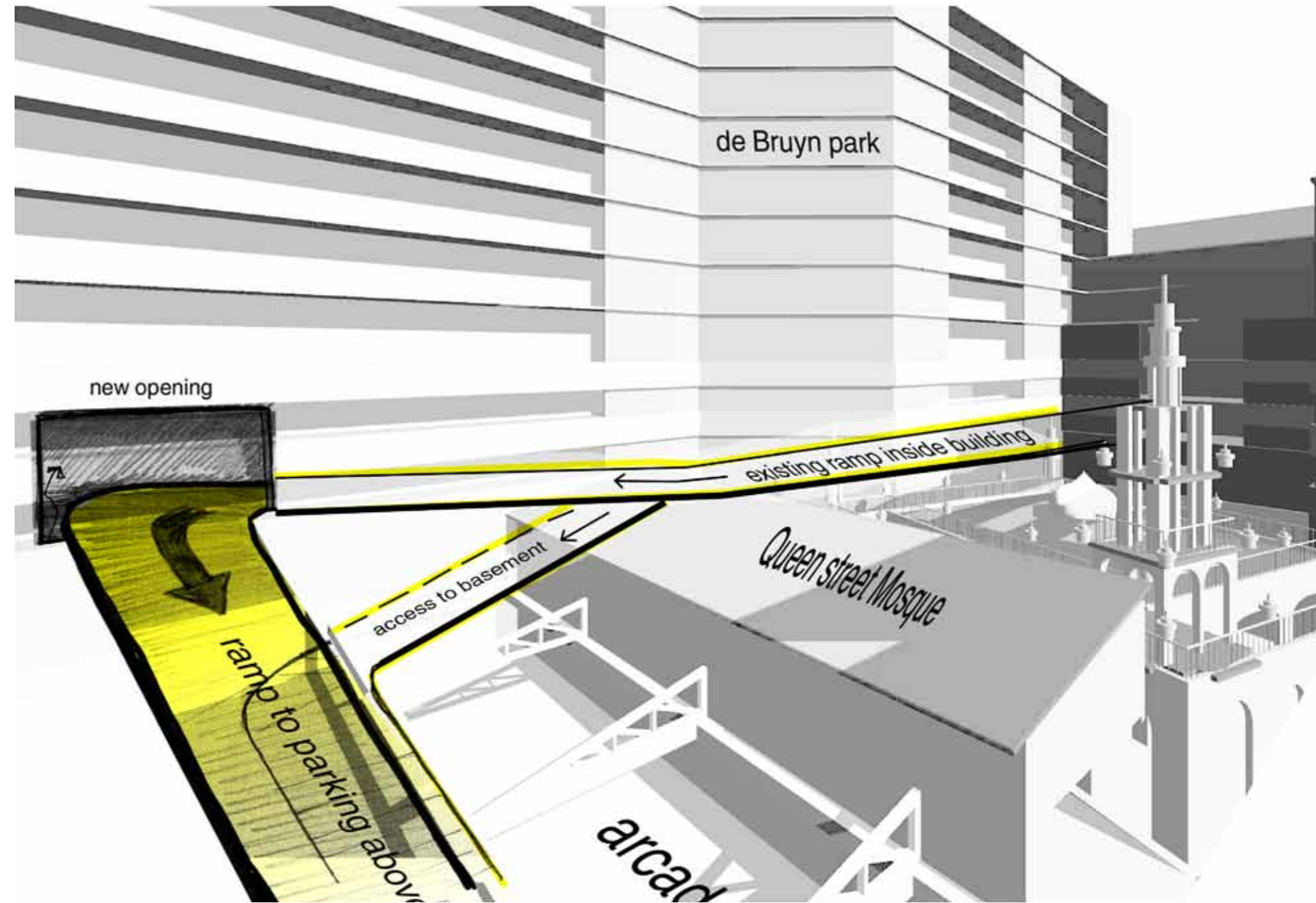
design development [6]

### 6.1.5 PROGRAMME

The nature of the intervention's programme demands **centrality, accessibility and verticality**. Thus to place the intervention in the **middle** of the block with a loading services basement from which industrial lifts sprout upwards, would be the most efficient approach for the resources, people and conduit structure to move between the intervention and the individual buildings.

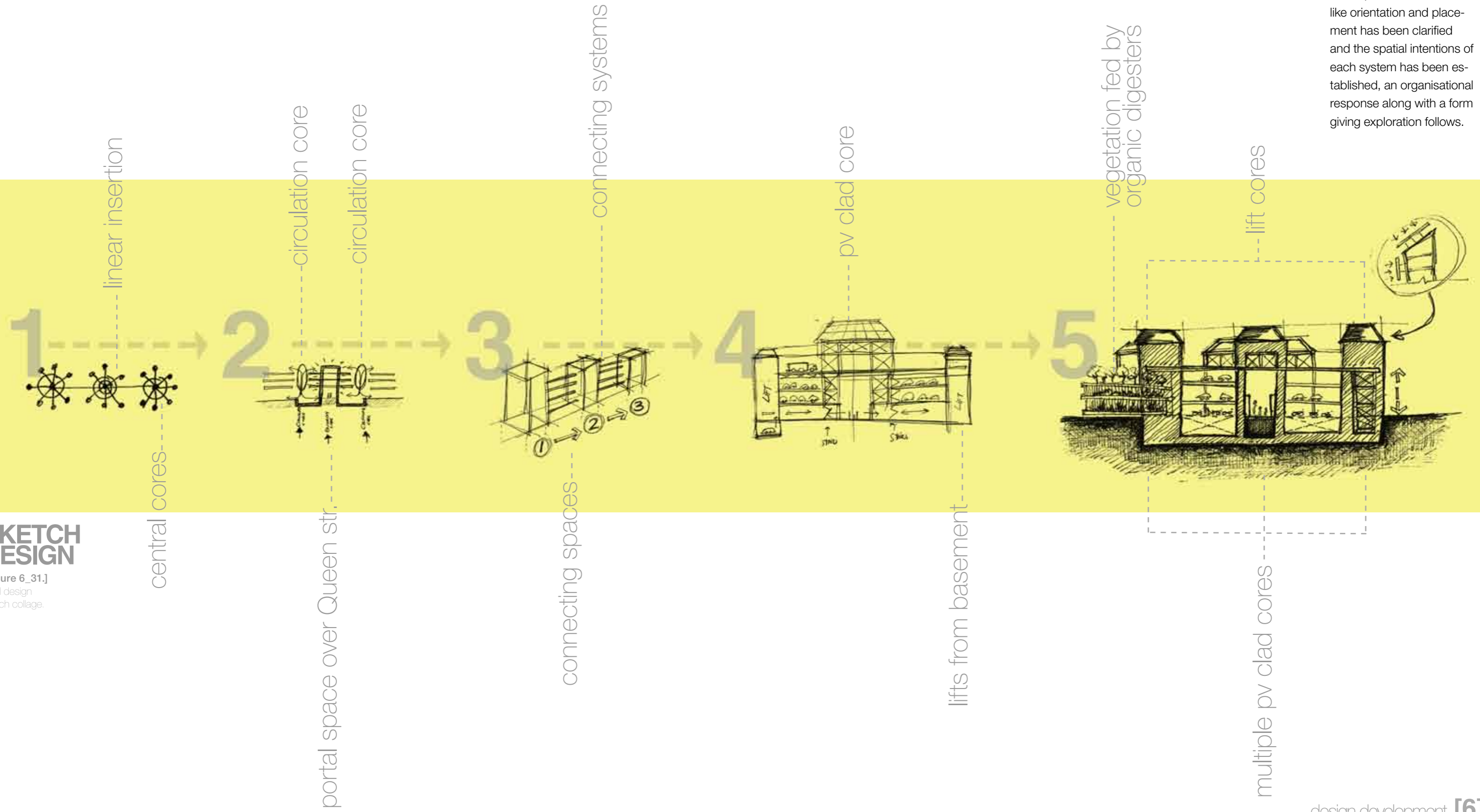
#### ACCESS

The intervention demands efficient access, not only between the existing structures, but also for the cars. De Bruyn Park has parkade floors on the first floor and basement which is served by a ramp along the western edge of Queen street mosque. Rather than building a new ramp to service the parking floors of the intervention, it is proposed that this **existing ramp is used** to service the new extension loading area of the basement and the access route to the upper floors as well as provide access to the bicycle parkade.



[Figure 6\_30.] Existing de Bruyn Park ramp becomes part of the intervention.

Whilst exploring the endless possibilities of the different systems, an architectural response starts to develop. Now that issues like orientation and placement has been clarified and the spatial intentions of each system has been established, an organisational response along with a form giving exploration follows.

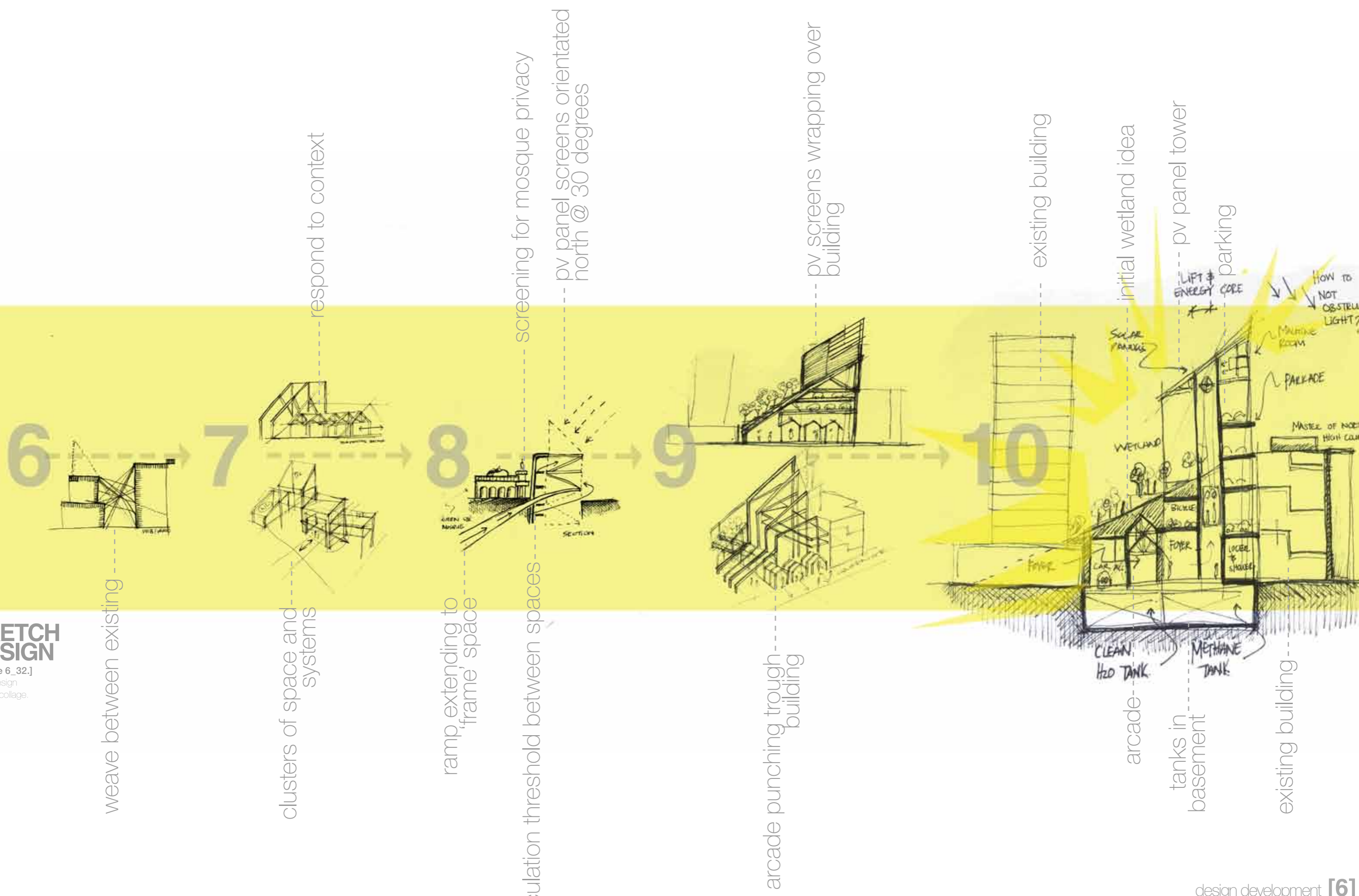


SKETCH DESIGN

[Figure 6\_31.] Initial design sketch collage.

**SKETCH DESIGN**

[Figure 6\_32.]  
Initial design  
sketch collage.



weave between existing

clusters of space and systems

respond to context

ramp extending to "frame" space

circulation threshold between spaces

screening for mosque privacy

pv panel screens orientated north @ 30 degrees

arcade punching through building

pv screens wrapping over building

existing building

arcade

tanks in basement

existing building

initial wetland idea

pv panel tower

parking

LIFT & ENERGY CORE

MASTER OF NORTH HIGH COURT BLDG

PARKADE

MULTI-ROOM

HOW TO NOT OBSTRUCT LIGHT?

SUPER PARKING

WETLAND

BIOME

FOYER

LOBBY & STAIRS

CLEAN H2O TANK

METHANE TANK

METHANE TANK

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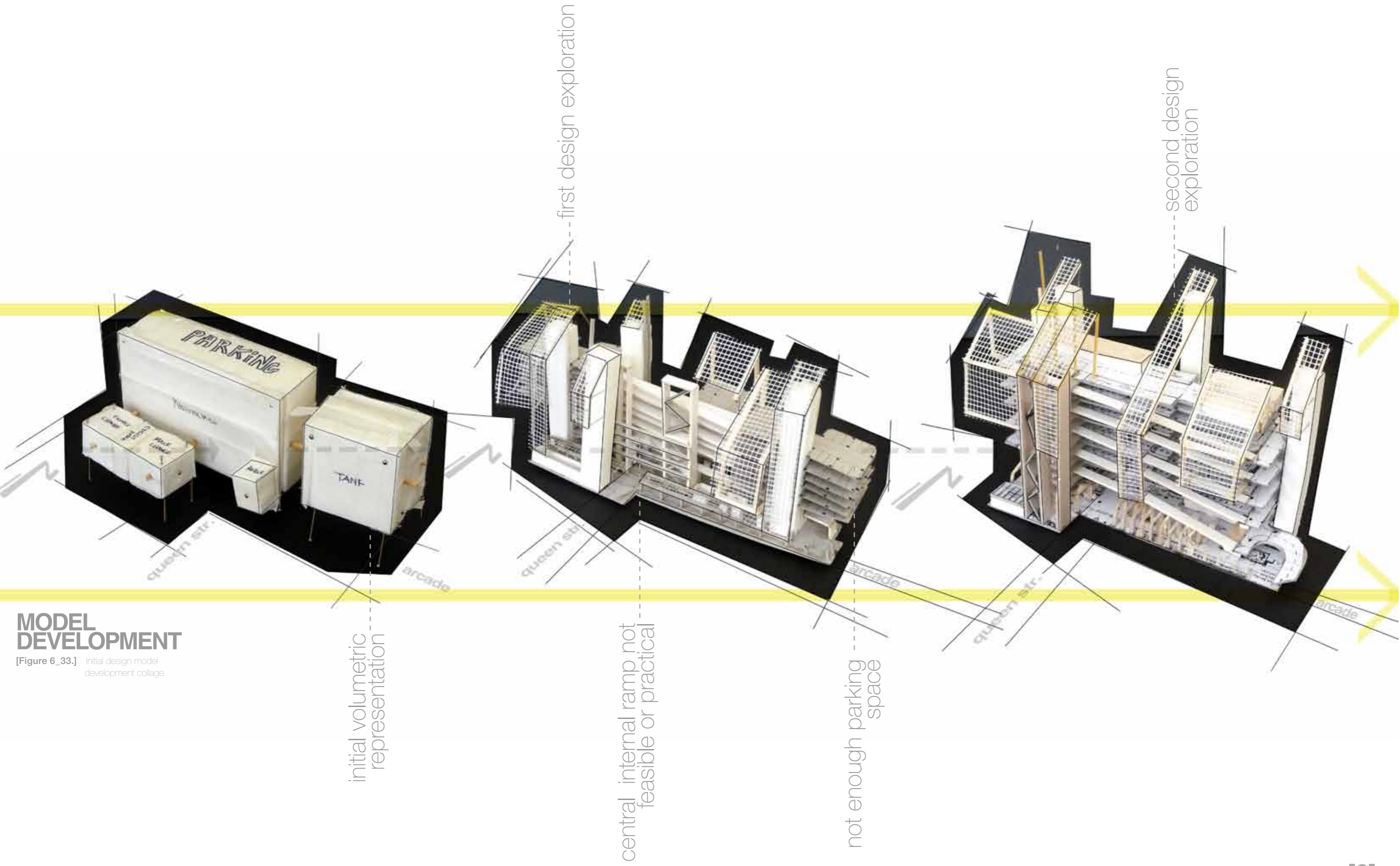
METHANE TANK

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first design exploration

second design exploration

initial volumetric representation

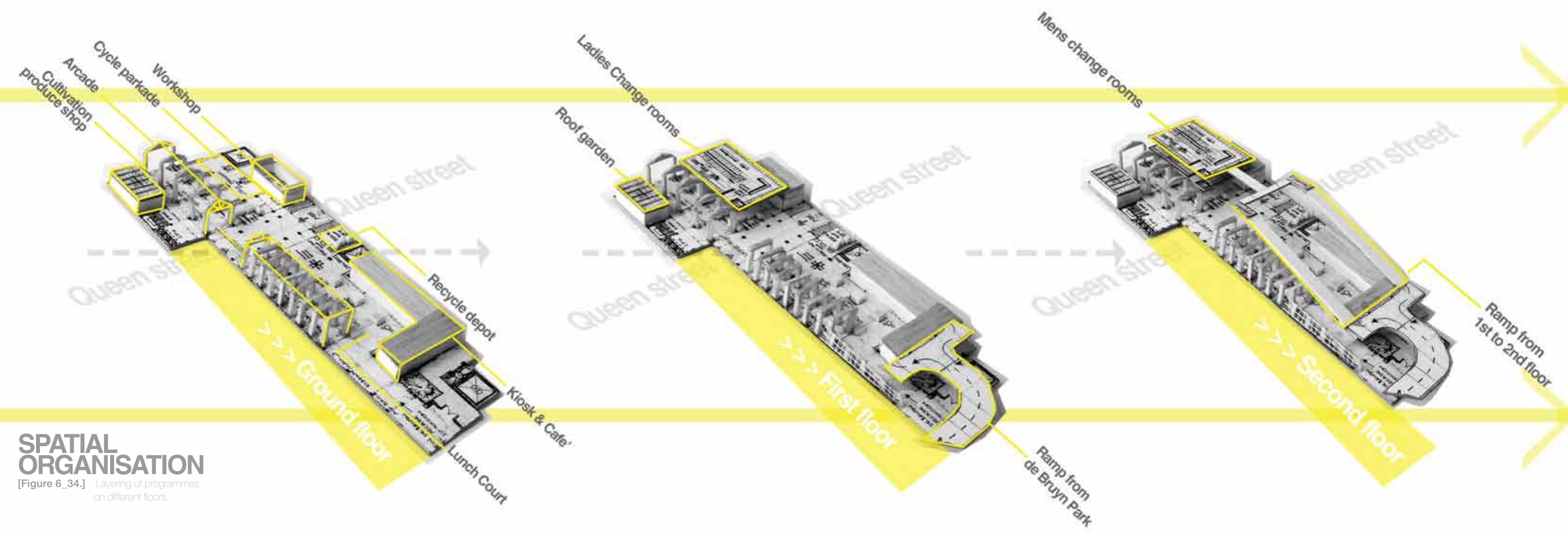
central internal ramp not feasible or practical

not enough parking space

**MODEL DEVELOPMENT**

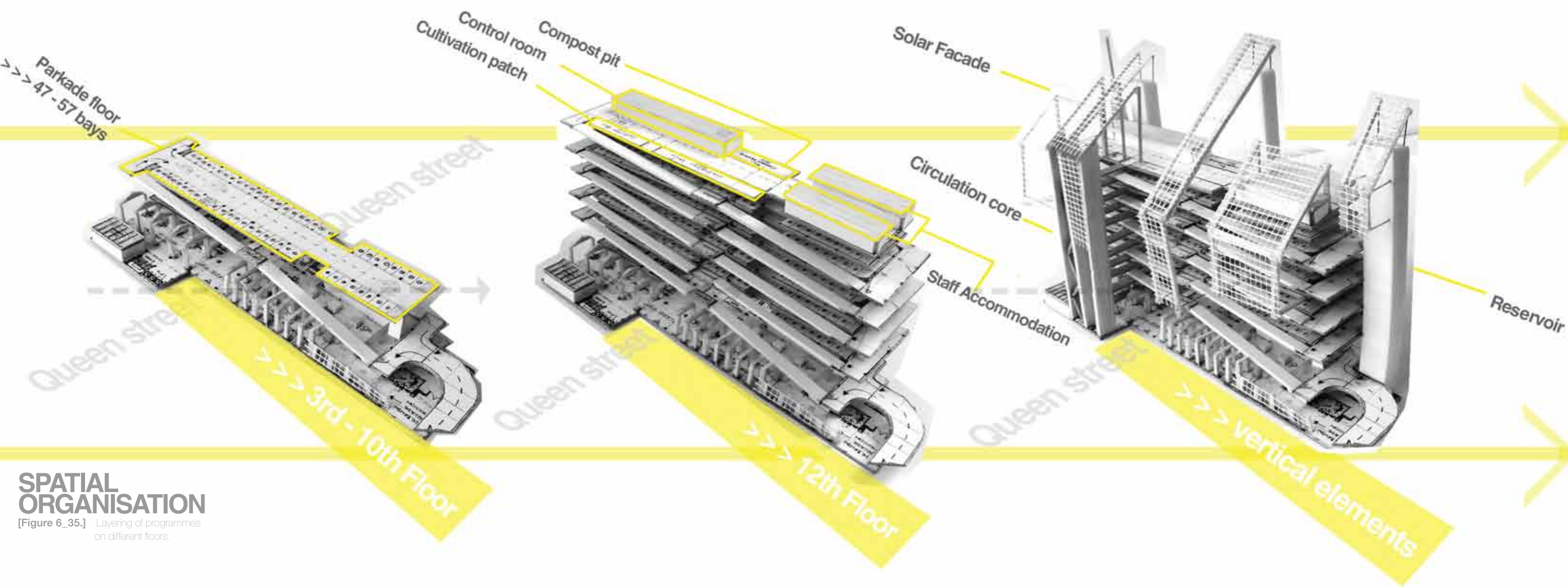
[Figure 6\_33.] Initial design model development collage.





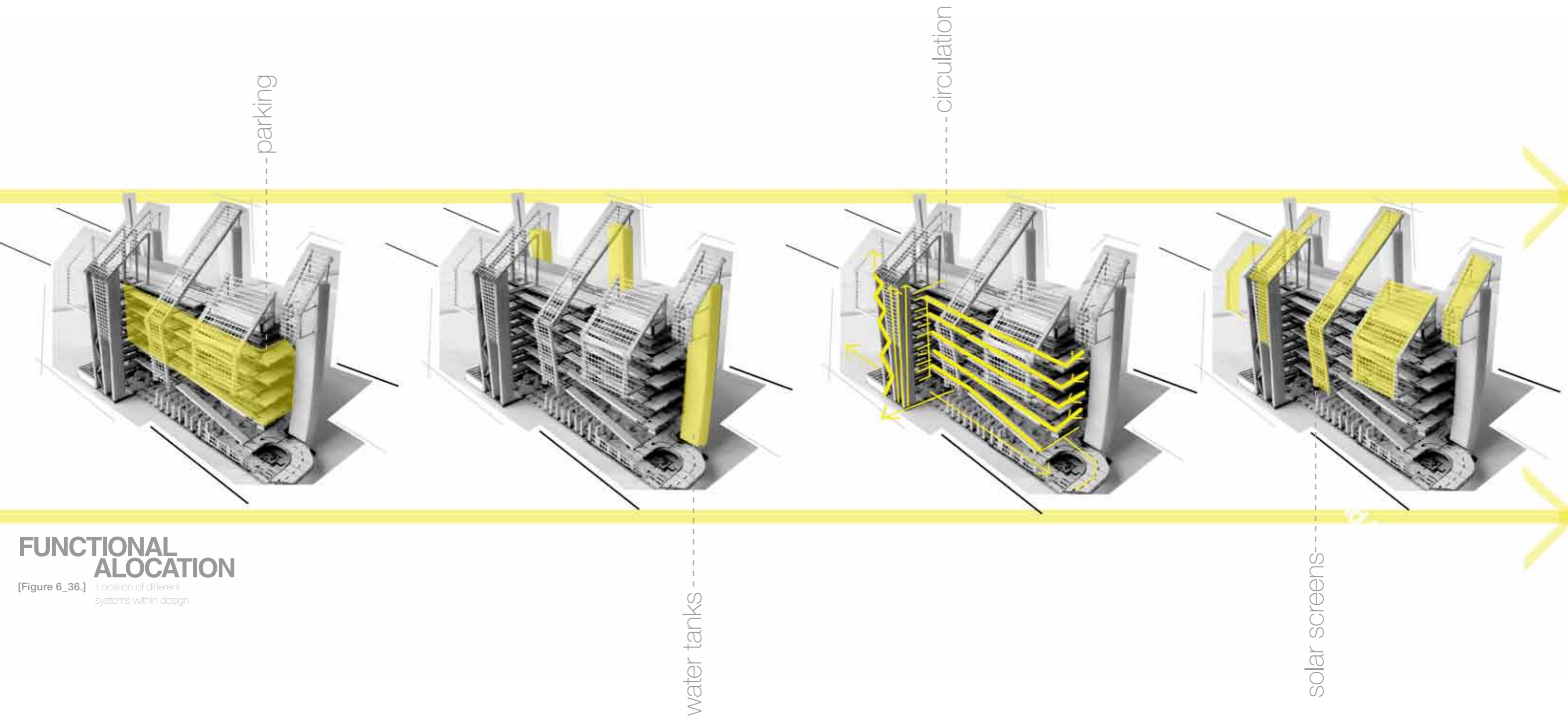
# SPATIAL ORGANISATION

[Figure 6\_34.] Layering of programmes on different floors.



# SPATIAL ORGANISATION

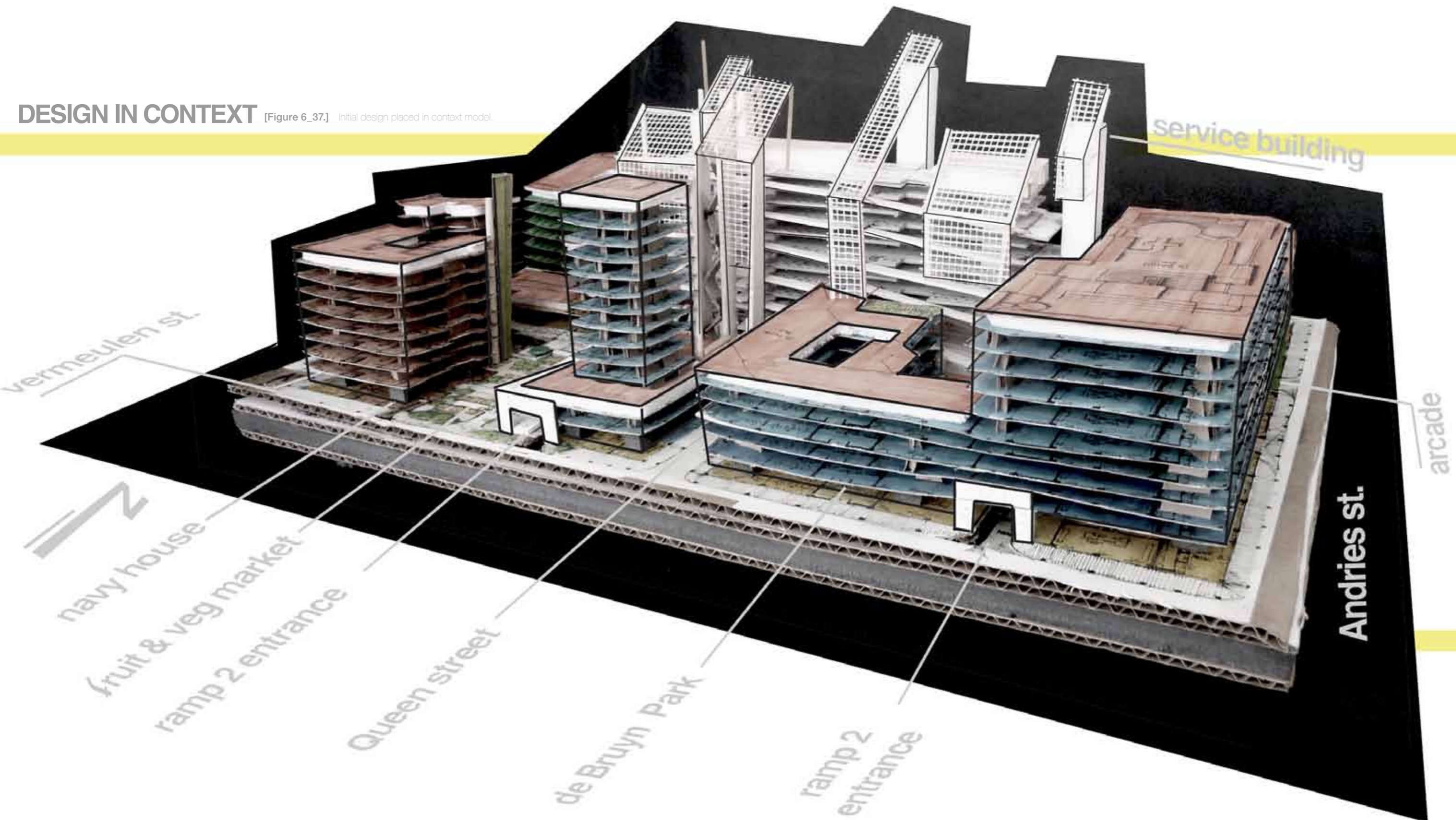
[Figure 6\_35.] Layering of programmes on different floors.

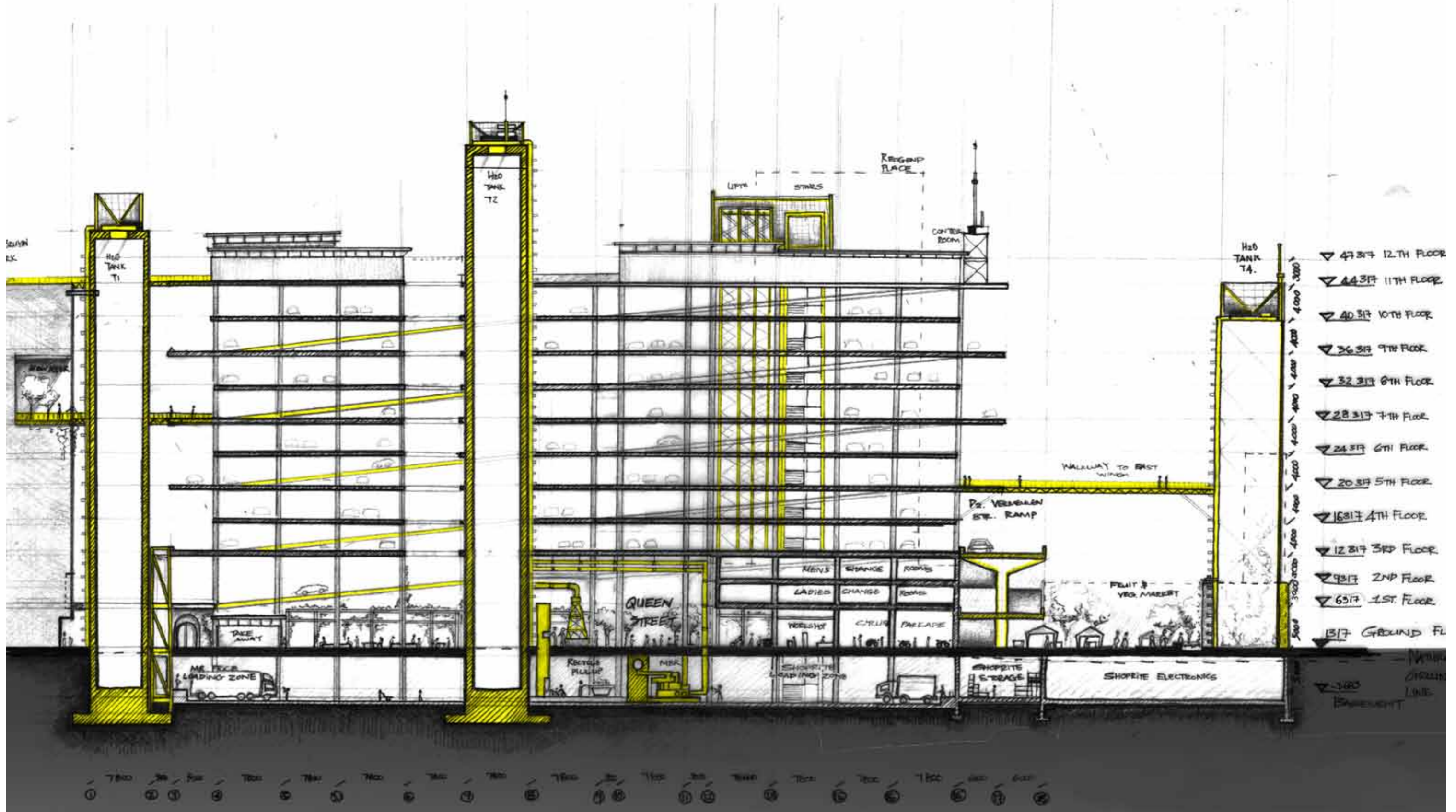


# FUNCTIONAL ALOCATION

[Figure 6\_36.] Location of different systems within design.

DESIGN IN CONTEXT [Figure 6\_37.] Initial design placed in context model.





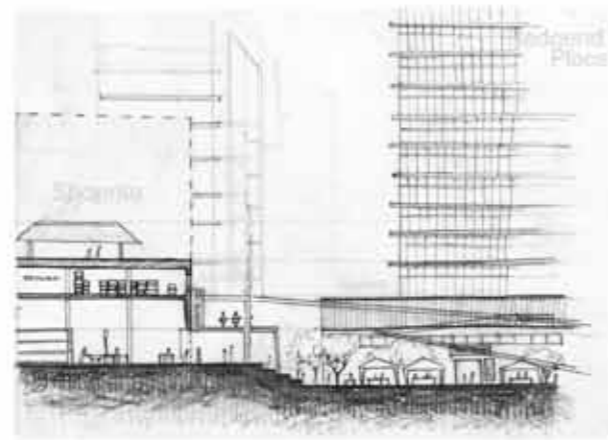
**SECTION A-A** [Figure 6\_38.] Section through design illustrating the water tank scale and animated ground floor area.

A review of the design up to this stage revealed that the architectural language of the scheme is still in question. Although a large portion of work was done in order to plan and organise the design, it seems that it may come across as **basic engineering** rather than an architectural design. Thus further investigation needs to be done questioning the **tectonic and contextual response**.

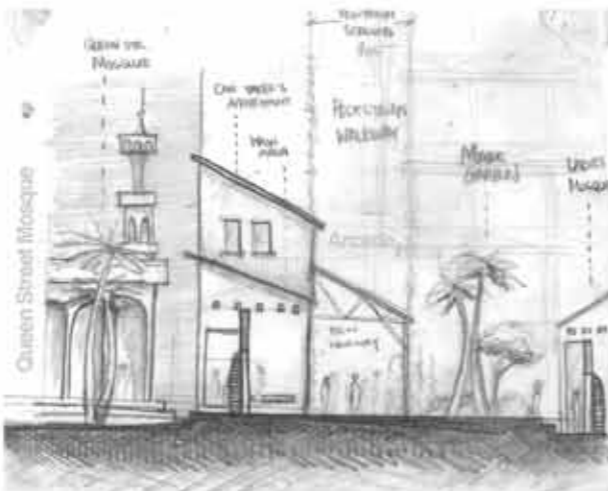
The design's **scale** is also questioned, because the design is placed in the block core, a very **sensitive** and strategic approach needs to be taken in order not to **'drown' out the existing fabric**. Thus it is proposed that the basement is optimised and a **super basement** is created in order to lessen the building's vertical mass. Also questioning the vertical organisation; right now the design is planned out to be an economically practical parking building - but this is not what the design set out to be.

**Must the parkade just be an extruded plan?**

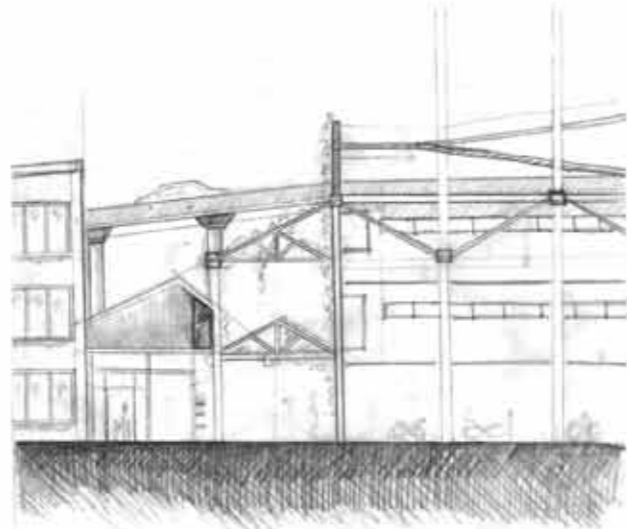
Because of the symbiotic character of the intervention, the **linking spaces in between the intervention and the existing fabric** becomes very important. The mass as a whole as well as the circulation should **respond to the existing fabric** to establish this symbiotic relationship and an **appropriate contextual response**.



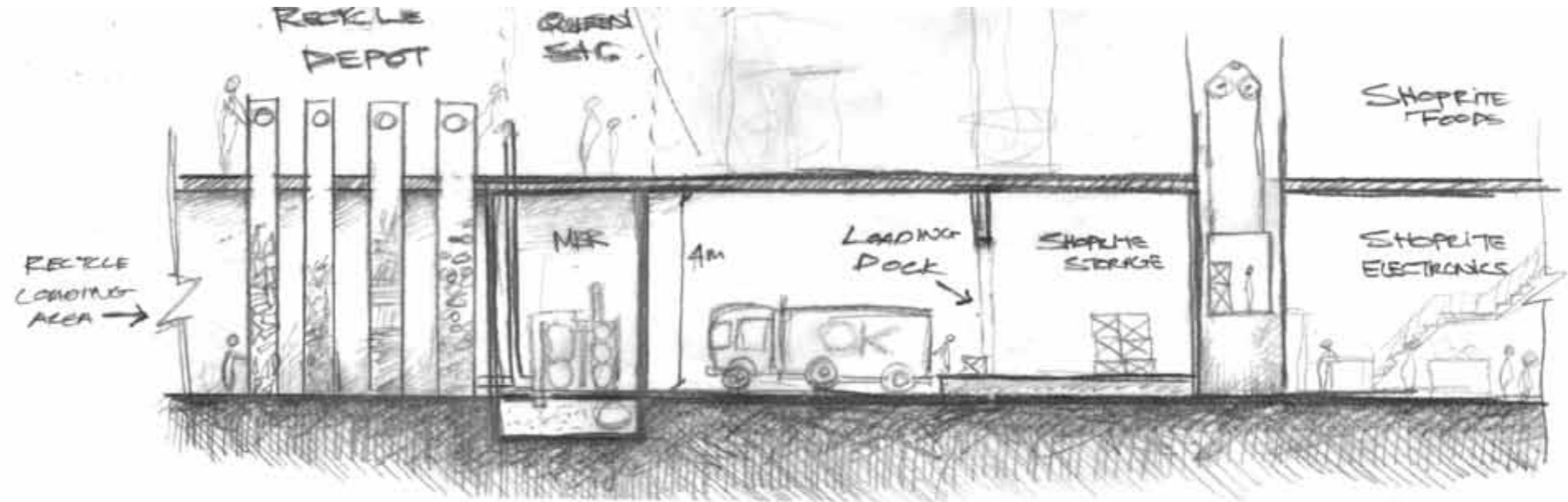
[Figure 6\_39.] Proposed fruit and vegetable market space in front of Shoprite Foods with new ramp next to Regend Place facade.



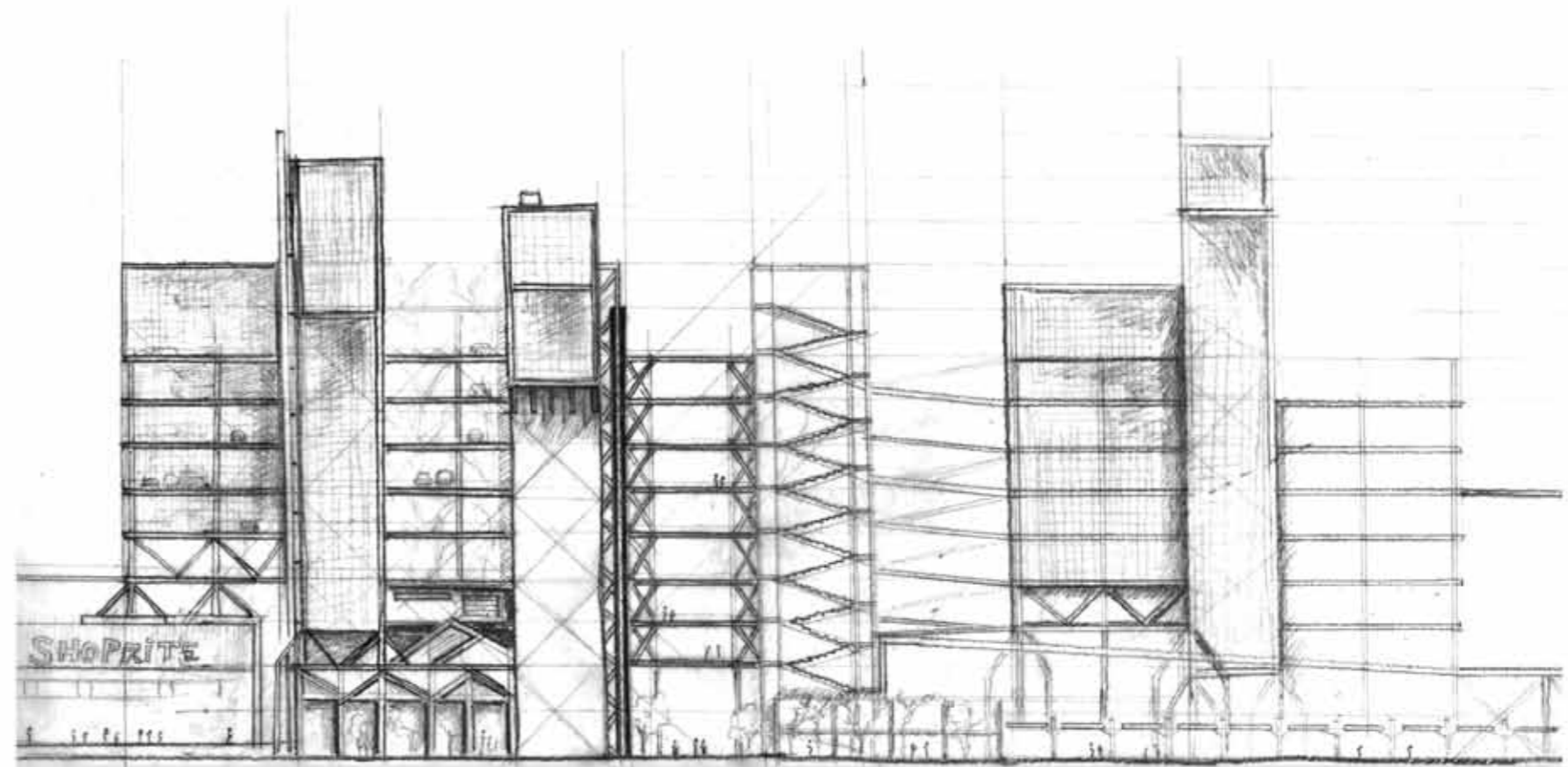
[Figure 6\_40.] Arcade through old Wanjacheng structure creating a buffer between the square and mosque.



[Figure 6\_41.] Concrete ramp with steel bracing extending over arcade with proposed cyclist parking on ground floor.



[Figure 6\_42.] Basement recycling, storage and loading area with industrial lifts for goods being transported to serviced buildings. The basement serves the site systems above with a vertical 'feed' system.



[Figure 6\_43.] North elevation of intervention within context. Vertical screen/roof structures wrap over the facade.