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YUNIBESITHI YA PRETORIA

DESIGN DEVELOPMENT





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07



CHAPTER 7 DESIGN DEVELOPMENT

CONCEPT: ARCHITECTURE AS MEDIATOR

The concept is based on the idea that architecture can act as a mediator, addressing the disconnection between urban and natural spaces, town and countryside and eventually places of consumption and places of production. To achieve this the design has to engage with both the urban and the natural environment.

Through biomimicry and ecosystemic design the building can function like a living organism or ecosystem, integrating the building systems with available natural resources.

DESIGN GENERATORS

The process is informed by three main design generators:

- Reconnecting the river to the city.
- Responding to environmental context.
- Integration of a mixed use programme.



Figure 100: Architecture as mediator

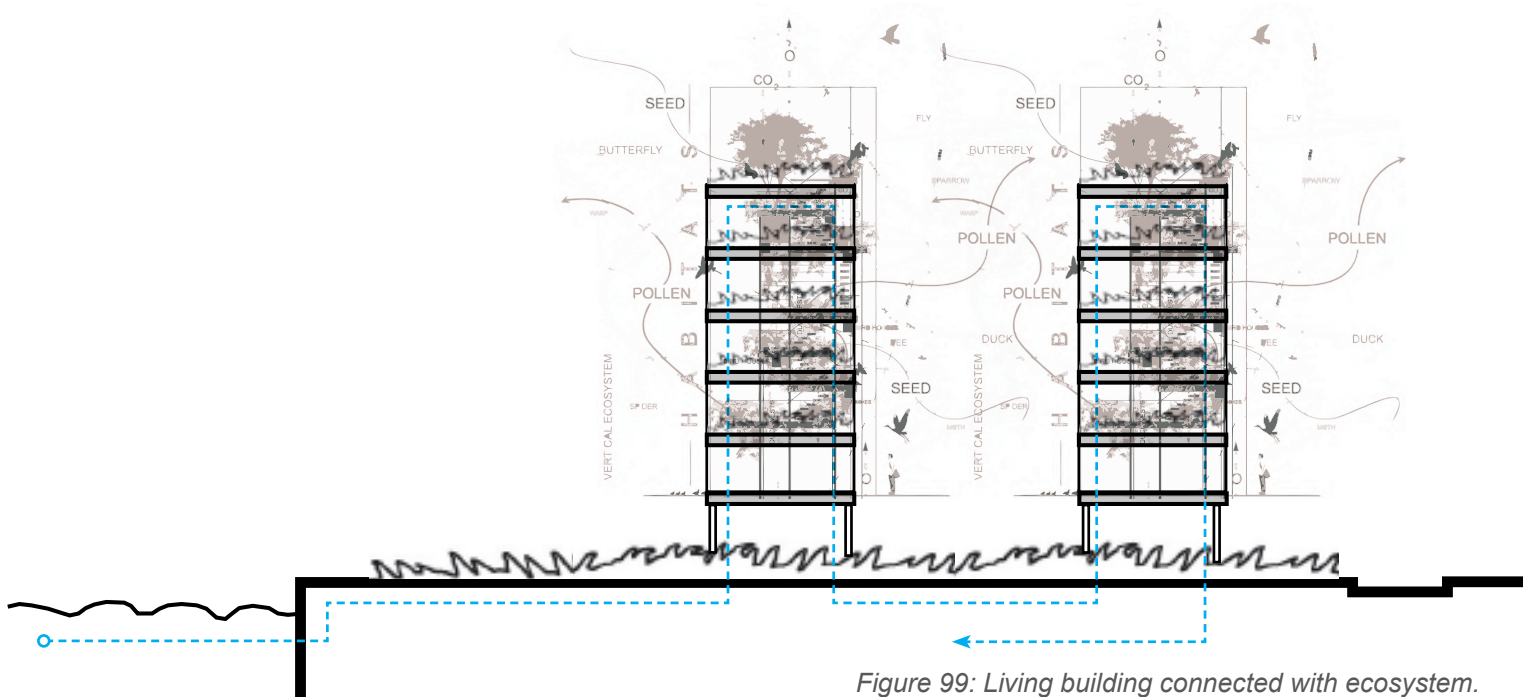


Figure 99: Living building connected with ecosystem.

CONNECTING THE EDGES

To connect the techno-sphere (urban) with the biosphere (nature) the design explores the disjunction between the immediate edges.

Figure 101 indicates the factors that will be used to help connect the urban edges with the natural river reach. This in turn will help to connect the urban dweller with his natural environment.

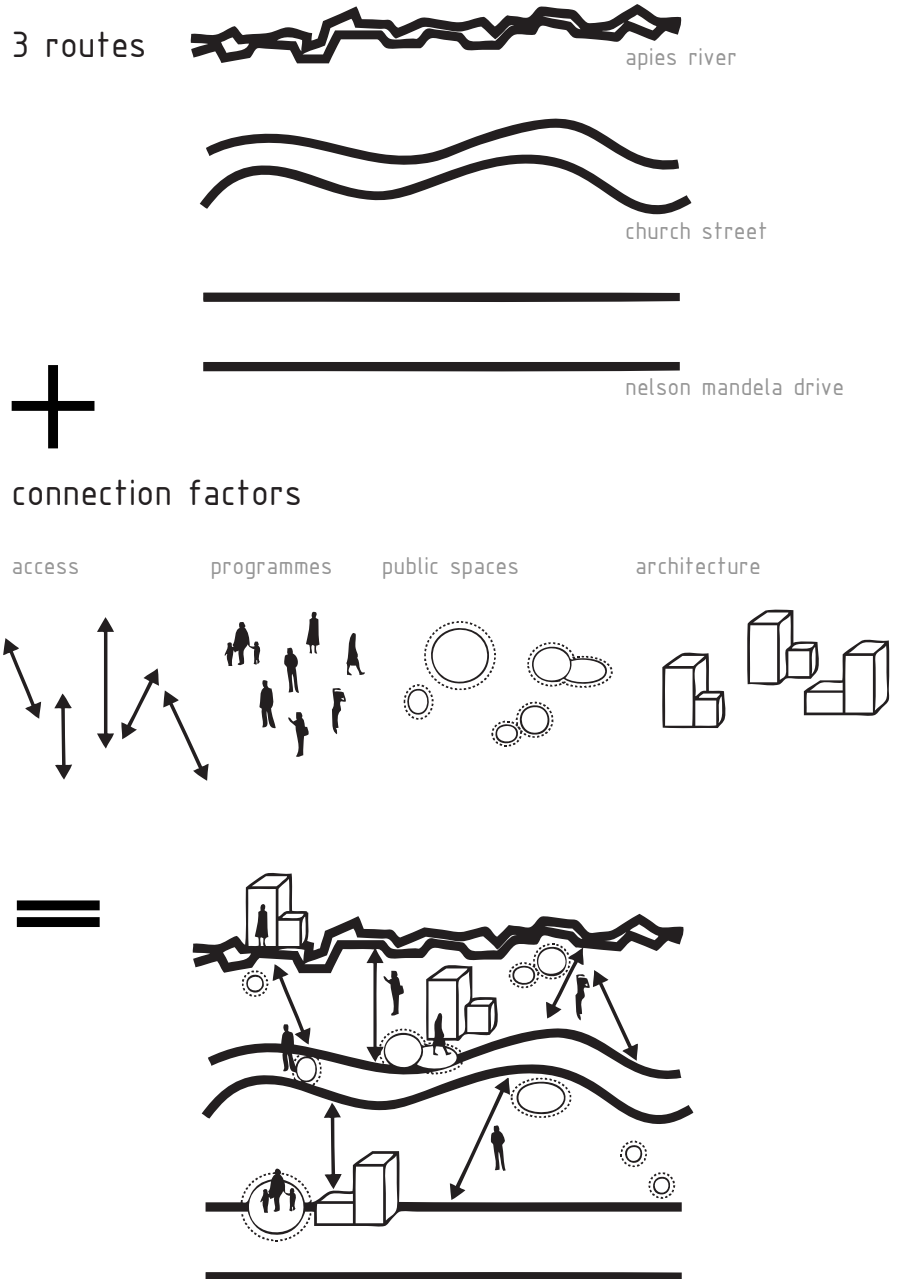


Figure 101: Factors used to connect urban edges with the river.



SITE DEVELOPMENT

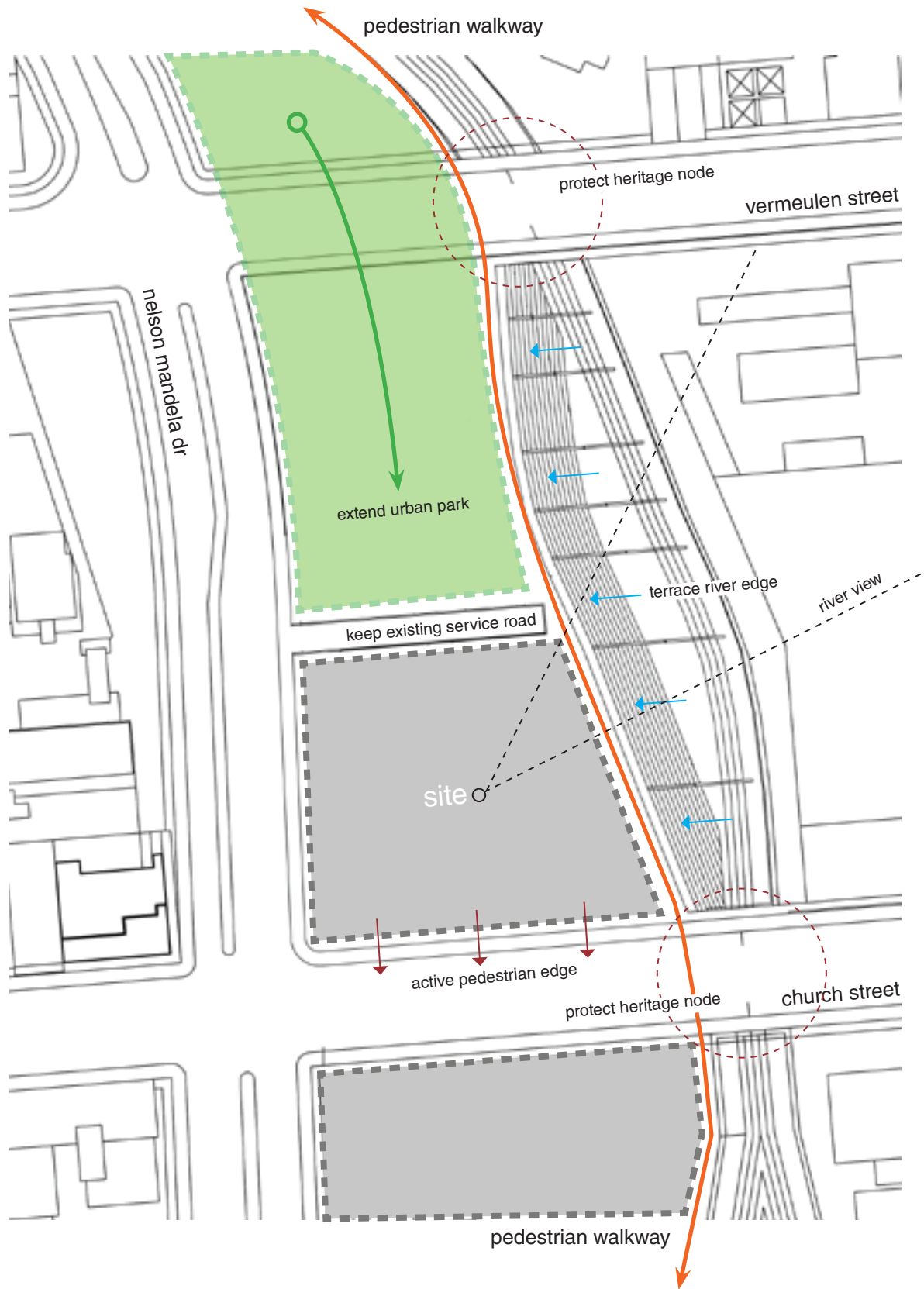


Figure 102: Site development diagram.



Figure 104: 3D View of proposed site condition.

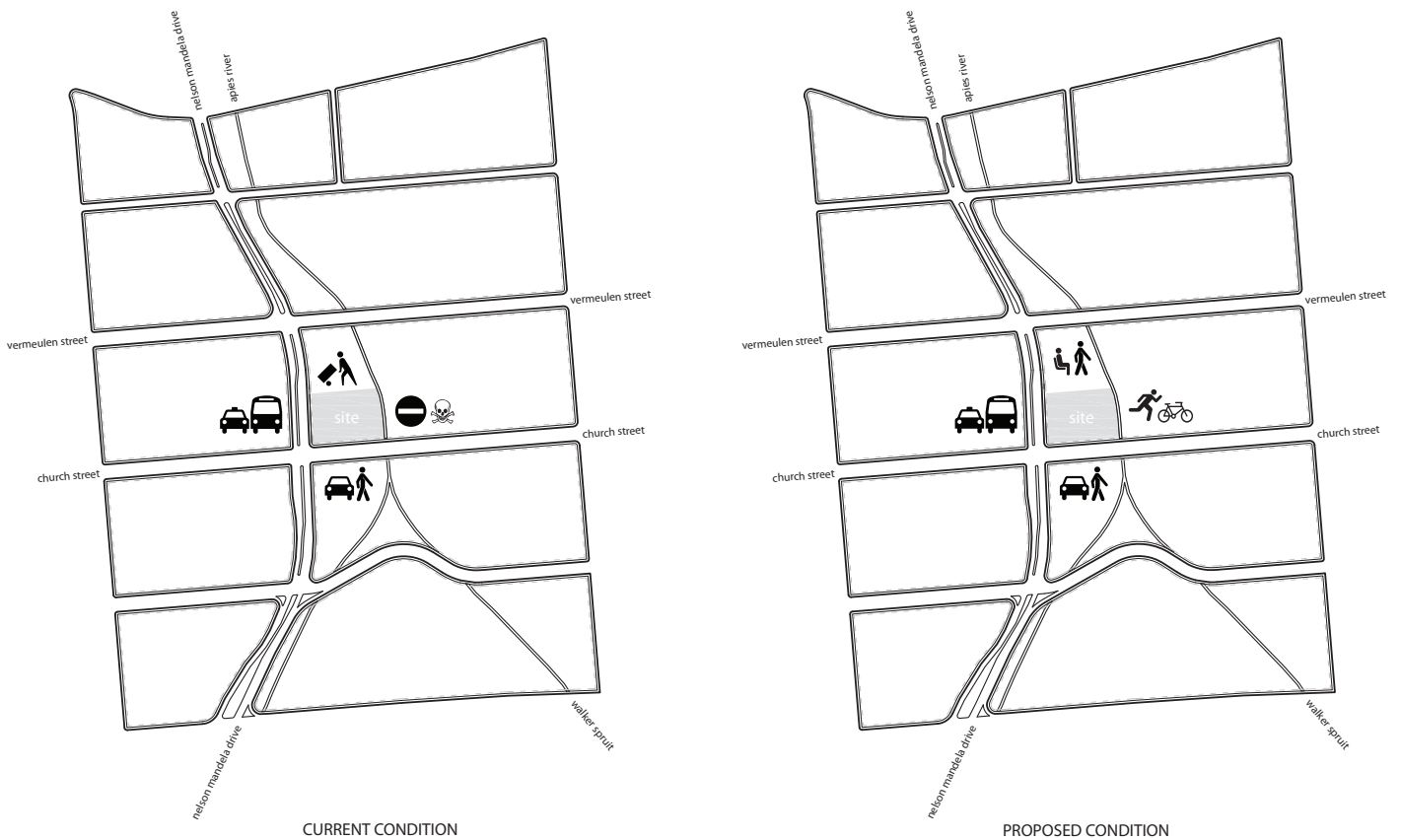


Figure 103: Current and proposed site edge conditions.



RIVER CONNECT

The main contextual problem is the lack of connection between the river and the urban realm. The design therefore has to respond to the problem by providing safe access for all city dwellers. The building form and programme should invite the public in to the river edge.



Figure 107: Concept sketch showing building connect to river edge.

Figure 105: Site exploration concept models.

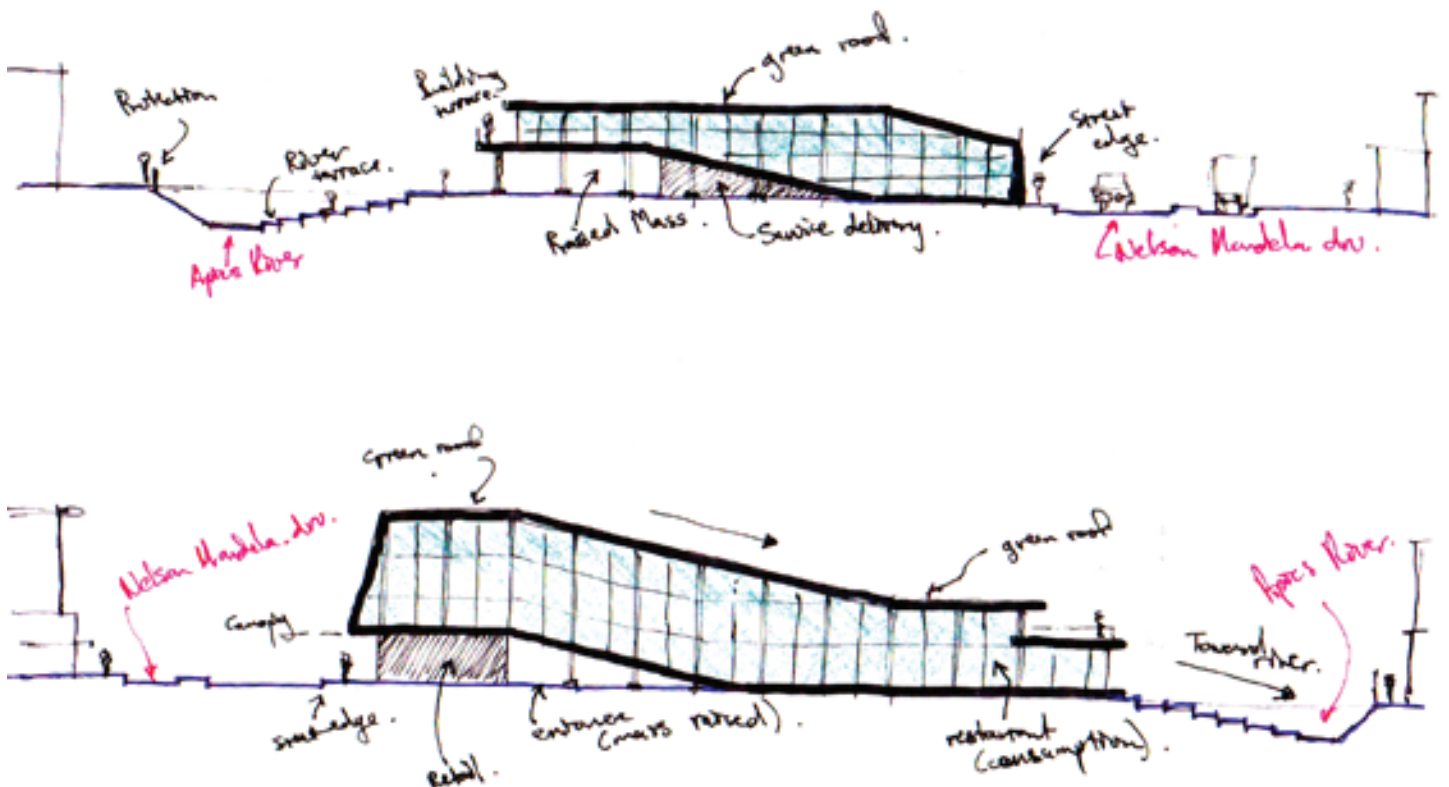


Figure 106: Sketch connection between edges and building.

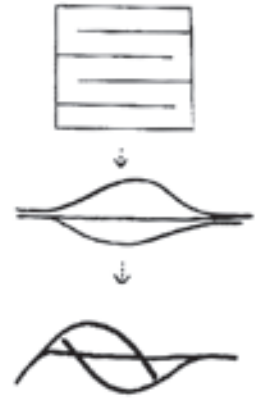
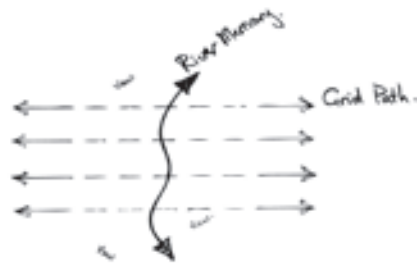


Figure 110: Strip extrusion concept.

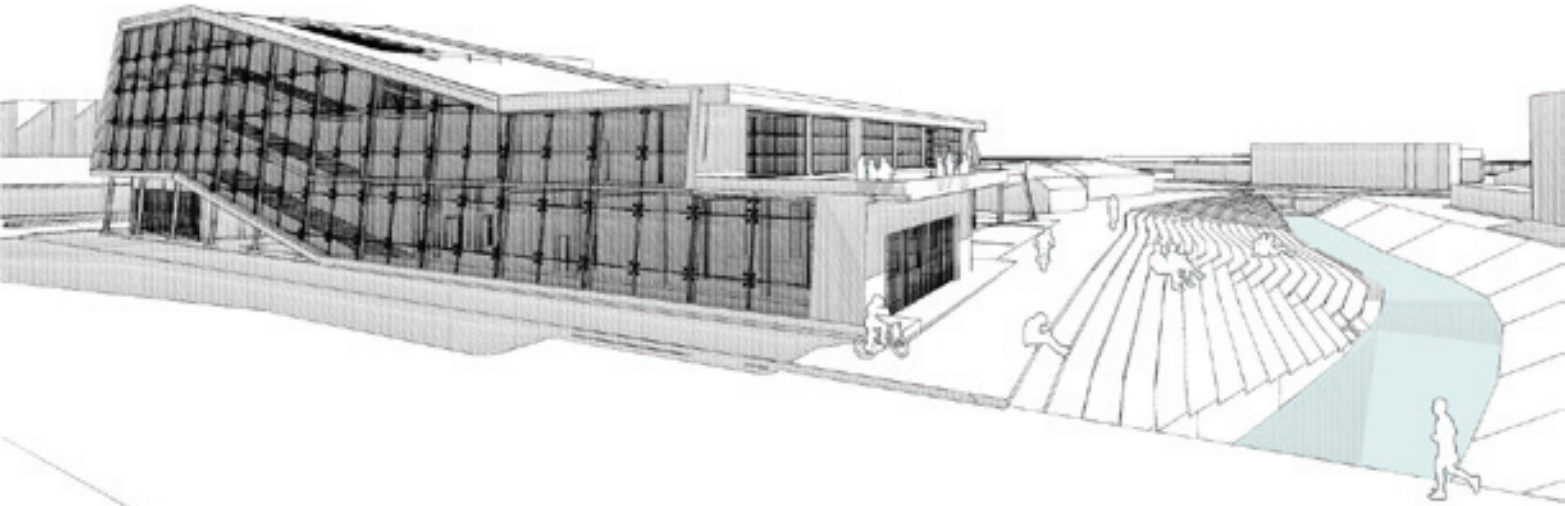


Figure 109: Perspective showing building shape respond to river edge.

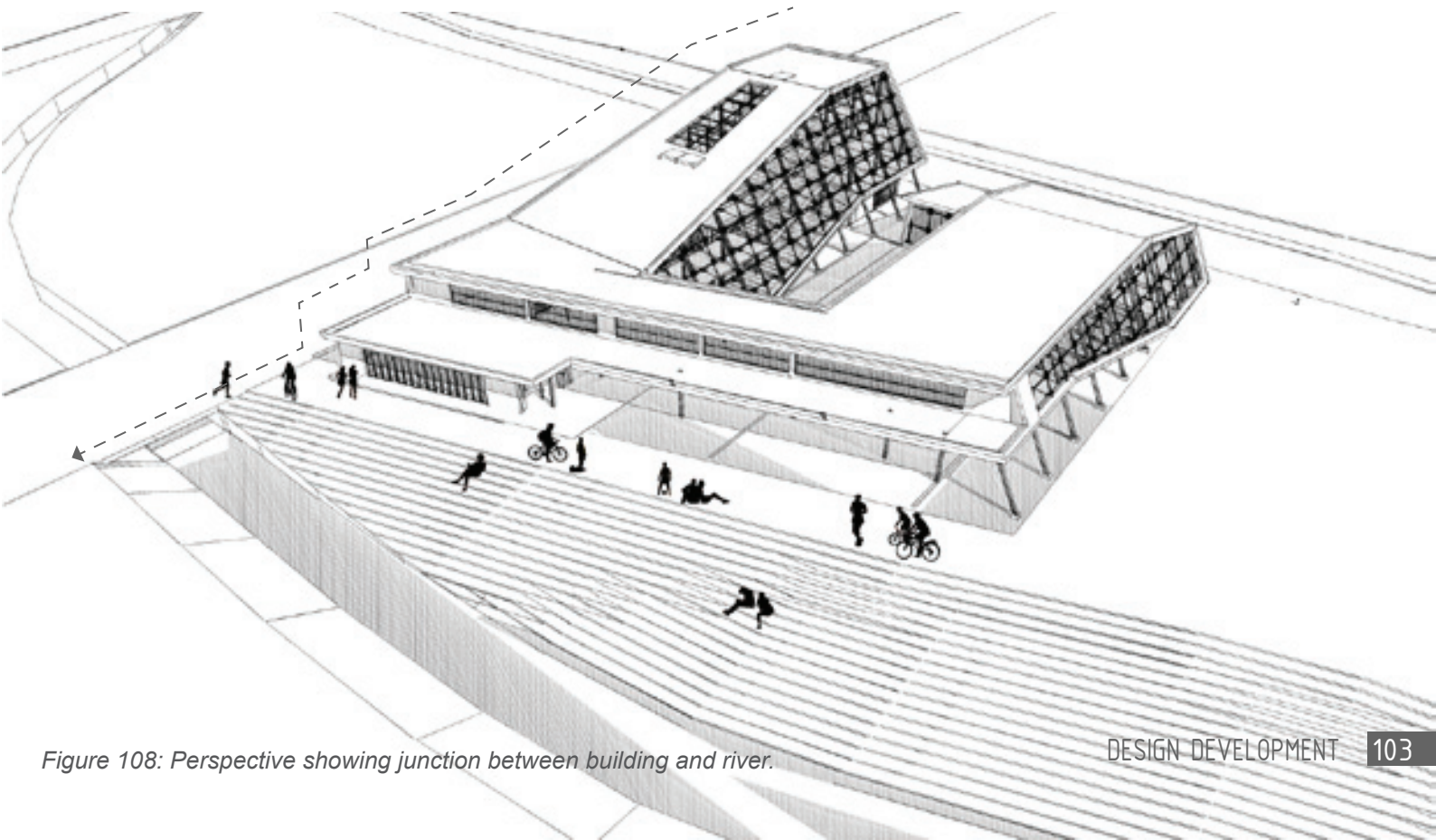


Figure 108: Perspective showing junction between building and river.



ENVIRONMENTAL RESPONSE

The agricultural activities housed within the building requires specific environmental conditions. The building will therefore be shaped and moulded by these climatic and environmental elements

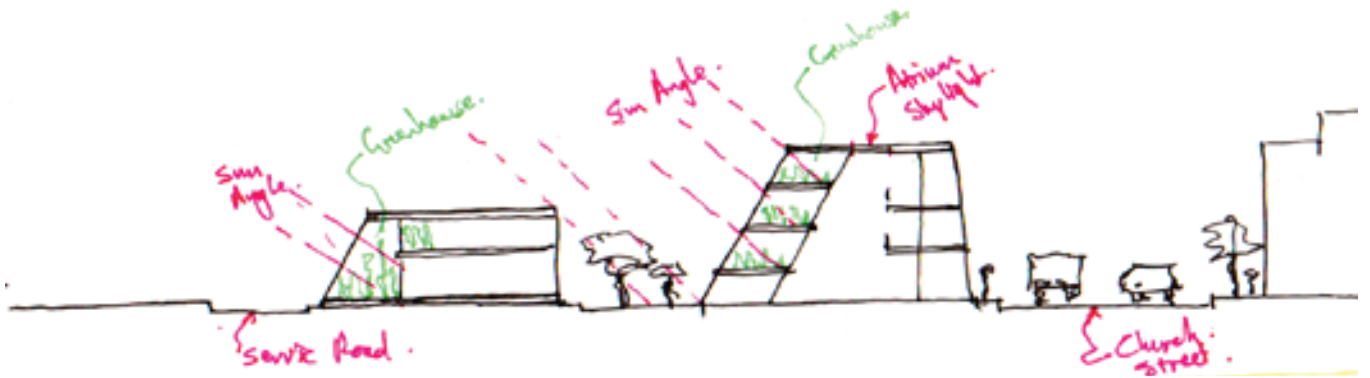


Figure 111: Natural daylight as design informant.

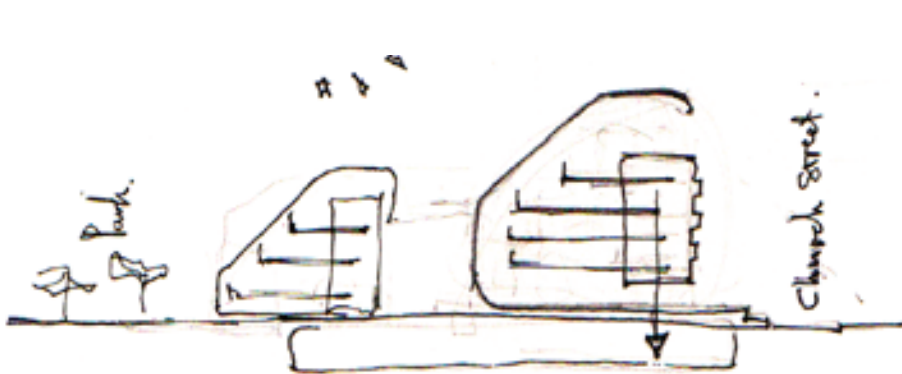


Figure 113: Building use of earth as functional space.



Figure 112: Natural ventilation as design informant

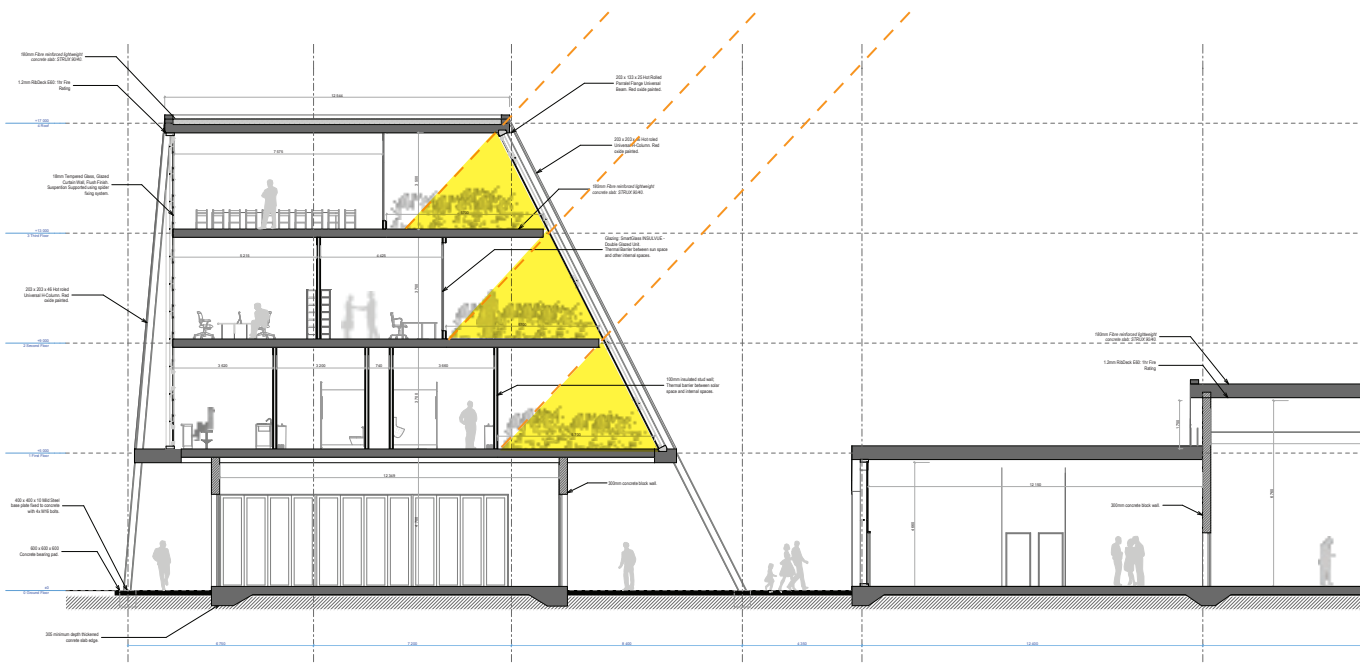


Figure 114: Draft section indicating direct natural daylight in greenhouse areas.

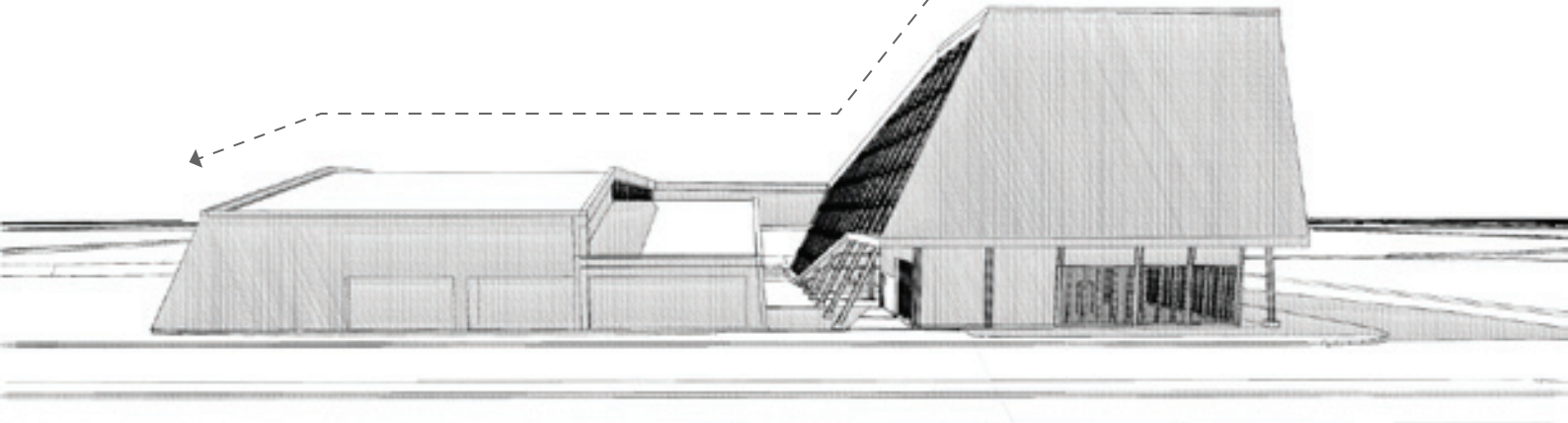


Figure 115: Building mass stepped and angled to allow maximum daylight into courtyard and internal spaces.

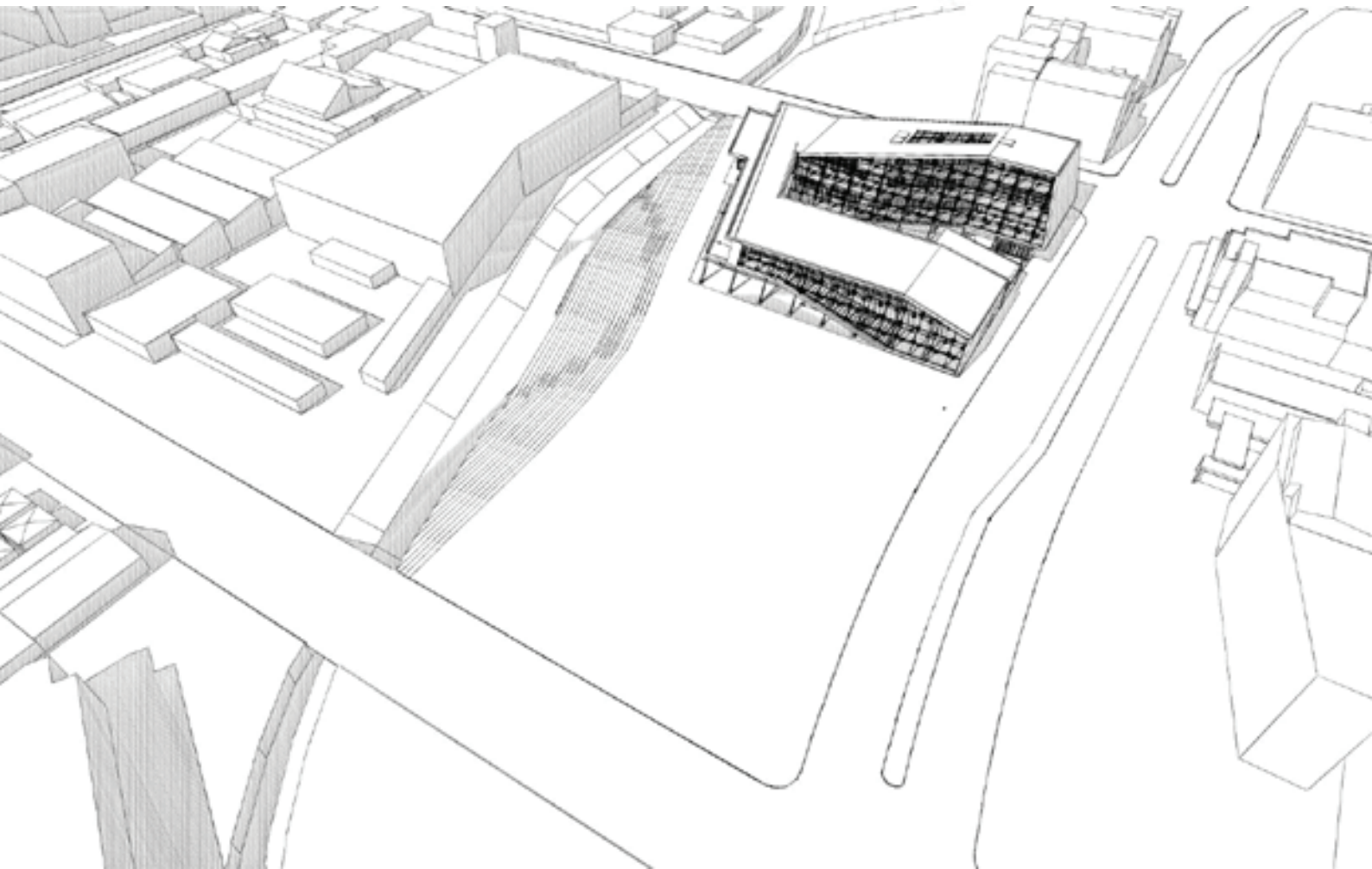


Figure 116: Building mass stepped to respond to proposed open green space on adjacent site.

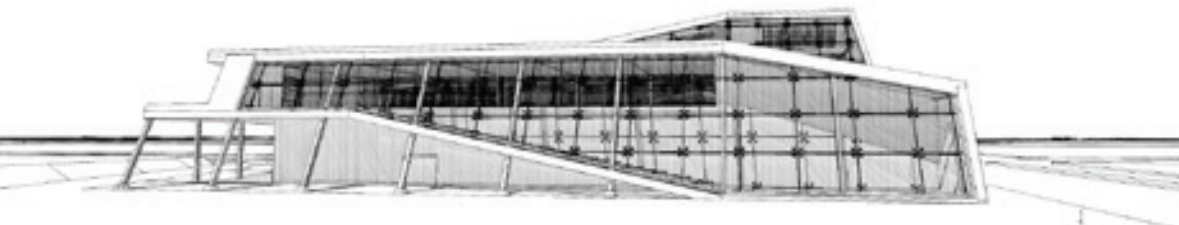


Figure 117: View from adjacent park location.

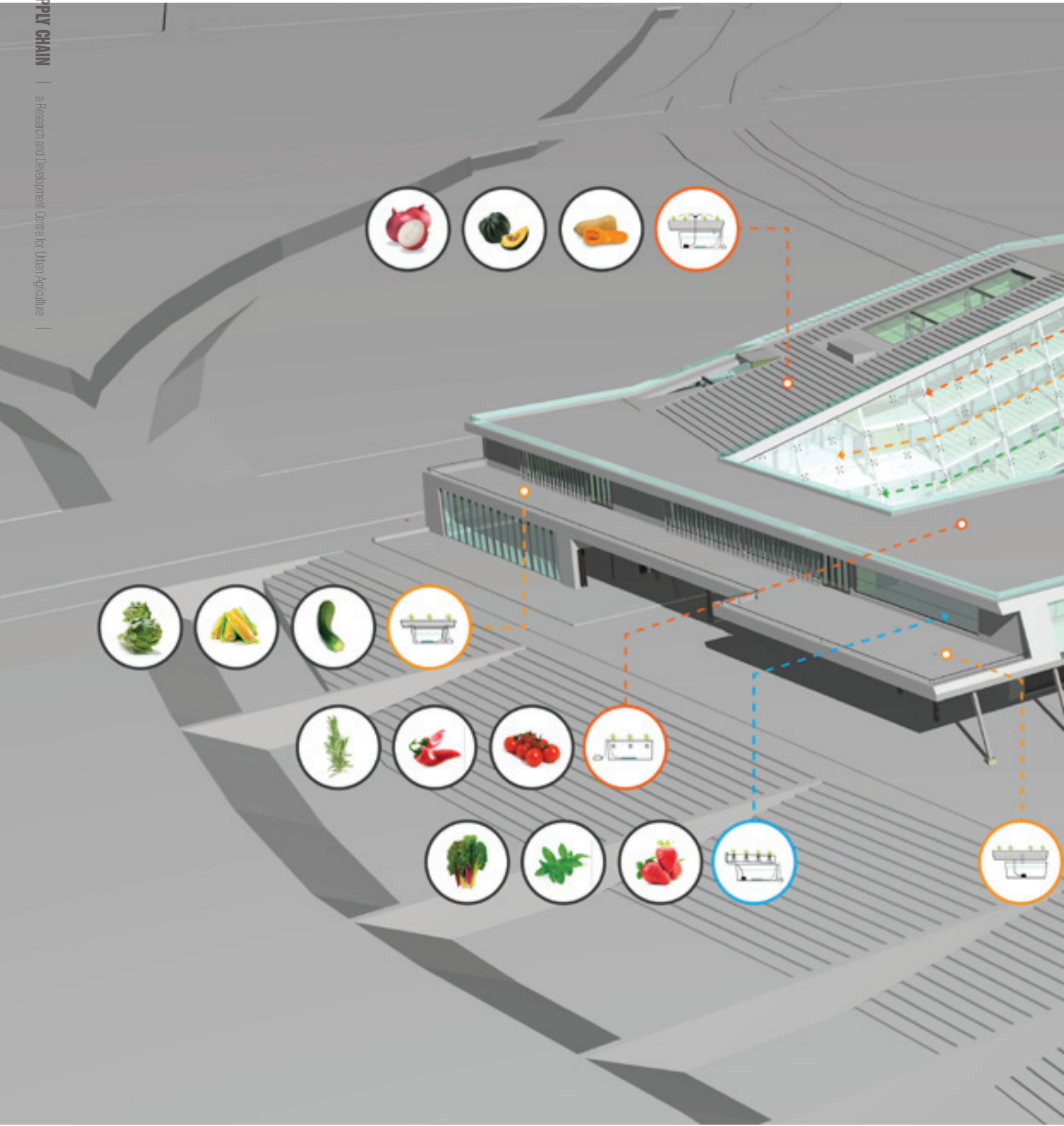
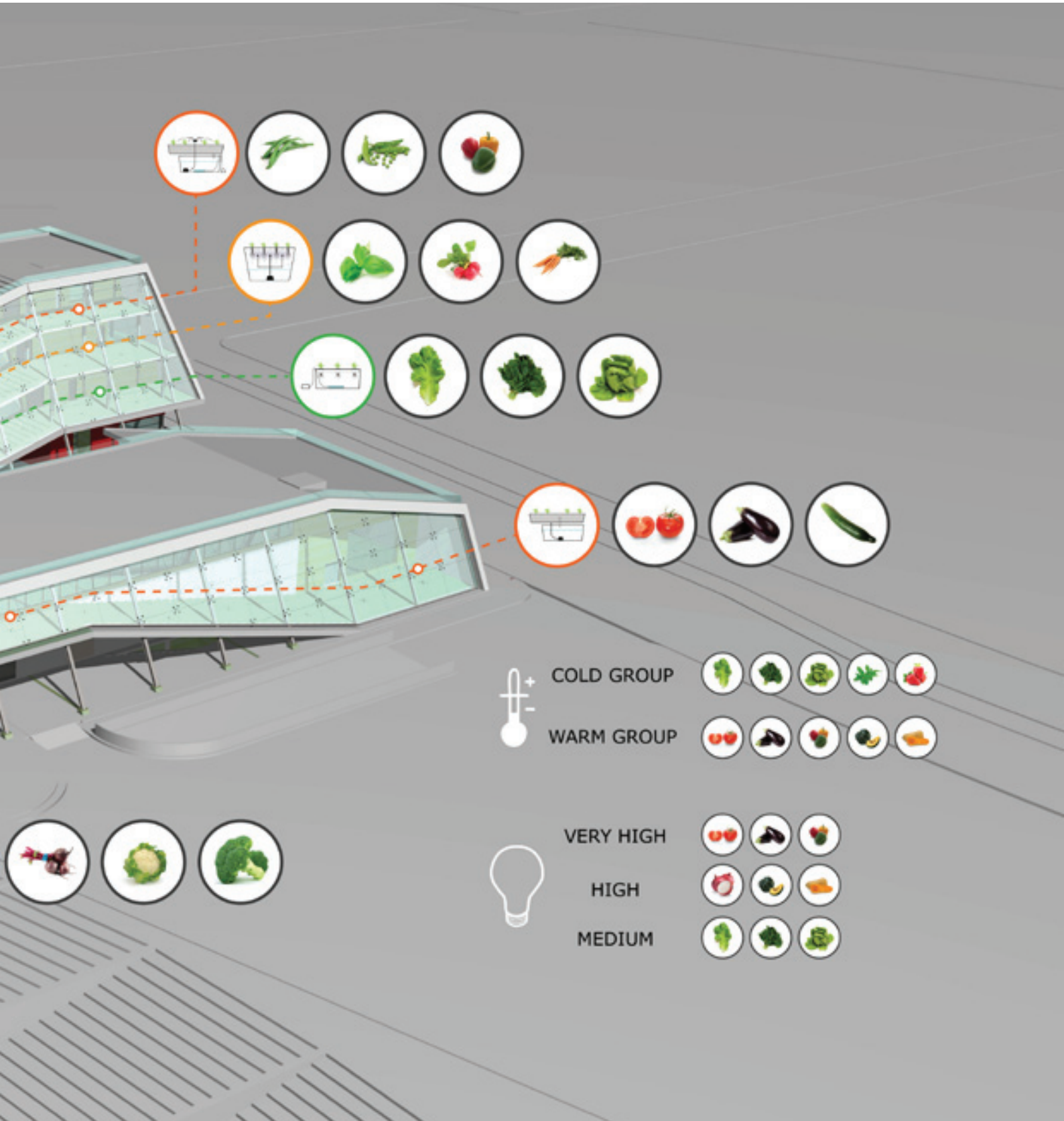


Figure 118: Diagram showing location of specific crops and hydroponic technologies based on light and heat intensity in specific locations.





PROGRAM

Historically production /industrial environmental have resulted in negative urban spaces and have been located on the fringe areas outside of city centres. By introducing ground floor activities that engage with the public realm, the negative impact of production on the street edge can be negated.



Figure 120: Functional Diagram.

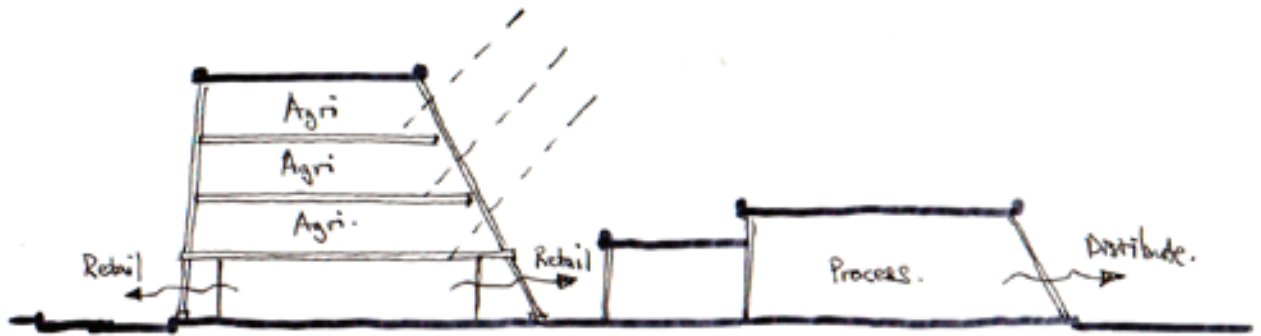


Figure 119: Concept section showing ground floor program with public interface.



With over 50% of the world's population living in cities, it is important for us to think locally and reconnect not only to our food but also its processes and the ability to implement them in our living conditions as an urban bound species

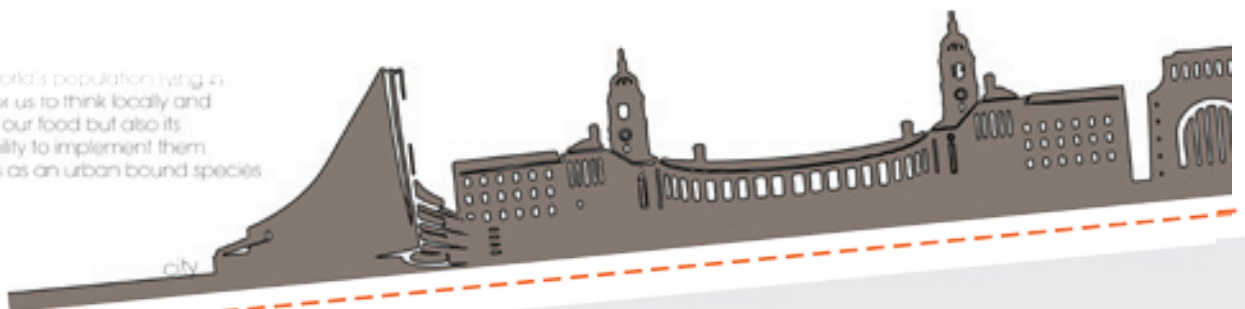


Figure 121: Connecting the city and nature using building program.

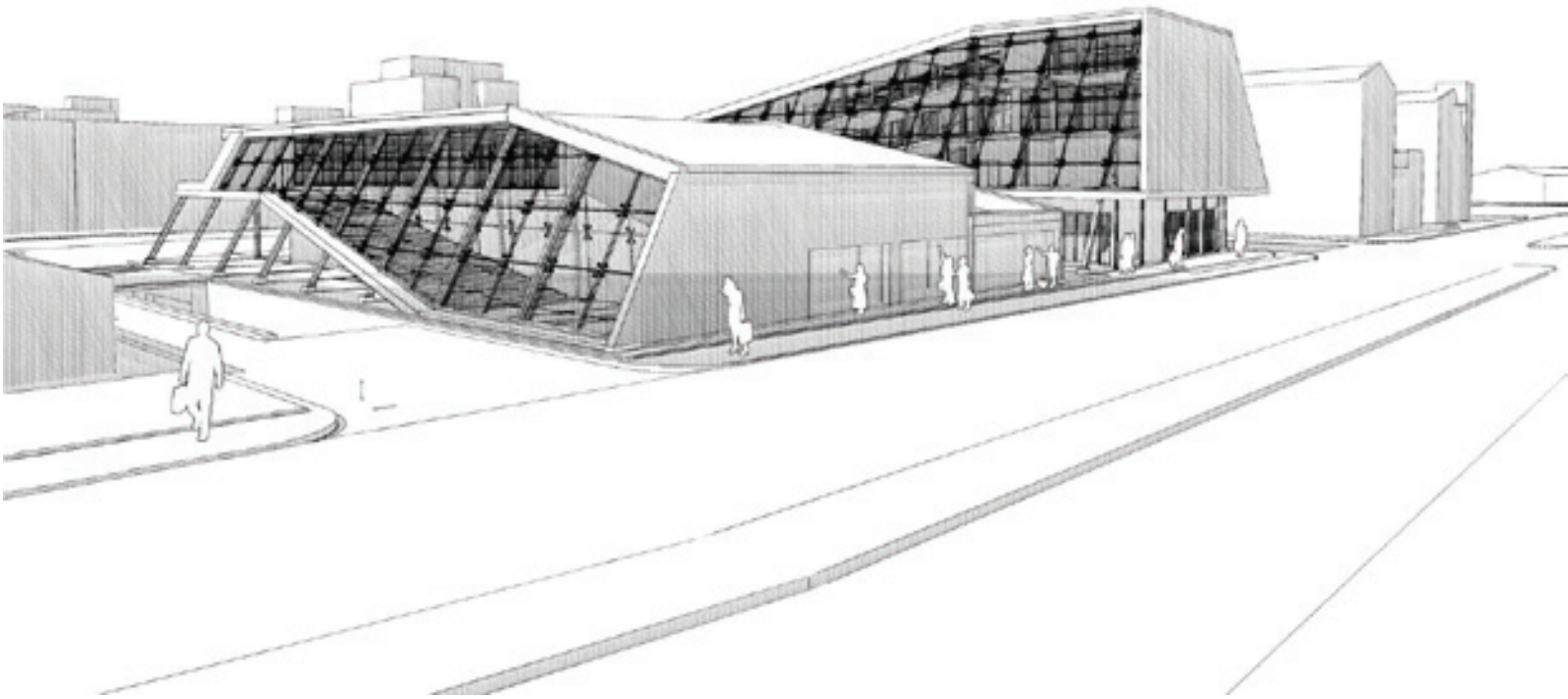


Figure 122: Perspective view from Nelson Mandela drive showing proposed retail edge.

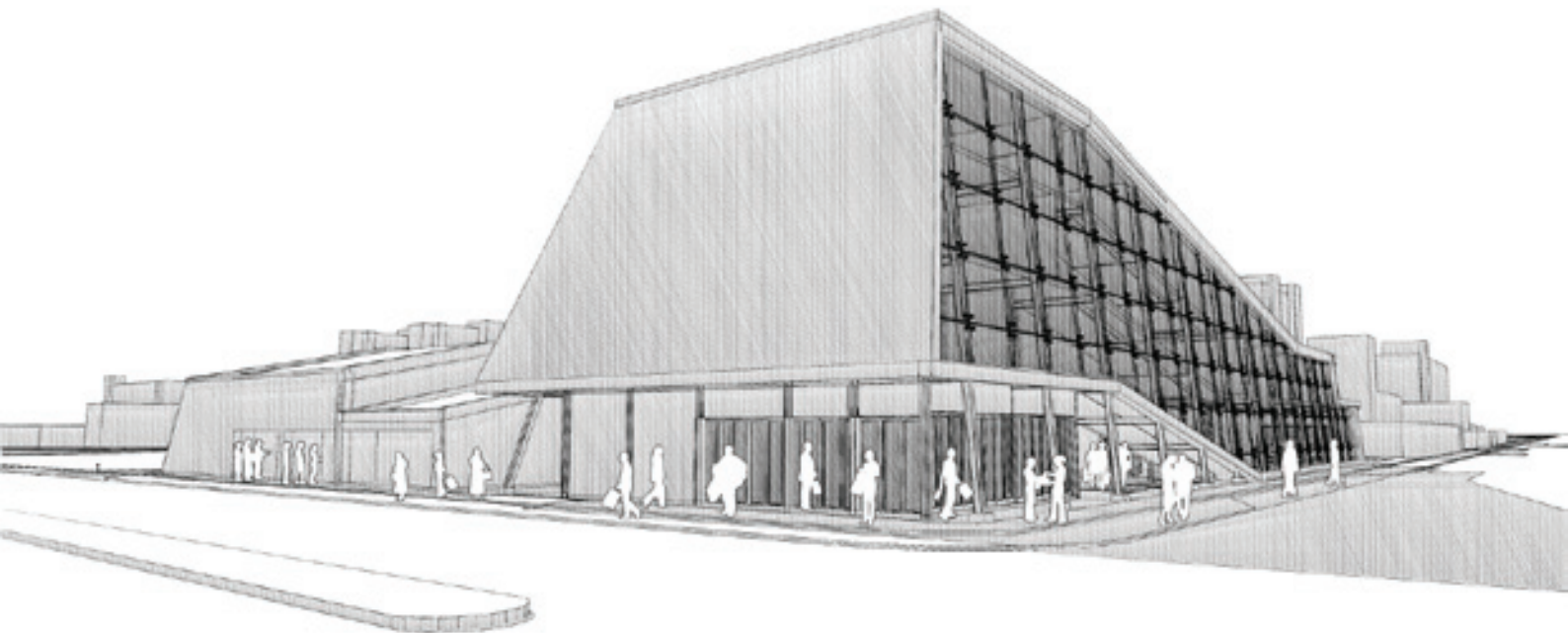


Figure 123: Perspective view from Church Street showing proposed retail edge.

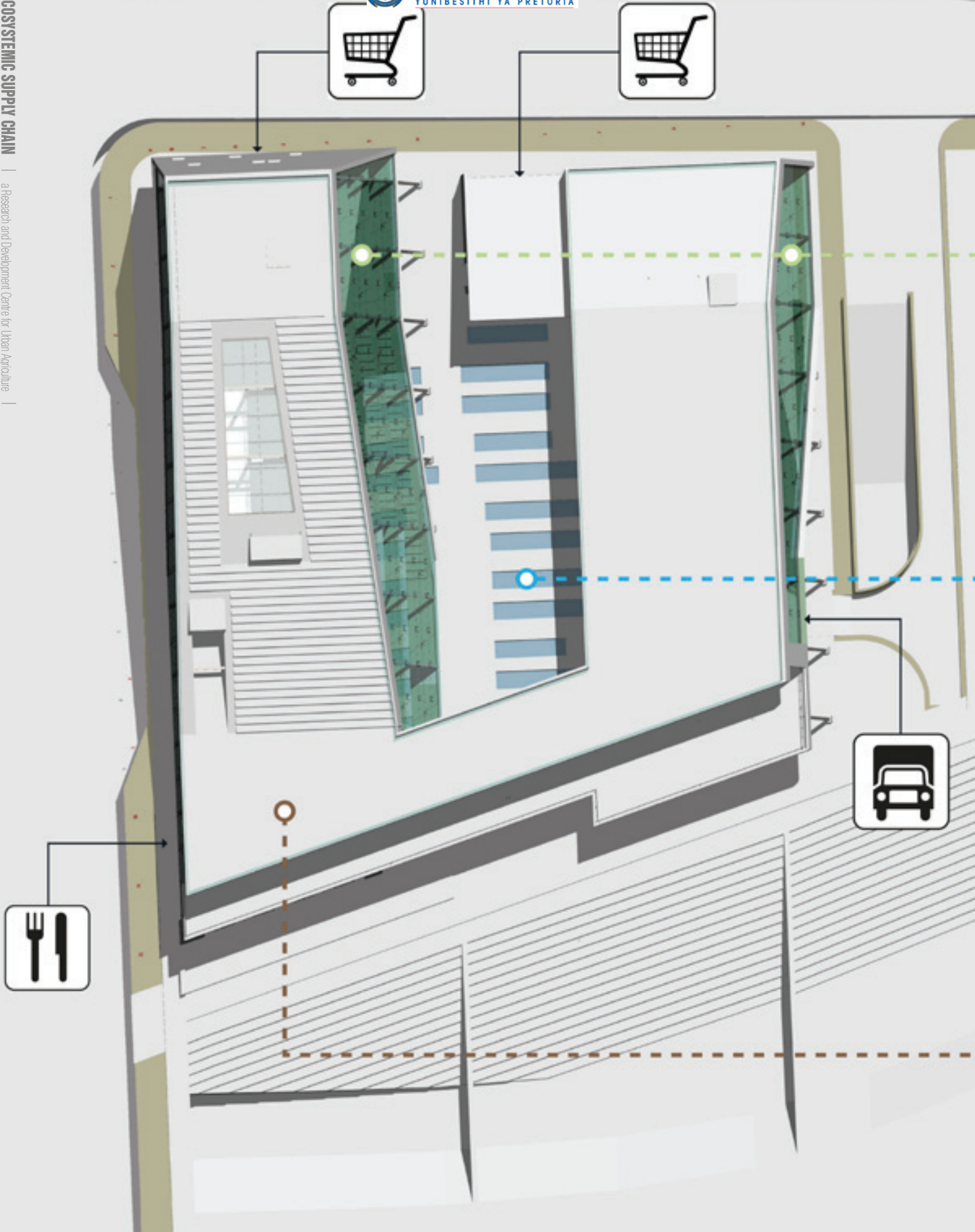
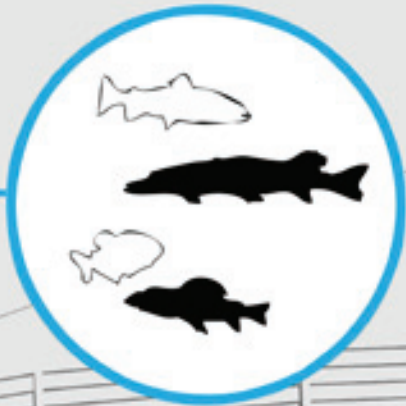
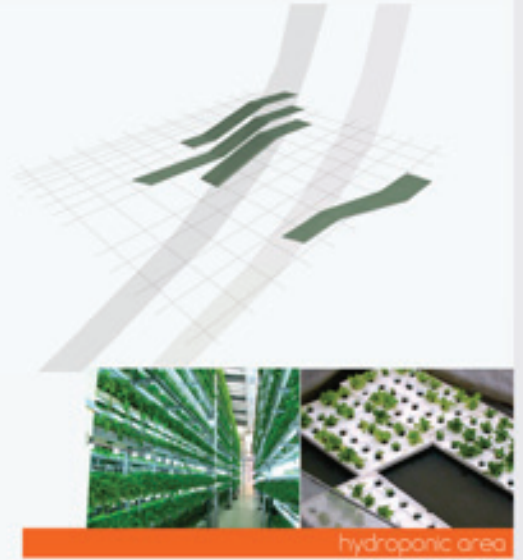


Figure 124: Diagram showing location of production and consumption programs based on climatic and edge conditions.



food production areas





EXPLORATION OF PUBLIC SPACE AND ARCHITECTURE

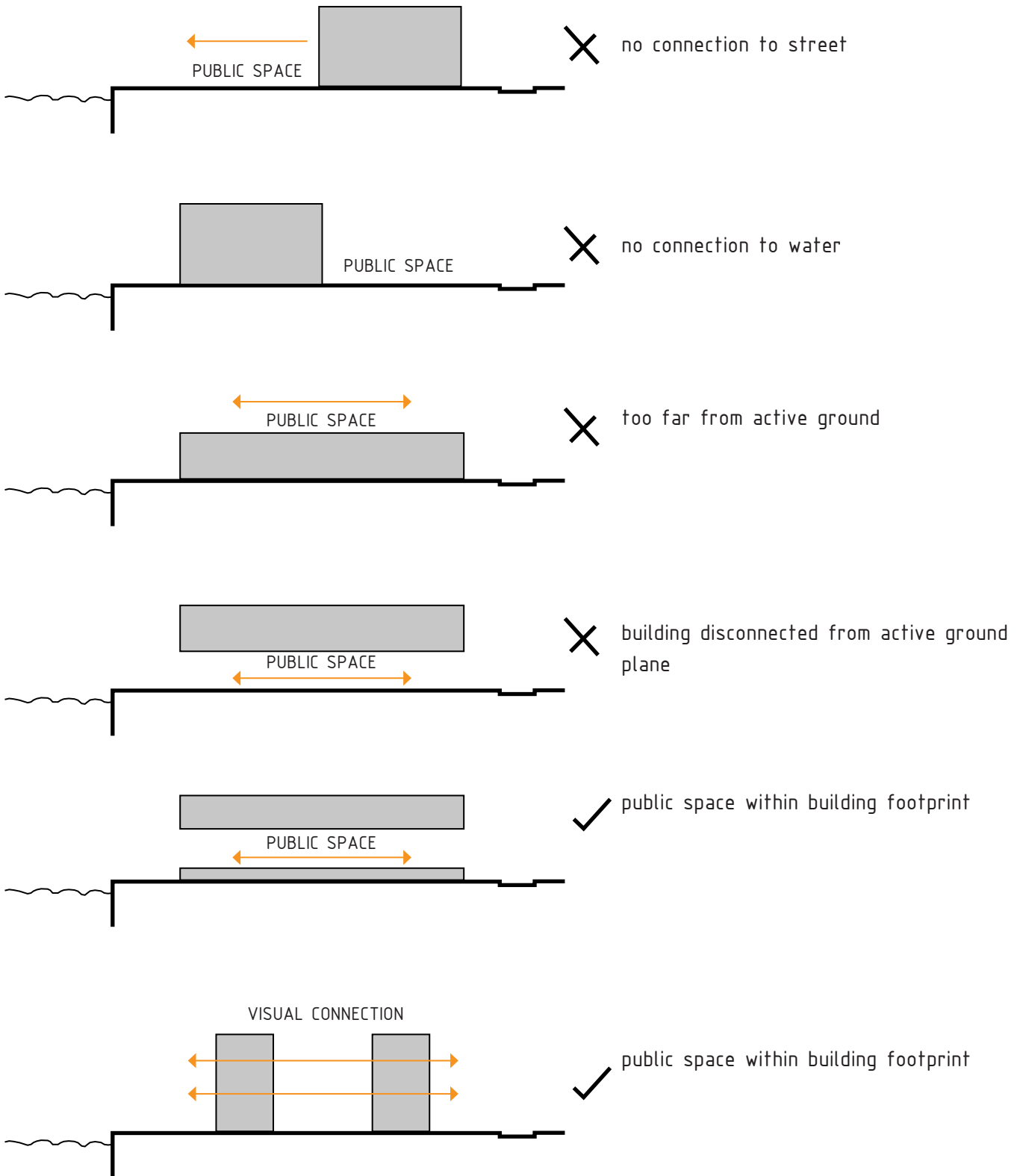


Figure 125: Diagram showing possible locations of public space component.



EXPLORATION OF LANDSCAPE AND ARCHITECTURE

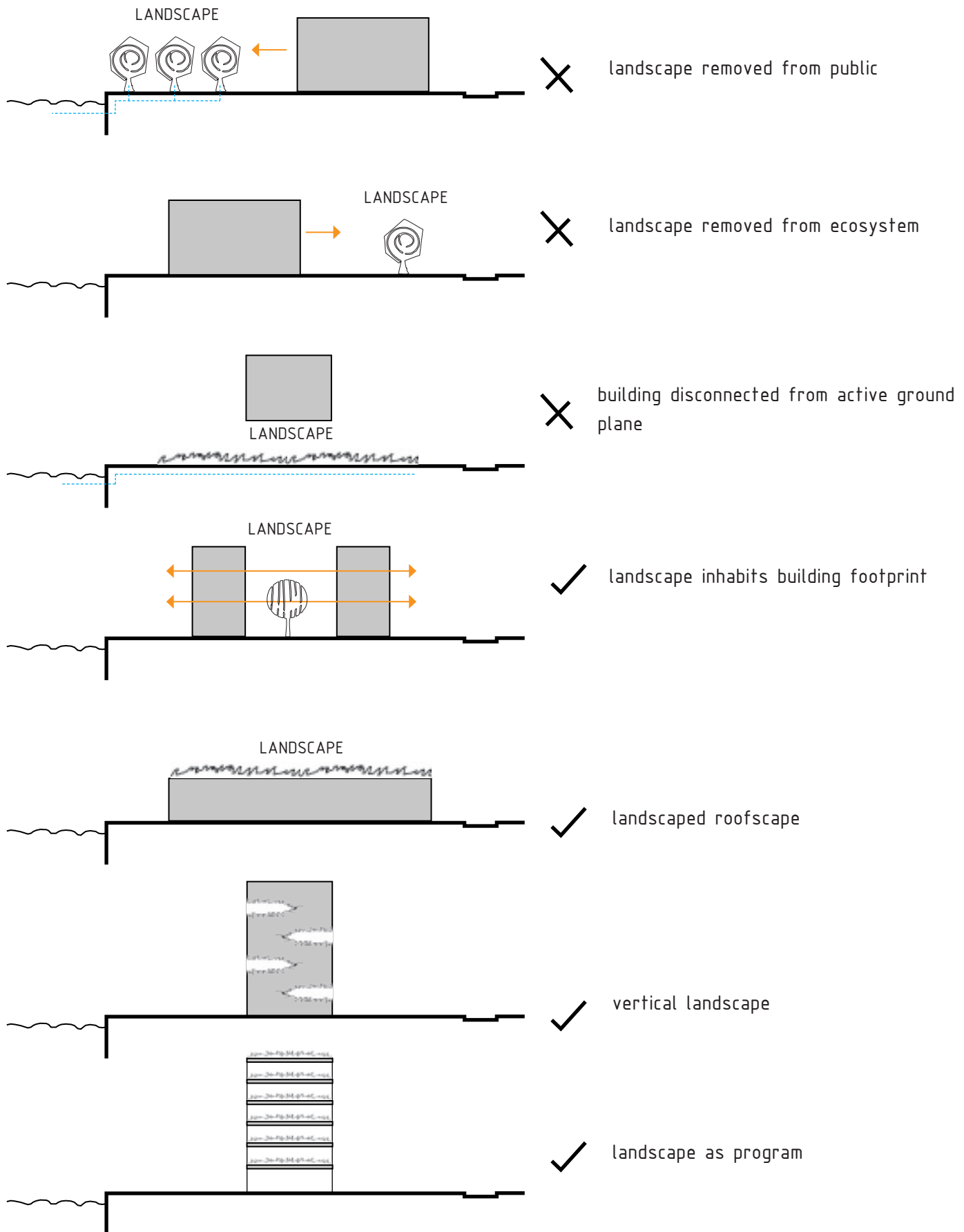


Figure 126: Diagram showing possible locations of landscape / agriculture component.



MASSING STUDY

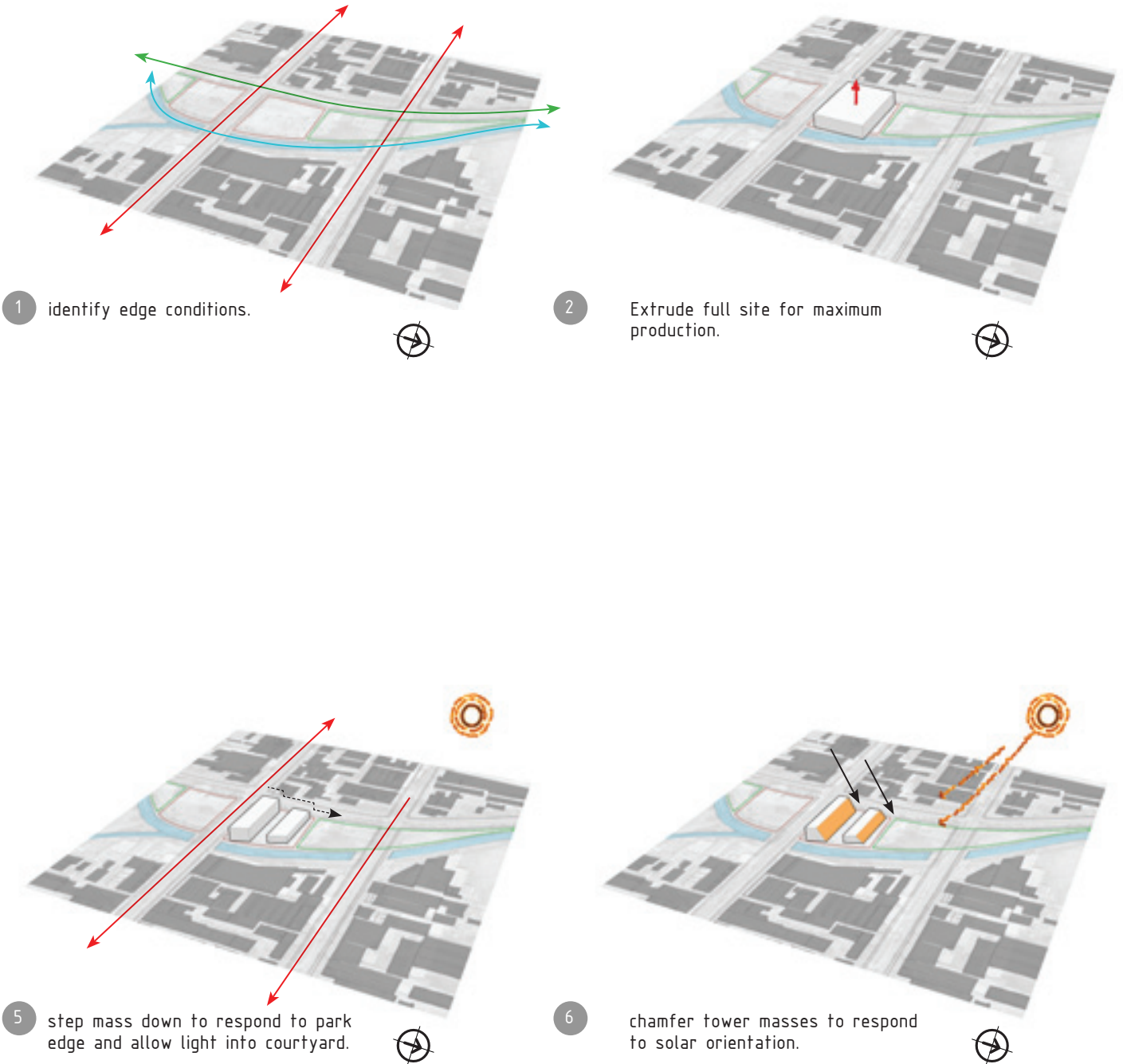


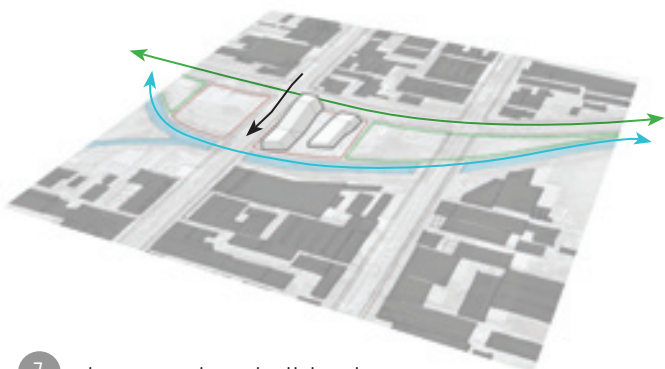
Figure 127: Diagram showing design development as response to design generators.



3 skew mass from street grid to respond to river edge.



4 disjoin mass to allow access to river from city.



7 step mass down to link urban scale to pedestrian scale.



8 connect functional masses with service and circulation space.

