Städtebau TU Wien

Tbilisi

Didube Transportation Hub

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Technische Universitat Wien
Institute of Urban Design and Landscape Architecture E260/1
DEPARTMENT OF URBAN DESIGN

Tbilisi

Didube Transportation Hub

Preface

TU Wien Design Studio Didube
and Excursion to Georgia and Armenia in 2017

My personal visit to Georgia in 2010 initiated the idea of the Institute of Urban Design and Landscape Architecture to do an excursion to the Caucasus with students to visit the incredible monuments of soviet modernism in this region.
In June 2017 we received the invitation of the Austrian Institute of Technology to contribute to their project for the new BRT (Bus Rapid Transport) in Tbilisi. Katja Schechtner, at that time Guest Professor at the TU Wien, who worked some years ago with the AIT, connected us with the research engineer Gernot Lenz and senior scientist Stefan Scheer as well as the urban planning department of Tbilisi and the TU Georgia. We would like to thank all of them for their contributions to this excursion and design studio. Without their support, we would not have to been able to develop the proposals shown in this brochure. Our focus for the design studio was the Didube Metro and Bus hub, one of the mayor stops of the new BRT line in Tbilisi. While working in Tbilisi, TU Georgia generously hosted us and offered any kind of support needed, but also helped us understanding the complexity of the formal and informal transport facilities that are connected at Didube. This information allowed us to carry out the urban design project with focus on traffic planning shown in the brochure.

Didube, besides being an important transport hub in Tbilisi, is also surrounded by large brownfields of Tbilisi, most of them embedded within the consolidated city fabric. Taking into consideration this huge potential for urban transformation in central areas of the city, Tbilisi can become a totally different urban structure by renewing these special resources. Our projects therefore also include some of these potentials around Didube to embed the new infrastructure in a new and user-friendly urban environment. Considering the local economy on site, such as different types of markets and services was among the main goals in all the proposals.

This project, as well as the excursion through Georgia and Armenia triggered further curiosity and interest among students and teachers, so we intend to organize another trip for the upcoming spring semester of 2018 to visit Georgia´s western part, the coastline of the black sea as well as Azerbaijan.

As our major interests are urban development and transformation processes of areas that require detailed examinations and research, dealing with brownfields as well as infrastructure with all the consequences for urban development, our aim is interaction in cooperative research with local authorities and universities to exchange ideas and visions.
Our project in Tbilisi follows a long series of discoveries all over the world. In the past 15 years we have worked among others in the Ukraine, Brazil, USA, Philippines, Bulgaria and we are looking forward to intensifying our study of Tbilisi in the next months.

Markus Tomaselli
Head of Department Urban Design and Landscape Architecture, TU Wien

Cooperation TU Wien - Austrian Institute of Technology

In 2016 the Asian Development Bank (ADB) started a new project in Georgia:
The aim of the project Knowledge Capacity Development – Urban Transport in Tbilisi was to work on expert studies and capacity development within the urban planning and transport sector in Tbilisi, the capital of Georgia.

In this project ADB wanted to include latest smart city technologies and current know-how on citizen focused urban planning while still respecting the local cultural practices and specific economic conditions of a fast-growing city in a developing country. Therefore ADB approached Katja Schechtner, a former member of ADB's transport team to suggest a team and project set-up that would combine international academic and applied research and development expertise in the transport and urban sectors with hands-on planning know.

The final project set-up integrated local experts from the Tbilisi Municipality, international planners from the Cities Development Initiative for Asia (CDIA) and the Future Cities Program (FCP) of ADB, technology experts from the Austrian Institute of Technology (AIT) and faculty from the Technical University Wien (TUW) and the Georgia Technical University (GTU).

Based on an in-depth review of Tblisi's urban fabric and the current and future planned transport network an area that would benefit from a reformulation of the transport nodes and a new transit-oriented master plan was identified around the Didube Metro Station.

In a two-step approach the experts from AIT first analyzed the Didube Metro station area and then built a simulation model to show optimization potential for the multimodal transport hub. Secondly the input from the analysis, including on-site plans, data and the simulation was presented used as the input material for an urban design class at the Urban Planning Institute of TUW, led by professors Markus Tomaselli and Katja Schechtner.

In October 2017 the "Didube Urban Master-Plan" group from TUW was hosted by the Head of the Department of Architecture and Town Planning (Urbanistics) of GTU (Nino Imnadze) and her students. The site-visit included the study of Tbilisi urban planning history, visits to architectural and urban planning landmarks and field trips to understand the current transportation practice – including the mix of formal and informal transport options. The workshop itself focused on onsite analysis by mixed GTU-TUW groups, applying Kevin Lynch and Gehl Studio methods for qualitative data collection (including structured interviews), learning about urban planning traditions and current projects/issues through presentations by faculty from both universities and a joint design charette. Furthermore, TUW faculty met with representatives from city hall and interfaced with ADB project team and the whole group was hosted by the Austrian Ambassador Arad Benkoe, who shared insights from the development strategy and projects that Austria is pursuing in Georgia. Based on this on-site workshop the students and faculty elaborated different visions for the master-plan of Didube area, which are presented in this report.

Katja Schechtner

Austrian Institute of Technology

Urban Transport Tbilisi-
A knowledge capacity development project

Gernot Lenz
Research Engineer
Stefan Seer
Senior Scientist

From 1990 to 2015, urban population in Asia and the Pacific Region doubled within this period and grew faster than any other region. Between 2015 and 2050, Asia's cities are expected to rise from 50% to about 65% of its total population, which will rise from 2.1 billion to 3.3 billion people. While this presents opportunities for higher productivity and better living standards, there are several risks – so integrated urban planning is needed. To engage selected cities in an integrated approach towards becoming more livable, the Asian Development Bank (ADB) established the Future Cities Program (FCP) in the Asia and Pacific Region. 1 2
One of these selected cities is Tbilisi, the capital of Georgia. The city, while historic and attractive (judging by the rapidly increasing volume of tourists over the last years), faces several urban problems such as traffic congestion, pollution, and poor public transport service. The AIT Austrian Institute of Technology was engaged under ADB'S FCP to provide Tbilisi with expert knowledge and capacity building in urban transport.
Based on the identification of present gaps in urban transport planning and operations management, the main issues in transport in Tbilisi were identified. A prioritization exercise conducted in close cooperation with ADB and local representatives has led to the following feasible items as part of AIT's work:

- Analysis for planning and optimization of multimodal transport hubs
- Multi modal transport data collection via smartphone app based tool
- Capacity building and further linkages

Analysis for planning and optimization of multimodal transport hubs
The aim was to execute a detailed simulation of crowd and traffic flows within the area of Didube station, located in the north of Tbilisi. This station is one of the hot spots in the city's public transport network as most of the regular bus lines and marshrutkas from the north-west periphery of Tbilisi as well as regional buses from Western Georgia have the first contact point to Tbilisi's metro system there.
A concept including 6 scenarios was developed for redesigning Didube Station. These scenarios included measures to reorganize local & regional bus stops, ensure a smooth traffic flow and improve the comfort in public space. Two of these scenarios were subject of a detailed impact assessment using a simulation framework which includes a multimodal traffic simulation in PTV VISSIM and AIT's pedestrian simulation framework. The results of the study will support the replanning of Didube with its comprehensive investigation of traffic and crowd flows.

Multi modal transport data collection via smartphone app based tool
AIT's smart survey, a smartphone app based tool, has been adapted to match the local circumstances in Tbilisi. In March and April there was a test survey with AIT staff and four local participants, followed by further adaptations on the survey tool. From end of May to August 2017 the evaluation survey with about hundred participants was conducted. The results of this survey reveal more detailed information than conventional survey as AIT's smart survey automatically detects the transport mode used and offers the possibility to capture short trips, walking parts and transits between other transport modes. As the proof-of-concept was successful, the tool is ready for further use (e.g. in an extensive survey or as part of the next household survey). For a full roll-out it is recommended to build up local technical assistance for the participants in order to guarantee a smooth roll-out and high-quality dataset.

Capacity building and further linkages
AIT defined a three-level approach to tackle short, medium and long-term opportunities for creating a Knowledge Hub for Sustainable Transport. This approach includes a training on Open Source GIS tool QGIS and setting up a cooperation at city administration level as well as at university level. The cooperation at university level consist of a joint urban planning and design course by the Technical University of Georgia and the Vienna University of Technology. This was held in fall 2017 with a focus on the multimodal hub Didube.

The work done by AIT together with the Tbilisi Bus Network Improvement and Pilot Surface Transit System Pre-Feasibility study and the Metro Rehabilitation project (both supported by CDIA) will strongly contribute to a multimodal transport and sustainable urban mobility in Tbilisi, supporting its goal to be a leader in the region and becoming a smart, future-ready city.

Acknowledgement:
All the work within this project was done in close cooperation the Asian Development Bank, Tbilisi Municipality, the Cities Development Initiative for Asia (CDIA), the Future Cities Program and its associated TA's, especially the Promoting Smart Systems in ADB's Future Cities Program (RETA-9170), the Piloting Future Cities Future Women Initiative (RETA 8797) and the Unlocking Innovation for Development (RETA-9017) as well as overall within ADB's Sustainable Urban Transport Investment Program (SUTIP).

1 Asian Development Bank: Establishing the Future Cities Program in the Asia and Pacific Region, Project Number: 49053-001, Technical Assistance Report, December 2015 (https://www.adb.org/sites/default/files/project-document/178245/49053-001-tar.pdf)

2 United Nations, Department of Economic and Social Affairs, Population Divison, (http://www.un.org/en/development/desa/population/publications/database/index.shtml)

Workshops

In cooperation with TU Georgia

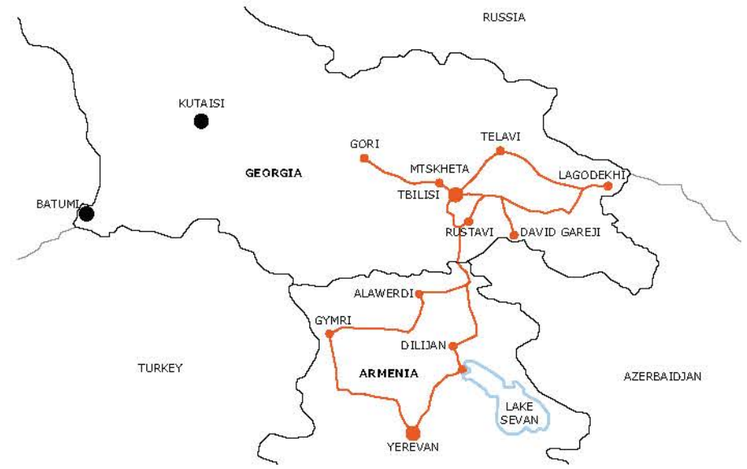
Arriving with only a rough understanding of Georgia and Tbilisi our group set out to explore Didube.
With the help of the dean of architecture, Nino Imnadze and professor Irakli Murgulia as well as students from TU Georgia Didube we thoroughly explored Didube. We analyzed the planning site for the Didube transportation hub on three occasions.
To summarize: Didube is the northernmost transportation hub of Tbilisi. A sprawling market and a decentralized Marshrutka (mini bus)-station are wedged in between river, city highway and railway tracks. Furthermore there are a lot of unused Soviet-era factories in close vicinity. There is an underground and a railway station.For pedestrians it is an obstacle ridden way to change between different modes of transport.
The whole area is congested and there is no enforcement of parking regulations.

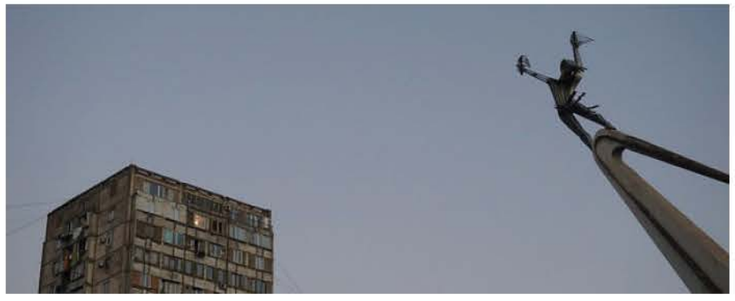
The on-site analysis was accompanied by two lectures at TU Georgia showing the many (unrealized) approaches to change Didube and the new masterplan for Tbilisi.
After spending a lot of time in Didube with the support of TU Georgia, first impressions and analyses were compiled together.
During our short stay we got to experience Didube and Georgian hospitality and got a good foundation for the following work in Vienna.

Excursion to Georgia and Armenia

Exploring Soviet modernism

Our excursion to prepare for the design course led us through Georgia and Armenia. The book "Soviet Modernism - 1955-1991 - unknown history" by the Architekturzentrum Wien served as our guide on our trail of Soviet architecture during the period of "brutalism".
With our rental bus we visited diverse buildings and made interesting discoveries. On some occasions we were too late and the building had already been demolished. Some of the buildings were privately owned and inhabited by oligarchs. In parts, the citizens are aware of the history of their architecture and cherished these memories. But for the most part, the buildings were abandoned long ago and totally rundown or misappropriated.



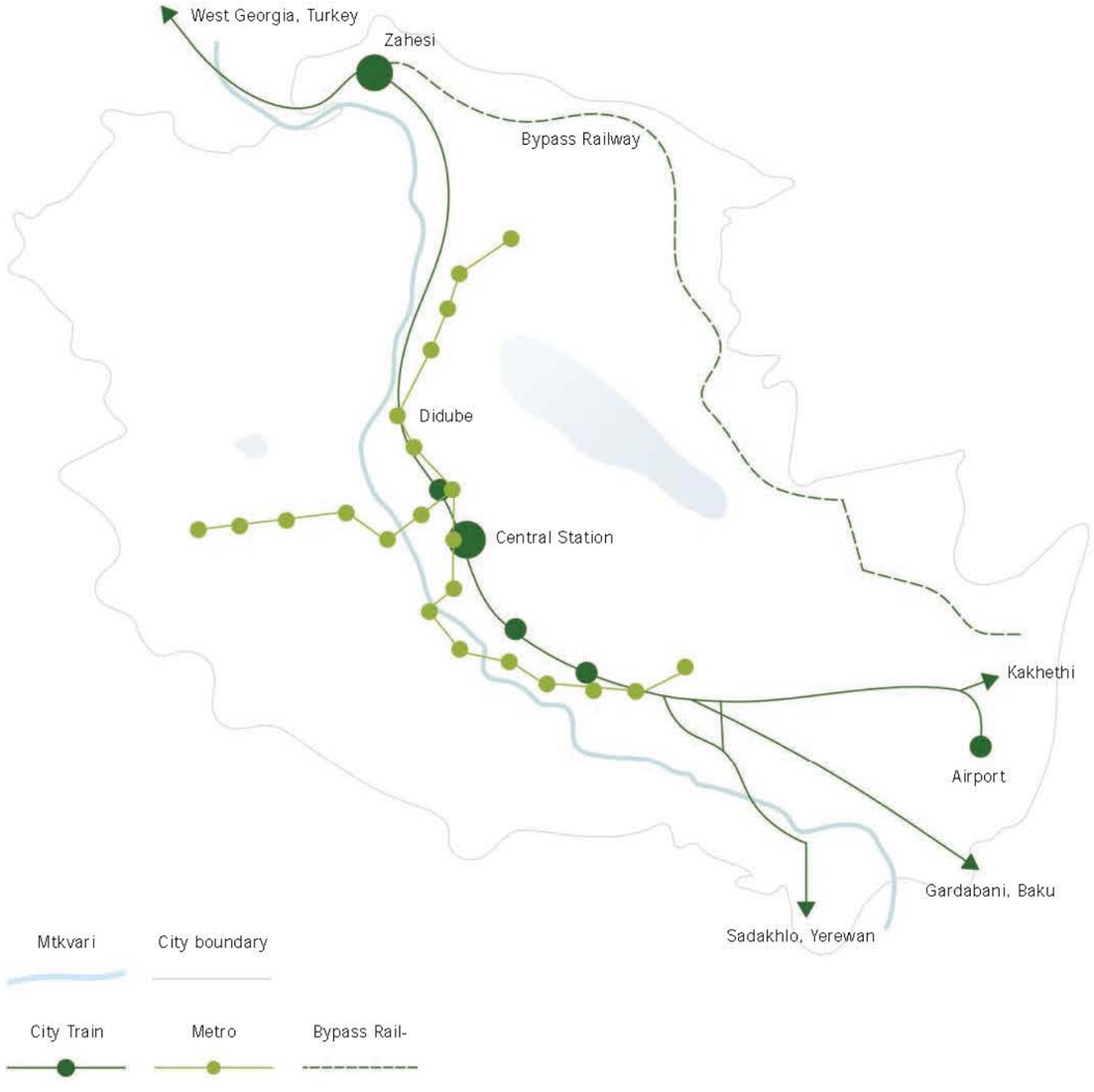


The Axis

The concept is to create a major volume which operates as Multi Modal Hub. As "Commercial-, Traffic- and Infrastructure-Axis", the new building complex shall bundle the following functions: public transport, market, shopping centre, public spaces as well as social infrastructure. We describe it as a funnel where people from all neighborhoods, the green areas, those who come by public transport can be gathered and then carried to the other side of the river, to the market, the multifunctional center or public transport places.
On the one hand, the Hub copes with the immense traffic density and keeps changes of means of transport short, with a maximum of 100 meters walking distance.
On the other hand, the Axis ends in a bridge for pedestrians and bicyclists, which connects the district east of the tracks with the western river bank.
Within the building, formal and informal selling flow into each other – the established market will be covered by a roof on top of the already existing steel construction.

Traffic Concept: Three fundamental alterations are intended.
Firstly, our group plans to run a City Train between Zahesi and the airport. The present and low frequented train service will be diverted around the reservoir lake and the redundant track will be used for the City Train.
Secondly, we introduce the Bus Rapid Transport (BRT) system. The aim of the implementation of these two higher posed means of transport is to increase the usage of public transport and to profit from the benefits of making these improvements in terms of living standard, economy, energy and environment.
Thirdly, the creation of paths for pedestrians and bicyclists is planned throughout the city. Via the cycle tracks, one can easily reach other city parts or local recreational areas, like the Lisi Lake.

Focus Didube



Introducing a City Train from Zahesi to the Airport Tbilisi

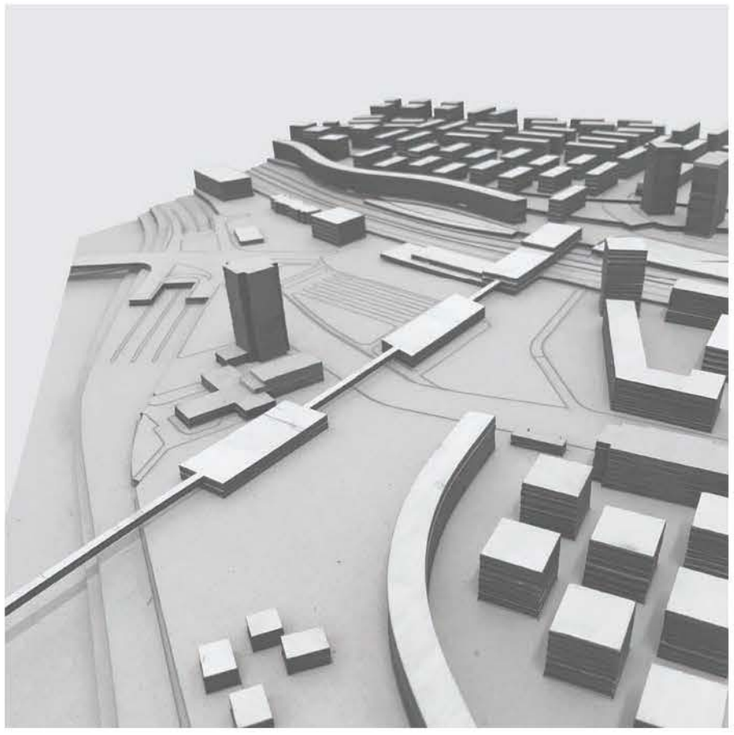
New Green Areas

When we had our excursion to Tbilisi in October 2018, we could find only very few green areas in the city. Therefore, we try to turn brown fields into livable areas and make it as green as possible. Thus, in support of our main axis, we have designed two green corridors; the bigger one starting at the existing park and leading to the gastronomy area.

Moreover, we have planned a green elongated park (with playgrounds, sports grounds, cafés and consuming free gathering points) as connection and as an open and free space for the city. The green zones, as well as the new streets, are positioned in order to create sight lines and to frame the picturesque and magnificent Georgian nature and surroundings of the city.
Nearby areas: In addition, one can find a college nearby the station and we would like to develop and enhance it by designing a student dormitory and spaces for studying. There are also a polyclinic and a hospital next to the metro and city train station that we want to strengthen with a small park, new buildings and a hotel for visitors and relatives. We would also like to support the so-called "commuter patients" (people coming from rural areas and the countryside, who come to the city hospital by public means of transport).
Opposite from the new bus and marshrutka station, a gas station is planned, as well as a parking garage (with offices) and space for workshops. In this area, any service concerning cars, repairing and manufacturing can be received. Behind this car-related area and between street and tracks, construction markets are situated.

Key figures

	m²	users
Residential	643.000	18.400
Commercial	255.000	6.400
Social Infrastructure	99.500	
Green Space	123.000	
Planning Area	1.120.500	



Sports- & Culture Centre and Gastronomy belt

1 City Train
2 Metro
3 Bus Rapid Transport System
4 Street
5 Bicyclists & Pedestrians
6 Gas Station
7 Parking Garage
8 Workshops
9 Construction Market

10 Central Park
11 Green Axes
12 Open Community Space
13 Existing Parks

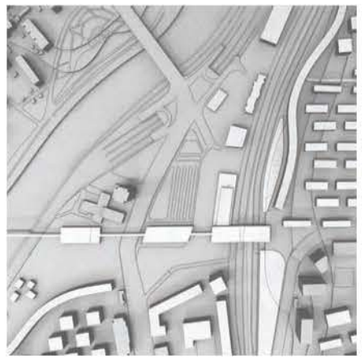
14 Student Dormitory & College
15 Hospital Complex
16 Hotel
17 Gastronomy
18 Plaza
19 Sports- & Culture Centre

Legend

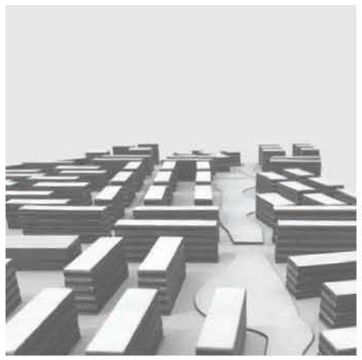
Masterplan | Urban planning inventions

Scenario: Connecting Axis

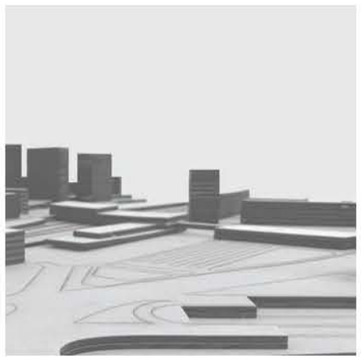
The main aims of the Hub and the Axis are to concentrate all means of transport in Didube within short walking distance; to release the tension of the current situation; to connect secluded districts with the traffic hub; to keep all present functions on site; to span a connection between to big green parks; and to create a landmark with "The Axis" that is known throughout the town.
Besides that, our group sees an enormous potential in the implementation of bicycle paths, not only within the Axis, but also in whole Tbilisi. Well evolved paths are a benefit not only for young people, but for persons of every age. In addition, we can imagine "city bike stations", where inhabitants and visitors can rent bikes.



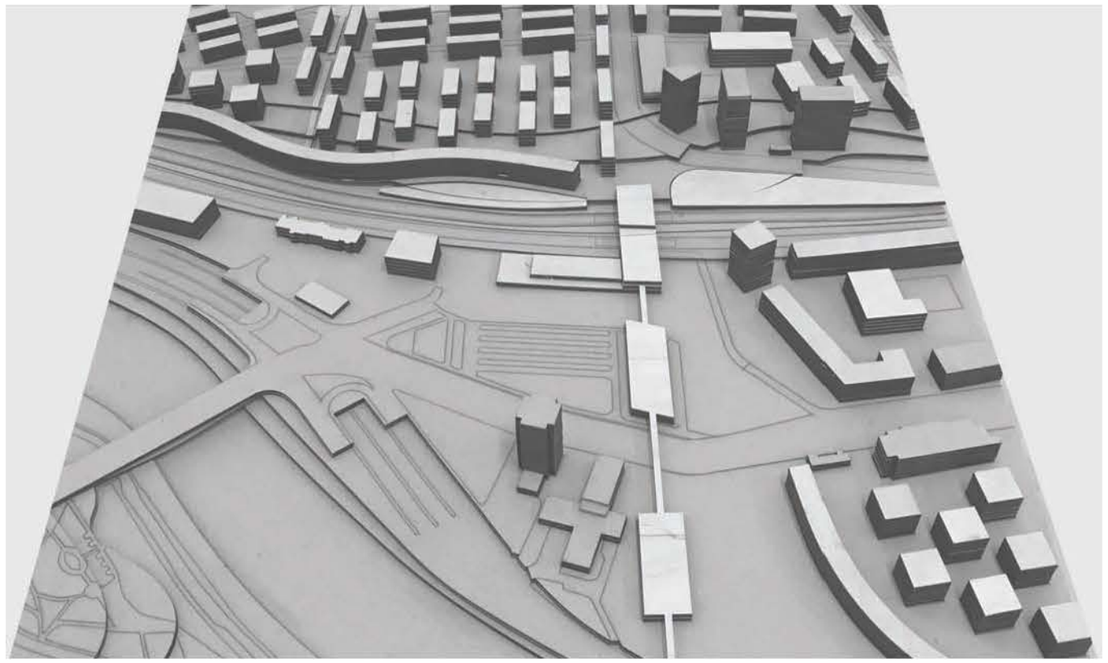
Top view



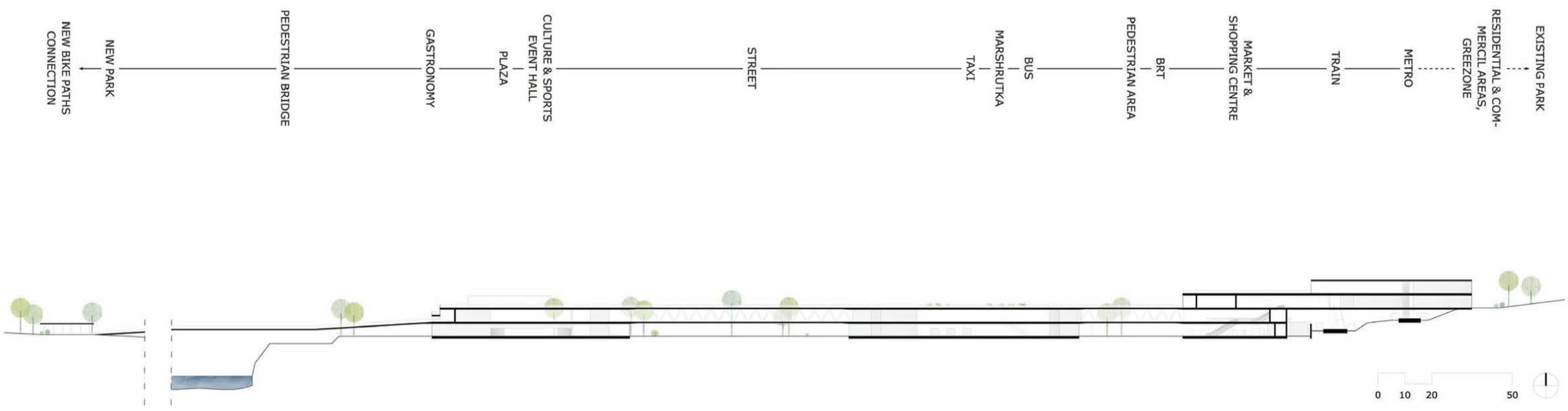
View from the right river bank



Elongated Park



Station Square

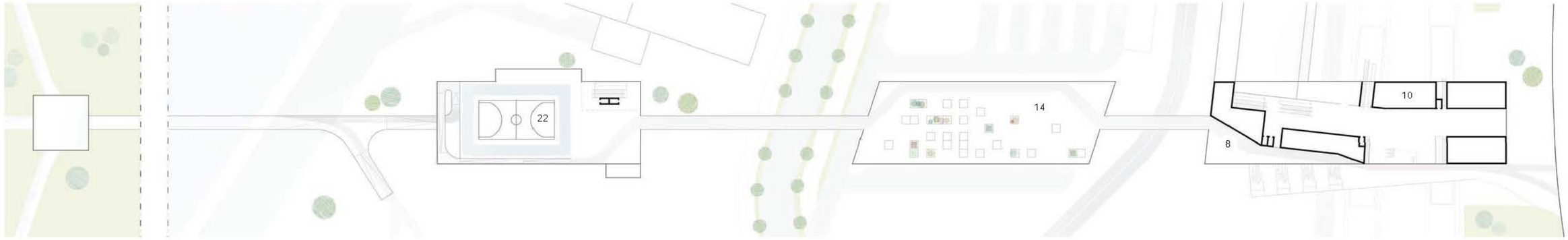


Section | Connecting districts in Tbilisi

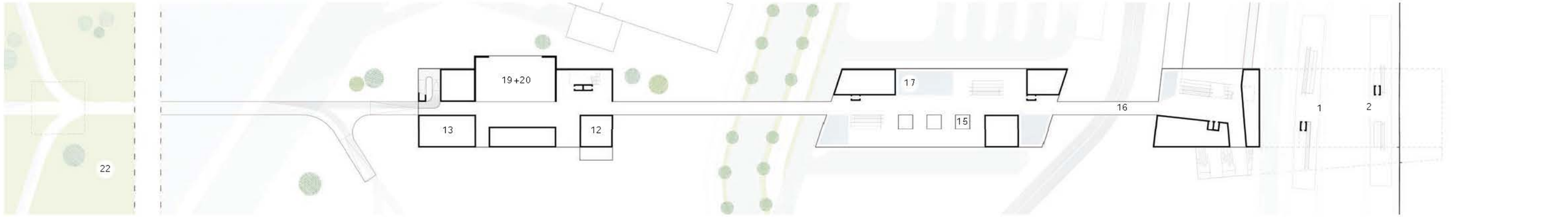
Multi Modal Hub Didube

The Hub is formed by three main buildings. A pedestrian and bicycle bridge runs from the eastern part of the city directly through the three volumes and above Mtkvari river.
A tour through the terraced Hub:
Starting at the easternmost part of the Hub at Tornike Eristavi street, one is located at the building level 2, which offers entrance to the Metro and the City Train platform (via stairs and escalators as well as elevators). Tickets and information can also be received there. One level higher, people can enjoy the sight over the Mtkvari and the pedestrian zone next to the market while sitting in the roof restaurant. A supermarket is also situated on level 3. Standing on level 2 again, the users of the building can choose between going (A) downstairs to the market and pedestrian area or (B) walking to the bus station (by crossing the BRT lane in the connection-passageway) or to the sports and culture centre behind the bus station. If the person chooses to purchase something at the market (A) before continuing the journey, he or she would head to level 0. While walking downstairs (from level 2 to 1 and 0), the visitors can already see the market and get a quick overview of the goods offered. The middle building gives information about busses, marshutkas and holds a taxi stand. At the northern peak of the station, there is a pavilion where the drivers can meet each other or to take a quick nap after a long tour. The building next to the river contains a hall for cultural and sporting events and a sports ground at the roof.

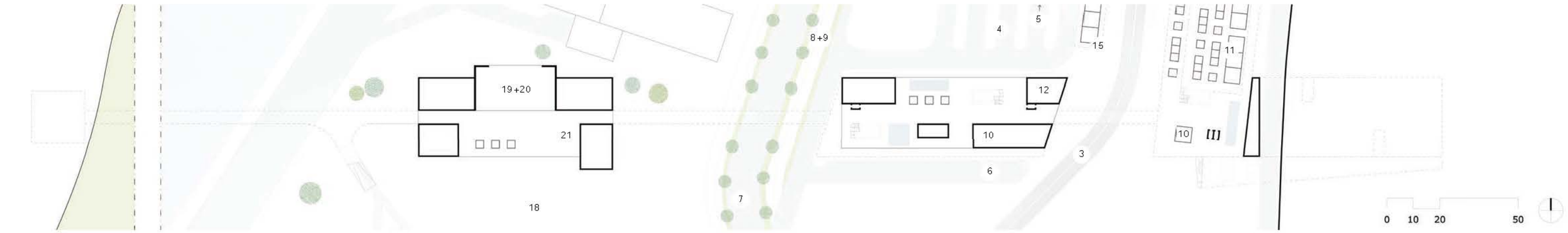
1	City Train	12	Café & Bar
2	Metro	13	Restaurant
3	BRT	14	Roof Garden
4	Bus Terminal	15	Kiosk
5	Marshrutka	16	Crossover
6	Taxi Stand	17	Seating Area
7	Cars	18	Plaza
8	Bicyclists	19	Culture Hall
9	Pedestrians	20	Sports Field
10	Info & Ticket	21	Exhibition
11	Market	22	Central Park



Level 2



Level 1



Floor plans | The Hub | Traffic Organization, formal and informal trade & sports and culture | Level 0

Connected by nature- Green Hub Didube

The planning area Didube is located in the north of Tbilisi. Didube features a diffuse development and city structure, which is influenced by the past industrial using and the consisting change.

green space
Since Tbilisi has a big deficit of green areas in its urban space, the goal is to change the existing unused track bed between Didube and the main station into a central park. Two tracks of the rail connection will still exist, but will be lowered in the green area. The different districts and parks will be interconnected by several green areas, which shall strengthen the urban space.

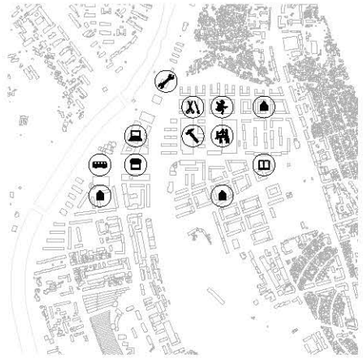
The two main roads running along the river Kura present an additional problem. These roads inhibit the access to the riverside. By breaking down the road on the east riverside and redeveloping the river walk, we create access to the water as well as a huge additional value of livability in Didube. Similar ideas are documented in some studies of the TU Georgia.

traffic
Another idea is to develop the existing public transport system. The BRT lines are connecting all the residential areas with the city center. All parts of the city should get a highly efficient public transport system and the individual transport should be minimized. This manner allows to break down the road on the east riverside, because most of the people will switch to the public transport. Two additional bridges and the corresponding road links will release the only bridge in Didube.

The urban design is focused on the transformation of the former industrial area as well as the establishment of new living quarters and a business campus. The halls of the former industrial area are worth preserving and will be redesigned into a new cultural and creative quarter. By this special kind of usage, the area will be revitalized and will get a unique charm. Close to the new creative area a new urban living quarter is aris-

current situation

desired situation



function and uses

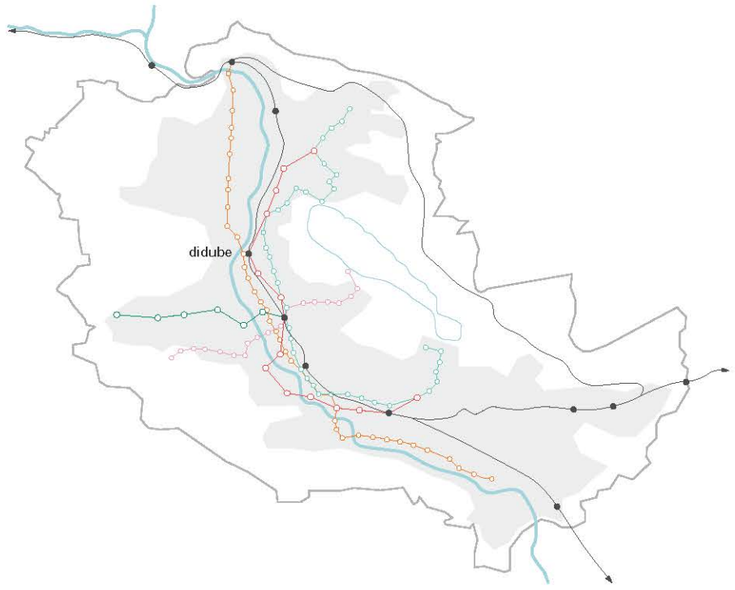
total area
1.123.000 m² 112 ha

green infrastructure
268.000 m² 24 % of the total area

housing
647.000 m² 18.500 users

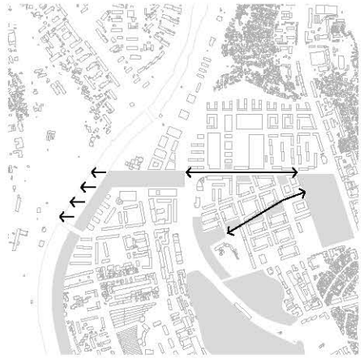
business and commercial
209.000 m² 5.200 users

social infrastructure
177.000 m²

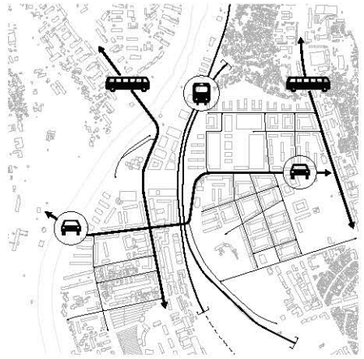


BRT line 1
BRT line 2
BRT line 3
metro line Achmetelis-Teatri-Warketili
metro line Saburtalo
railway

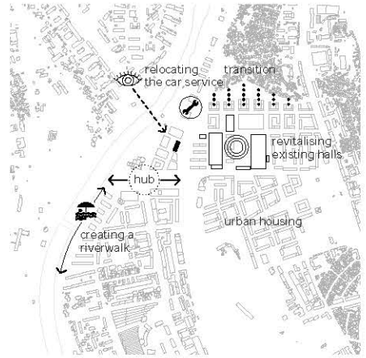
public transport system



green infrastructure



connectivity

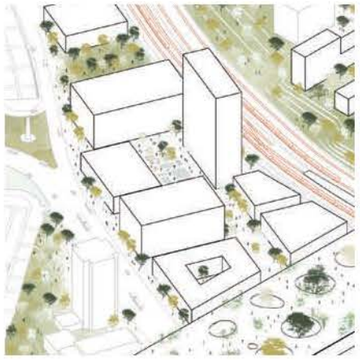


concept

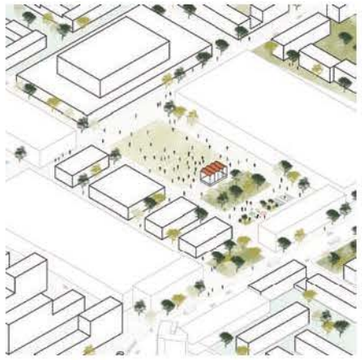
urban planning

Next to the park at Tsotne Dadiani Street a new education center will be developed and vitalizes the living quarter. A green axis crosses the housing blocks and interconnects the park in the east with the big central park. Upside the transportation hub an attractive business campus will rise at top location. With a view onto the river a new residential quarter is stretching across the new designed riverside of Kura.

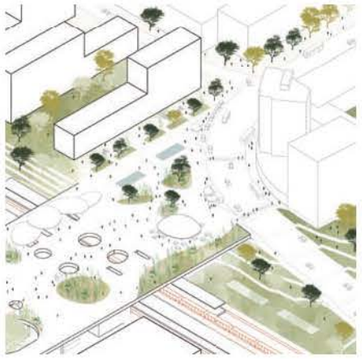
riverwalk



business campus

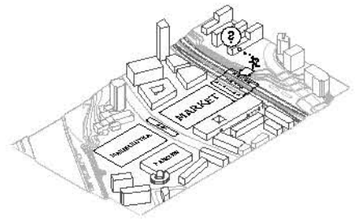


cultural and creative quarter

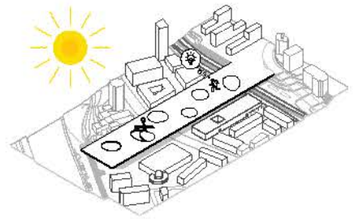


Tornike Eristavi Square

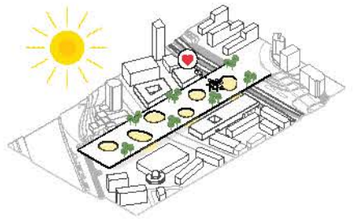
functional zonance



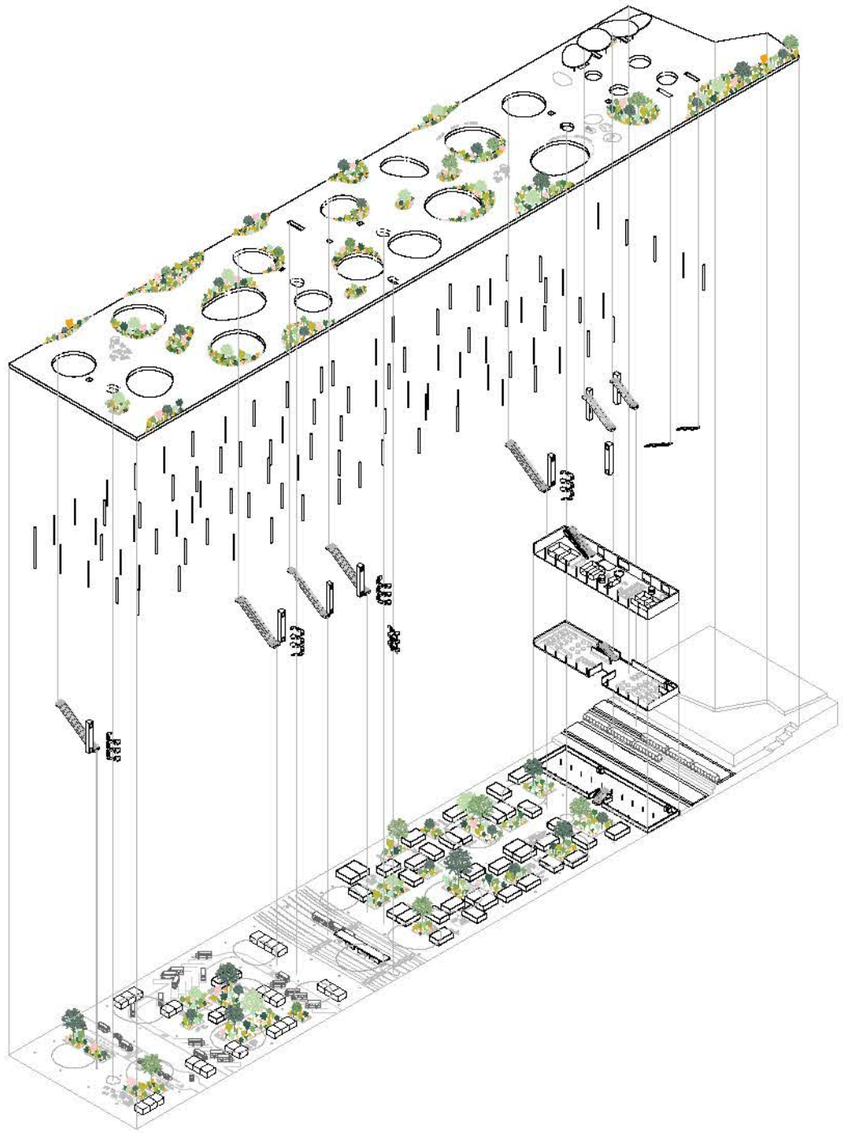
access



porosity

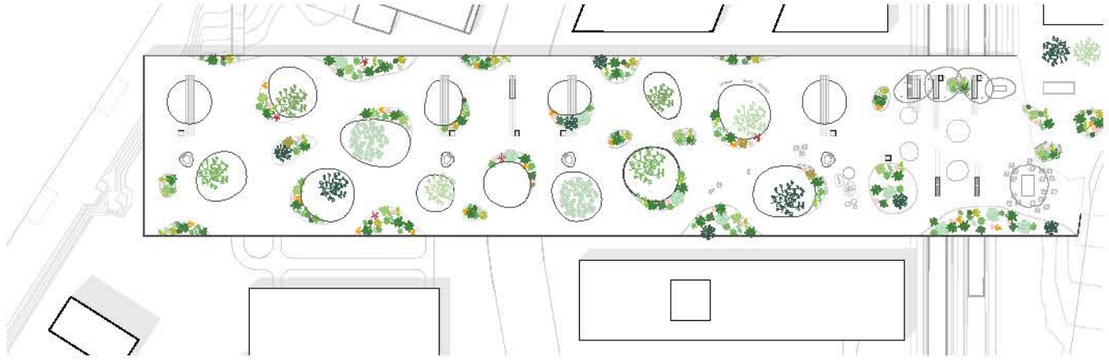


diversity



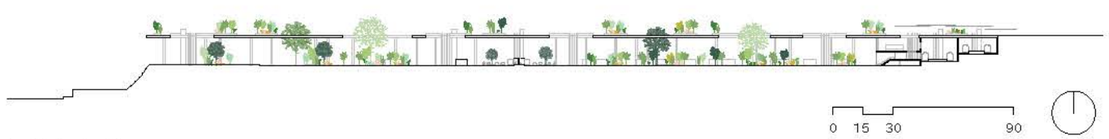
structure - construction - circulation

To give the elevated residential quarter on the east side a direct access to the river Kura, we create a level, which succeeds the pedestrian and green connection to the riverside. At the same time, it completes the green axis from the eastern park to the waterside promenade and overcomes the urban barriers of traffic. The level seems to grow out of the natural terrain on 15 meters height. From this level you can also reach the ground floor with the total infrastructure of the transportation hub and its formal and informal markets. Cut-outs in the rooftop allow light coming down to the ground floor.Through this cut-outs trees and plants can grow high and create a little jungle over the market area. These holes also enable a sensible contact between the upper and the ground floor.

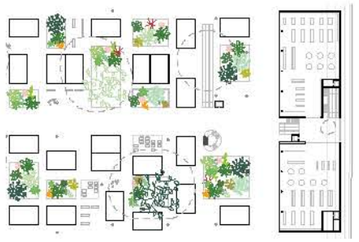


rooftop

ground floor

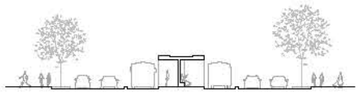


longitudinal section



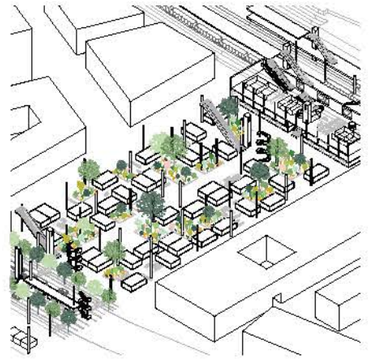
supermarket - level 1

train station - level 2

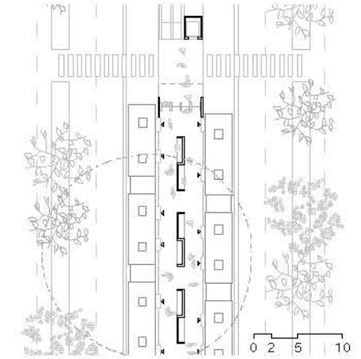


BRT station cross section

detail marshrutka station



detail of the market



BRT station

detail of the market

Bridging Didube

Didube is an important transportation hub north of the center of Tbilisi. It is divided by different heights, railway tracks and highways.
The implementation of a new Bus Rapid Transit (BRT) system will allow a rethinking of the entire area and the opportunity to embrace the sprawling market and the Marshrutka (small informal busses) station as well as abandoned Soviet-era factories.

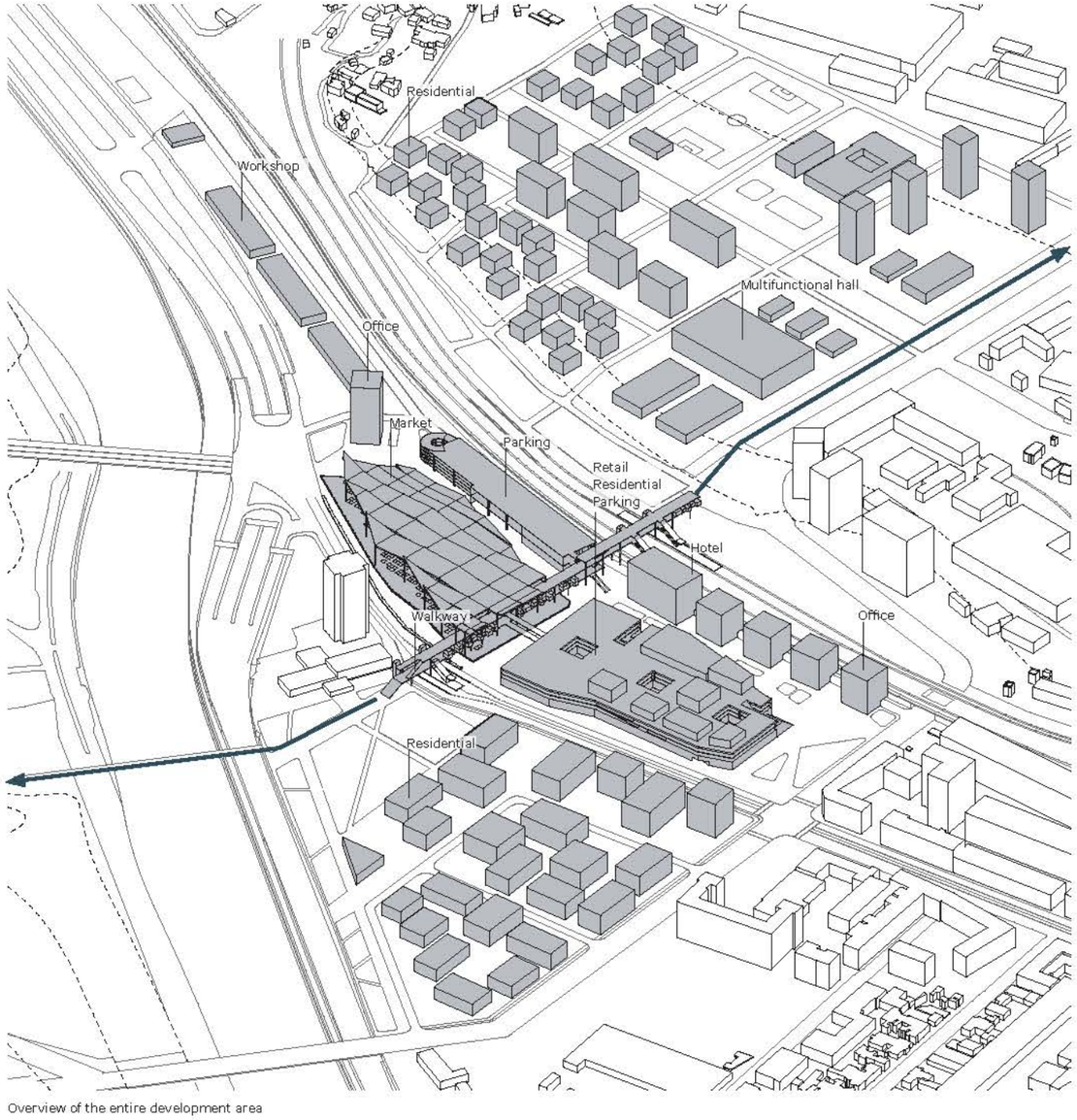
Our approach aims to connect the different means of transport and bridge all obstacles and heights by introducing a raised walkway (the spine) and thus enabling a protected walk across Didube and between the various means of transport. The main buildings are directly linked to the spine via bridges. Furthermore, the informal character is key to the area and will be integrated into the new vision of Didube.

The existing buildings can be divided into two groups. Soviet-era factory buildings and self-built market buildings. The factory buildings lack the quality to repurpose them. Although a lot of buildings are torn down the existing underlying organizational principles are kept and enhanced. Rubble from the demolition of the buildings is used to fill in the space below the market as well as landscaping in upper Didube.

Key Figures

	m²	user
Residential	200.000	5.800
Commercial	50.000	1.300
Social infrastructure	25.000	
Green space	85.000	
Project area	460.000	

The existing parks are completed with additional green areas throughout the building site



Overview of the entire development area

Analysis

Didube is characterized by the informal market and Marshrutka station and the resulting congestion through parking mini-busses. On the other hand it is lively and seems to have been grown rather than planned.
This prevalent DIY spirit characterizes the market with self-built Butkas (small stores), the Marshrutka service and the often upgraded residential buildings.
The traffic is congested and there is a lack of enforcement of parking law.
Marshrutkas circle the area or park at one of many different stations.
To cross the area from upper to lower Didube a pedestrian needs to walk down a staircase into a tunnel, zig-zag between Marshrutkas and Butkas and then go up and down a pedestrian bridge crossing the highway. Green areas in Tbilisi are rare and wide apart. Didube is lacking an adequate green space.

Butkas sell everything from bananas to shoes

Up to 260 *Marshrutkas* park in the area

Khrushchyovka are low-cost apartment buildings

Pedestrian bridge // zig-zagging // tunnel entrance // tunnel // stairs to upper Didube

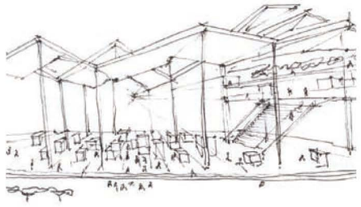
Existing buildings including old factories

Entering Didube from all sides leads to congestion

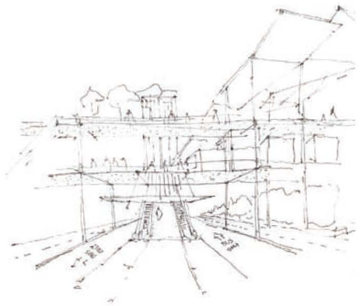
Existing modes of transport

Concept

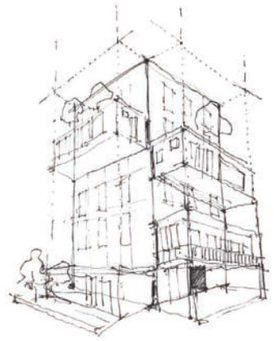
The aim of *Bridging Didube* is to optimize and regulate the traffic situation for drivers and pedestrians, while retaining the unique DIY method of problemsolving and organization. The approach is to give the informal activities a formal framework. For the market it is a roof and a grid , for the Marshrutkas a parking deck and for the residential buildings a typology, which needs to be finished by the inhabitants.
All modes of transport and the walk between upper and lower Didube are connected via the spine leading to shorter ways and heightened comfort.
The streets leading into the hub area are one-way with the help of a new bridge thus eliminating congestion.
The green-roofed spine connects a park in the east with a new park on the other



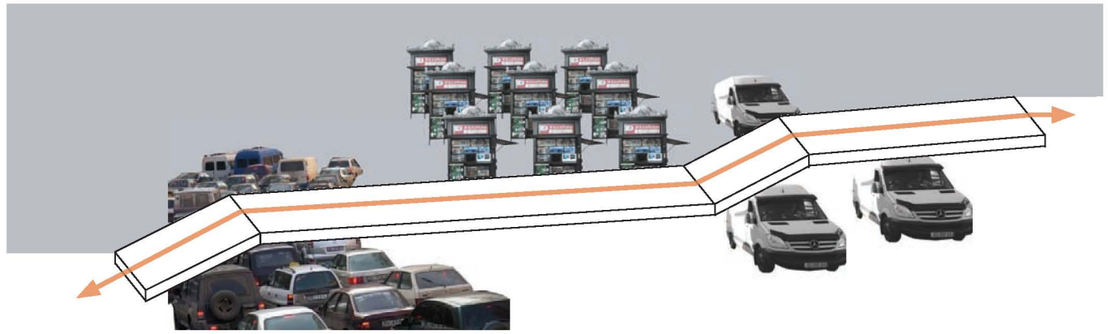
Roof (formal frame) + Butkas (informal)



BRT



Khrushchyovka finished by residents



Efficient connection of all the hotspots

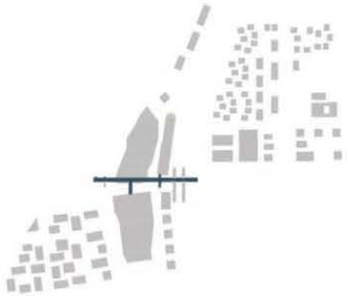
New vision including two additional bridges

One way system to enter Didube solves congestion

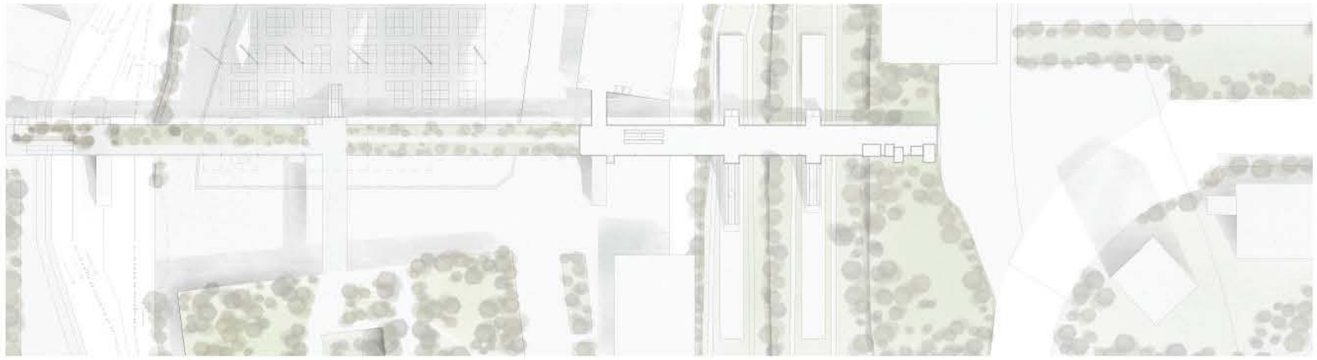
New BRT and Railway stops

The Spine

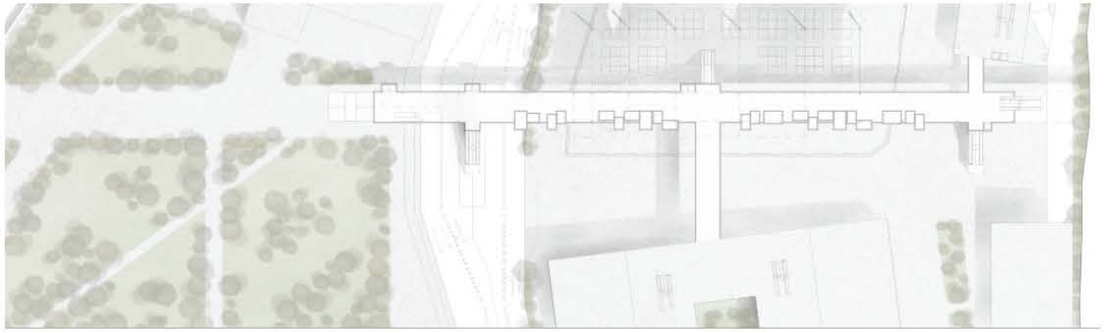
The raised walkway connects all modes of transport (BRT, Yellow Busses, Metro, Railway, Taxi, Marshrutkas, Parking) with each other along a short, straight line of terminals. Furthermore it connects upper Didube with the river on a safe, obstacle-free route.
The Spine consists of two raised floors. The lower comprises the technical infrastructure and the main connection route **between the different modes of transport.**
The wind blows from the north, so this side of the spine is protected by room-high glass panels. Below the roof of the market, these give way for guardrails. The market can thus be seen, heard and smelled while the pedestrian is aloft over the commotion. The southern side is open, but 1-2 levels of Butkas are situated there for short breaks and protection against the elements.
The higher floor can be reached by staying on the same level as upper Didube or from the riverside. It has a green roof and is part of the axis connecting the park in the east with the new park on the other riverside. Pedestrians can choose between the busy, bustling floor below or the calmer, green floor above.
To bridge the difference in height of the terrain it is necessary to use an escalator between the railway station and the Marshrutka station.
On route along the spine it is easy to visit the market or the shopping center for quick shopping in between.
From the spine the hotel can also be accessed by stairs and escalator.



Site Plan

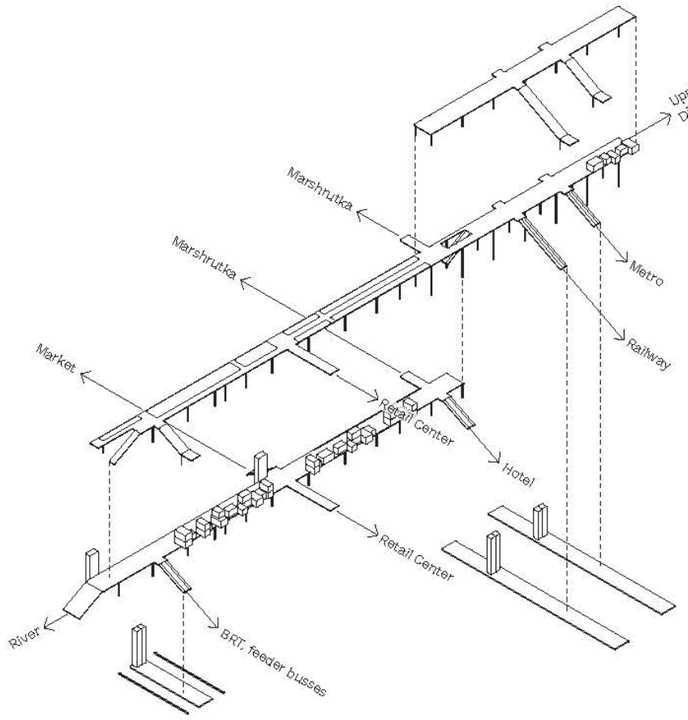


Second Level 1 : 2.000



First Level 1 : 2.000

Transition into the outdoor space

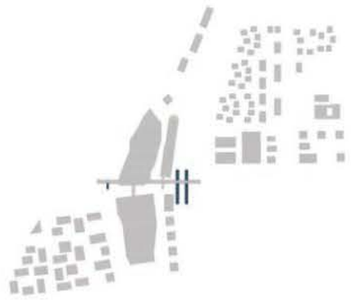


All linkages are centralized at the spine

Section 1 : 850

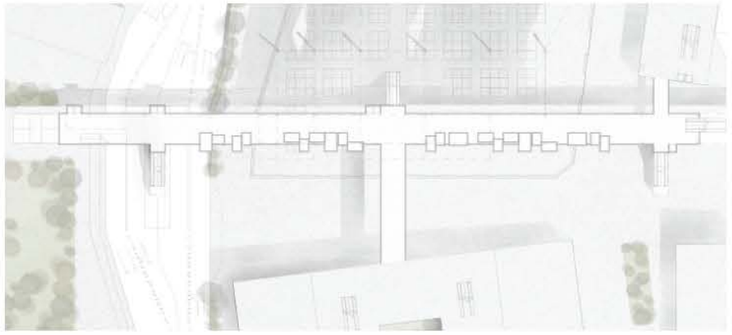
Public Transport

At the BRT-Terminal the articulated buses as well as the regular feeder buses stop. Making it easy to switch between different busses. There is no traffic light thus speeding up the traffic and the BRT system. Via escalator, stairs or elevator the spine is accessed.
The railway station as well as the Metro station work in the same way, highlighting the importance of the spine. Ticketing and other infrastructure are situated on the spine close by. To switch between different transports only a straight, weather protected walk along the spine is needed.
The most important modes of transport (BRT and Metro) are located at the outermost ends of the spine following the logic of shopping malls to create traffic for the market and the center.

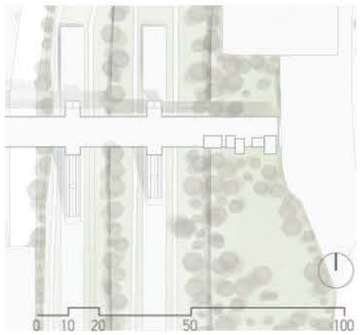


Site Plan

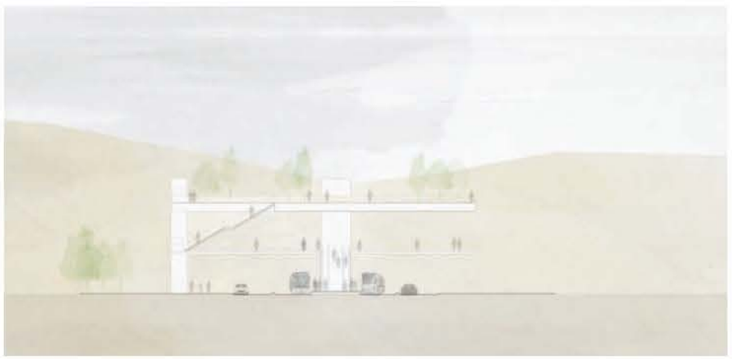
The newly created BRT & Bus-Station



First Level 1 : 2.000



Second Level 1 : 2.000

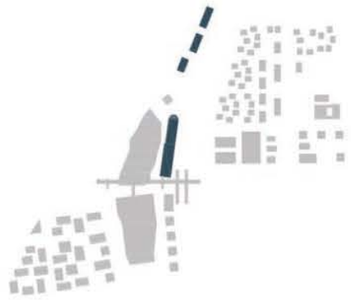


Section BRT Station 1 : 1.000

Section Metro Station 1 : 1.000

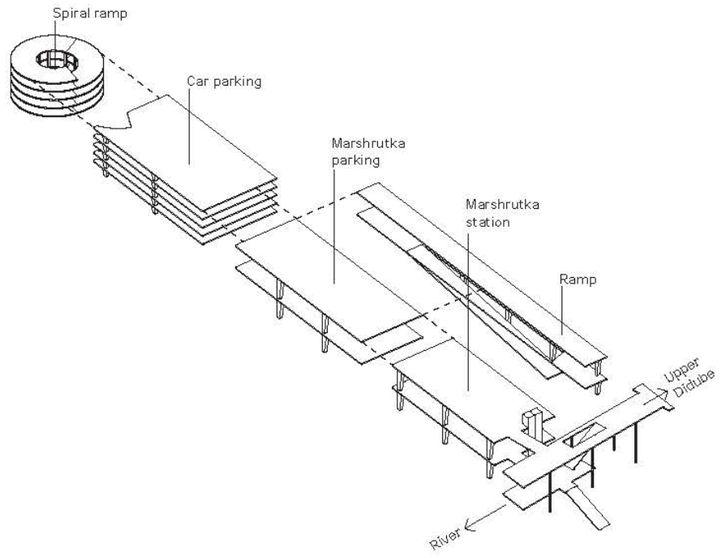
Marshrutka Station

About 260 Marshrutkas parked around Didube driving to about 30 destinations in Georgia. Drivers own the bus and get a departure time slot and parking space in return for a fee. To minimize the space needed and professionalize the organisation, the station consists of stacked parking decks. The arrival takes place on the 1st floor. Leaving travelers can directly access the spine.
Departure takes place on the ground floor, so it can be easily accessed from the market.
Behind the station there is a parking deck for Marshutkas, followed by a deck for regular cars.
Petrol stations and workshops are situated north of the market following the service road. The new Marshrutka parking area is smaller than the existing one, taking into account an expansion of public transport.



Site Plan

Arrival hall of the Marshrutka station

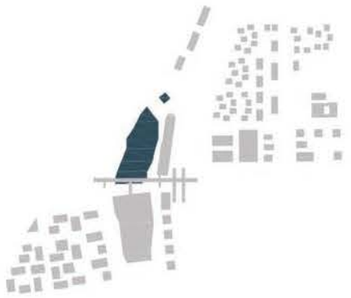


The station is lenghtwise divided by functions

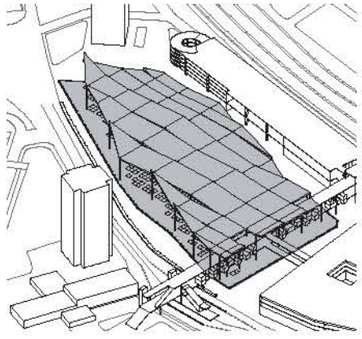
Section Marshrutka Station 1 :1.000

The Market

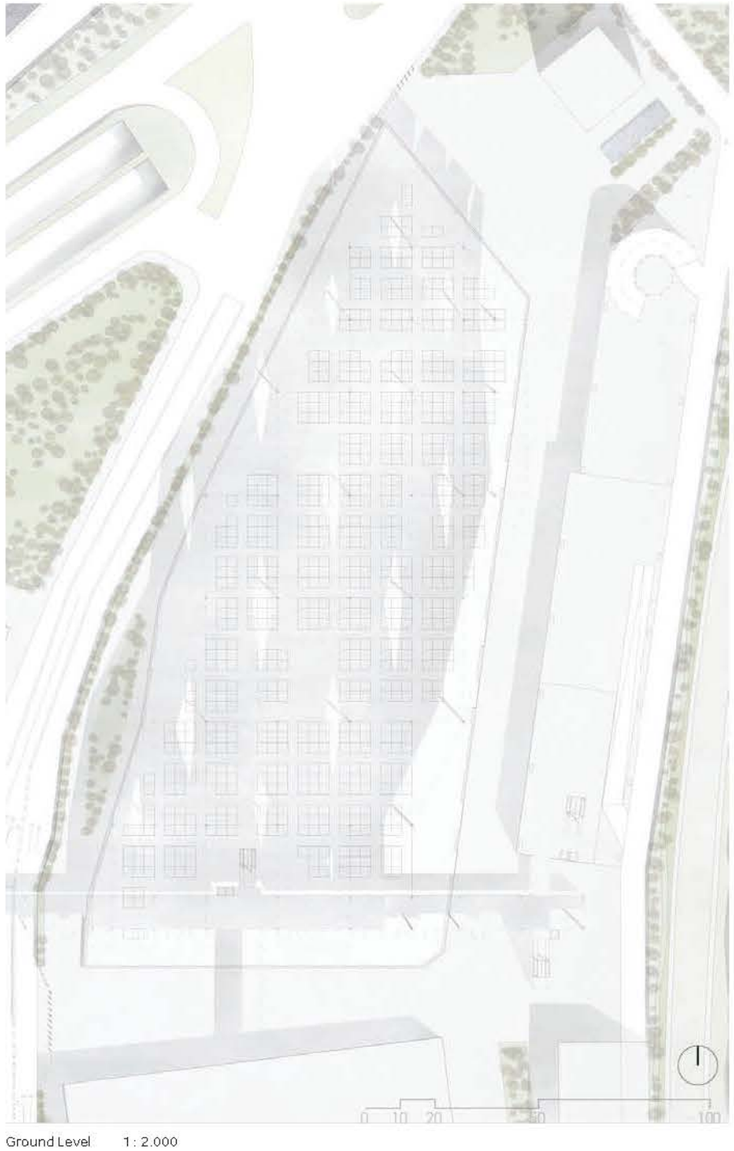
The self-built market is the key characteristic of Didube. Preserving its DIY atmosphere while giving it a formal framework is the aim of the market design.
The new market is raised three steps from street level. A reflective metal roof protects vendors and customers and makes the market visible even while walking on the spine. For people crossing the Mtkvari river towards Didube it is a highly visible landmark. The roof extends partly over the walkway sheltering people walking on the green roof, while also giving the feeling of being inside the market by seeing, hearing and smelling it.
The market is segregated from the city highway by a raised line of trees creating a buffer area between the street and the market.
The market area itself is made up of a 3x3x3m grid painted onto the floor. All major routes and squares of the market space are predefined, while the layout and organisation of the butkas is left to the owners.
Every grid unit has an infrastructure-bollard with access to electricity, water and gas. The butkas can encompass more than one grid unit, enlarging it and making room for storage or bigger stalls. A vertical expansion is possible under the up to 20m high roof.
The delivery trucks drive along the service road and dock backwards onto the platform, where wares can be directly transferred onto market level.
The 3 steps leading to the market are at places combined to offer seating or unloading of wares.
The northern part of the market is reserved for a flea market.
The northern end of the market is defined by a office high-rise. To the east lies a pedestrian street with direct access to the Marshrutka station.



Site Plan

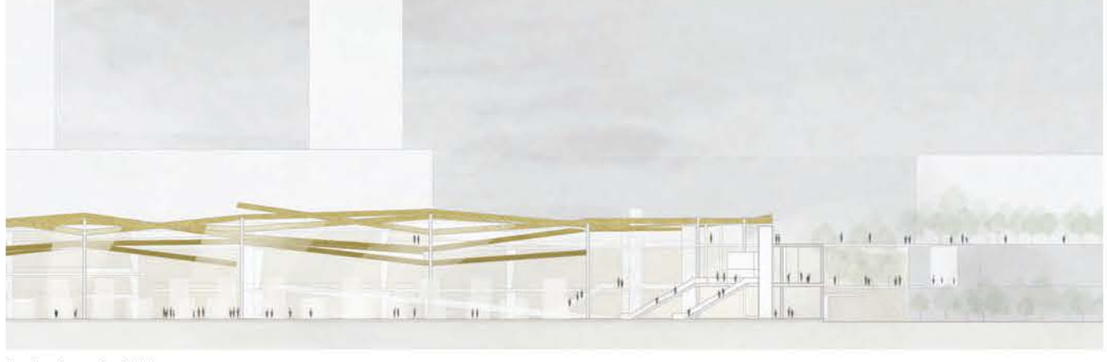


Pleated market roof



Ground Level 1 : 2.000

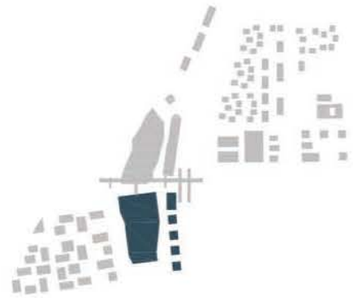
View of the new market roof, when entering Didube from the other riverside



Section 1 1 : 1.000

Center+

The upgraded Didube transportation hub makes the location suitable for functions going beyond the scope of the neighborhood, like a shopping center or a multifunctional event center.
The Center+ borders the spine to the north. East of the center there is a traffic-free street with four office buildings and a hotel. In the south lies a public square. To create a bufferzone to the busy street a line of trees borders it.
The center contains different stacked functions.
The Commercial area is on the ground floor and part of the 1st floor adjoining the spine. Parking in split levels is on the rest of the 1st floor. On the roof there are residential buildings as well as a school and a park linked to the green floor of the spine.
The entire center is lit by three atriums. In summer the ground floor is opened towards the atriums.
The shopping area is easily accessed from the ground floor as well as from the 1st floor of the spine.
The parking deck can be reached from the main street by a ramp. Bike parking is situated on the parking deck next to the shopping area on the 1st floor.
On the roof there are six residential buildings looking out towards the river, as well as an elementary school. The school can be accessed by the spine as well as by two stairs leading to the traffic free street in the east and the public square in the south, so students do not have to enter the shopping center on their way to school.
The rent of the shopping area is used to finance the construction of the school above.



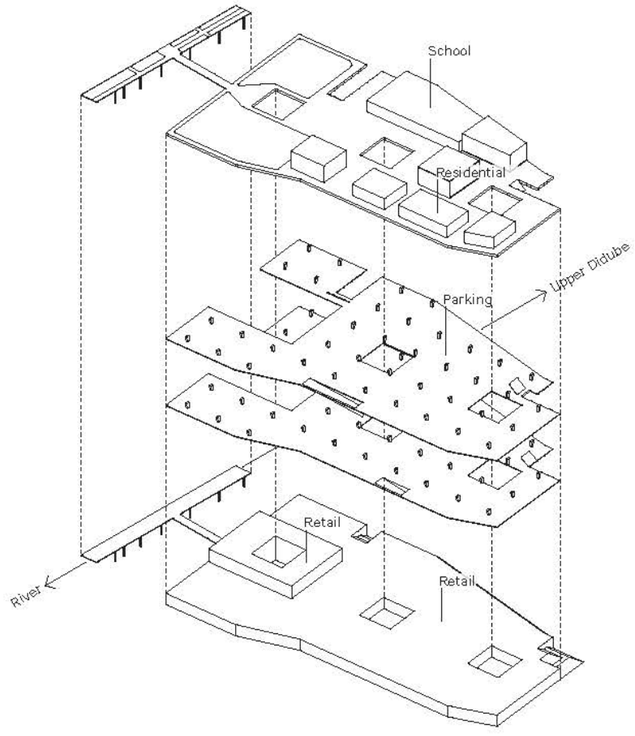
Site Plan

Collage

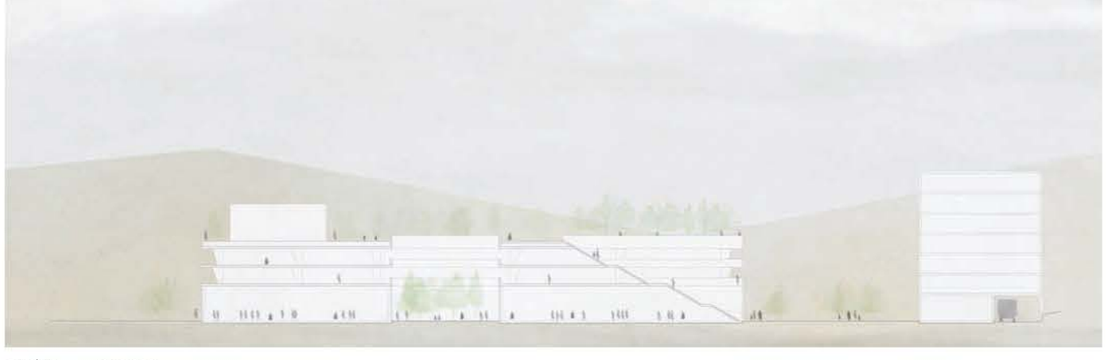
Access to the school from the east

Ground Level 1 : 2.000

3rd floor 1: 3.000



The shopping area is embraced by parking decks giving fast access to the spine

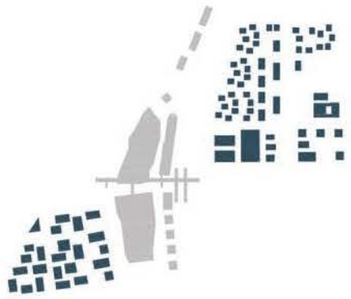


Section 1 : 1.000

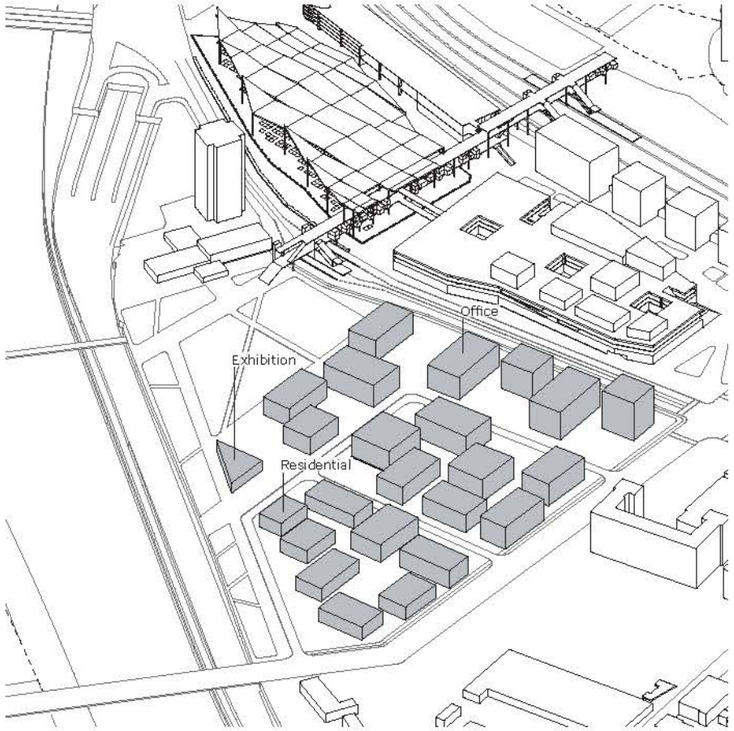
Residential quarters

The neighborhood along the river contains dense building clusters. There is also a gallery/museum with a view of the river. The row of offices shields the neighborhood from traffic. South of the area a new bridge connects to the Didube hub, making one way traffic through the market and center area possible.

Entering the neighborhood from the spine there is a park with a view of the river. Two already existing building define the border of the park in the north. Contrasting the public park every residential building has access to at least one semi-public square inside the neighborhood.



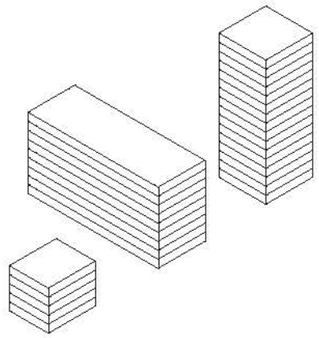
Site Plan



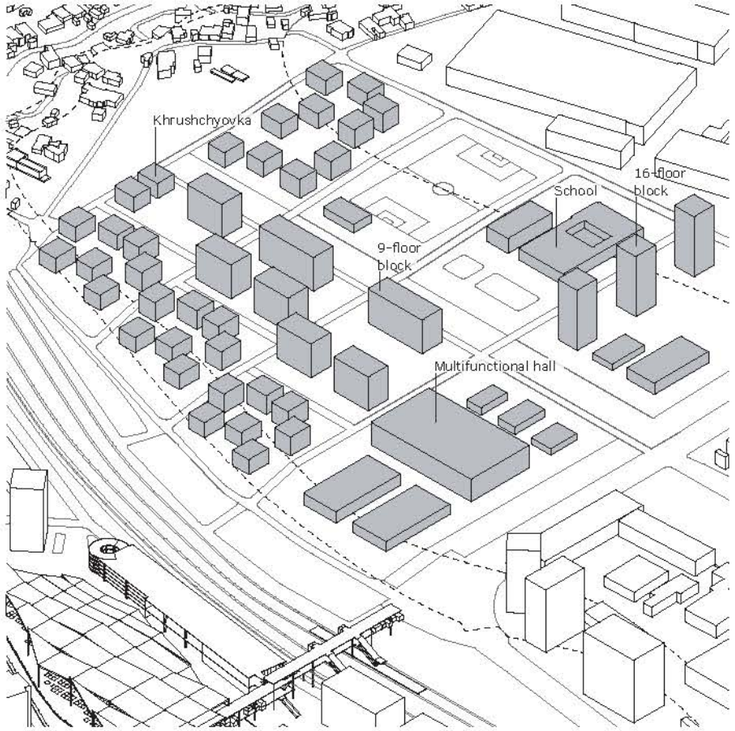
The dense agglomeration of houses is loosened through public squares

The new residential area in upper Didube lies on ascending terrain. It has good views of the surrounding cityscape. The building height is increased towards the top of the hill. A green strip connects the north with the south. Along it on the east public buildings are situated. A sportsfield, a library and a school. In the south, there is a cluster of multifunctional event halls.

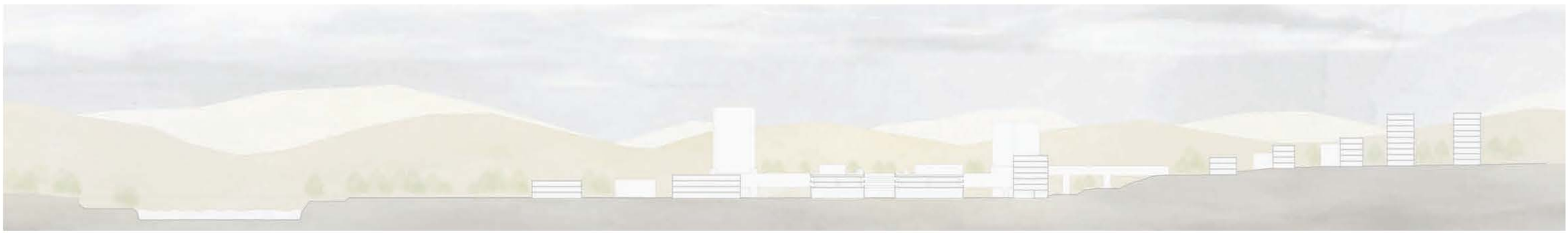
The upper residential area builds on the tradition of self-construction of the prevalent Soviet-era housing units: Khrushchyovka (3-5 floors), 9-floor- and 16-floor-blocks. The same base volumes are used for the new neighborhood. It differs by integrating selfconstruction from the very start into the building process. All technical infrastructure, as well as the circulation and the building shell are put into place professionally. The apartment units themselves are built by the inhabitants. Saving them money and increasing a feeling of belonging and identification with the new neighborhood.



The volumes of typical Soviet-era units are used



Along a central north-south greenway the houses are situated with good views of the surrounding landscape

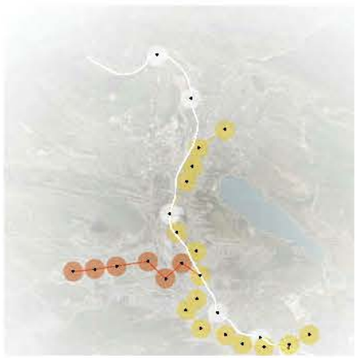


Buildings start out small along the riverbank and increase in size towards upper Didube, enabling a view for all users of the riverside

Didtube

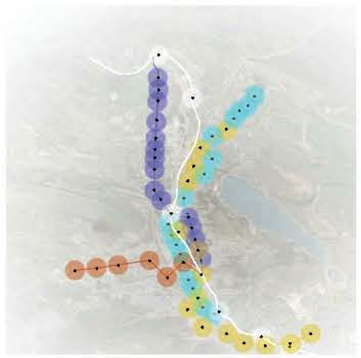
The masterplan of the city of Tbilisi along with the development of public transport were core elements while working on this project. By introducing two BRT-lines (instead of the just planned one) fare vaster area can be exploited. To make sure to maximize the exploitation, the two BRT-lines are scheduled to cross paths underground, exactly where the new Railway station will be located on ground floor. This smart layout will ensure short transfer times between the local traffic and inter-city transport and in natural consequence enabling faster connections.
A modern organic bridge connects railway tracks, subway and BRT-line directly with the higher situated area located east of the project. Regional busses adjoin north and city busses and taxis south of the main structure.

To the west of the traffic hub the new market stretches out. Different sized market stalls promote high variety in sales objects and ensure diversity. The arrangement of the market stalls purposefully steers visitors in the backmost areas of the market hall in order to foster fair distribution of business premises.



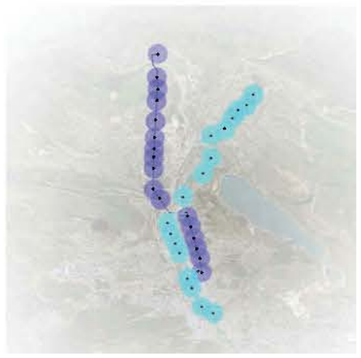
existing public transport

regional train
underground 1
underground 2



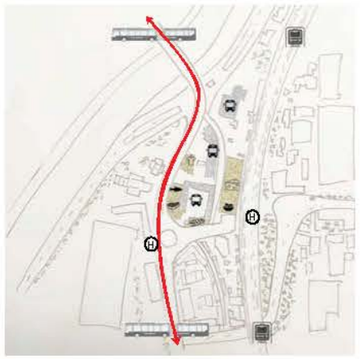
adding the two new BRT - Lines

BRT - Line 1
BRT - Line 2
distance between two stations

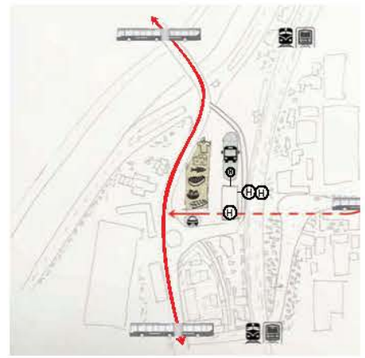


crossing point of the two BRT - Lines

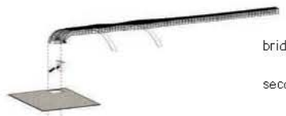
figure ground plan



existing market areas & three bus stations

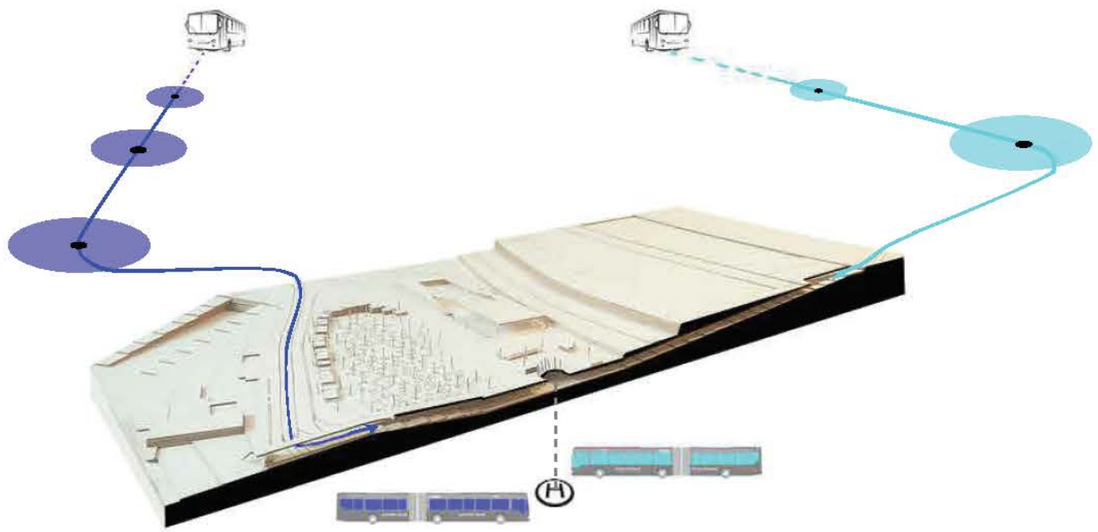


connecting the market areas & the public transport

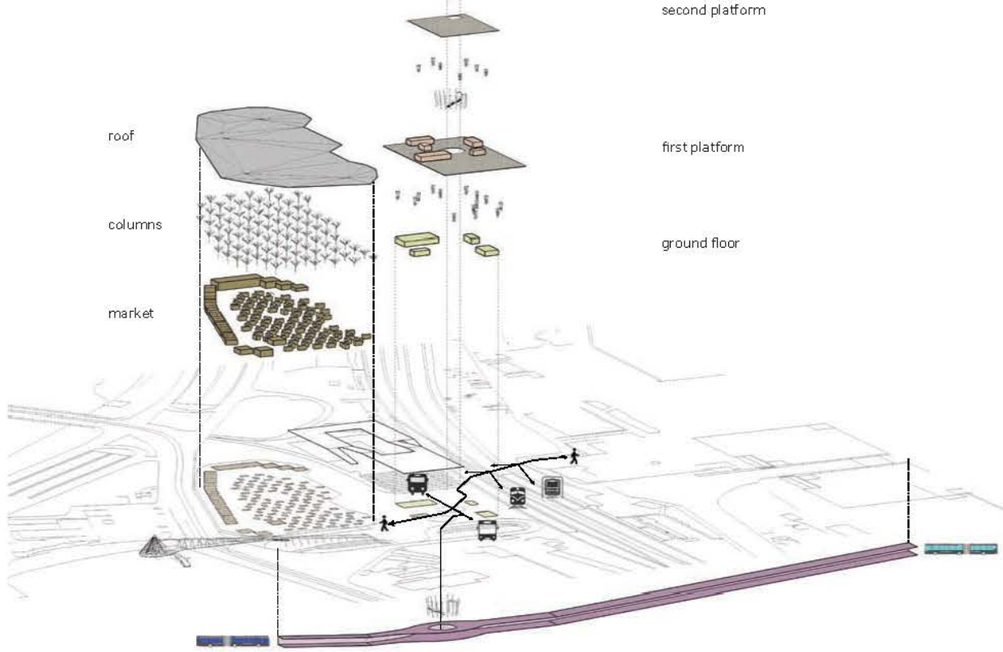


bridge to the train & underground stop

second platform

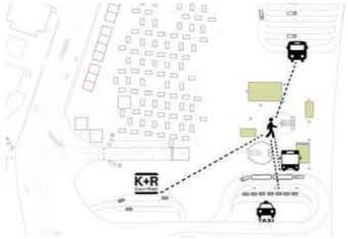


concept tube

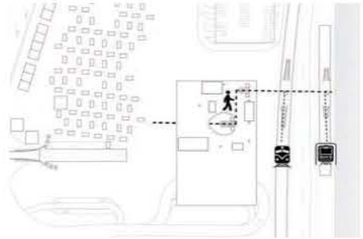


explosion view station/market

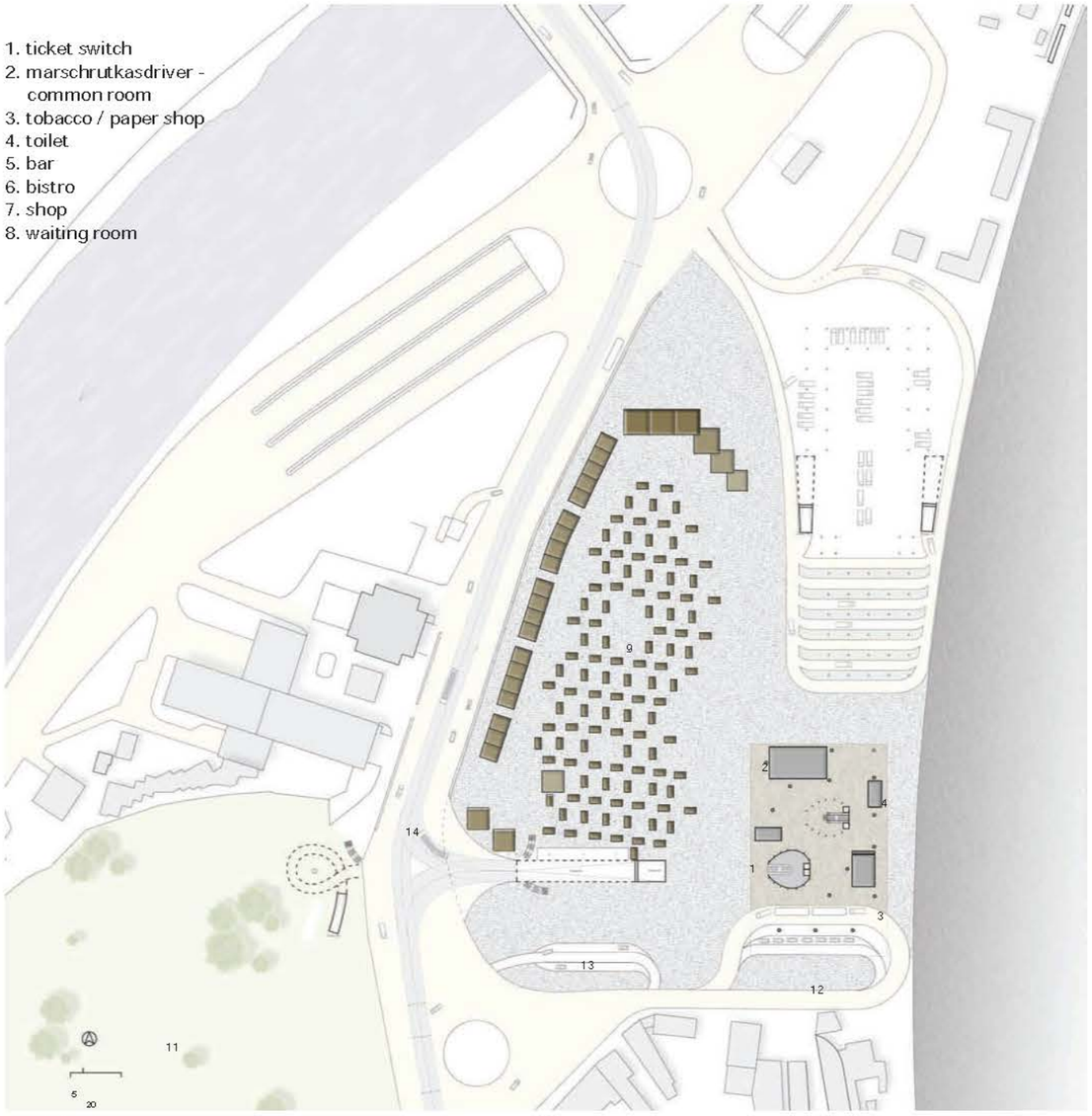
The ground floor of the station has the most connections to public transport. In the northern area of the HUB the Marschrutkas stops, southern of the station the city buses and taxis, and on the left side you will find the Kiss & Ride.



On the upper floor of the station, a bridge stretches to the slightly higher level of the city (seen east from the HUB), enabling the development of the regional train and the subway.

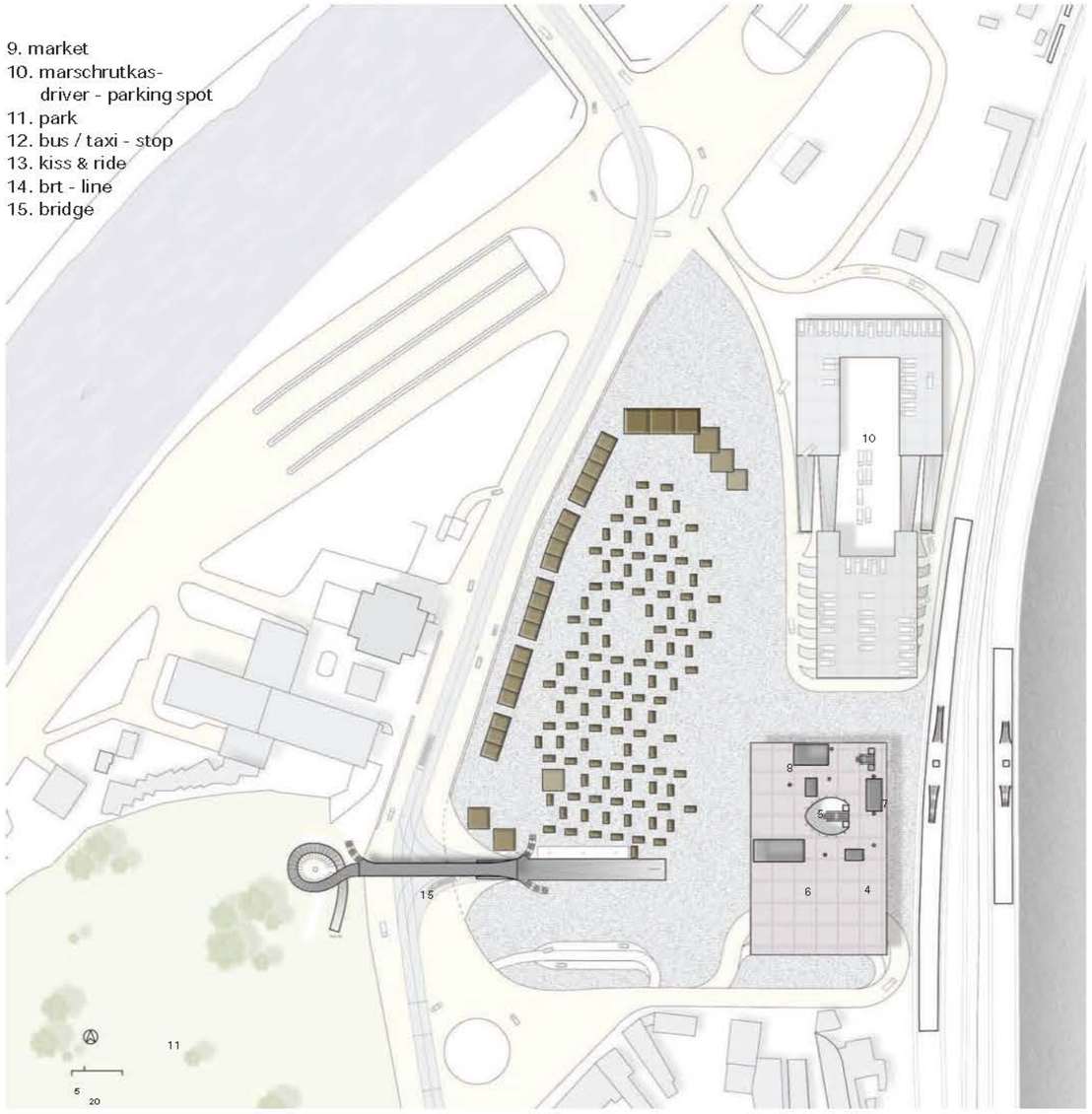


1. ticket switch
2. marschrutkasdriver - common room
3. tobacco / paper shop
4. toilet
5. bar
6. bistro
7. shop
8. waiting room



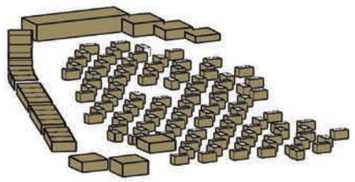
ground floor (0m)

9. market
10. marschrutkas- driver - parking spot
11. park
12. bus / taxi - stop
13. kiss & ride
14. brt - line
15. bridge

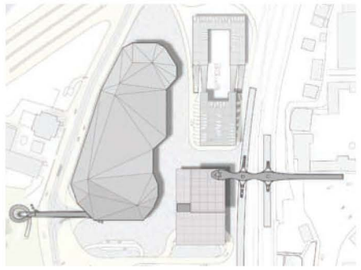


first floor (5m)

The arrangement of the market stalls is based on the main axis of movement of pedestrians. Directly on the axis are the small market stalls, which offer products such as fruits and vegetables.
Along the road, there are slightly larger stalls, on the one hand to keep the noise of the road away, and to offer a reasonable sales area.
There, garments and smaller electronics can be offered. In the northern area there is the catering, where the length of stay should be the longest.



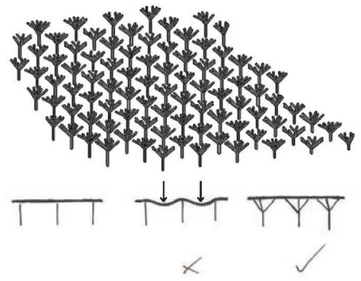
market stalls



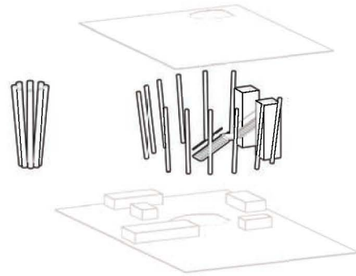
second floor (15m)

The large market roof is carried by a total of 77 columns. In order to ensure maximum flexibility for the market, the distance of the column grid was chosen as large as possible.

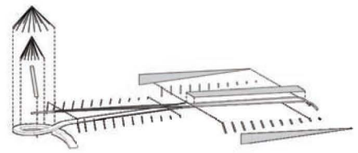
As a result, the supports in the upper area have several overhang objects to guarantee the spans. This practically creates a supportive forest in the truest sense of the word, and gives the market a special flair.



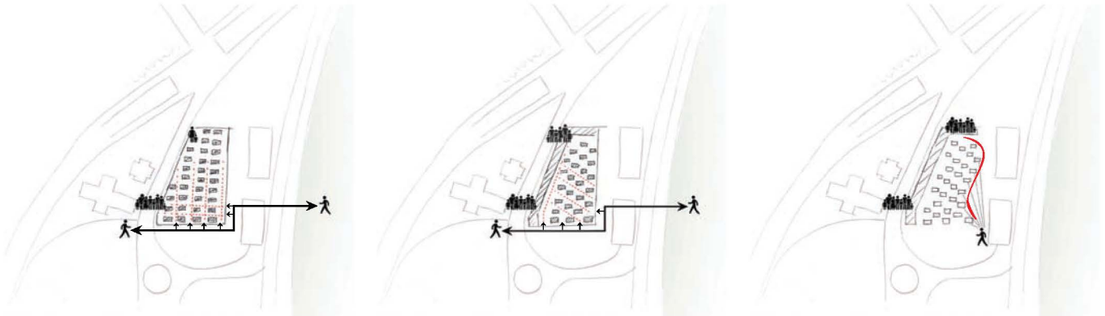
columns market



columns main station

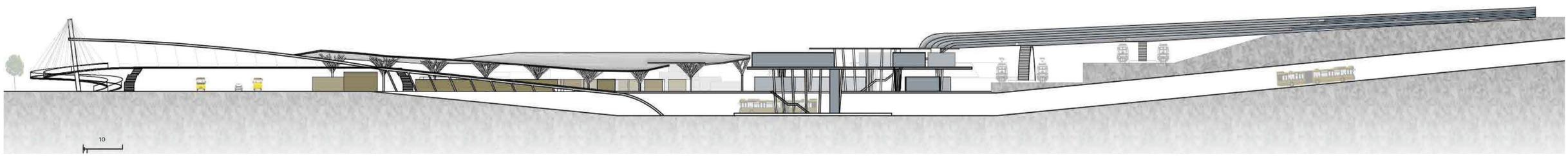


pedestrian bridge above the street



The principle of the pillar is continued in the station. Once they represent the supporting structure, but they also symbolize the development of the various floors as a vertical element.

collage of the market



section

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