









Hristo Georgiev, BSc

## **Wavepark Burgas**

### **MASTER'S THESIS**

to achieve the university degree of

Diplom-Ingenieur

Master's degree programme: Architecture

submitted to

**Graz University of Technology**

Supervisor

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Institute of Architecture and Technology

Graz, March 2017



## **AFFIDAVIT**

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fig 01::A-Team, Surf School Arapy Photo Credits- A-Team

## EDITORIAL

The Sea has been a particular influence on my life, and continues to be a major part in almost every decision I make. It has given me so much and probably made me who I am today. There have been countless times when the thought of it has managed to get me through some difficult times and situations. The people I have met by the sea continue to be a major part of my life. The decision to go abroad to study architecture was not an easy one, and I have found myself time and again thinking, wishing, dreaming of this place where all burdens seem to disappear.

It is no wonder that when the time came to pick a topic for my Master Thesis, my love for the sea and the water sports ended up being a decisive factor. I have been windsurfing ever since I can remember, and in recent years have taken up surfing and stand-up paddle boarding, all sport depending on the sea and the conditions it provide. The Black Sea isn't notorious for its perfect conditions for water sports, but it gave me a solid base and developed my love for all water sports, for which I am forever grateful.

This got me thinking, how can I help others, who have the same connection and love for the deep blue.

In recent times, the technology to re-create waves has been looked into and several firms believe they have reached the stage where Wavepools can be built and used by everybody. At the moment there are two operational facilities that can cater to the needs of surfers and beginners alike, who don't have the access to waves. Because of the lack of prime conditions on the Black Sea Coast of Bulgaria, and the booming Summer Tourism scene, I have decided to put my knowledge gathered over the years at the TU Graz and combine my Master Thesis Topic with the hobbies that interest me.

In the next few chapters I will try to convince you why a wavepool would be a great business venture for the City of Burgas, and will show you a representation of what such a place could look like.

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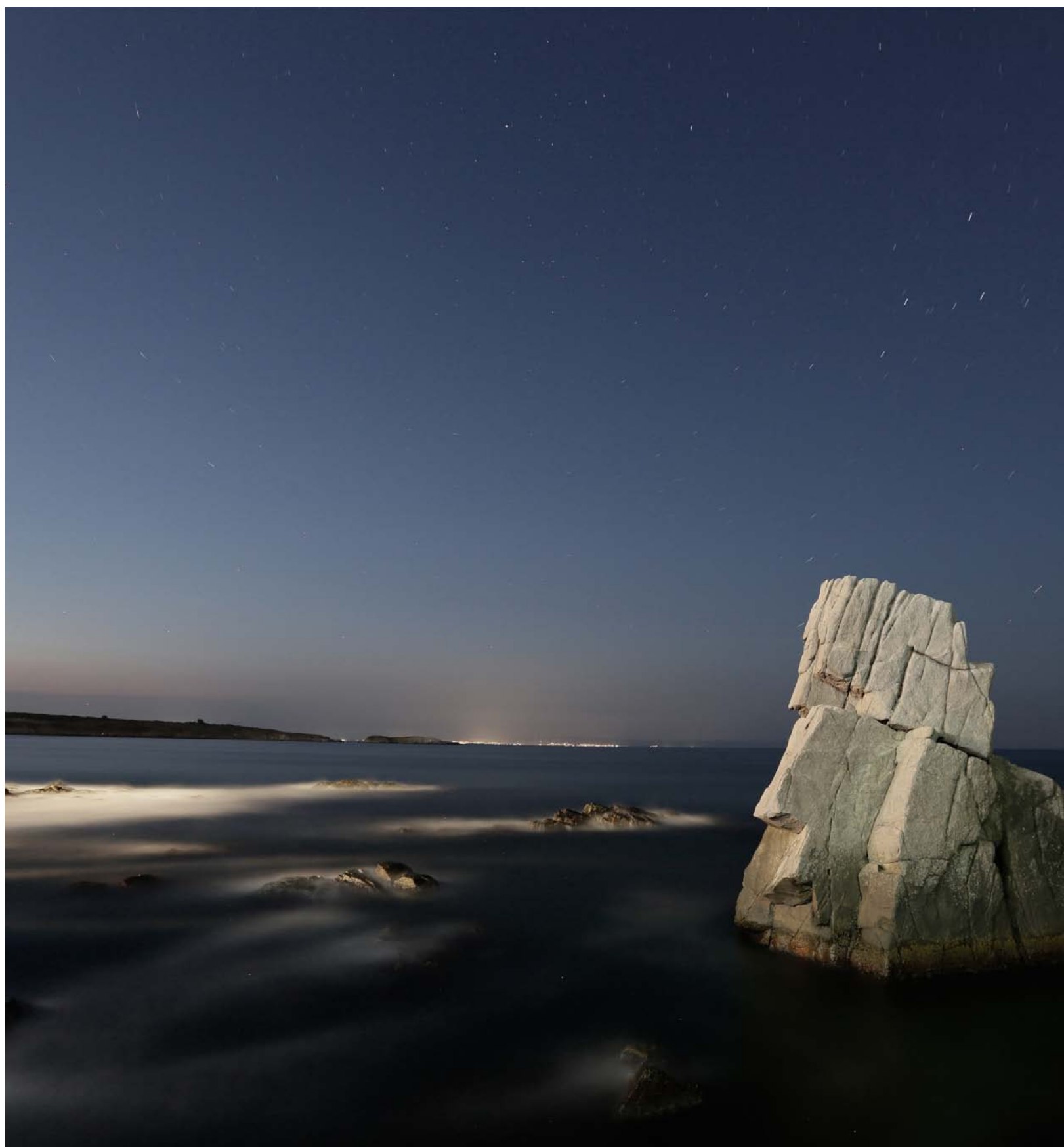




fig 06:: Photo Credits- Georgi Petev

# Brief History and Geographical location

The Burgas region has a territory of 127 101 acres and is the biggest municipality in Southeastern Bulgaria, which is about 7% of Bulgarias territory. The municipality center is the city of Burgas. The region has been known for its salt and copper trade since 7000 B.C. and was a epicenter of ancient civilizations. The first settler were the Thracians, who used a port, "Sweet wells", as a link to ancient Greek settlements along the Black Sea coast. After them the Romans built a fortress to supply their settlement Deltum with goods from their empire. The Roman name of the fortress was Burg-Burgos, which translated means "tower". Other cultures had different names for the port-city - the Greek called it Pirgos, while the Italians called it Poros.

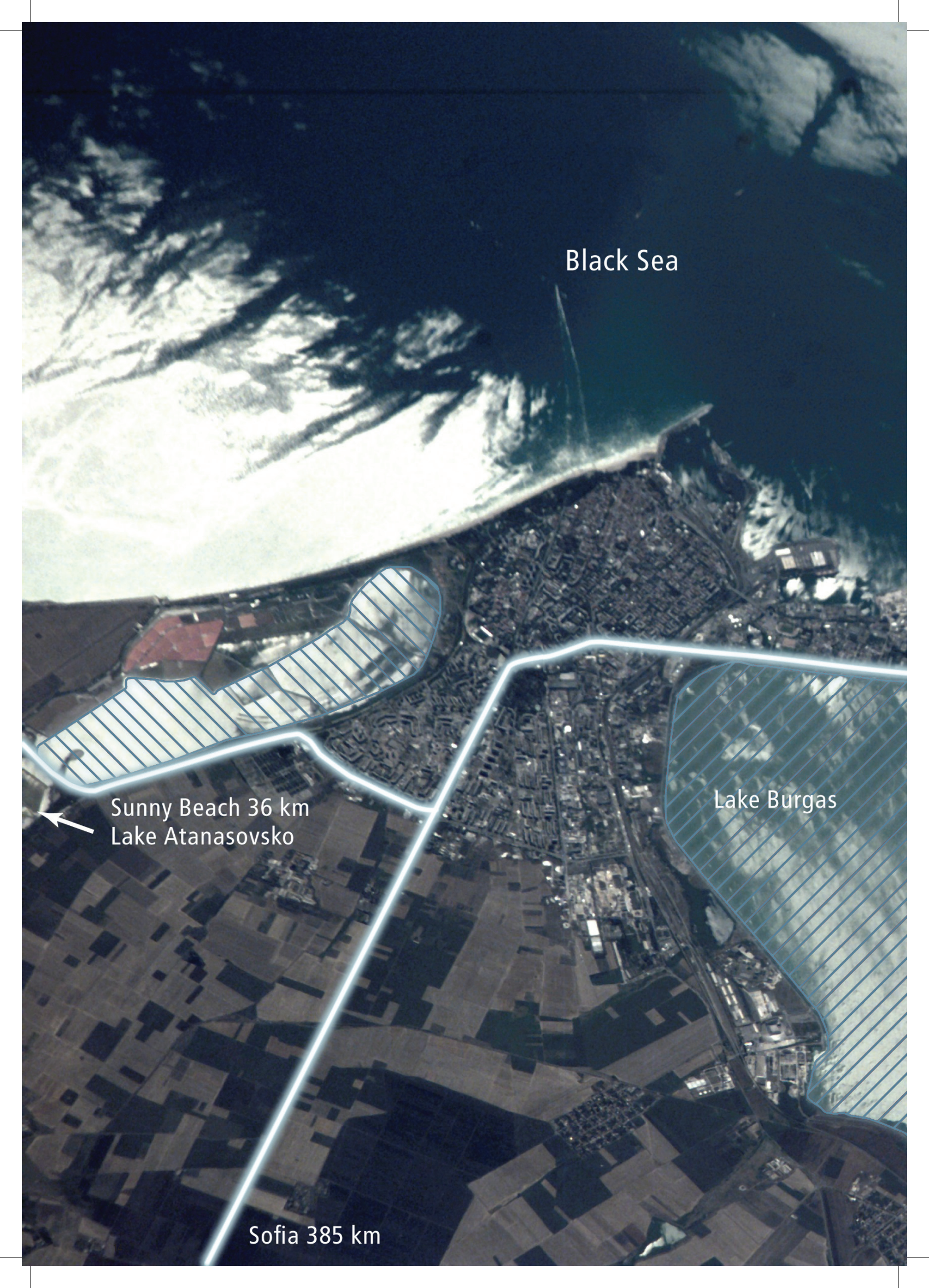
Burgas was recognised for its good geographical location, good port, and good trading capabilities. This is one of the reasons for the cities development and growth, and its current status as one of the biggest cities in Bulgaria.

Burgas is the biggest city in the Southeast part of Bulgaria, and the second biggest city on the Black Sea coast after Varna. With an area of 253 644 km<sup>2</sup> it is one of the largest cities in the country. It has a population of about 219 267 inhabitants, which puts it in fourth place after Sofia (the capitol), Plovdiv and Varna. It is situated in the east part of the Burgas Plain. The bay surrounding the city is the biggest in the country and bears the same name. Surrounding the city are three lakes, the Burgas Lake to the west, the Atanasovsko Lake to the north-east and the Mandrensko Lake to the south-west, containing large ammounts of bird species. Two sandspits are located in the urban area. The first one, Kumluka, is situated between the Burgas Lake and the Black Sea, with a lenght of 3km and widht of 1km, while the second one called Atanasovska is between the Atanasovsko Lake and the Black Sea with a lenght of 1km. Burgas has the second largest airport in Bulgaria, capable of operating international flights, as well as the largest bulgarian port. Good road access is also available for this touristic destination.

One of the Pan-European corridors passes through the city on its way from Varna to Düress, a 1 500km road connecting the Black Sea with the Adriatic Sea. The A1 Highway starts in the port city and heads east to Sofia, the capitol. Other major roadways in Burgas include the A5 Highway north to Varna, which is currently under construction as well as the european road E87, which starts in the ukranian city of Odessa and ends in the turkish city of Antalia, working as a major transport line between the north and south part of the bulgarian Black Sea coastline. With its central positioning, the city of Burgas works as a transportation hub for the bulgarian coastline and a starting point for many tourists, either arriving by bus from some of the bigger cities in Bulgaria or its neighbouring countries or direct flights from Sofia and destinations such as London and Moscow, as well as being an important economics, cultural and political center for the country







A satellite map of Bulgaria showing the Black Sea to the north, Lake Burgas to the east, and Lake Atanasovsko to the west. A blue line with a white border highlights a path starting from the Black Sea, passing through Lake Atanasovsko, then through a city area, and ending near Lake Burgas. The path is marked with an arrow pointing to Sunny Beach. The map also shows agricultural fields in the south and a city area in the center.

Black Sea

Sunny Beach 36 km  
Lake Atanasovsko

Lake Burgas

Sofia 385 km



Sozopol 33 km  
Tsarevo 64 km

Lake Mandrensko





fig 08: Urban Plan Burgas 1891 Photo Credits- Atika R5 Ltd.



fig 09: Burgas Aerial photo Photo Credits- medias



fig 10: Burgas Aerial photo Photo Credits- www.socbg.com

## Urban Development

Burgas started out as a small fishing village on the coast of the Black Sea. In 1912 Alexander Kodzhakafaliata gives new territories, in what is now "Bratia Miladinovi" neighbourhood, to the poor and homeless.

The city has been evolving mainly as an industrial center, which by today's standards is seen as a negative quality. Until 1987 the surrounding villages exist and develop as single local units. The surrounding lakes, sea and industrial zones cause a stage by stage inclusion of the existing nearby villages (Kraimorie, Sarafovo, Lozovo, Gorno Ezerovo) into the limits of the city. Rapid growth takes place in Burgas during the first decade of the present century.

The first urban plan for the city was accepted in 1891, adopting 289 neighbourhoods. In 1970-73 a collective team of "Glavproekt" proposes a General City Plan. It was strongly influenced by the problems and processes linked with the development of the city of Burgas according to the centralised planned economy. An important part in the urban development plan is that





fig. 11. -Bulgaria photo Photo Credits- Anton Nihtyanov

it does not concentrate solely on Burgas, but also focuses on the suburban area, as well as the main road network and the specific requirements of the territory. It also contains a General transport-communications plan.

Data for the population growth of Burgas during the last 11 decades speaks of the development of the city. During 1844, the then fishermen's village had approximately 2000 inhabitants, in 1884 it had 5864, whereas in 1900 - 11738. In 1920 the population doubles itself and reaches 21 170 residents. A steady growth is witnessed during the coming years, in 1934 it reaches 34 260, in 1946 - 44 400, in 1965 - 106 115, in 1975 - 148 662, 1985 - 182 338 (fifth largest in the country) and in 1992 - 190 057 (fourth largest in the country).

These days Burgas has a population of 219 267 people which puts it in number four of Bulgaria's largest cities.

94,34% of the population of Municipality Burgas is concentrated in the city. This accounts to 50% of the population of the region. Burgas is one of the few cities to have an increase of population growth. This puts pressure on the city and its needs for future expansion and development. As a main logistics center it is also a

subject of increased flow of commercial goods and people. Burgas has a pivotal role as a tourist hub for the adjacent summer resorts in the north and south. There is a tendency for tourists to avoid highly urbanised territories with a typical urban-type for less dense resorts and holiday villages. The existence of several lakes (Burgas, Atanasovsko and Mandrensko lakes) and the bordering Black Sea to the east predefines the city's orientation to north-south. "Stefan Stambolov", "Struga" and "Todor Aleksandrov" boulevards work as the main traffic arteries.





## *Burgas is divided into the following territories:*

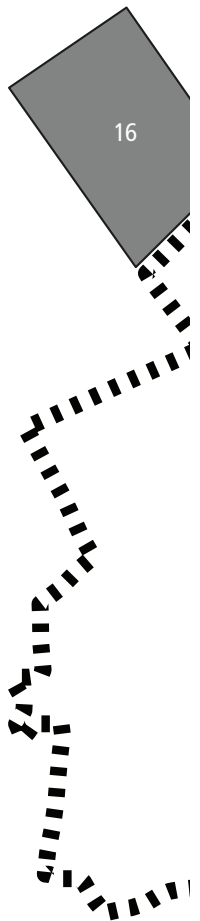
- City core

- "Inner City" - including the neighbouring boroughs of "Slaveikov"(1), "Izgreve"(2), "Zornitsa"(3), "Bratia Miladinovi"(4), "Lazur"(5), "Pobeda"(6) and "Akacii"(7)

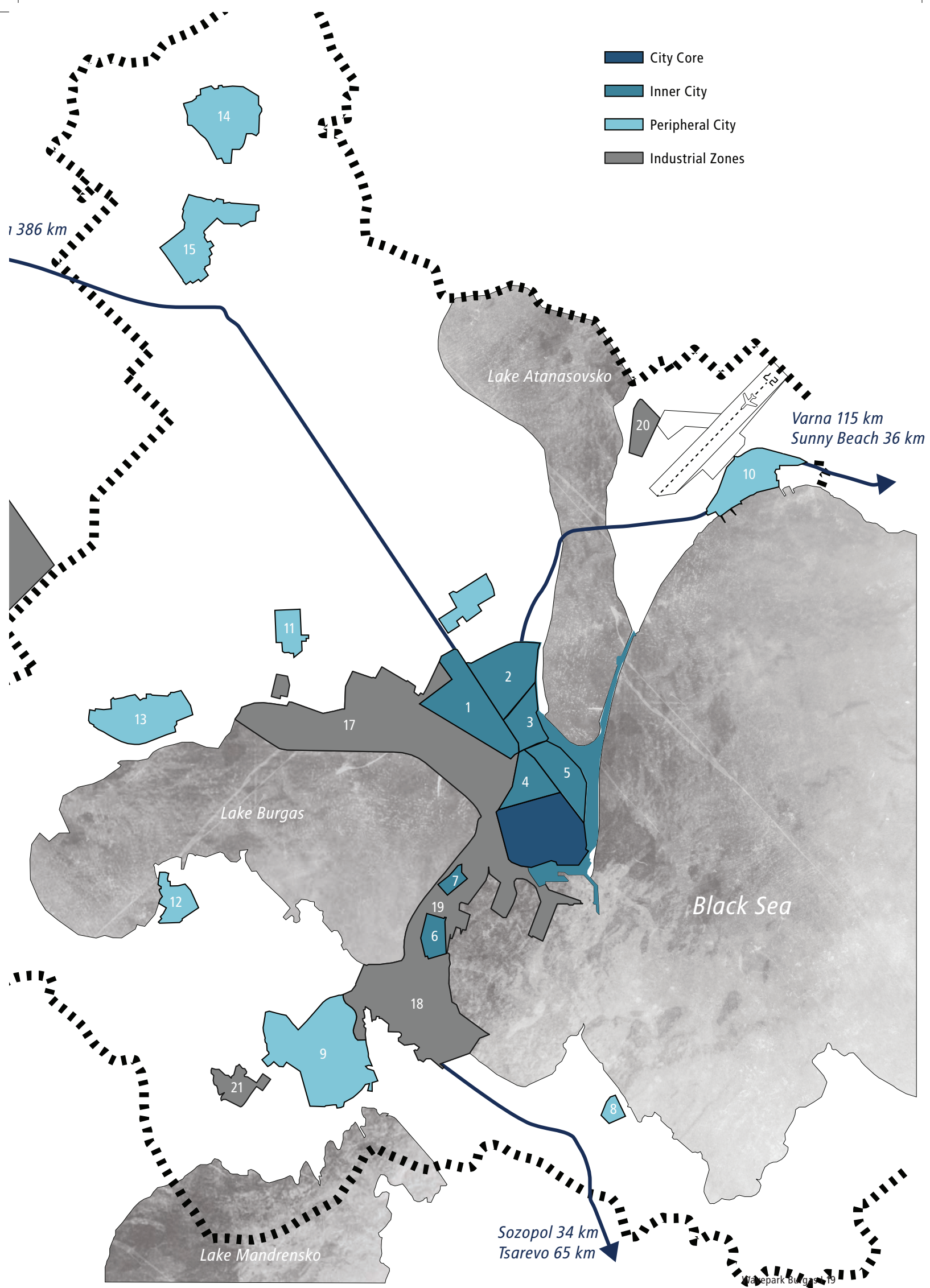
- "Peripheral City" - districts, situated close to the city - "Kraimorie"(8), "Meden Rudnik"(9), "Sarafovo"(10), "Lozovo"(11), "Gorno Ezerovo"(12), "Dolno Ezerovo"(13), "Banevo"(14) and "Vetren"(15) (including the holiday village "Mineralni Bani"), as well as suburban areas, such as agricultural lands and the area of "Lukoil Neftohim Burgas"(16), the city's oil refinery

- Industrial zones "North"(17), "South"(18), "Pobeda"(19), "Sarafovo"(20) and "Meden Rudnik"(21)

The three lakes, the Black Sea, the big beach front, Via Pontika (a migration route for birds from Europe to Africa), the extraction of salts and its salt lakes are all factors that determine the position and growth of the city, filling in the blank spaces inbetween. The central part (City core), where the administrative functions take place is like the heart of the city, from where five branches make their way to the district of "Sarafovo" to the north-east, the district of "Vetren" and "Banevo" to the north-west, two to the east on either side of the "Burgas" lake, reaching the northern and southern district of "Gorno Ezerovo" and "Dolno Ezerovo" respectively, and to the south/south-east to the districts of "Meden Rudnik" and "Kraimorie".



0 450 900 1800 2700 3600



### City Core:

The city core includes the residential areas of "Vuzrajane" and the Central city area. The Central city area consist of the historical center of the city, as well as the administrative center and a residential part. It borders the Port of Burgas to the south, the Black Sea to the east via "Primorski" park, the residential area "Lazur" to the northeast, the residential area "Bratia Miladinovi" to the northwest via the "San Stefano" boulevard and the residential area "Vuzrajane" to the southwest via "Hristo Botev" street. It has an easy access to the sea front and the main pedestrian zones in the city. It is characterized with mostly low to medium high buildings. Most of the cities old buildings, a big part of which are considered cultural heritage, are concentrated there. Apart from the historical part a lot of residential buildings (5-6 stories high) have emerged in the last twenty years, which has significantly densified the urban structure and represent a higher density of occupation.

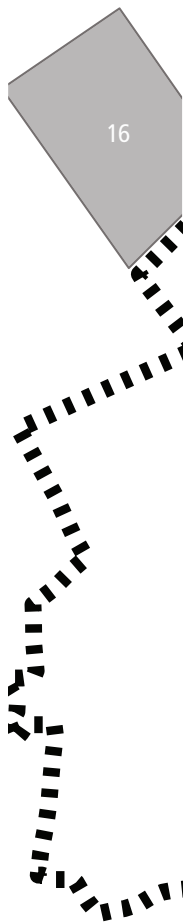
This poses a challenge to the city core and its future development. The bigger part of the buildings are residential, although mixed use ones exist, and there is no clear tendency of pushing them out towards the outer limits and replacing them with buildings for the administrative needs. This creates transportation problems which are still heavily active in this part.

### Inner City:

The residential areas in this zone have a similar characteristic, which is represented by the medium to high building types. A wide variety of construction types. In recent years, among the "Plattenbau" buildings, apartment houses have risen, which densify the environment and most times block or destroy shared and green spaces. Among some of the worst affected districts are "Akacii" (7) and "Pobeda" (6), which are considered top priority by the new development plan. Its problems can be traced to the chaotic sprawl of new buildings without proper regulations or planning, the ease of access to such places, as well as social and ethnical differences.

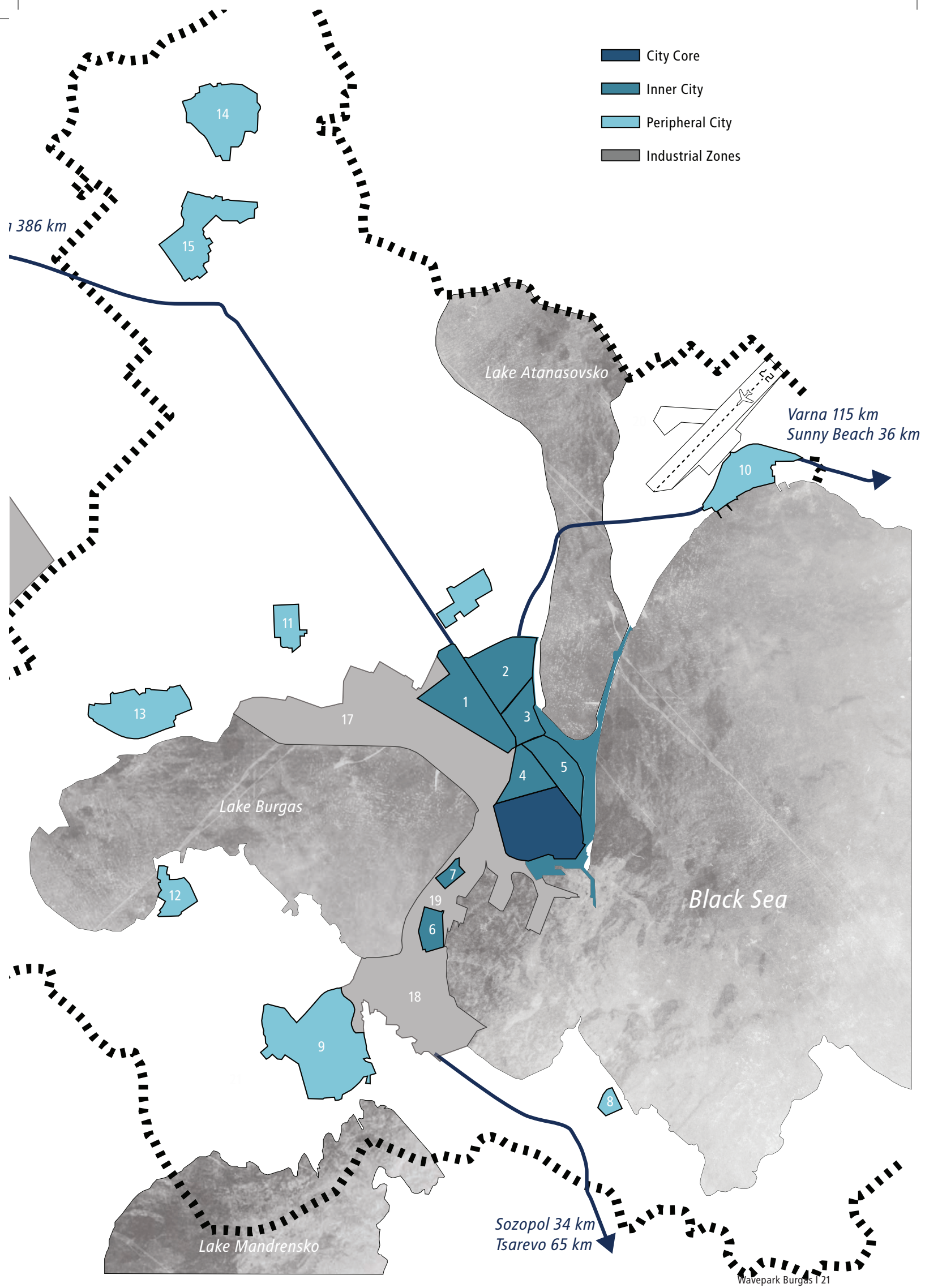
### Peripheral City:

The rest of the residential areas, such as "Banevo" (14), "Vetren" (15), "Sarafovo" (10) and "Kraimorie" (8) are being developed at a high pace. The proximity of the last two to the sea front makes them an attractive place for future residents and investors and thus has increased real estate value. "Banevo" and "Vetren" have good location, as well as easy access to major transport connections, proximity to cultural inheritance and large green space.



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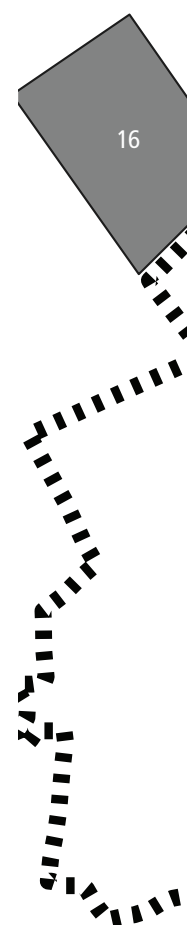


## Green Space:

The green spaces in Burgas are relatively well distributed in the compact city center, as well as the outer part of the city. In the City Core the most notable and valuable area is the "Morskata Gradina", followed by the well arranged smaller gardens and parks and the well developed green belt around the major road arteries. The greenery around the residential areas of "Meden Rudnik" and "Kraimorie", along with the area surrounding the lakes builds a green frame around the city. The remoteness of "Meden Rudnik" and "Kraimorie" from the inner city help create connections with the natural landscape territories (parks "Kapcheto", "Rosenets", "Kraimorie" and "Lambair") and coastal areas. However, due to the rapid growth and development in the city in the last few years has consumed a lot of the open and green spaces, which has resulted in the ruining of the appeal of Burgas.

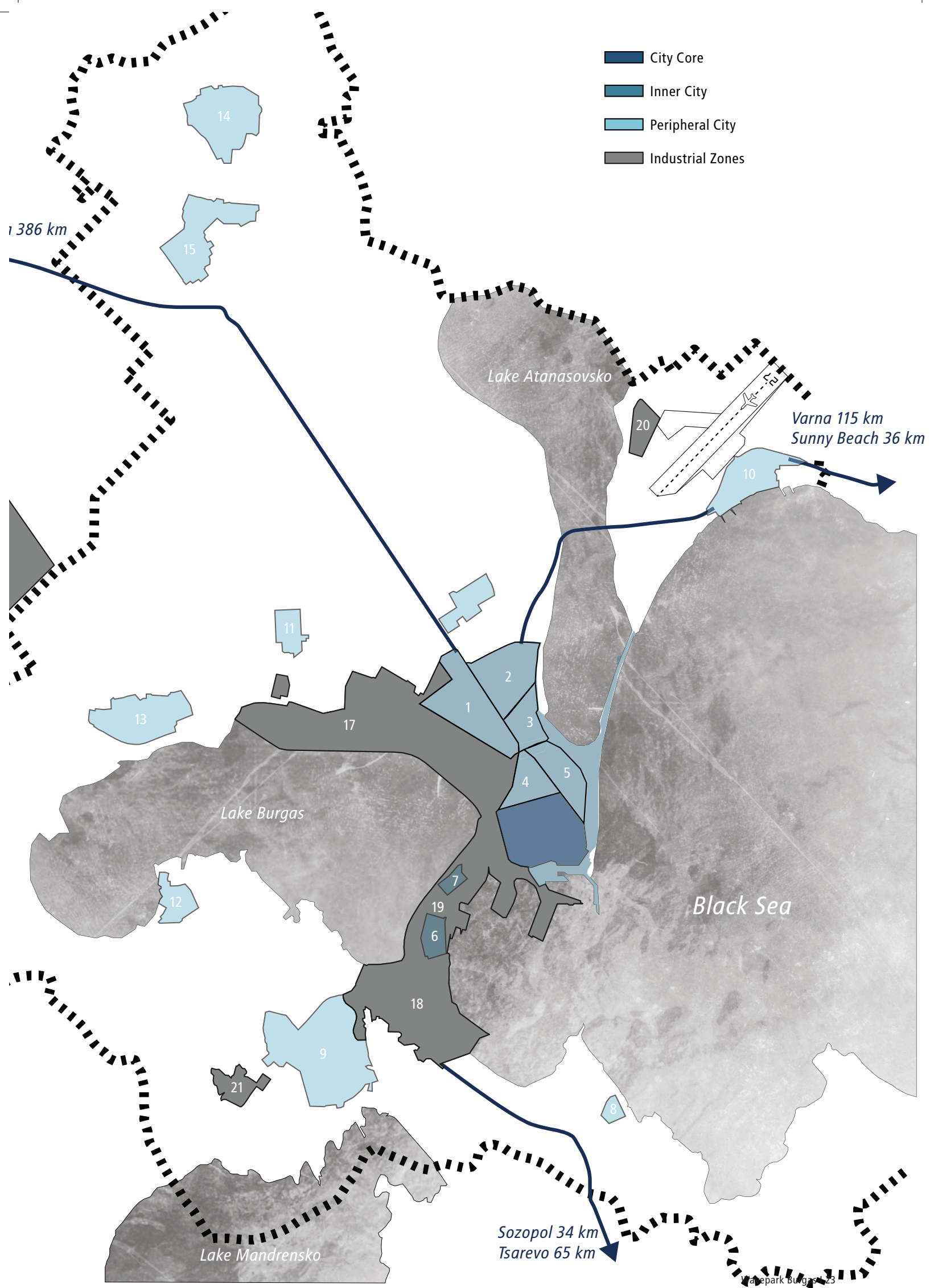
## Industrial zones:

The city of Burgas is an important industrial, trade, transport and touristic center. It has several distinguished industrial zones: "Sever"(north)(17), "Iug"(south)(18), "Meden Rudnik"(21), "Dolno Ezerovo", "Sarafovo"(20) and "Pobeda"(19). They are embeded in and around the city limits and cover big areas. The port "Burgas", with its trade and storage sevicees is considered as an economically and idustrial active zone. These zones are defined by good infrastructure and access. However the engineering infrastructure is in need of renovation and repair. Most of the buildings are old and in some places ruined. A full assessment and evaluation is needed. A decline in activity has been ongoing in some of the bigger manufacturers, while some enterprises choose to work on reduced capacity. In recent years storage space and smaller enterprises have become more popular in comparison to large production. The proximity of the industrial zone "Sever" to the city of Burgas has led to the building of malls and retail stores for some of the bigger chains. One of the most important zone for the city is the Port "Burgas". It is the major import and export hub for the regional industry, as well as entry point for tourist using water transport.



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fig 14::Industrial Zones Burgas





### *Air Transport:*

The international airport Burgas is situated in the Sarafovo neighbourhood, approximately 8 km north-east from the city center, and 10 km from the port and the industrial zone.

The development of the airport is directly linked with the forming of the South Black Sea coast as the center of international and national tourism. It is characterized with strong seasonal usage. The airport itself was founded in 1947, while in 1963 a concrete runway was made with a distance of 2600 m. In 1979 this runway was expanded to 3200m, which serves the heaviest airplanes BOEING 747 Jumbo and AN 124 Ruslan, making it the 3rd longest runway on the Balkan peninsula. The airport has a surface of almost 2,600 decares.

In 2013 the airport has served more than 2,500,000 people. Early in 2014 a new terminal has started functioning, with a maximum capacity of 2,500 people/hour.

### *Road Network:*

Burgas has a good road network system in comparison to other regions in Bulgaria. Two major international roads pass through the city: I-6 (Macedonia - Sofia - Karnobat - Burgas) and I-9 (Romania - Varna - Burgas - Malko Tarnovo - M. Tarnovo border checkpoint). State road II-79 (Elhovo - Sredets - Burgas) has a major regional importance in connecting Burgas with neighbouring municipalities from the Strandja - Sakar region. The shortest connection between the ports of Burgas and Alexandroupoli can be achieved via this road.

State road II-99 (Kraimorie - Sozopol - Tsarevo - Malko Tarnovo) is really important as it provides the main road connection from the city to the south part of the Black Sea coast. The region has a total of 51,4 km of motorways, 249 km of first class roads, 261 km of second class roads and 608,6 km of third class roads. The latter serve as a connection between the major roads.

### *Railroad Network:*

The city of Burgas is the end station of the 8th state railroad track (Plovdiv - Filipovo - Karnobat - Burgas), starting from the second biggest city in the country, Plovdiv. Through the city of Karnobat, a connection is made with the 3rd state railroad track on the line Sofia - Karlovo - Karnobat - Sindel - Varna. The two railroads service the national and international trade corridors, which allows for combined transportation of goods throughout the country and neighbouring nations.

An additional industrial railroad exist for major enterprises such as: Port of Burgas, Industrial zones "Iztok" and "Zapad" and Dolno Ezerovo-Debelt



fig 15::Major Roads in Bulgaria

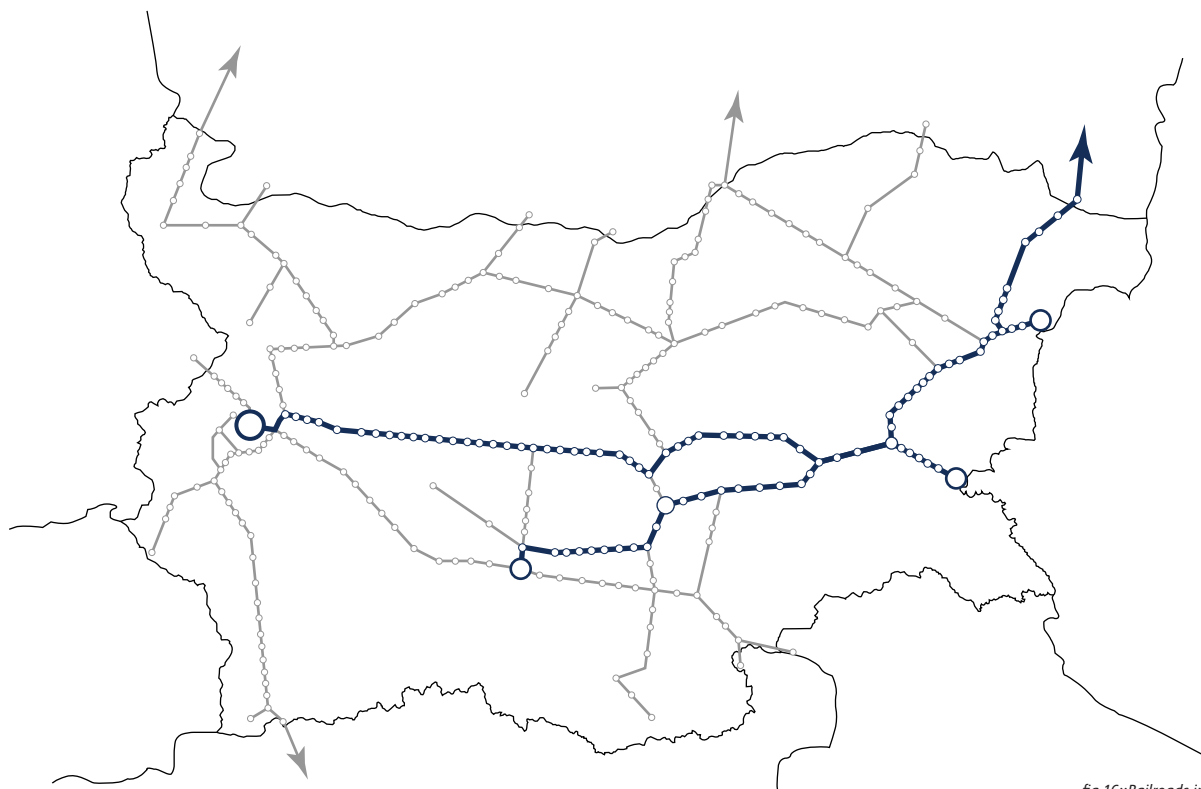


fig 16::Railroads in Bulgaria



### *Public Transport:*

Due to the numerous lakes and the Black Sea surrounding Burgas, and its branch-like structure connecting the City Core with the suburbs, public transport is extremely important for Burgas. Unfortunately the resources are limited and the present condition is extremely unsatisfying, so the majority of people prefer other means of transportation, which puts a lot of pressure on the infrastructure of the city and the requirement for sufficient parking spaces

### *Water Transport:*

The city of Burgas benefits from a strong water transportation network. There are 4 ports that service the needs for public transportation and 3 ports for special use.

#### *Public Ports:*

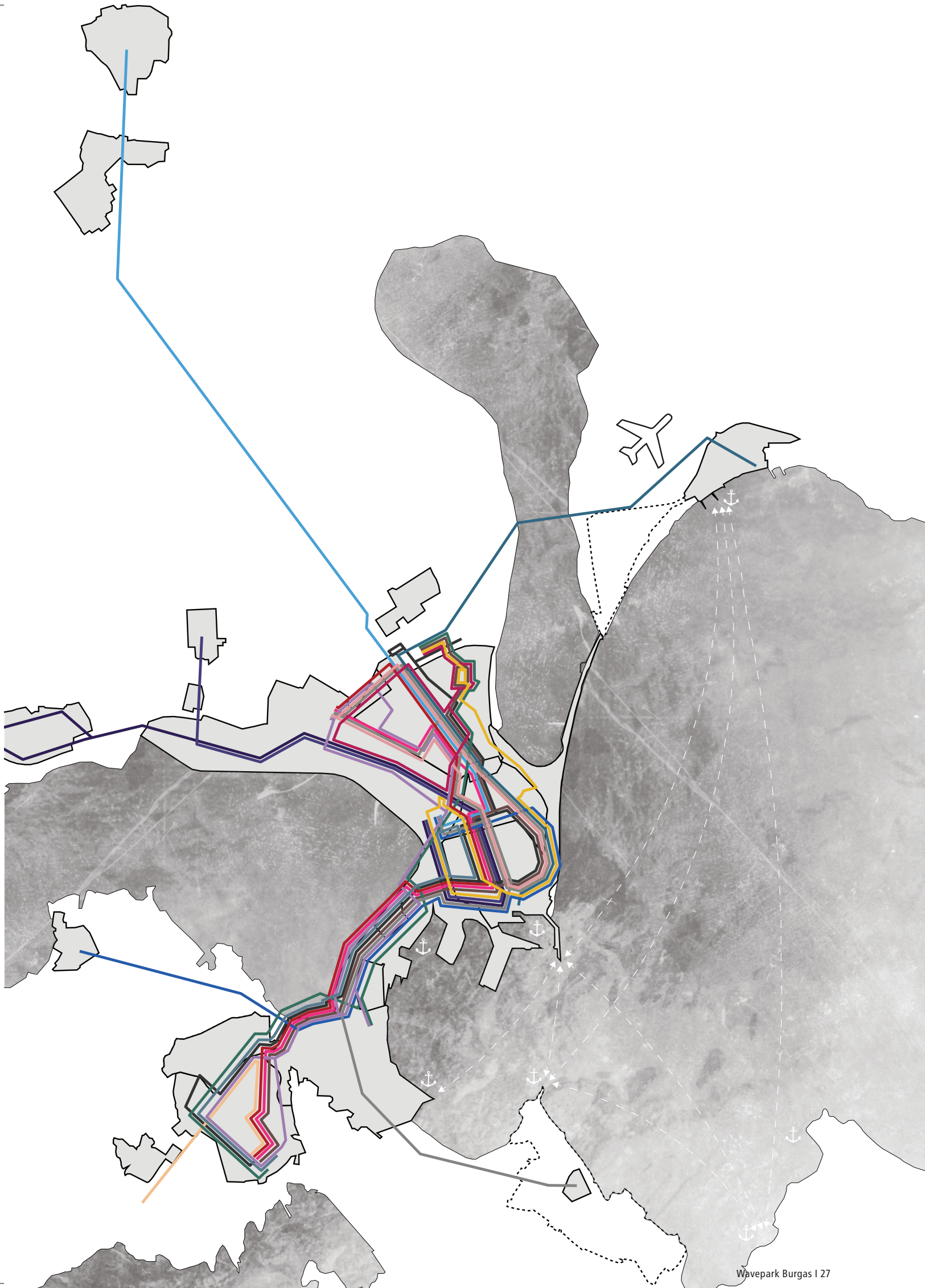
- Burgas Zapad Port
- Burgas Iztok Port
- Fishermans Port
- Rosenets Port

#### *Special Use Ports:*

- Port "Koraboremonten Zavod"
- Port "Transstroj"
- Port "Burgaski Korabostroitelnici"



fig 17::Public Transport in Burgas



## *Conclusion and Future development plans:*

Due to its particular landscape, the city of Burgas has evolved and developed around the existing natural borders created by the three lakes located northeast, west and southeast and the Black Sea located to the east. The city has made full use of the limited territory, creating a central urban part (core), expanding out via five transport "branches", each ending with a district that has its own secondary urban structure. This puts extreme pressure on the transport infrastructure, as it is the only connection between the different city districts. These urban structures have developed secondary city cores, which are of great importance for Burgas and the creation of a quality city structure. The remoteness of most of the neighbourhoods imposes the necessity of such well established secondary city cores, that can provide basic needs for the given urban structure. Those districts have started out as former villages, which due to their closeness and important relationship to the city, have gradually become a part of it. Each of those villages has its own core, but none of those cores are considered as a secondary city core to Burgas.

Few cities have the geographical and urban structure Burgas has. Its disperse urban areas all have different potential, history, infrastructure and concentration of multiple activities with national importance (port, airport, multiple train stations). These are all prepositions for the creation of quality intermodal transport. This will have a positive effect on the industrial zones, which possess great areas that are not being used to their full potential and where there is a number of abandoned or unused areas. The state of decay these zones find themselves in can be easily turned around with the improvement of the ease of access to them and more active public-private partnerships. Alongside the ever growing population of Burgas and the expansion of its territories, these zones are going to have an important plan for the future urban development of the city. Relocating the existing heavy industry and industrial enterprises outside the city limits can open those unused areas for the creation of business parks and sport complexes, creating a more desirable environment for the city of Burgas. This is all part of the "Integrated plan for urban reconstruction and development of Burgas", and the future of the city.

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fig 18.:Future Development Zones Burgas



- City of Burgas border
- Protected Areas
- Development Border
- Main Roads
- City of Burgas
- ▨ Future Development Zones

Sofia 386 km

Lake Atanasovsko

Varna 115 km  
Sunny Beach 36 km

Lake Burgas

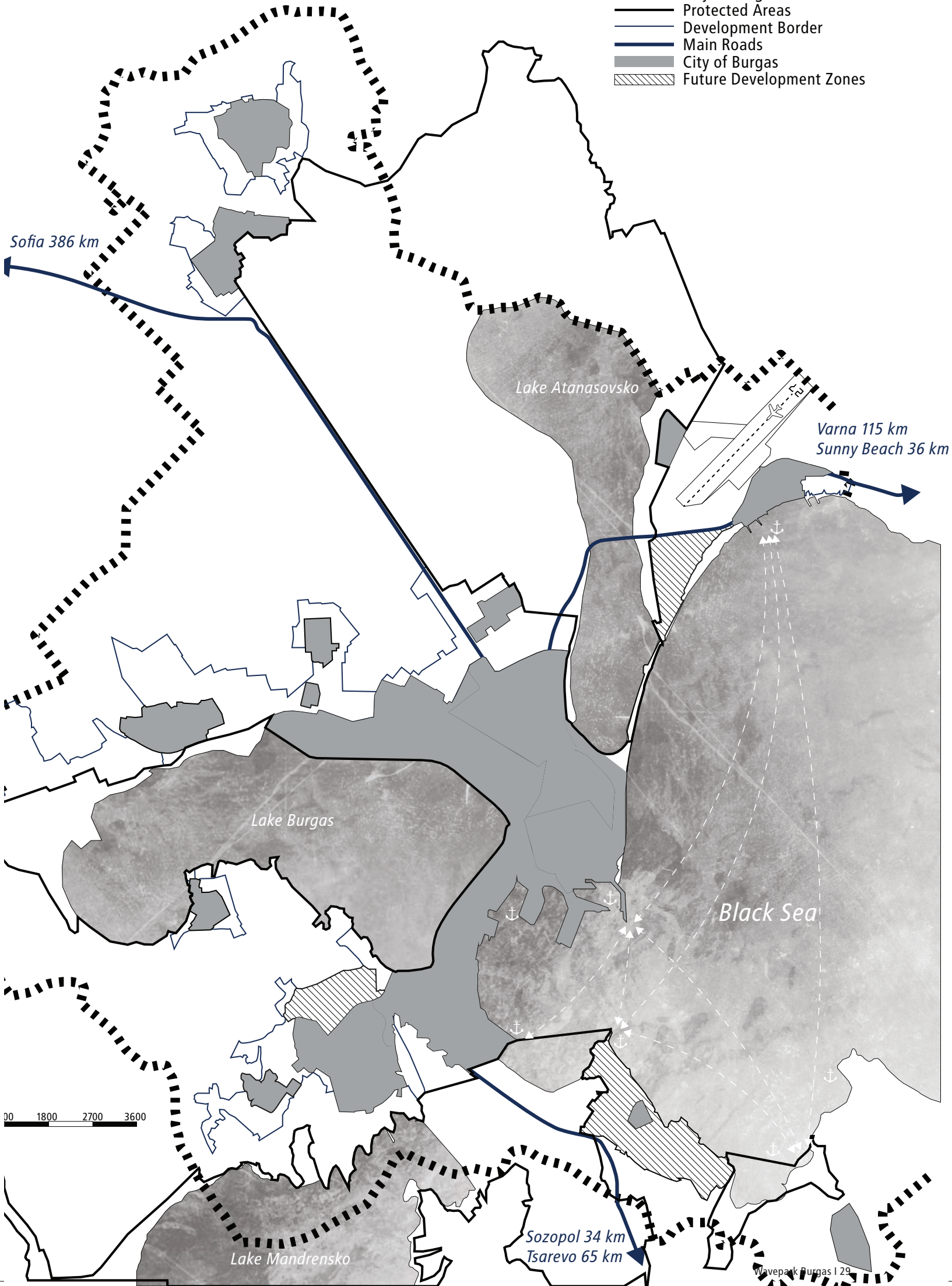
Black Sea

Lake Mandrensko

Sozopol 34 km  
Tsarevo 65 km

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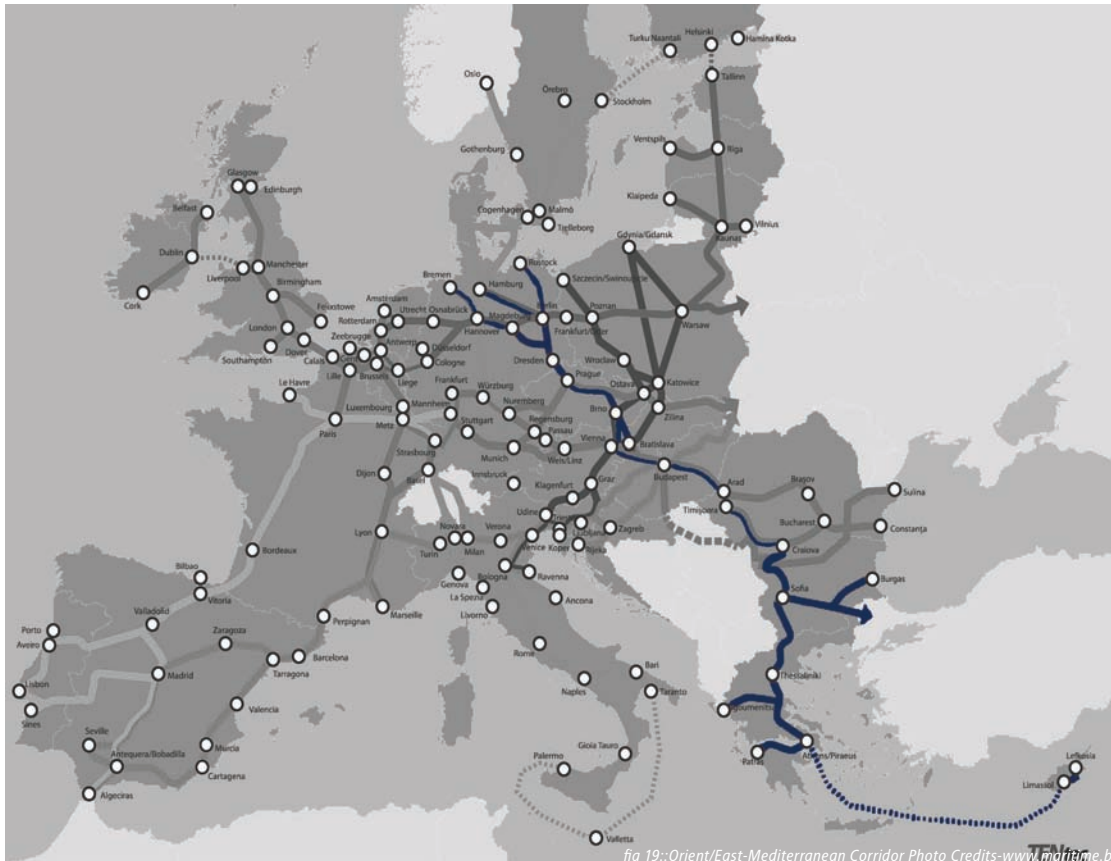


fig 19.:Orient/East-Mediterranean Corridor Photo Credits-www.morime.bg

## Economy

The economy as a science is a complex matter defined and influenced by many factors. Analysing the processes that make up and define the economy of a city such as Burgas is going to be a difficult and time consuming job. That is why I have directed my attention to several documents which will provide invaluable information and insight for the way Burgas and the Burgas region are developing and the plans they have set for themselves. Those documents are as follows:

- Integrated plan for urban reconstruction and development of the city of Burgas
- Strategy for sustainable development of the tourism in Bulgaria 2014-2030
- National strategy for regional development of the republik of Bulgaria for the period of 2012-2022 (mainly focusing on the Southeast region)
- Project for Integrated Maritime Strategy of the Republic of Bulgaria

The economy can be seen as an aggregation of different sectors- industry, transport, tourism, agriculture, more or less depending on the environment. Economy of the Black Sea region is based on the close relation with the sea as a waterway and a connection to the world. Through ports, trading can be extremely beneficial. Burgas is a part of the Orient/East-Mediterranean Corridor of the "TEN-T" infrastructure that connects the German ports of Bremen, Hamburg and Rostock with the ports on the Black (Burgas) ,Aegean (Athens) and Mediterranean (Patra) Seas through the Czech Republic, Slovakia,

Romania, Bulgaria and Greece. This corridor connects railways and main roads, important ports and airports throughout its path. It is also a part of the eight Pan-European transport corridor(Durrës - Elbasan - Skopje - Sofia - Plovdiv - Burgas - Varna, 1,500 km). Both are major European trading arteries.

The most profitable sector in the Southeast region is the service sector, mainly tourism, which forms 51.04% of the Gross Added Value with an average of 63.82% for the country. The second biggest economy sector is the industry. It is an important part for the regional economy with 43.14% with an average of 31.34% for the country. At number three, the agricultural sector forms 5.82% of the GAV for the region with an average of 4.84% for the country. In GDP per capita for 2014, the Burgas region has 9 819 BGN with an average of 11 574 BGN for the country.[1]







fig 20.: Pan European Corridors Photo Credits-Wikipedia





fig 21::Port of Burgas Photo Credit-<http://socbg.com>



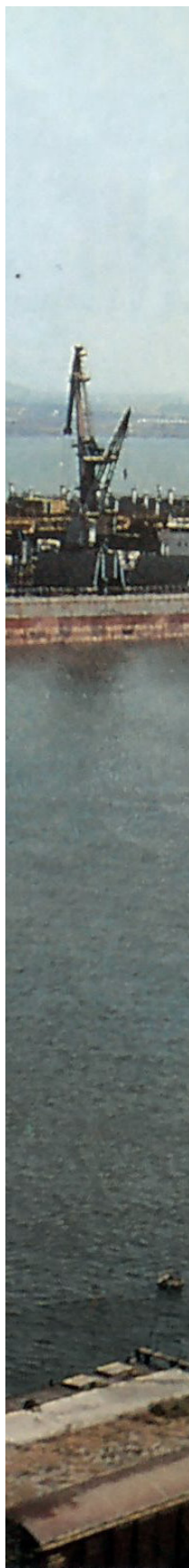


fig 22::Lukoil Refinery Photo Credit-<http://www.aktor.gr>

## Industry:

Industry is the main economy-defining sector in the municipality of Burgas with 86.2% of production. The main subsectors of the industry are: chemical and petrochemical industry, food industry, electronic and machine building, shipbuilding, textile industry and energy.

"Lukoil Neftohim Burgas" is the biggest oil refinery in South-eastern Europe and the biggest industrial enterprise in Bulgaria. Owned by the Russian petroleum giant "Lukoil", it is the biggest privately owned contributor to the budget income of the country. It is the main producer and distributor of liquid fuels, petrochemicals and polymers for Bulgaria and the region, and one of the leading companies in its sector in Europe. It has the capacity of refining 9.5 million tons of raw petroleum per year. During the period of 2008-2010, investments of over 500 million USD have been made, and during 2012 a new investment, exceeding 1 billion USD, has been made for the creation of an ultra-modern technological complex for deep processing of oil tar with a capacity of 2.5 million tons per year and thus opening 3000 new work spaces.

The food industry is the second sector of importance for the economy of Burgas. The city is famous for its specialized facilities for aquacultures. There are 21 facilities for cultivating carp, 1 for cultivating trout species and 4 mussel farms. In Burgas there are 3 specialized warehouses for storing fresh fish as well as 12 fish processing factories. These factories have national and regional importance. The leading one is "Atlantik Group", which specializes in import and export of

fish and fish products and the production of mussels and sea bass in a recirculating farm in the city of Burgas.

The municipality foresees the development of a modern fishing port along with a fish market in the district of Sarafovo, aiming to increase the number of fishing boats and small ships as well as developing the infrastructure in the area.

The electrical and electronics industry is the third strongest branch of the economic structure in Burgas. It is represented mainly by the production of cables and electronic instruments. One of the main enterprises in the city is "Elkabel", designing, manufacturing and sales of power, control and telephone cables and materials needed for their production. "Belkom" is another firm that produces, sells and services equipment for power systems.

Machine building and metalworking is another strong representative for the economy in the area. Enterprises such as "Metalni Izdelia" and "Metalni paneli i konstrukcii" produce wire, both soft and hard, as well as galvanized and welding wire, metal constructions and panels, etc.

For 2014 the GAV in the industry sector was 558 million BGN, whereas the GAV in the services sector was 2 380 million BGN, four times as much[2].



# Tourism

Bulgaria is situated in Southeast Europe and in the Northeast part of the Balkan peninsula. The country's geographical location, bordering the Danube river and the Black Sea, and the fact that it stands on the crossroads between Europe and Asia define its strategic place and importance on the European political map as an international touristic destination. The existence of multiple well established European tourist centers in Bulgaria, the easier border and customs control, the free movement of people, goods and services that came after the country's inclusion in the European Union are some of the main advantages for the past and future development of the tourism industry. Bulgaria has an area of 110,994 sq m but its diverse nature and cultural heritage make it a preferred destination with an abundance of tourist possibilities and potential. The Black Sea coast spreads on 378 km, including over 209 beaches, picturesque bays and dunes. Nine UNESCO World Heritage Sites are situated all around the country's borders. Seven of them are cultural: *Boyana Church, Madara Rider, Rock-Hewn Churches of Ivanovo, Thracian Tomb of Kazanlak, Ancient City of Nessebar, Rila Monastery, Thracian Tomb of Sveshtari*; and two of them are considered natural heritage sites: *Pirin National Park, Srebarna Nature Reserve*. More than 600 hot springs are scattered throughout the country's diverse nature and geographical landscape.

Around 30% of the territory is covered with mountains, which are extremely diverse in their landscape, and offer their visitors a wide variety of recreation, sport and entertainment options.

Bulgaria's location and the existence of four distinct seasons, its numerous mountains and the Black Sea, partnered with the underdevelopment of cultural, business, rural, spa, natural, religious, hunting and wine tourism has led to the focus on mainly winter(ski) and summer tourism. This however means that the main and most profitable source of tourism is still very seasonal.







fig 23::Pirin National Park Photo Credits-www.unesco.org





fig 24::Boyana Church Credits-Todor Bozhinov



fig 25::Rila Monastery Photo Credits-Wikipedia

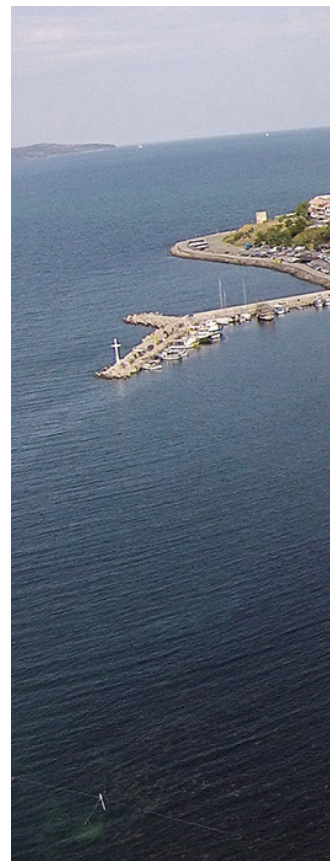


fig 26::Rock Hewn Churches of Ivanovo Photo Credits-<http://weloveyatours.blogspot.co.at>





fig 27.:Madara Rider Photo Credits-Diego Delso



fig 28.:Nessebar Old Town Photo Credits-<http://www.visitnessebar.org>







fig 29::Port Sozopol Photo Credit- Georgi Petev









## Winter(ski) Tourism

There are five mountains which offer great opportunities for ski tourism:

*Rila, Pirin, Rodopi, Vitosha and Stara Planina.*

The average duration of the ski season is around 130 days. There are 36 ski resorts, from which 12 are considered on an international level and 24 that have a regional significance. The most noticeable ski resorts are Bansko, in Pirin Mountain, with 14 ski lifts with a capacity of 23,000 people per hour, Borovets, in Rila Mountain, with 18 ski lifts and a capacity of 16,750 people per hour, Pamporovo, in Rodopi Mountain, with 14 ski lifts and a capacity of 15,000 people per hour. Sofia is one of the few capitols in the world that has direct access to a mountain and a ski resort, but unfortunately, due to political and personal interest the Vitosha Ski zone has currently only one ski lift functioning. The closeness of these mountain resorts to the main transport connections (Sofia Airport, Plovdiv Airport) and the neighbouring countries allows for steady development and rise in the tourism industry. The existence of 45,000 beds in the winter resorts ranks the winter tourism as the second biggest branch in Bulgaria.

Due to this fact, in the past ten years there has been an increase in investment which has led to the rapid overbuilding and unregulated construction in most bulgarian ski resorts. Significant problems for mountain resorts in Bulgaria are the quality and capacity of infrastructure which do not meet the rapid pace of development of resorts and impede access to them, especially during the winter months. The roads leading to these resorts are in poor condition and the quality of service and personnel has proven insufficient. Lack of real marketing concept and marketing strategy in the past and recent years makes it difficult for the unpopular or unknown places of interest to develop and prosper and most of the potential tourist attractions have been neglected by the tourists.[3]

fig 30::Pirin Mountains Rider: Victor Bozhkov Photo Credits-Jordan Bozhkov

# Summer Tourism

*"Bulgaria's 380 kilometre coastline largely offers gentle slopes and comparatively long stretches of dunes and sandy beach, interspersed by the major cities of Varna and Burgas, and historically important towns such as Nesebar and Sozopol. In the 1950s and 1960s, this topography was an open invitation to plan large holiday resorts on an urban scale, with capacities of up to 30,000 beds. In the framework of comprehensive urban plans drawn up by Glavproekt, the central state institute for architecture and urban planning in Sofia, tourism development was purposely concentrated in a few distinct locations so as to preserve as much as possible of the coast's natural assets." [4]*



fig 31::Albena Resort Photo Credits-<http://socbg.com>



fig 32::Zlatni Piasci Resort Photo Credits-<http://socbg.com>

The development of the Bulgarian Black Sea coast and its natural resources started in the mid 1950s when the then socialist country decided to take advantage of its natural treasure, the sea. Responsible for the urban planning and architecture of facilities required for tourism purposes were the people working at Glavproekt, the institute of urban planning and architecture in Sofia. By the late 1960s, the building of four resorts (Golden Sands, Albena, Druzhba, Sunny Beach) was done.

*"Mass tourism was deliberately concentrated in a few high-density resorts in order to avoid coastal sprawl and protect the natural resources so vital to tourism development." [5]*

Much of the pressure for development of such resorts came from the socialist regime and the Constitution of 1948, which states that all employees must have fourteen days of paid holiday, to ensure their relaxation and the regeneration of their productive capabilities. In the next two decades the capacity of the Black Sea resorts has been increased to almost 500,000 beds, including not only hotels but camping sites, holiday houses and more. Up until the mid 1980s there has been a significant rise in the tourist numbers. Architecture was extremely important in the early days of the rise of Bulgarian sea tourism. Architects and urbanists have been given the opportunity to experiment and the Black Sea coast was turned into a testing site for Bulgarian modernism. After the fall of the communist regime in 1989 those numbers suffered a significant drop because of the delicate political situation Bulgaria was in. In

the next twenty-four years this picture has drastically changed in many ways. Due to privatization, the state-owned resorts have been broken down to smaller entities or sold off individually. In 2000 a construction boom took hold of Bulgaria and its touristic attractions not only on the coast, and the resorts that were so carefully planned underwent a radical change. Due to lack of urban planning control and regulation and quick profit most of these modernistic resorts were completely reshaped and in a way devastated by the overbuilding that took place. Albena and Sunny Beach are two holiday resorts which have adopted completely different strategies for dealing with the effects after 1989. One has remained a solid entity, while the other has been broken down to single units. In the next chapter we are going to have a look at both.





fig 33::Sunny Beach Resort Photo Credits-<http://socbg.com>



fig 34::Albena Resort Photo Credits-<http://socbg.com>



*"Today, Albena, with its trademark step pyramid structures, is regarded as the most successful example of adaptation to what Bulgarians laconically refer to as 'the changes' - both economically and in terms of its overall physical planning."* [6]

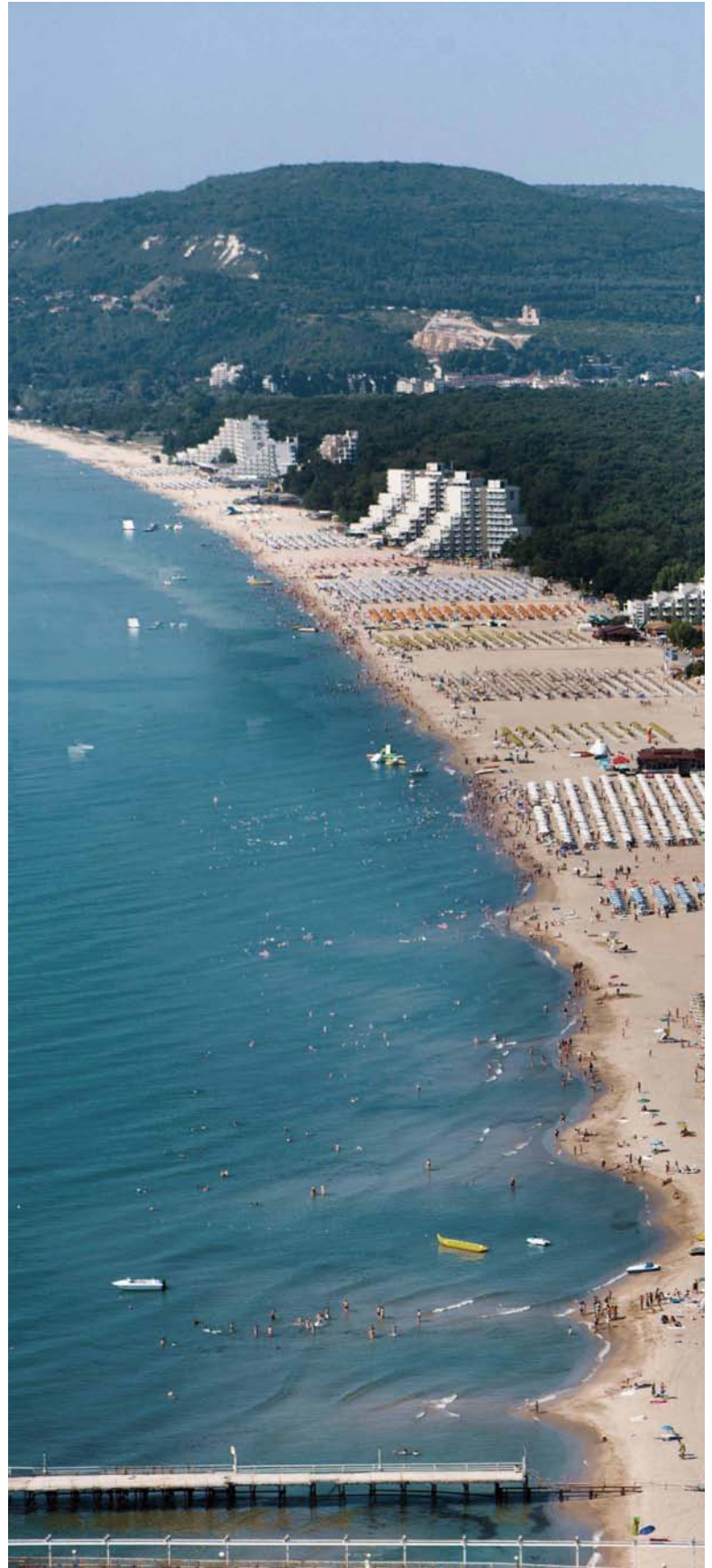






fig 35.: Aerial Photo of Albena Resort. Photo Credits-<http://www.worldcongressipa.com>





fig 36: Al



fig 37: Albena Beach Photo Credits-<http://sc>



# Albena

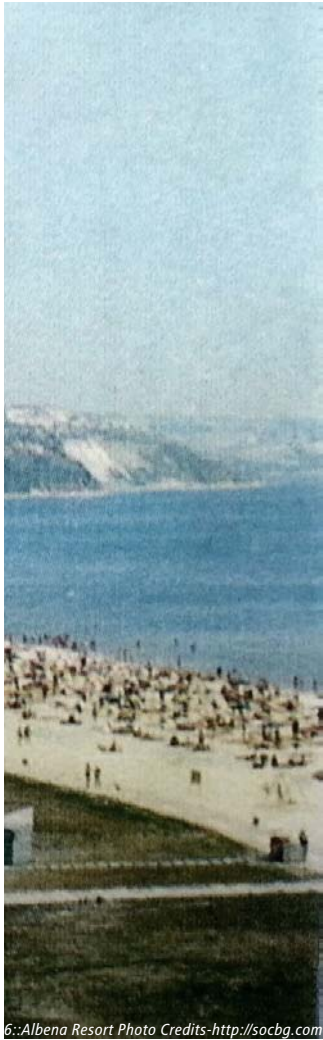


fig 37: Albena Resort Photo Credits-<http://socbg.com>



fig 38: Albena Resort Plan Photo Credits-<http://www.beachbulgaria.com>

After 1989, mass privatization underwent in Bulgaria. Before that state ownership had 100% of assets in the economic sector in the country. Most of the state owned enterprises, in this case the tourism facilities in the Bulgarian resorts, were broken into single entities. But that was not the case for the Albena resort, which remained as a single enterprise and was governed by its previous owners.

*"Planing and constructions of the resort began at the end of the 1960s, on a sweeping stretch of sandy white beach around 10 km north of Golden Sands. Under the aegis of architect Nikolay Nenov, the entire resort was designed as a single functional entity, in a uniform style. Besides hotel buildings, chalet parks and camping sites, the master plan proposed five restaurants, a bar-cabaret, a casino, a shopping centre, leisure areas, and an all-year-round health centre. By the mid 1970s, the resort was had around 14,000 beds and its construction was largely complete."* [7]

They were keen to save and preserve the positive features of the previous urban plan. The project was divided into four zones, every one of them having a different function. Hotels and restaurants are interlaced, creating semi-private green spaces, form one part of the complex. Six hotels, rising higher than the other buildings form the second zone, placed neatly on the seashore. Behind them, the so-called green zone is placed, further away from the beach. Sporting facilities and administrative buildings form the fourth and last zone for recreational activity. Pedestrian streets complement

the complex, which remains largely closed off for vehicles. After acquiring the majority stake of the resort with the help of Banque Nationale de Paris, the plan was to either rejuvenate or completely replace the old buildings sticking with the old master plan and the number of beds proposed. Abstaining from the current construction boom after 2000 proved vital for maintaining the quality of the product provided.

*"The original holiday resort concept was upgraded continually under state socialism, and has progressed likewise since 1989. Albena thus remains a perfectly self-contained and comprehensively planned holiday enclave that can cater to a tourist's every wish, from a welcome cocktail to a beach parasol. And the resort's urban silhouette serves as its trademark to this day."* [9]

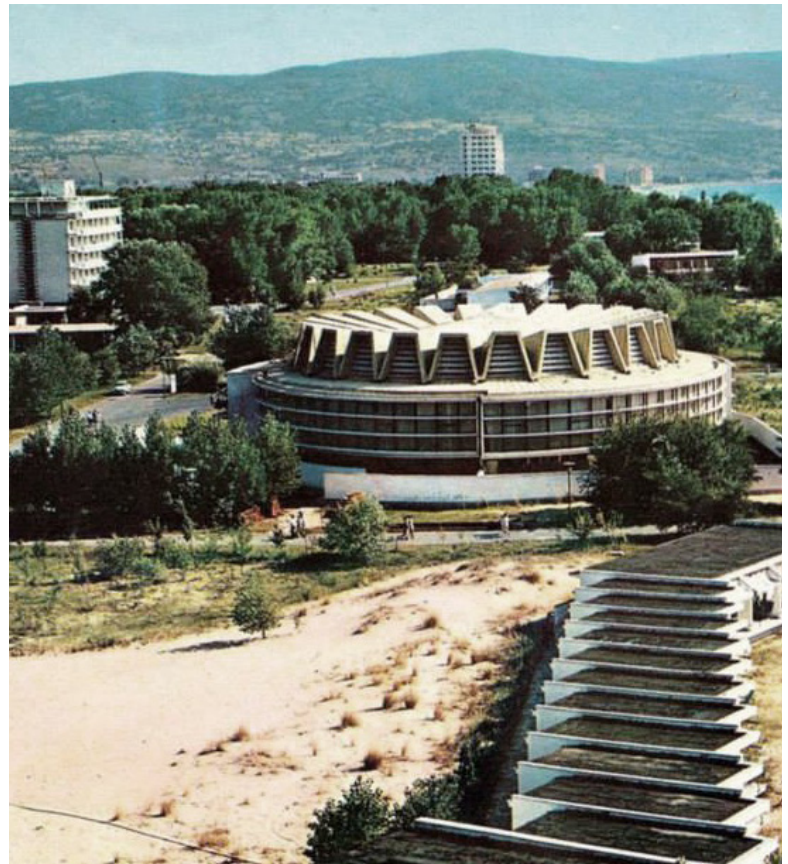
# Sunny Beach

Sunny Beach was one of the resorts marking the Bulgarian summer tourism start. It followed the same rules and principles set by Glavproekt. Placed on a sweeping bay near Nessebar, it offered more opportunities for growth than other summer resorts at the time. The sheer size of the complex meant that privatization as a single unit, as was the case with Albena, was not possible. The resort was divided into small single units and sold off. Those deals were in the gray zone, non-transparent and open to corruption. In the years to come Sunny Beach would experience Bulgaria's construction boom to the fullest, changing dramatically in the process. In the early 2000s major local and foreign investments were made, alongside EU funding, which triggered the revitalizations and renewing of many old hotels, that were upgraded to meet international standards. The growing numbers of flocking tourists, the renowned stature as a top summer retreat and the infrastructure made Sunny Beach an appealing option for investors. In the next years Sunny Beach was completely transformed.

*"The resort's number of beds - circa 27,000 in the late 1980s, and hence already at the planned maximum capacity - was reported to be 40,000 in 2004. By 2010, it was estimated that 150,000 beds were available in Sunny Beach alone, and the same number again in the unbroken string of hotels on the coastal strip around Nessebar, which had engulfed the original villages and towns. The estimated total figure for the resort and its environs was therefore around 300,000 - exact numbers are not available, given that newly built apartment complexes and so-called 'apart-hotels' were not necessarily classified as tourist accommodation."*[9]

A mix of architecture styles can be seen throughout the resort after the construction boom in 2000. Oversized hotels depicting the most lavish architectural styles, seemed to sprawl up like mushrooms, some even merely meters from the water front. Ornaments were the choice for many investors, some of which had a conspicuous past and source of income. Urban planning was brushed aside to make way for quick profit, and thus dense buildings sprouted along the carefully planned facilities from the past. The lack of a current master plan and enforcing local authorities meant that new complexes and hotels populated every available site, leaving construction regulations aside. The existing infrastructure, meant at first to facilitate 30,000 people, cannot cope with the sheer numbers of incoming tourists and the newly forming buildings.

The green spaces designed by Glavproekt are now a thing of the past, overcrowded by restaurants, night clubs and street vendors. Local authorities seem to have turned the other way around for the right amount of motivation. When Bulgaria was accepted in the EU, a new law focused on creating and enforcing binding regulations was passed. It was all but too late, the damage had been done. The new law was set to come into force in 2008, which gave plenty of time for hotel owners to legalize their real estates. The financial crisis that came in 2008, put a temporary halt to new construction, but by then it was far too late, Sunny Beach had become a place for cheap drinking and partying, relaxation and nature put aside. This left the resort filled with unfinished buildings, nestled neatly in between five and four star hotels.



Until the crisis, 'apart-hotels' were extremely popular. These are holiday complexes that are not classified as hotels by the Ministry of Tourism, leaving ways and loopholes to bypass the previous laws that were enforced. They are designed specifically for foreign tourists, often being sold before they were even finished.





fig 39::Sunny Beach Resort, Bar Variette 1965 Photo Credits-<http://socbg.com>



fig 40::Sunny Beach Photo Credit-<http://www.lostbulgaria.com/>



fig 41::Sunny Beach Photo Credits-<http://socbg.com>





fig 42::Sunny Beach Resort, Bar Variette 2016

*"Once lavishly landscaped resorts more or less ceded to massive building sites or densely built tourist traps, thrown up at random, with no regard for planning. As in the notorious case of Sunny Beach, these are now renowned for cheap, binge-drinking, party-hopping tourism of a sort travel guides rarely recommend. One exception is Albena, a resort whose centralized management had the foresight to retain and upgrade the tourist product developed there over several decades." [10]*



fig 43::Sunny Beach, 2016 Photo Credits-Georgi Petev





fig 44::Sunny Beach, 2016 Photo Credit-<http://socbg.com>



fig 45::Sunny Beach, 2016

**T**he green spaces designed by Glavproekt are now a thing of the past, overcrowded by restaurants, night clubs and street vendors. Local authorities seem to have turned the other way around for the right amount of motivation. When Bulgaria was accepted in the EU, a new law focused on creating and enforcing binding regulations was passed. It was all but too late, the damage had been done. The new law was set to come into force in 2008, which gave plenty of time for hotel owners to legalize their real estates. The financial crisis that came in 2008, put a temporary halt to new construction, but by then it was far too late, Sunny Beach had become a place for cheap drinking and partying, relaxation and nature put aside. This left the resort filled with unfinished buildings, nestled neatly in between five and four star hotels.

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"This sad truth can no longer be ignored, as many stakeholders in the Bulgarian tourism sector were forced to admit, at the latest when the financial crisis hit in 2008. Tourism associations and the Ministry of the Economy are therefore now pursuing both regional and national strategies to turn the international spotlight away from sun, sea and sand package deals, and to polish Bulgaria's image as a place for high-end packages in the cultural, wellness and alternative tourism sectors." [11]

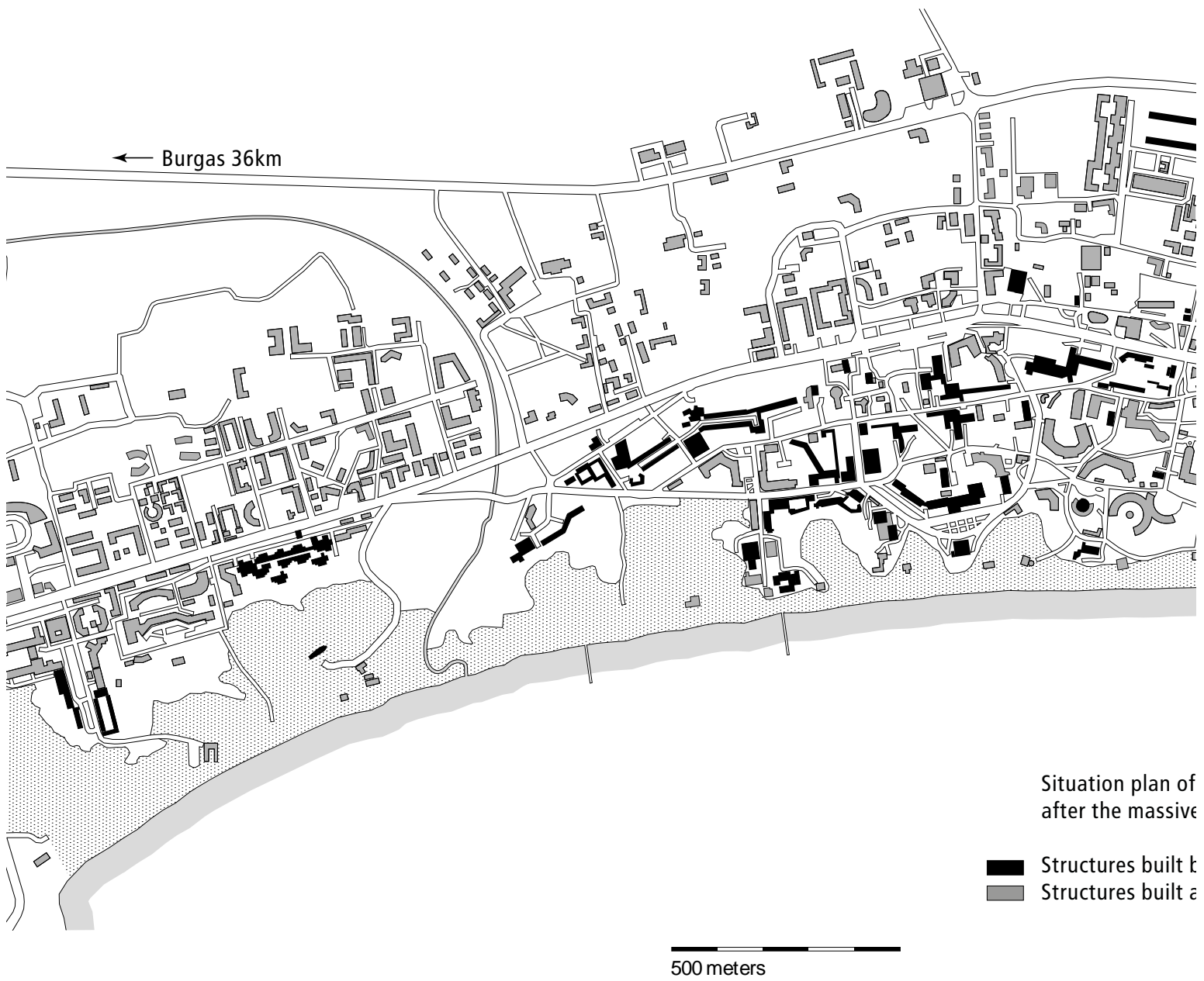


500 meters

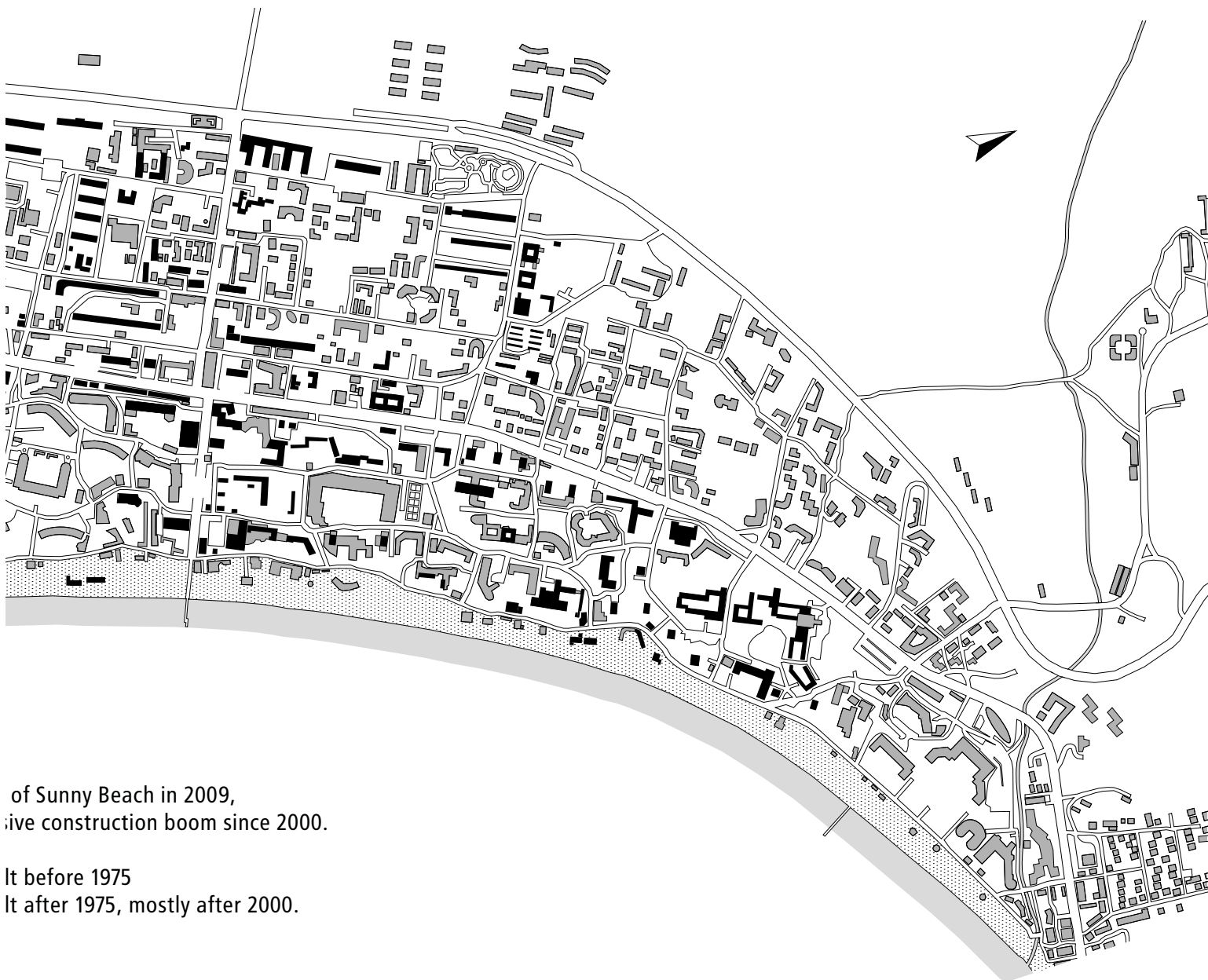




fig 46::Sunny Beach, Structures Built Before 1975 Diagram Credit - Anke Hagemann, "Holidays After The Fall"







of Sunny Beach in 2009,  
 ive construction boom since 2000.

It before 1975  
 It after 1975, mostly after 2000.

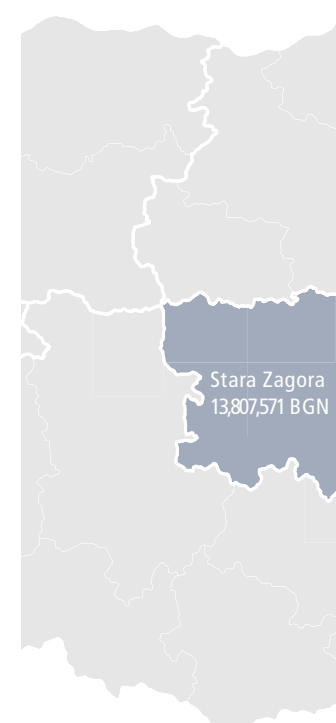
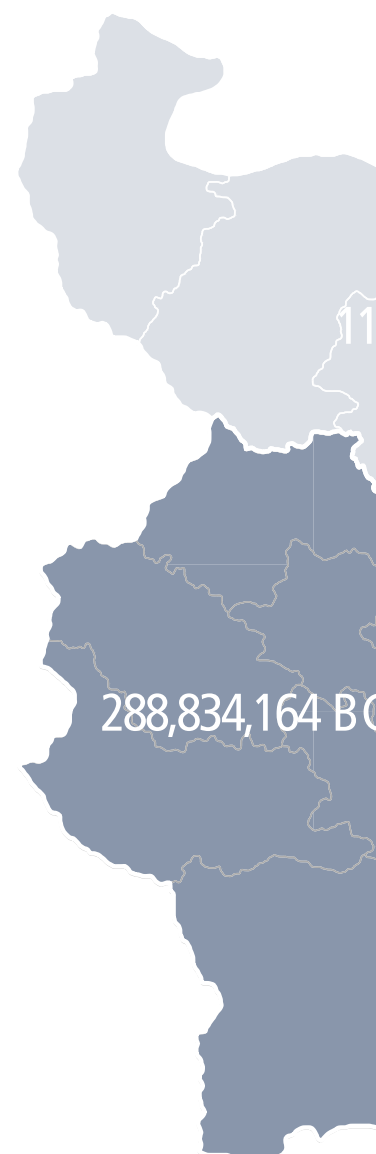
fig 47::Situation Plan of Sunny Beach in 2009 Diagram Credit - Anke Hagemann, "Holidays After The Fall"

# Tourism and Burgas Today

*"In Bulgaria, there is substantial public interest in the Black Sea coast both as a major economic factor and a popular holiday destination. Its development has been closely observed by economists and geographers, and several excellent ethnographic and cultural history studies have examined Bulgarian society in the light of tourism. Construction for the tourism industry is also an appreciable factor for the Bulgarian architectural profession."*[11]

Tourism has a vital role for the economy of the Burgas area. It is a leading economical sector, contributing to the local economy, stimulating the development of similar sectors, such as trade, communications and other services. It forms 51.04% of the regions GVA [13] overtaking the industry sector, which forms 43.14%. The Southeast region holds the number one spot for most income from lodging. It has received just over 381 m BGN for 2015, while the Northeast region (again, situated on the coast) received around 319 m BGN, 24% less. The third place is taken by the Southwest region, with around 197 m BGN. In the Southeast, for 2015, the Burgas area, with all its municipalities had an income of 362 m BGN generated by guests in lodging facilities, leaving the other areas of Sliven, Stara Zagora and Yambol with 19 m BGN to be divided among them. This staggering difference shows just how big of an importance the Black Sea factor is. Another interesting fact that comes up when reviewing this data is the income generated by foreign tourists. Out of the 381 m BGN generated for 2015, 305 m BGN have been from international guests, which is almost 74%. [14]

*"Development of the coast for millions of holidaymakers laid the foundations for an economic sector that was vital to Bulgaria under state socialism, and has remained so under capitalism."* [15]





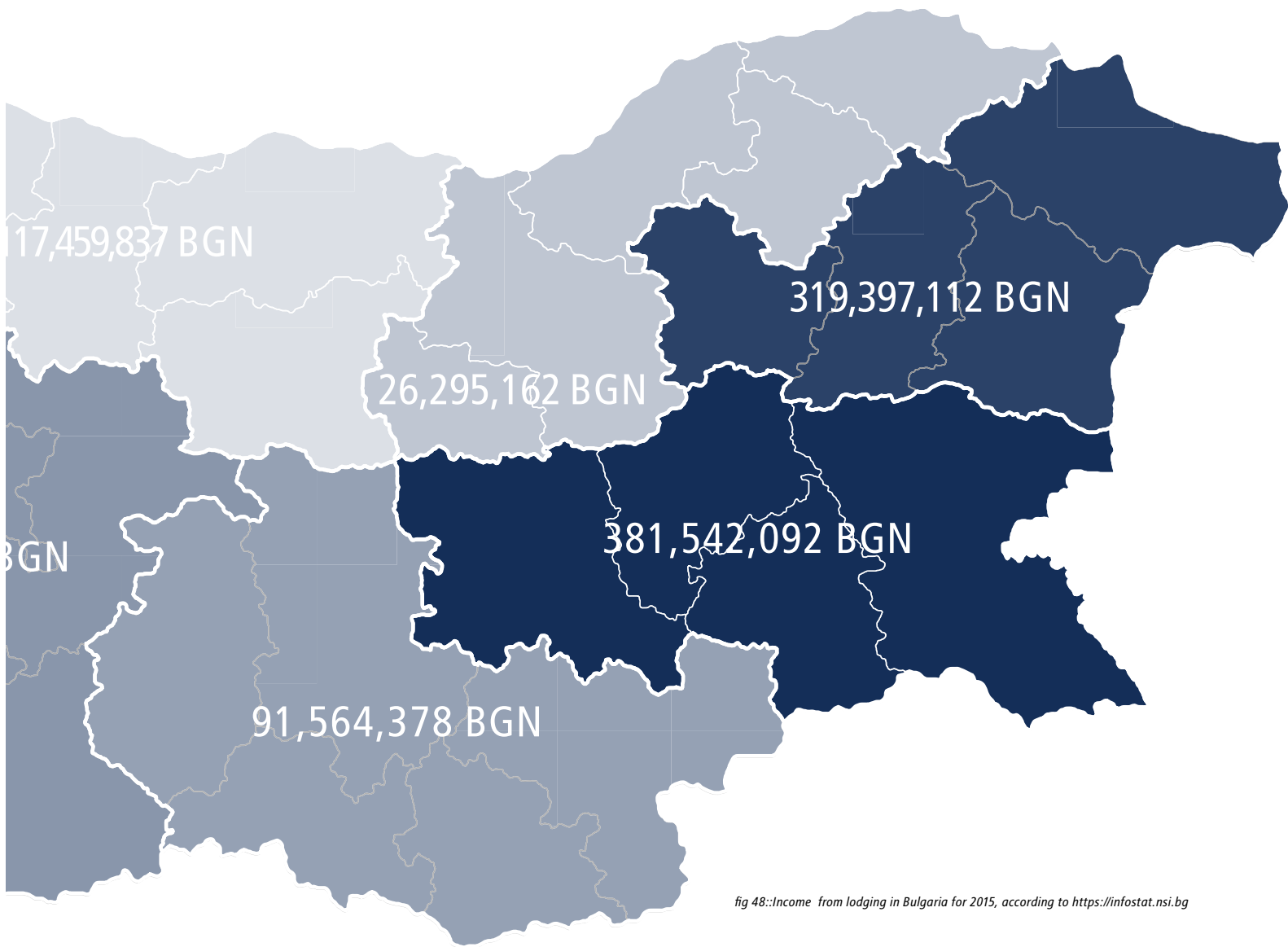


fig 48::Income from lodging in Bulgaria for 2015, according to <https://infostat.nsi.bg>

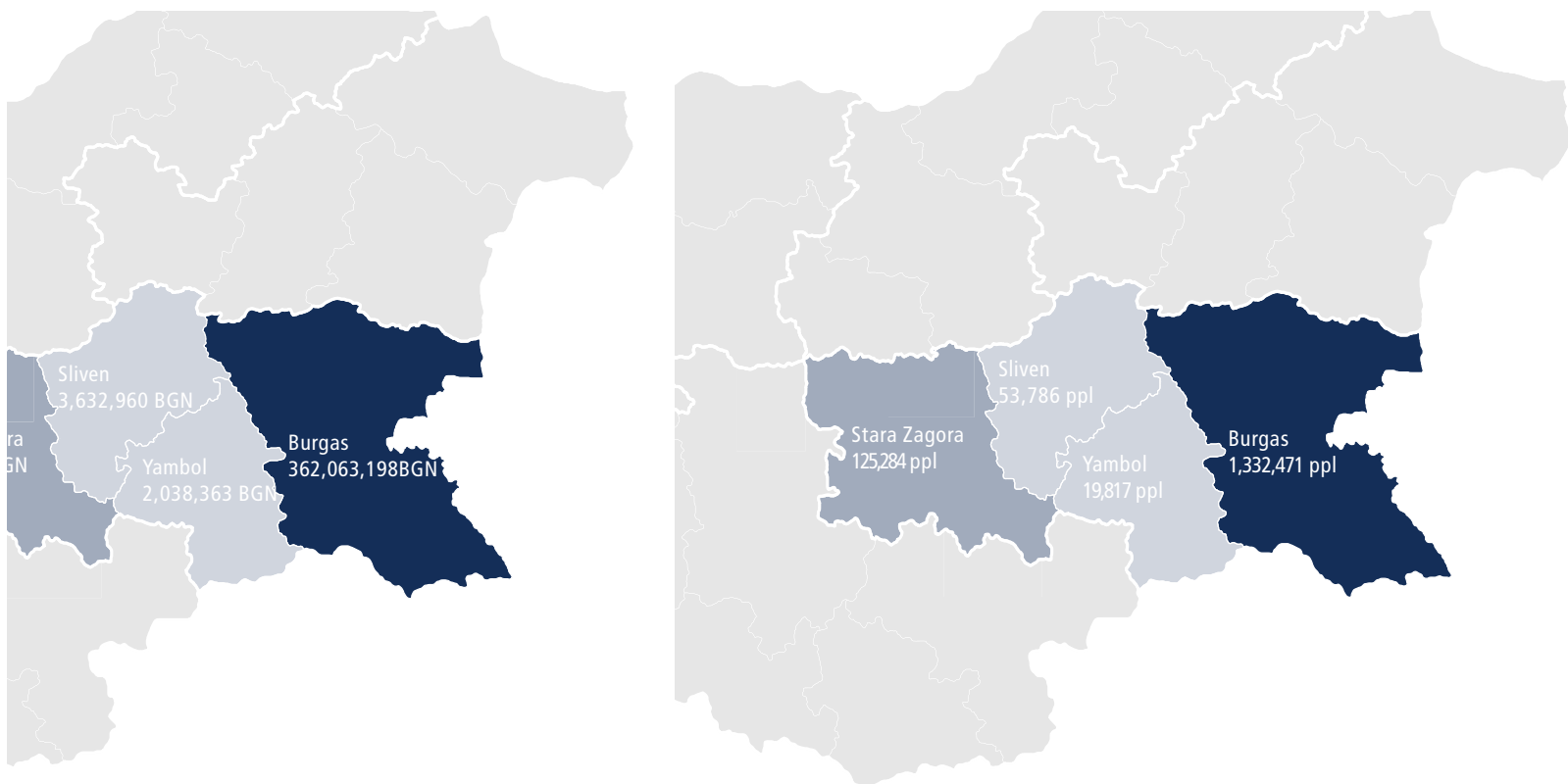


fig 49::Income from lodging in the Southeast Region for 2015, according to <https://infostat.nsi.bg>

fig 50::Number of People using lodging for 2015, according to <https://infostat.nsi.bg>

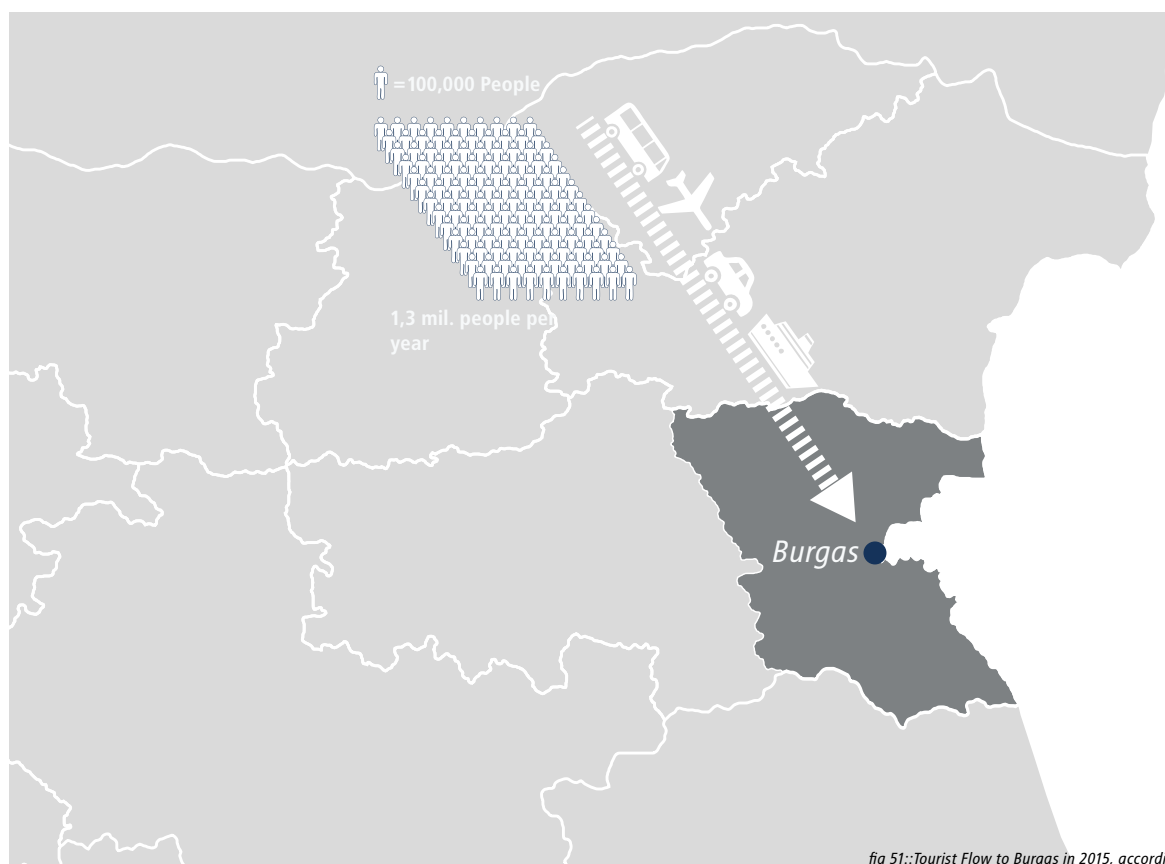


fig 51::Tourist Flow to Burgas in 2015, according to <https://infostat.nsi.bg>

The city of Burgas, being an intermodal transportation hub for the southern Black Sea coast, is the main entry point for international summer tourists. The Burgas airport has recorded an international scheduled passenger traffic of 675,000 passengers for 2014, ahead of Bulgaria's other "sea" airport Varna, which had 397,000 passengers for the same year. The leading airport in international scheduled passenger traffic is Sofia Airport, with a total of 3,336,000 passengers. Burgas is the leader in international charter flights with 1.8 m passengers for 2014, ahead of both Sofia (1.2 m) and Varna (854,000). For 2014, the total number of passengers, who arrived by air transport in Burgas is 2.475 m, twice the amount that arrived in Varna (1.25 m).[16]

The touristic flow to the Burgas area has been steadily increasing, ever since the big decline witnessed around the financial crisis in 2008. In 2010, 908,508 people have used hotels or other form of lodging. In 2015 this number was 1,332,471. An increase of 42.82 %.. However a small amount of those people have chosen the city of Burgas as their preferred destination, and after arriving, have chosen to spend their time and money in the various resorts in the region. Around 10 % of the arriving tourist have remained in the city, which adds up to 131,625 people, or an income of 17.5 m BGN. The majority of people (67.7%) have chosen the municipality of Nessebar, mainly the resort Sunny Beach, which has the highest concentration of beds for a Bulgarian resort, contributing to the income of the municipality with 270 m BGN. Other significant tourist end points are the municipalities of Sozopol (7.3%), Primorsko (6.11%), Tsarevo (4.1%) and Pomorie (3.9%). This statistic shows that the city of Burgas is seen as a transportation gateway, a hub distributing people to other resorts in the region. The aim of the municipality is to attract and retain tourists through sustainable development of the infrastructure and diversification of the tourist product through the development of alternative forms of tourism - spa, ecotourism, sports tourism, sea and fishing attractions. Offering a wider and broader spectrum of touristic attractions, as well as utilising the potential of the existing ones will benefit the tourism sector of the city and increase the number of people, willing to remain in Burgas, increasing the income for the municipality.

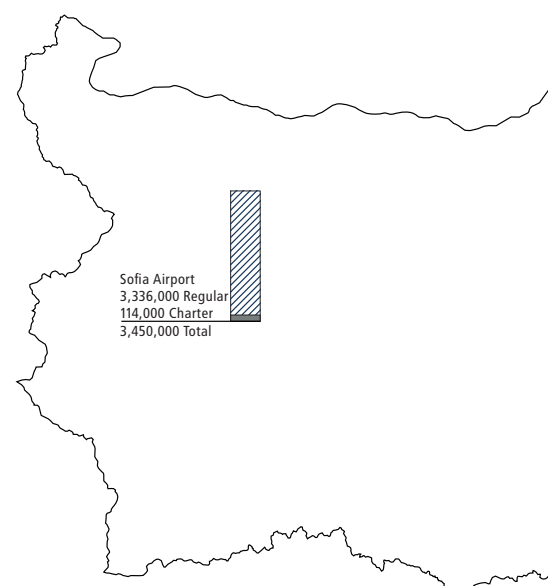


fig 52::Air traffic in Sofia

The increase in the tourism flow in the city and suburban areas will greatly enhance the economy, opening up new working places and pouring foreign money in the local economy.

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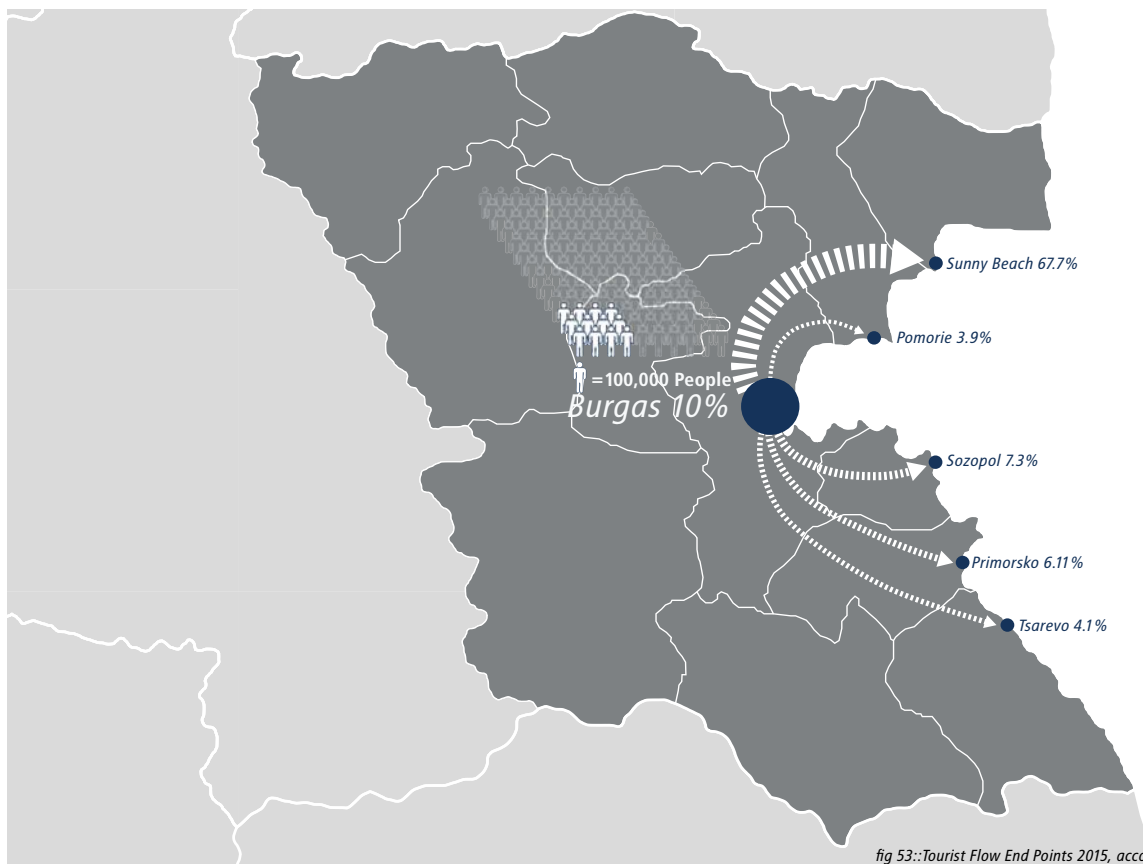
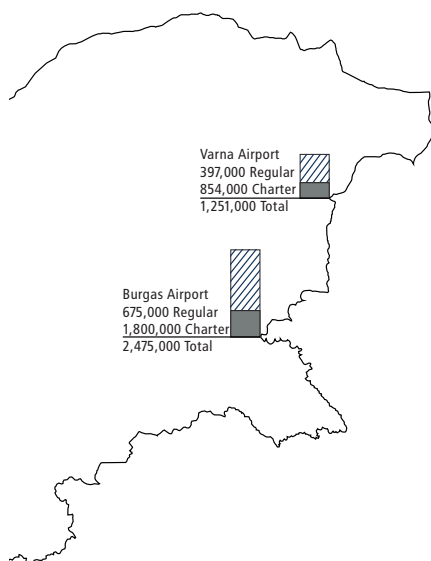


fig 53::Tourist Flow End Points 2015, according to <https://infostat.nsi.bg>



*"Tourism is unquestionably one of the world's primary economic sectors. It shapes the working lives and living standards of travellers, the host country travelled and the service providers encountered en route, and transforms every physical and cultural landscape that it touches. The tourism industry urbanizes target areas at the start of a season and leaves them high and dry, amid a clutter of built infrastructure, when the season ends."*[17]

c in Bulgaria, 2014, according to <http://www.association-aba.org/>

Other significant tourist end points are the municipalities of Sozopol (7.3%), Primorsko (6.11%), Tsarevo (4.1%) and Pomorie (3.9%). This statistic shows that the city of Burgas is seen as a transportation gateway, a hub distributing people to other resorts in the region. The aim of the municipality is to attract and retain tourists through sustainable development of the infrastructure and diversification of the tourist product through the development of alternative forms of tourism - spa, ecotourism, sports tourism, sea and fishing attractions. Offering a wider and broader spectrum of touristic attractions, as well as utilising the potential of the existing ones will benefit the tourism sector of the city and increase the number of people, willing to remain in Burgas, increasing the income for the municipality. The increase in the tourism flow in the city and suburban areas will greatly enhance the economy, opening up new working places and pouring foreign money in the local economy.

Another major problem for the tourism sector on the Black Sea coast is its seasonal nature. Because tourism is oriented around the sea and all the recreational activities available there, it means it can only operate at a certain period of time. It usually starts slow during the month of May, partially due to the light warming of the weather and the several national holidays, which allow for a longer period of uninterrupted vacation from work for most people, and then builds up until it reaches its strongest point. The strongest months for summer tourism are July and August, with 115 m BGN and 84 m BGN respectively, generated from revenue made by lodging facilities and hotels. After that the demand for a summer getaway starts to slowly fade away. For example, the least profitable months in that category are January and December, with 366,000 BGN and 213,000 BGN. The drop of revenue from July to December is 54,000 %.[18]



fig 54::Spirit of Burgas Photo Credit- <http://www.burgas1.org>

"Historically, tourism's economic benefits have seemed most promising in countries with access to the sea-for, in the enthused writings of bourgeois elites, this singularly attractive resource has been transformed over the last few centuries from a potentially menacing natural force into an aesthetic source of sublime grandeur or, at least, into a portent of health." [19]



fig 55::Spirit of Burgas Photo Credit- <http://www.mixgrill.gr>

The location, sea, natural resources, favorable climate, natural hot springs and reserves all contribute to the appeal of Burgas as a touristic destination. The abundance of natural resources can lead to Burgas becoming a major bulgarian, european and international tourism center. The region is characterized by a unique natural diversity, easely accessible mountains, unique flora and fauna, as well as historical momuments, traditions and customs. The natural tourist resources in the region are seen as foundations for the development of tourism branches such as: seaside recreational tourism; cultural tourism; ecotourism; rural tourism; balneo, spa and wellness tourism; hunting tourism; business tourism; camping tourism; sport tourism.

### *Seaside recreational tourism:*

The Black Sea coastline in the Burgas region offers a great place for a summer retreat. The abundance of beaches and sea resorts offer unique and new experiences for everybody, as well as numerous activities and water sports. Several national reserves allow tourist to experience them either by foot, bike or on horseback. With the high number of summer resorts, everybody can find something for their liking. Resorts such as Obzor, "Elenite" and "Duni" are more suited for families with children, as they are quieter and offer more options for relaxation. Others such as "Sunny Beach", Primorsko, Kiten, Lozenets are preferred by younger people, looking to experience the party lifestyle, with the plentyfulness of bars, clubs and discos.

### *Cultural tourism:*

The century old history and heritage of the region of Burgas, left by ancient civilizations, has filled the region with unique archeological discoveries. Ancient villages, roman cities, Byzantine and medieval castles, churches and monasteries built on islands are all part of the bulgarian heritage, that can be seen around Burgas. Probably the most impressive, is the Ancient City of Nessebar, just north of Burgas, which is listed as an UNESCO World Heritage Site. In the ancient part of the city there were 42 churches found by archeologists, only one of which is still in service.

Numerous festivals take place during the summer months, focusing on folklore, culture and customs, as well as modern day art. Some of the more famous ones are: "Burgas and the sea", " Spirit of Burgas", which takes place on the main beach of Burgas and invites popular artists from Bulgaria and the world, festival of sand figures, International folklore festival, Beer Festival, as well as the "Nestinarski festival", a bulgarian tradition, where people walk on fire.





fig 56::Ancient City of Nessebar Photo Credit- <http://www.hotelroomsearch.net>



fig 57::Nessebar Photo Credit- <http://www.bulgaria-life.com>





fig 58::Sozopol, Old Town Photo Credit- Georgi Petev

Sozopol, a town 33 km south from Burgas, is home to several historical monuments, as well as the Old Town of Sozopol being declared a museum. Around 180 residential buildings, built from stone and wood, from 18th and 19th century form the cultural outlook of the city. As many as 1500 Thracian tumuli have been discovered in the Bakarlaka mountain, used for burial rituals of the Thracians. The island "St. Anastasia" houses the most preserved monastery, which is the only island monastery in Bulgaria.

Archeology is a main branch in the cultural tourism of the region, represented by "Aquae Calidae", a historical village in the outskirts of Burgas, which has been visited by Philip II of Macedon, Justinian I, Constantine IV, Khan Tervel and Suleiman the Magnificent, the longest ruler of the Ottoman Empire.

### *Ecotourism:*

The Burgas region has an extremely rich biodiversity, an abundance of nature parks and reserves, and many lakes and rivers home to a number of animal and plant species. The lakes surrounding Burgas, also known as the Burgas wetlands or the Burgas Lakes, is one of the three most significant groups of wetlands for waterbirds on the Bulgarian Black Sea coast. Via Pontica, once an ancient Roman road that started in Byzantium, passed through Constantinople and Aquae Calidae (present day Burgas) and reached Istros (Romania) is also the name of one of the main corridors used by migratory birds from Europe to Africa. One of the resting places for the birds is namely the Burgas Wetlands. The Burgas Wetlands consists of the lakes Burgas, Mandrensko, Atanasovsko and Pomoriisko, along with the protected areas "Poda", "Chengene Skele" and "Uzungeren". Ornithologists around the world flock to Burgas to watch and observe the numerous and rare bird species that come to rest and spend the cold months and nest. Facilities to accommodate the tourists have been made by the municipality. The national reserve "Ropotamo", which includes the wetlands of the river "Ropotamo", the wetlands of "Alepu" alongside its sand dunes and the cape "Maslen Nos", along with the Burgas Wetlands are included in the Ramsar Convention, dedicated to the conservation and sustainable use of wetlands. Hundreds of kilometers of marked eco-paths have been created in the national parks and reserves for tourists. The European tourist route E-3 weaves through the Burgas region, ending at the cape "Emine". The natural park "Strandzha", the biggest protected territory in Bulgaria, is 60 km away from the city of Burgas. It has the most diverse deciduous forest complex in Europe.



fig 59::Sozopol, Old Town Photo Credit- Georgi Petev

Forests from over a million years ago still remain in the protected habitat. The biggest bio-diversity of amphibians in Europe is found in the national park.





fig 60: Sozopol, Old Town Photo Credit- Georgi Petev



fig 61: Sozopol, Old Town Photo Credit- Georgi Petev





## Sport Tourism

The region of Burgas offers great possibilities for the sport oriented tourists. As the city is situated on the coast of the Black Sea, the predominant sports are water oriented. The access to water allows for sports such as windsurfing, paddle-boarding, surfing, sailing, kiteboarding, water-skiing, diving, and fishing. There are multiple water-centers along the coast, situated in various resorts and camping sites, where you can rent gear and have instructors show you the first steps. Such places are: Bur-

gas, Gradina, Lozenets, Arapya, Ravda.

The city of Burgas aims to improve its current sporting facilities, such as stadiums, sport halls, rowing bases and the smaller communal sporting facilities. In recent years, constructions of new sport facilities and reconstruction of the old, pre-existing ones has been a priority for the city. The abundance of tennis courts, football fields, beach-volleyball courts, bike alleys, swimming pools, and a newly built skateboard park

define the image of Burgas as a sport oriented city.

A newly opened activity park in Tsarevo offers people the possibility to test their skills on the BMX pump track, skate pool or the rope garden.



fig 63::Skatepark, Burgas

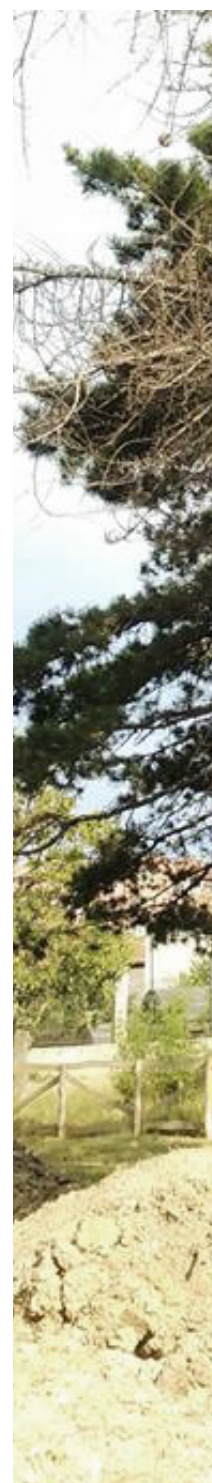






fig 62.: Surf School Arapyra, Arapyra Photo Credit- A Team



fig 64.: Dirt Track, X Challenge Park Photo Credit- Vesselin Despotov







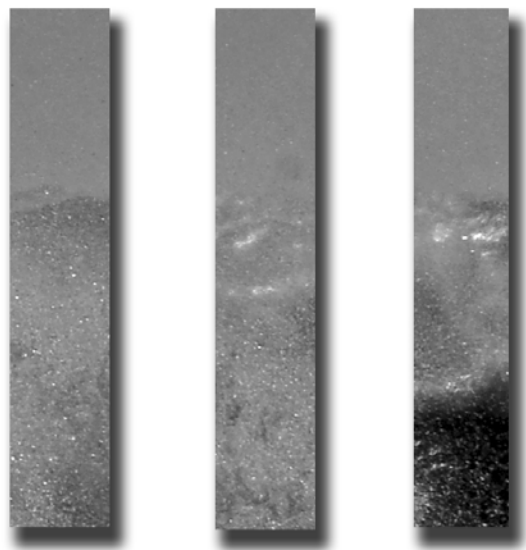


fig 65::Skatepool, X Challenge Park Photo Credit- Vesselin Despotov









*fig 66::SUP Session, Lozenets Photo Credit- Ekaterina Kovacheva*



*Location:* Ahtopol 42°05'52.0"N 27°56'39.9"E

*Wave Type:* Left-hand Break

*Seabed:* Rock

*Best Swell Direction:* NE



fig 67.:Lighthouse Ahtopol Photo Credit- Ekaterina Kovacheva











*Location:* Ahtopol 42°05'52.0"N 27°56'39.9"E

*Wave Type:* Left-hand Break

*Seabed:* Rock

*Best Swell Direction:* NE

*fig 68::Lighthouse Ahtopol Photo Credit- Kiril Peychev*



*Location:* Varvara 42°07'05.9"N 27°54'31.8"E

*Wave Type:* Left-hand

*Seabed:* Rock

*Best Swell Direction:* N



fig 69::Varvara Photo Credit- Tony Gogov

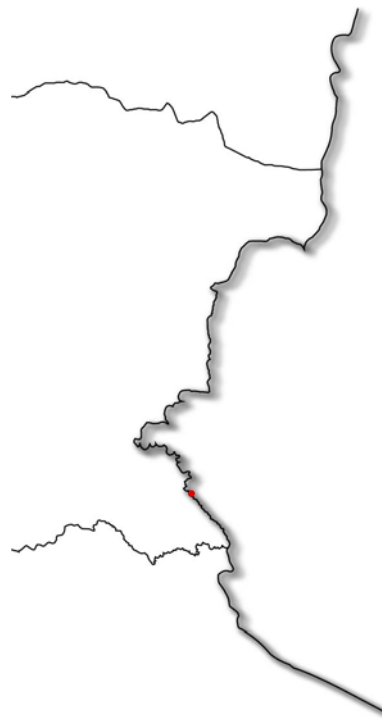
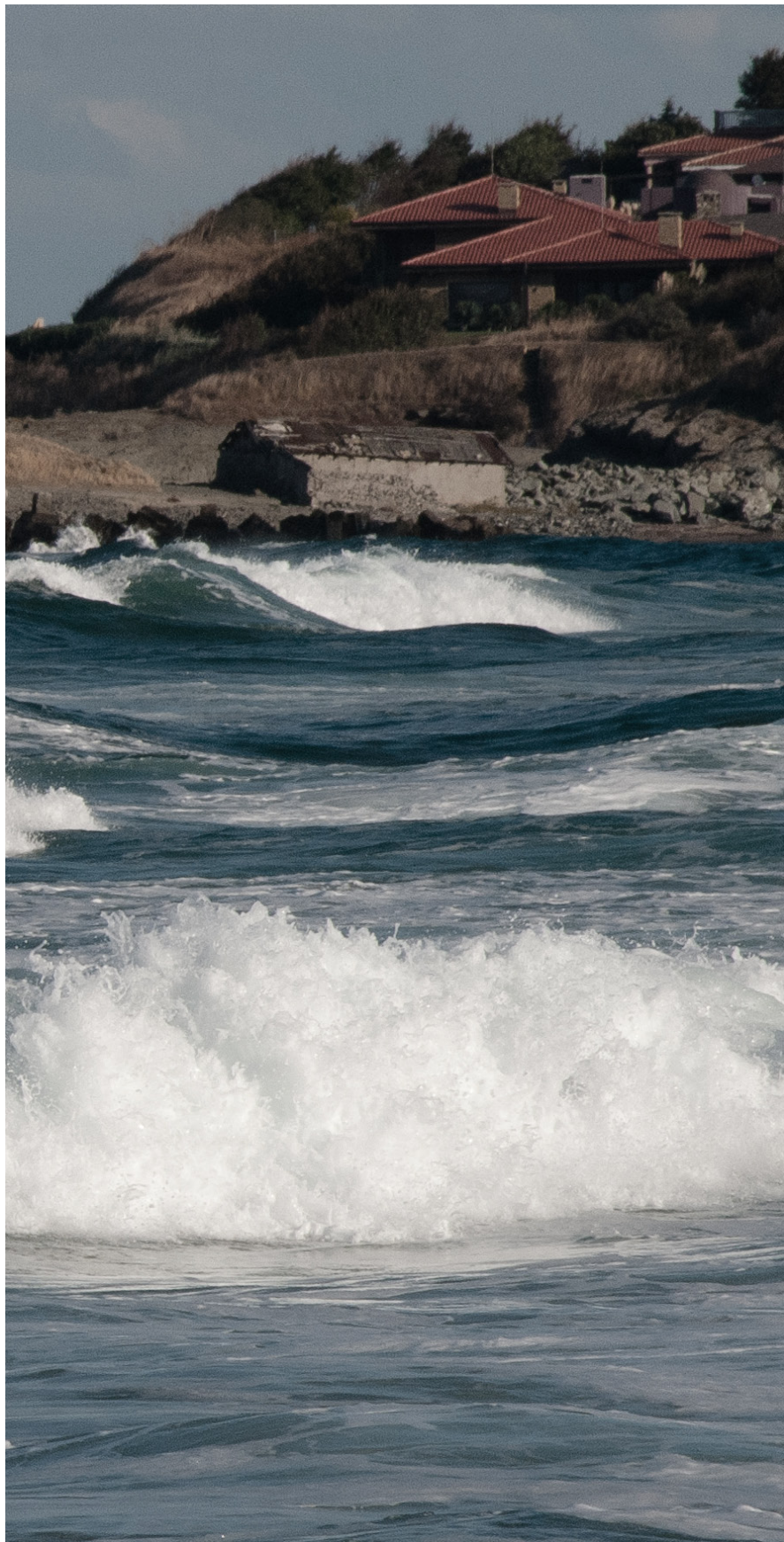












*Location:* Lozenets 42°12'36.8"N 27°48'32.8"E

*Wave Type:* Left-hand/Right-hand Break

*Seabed:* Sand

*Best Swell Direction:* N-NNE-NE

*fig 70::Lozenets Photo Credit- Kiril Peychev*



*Location:* Perla 42°15'43.5"N 27°45'06.9"E

*Wave Type:* Left-hand/Right-hand Break

*Seabed:* Sand

*Best Swell Direction:* N-NNE-NE

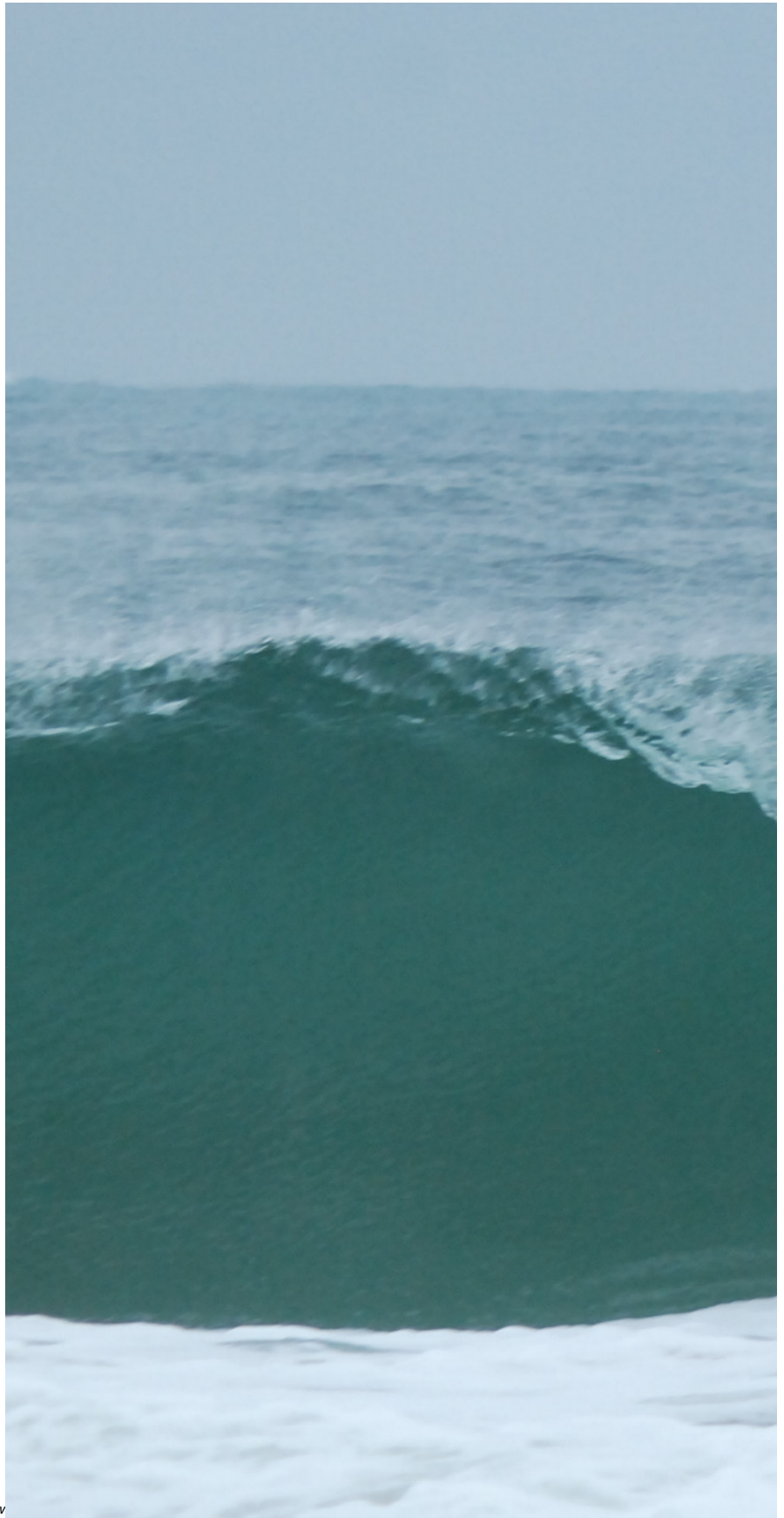


fig 71::Perla Beach Photo Credit- Tony Gogov













fig 72::Red Bull Unleashe, Surf Snowdonia 2015 Photo Credit- [www.youtube.com](http://www.youtube.com)



## Artificial Waves

The first artificial wave to ever be created was built in the 19th Century in the castle of Linderhof by Ludwig, King of Bavaria. The desire of the king to have his own blue grotto of Capri, led to the making of the Venus Grotto, which was lit using 24 dynamos and had a machine that produce breaking waves. In 1929, a film called "Indoor Surfers" depicts a small pool in Munich, Germany that generates small artificial waves and is labeled as the future of german baths. It uses large rectangular volumes that move back and forth, creating large ripples and movement in the water.

Nowadays, with the advancement of technology, several different methods are used to simulate waves and the feeling of surfing a wave.

### *"Standing Wave" or "Sheet Wave":*

It was created by Tom Lochtefeld, as part of the creation of the Ranging Waters waterparks located in San Dimas, San Jose and Salt Lake City. Specially designed surfaces are used to mimic the waves form while water is being pumped at high speeds towards them. Surfers use small boards, attached to their feet with straps. This made it possible to reduce the area needed for a wave generating machine. This made it possible for venues held away from water and even in closed spaces to have a surfing experience.

### *"Wave Pools":*

A wave pool is practically a swimming pool that generates reasonable waves, but require large areas of operation.

*"Wave pools replicate the movement of the ocean one of two ways, depending on the size of the pool and the size of wave desired. In small wave pools, pressurized air is blown onto the surface of the water, or a paddle creates force in the water, creating small*

*ripple-like waves. Other techniques utilize an "accordion mechanism" which opens and closes in order to suck water into its belly (opening) and push it out (closing) to cause waves. However, in high-volume wave pools, a large amount of water is quickly allowed into the far end of the pool, forcing the water to even out, generating a sizeable wave. In these large wave pools, the excess water is removed by being channeled through a return canal where it can be used again to generate another wave."*[20]

However such waves are very costly and don't produce a great result for surfing. Two things are very important when creating a wave: the shape of the "seabed", in order for the wave to brake properly, and the generating mechanism. Two firms have specialised in making wavepools, which are cost effective and create the closest thing to a real surfable wave.

Wavepools are great training facilities for both begginers and pros.

### Wavegarden

*"Wavegarden works in the exact same way an ocean wave does. A mass of water is systematically moved over a surface that causes the wave to form and then fold on itself – just like a wave breaking over a reef or sand bar. The difference is that Wavegarden can regulate the size and speed of the wave at will, making it engaging for all different skill levels, from beginner to ripper.*

*This technology has been fully and exclusively developed by Wavegarden, which owns the patent. The ground breaking technology is based on an innovative hydrodynamic Wavefoil and a revolutionary wave lagoon design which creates two perfect barreling waves at the same time.*

*The state of the art Wavefoil generator has been proven to be*





fig 73::Keely Slater Wave Company, Photo Credit- [www.vimeo.com](http://www.vimeo.com)



fig 74::Standing Wave Photo Credit- <http://www.wavehousemallorca.com>



fig 75::Kelly Slater at his Wavepool Photo Credit- <http://www.carvemag.com>

more reliable and to require significantly less energy than existing wave generating technologies and those that are still in conceptual design stage.

The Wavegarden technology has secured all the necessary quality and safety certifications through strong partnerships with leading industry firms.

Robust design combined with high quality mechanically engineered components maximizes the lifetime of the system and reduces maintenance costs. Building on our many years of experience Wavegarden can provide guaranteed technical support and the specialized maintenance services required to ensure the long term successful operation of this large-scale facility.

Energy consumption is much lower than existing wave generation technologies. This proposition, unique to Wavegarden, allows profitable surfing-based sports & lifestyle facilities for the first time

ever. Wavegarden can operate multiple waves simultaneously within the same facility, catering to advanced surfers, beginners, and children all at the same time. The length of the Wavegarden wave is only limited by the size of the available land. Wavegarden's unique technology enables the waves to be modified and customised any time. Waves can be consistently identical or there can be small variations at any point or moment of the break. These variations are programmed so that the surfer may or may not know that they are going to occur.

# Technical Requirements

## Area requirements

*The measures of Wavegarden's standard lagoon are 320 metres (1,050 feet) by 120 metres (394 feet). The measures of the optimum lagoon are 330 metres (1,082 feet) by 150 metres (492 feet). There is no maximum size since Wavegarden holds its form over any distance.*

### *Water level*

*Wavegarden requires a constant water depth that can be monitored and controlled. The depth should not vary beyond +/- 10 centimetres (+/- 4 inches.)*

## Depth

*Wavegarden is engineered with a bottom that replicates ocean sand bars and reefs. Our engineers will custom design the bottom of your installation in order to take advantage of the allocated space and your unique requirements for distinct wave zones. The depth averages around 1 meter (3.3 feet) and it can reach up to 2 metres in a protected zone.*

## New Lagoon/Existing lagoon

*The requirements for Wavegarden to be installed in a new or an existing lagoon are:*

*The water level has to remain fairly constant with a maximum variance of +/- 10 centimetres (+/-4 inches)*

*The lagoon needs to be drained every year for maintenance purposes.*

*The perimeter of the lagoon in proximity to the wave may need to be slightly modified in order to ensure wave dissipation and overall safety.*

*The water source (either fresh or salt water) can either be treated or untreated.*

*Due to these technical requirements, in most of the cases, it will be more cost effective to build a new lagoon rather than trying to use an existing one.*

*Throughout the length of the wave there are sections suitable for every rider and every ability.*

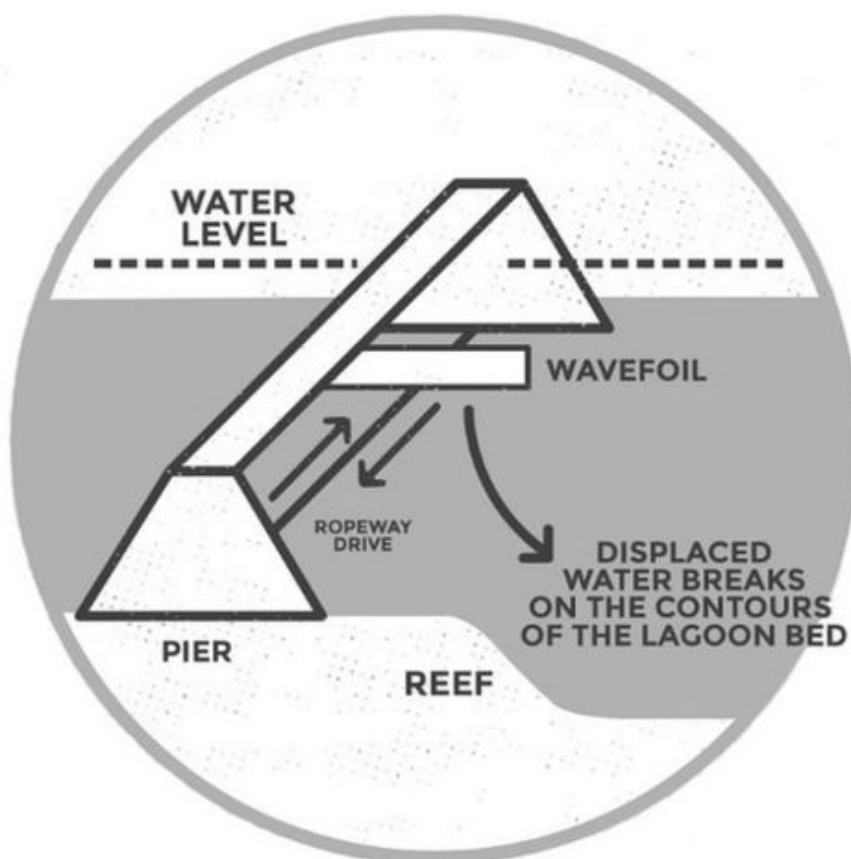
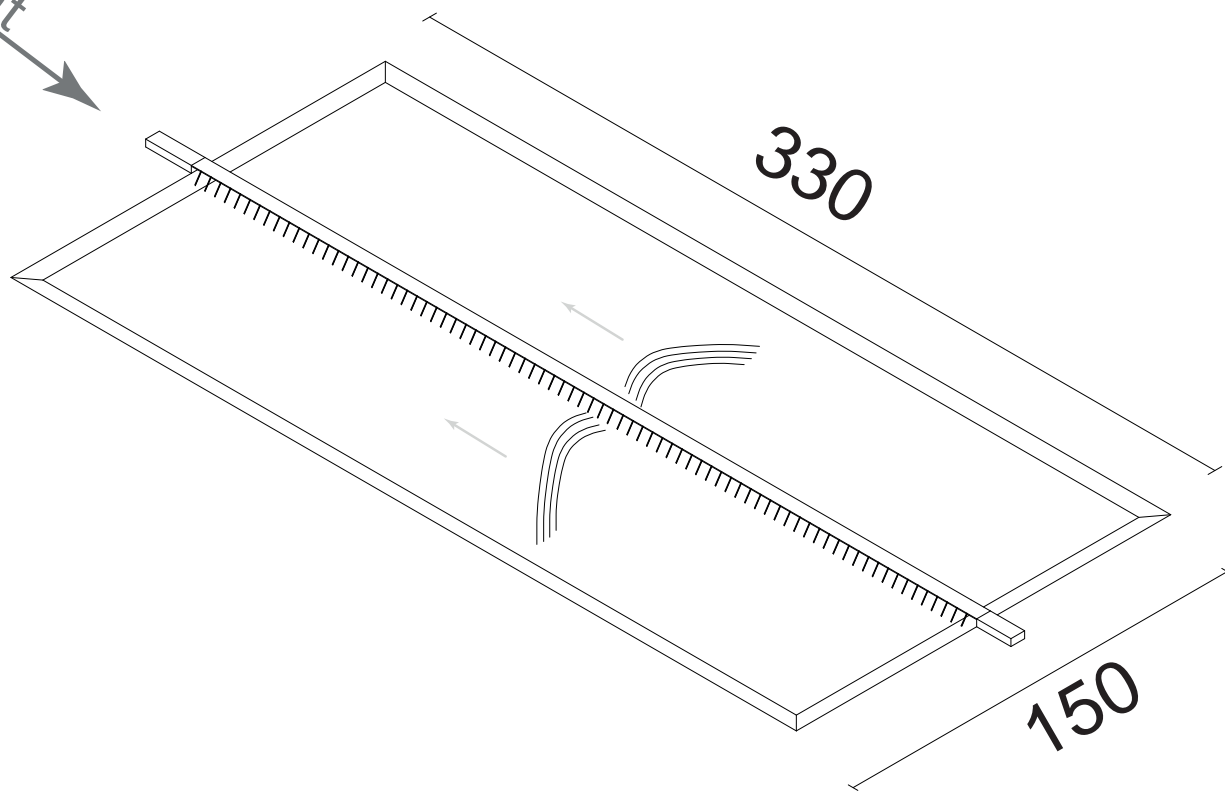
*This man made wave remains unaffected of most outside factors, which in terms provide a wave that is always the same, great for practise and learning. People can improve their skills at the wavepark and then go test their abilities in the ocean. You don't have to depend on forecasts and swells and you can go catch a wave anytime you want. It's like going to the gym."*[21]

*fig 76::Optimum lagoon dimensions*

*fig 77::Wave Creating Technology  
Photo Credit-<http://ichef-1.bbci.co.uk>*



Frequent  
Wind



# URBNSURF Melbourne, MJA Studio

*"Perth based, Wave Park Group, today confirmed that it has secured a 7.1ha site under a 30-year lease on which it will develop a world class surfing lagoon almost twice the size of the MCG."*

*The \$18.5 million development, which has already received planning approval, is to be located adjacent to the Essendon Football Club on Airport Drive at Melbourne Airport. The surfing lagoon will feature world-leading, Wavegarden® wave generating technology which will deliver authentic, man-made waves, offering high quality surfing experiences for beginners through to experts.*

*"The beauty of the Wavegarden technology is that it can accommodate in separate zones the needs of all surfers – from the smallest groms, and those starting out, through to the high performance training requirements of elite surfing athletes," said Wave Park Group Founder and Executive Chairman, Andrew Ross. "Waves will range from 1.9m high, 32 second long, pitching waves, that are designed for the highest levels of performance surfing, down to 0.6m high, rolling white-water waves, which are ideal for beginner surfers.*

*"Waves will form cleanly and break with constant power and shape throughout the ride, which will be the equivalent to riding high-quality, ocean-based waves of similar sizes. Melbourne's 200,000 or so surfers will be able to enjoy longer and better quality rides than can usually be found at many of Victoria's most popular breaks, all within a 25 minute drive of the Melbourne CBD."*

*As well as having amenities like a pro store and surf training academy, a licensed café and function centre, URBNSURF Melbourne will also be home to a climbing wall, parkour trail, bouldering course, mountain bike pump track, running track and other lifestyle sport opportunities.*

*"Wavegarden surf lagoons unlock the geographic limitations of surfing, by bringing the beach to your backyard," said Mr Ross. "Through the development of urban surfing environments, we are providing the opportunity for surfers to engage with their sport more frequently, more conveniently, and more safely – allowing them to simply 'surf more'".*

*Wavegarden wave generating technology has been in development for over 10 years, created and perfected by a team of 26 engineers based in Europe. The first commercial surf park facility featuring a Wavegarden lagoon opened in Wales in 2015, and another is due to open shortly in Austin, Texas. Both are already drawing keen tourism interest and investment to their regions.*

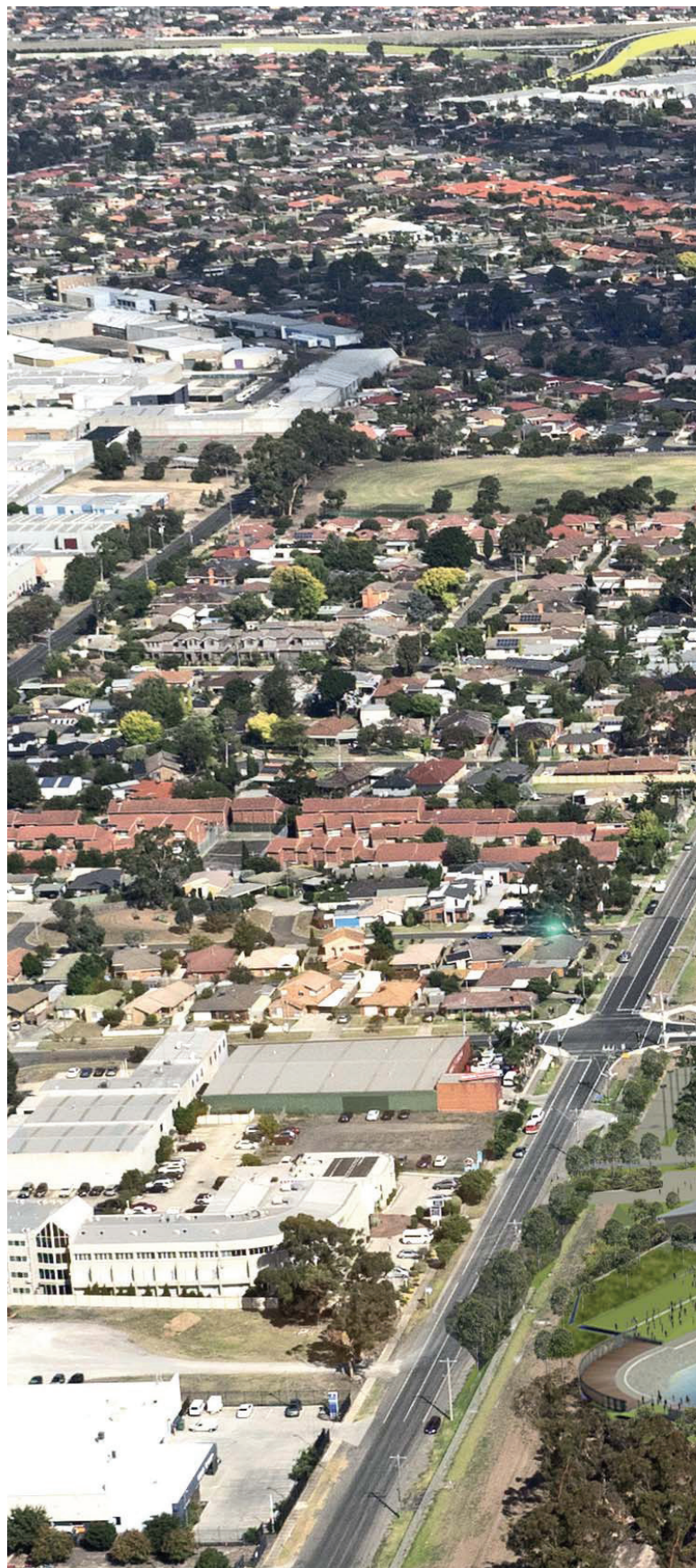


fig 78::URBNSURF Melbourne  
Photo Credit-MJA Studio,  
<https://www.mjastudio.net/>













*"The development of URBNSURF Melbourne will generate over 300 jobs during the construction phase, and another 45 full time positions will be created in the surf park when it opens its doors," said Mr Ross. "The surf park will inject more than \$267 million in gross economic contribution to the Melbourne region over the project life, and we have well-progressed plans for additional URBNSURF facilities around Australia which will be announced in the near future."*

*Planning consent for the development has been received, and construction is scheduled to start in late 2016, with the first riders taking to the waves at URBNSURF Melbourne in late 2017.*

*Victoria's Minister for Tourism and Major Events, the Honourable John Eren MP said, "This is going to be a great attraction that will shore up Victoria's status as a world-class destination for visitors.*

*"There's so much to see and do in Melbourne and the URBNSURF Melbourne project will be another great tourism hot spot visitors from all over the world can enjoy."*

*CEO of Surfing Victoria, Mr Adam Robertson supports the development, saying "Surfing Victoria supports the development of wave pool technology such as URBNSURF Melbourne, and sees this as an exciting step forward for the sport of surfing and for the opportunities it will bring to all surfers in Victoria and beyond."*

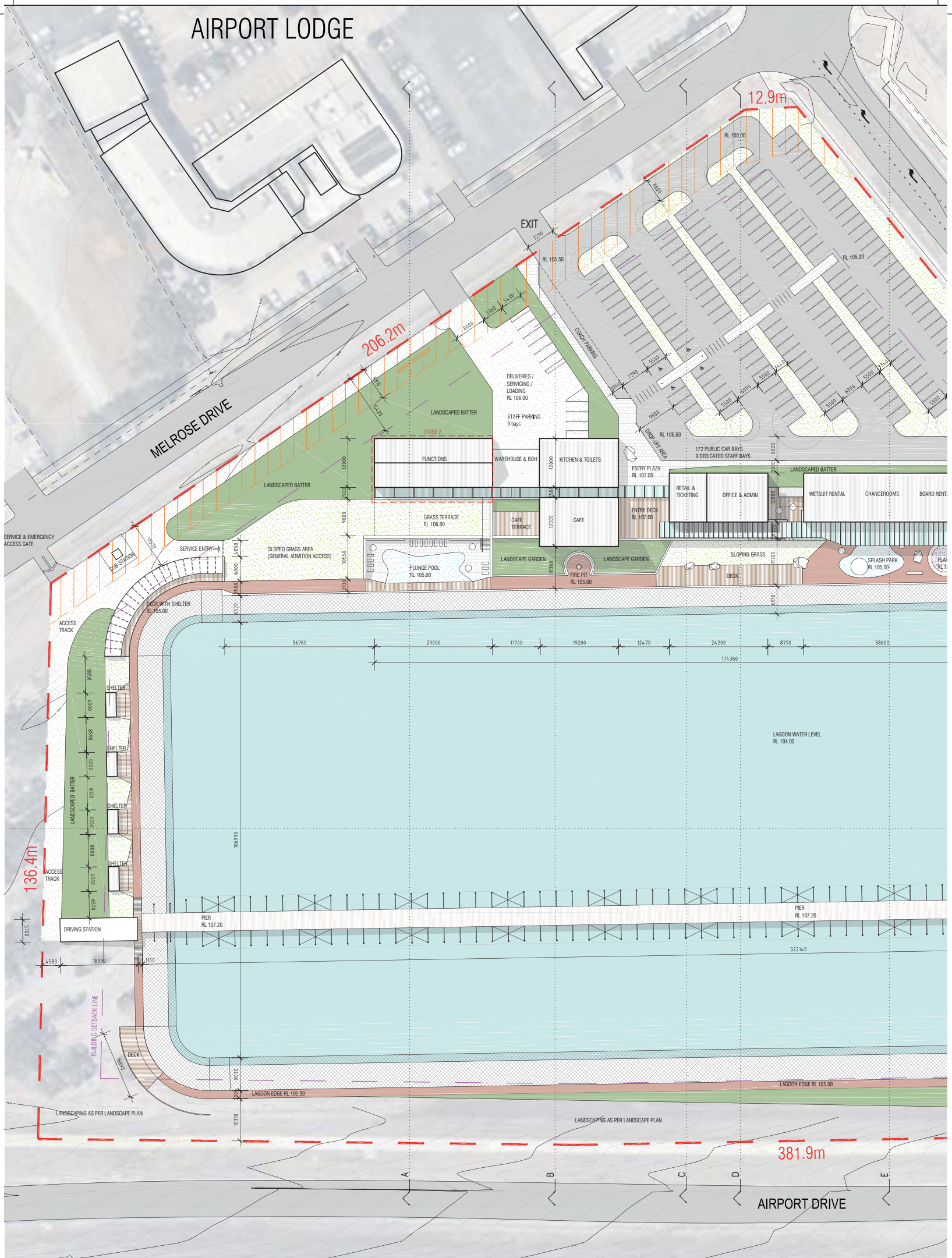
*For Founder and CEO of Wavegarden, Mr Josema Odriozola, URBNSURF Melbourne is the realisation of a long-term plan to make surfing more accessible worldwide.*

*"We are thrilled to be associated with the development of URBNSURF Melbourne. Melbourne has a large existing surfing community that are starved of waves, along with the many visitors to the city who are keen to learn to surf.*

*"We are confident of delivering an outstanding Wavegarden lagoon that will meet the needs and expectations of all who visit." "[22] ([http://www.urbnsurf.co/press\\_release\\_category/urbnsurf-melbourne/](http://www.urbnsurf.co/press_release_category/urbnsurf-melbourne/))*

*fig 79::URBNSURF Melbourne  
Visualisation  
Photo Credit-MJA Studio,  
<https://www.mjastudio.net/>*

# AIRPORT LODGE





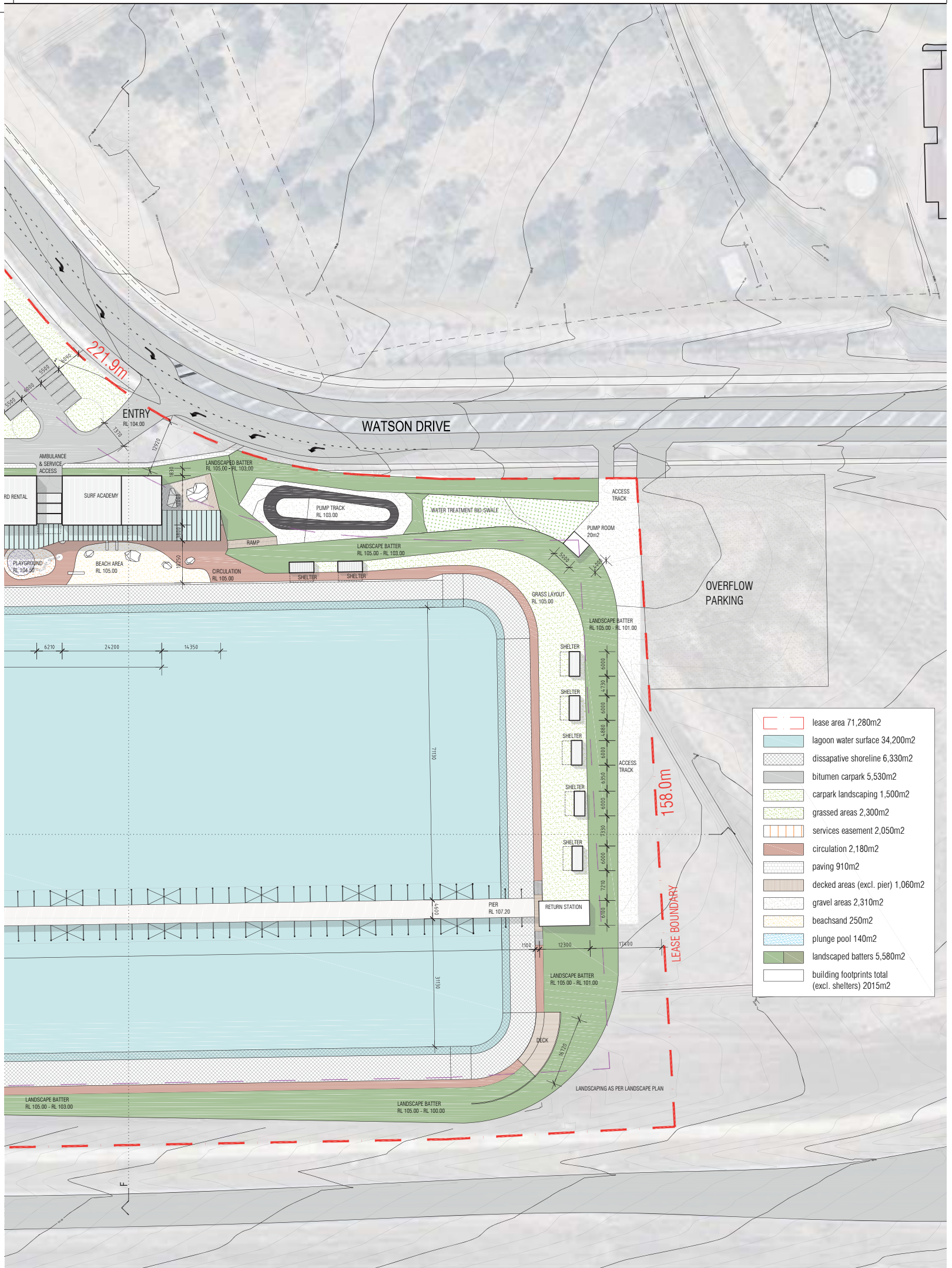
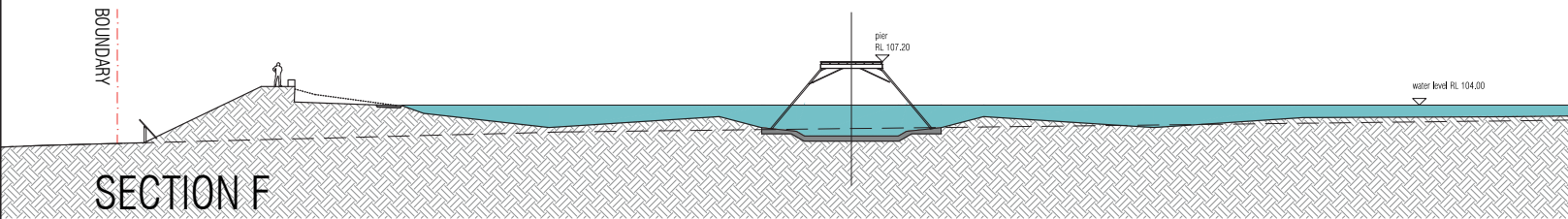
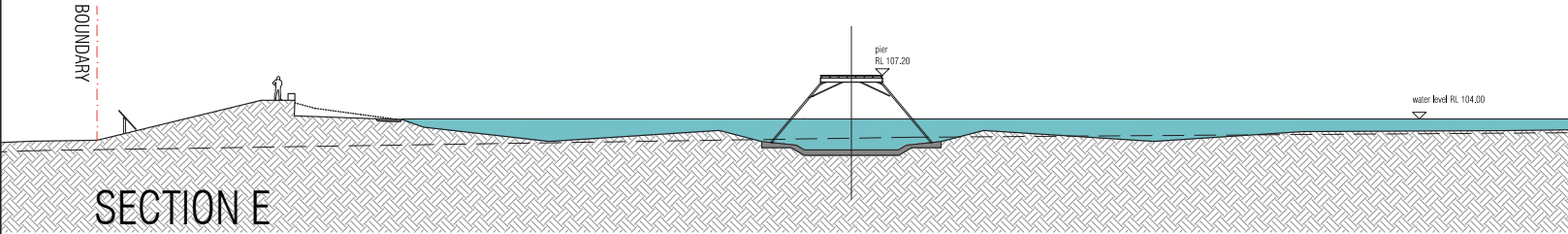
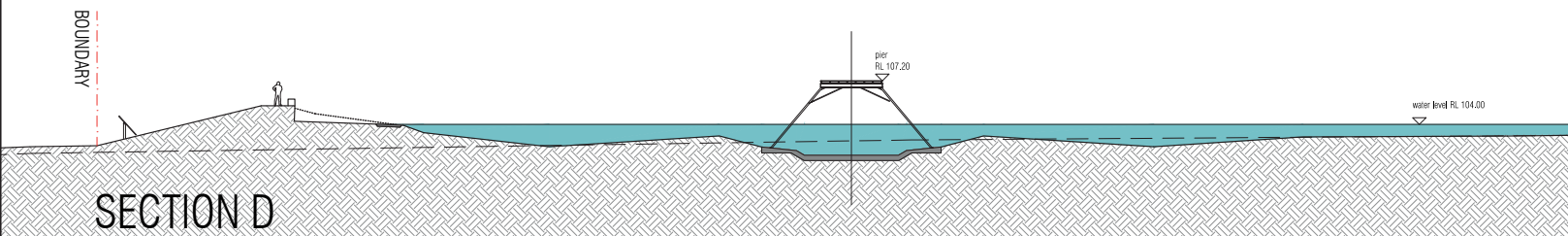
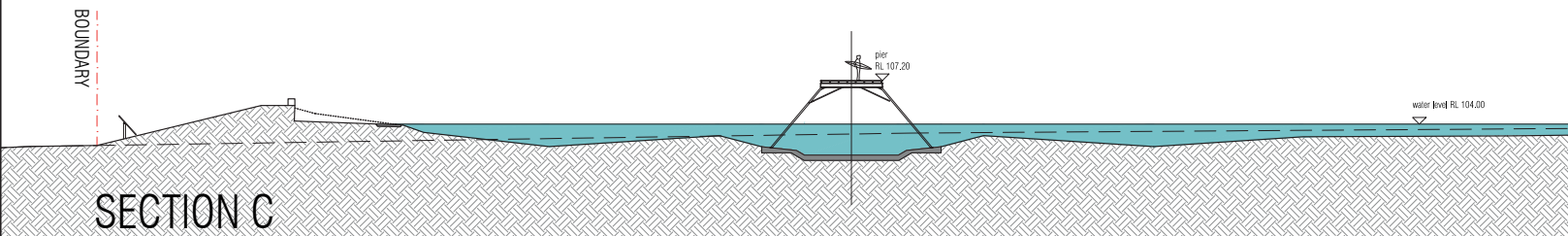
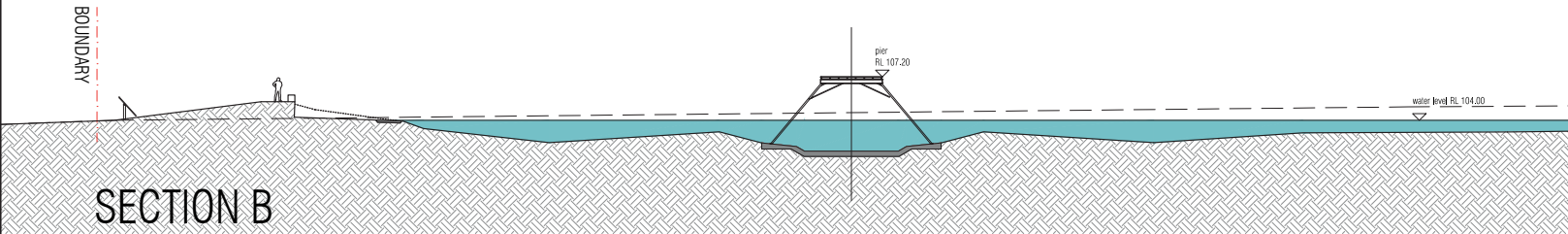
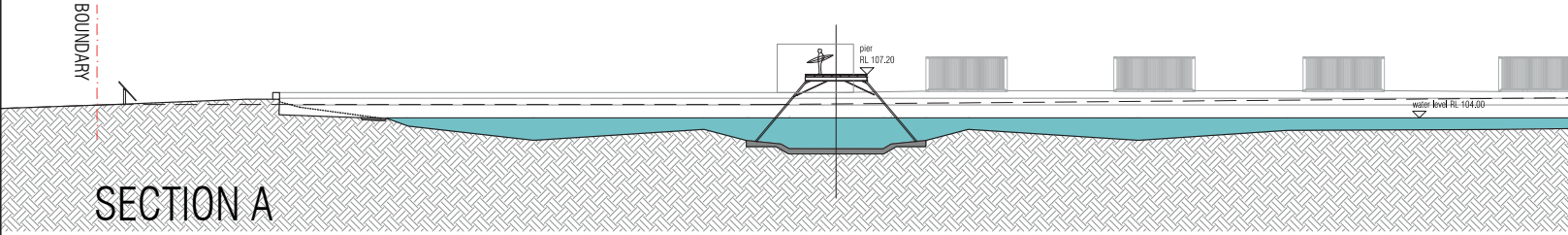


fig 80::URBNSURF Melbourne Plan Credit- MJA Studio, <https://www.mjastudio.net/>





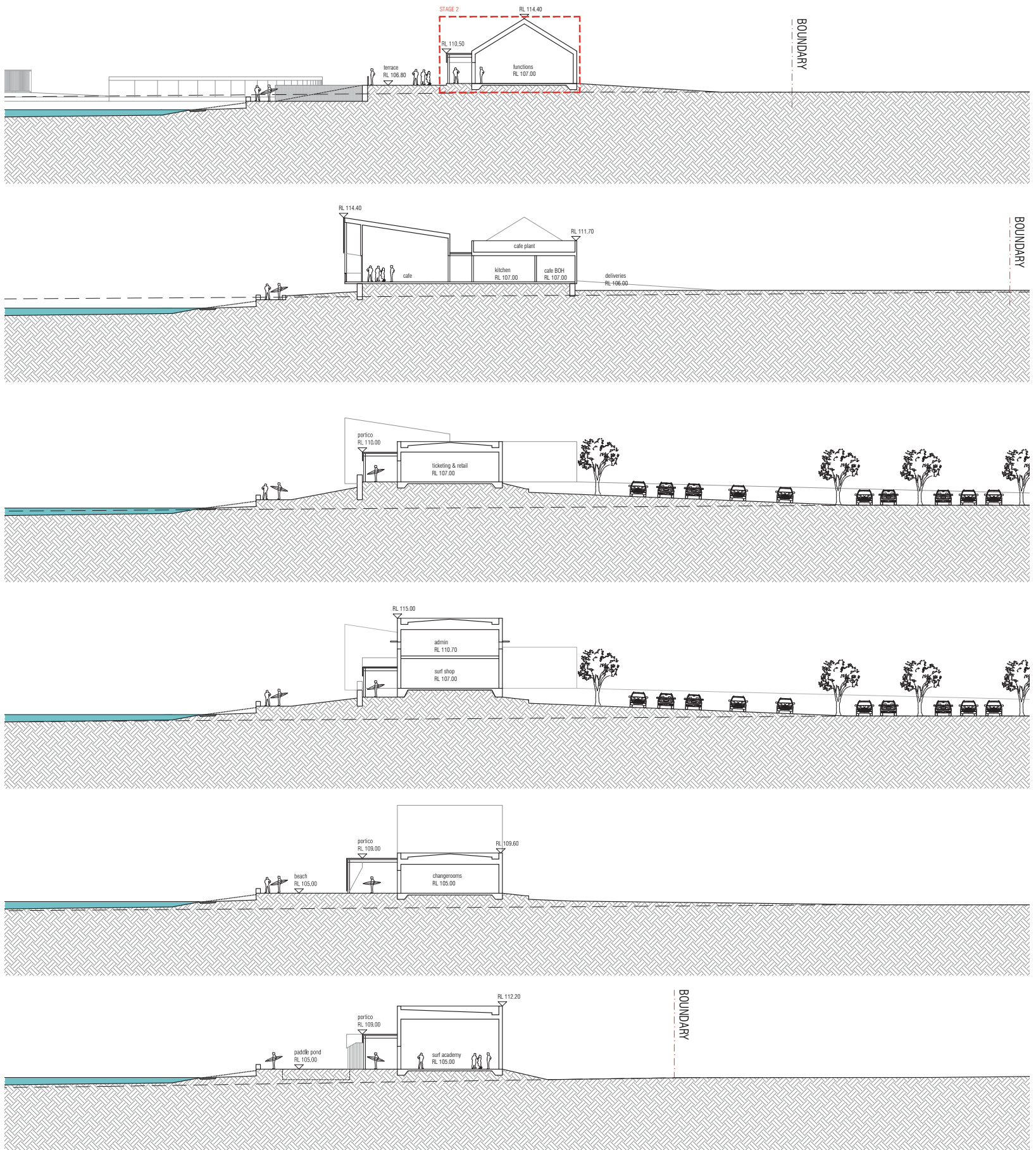
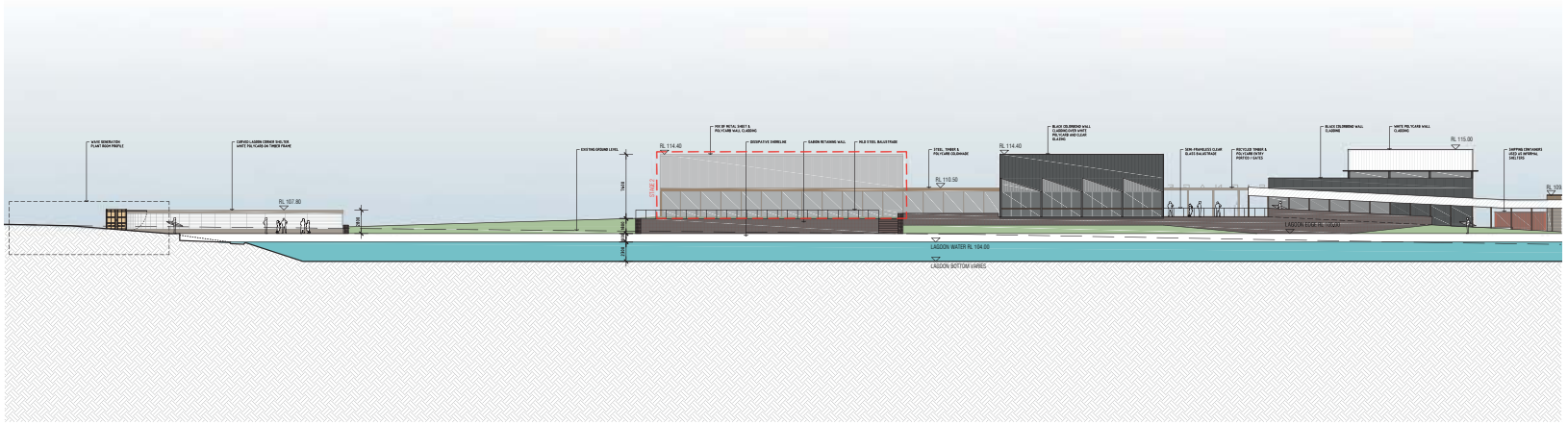
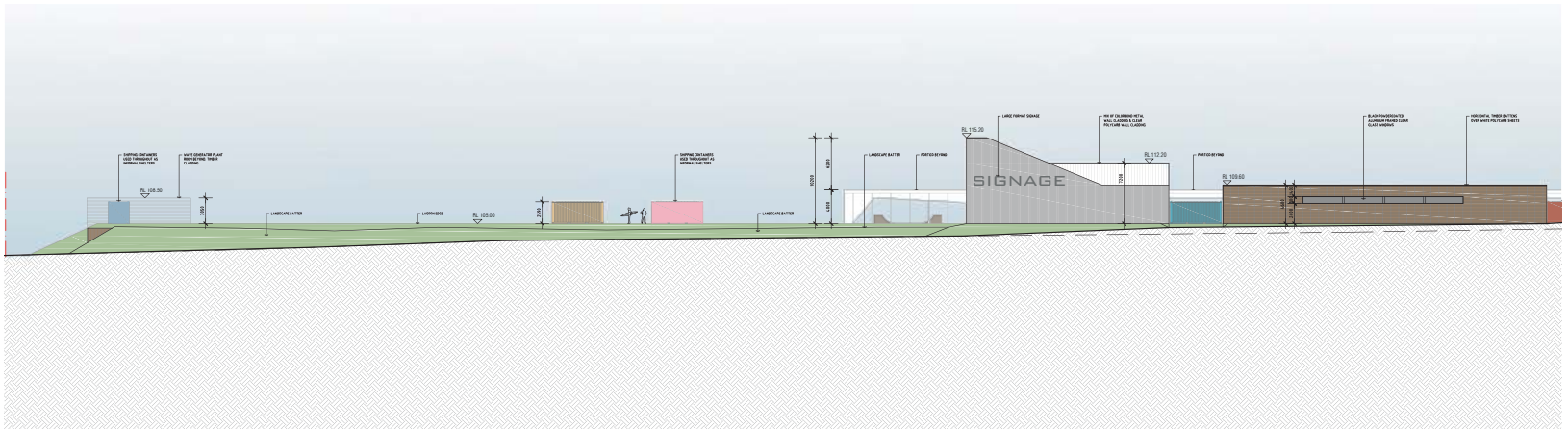


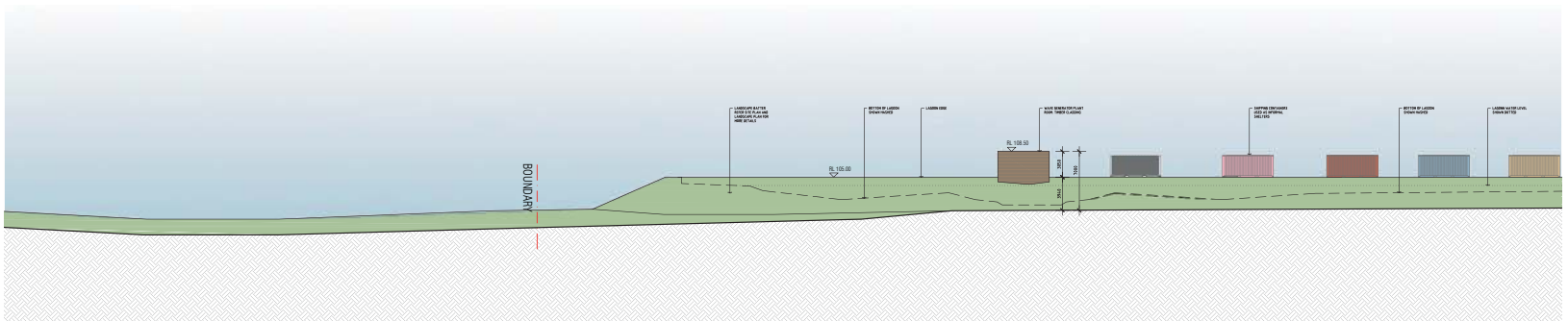
fig 81::URBNSURF Melbourne Sections Credit- MJA Studio, <https://www.mjastudio.net/>



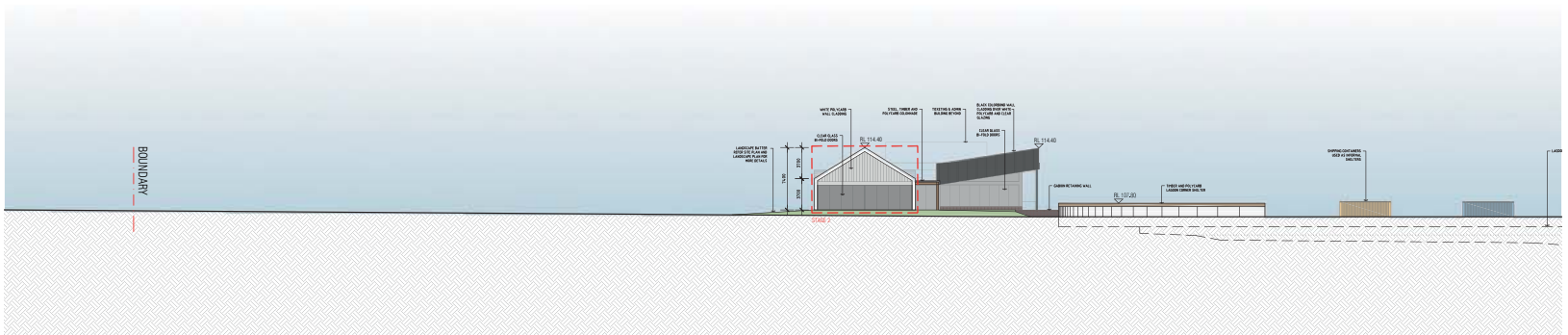
WEST ELEVATION (from Airport Drive) / SITE SECTION



EAST ELEVATION (from Melrose Drive)



SOUTH ELEVATION (from Watson Drive)



NORTH ELEVATION



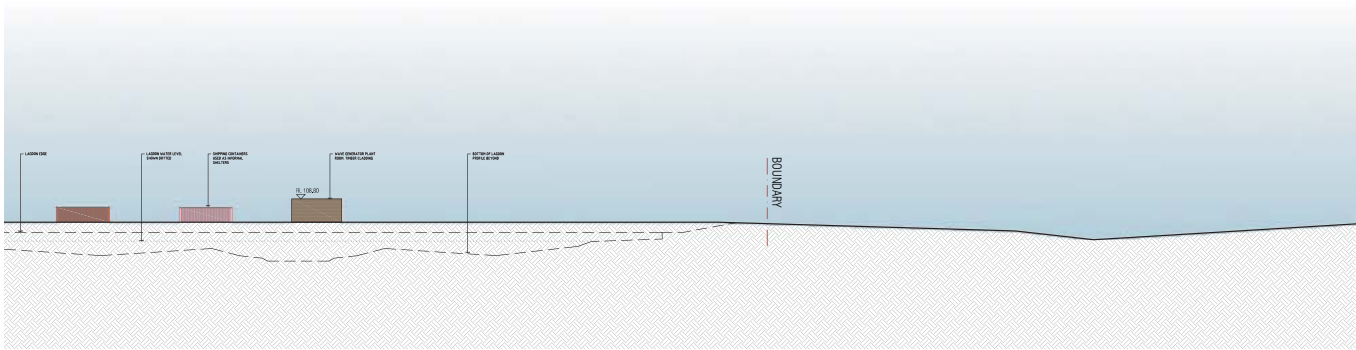
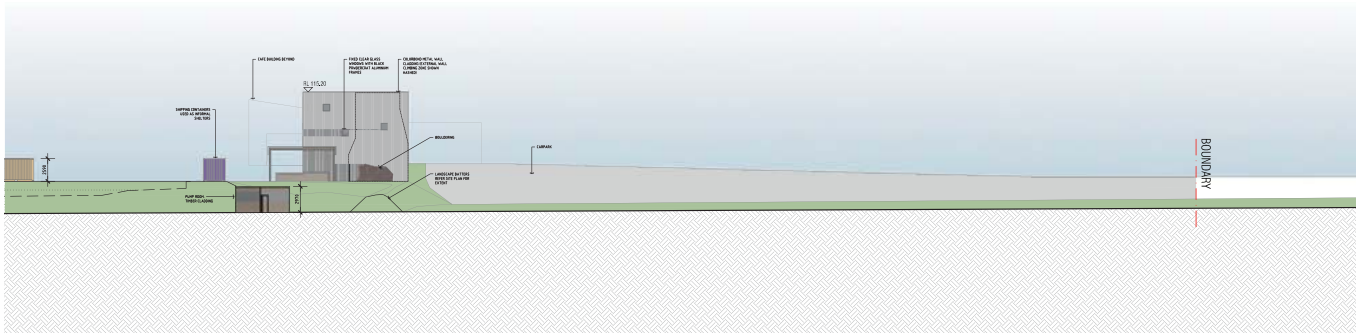
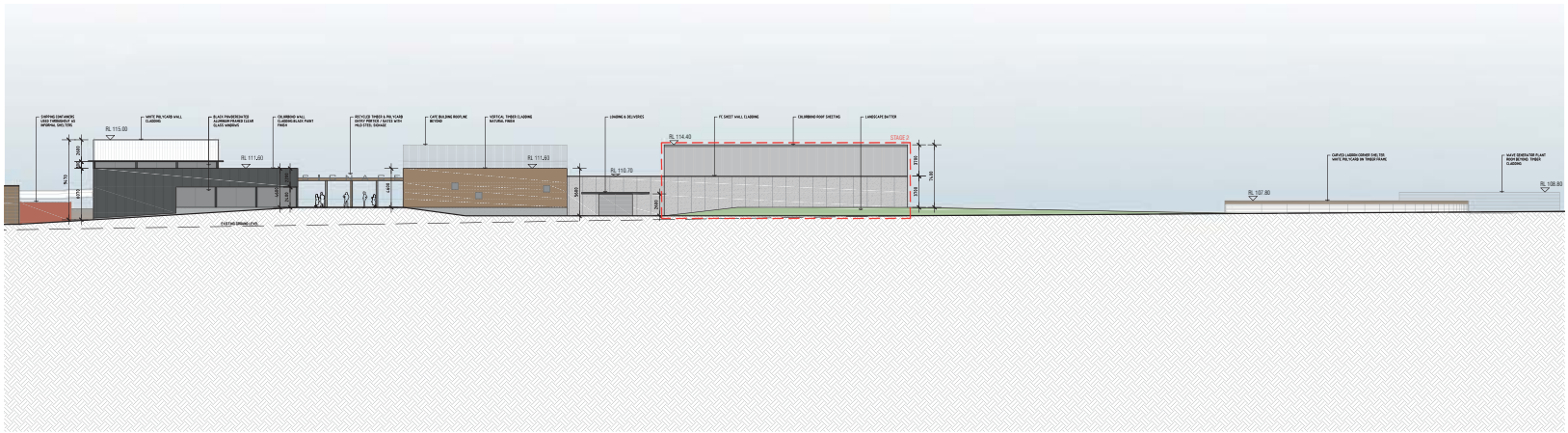
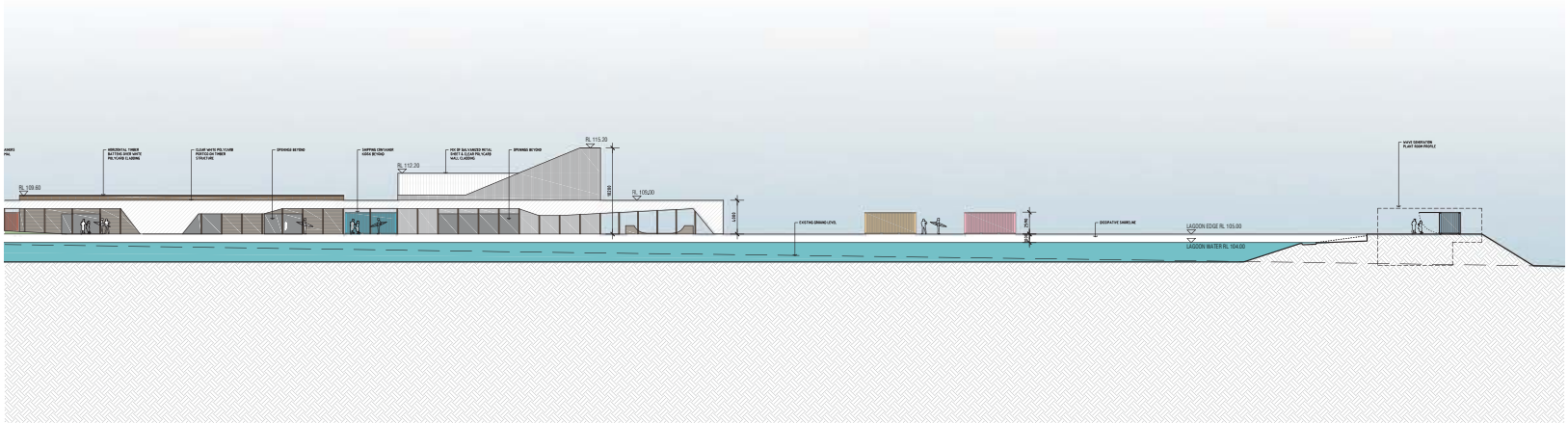


fig 82::URBNSURF Melbourne Sections Credit- MJA Studio, <https://www.mjastudio.net/>



fig 83::URBNSURF Melbourne Render Credit- MJA Studio, <https://www.mjastudio.net/>





fig 84::URBNSURF Melbourne Render Credit- MJA Studio, <https://www.mjastudio.net/>







*fig 85::Kelly Slater at his Wavepool Photo Credit- <http://www.carvemag.com>*

# Wavepark Burgas,

## Design Process

Working closely with the "Future Development Plan for the city of Burgas", I have come to understand the city's needs for new and improved infrastructure in order to achieve the goals of becoming a touristic center, not just a transportation hub for other tourist destinations. The city is in need of modern facilities able to fulfill the needs of the present day tourists, as well as, improve the life of its own. Burgas must look to the future, in order to achieve and exploit its endless potential, coming from the closeness of the sea and the abundance of possibilities offered by its diverse surroundings. Looking to the future, one cannot but help and think about the main characters that will come to play a vital role in it, the children. The need for new sport- and playgrounds is plain to see and must be addressed.

Combining the need of touristic attractions and sport oriented facilities with the city's modern views, I came to the conclusion of combining a sport that has existed for many years with the newest technology available, thus meeting the modern day view and expectations of the city of Burgas.

### *A Wavepool...*

An artificially built lagoon capable of producing ocean-like waves at the push of a button, catering to the endless needs of many surfers around the globe for endless swell.

The facility requires an immense area of land, and during the research phase, it became clear that it had to be combined with other sporting functions for it to work. Indoor climbing wall, tennis fields, beach volleyball, skatepark with numerous skate-pools, a football field along with camping grounds just 5 minutes away from the city center by bike.

Examining the future development plans for the city I came across a diagram showing future potential zones for further developing. Just between the city center and the neighbourhood of Sarafovo lies a agricultural piece of land destined to become the new sport center of Burgas, surrounded by the sea and Atanasovsko Lake. Its proximity to the airport and the accessibility from the city center via a bicycle lane makes it the perfect spot for such a project

Sc  
←



0 450 900

fig 86::Future Development Zones Burgas





- City of Burgas border
- Protected Areas
- Development Border
- Main Roads
- City of Burgas
- ▨ Future Development Zones

Sofia 386 km

Lake Atanasovsko

Varna 115 km  
Sunny Beach 36 km

Lake Burgas

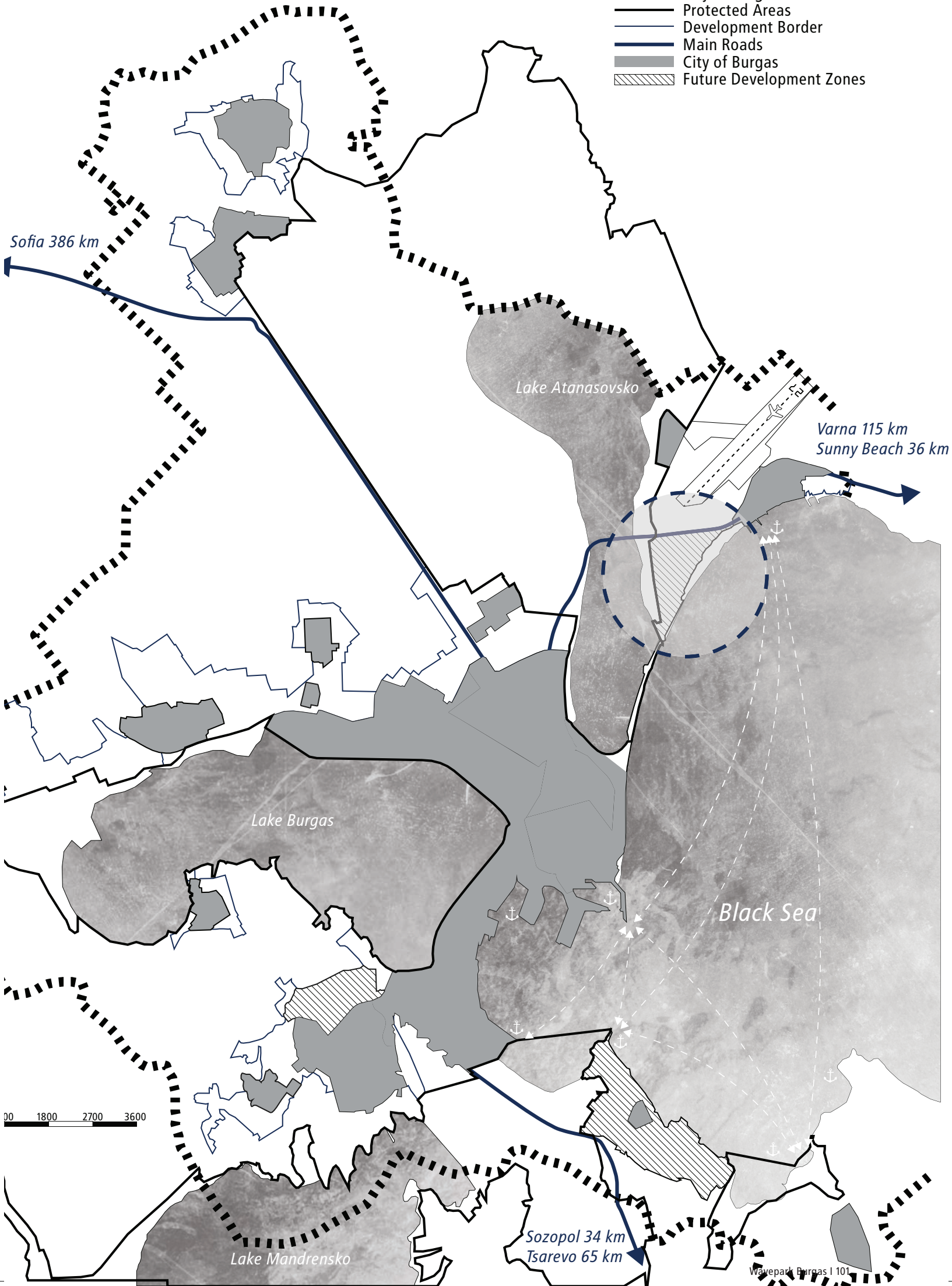
Black Sea

Lake Mandrensko

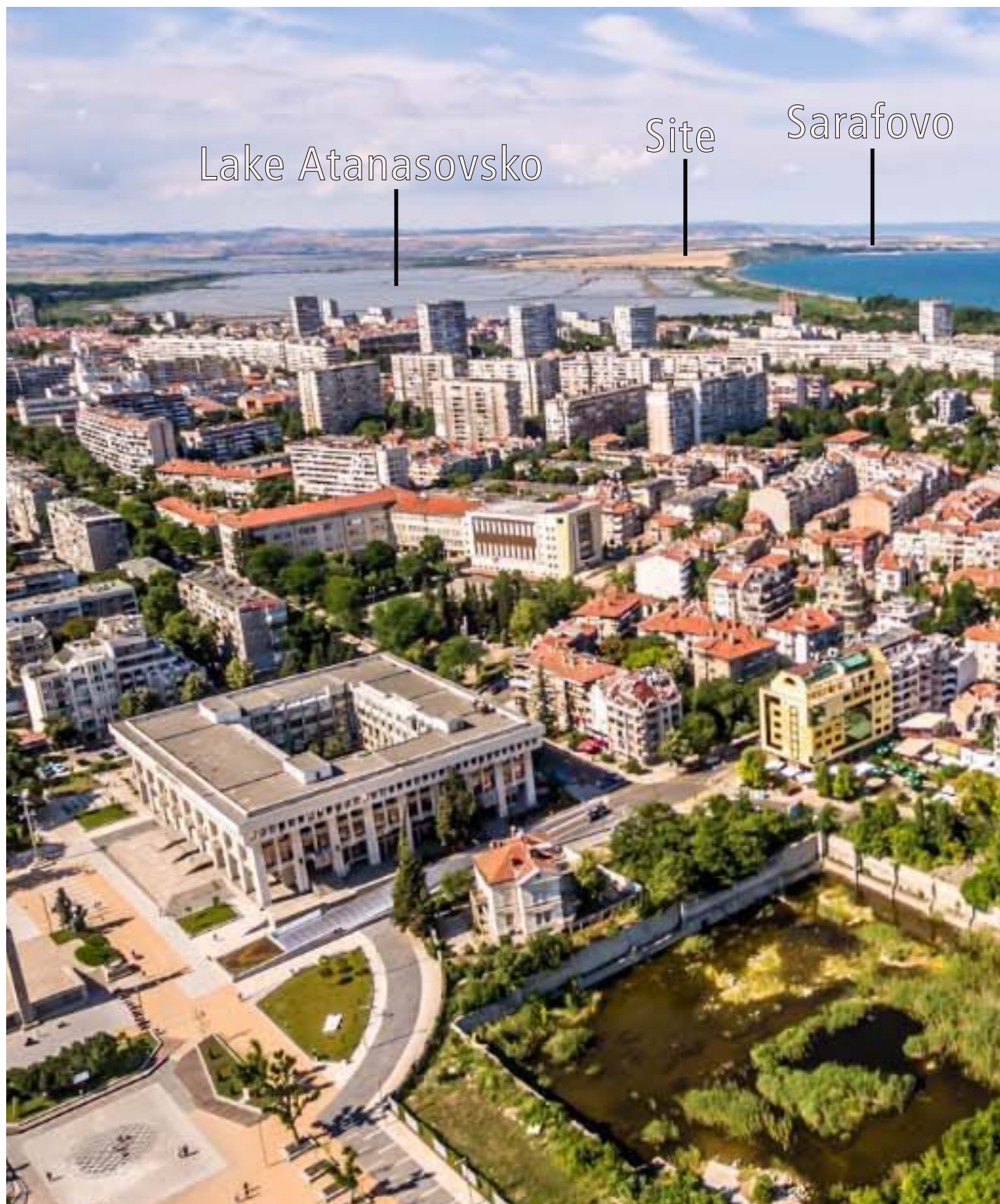
Sozopol 34 km  
Tsarevo 65 km

Wavepark Burgas I 101

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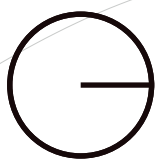




Black Sea



fig 87::Hotel Bulgaria photo Photo Credits- Anton Nihtyanov



100m  
200m

P

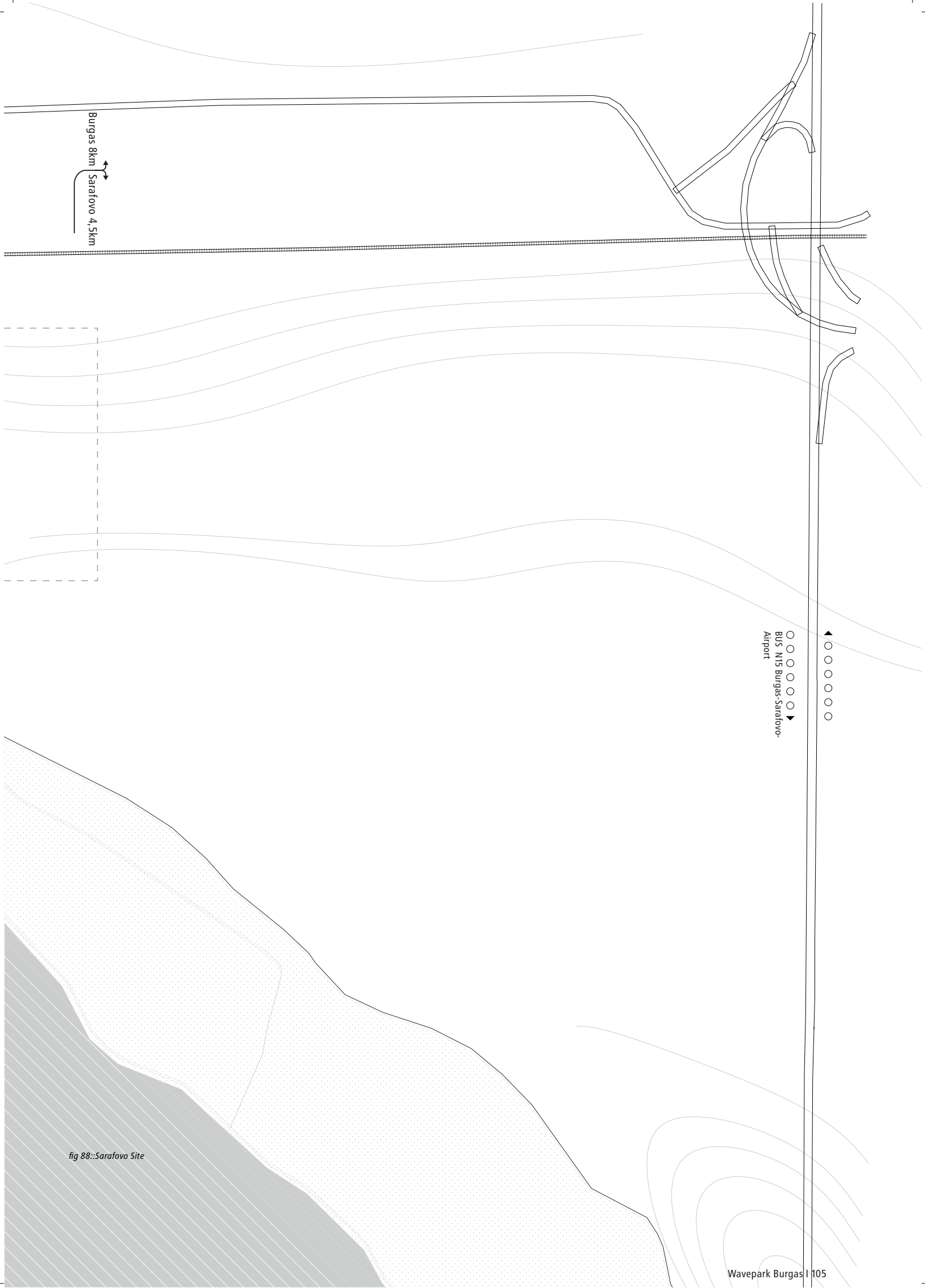
Burgas 5km 

 Sarafovo 3,3km

Lake Atanasovsko

Varna 115 km  
Sunny Beach 36 km





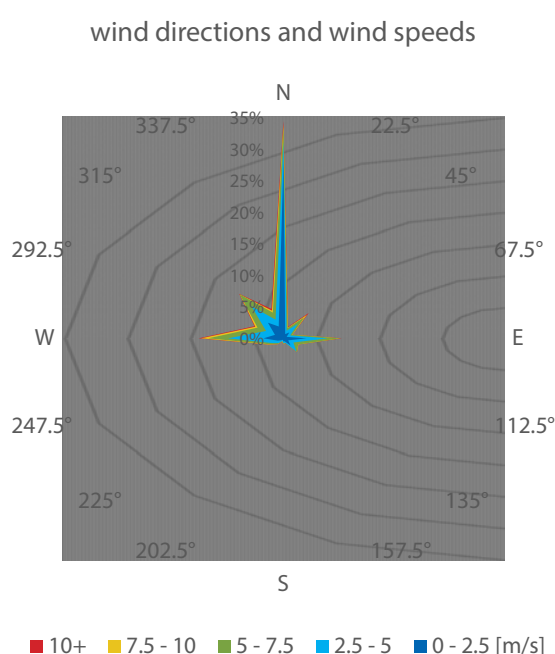
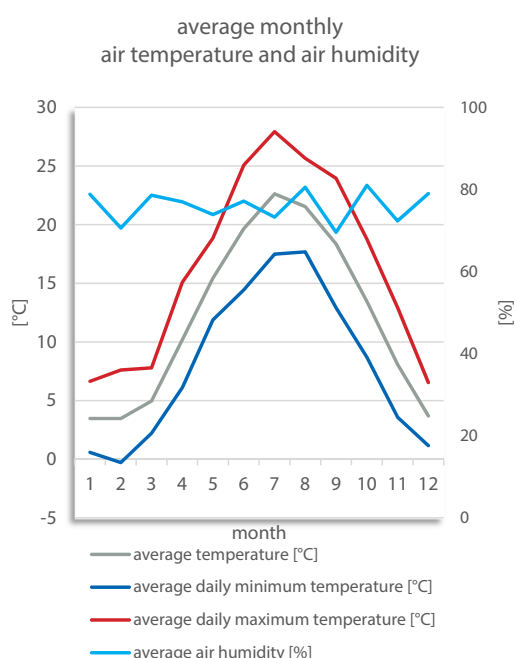
◀ ○ ○ ○ ○ ○ ○ ○  
BUS N15 Burgas-Saratovo-Airport

Burgas 8km  
Saratovo 4,5km

fig 88::Saratovo Site

Having chosen the site of the project, the hard part set in. Designing on a "blanc piece of paper". The empty plot made it difficult to choose where to situate the wavepool. Fortunately, the ideas came quick, wanting to keep the project as cost efficient as possible I started looking the perfect spot, which required minimum outside intervention. Due to the sheer scale of this sports center, even the small slope of no more than 3% became a big obstacle, having height differences of up to 9 m from end to end. Looking through the weather files I collected for Burgas another hefty solution jumped out in front of me. The majority of winds came from the north, and through the knowledge gathered while surfing myself, I quickly decided that the wave direction has to be opposite the wind direction, thus when the frequent wind picked up, it will help shape and build a perfect face for the wave. Then came the pool itself. Having minimal size restrictions I opted to go for the optimum lagoon size given

combined with the vision barriers place between the lots gives an opportunity of having parking as well as green space for different activities for the visitors to enjoy. The overflow parking will provide an additional of 400 parking spaces when needed. One of the main objective was to make this an "activity" landscape, designed to stimulate people to be active and moving. The whole park is open for the general public, to encourage people to come. Only the services that are being offered will going to be charged. Everyone is welcome to come and have a look around. The wavepark is accessible both by car and bike. The main road connection leads to the road connecting Burgas and one of the major summer resorts, Sunny Beach. By car it is 8km to Burgas and about 4,5 km to the neighbourhood of Sarafovo and the Airport. A bus route connecting the airport and the city is the closest public transportation available, and therefore a shuttle service will be provided from and to the airport, servicing both people arriving by plane or using the



by the producers, WaveGarden. From then on it was a matter of playing around with the landscape, encountering the different problems that came up. On one side you have this minimal slope (3% max.) which doesn't give enough room to play with, and on the other, due to the sheer size of the complex, the big height difference from corner to corner (approx. 9m). The next problem I encountered had to do with the parking spaces of the wavepool. Designing a facility such as this requires a great amount of parking space. Thinking ahead it should be able to hold 50 people as well as 5000 in case of a special event. An overflow parking was added in case of a big event and parking spaces shortage. There are 4 separated parking lots, each containing 88 parking spaces and 3 handicapped spaces. The shading is achieved with placing trees, which is done in accordance to the wind direction, as to not hinder the wind flow. The parking itself is designed using a special surface material that allows it to be entirely covered in grass, making this a non-traditional solution, but one that provides many benefits. For one, heat emission from the concrete that would be otherwise used are replaced with green areas. A parking system is designed to fill each parking lot, before opening other ones, and that

public transport system of the city of Burgas. A bicycle lane passes right next to the plot, offering quick and easy access to both Sarafovo (3,5 km) and the city center (5 km) via one of the longest beaches the city has to offer. The site will offer camping accommodation, as well as "pods" for up to 4 people with shared amenities. A "five-a-side" football pitch, along with basketball hoops will be catering the needs for the people of Burgas, as well as 2 tennis courts and 4 beachvolleyball pitches. A new skatepark will be added. The Surfing Academy will offer different surf-related sports, like yoga, martial arts, indoor climbing and many more.

fig 89::Average Temperature, Burgas

fig 90::Windrose, Burgas



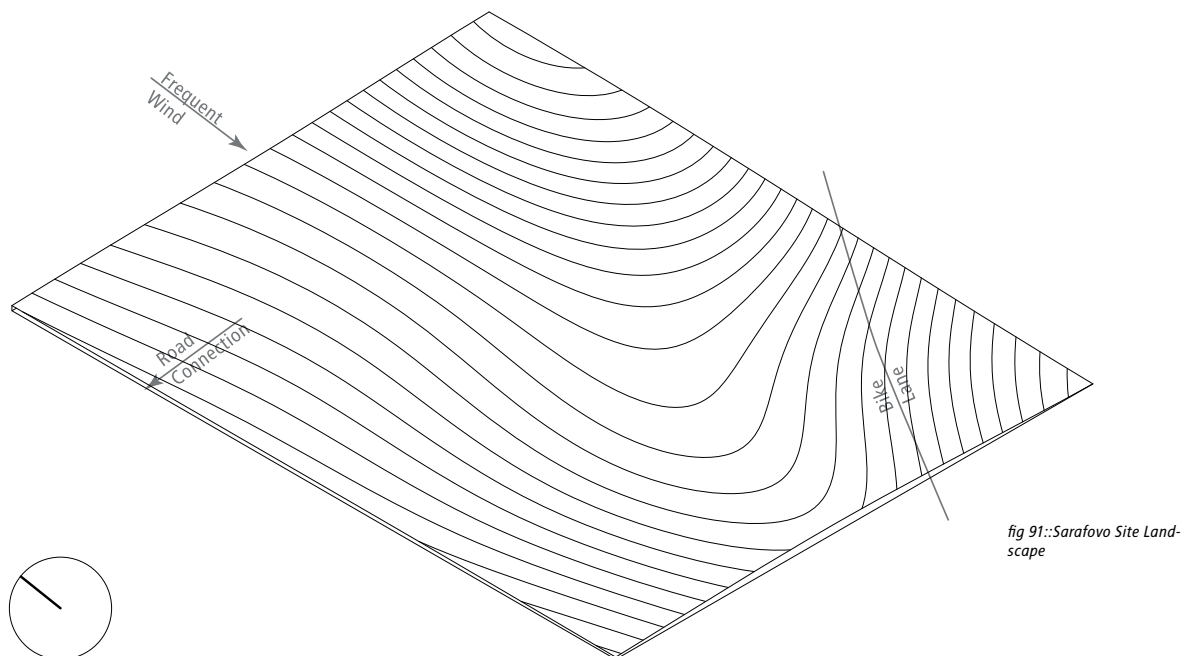


fig 91::Sarafovo Site Land-  
scape

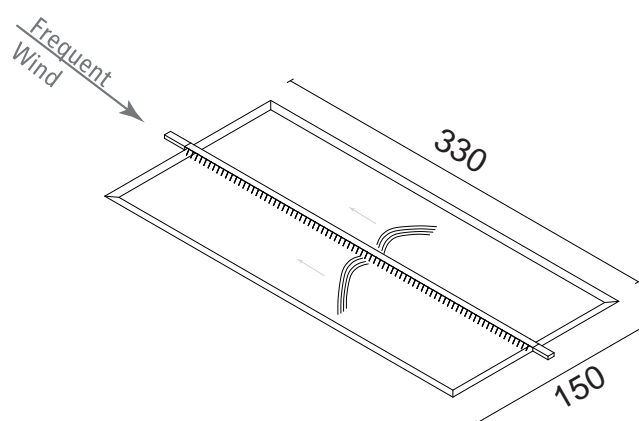


fig 92::Lagoon Dimensions

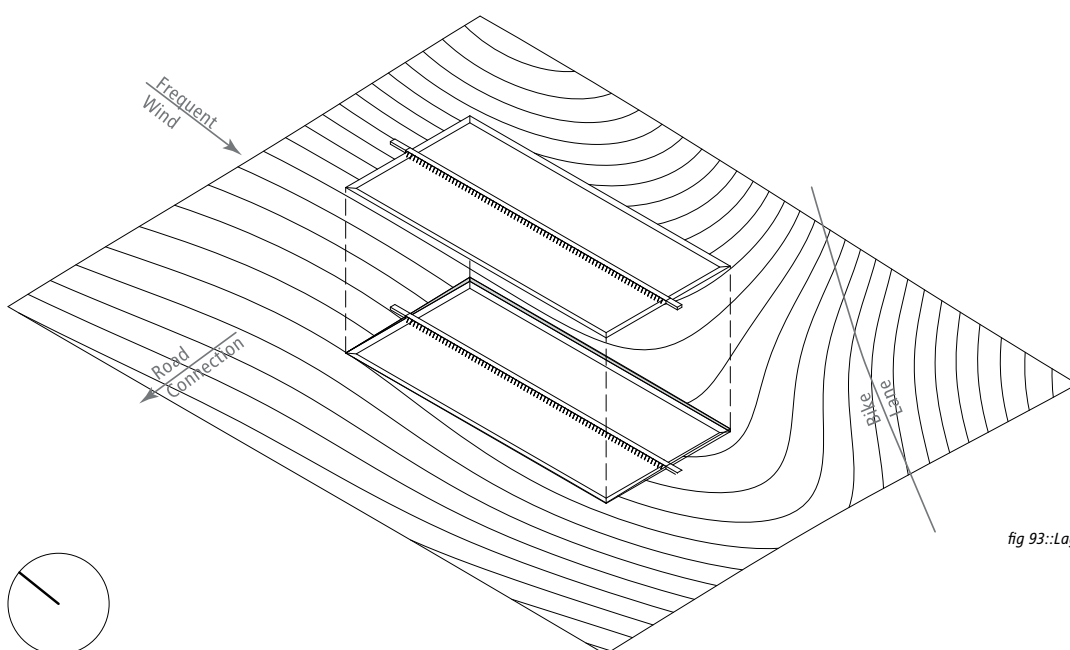


fig 93::Lagoon Placement

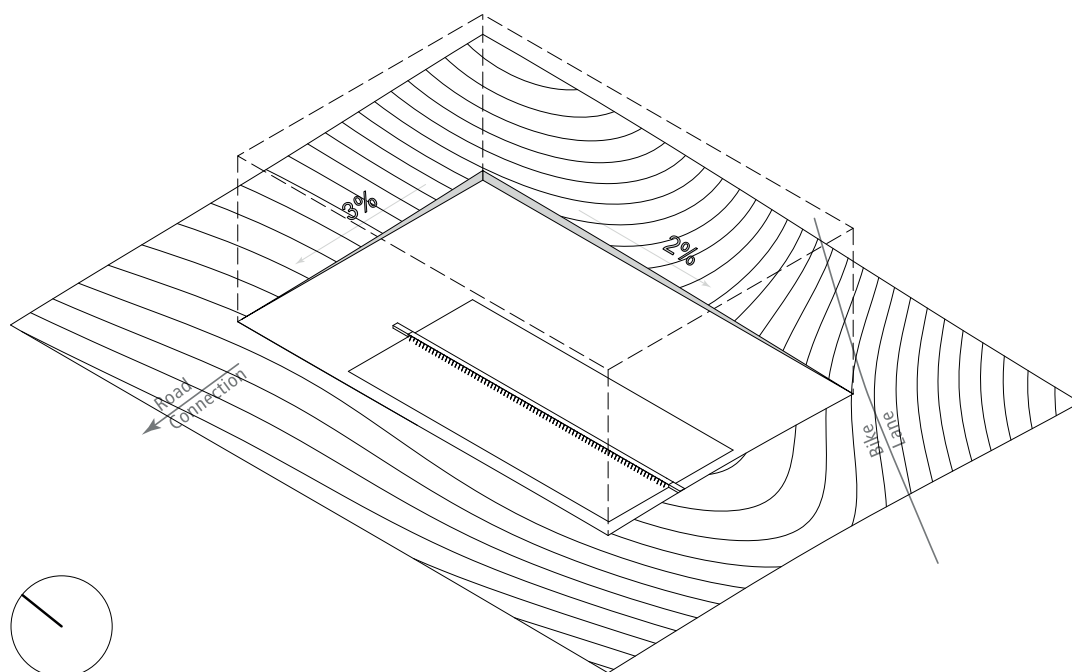


fig 94::Additional Space for Facilities



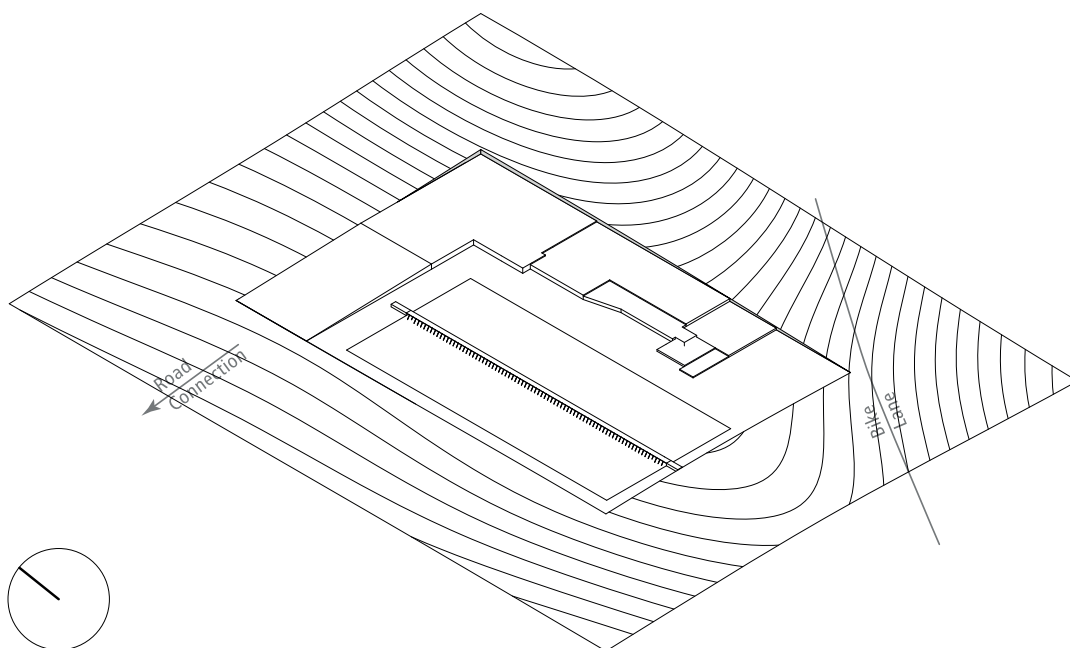


fig 95::Landscape

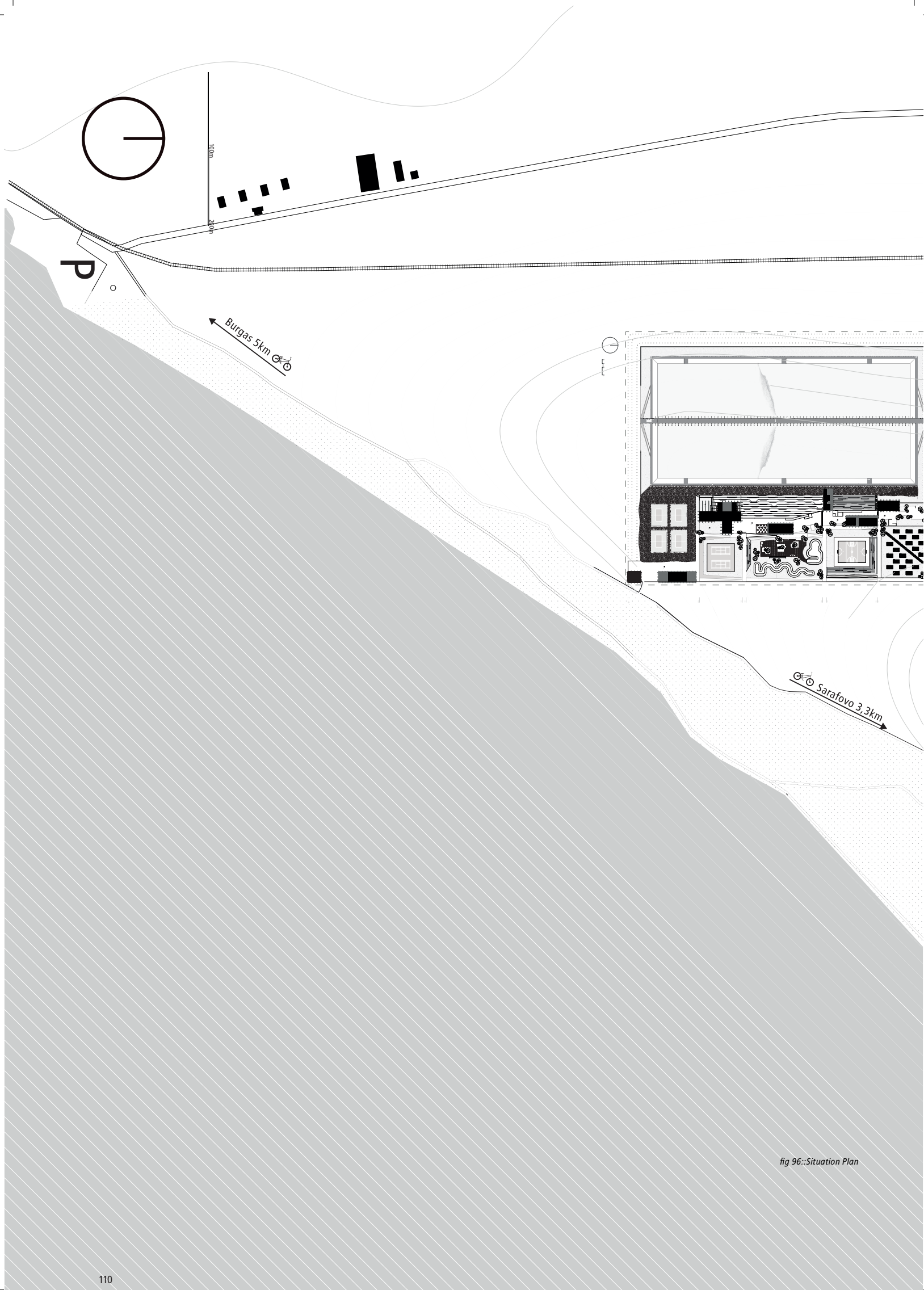
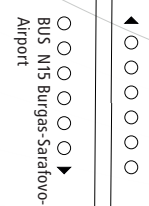


fig 96::Situation Plan





# Wavepark Burgas

1. Main Parking Lot - 4x91 parking spaces, a total of 364

2. Common Area for Campers

3. Camping for Camper Vans - a total of 28 spaces

4. Staff parking - 10 parking spaces

5. "Pod" Parking - 44 parking spaces

6. "Pod" Camping - 22 camping pods capable of housing up to 4 people

7. Five-a-Side football pitch with optional basketball hoops

8. Skatepark

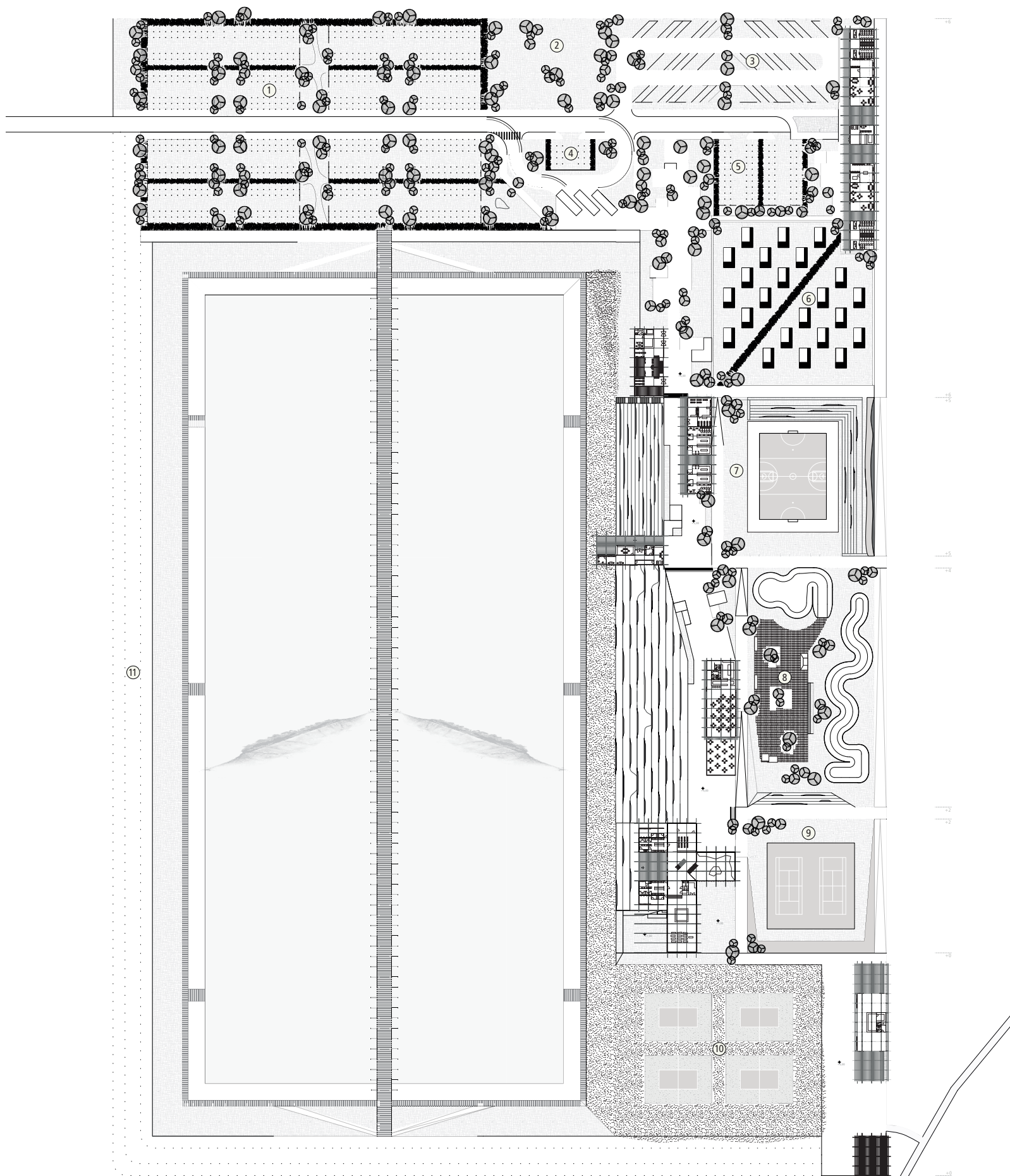
9. Tennis Courts

10. Beach Volleyball

11. Overflow Parking

*fig 97::Master Plan with Functions*



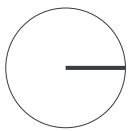


'BB' - -

- - 'BB'

'CC' - -

0 5 10 20





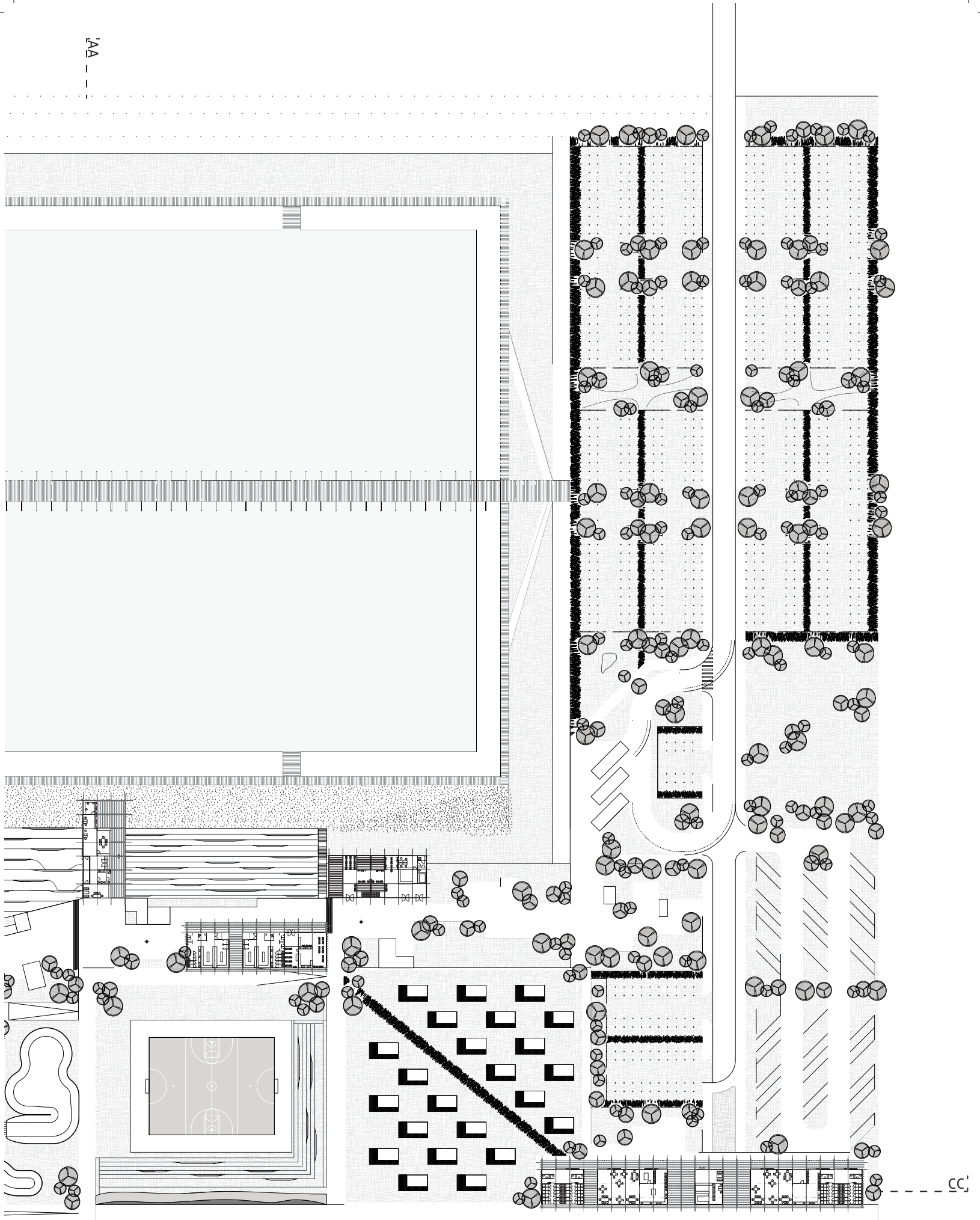
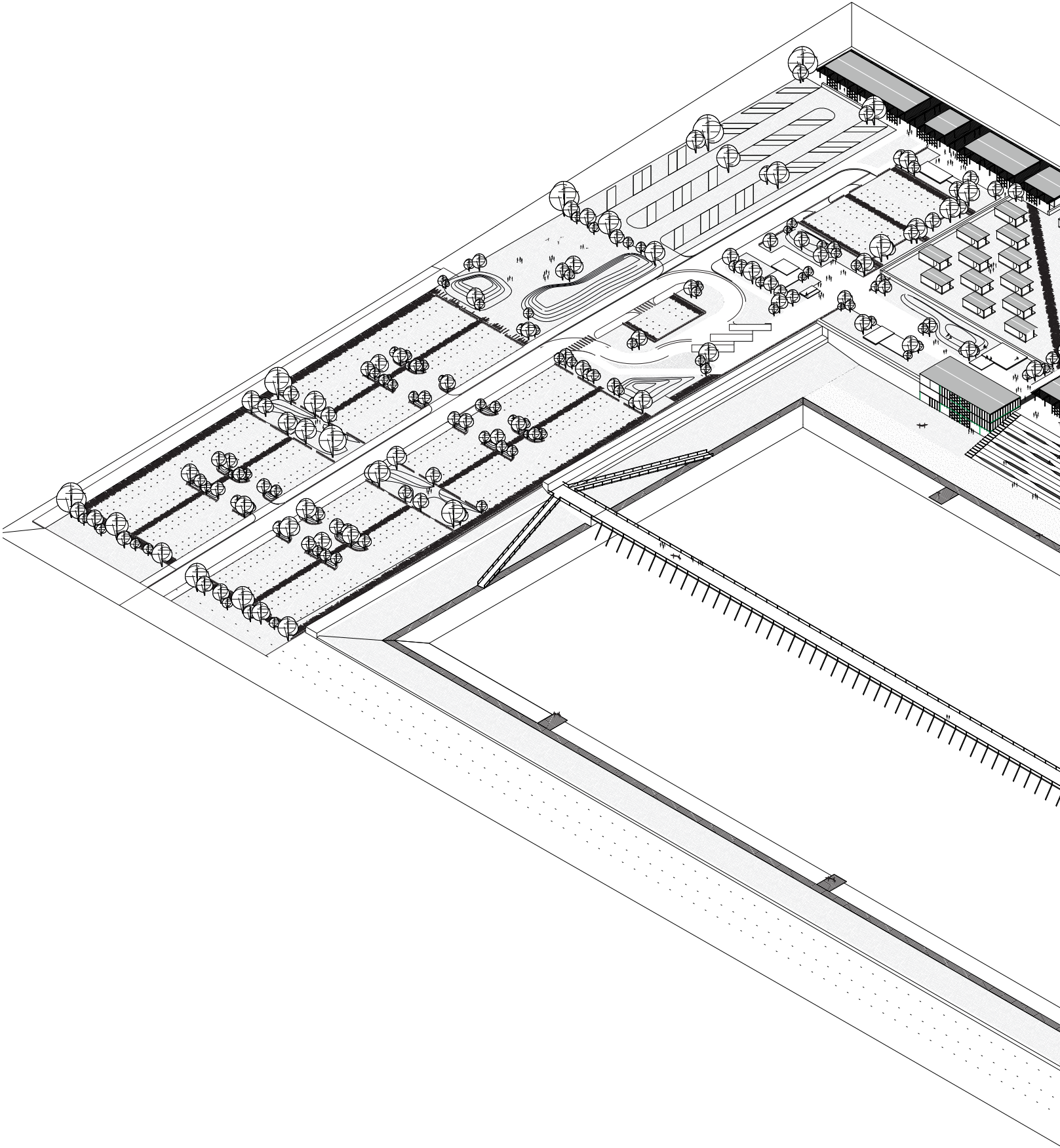


fig 98::Plan





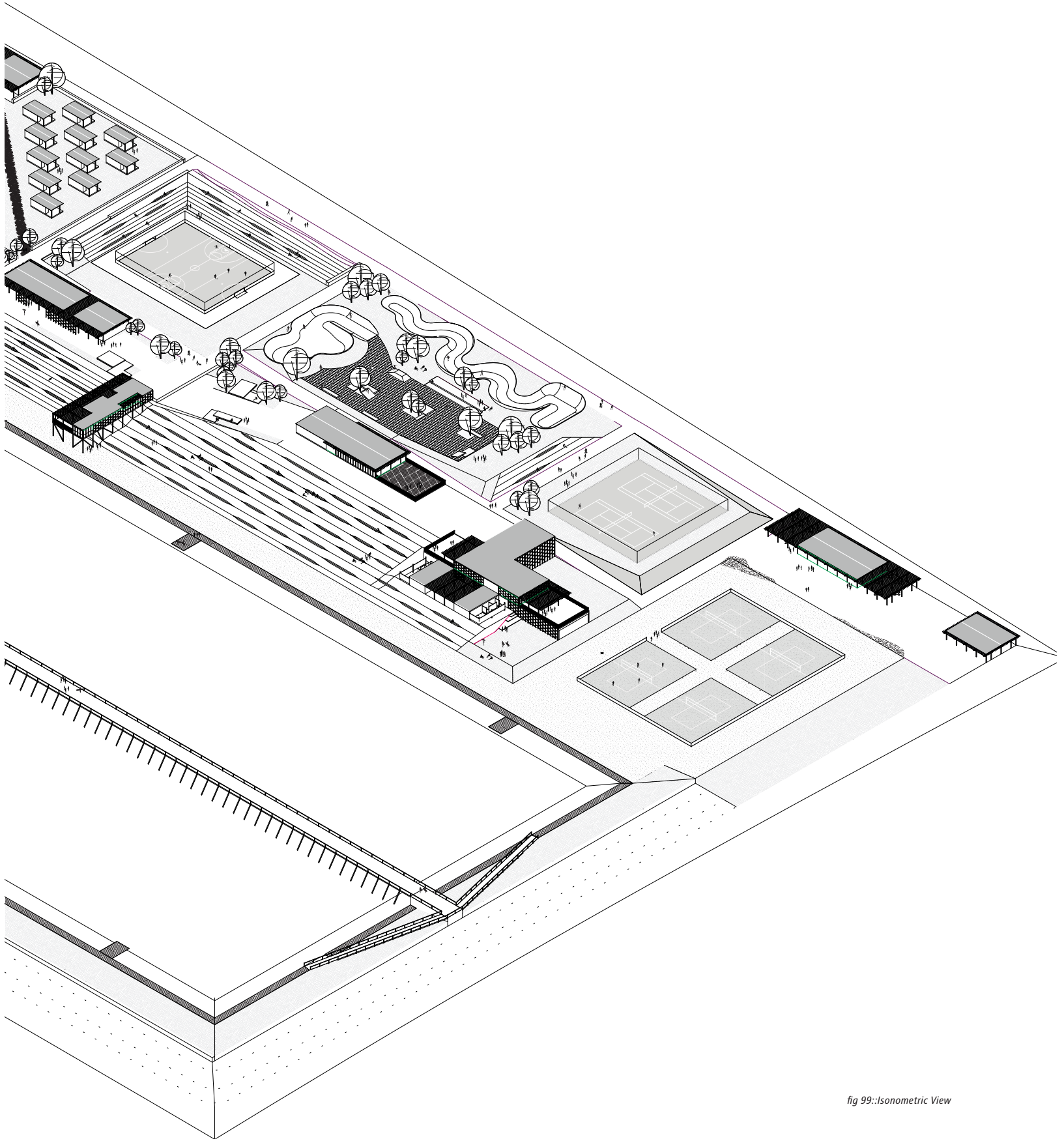
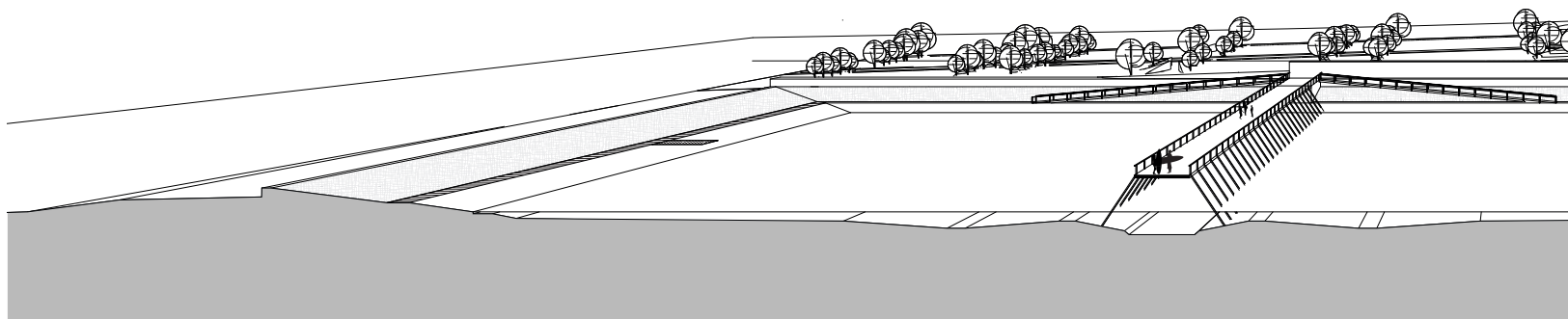
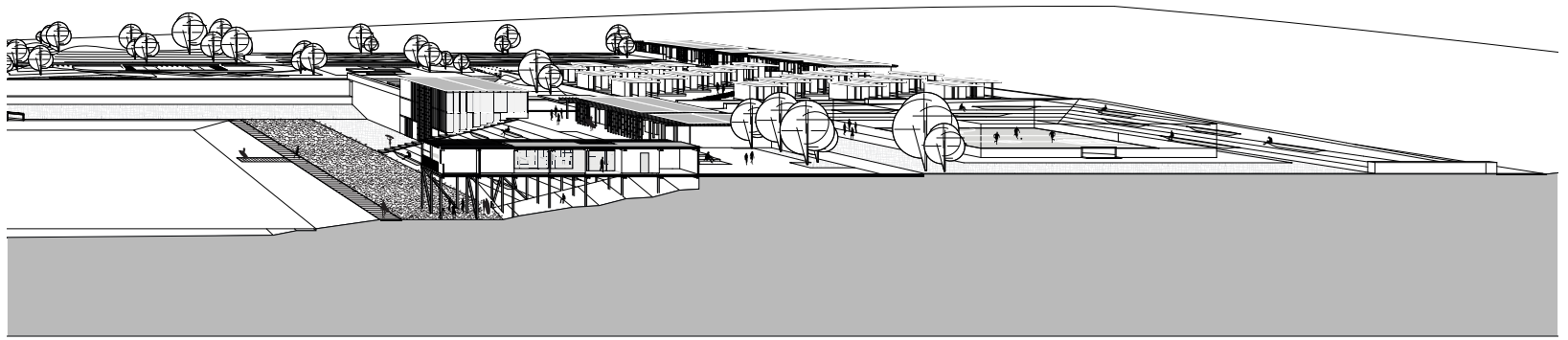


fig 99::Isometric View

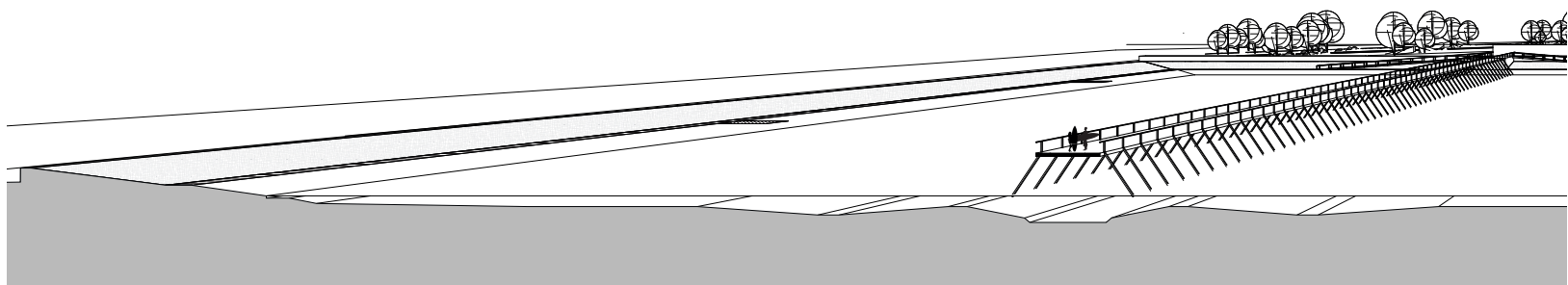


0 5 10 20



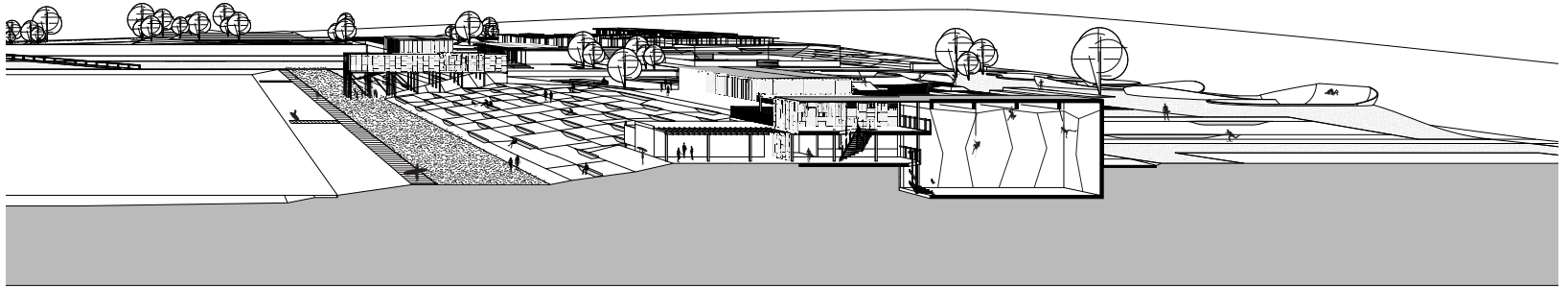


*fig 100::Perspective Section AA*

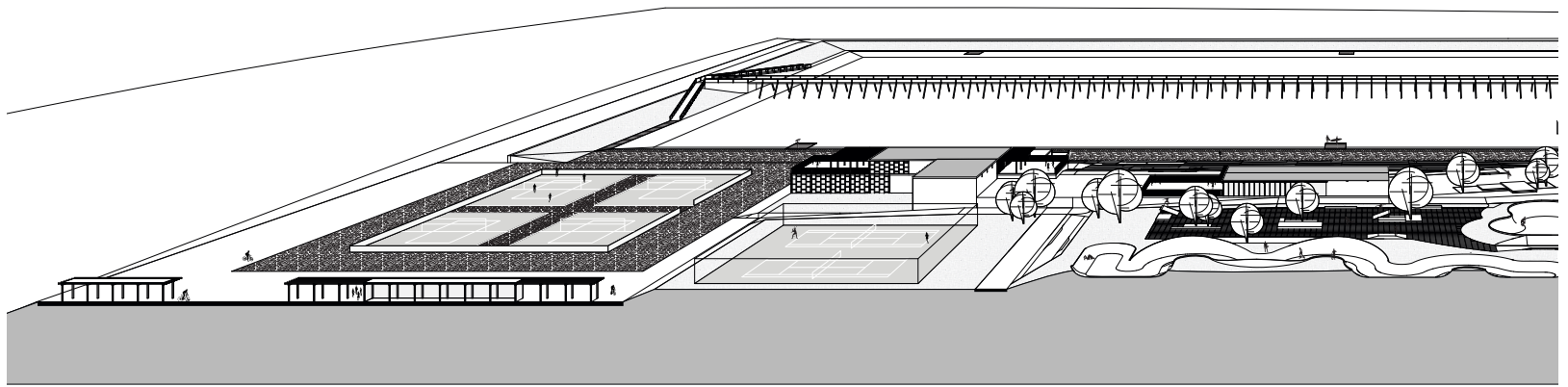


0 5 10 20



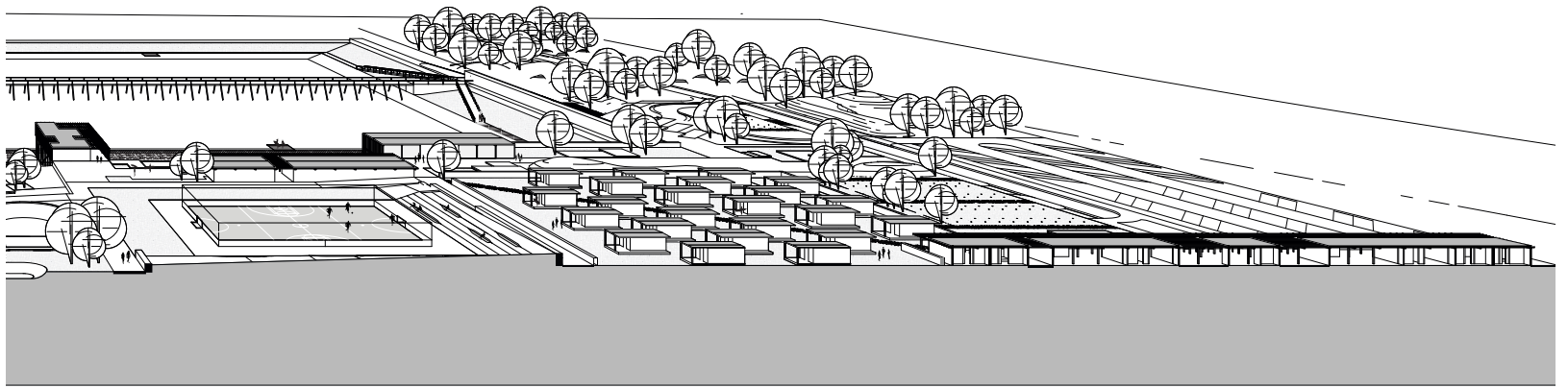


*fig 101::Perspective Section BB*

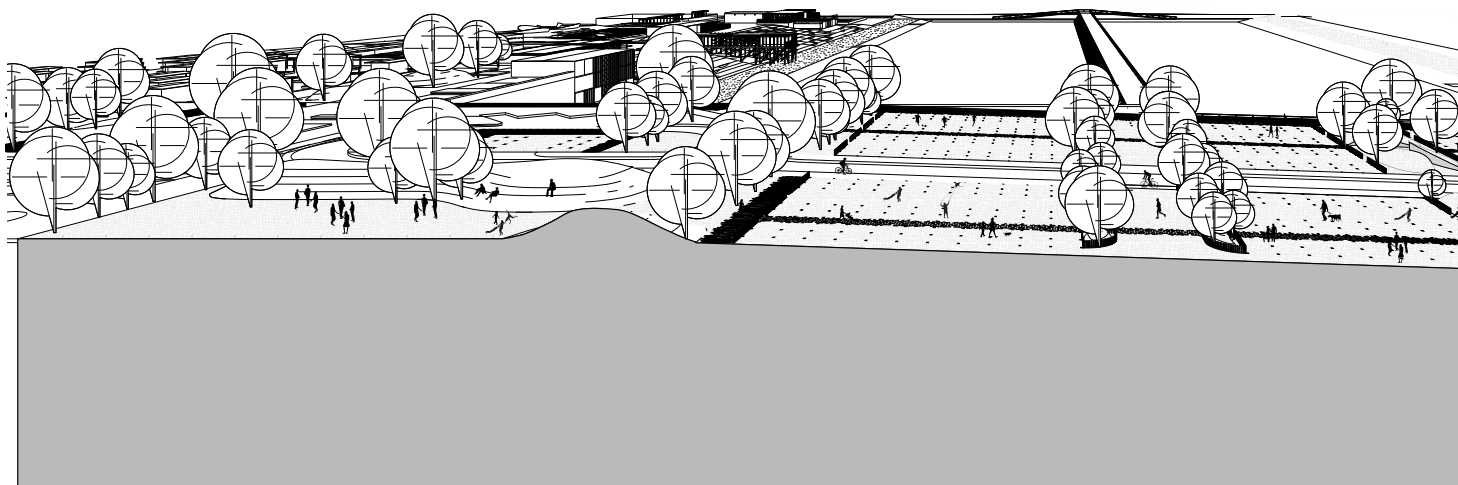


0 5 10 20

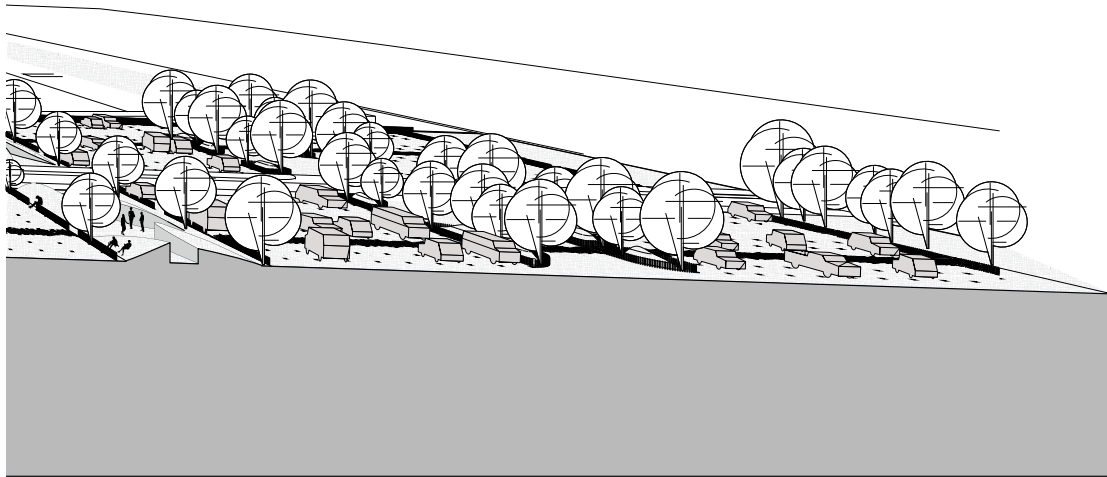




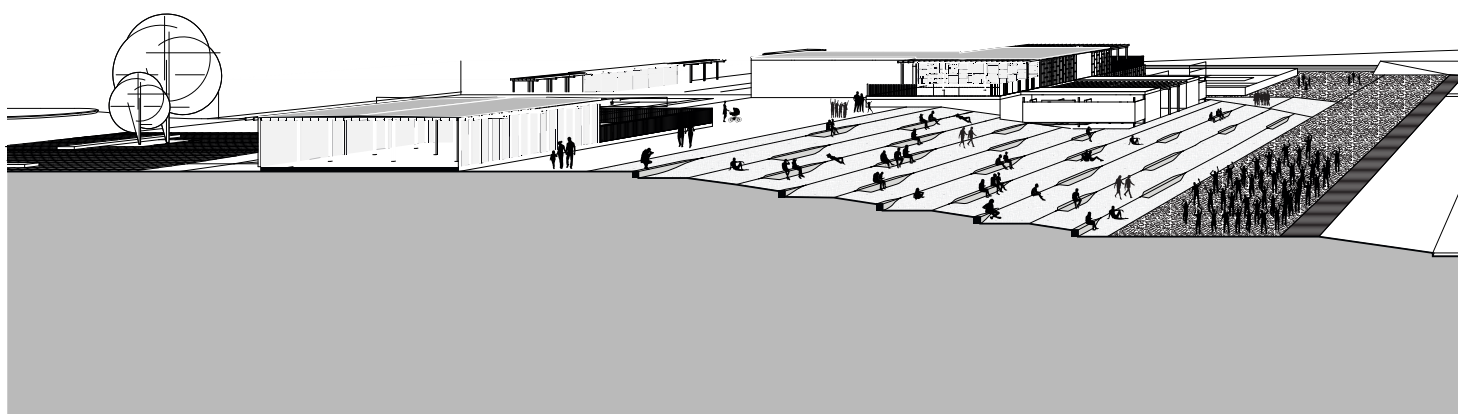
*fig 102::Perspective Section CC*







*fig 103::Perspective Section, Parking-Park Concept*





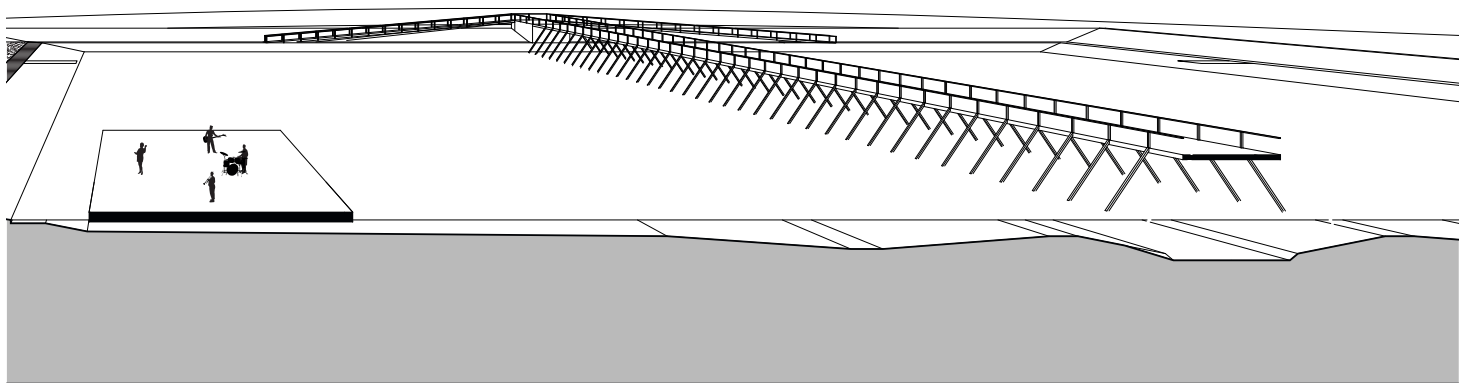


fig 104::Perspective Section, Stage Concept

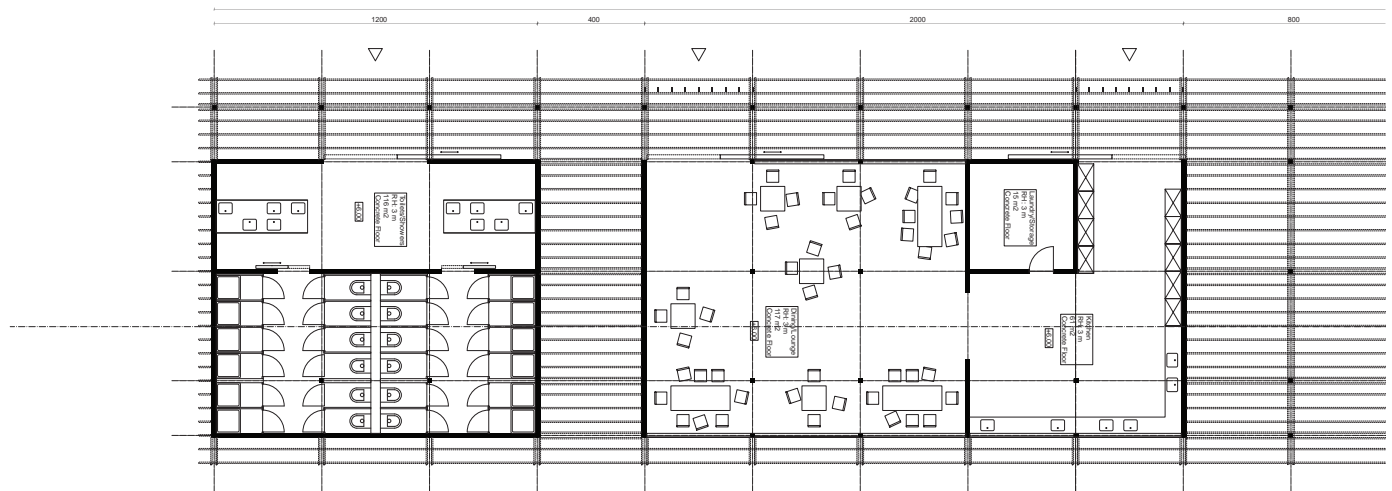
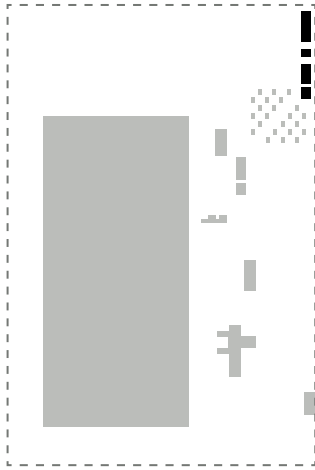
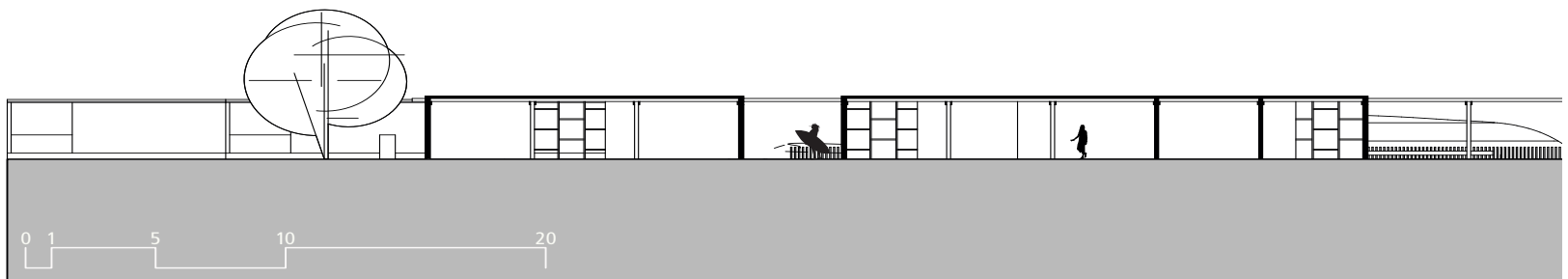


fig 105::Groundfloor Plan  
Camping Building

fig 106::Section Camping  
Building





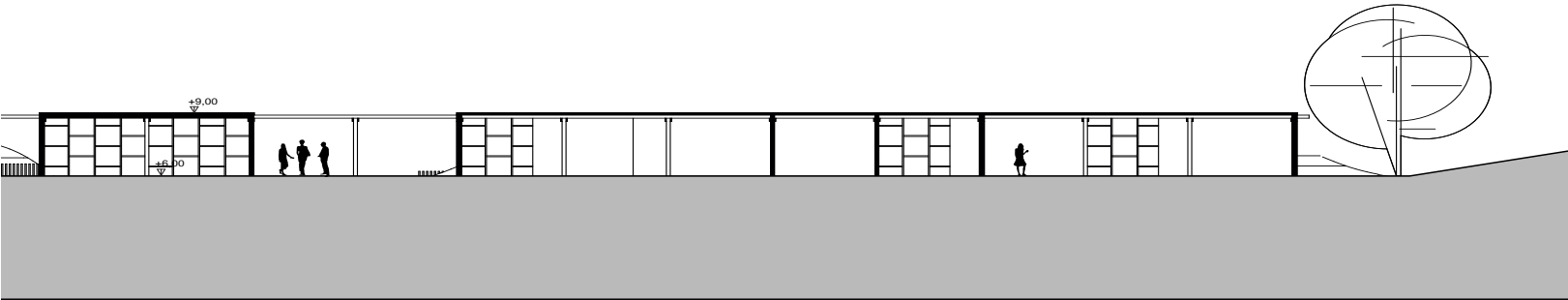
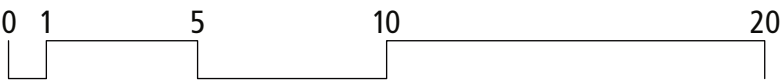
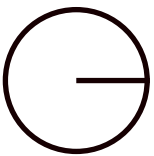
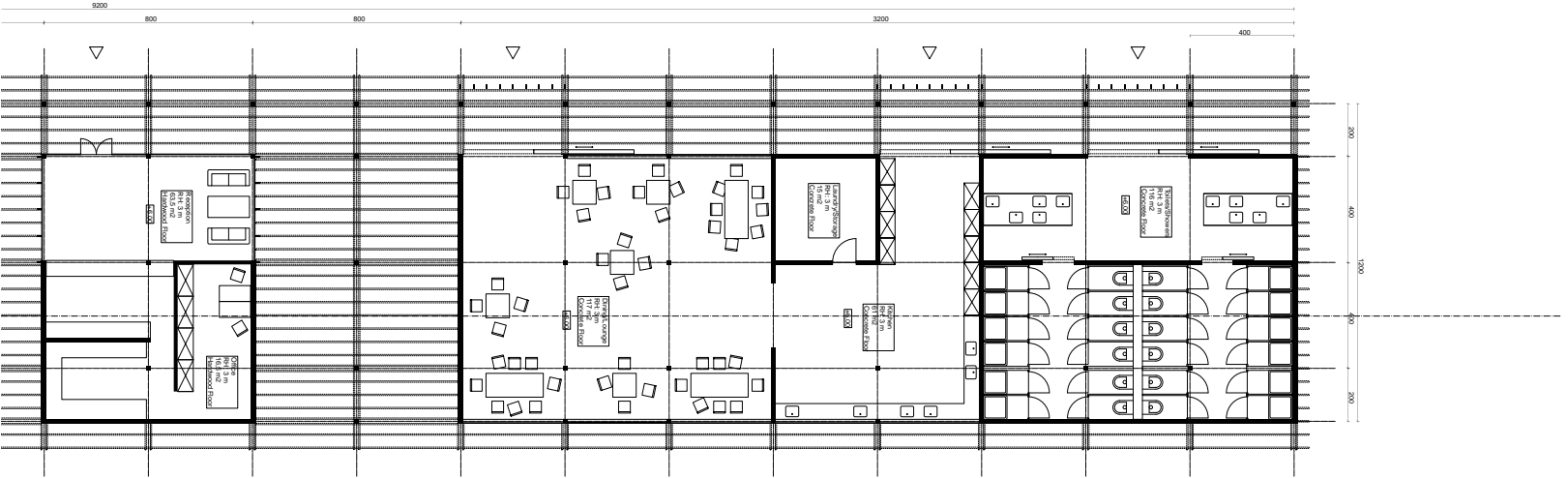
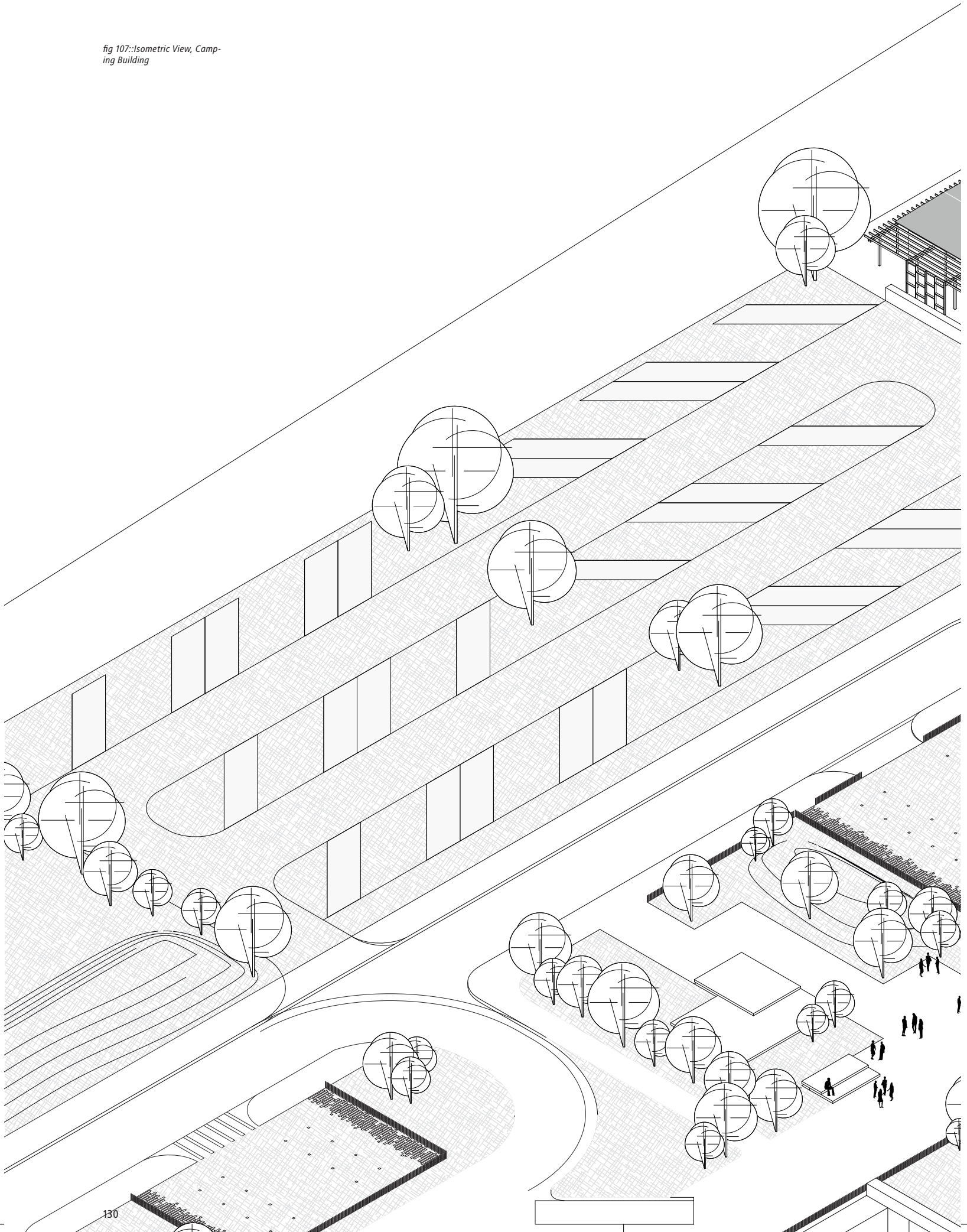
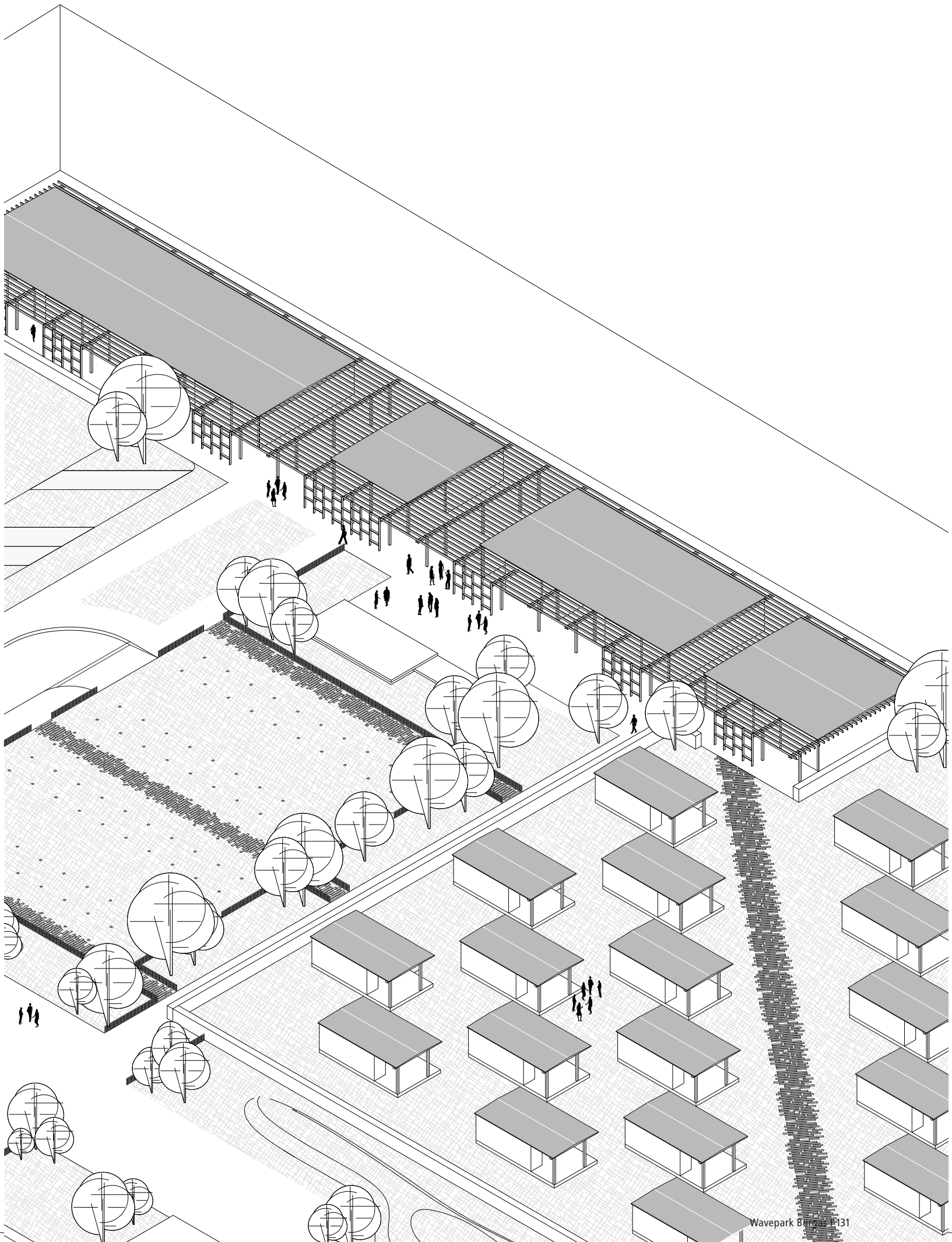


fig 107::Isometric View, Camp-  
ing Building







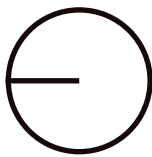
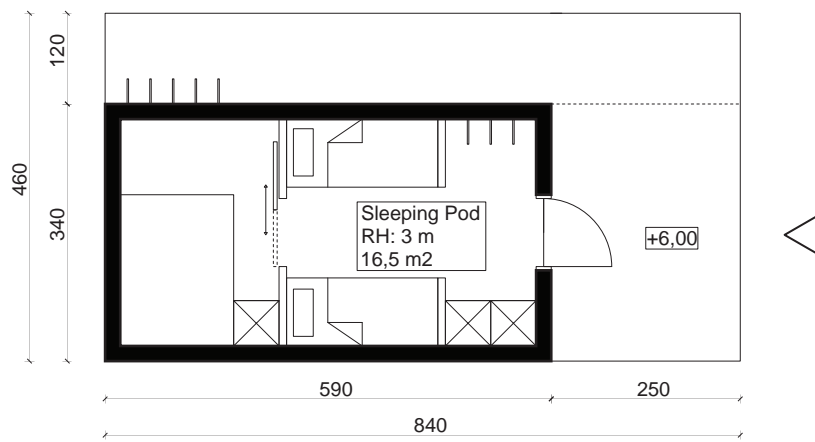
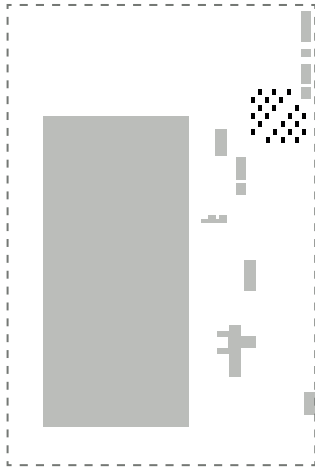


fig 108::Pods Floor Plan



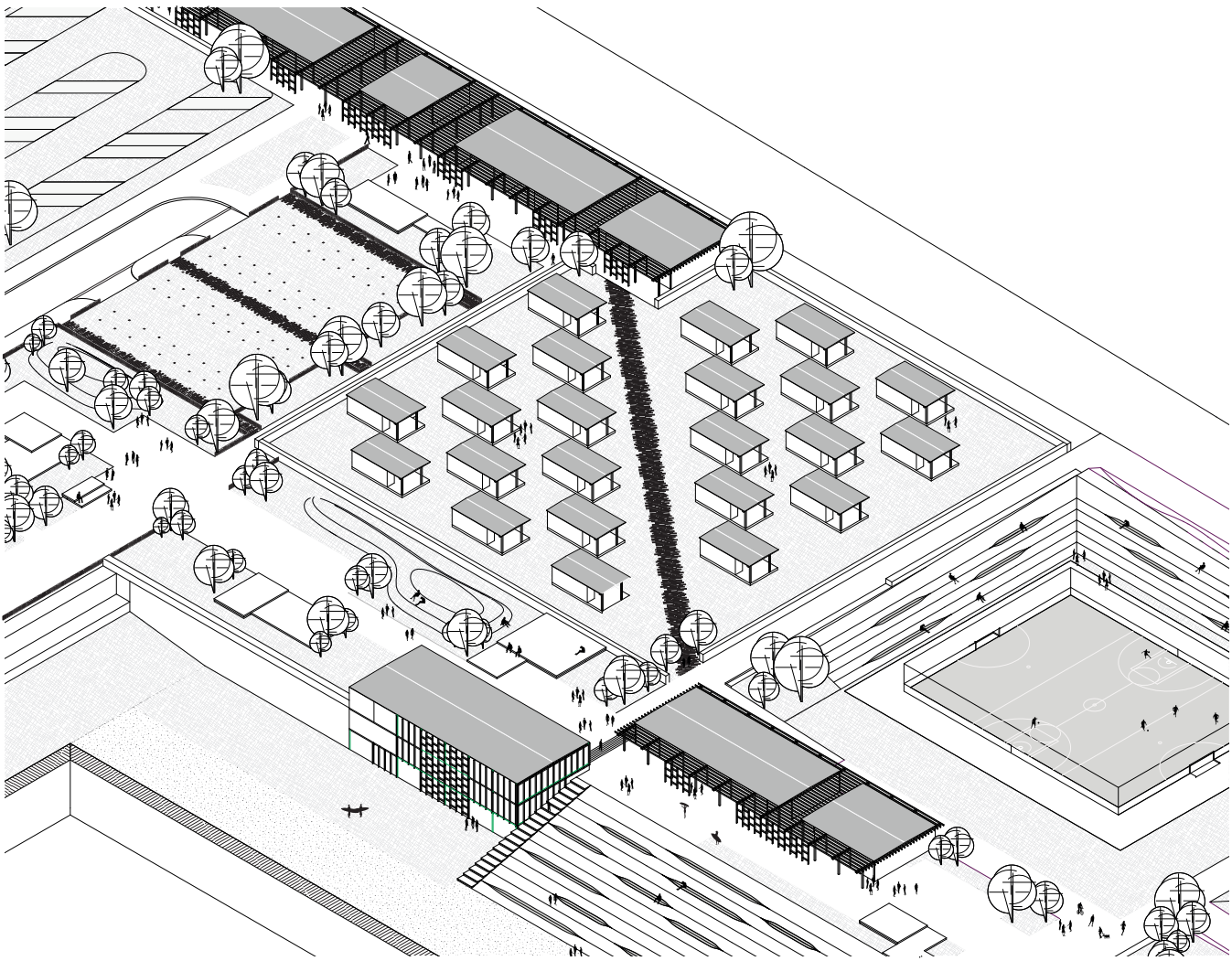


fig 109::Pods Isometric View

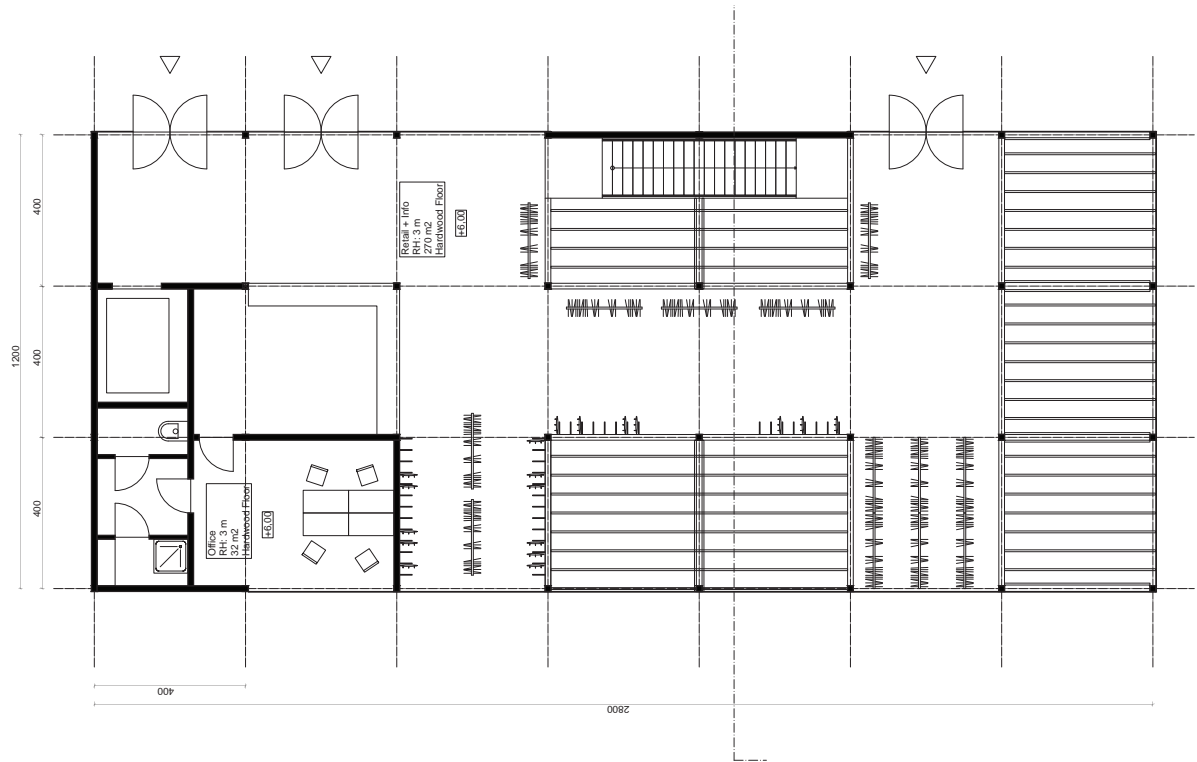


fig 110::2nd Floor Retail Center

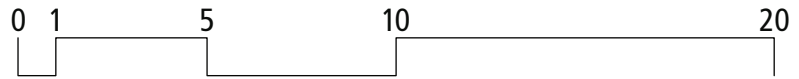
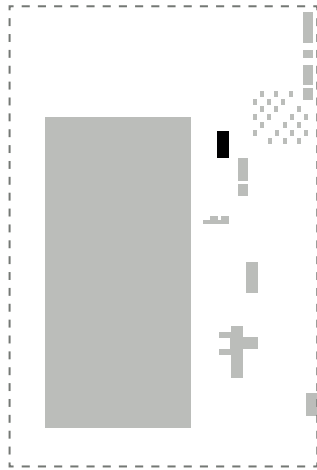
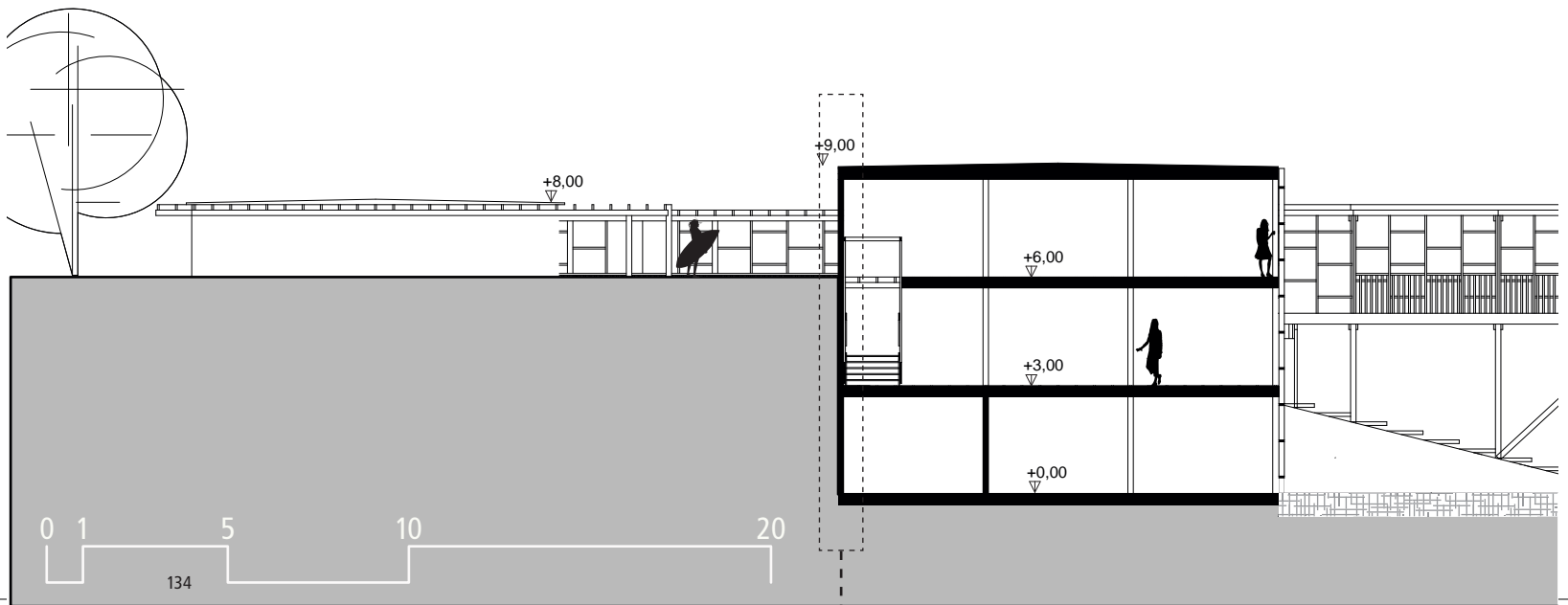


fig 111::Section Retail Center





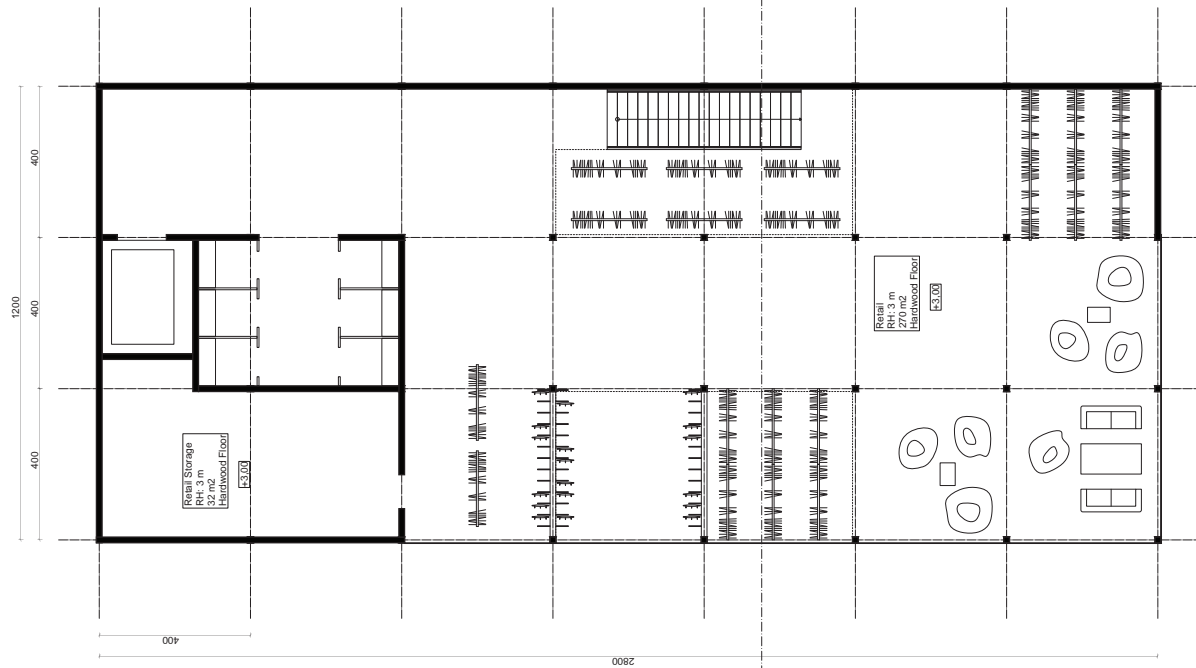


fig 112::1st Floor Retail Center

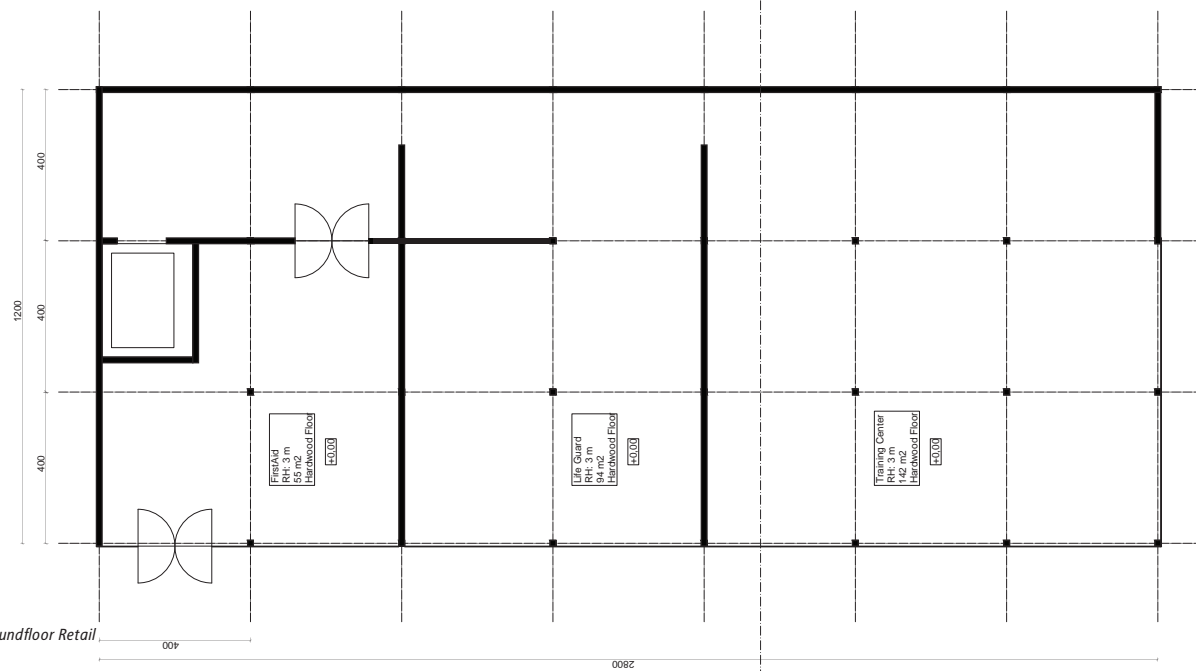
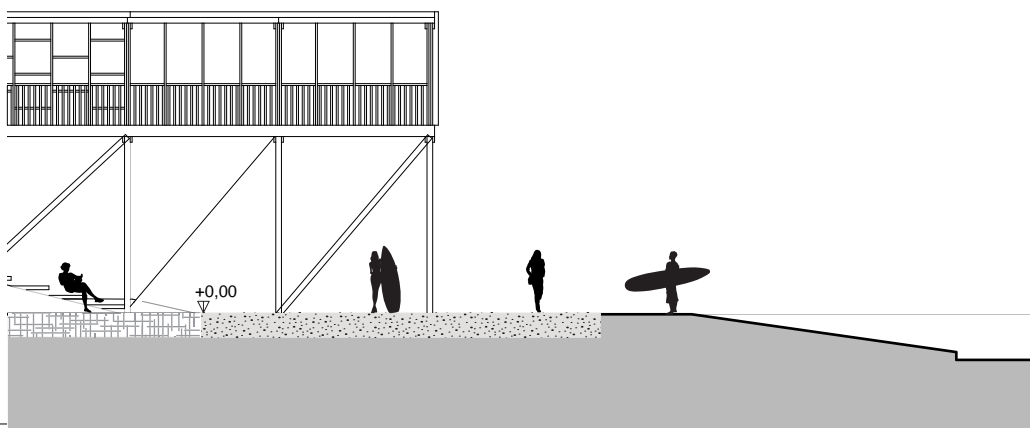
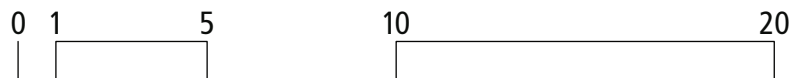
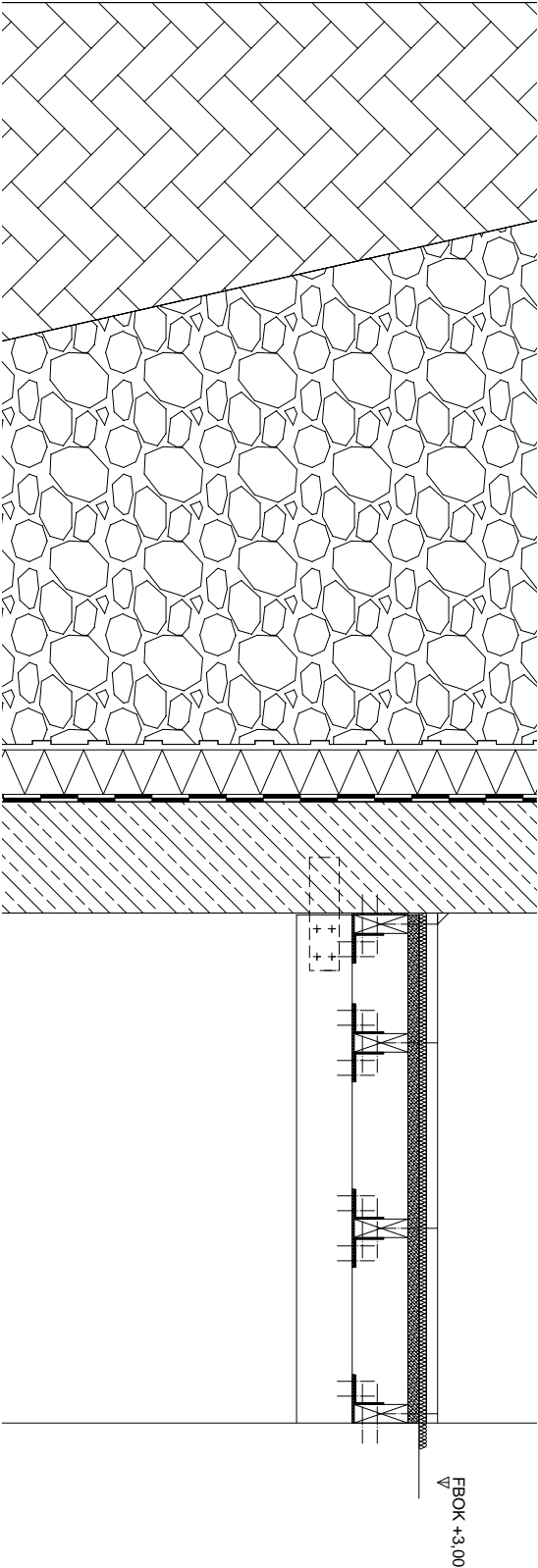


fig 113::Groundfloor Retail Center





# UNTERGESCHOSS -2

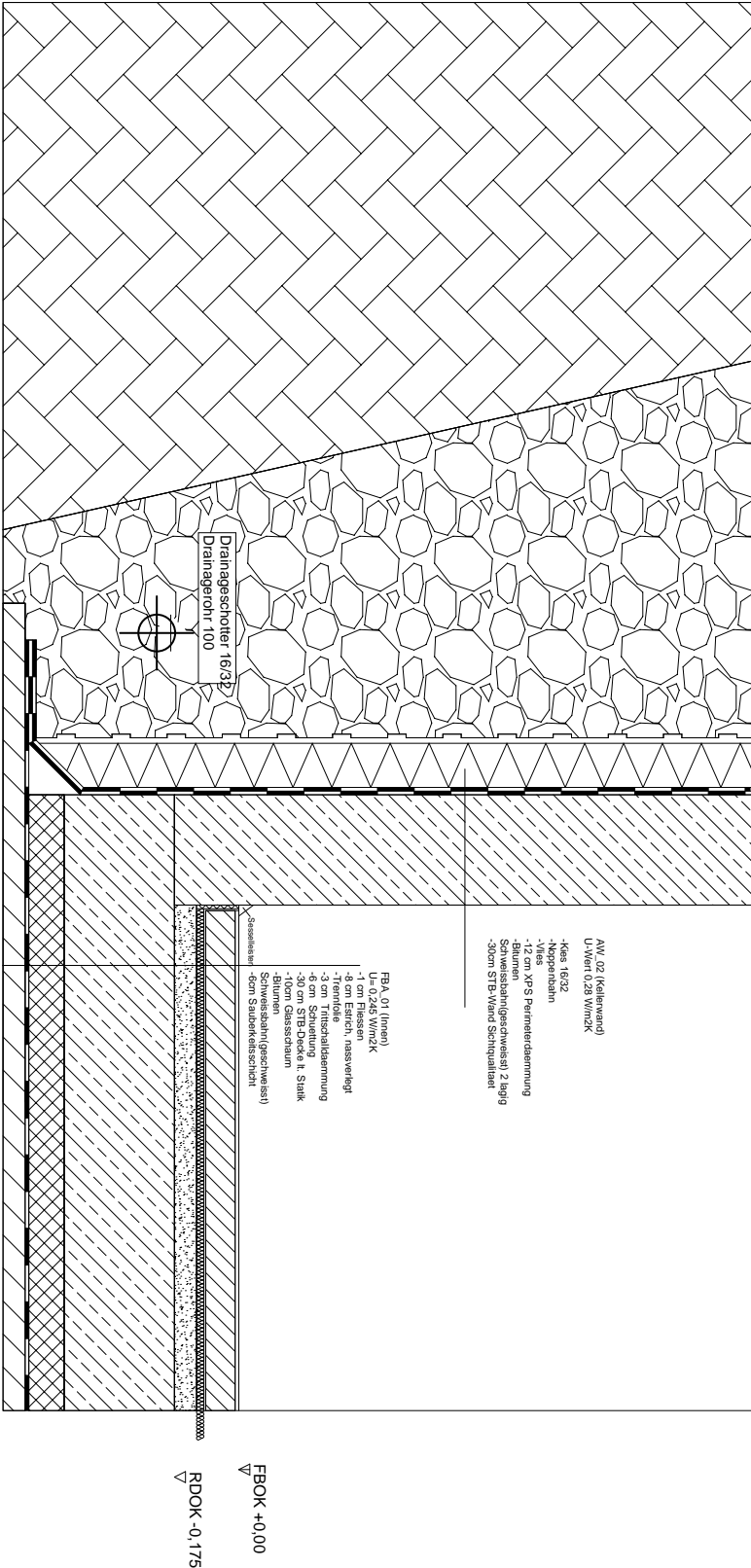
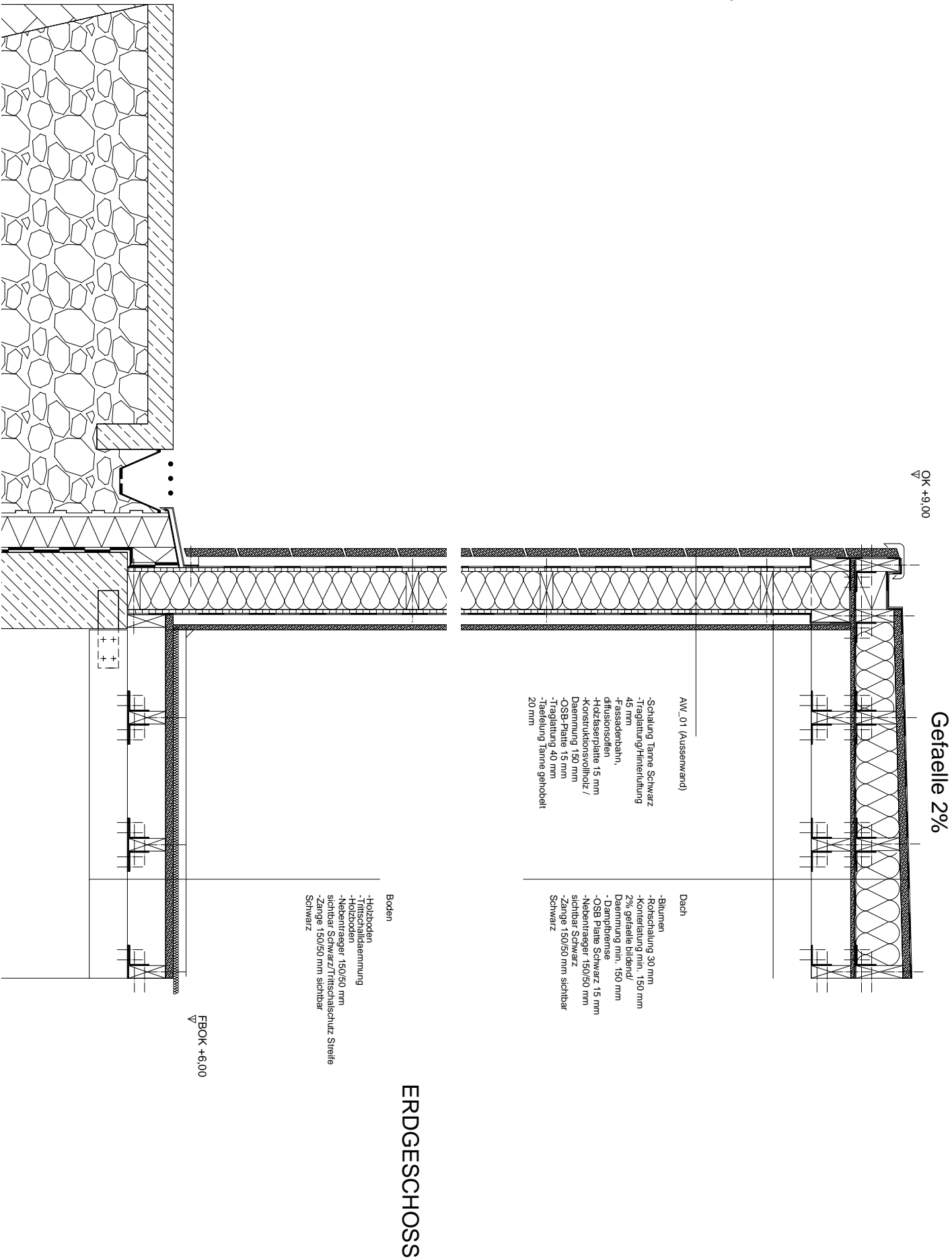




fig 114::Wall Section Retail Center M1:20



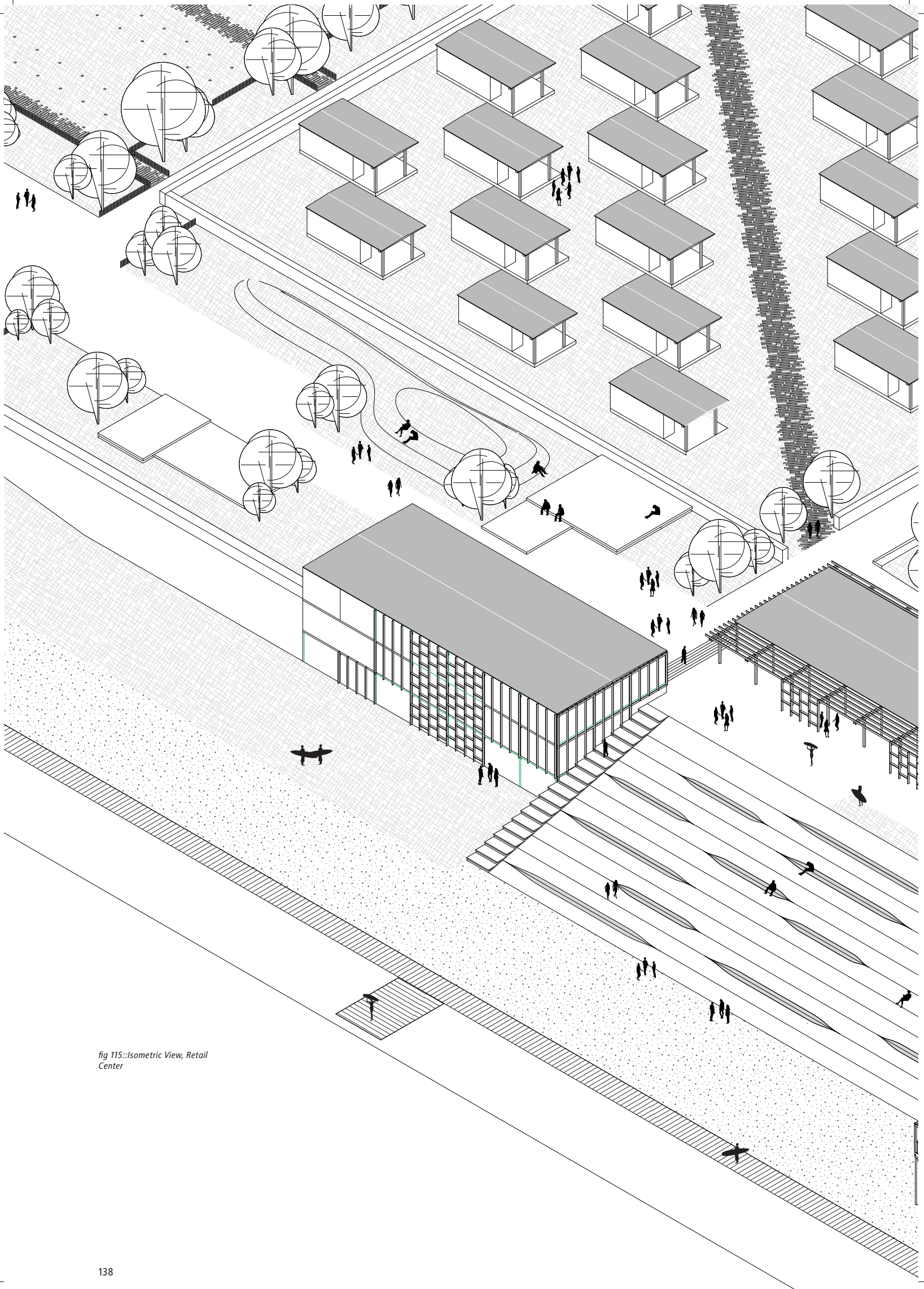
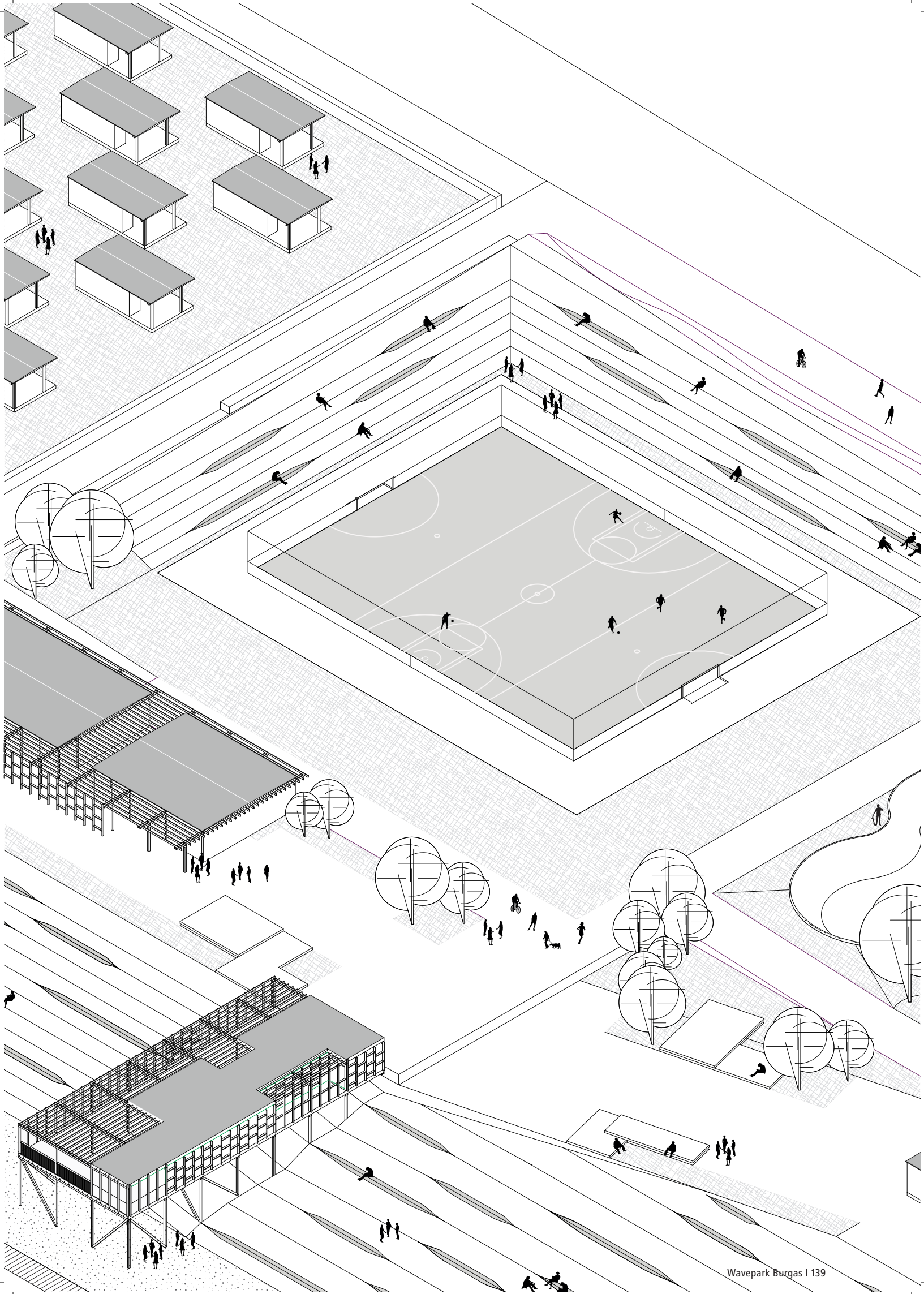


fig 115::Isometric View, Retail Center





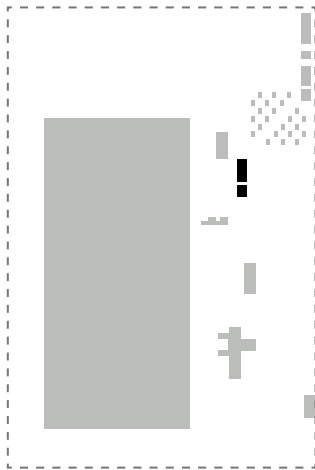


fig 116::Section M1:200,  
Changing Area

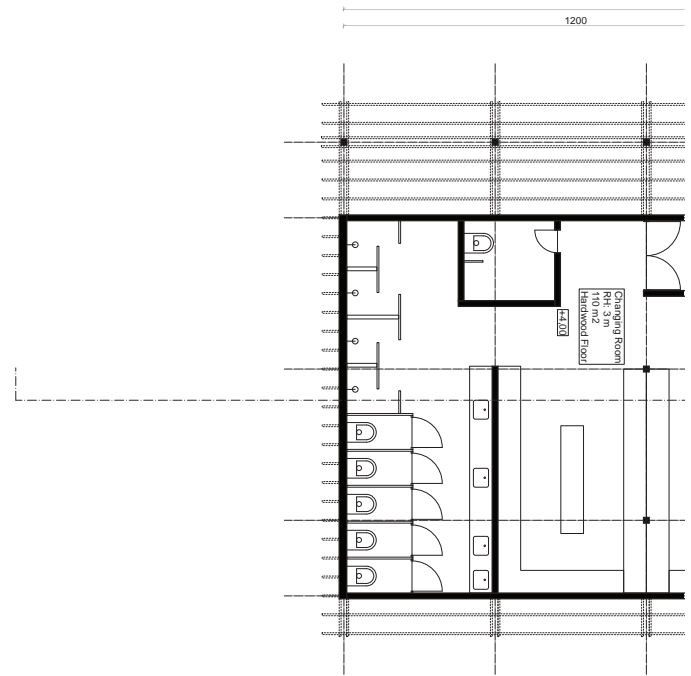
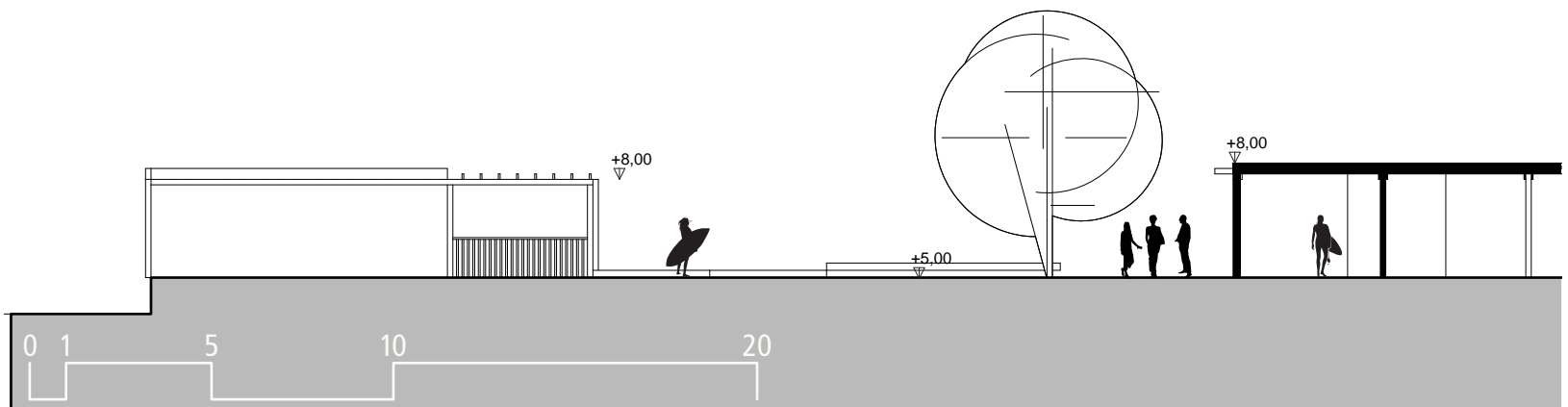
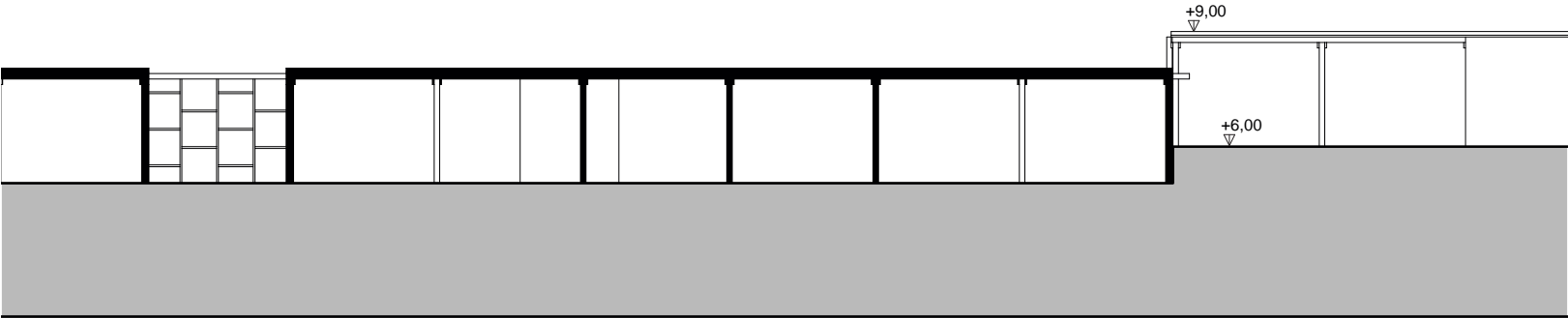
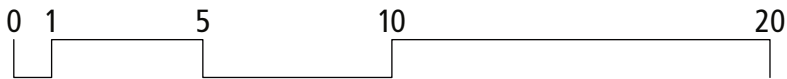
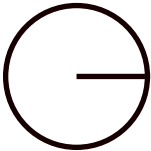
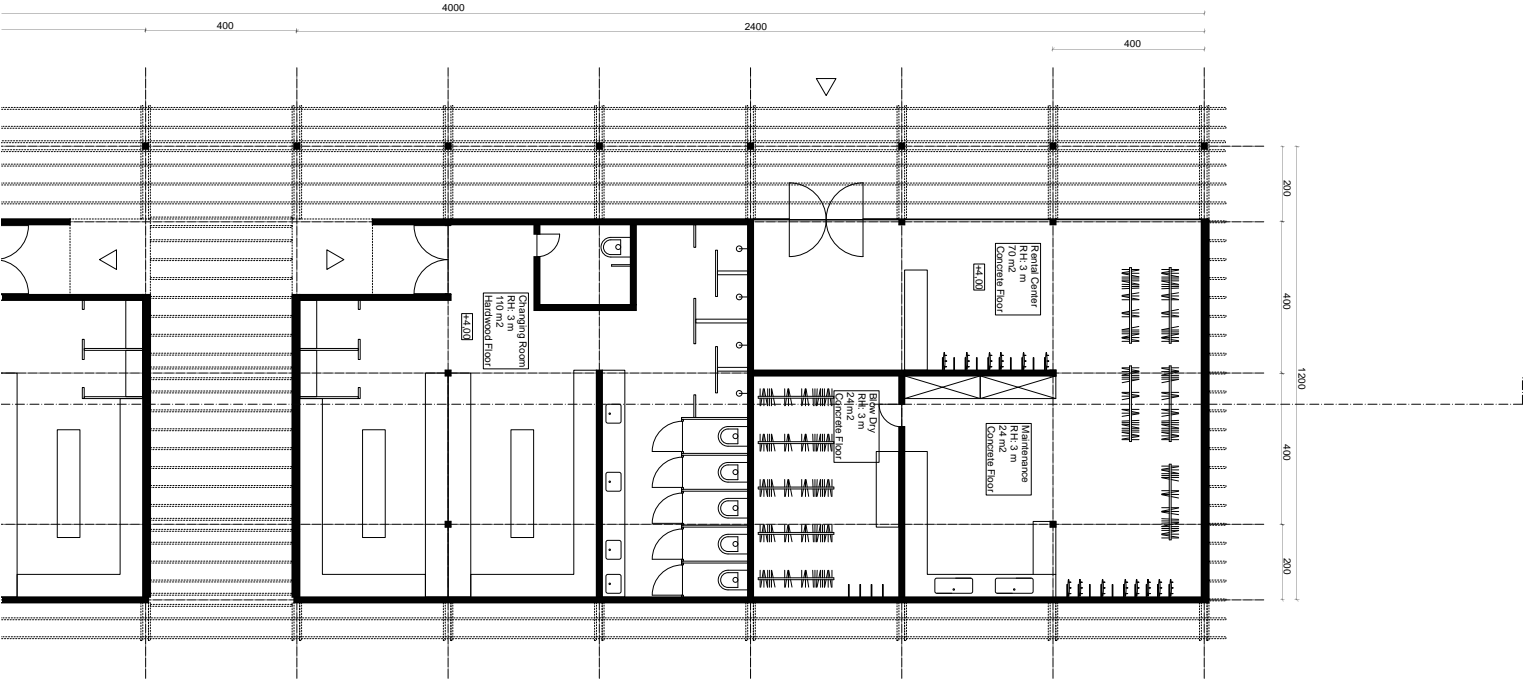


fig 117::Floorplan M1:200,  
Changing Area







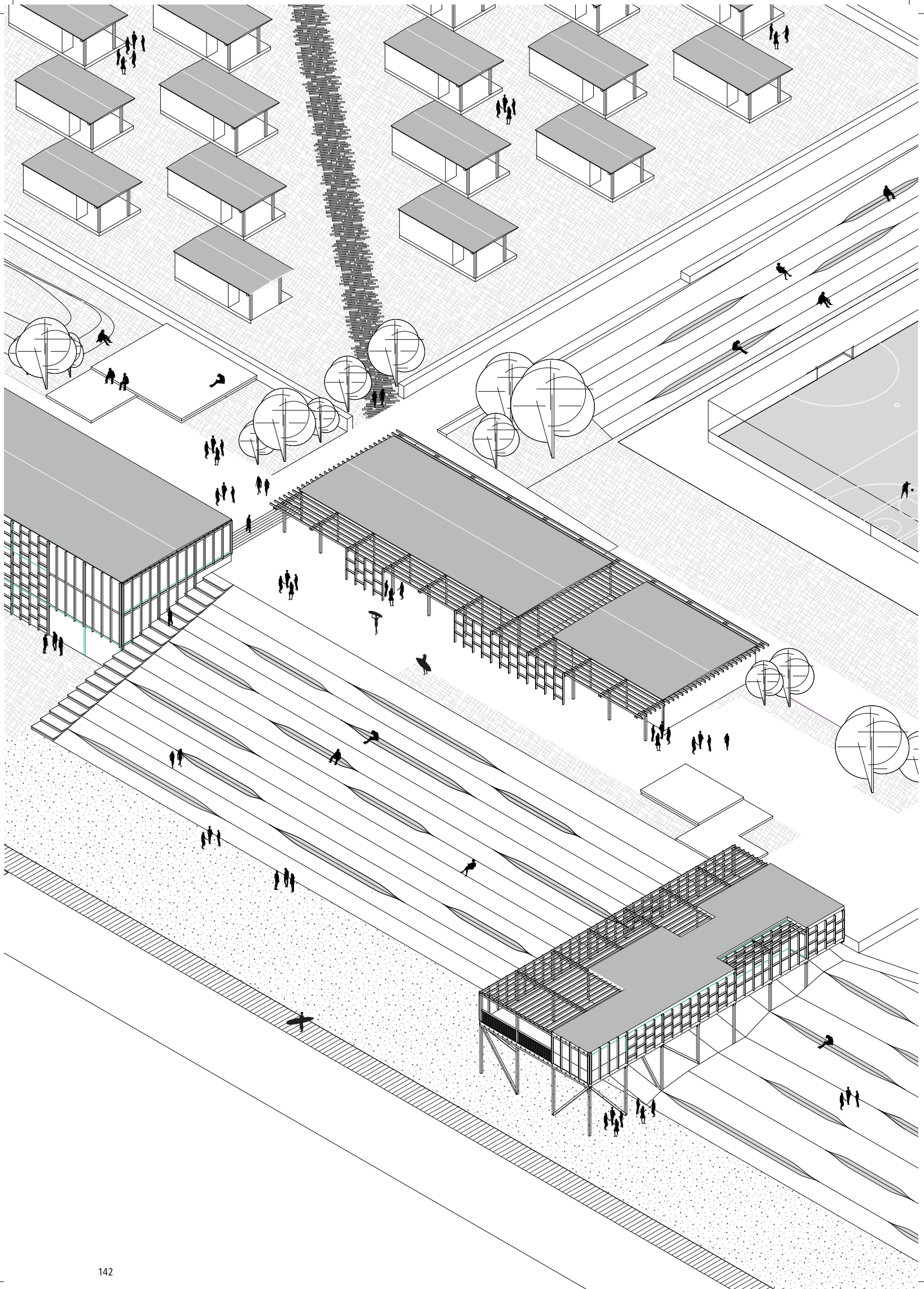
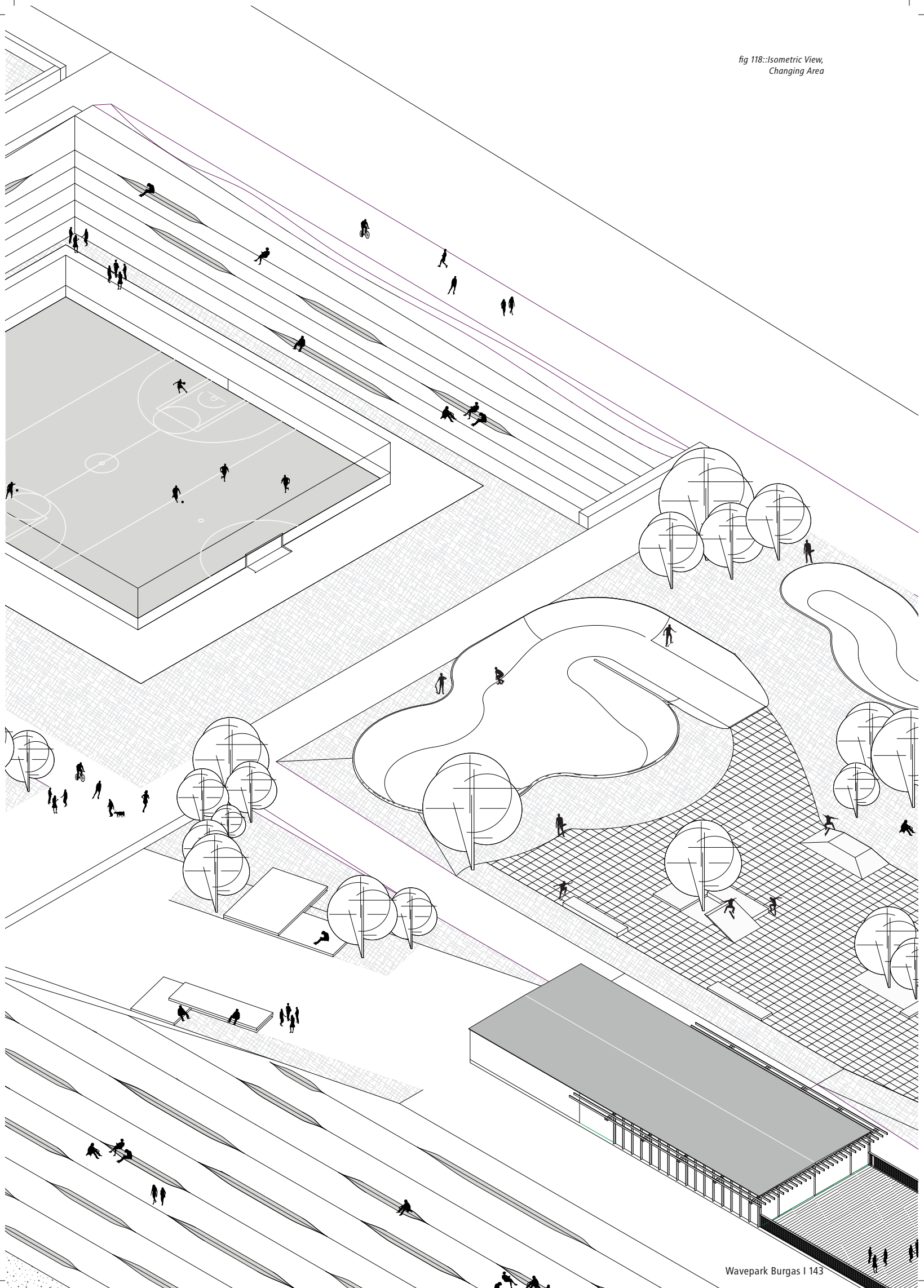




fig 118::Isometric View,  
Changing Area



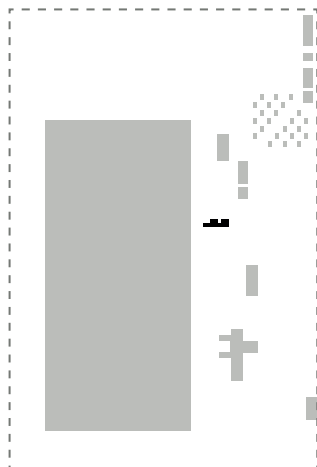


fig 119::Section M1:200,  
Control Center

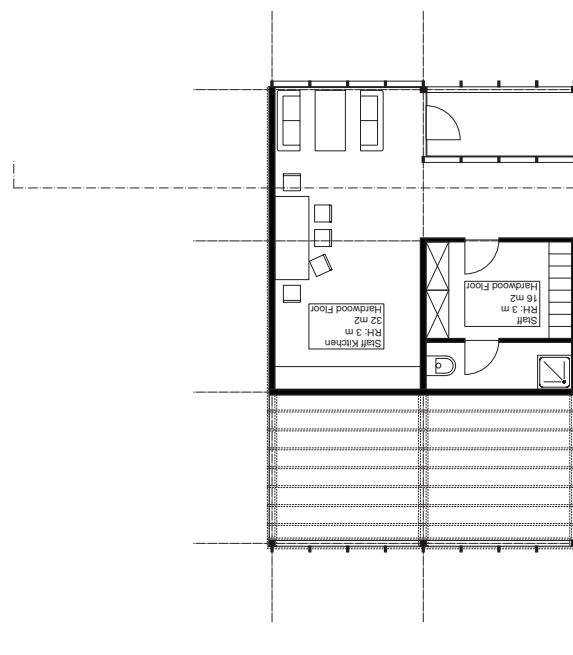
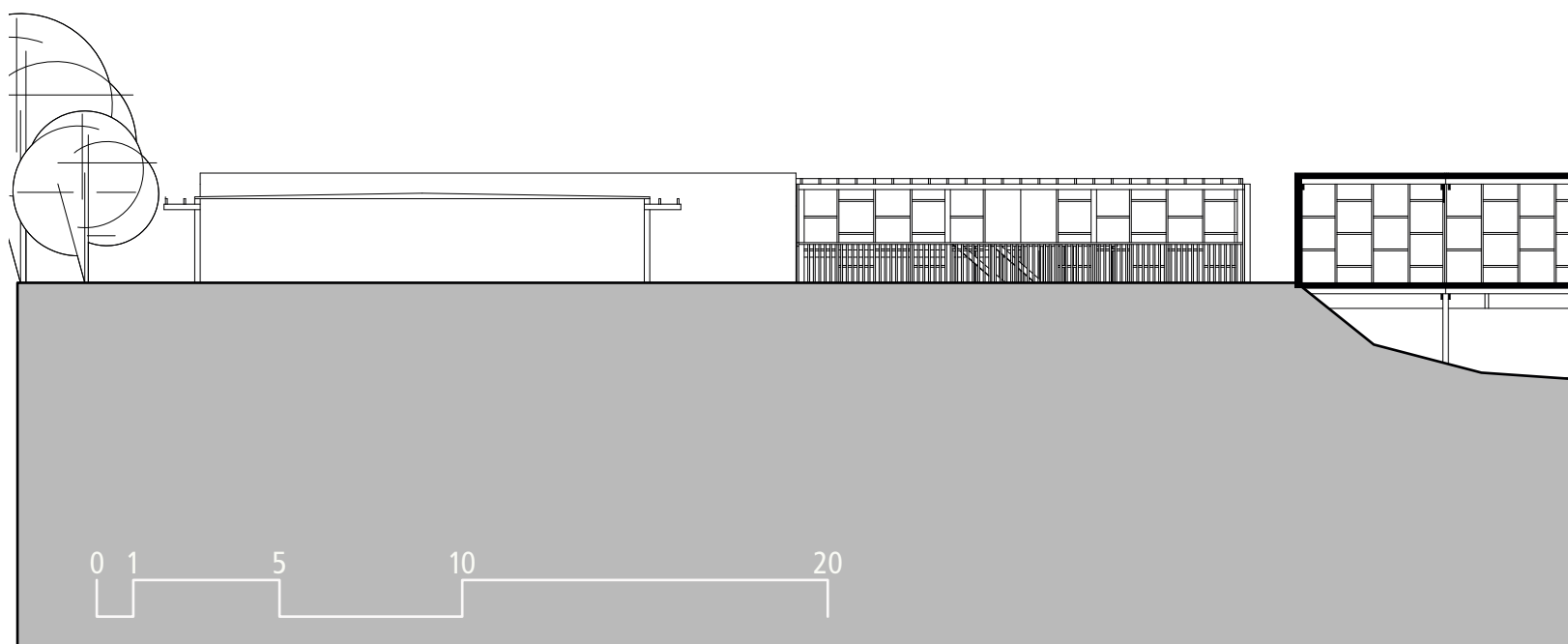
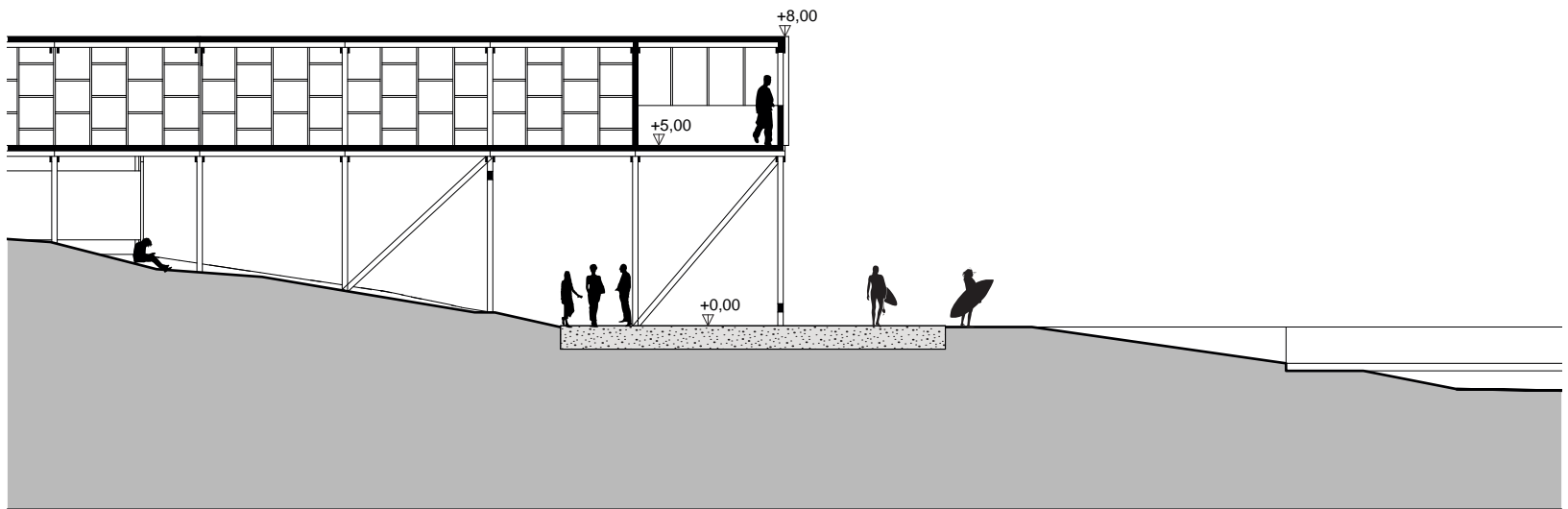
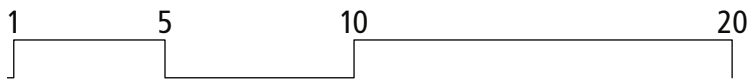
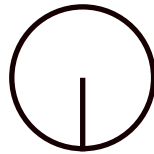
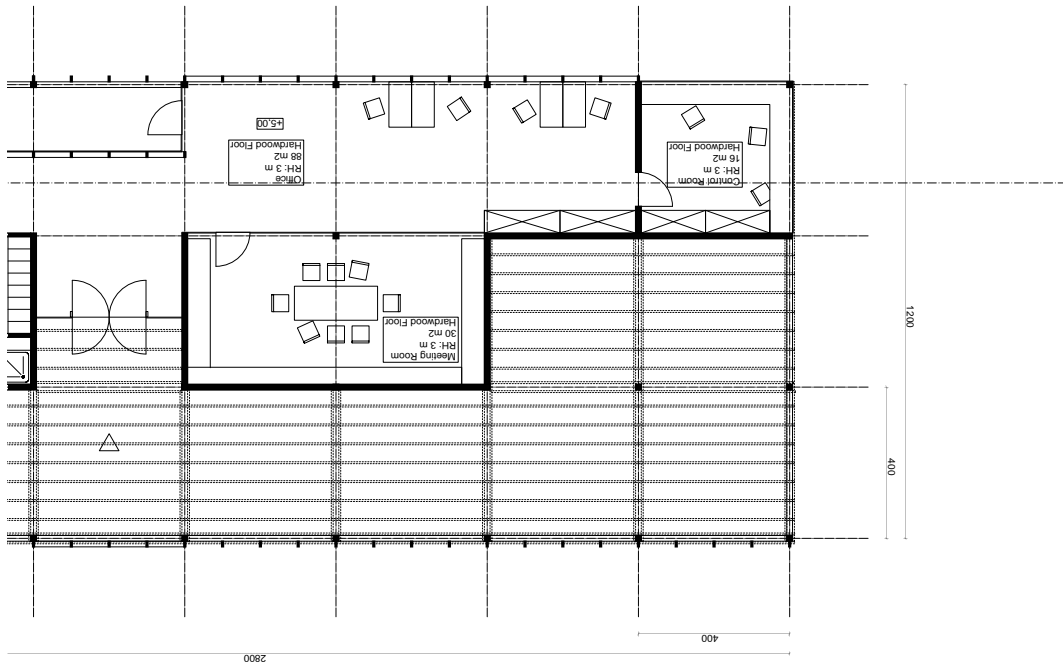


fig 120::Floor Plan M1:200,  
Control Center

0 1







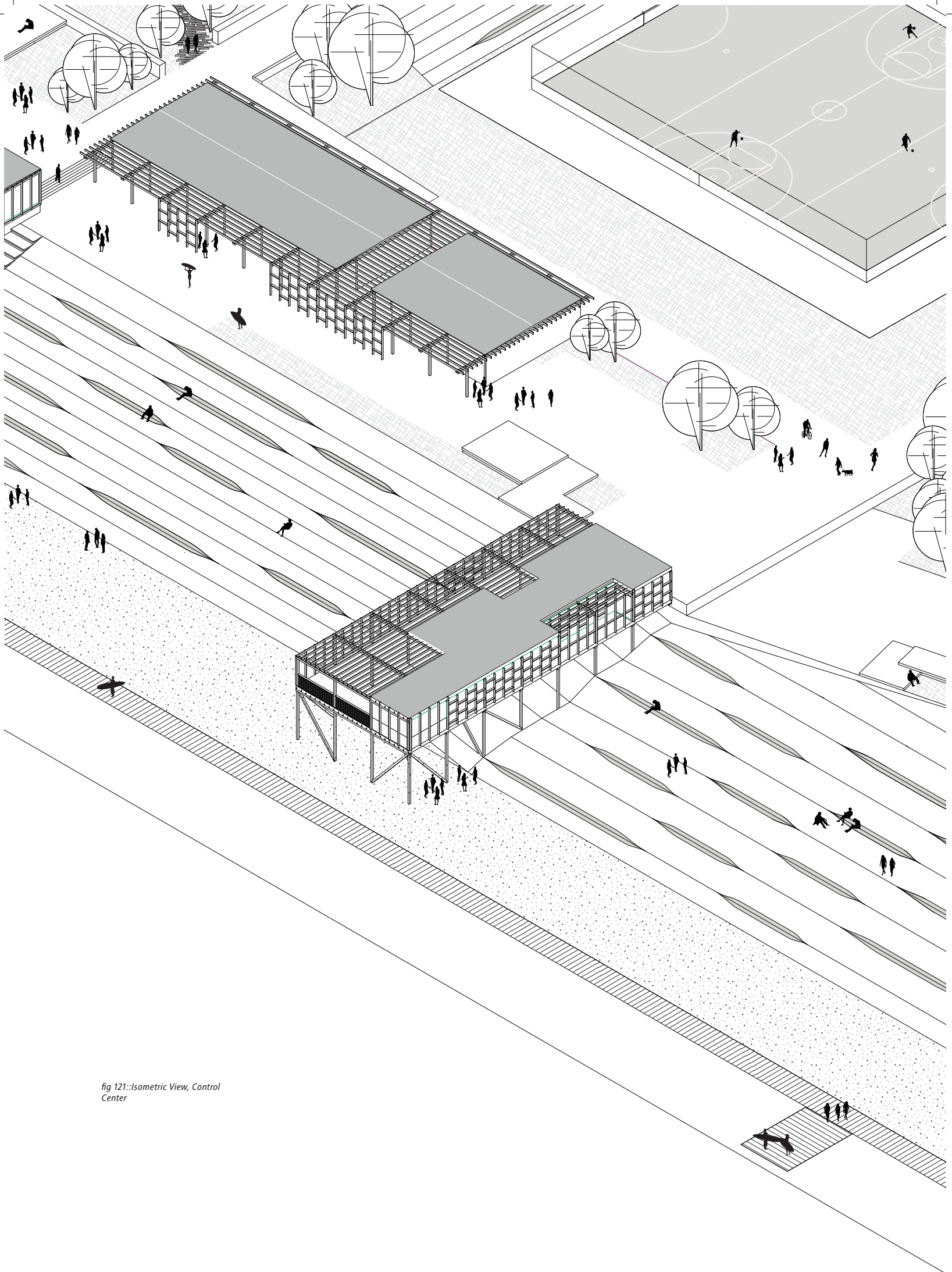
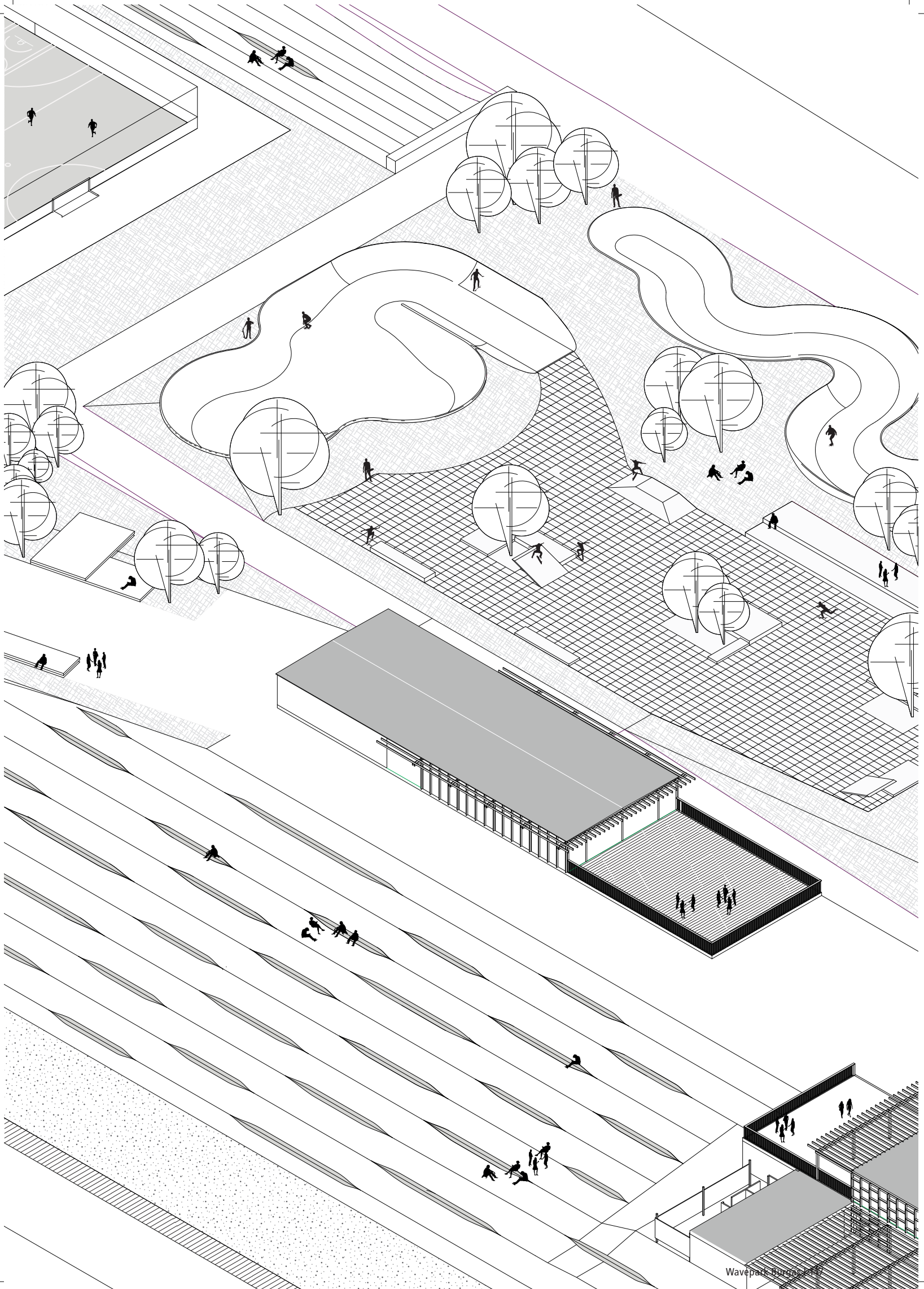


fig 121::Isometric View, Control Center





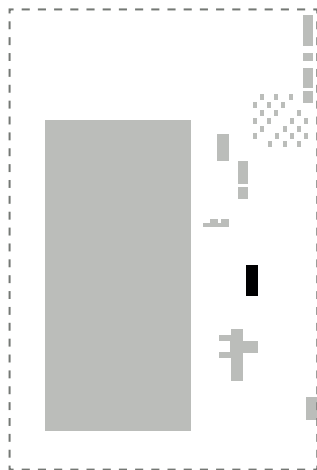


fig 122::Section M1:200,  
Restaurant

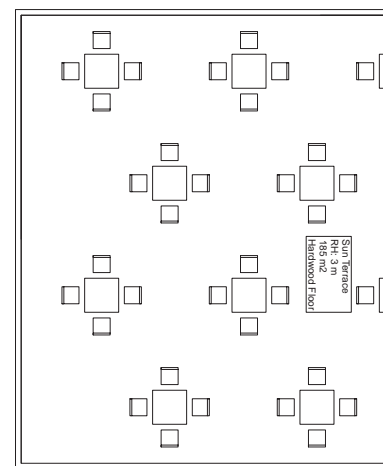
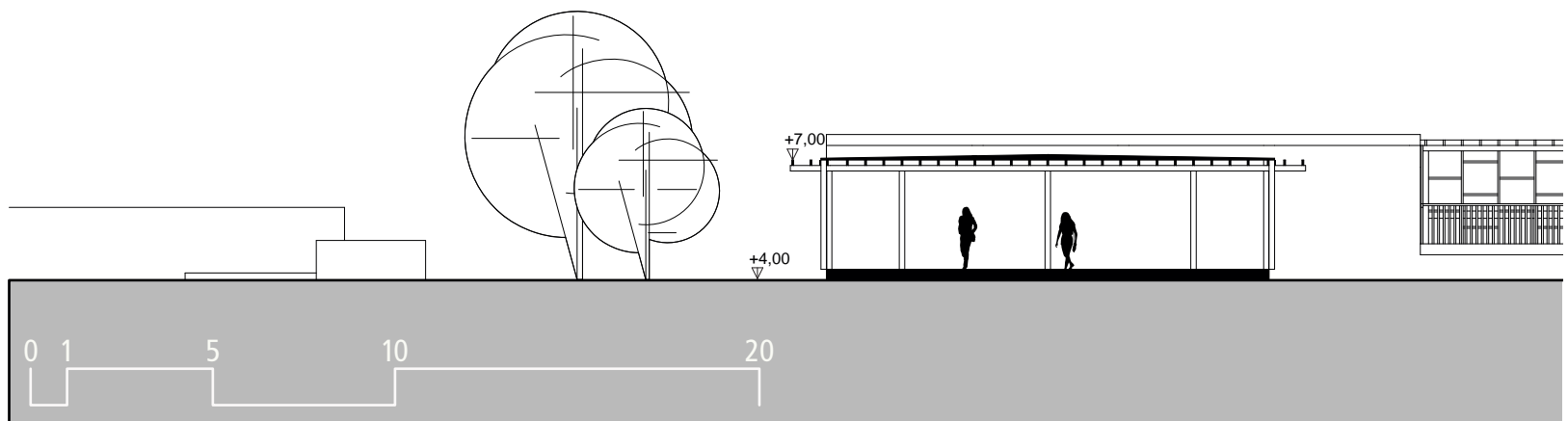
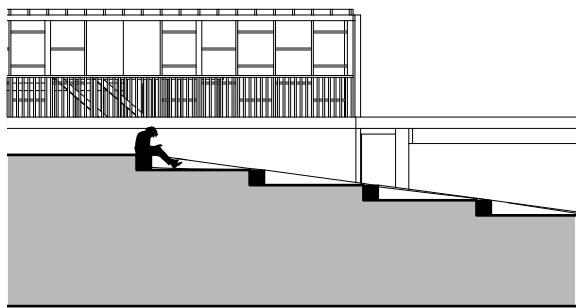
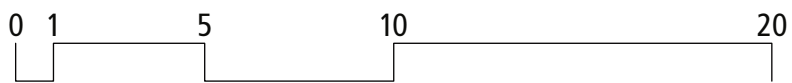
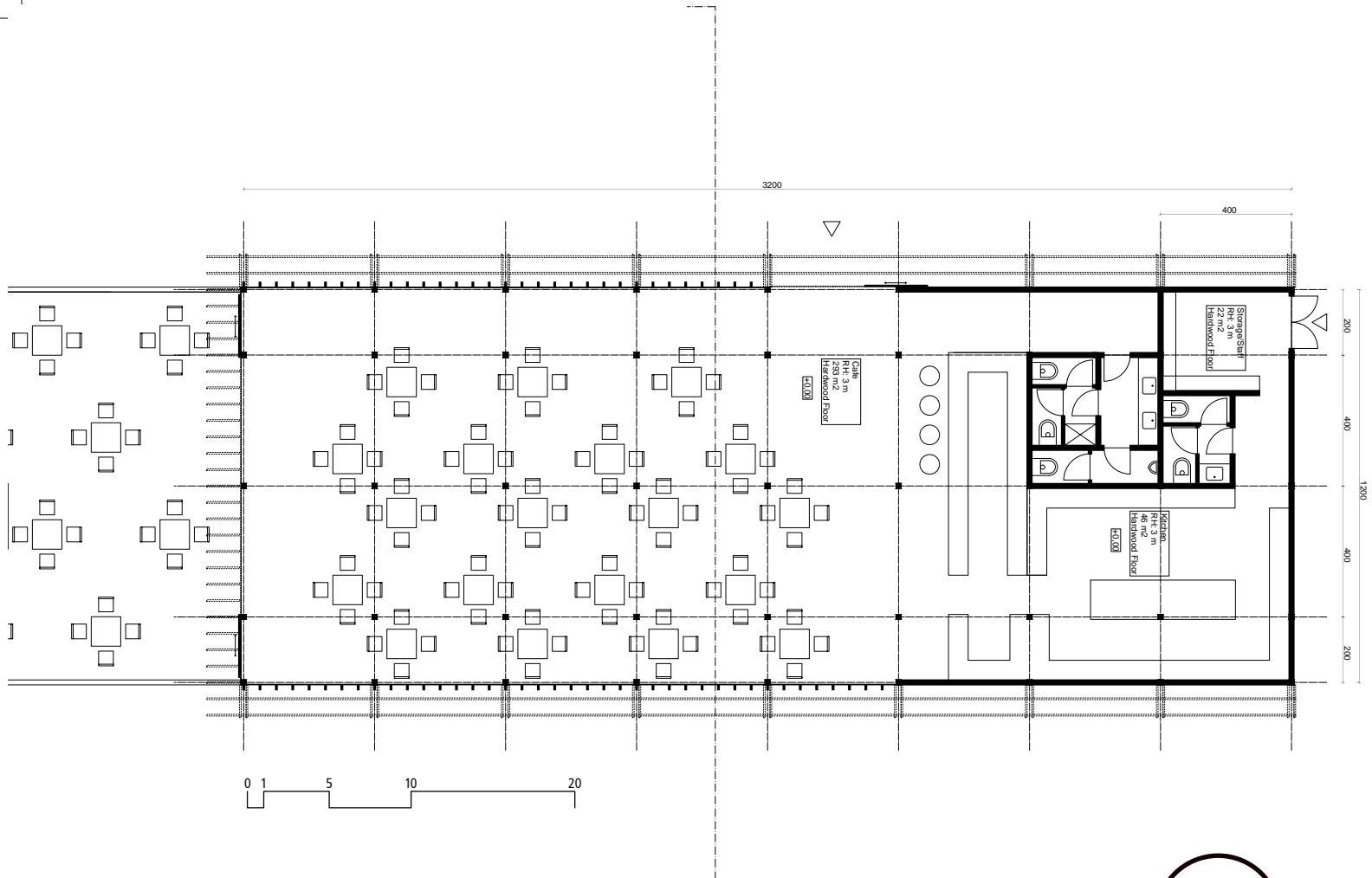


fig 123::Floor Plan M1:200,  
Restaurant







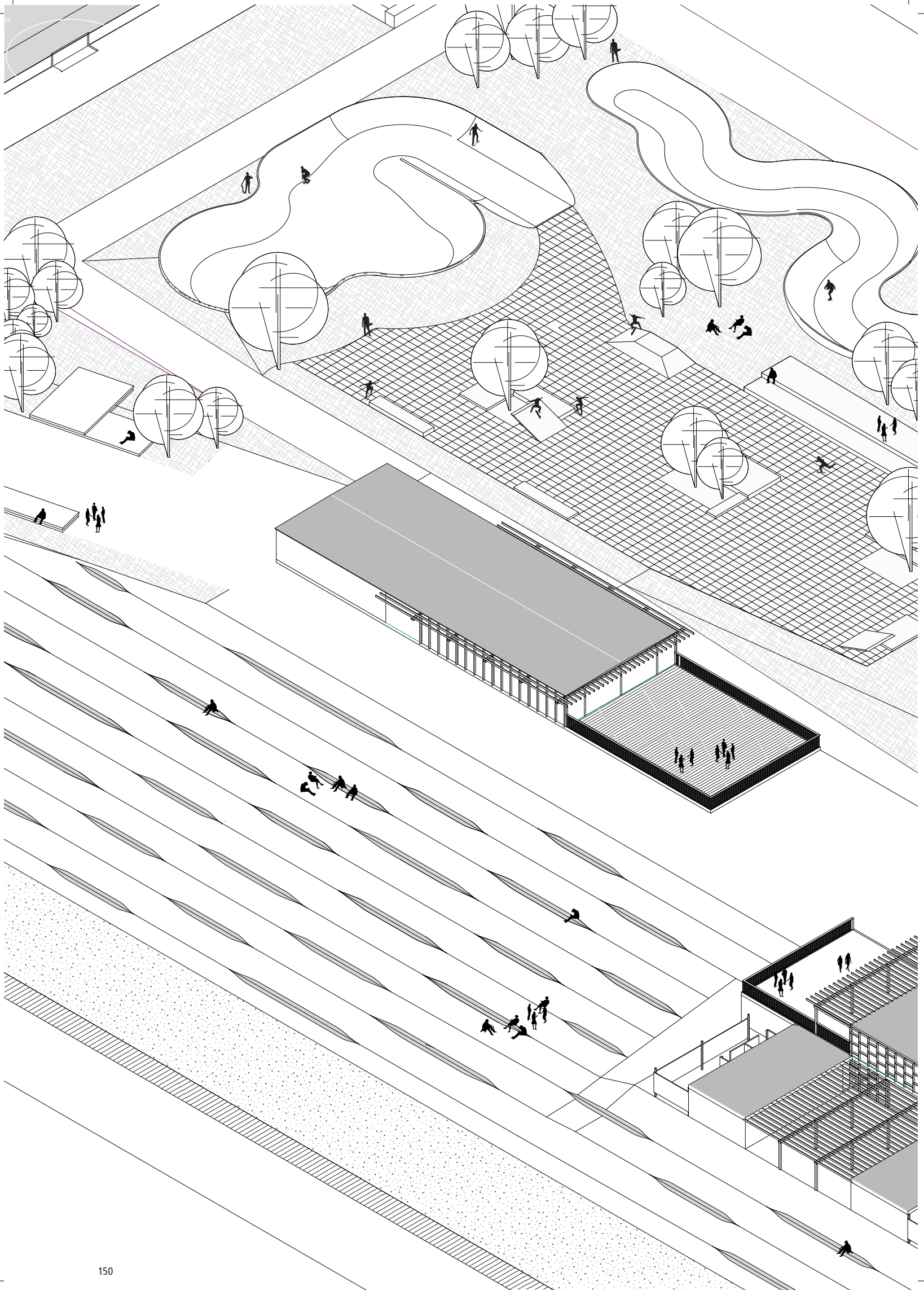
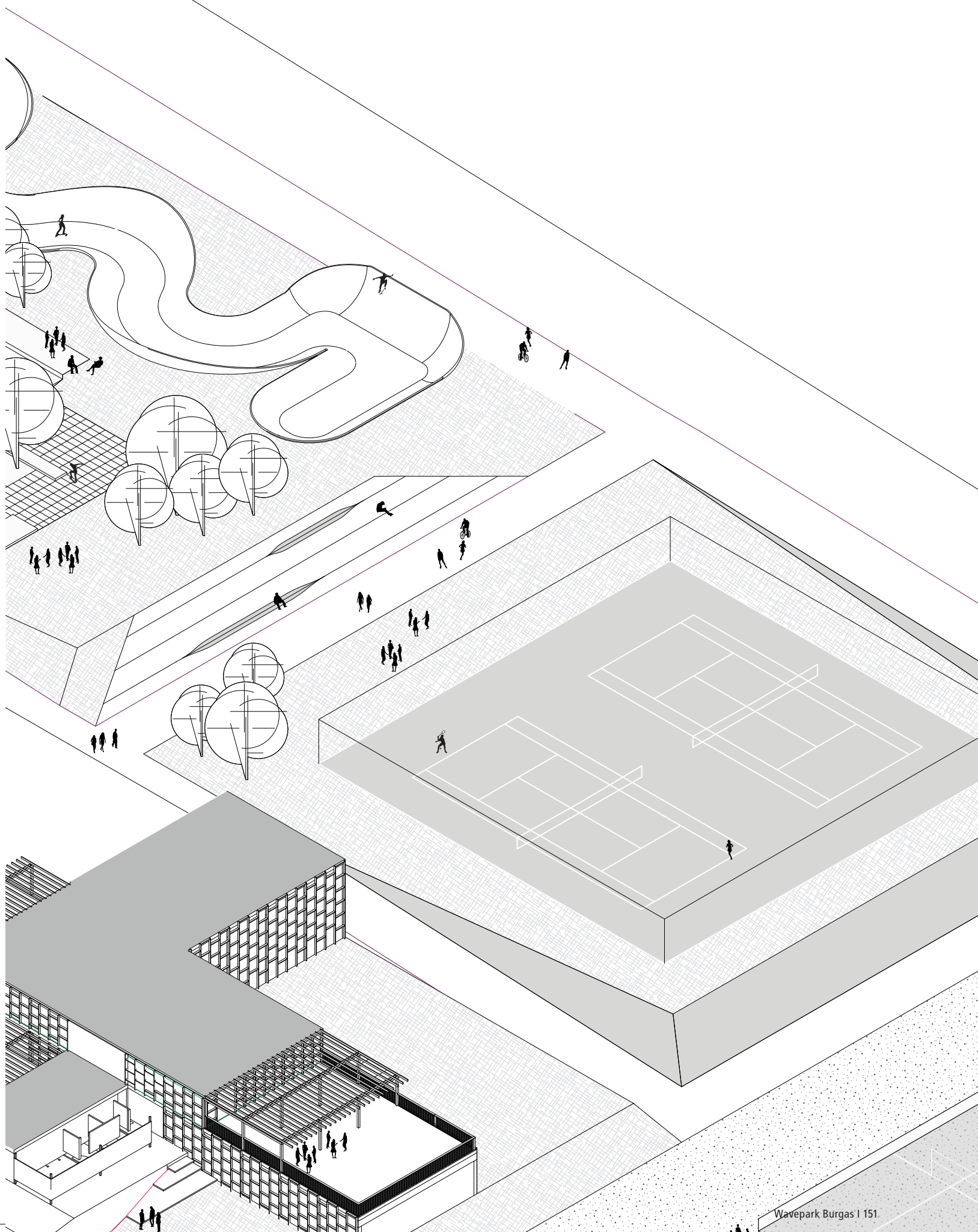




fig 124::Isometric View,  
Restaurant







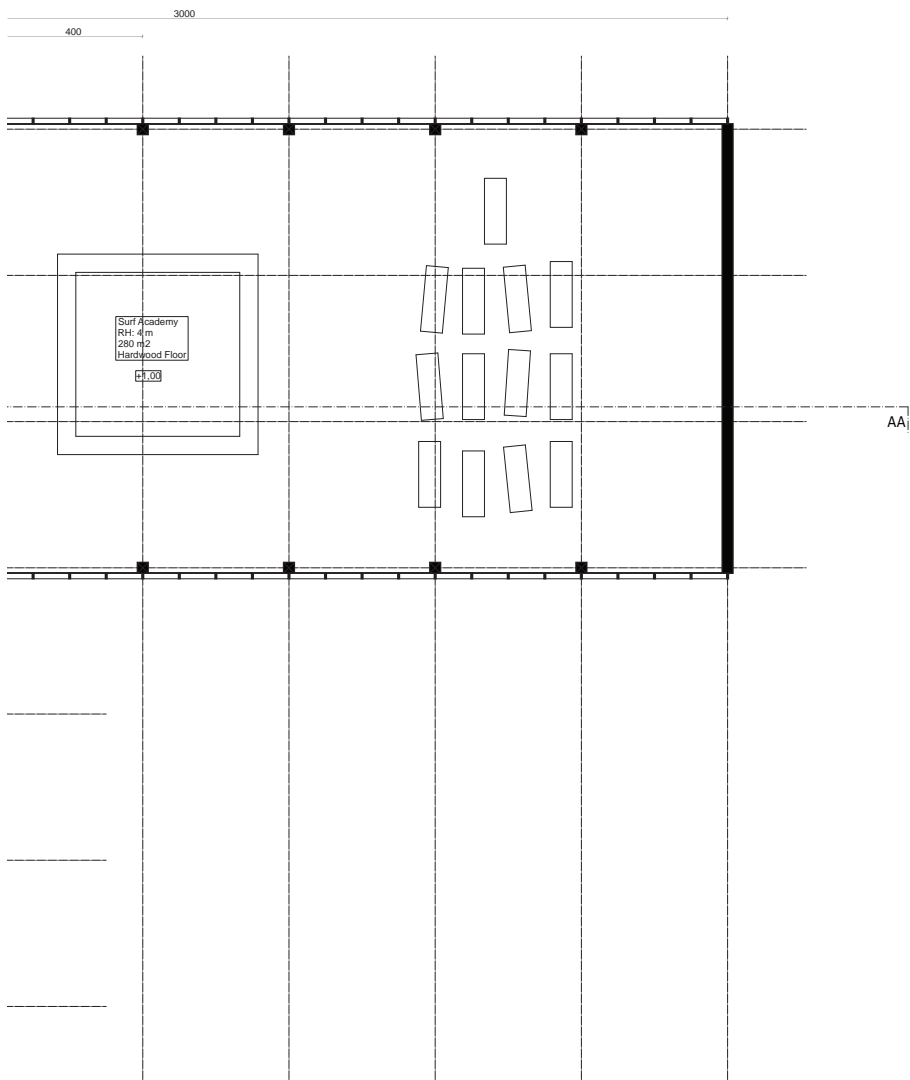
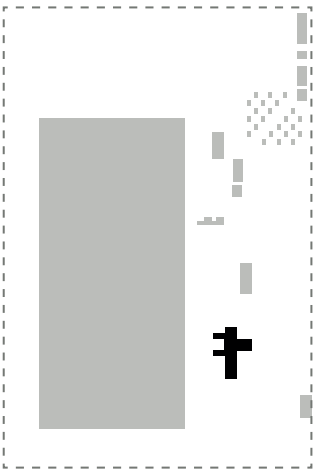
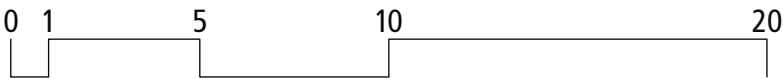
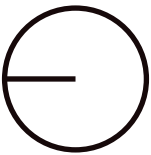
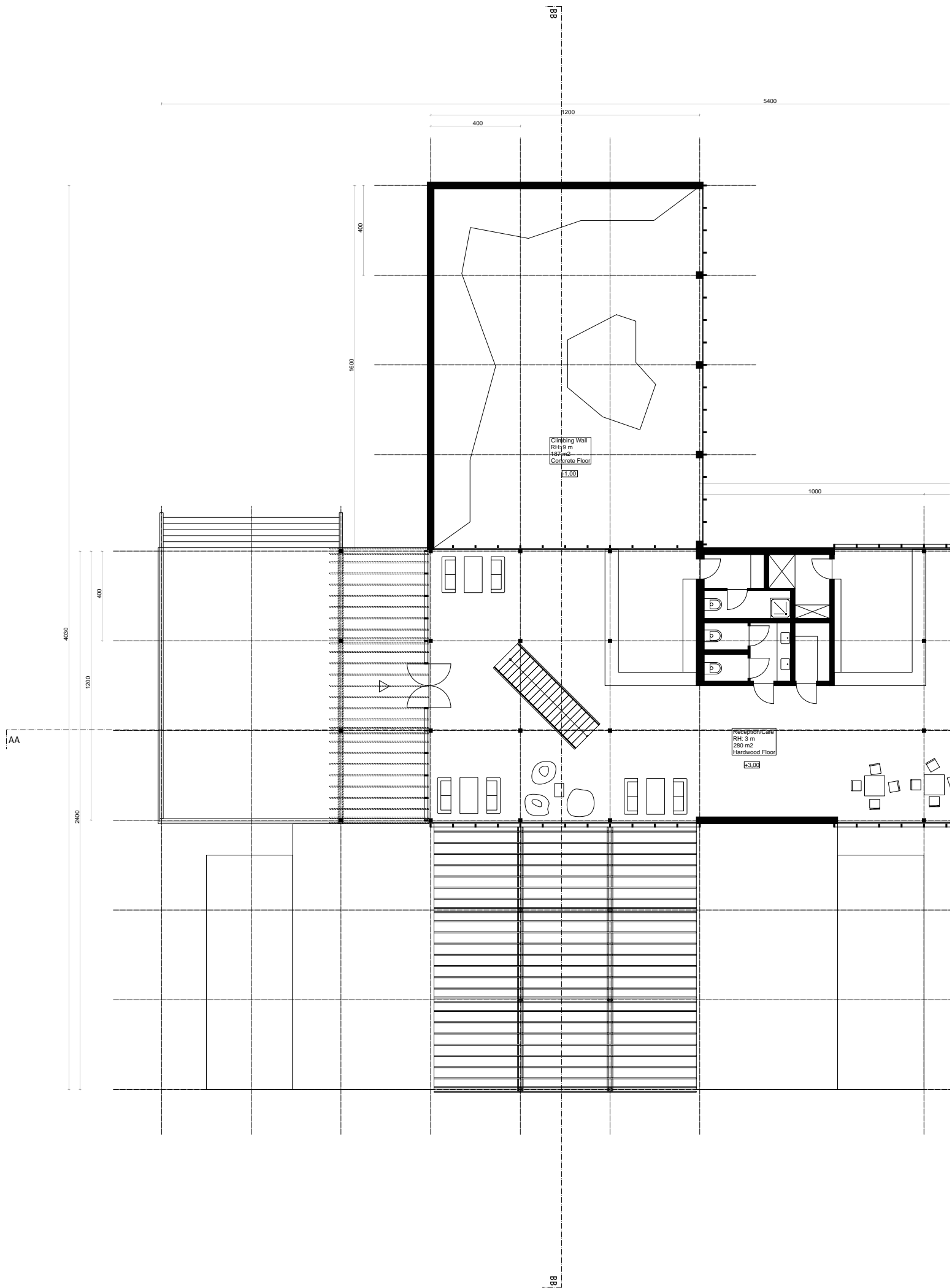


fig 125::1st Floor Plan M1:200,  
Surf Academy







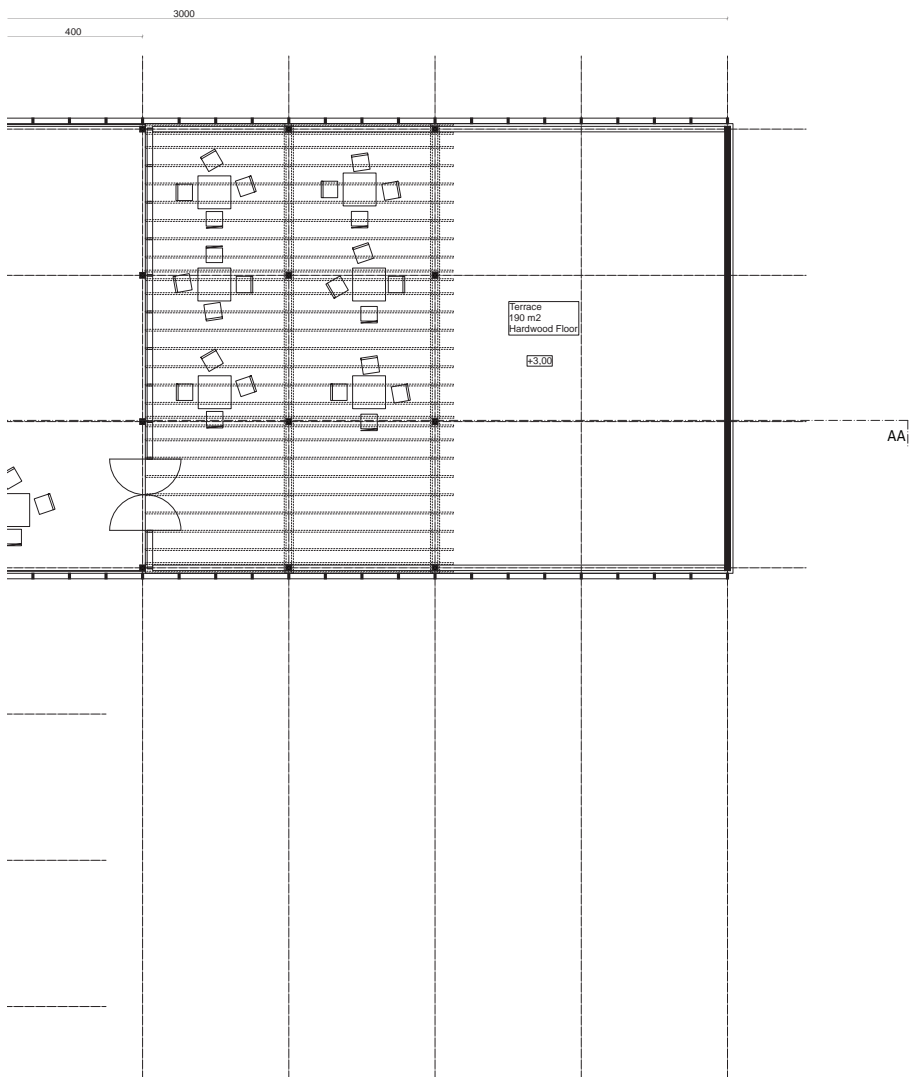
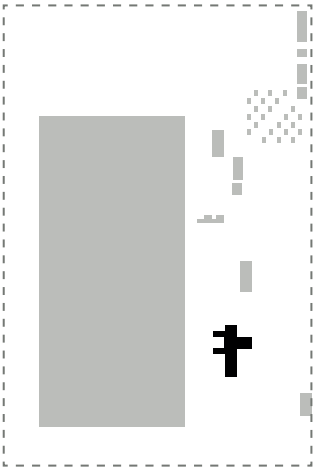
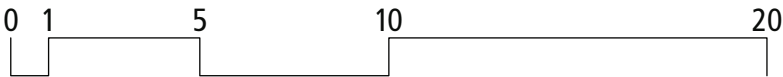
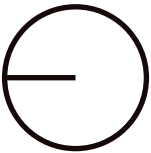


fig 126::Ground Floor Plan  
M1:200,  
Surf Academy



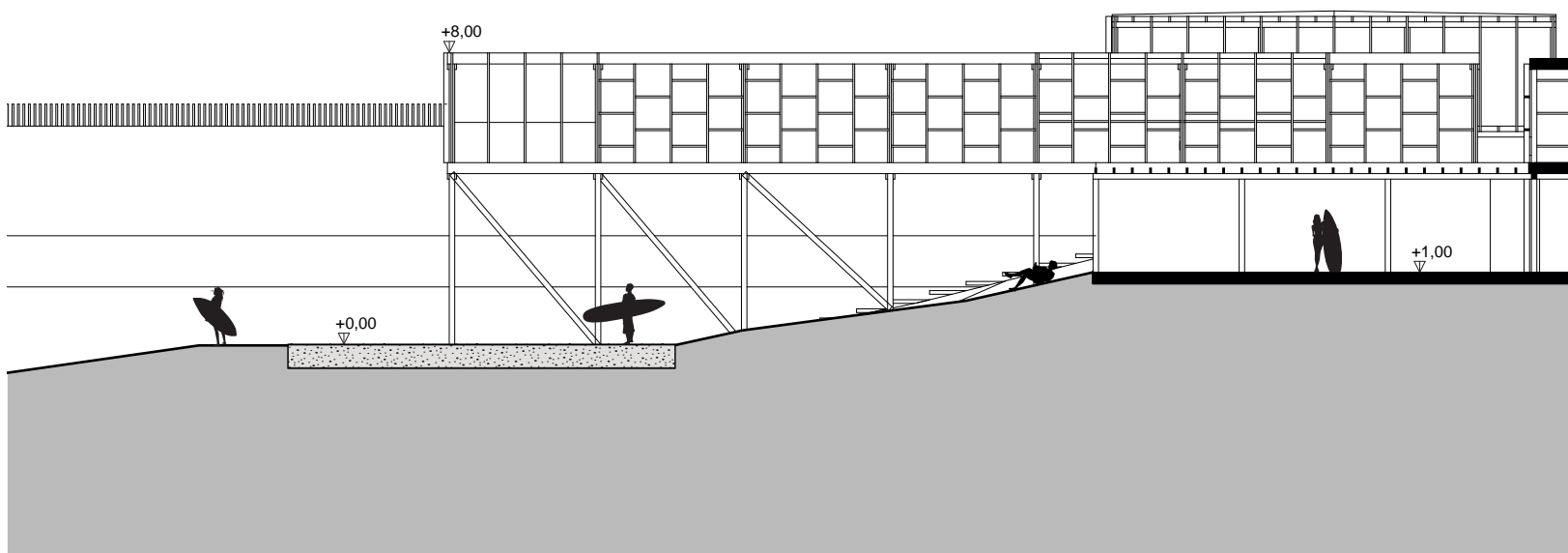
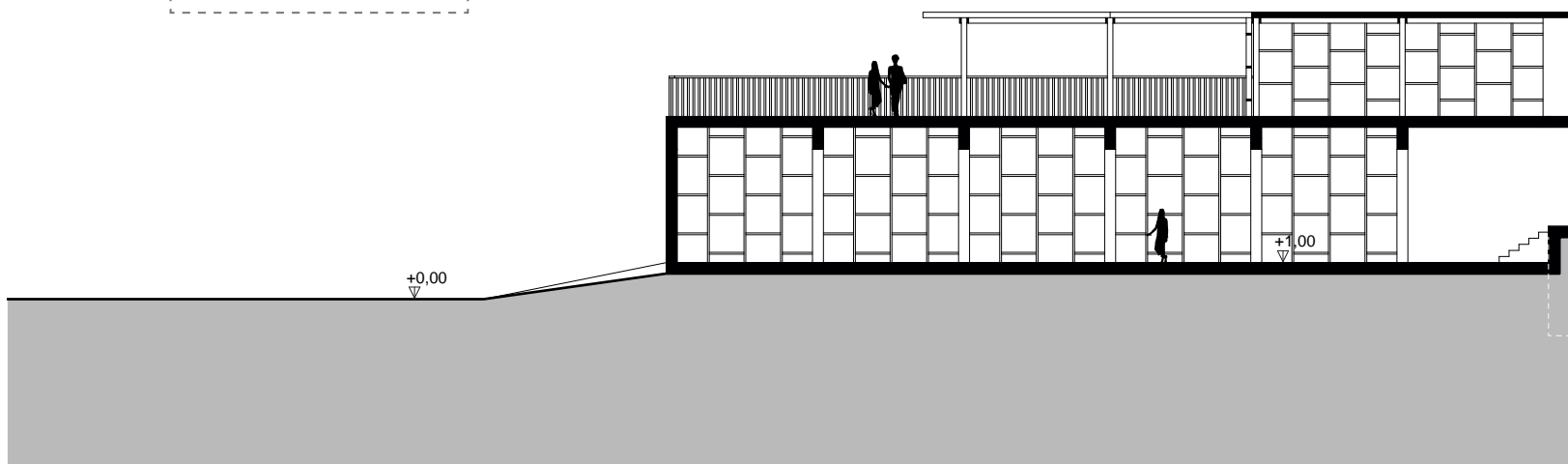
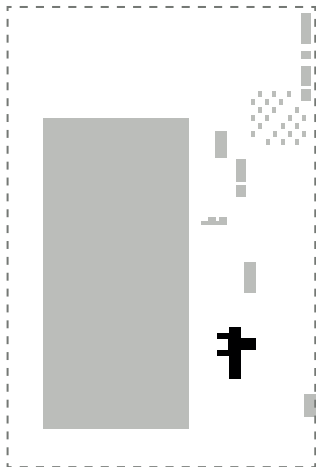




fig 127::Section AA M1:200,  
Surf Academy

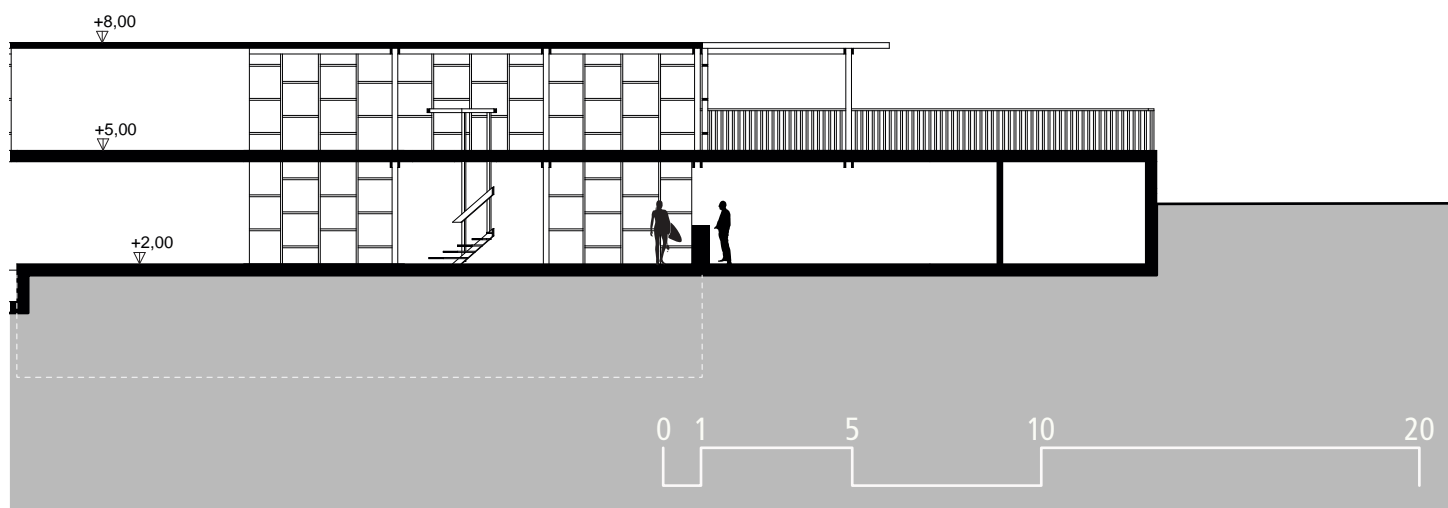
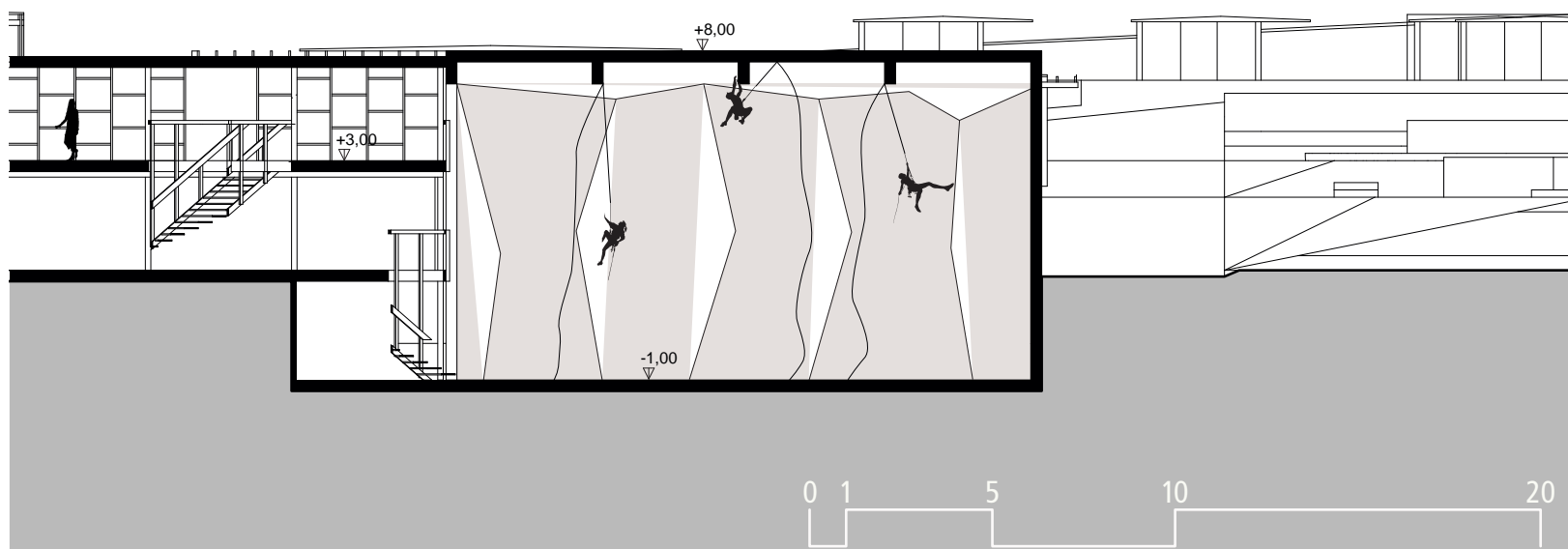


fig 128::Section BB M1:200,  
Surf Academy



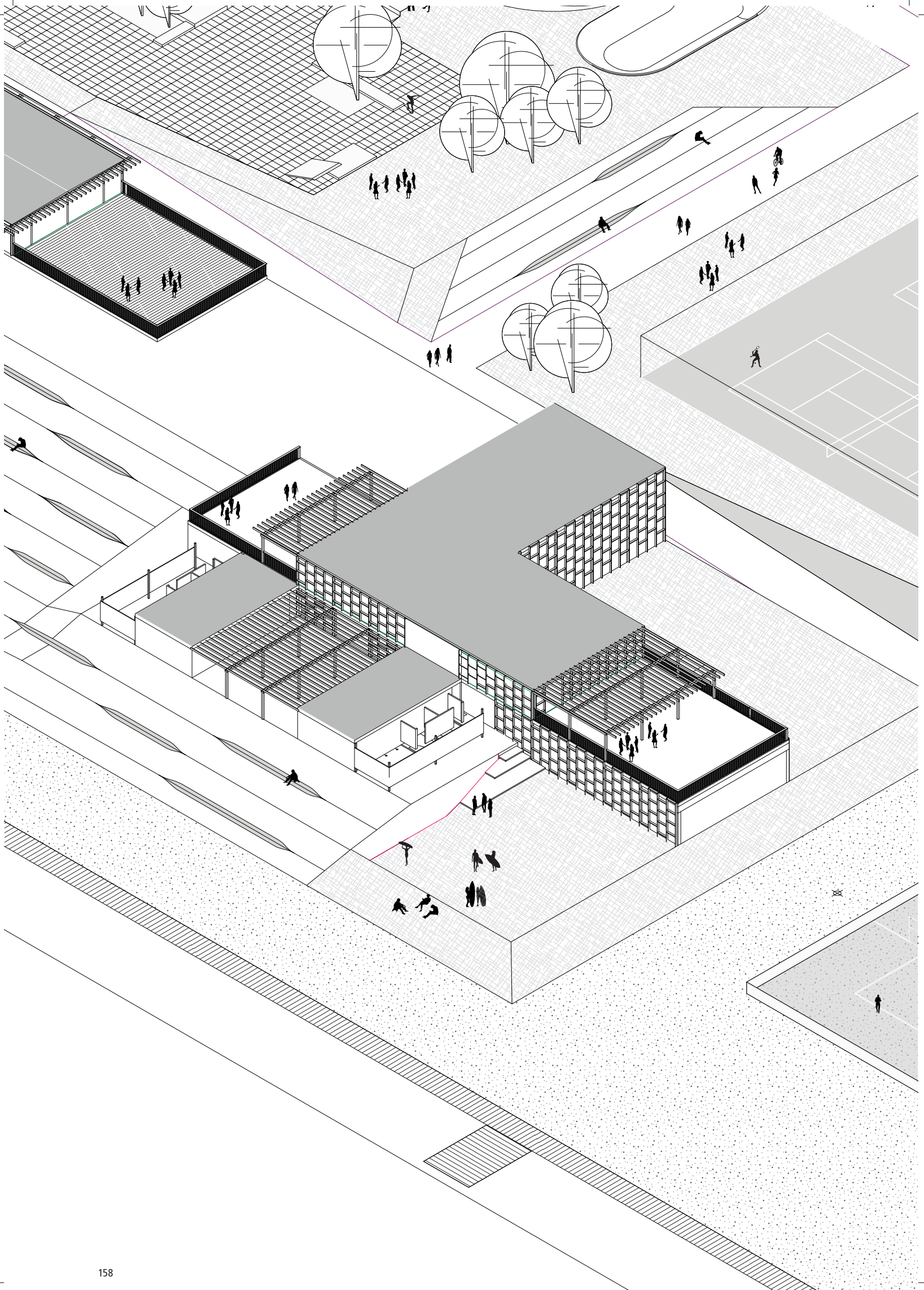
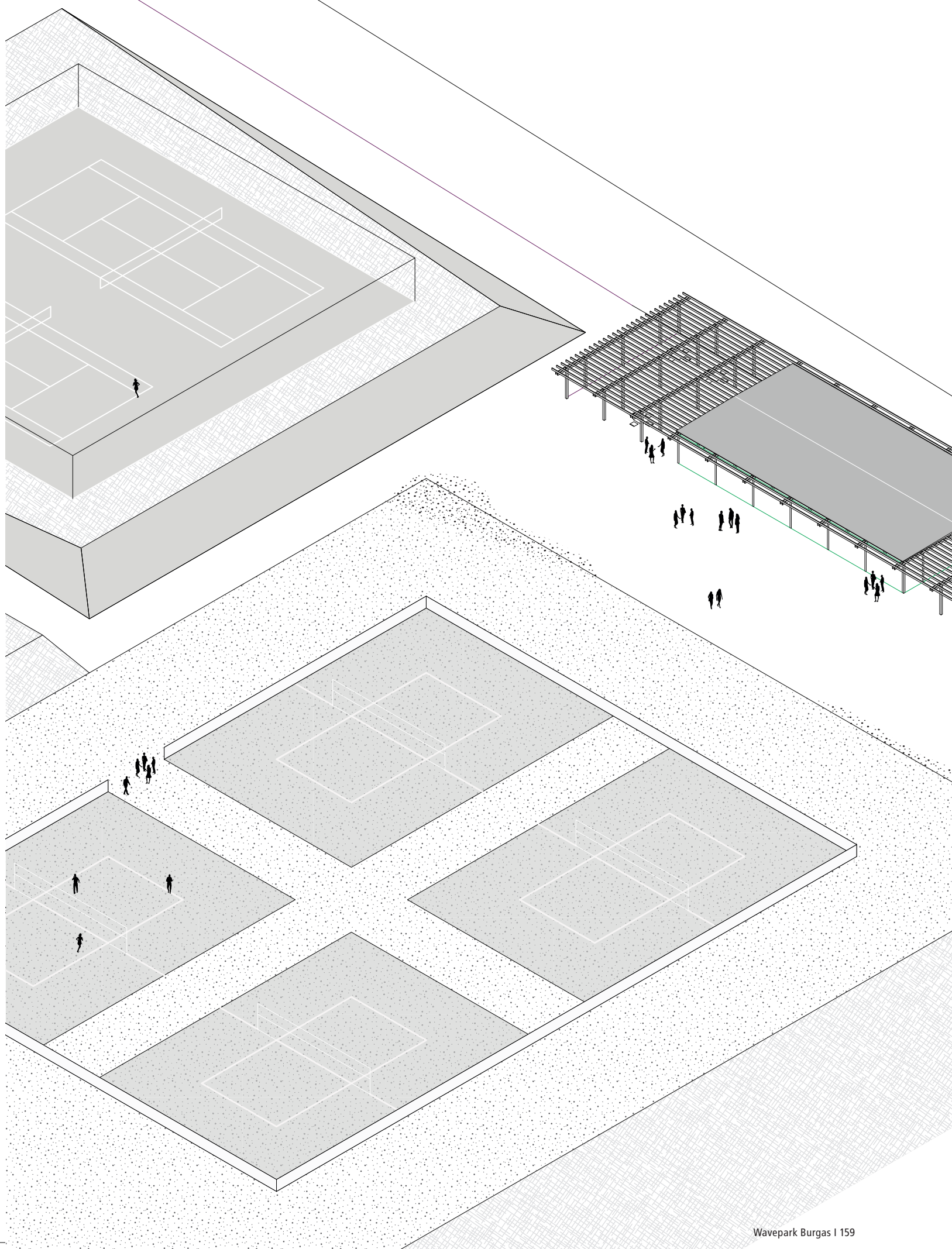




fig 129: Isometric View,  
Surf Academy



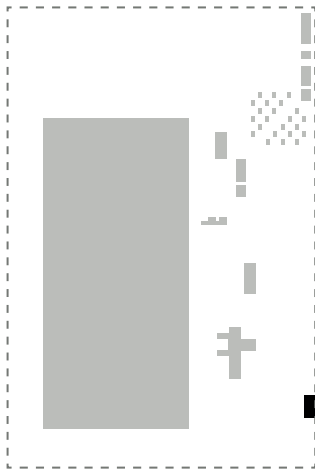


fig 130::Section M1:200,  
Cafe

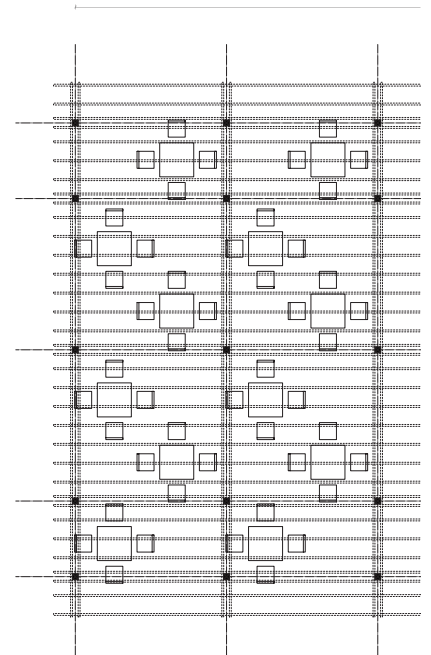
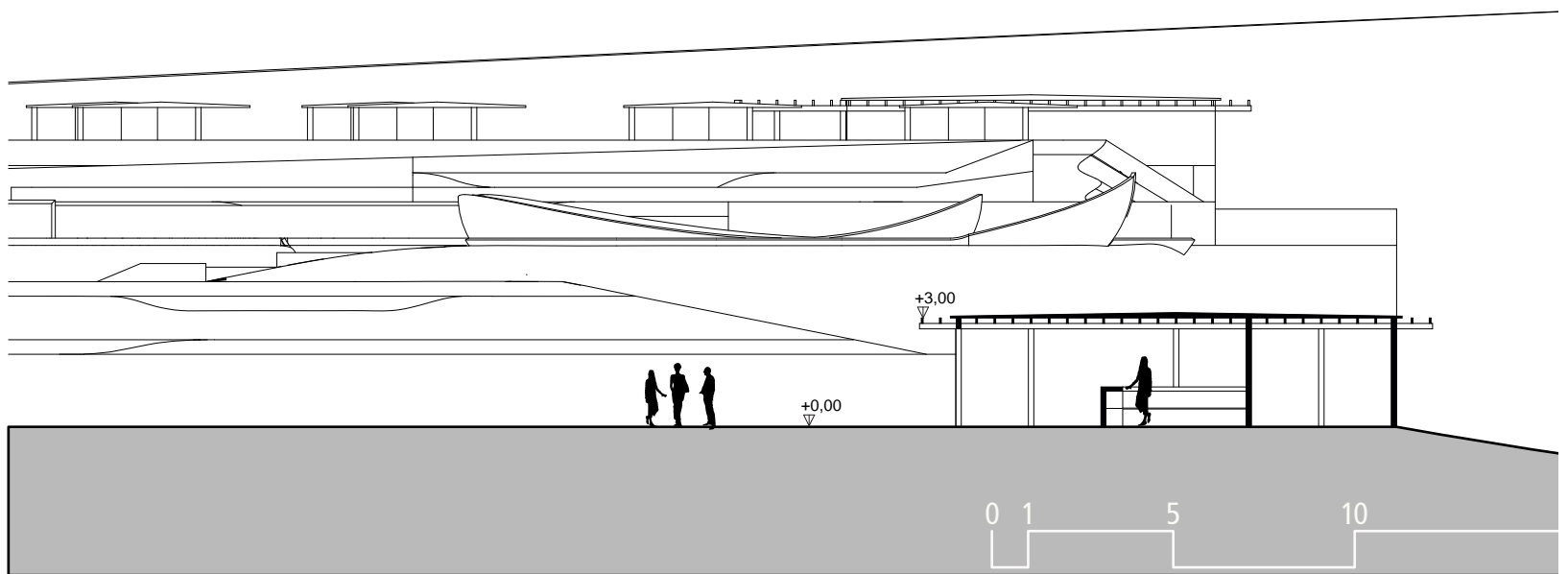
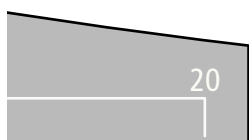
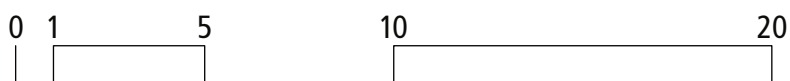
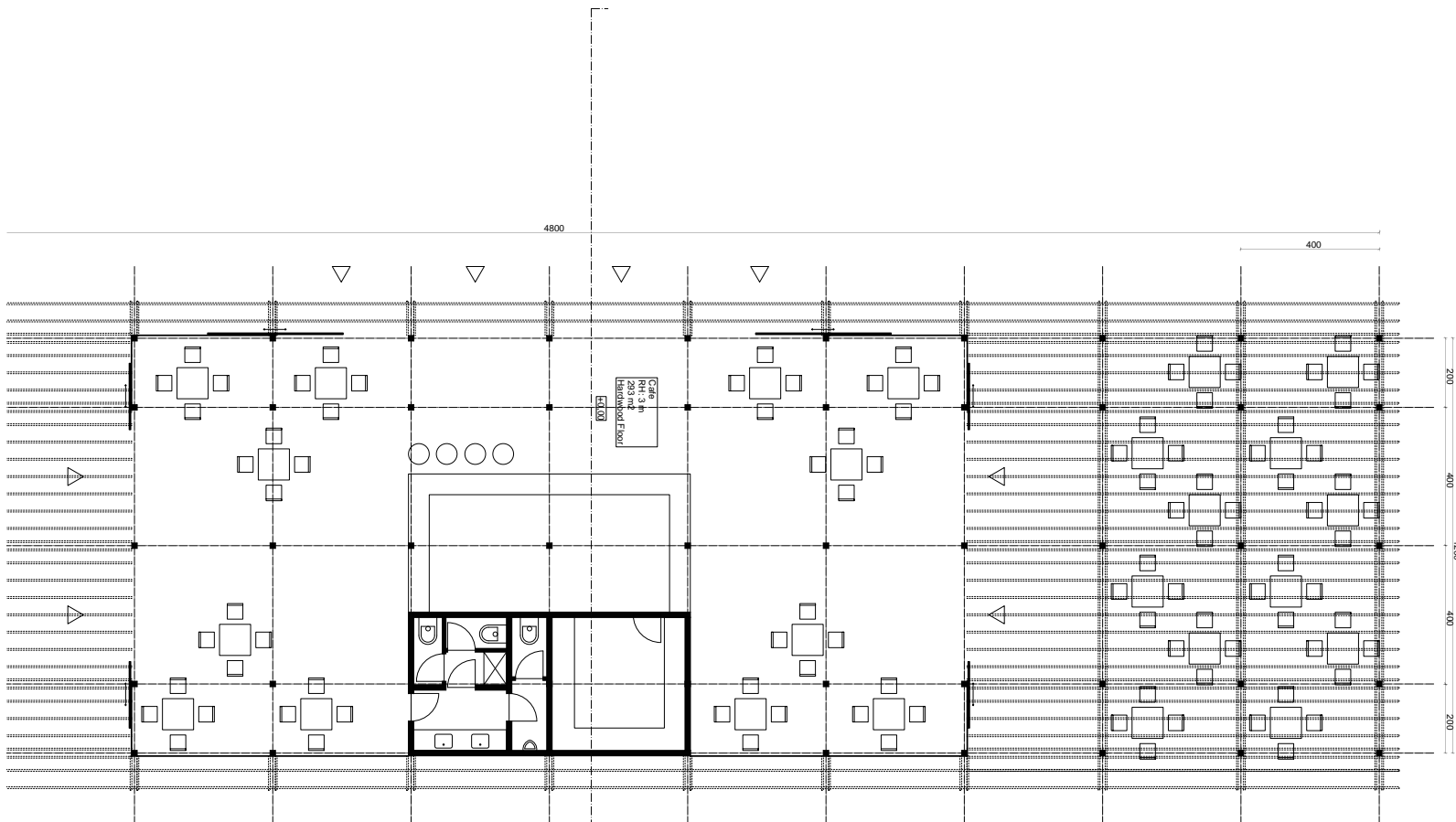


fig 131::Floor Plan M1:200,  
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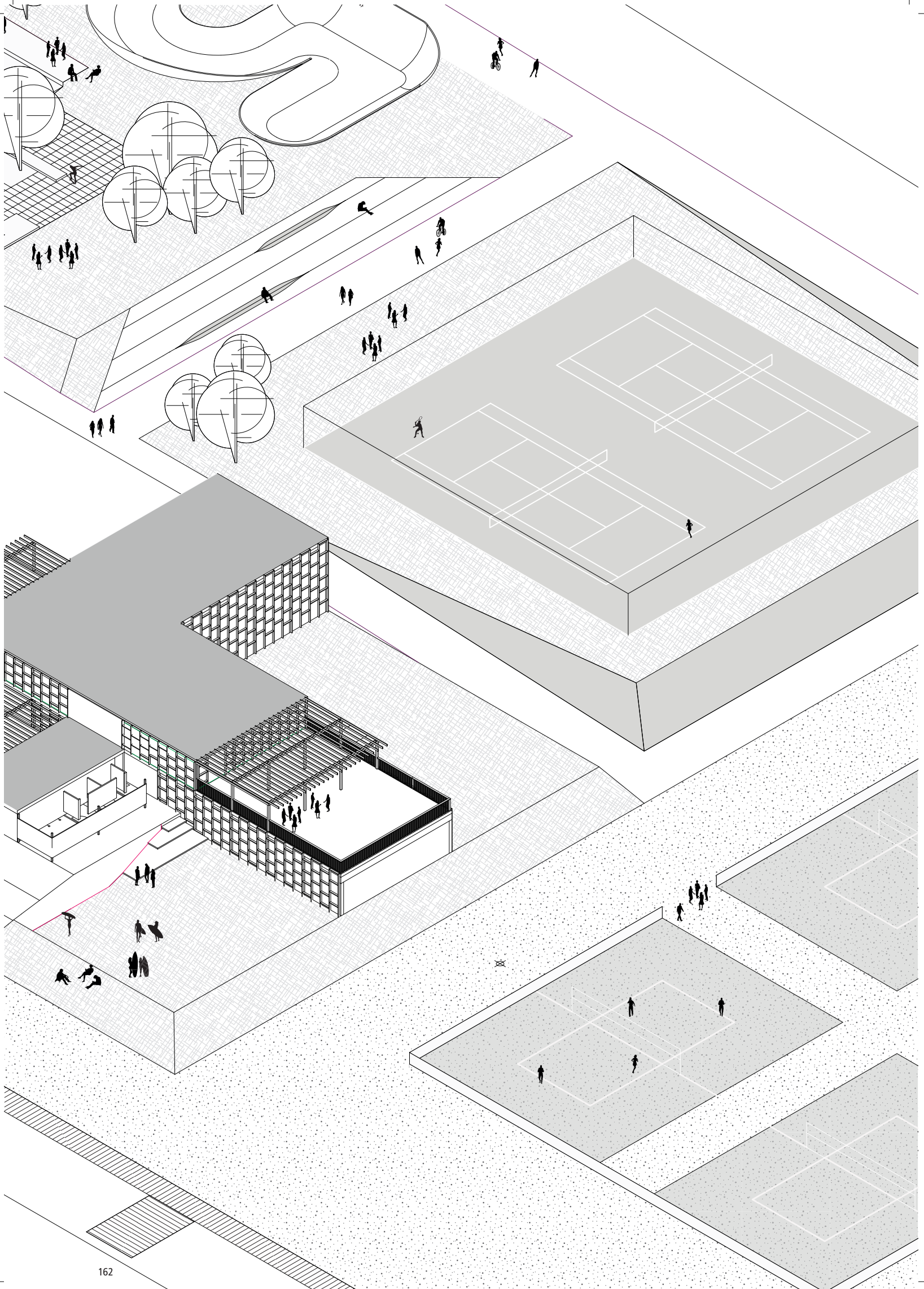




fig 132::Isometric View,  
Cafe

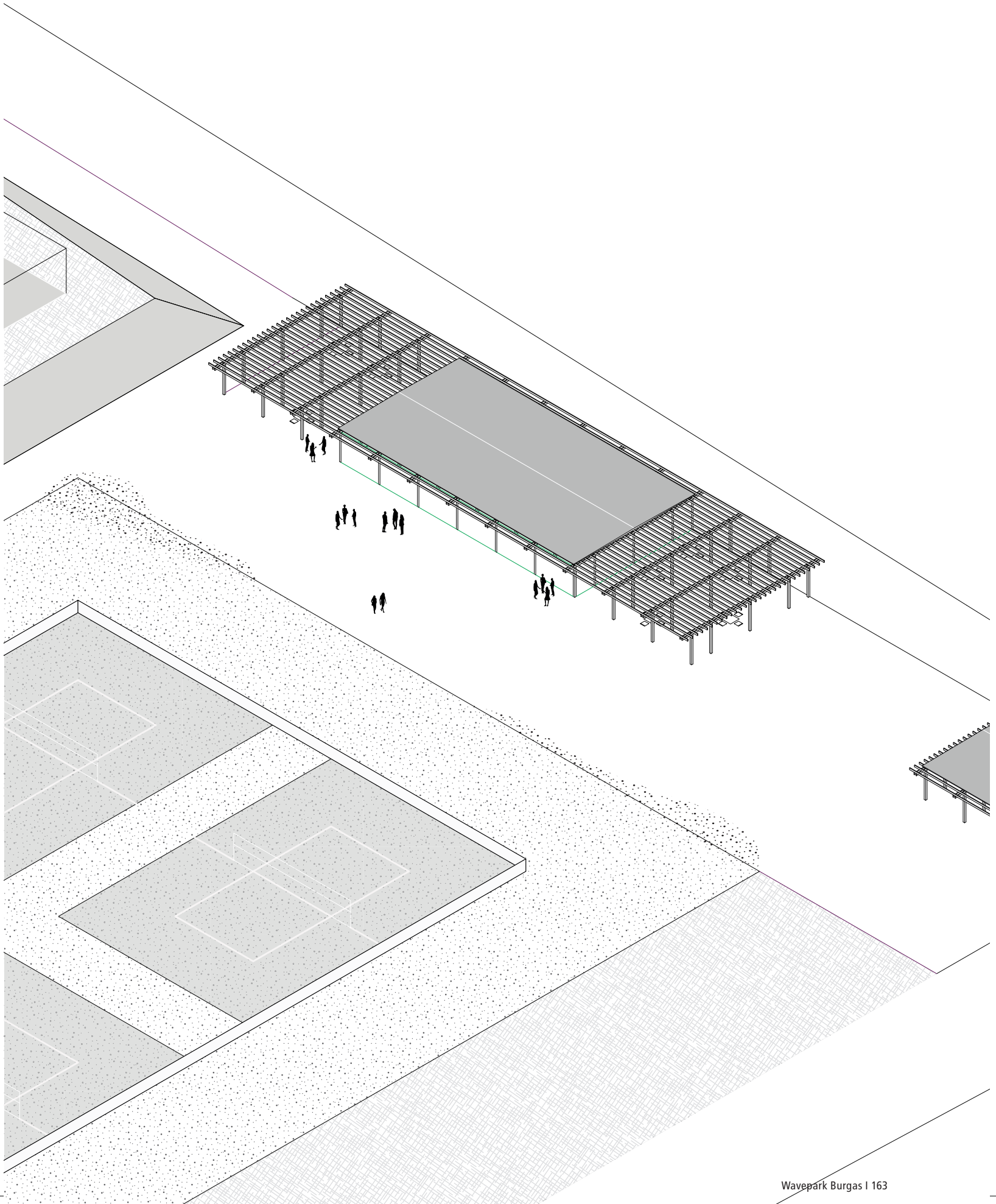








fig 134::Pier Lookout Point

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# THANK YOU!

*To all the people that have supported me  
through this difficult journey!*



*Univ.-Prof. Dipl.-Ing. Architekt* **Roger Riewe**

*Ao.Univ.-Prof. Dipl.-Ing. Dr.techn.* **Grigor Doytchinov**

**Stangl, Markus, Dipl.-Ing.**

**Fantuz, Marcello, M.Sc.**

*Technische Universität* **Graz**

*My Family,  
for the continuous support over the years and always being there for me*

**Ivanina Dahterova,**  
*for always believing in my project*

**Dimo Zhelyazkov and Alexandra Petrova**  
*for all the discussions and stress that made me start working when I didn't feel like it*

**Nasko Nikolov,**  
*for the input and advise*

**Georgi Petev,**  
*for all the tips and the photos*

**Georgi Nikolov,**  
*for all the support and advise*

**Liliya Atanasova and Nikolai Stefanov,**  
*for the countless questions they had to answer*

**Veselin Despotov,**  
*for the ideas and enthusiasm*

**Martin Raynshmid ,**  
*for understanding*

**Ivan Petrov, Kiril Stoilov and Iliyan Kulev,**  
*for keeping my mind off this thesis when it was need*

**Kiril Peychev and Tony Gogov,**  
*for the photos*

