



# HOSPITALITY

THE HOSPITAL THAT HOSTS THE CITY



# HOSPITALITY

A MULTI-SCALAR  
APPROACH ON  
HOW A HOSPI-  
TAL CAN AFFECT  
THE WHOLE CITY

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MASTER'S DEGREE  
A.A 2020/2021

POLITECNICO DI MILANO

SCHOOL  
Architecture Urban Planning  
Construction Engineering

COURSE  
Landscape Architecture  
Land - Landscape Heritage

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**MILANO 1863**

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# 01

## INTRODUCTION

Founded over 3,200 years ago, Brescia (in antiquity Brixia) has been an important regional centre since pre-Roman times. Its old town contains the best-preserved Roman public buildings in northern Italy and numerous monuments, among these the medieval castle, the Old and New cathedral, the Renaissance Piazza della Loggia and the rationalist Piazza della Vittoria.

The old town of Brescia (characterized, in the north-east, by a rectangular plan, with the streets that intersect at right angles, a peculiarity handed down from Roman times) has a significant artistic and archaeological heritage, consisting of various monuments ranging from the ancient age to contemporary

The monumental archaeological area of the Roman forum and the monastic complex of San Salvatore-Santa Giulia have become a UNESCO World Heritage Site as part of a group of seven inscribed as Longobards in Italy, Places of Power.

Brescia is considered to be an important industrial city. The metallurgy and the production of machine tools and firearms are of particular economic significance, along with mechanical and automotive engineering. The major companies based in the city are utility company A2A, steel producer Lucchini, firearms manufacturer, Fausti, Beretta and Perazzi, shotgun producer, machine tools manufacturer Camozzi and gas equipment manufacturer Cavagna Group.

The city is at the centre of the third largest Italian industrial area. The local Confindustria, the AIB – Associazione Industriale Bresciana (Industrial Association of Brescia), was the first industry association founded in Italy in 1897. The Brescian companies are typically a small or medium-sized, often family-run, ranging from the food to the engineering industry.

Also its agriculture is well known. The viticulture is the most important agricultural sector of the Brescian food system. The municipality of Brescia is part of the production areas of five different wines: a DOCG wine, i.e. the Franciacorta, three DOC wines (Botticino, Cellatica and Curtefranca) and an IGT wine (Ronchi di Brescia). In addition, in its old town, along the northern slope of the Cidneo Hill, there is the largest urban vineyard in Europe, characterized by the cultivation of Invernenga, a local white grape variety present in Brescia since Roman times.

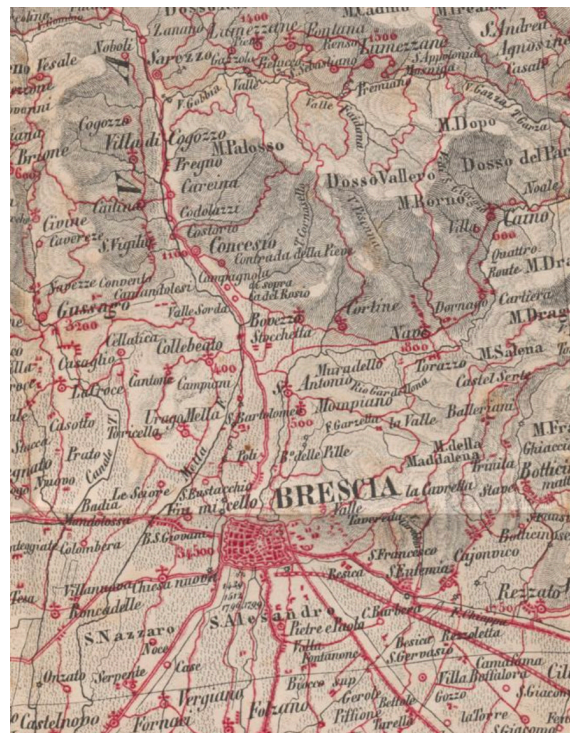
Another very important sector is the production of olive oil, especially in the nearby area of Lake Garda. The European Union has recorded as PDO two typologies of extra virgin olive oils and they are Garda and Laghi lombardi.

Brescia is also the homeland of Italian caviar. In Calvisano, about 30 kilometres (19 mi) south of the city centre, is located the world's largest sturgeons farm that produces annually 25 tonnes of caviar exported all over the world.

While on a healthcare basis, Brescia is an important medical centre. The main hospital of the city is Spedali Civili di Brescia, which has 2,180 beds and an employed staff of 6,175. It was founded in 1427 and is considered the second best hospital in Italy. Other hospitals are located in the city: Fondazione Poliambulanza, Casa di Cura S. Camillo, Istituto Clinico S. Anna and Istituto Clinico Città di Brescia.

The significant historical and artistic heritage of Brescia (since 2011 in the UNESCO World Heritage list) and the natural beauties of its surrounding area (like the Lake Garda, the Val Camonica and the Lake Iseo) have allowed the city to attract an increasing number of visitors. In 10 years, the number of tourists who visited Brescia has almost doubled from 142,556 in 2003 to over 280,000 in 2013.

Additionally, Brescia is close to important tourist destinations (Milan can be directly reached in 45 minutes by train, Venice and Florence in about 2 hours) and is one of the cheapest cities in Italy in terms of hotel stays. For these reasons, tourists often use Brescia as a base to explore the surrounding places.







# ABOUT TODAY

Any new change that comes to the world changes the perspective of our daily life, but what does this mean for urban public space

and the built environment?

From cities to neighborhoods to home. Considering these three scales, with more people working at home, gyms closed, meetings

going online and any sort of entertainment inaccessible, the outdoors is not seen anymore as a routine but became a necessity.

While hospitals have always been seen as a place of physical healthcare, now we realize the importance of providing support to maintain mental health as well.

The importance of green space and light and the integration between the indoors-out will be more important than ever. This is surely a design issue, as well as health concerns, are key for design planning.

The idea is to create a complex in which the hospital can integrate with the neighborhood, without overtaking its privacy, and here's where our design will play a role. By creating a park where community can see the world with different eyes, a park where patients are not isolated anymore, and relatives can enjoy a day out in total relax.

This environment can provide options for healthy behaviors such as physical activity, recreation and mental well-being, where the

hospital is not seen as a separate section of the city but rather the main point of interaction.

● Spedali civili di Brescia

City centre



### ***Roles of Hospital and Territorial Pharmacists within the Italian National Healthcare Service***

The central body of the Italian National Healthcare Service (NHS) is the Ministry of Health, which coordinates the NHS and is responsible for government functions related to health care for Italy's 60 million inhabitants.

The Ministry of Health works in collaboration with the governments of the 20 Italian regions, 15 of which operate under a "normal" statute and 5 under a "special" statute. The NHS develops a National Healthcare Plan (Piano Sanitario Nazionale), proposed by the Ministry of Health, which then is put into effect by the government, keeping in mind the proposals made by the individual regions. This 3-year plan indicates the priority areas where work is needed to reduce social inequalities in health care. It is used to define general objectives and methods for carrying out the institutional activities of the NHS. The National Healthcare Plan stipulates various essential levels of assistance (Livelli Essenziali di Assistenza or LEAs), which represent guarantees of the objective of social equality among all citizens and which are necessary to meet the fundamental needs of promotion, maintenance, and recovery of health; the Plan also establishes the modalities for meeting these goals.

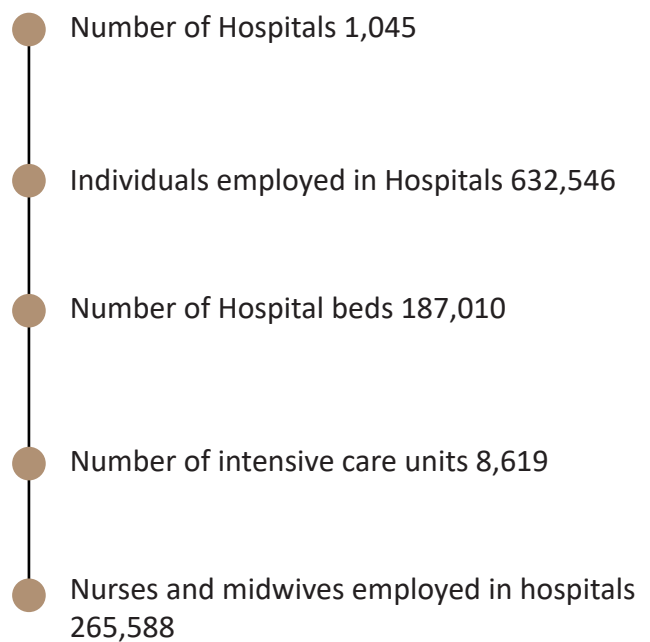
The LEAs are the activities and services that the NHS is bound to guarantee for all citizens, free of charge or with copayment, by collecting funds through the taxation system.

The Italian NHS offers universal assistance, that is, medical treatment to all those who need it. To guarantee the sustainability of such a system, considering the increasing cost of innovative medicines and medical devices, all of the health care professionals involved must take great care to monitor the appropriateness of diagnostic and treatment plans to ensure that the measures taken correspond to patients' needs, according to the correct instructions for medicines, in terms of efficacy for a specific pathology; these measures must be provided in suitable ways and within adequate times, on the basis of recognized standards, with a positive balance between benefits, risks, and costs.

### **Statistics & facts**

Italy's healthcare system provides universal coverage free of charge for all Italian citizens, as well as foreign citizens living in the country with a regular permit. When it comes to managing hospitals, public funds are allocated by regional health units to public hospitals and private hospitals accredited with the national healthcare service. In Italy, the majority of hospitals are public and are either managed directly by local health units or operate as semi-independent public enterprises. In recent years, the number of hospitals has decreased, which, as a consequence, led to a decrease in the number of hospital beds.

The number of hospital employees in Italy amounts to approximately 625 thousand, a figure that has also been decreasing in recent years. The majority of individuals employed in hospitals are nurses and midwives. Physicians represent 20 percent of total hospital employees, and the most widespread fields of specialization among them appear to be anesthesiology and resuscitation.



### ***Hospitals and economy***

Population health is an important health-care component whose impact should be considered. A healthy population can reduce the expense on national healthcare and increase the potential for earnings. In this manner, the economic impact of population health can occur at the micro and macro levels. It is no surprise that some countries assign a higher value to gains from health than gains from income. Additionally, most countries have witnessed an increase in life expectancy despite a persistent income gap over the last 50 years, reflecting the monetary benefits that can accrue from investing in healthcare

Hospitals are considered Economic Anchors in the communities worldwide, this is a general situation that can adapt in every developed country.

The health care sector in the U.S. has traditionally been an economic mainstay, providing stability and job growth in communities. Health care added more than 35,000 jobs per month in 2016.

Hospital care is an important component of the health care sector. Hospitals:

- Employ more than 5.7 million people.
- Are one of the top sources of private-sector jobs.
- Purchase nearly \$852 billion in goods and services from other businesses.

The goods and services hospitals purchase from other businesses create additional economic value for the community. With these “ripple effects” included, each hospital job supports about two additional jobs, and every dollar spent by a hospital supports roughly \$2.30 of additional business activity. Overall, hospitals:

- Support 16 million total jobs, or one of 9 jobs, in the U.S.
- Support more than \$2.8 trillion in economic activity.

### ***Hospitals and Education***

The impact of health on education is an important factor that plays a role in health-care expenditure and economic performance . Children who enjoy good health can attend school regularly and have the potential of high learning ability and cognitive development. Also, if good health continues through adulthood, it will enable the population to recover the investments in education.

### ***Healthcare and its impact on urbanization and well-being***

health risk are the urban poor in developing countries-especially the children-but urban congestion and pollution threaten the health of people in all countries. The potentialities of the urban setting to enhance health are seldom realized.

Rapid population growth in urban centres throughout the world is creating an urban revolution. The urban population of the industrialized countries doubled between 1950 and 1985, and it quadrupled in the developing countries. Cities in developing countries, which already have enormous squatter settlement populations, will have to accommodate a further 750 million people by the year 2000 (United Nations Centre for Human Settlements, UNCHS, 1988a).

Their urban growth has preceded the establishment of a solid, diversified economic base to support the provision of housing, infrastructure and employment. Major deficiencies exist in housing quantity and quality, the security of the occupants' tenure, the infrastructure (including roads, piped water, sanitation, site drainage and electricity) and basic services (including collection of household wastes, primary health care, education and emergency services). Several case-studies vividly illustrate these points (Adegbola, 1987; Oya-Sawyer et al., 1987).

Environmental problems pose health hazards to both wealthy and low-income settlements in the urban areas in most countries. They include air pollution from motor vehicles and industrial emissions, water pollution, insufficient water supplies, inadequate solid waste management leading to the proliferation of disease vectors (particularly insects and rodents), contaminated food and noise. However in any country the health impacts are felt most severely in low income settlements, where capacities to deal with the problems are the most deficient.

The problem of shelter in urban areas dramatizes the need for housing authorities and planners to adopt a comprehensive approach to their work. Inappropriate policies, structures and resource allocations inhibit the use of knowledge and technologies to prevent negative health outcomes. Actions by governments, the professions, academia, economic enterprises, and communities often fall short. Specialization in organizations, sectors and disciplines-leads to fragmented perceptions, thinking, strategies and programmes, at critical costs in wasted resources and damaging outcomes. Housing is not only a major defence against ill-health, but also it should support the state of positive health' implied by the World Health Organisation (WHO) definition: a state of optimal physical, mental and social well-being".

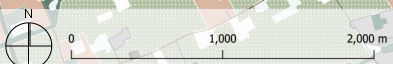


BRESCIA

RAILWAY STATION

PROVINCE HIGHWAY

Spedali civili di Brescia



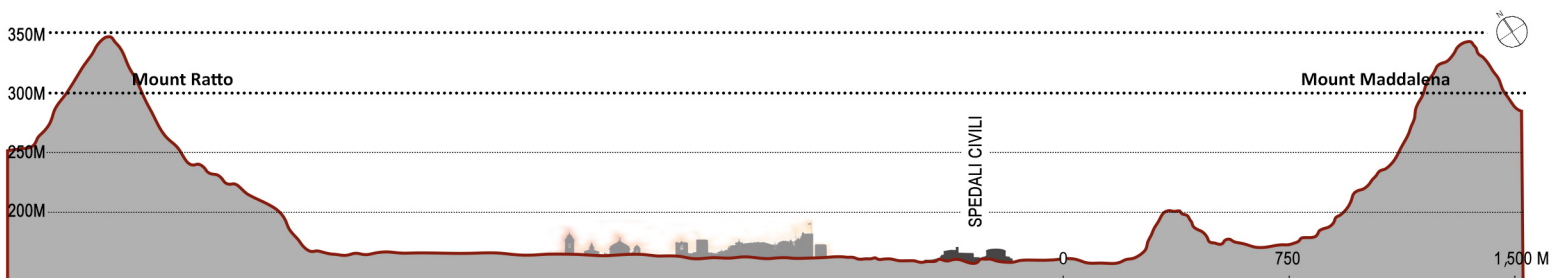
# 02

## AREA OF INTEREST

### Topography

Brescia is located in the north-western section of the Po Valley, at the foot of the Brescian Prealps, between the Mella and the Naviglio, with the Lake Iseo to the west and the Lake Garda to the east (but it has also other important lakes like Idro and Moro[20]). The southern area of the city is flat, while towards the north the territory becomes hilly. The city's lowest point is 104 metres (341 ft) above sea level, the highest point is Monte Maddalena at 874 metres (2,867 ft), while the centre of the town is 149 metres (489 ft). The administrative comune covers a total area of 90.3 square kilometres (34.9 sq mi).

Modern Brescia has a central area focused on residential and tertiary activities. Around the city proper, lies a vast urban agglomeration with over 600,000 inhabitants that expands mainly to the north, to the west and to the east, engulfing many communes in a continuous urban landscape.





## **Demographics**

In 2015, there were 196,480 people residing in Brescia, of whom 47.1% were male and 52.9% were female. Minors (children aged 0–17) totalled 16% of the population compared to pensioners who number 24.6%. This compares with the Italian average of 16.5% (minors) and 22% (pensioners). In the four years between 2011 and 2015, the population of Brescia grew by 3.9%, while Italy as a whole grew by 2.1%.[27] The current birth rate of Brescia is 7.9 births per 1,000 inhabitants compared to the Italian average of 8 births.

Brescia is one of the most cosmopolitan and multicultural cities in Italy. In 2018, the foreign-born residents represented 12% of the total population.[28][29] The largest immigrant group comes from other European nations (mostly Romania, Ukraine, Moldova and Albania), the others from South Asia (mostly India and Pakistan) and North Africa. The city is predominantly Roman Catholic, but due to immigration now has some Orthodox Christian, Sikh and Muslim followers.

In 2006 there were about 1,000 people of Pakistani origins living in Brescia.[30]

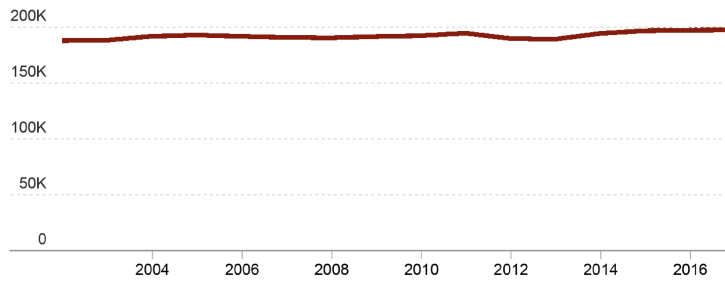
Foreign residents as of 2018

- Italian (88.2%)
- European (9.2%)
- African (2.0%)
- Asian (0.2%)
- Latin American (0.3%)
- Other (0.1%)

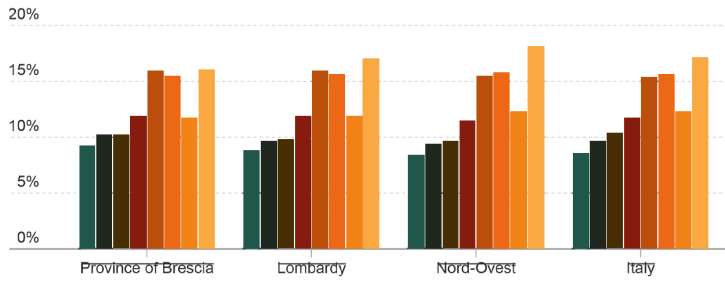
foreign Country nationality population at 1 January 2020

Romania	4,588
Pakistan	3,616
Ukraine	2,870
Moldova	2,427
China	2,397
Egypt	2,193
India	2,178
Albania	2,014
Sri Lanka	1,707
Philippines	1,624
Morocco	1,283
Bangladesh	1,208
Senegal	1,050
others	<1,000

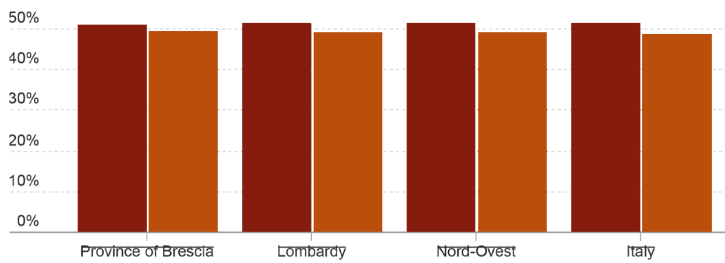
Population in Brescia



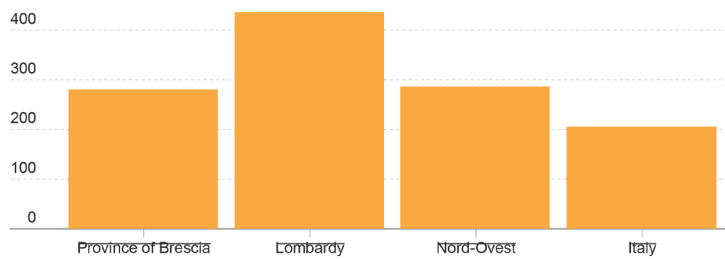
Age distribution: places that contain Brescia (2019)



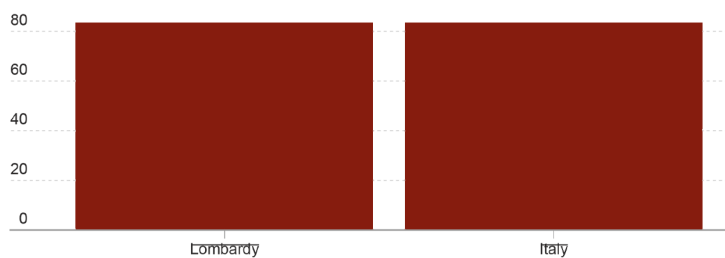
Gender distribution: places that contain Brescia (2019)



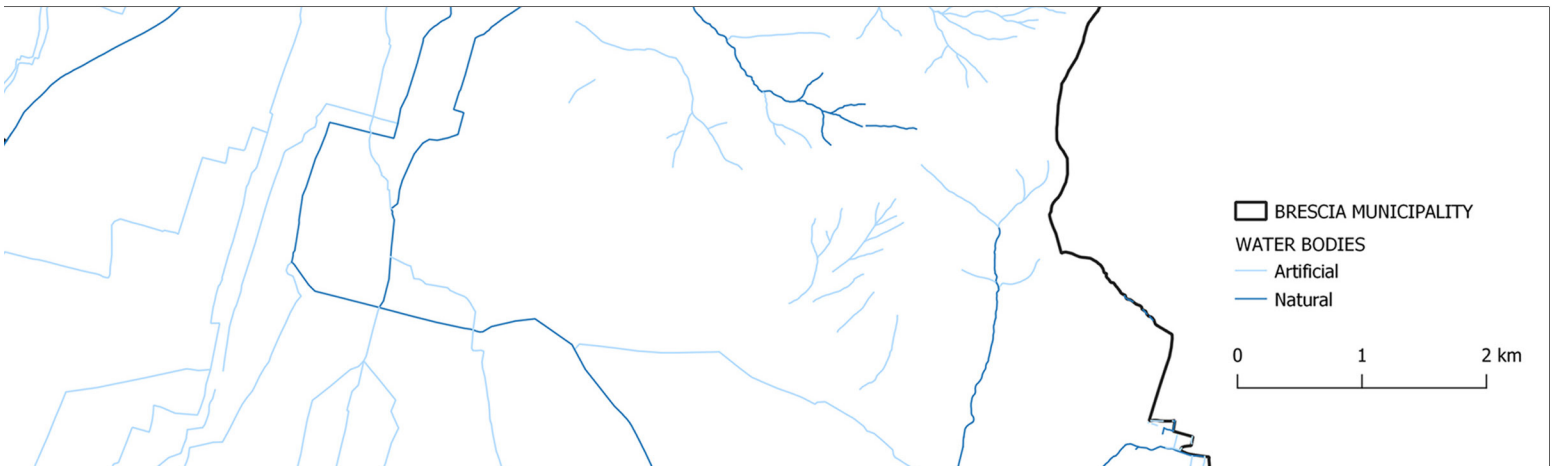
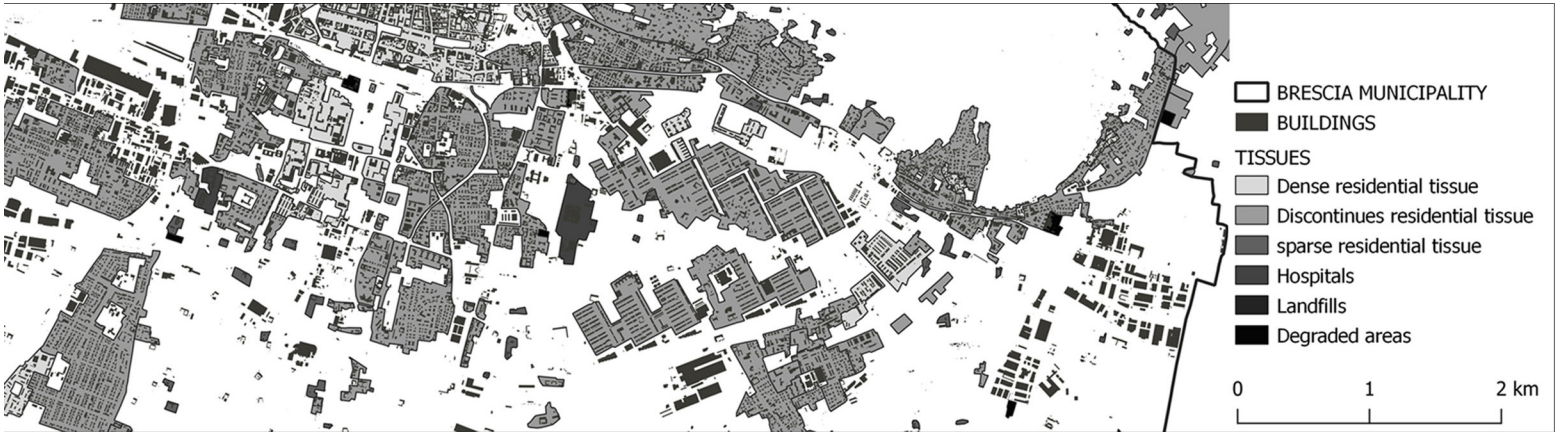
Population density (people per km²): places that contain Brescia (2018)



Life expectancy (years): places that contain Brescia (2017)



# The Patterns of Brescia



# Metropolitan city

Brescia Mobilità (BM) is the statutory corporation responsible for the transport network in Brescia; it operates one metro line (Brescia Metro) and 19 urban bus lines. Besides public transport, BM manages the interchange parking lots and other transportation services including bike sharing and carsharing systems.

## **Metro system**

The Brescia Metro is a rapid transit network that opened on March 2, 2013. The network comprises one line, 13.7 kilometres (9 mi) long, with 17 stations between Buffalora and Prealpino, of which 13 are underground.

The first projects for a metro in Brescia date back to the 1980s, with the introduction of the first fully automatic light metro systems in other mid-size cities in Europe. Two feasibility studies were commissioned in 1987. The automatic light metro system was chosen as the best technology for the city. The first public tender was announced in 1989. But this project was then cancelled in 1996.

In 1994, the first application for public financing was issued. The public financing from the central government arrived in 1995, while other funds arrived in 2002 from the Region. The international public bid for the first phase of the project was announced in 2000. The winning proposal was from a group of companies comprising Ansaldo STS, AnsaldoBreda, Astaldi and Acciona, with a system similar to that of the Copenhagen metro.

Hospital

- 
- Metro Line
  - Railway Network
  - Highway
  - Main Road
  - Secondary Road

### ***Rail***

Brescia has three railway stations. The main station, which opened in 1854, is located on the Milan-Venice railway and is the starting point for the Brescia-Iseo-Edolo, Brescia-Cremona, Brescia-Parma and Bergamo–Brescia rail lines. The station has 11 platforms and is used by about 20 million passengers per year. Other railway stations are Borgo San Giovanni (a lesser station that is located on the Brescia-Iseo-Edolo railway) and Brescia Scalo, with no passenger service and used as a freight station.

From Brescia, high speed trains connect to Milan, Rome, Naples, Turin, Bologna, Florence and Venice; one can reach Milan in 35 min, Venice in 1h and 35 min, Florence in 2 hours and 15 min and Rome in 3 hours and 35 min. In addition there are international day trains to Zurich, and overnight sleeper services to Paris and Dijon (Thello), Munich and Vienna (ÖBB).

### ***Roads***

Brescia is connected with the rest of Northern Italy by three motorways:

A4, that is the main axis connecting the city with the east and the west of the country, to cities such as Milan, Turin, Venice and Trieste;

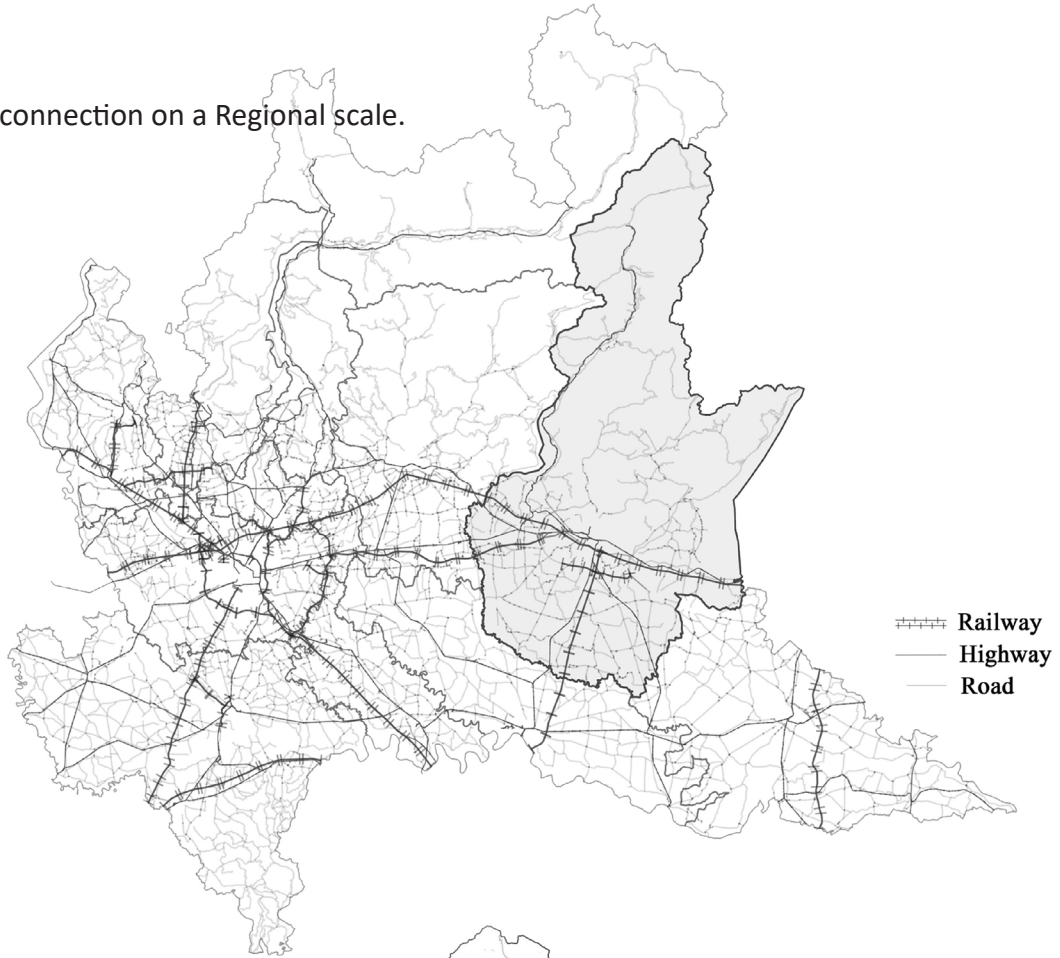
A21, which connects Brescia to Turin with a more southern route than A4;

A35, which connects Brescia to Milan and the Linate Airport with a faster route than A4.

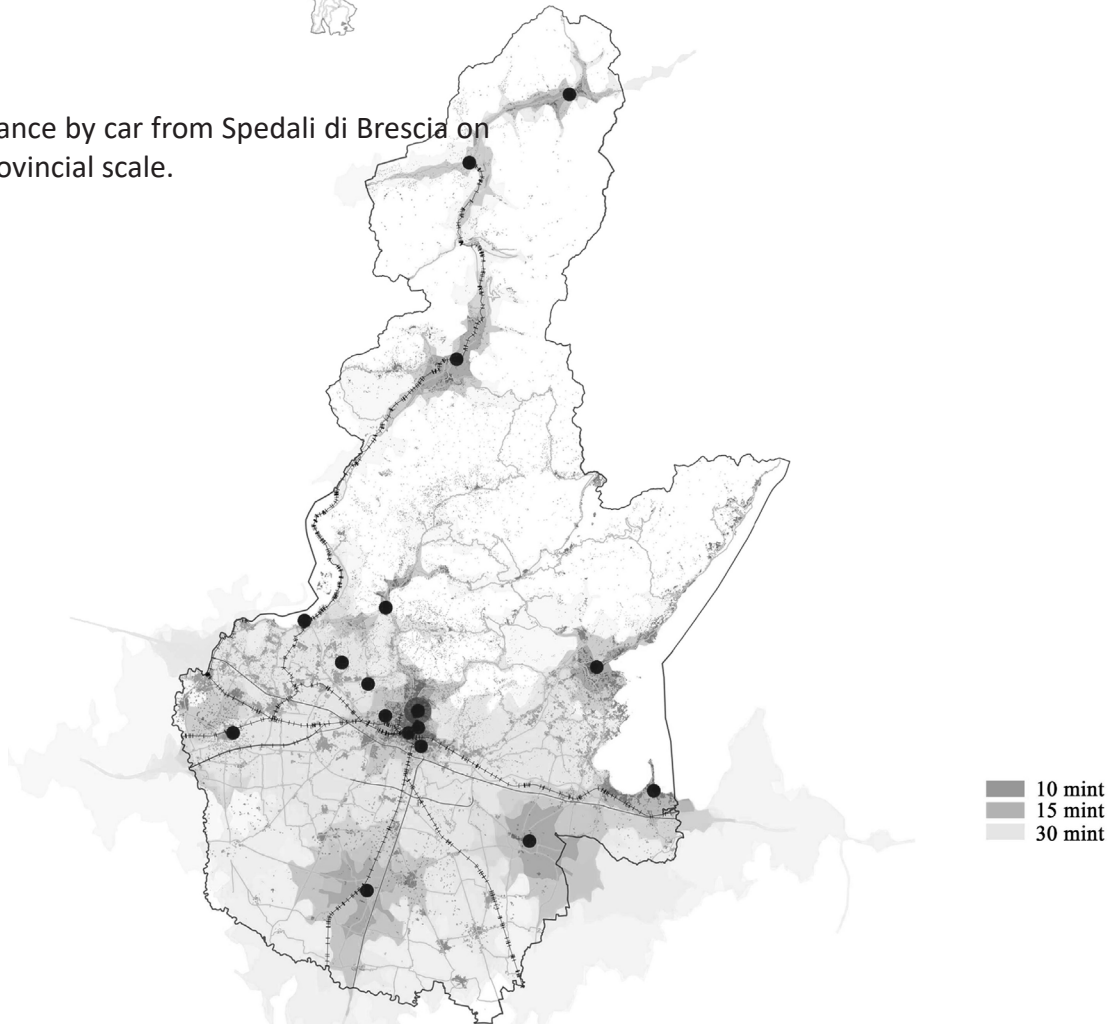
### ***Planned tram network***

The city is due to reintroduce trams after dismantling its former network in the 1940s. Two light rail lines are due to open in 2027. Brescia's historic seven-line tram network opened in 1882 and closed in 1949, when the city's transport focus moved onto road-based transport. In 2018, transport authority Brescia Mobilità and Italian state railway Ferrovie dello Stato Italiane signed an agreement for the construction of two tram lines in Brescia. One line would run from Pendolina in the northwest to the new Pala Eib sports centre in the southwest, mostly following the line of current bus route 2. The second route would connect Via Vallecamonica in the west and Viale Bornata in the east.

1 Mobility connection on a Regional scale.



2 Distance by car from Spedali di Brescia on a Provincial scale.



### ***Slow mobility***

Since 2004 in the city center of Brescia is active a traffic restricted zone or ZTL (Italian: Zona a Traffico Limitato). The objective of the ZTL, together with a program of pedestrianizations of the main squares and streets of the historical center, is to drastically reduce the chronic traffic jams that take place in the city of Brescia, promoting sustainable mobility and public transport, and decreasing the existing levels of smog that have become unsustainable from the point of view of public health.



# 03

## SITE INTRODUCTION

### ***SPEDALI CIVILI DI BRESCIA***

The “Spedali Civili”, simply the Hospital of the city, are a complex business reality, both in size and in the activity carried out. The Civil Hospitals also include the Children’s Hospital and those of Montichiari, Gardone Val Trompia, the Cardiological Rehabilitation Center of Fasano del Garda, the Department of Mental Health and finally the territorial Outpatient Clinics. The capacity is 2,254 ordinary beds and 239 day hospitals (1,652 ordinary beds and 207 day hospitals used), with 71,500 hospitalizations per year for 496,000 hospital days. With six thousand employees. They refer to a user population of about one million inhabitants with high percentages of patients from other regions. The institutional activity is of a public nature, but, in addition to the traditional welfare tasks, the Spedali Civili also carry out teaching and clinical research activities as part of the agreement with the Faculty of Medicine and Surgery of the University of Brescia.



The “Civil”, as the Brescians have always abbreviated, has become a hospital of national importance after the transformation of health care services since the 1978 reform. “, As defined by the general manager dott. Lucio Mastromatteo, but a real company, with all the related problems and benefits. With the reorganization laws on health matters, it moved from a situation in which the right to health was recognized in the context of a centralized and bureaucratic system, insured regardless of the expense it entailed, to a well-founded regime on the spending capacity of the public budget, on the decentralization of programming and operational activities, on autonomy, regional responsibility and finally on market competition at the level of local health facilities.

While respecting the autonomy of the companies, the Lombardy Regional Council has periodically provided information about the internal organization of the companies, in order to ensure a certain consistency between the corporate structures and the type of activity carried out.

Health policy strategies, medium and short term planning fall within the competence of the regional bodies.



Following the devolution from the State to the Regions, essentially, of the financing and organization of health services, a profound change in the allocation criteria of state funds in favor of the regions has taken place, passing from the automatic “ex post” reimbursement of expenditure historical, to the “ex ante” definition of the loan, in relation to residents in the individual Regions and to the National Health Plans.

This resulted in a more efficient use of resources and an increased quality of the offer. Hospitals today are remunerated based on the quantity and quality of health services provided.

This “process of corporatization” has led to full financial, organizational and managerial autonomy implemented through organizational models typical of private companies. This also required, as far as possible, the direct involvement of the medical profession in the planning and daily management of the diagnostic and therapeutic departments and support services, enriching the professionalism possessed with managerial skills.

Special internal organs of the hospital favor its active role on the basis of the principle that fixed costs, very high, must be combined with variable costs, in order to increase specialized services produced,

or to improve their quality, or added value, in the awareness of their management function as well as professional, with the possibility of making diagnostic-therapeutic decisions that involve a lower cost for the same efficacy. A business-like system has gradually emerged in which the hospital is bound to provide services evaluated not only in quantitative but also qualitative terms; quality is pursued at all levels and by all actors. Therefore we speak of organizational quality

(use of resources, organizational structure and decision-making processes within the company), technical quality (level of application of scientific knowledge, professional skills and available technologies) and perceived quality or customer satisfaction (comfort, hygiene, hotel treatment, availability, hospitality, courtesy, respect for the patient, waiting times ...).

Thus the survival of the hospital structure will depend on its ability to attract patients: in fact, the greater the demand for services, the greater the share of resources allocated to the structure. A real incentive to achieve high efficiency and effectiveness goals, also in light of full freedom of choice that the citizen will operate by opting for a specific hospital, deemed more suited to their needs.

**1427**

The Council of the city approves the establishment of the hospital



**1447**

March 26, the first stone of the new construction is laid in the heart of the city.



**1548**

a resolution of the two hospitals reserves the Maggiore Hospital for the reception of men only, while the Hospital of the Incurables, is intended to women's shelters.



Via Moretto costruzione del palazzo dei telefoni, area ex ospedale civile



**1800**

The first maternity room is established.



**1897**

The women are transferred to the new structure of the Ospedale Maggiore, giving life to the Spedali Civili.



Facciata del vecchio ospedale ed il palazzo dell'archivio notarile

**1902**

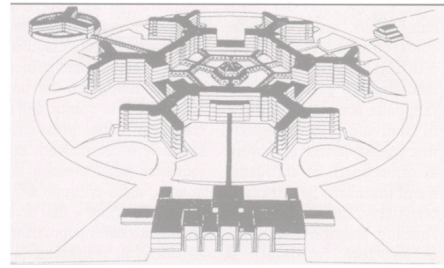
The Children's Hospital is opened.

**1911**

The mentally ill are placed in a provincial asylum along Viale Duca degli Abruzzi.



Due visioni dell'Ospedale Nuovo a nord della città nel 1946



**1938**

The first stone of the new hospital is laid; the project, with a stellar layout, provides for each department in a single block, divided into five floors above ground, then raised to six or seven. Inserted in an area of 168,000 square meters, consisting of 14 departments.

**1950**

Inauguration of the first hospital pavilion, after a forced interruption due to the Second World War.



**1953**

The entire hospital comes to life and the old headquarters of S. Domenico is closed.

**1972**

The Policlinico Satellite, the new large block, is inaugurated, it houses new departments and a more functional Emergency room

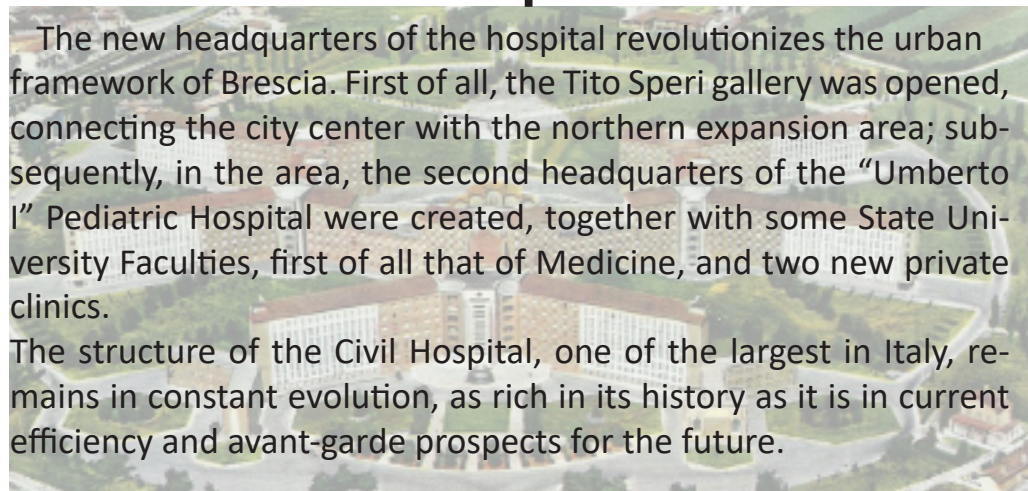
**1976**

The new pavilion for infectious patients is opened



The new headquarters of the hospital revolutionizes the urban framework of Brescia. First of all, the Tito Speri gallery was opened, connecting the city center with the northern expansion area; subsequently, in the area, the second headquarters of the "Umberto I" Pediatric Hospital were created, together with some State University Faculties, first of all that of Medicine, and two new private clinics.

The structure of the Civil Hospital, one of the largest in Italy, remains in constant evolution, as rich in its history as it is in current efficiency and avant-garde prospects for the future.



# SITE ANALYSIS

With a total area of 18.5 Hectars, strongly rooted in one of the richest and most innovative areas in Europe, with a capacity of 2,254 ordinary beds and 239 day hospitals, six thousand employees, they refer to a use of about one million inhabitants and of patients from all over Italy.

The hospital is located in a high urbanized area, close to the city centre directly connected with a metroline, the surrounding is composed of mainly private plots, the hospital boundary wall does not represent the end of the hospital structure as many other related buildings are spread all around the area.

On the north area it is located the Università degli Studi di Brescia - faculty of medicine and surgery, which constitutes an important part of the Spedali, teaching and clinical research activities were added to the basic care tasks as part of the agreement with the Faculty of Medicine of the University of Brescia. The university is supplied by its own parking and it hosts the North parking of the hospital underground,

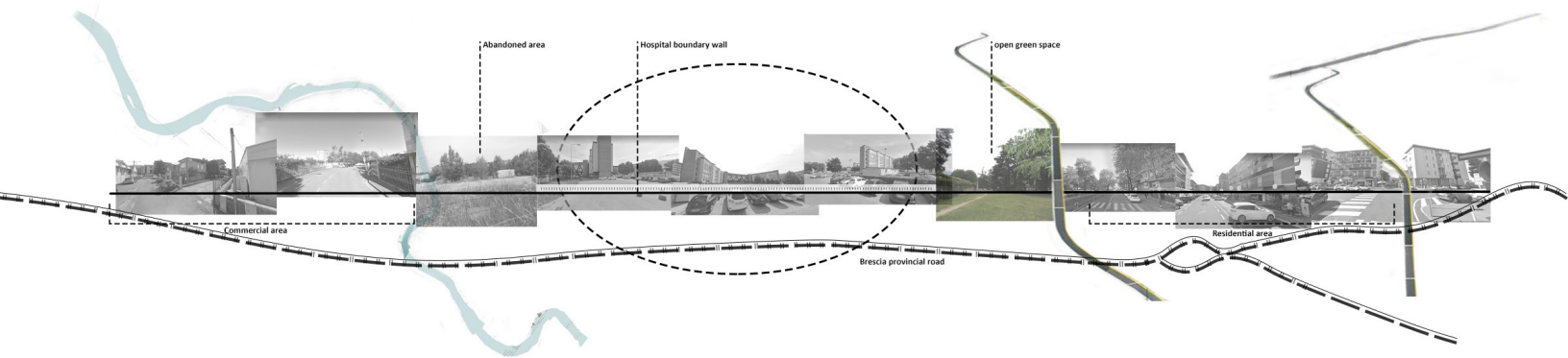
while South parking is located on the main entrance area, making it the underground of the blood draw service building, while on the west area we can find a third external parking which we believe is used by the orbital departments of the hospital.

Brescia is known for being a water city, and adjacent to our Spedali we can see Garza stream, a torrential river that springs from several sources, with a catchment area of about 75 sq km.

This area is also rich with restaurants, bars and many leisure spots which makes this area a highly busy area not only for patients but it offers a great opportunity for visitors and tourists to pass-by the hospital.

Eventhough the hospital area in itself seem to have a great percentage of greenscape, but from a site visit its been noticed that a good part of the green area is not accessible, it does not offer sitting areas nor resting points and it is completely surrounded by parkings.

- Building
- Gray scape
- Green scape
- Blue scape
- Bike lane
- Pavement



# ACTUAL SITUATION

● MAIN ENTRANCE - SOUTH AREA



● ORBITORY - WEST AREA



● PARKING INFRONT OF ORBITORY AREA



● ABANDONED AREA LEADING TOWARDS UNIVERSITY



● AMBULANCE - HELIPAD - NORTH AREA



● PARK - SOUTH AREA





- Forest
- Private park and garden
- Public park
- Agricultural
- Parking
- Road

0 100 200 m





-  Other Hospital
-  Parking
-  University / School
-  Bar/ Restaurant

Transportation access  
 Central area  
 Rich building types  
 Historical background  
 Existing trees well maintained

Beautiful surrounding landscape  
 Open space area  
 Nearby parkings  
 Adjacent river  
 Rich hotspots area

**STRENGTHS**

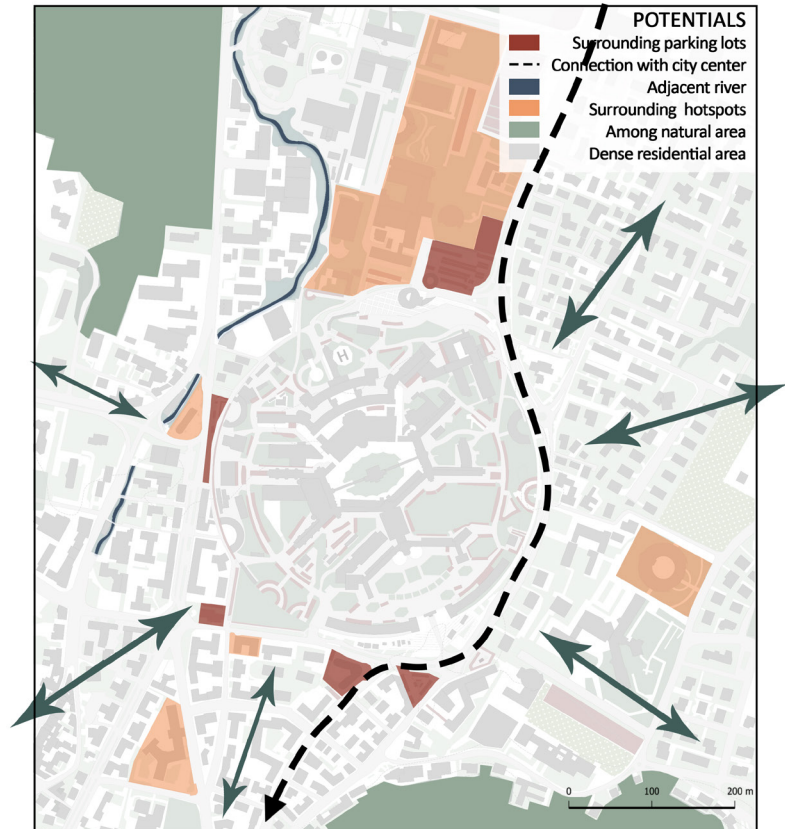
**W E A K N E S S E S**

High traffic density  
 Discontinuous street access  
 Different building harmony  
 Parking loads  
 Not well specified walkways

**O P P O R T U N I T Y**

**T H R E A T S**

The effect of the wall  
 Interruption  
 Lack of Resting points  
 Limited entrances  
 Visual pollution





# 04

## VISION

### ***The center point effect;***

The hospital acts as the center point that connects the city from all its different perspectives, the ability of a hospital to host not only patients but also to offer a warm atmosphere for the families, visitors and tourists, in a way that the Spedali Civili di Brescia turns into a city hotspot.

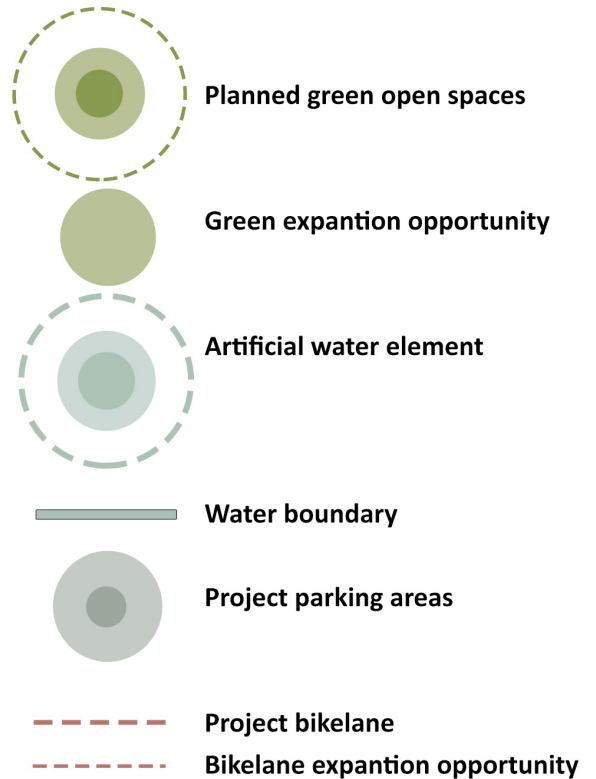
Circular shapes to mimic tree branches representing the expansion of ecosystem among the city, which will host different activities with different scenarios, in this way visitors will be on the same place in the same time experiencing different positive feelings.

Circulation VS separation;  
The ability of this place to offer a permeable barrier with the urban context, allowing Human and sensible vehicle internal circulation, versus a visual barrier and external noise separation.

Abundant green area integration, offering home to different fauna and flora, that will enrich the sustainable value of the city.

Inside/out connection by spaces alternation, where no barrier play a negative role, instead the city will become part of the hospital offering an aesthetic appreciation to the surroundings.

### **Legend**



**CONCEPT DESIGN**

*Water features as an element of sound, texture, and movement*

*Potentials of urbanization*

*linear expansion*

*From Gravity Walls to breathing Walls*

*Linkage to forest for Natural Distribution and Succession.*



Via Campana

N

E

W

S

200m

## Concept Development

**Removing the edges:** The idea is that hospital doesn't need to be a closed entity completely separate from the society instead remove the existing boundary wall and remove the barriers of identity that is always perceived.

**Creating Connection:** Expanding the connections of the hospital with its surroundings.

**Injection:** The existing green spaces are not people friendly (comforting) so the idea is to introduce spaces that can comfort zones.

**New source of interest:** It is very important to create areas that can act as multi purpose areas for all the users. Irrespective of their age groups (old and kids) and status (hospital personals and residents) they all should find the hospital green spaces functional for them.

**Intensive/ Extensive:** Patients staying in the hospital should be under observation so the spaces in between built blocks should be need to be more intensive spaces where they can be taken care and as we go towards the hospital edges they can be extensive for surrounding residents and visitors.



## User and Functional Demographics

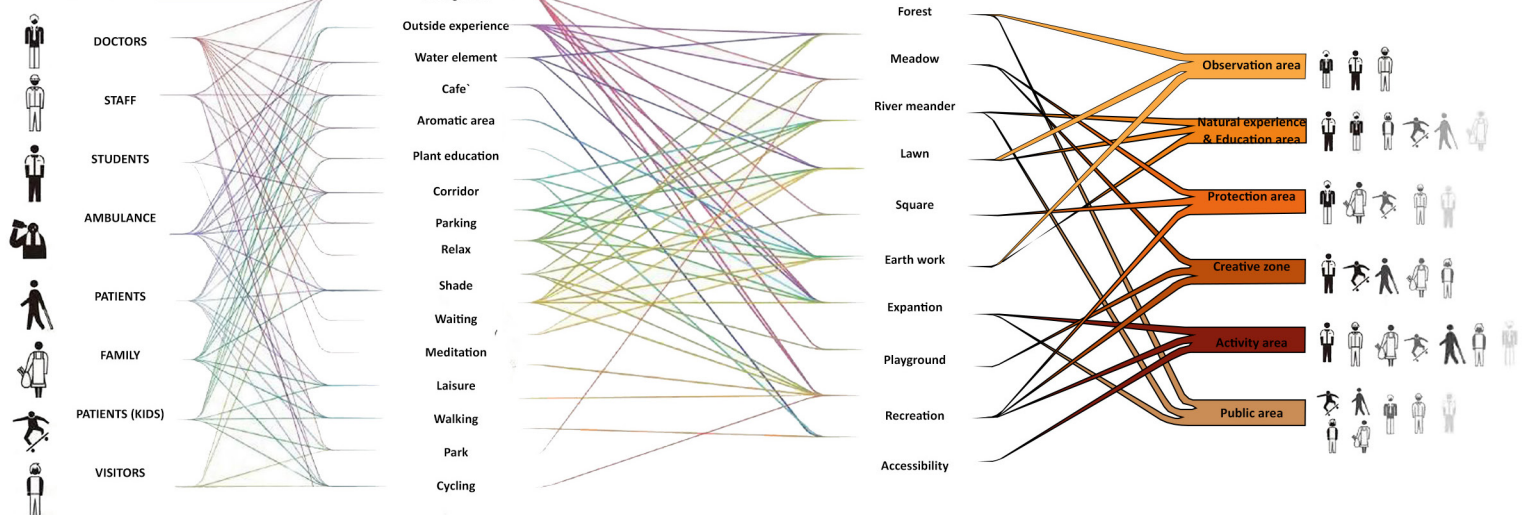
Everyday there are thousands of people coming to hospital for various reasons. Considering all the users that are proposed (residents) and the present users (doctors, staff) the spaces and areas requirements are different for all of them.

Analysing this demographics of different users coming to hospital and then understanding their functional requirement and identifying the element/strategy that can be implemented helps in finally proposing the different kind of areas/zones.

Considering the areas proposed according to the user demographics requirement there is one more important aspect that should be which is the existing building function and context.



## Design | functions



# 05

## Master Plan

### *How nature and urbanism can co-exist to create better environment:*

Re-naturalise the open spaces in the hospital not just for doctors, nurse and staff but also for the residents, locals also it make the hospital hotspot of Brescia City.

Project aims to develop as a traversable urban system, characterized by urban service functions, increasing the permeability of the external public space and providing it with usable and welcoming green spaces. At the same time, the intervention efficiently organizes the operational areas, able to answer the needs of the healthcare structure, the patients and the personnel.

Creating areas/ spaces that are comfort zones for the visitors.

These comfort zones are functional spaces characterised and designed as per the need of the different user and location.

Small green mounds to show the idea of bring the mountains to the hospital and creating the comfort zones to for functionality.

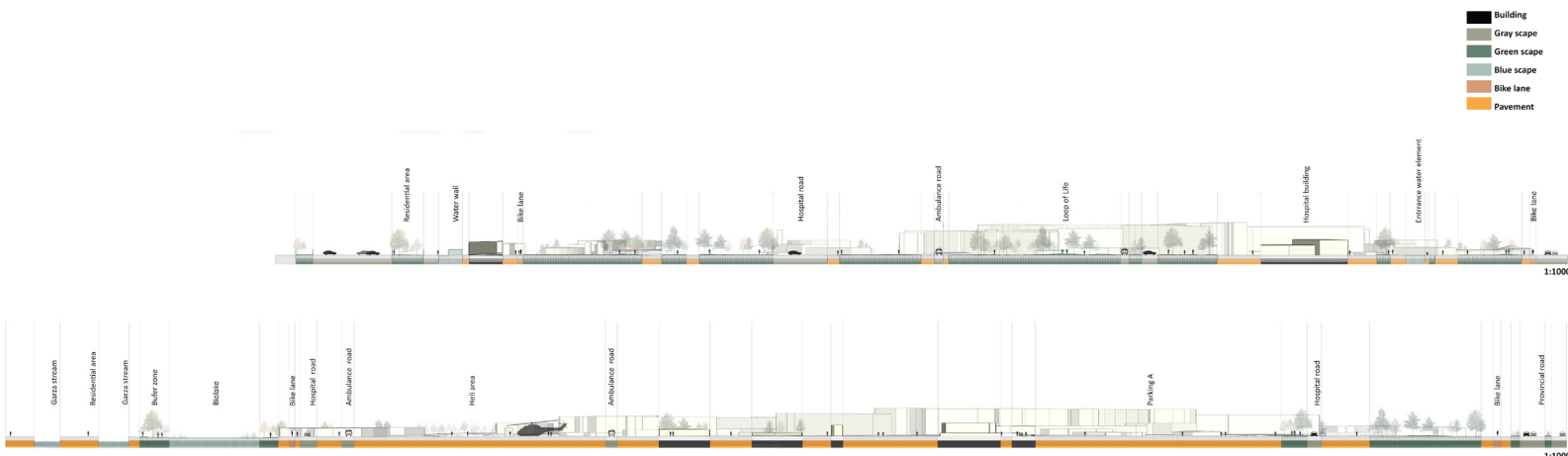
One way road to provide easy access for visitors. Separate ways for smooth ambulance movement.

Separate green parking areas for the hospital personal and visitors.

Bike lane proposed around the hospital for the visitors and residents.

Creation proper connection with university students and profesor to visit hospital. using the existing stream channel to create Bio Lake for visitors and students to relax and hang out.

Proposing trees and shrubs that are therapeutic and healing character for faster patients recovery.





University

North Parking

Entrance

Bio Lake

Water Wall

Sitting Area

Parking B

Therapeutic Garden

Parking A

Green Area (Residents)

Play Area

One-way Road

Entrance Square

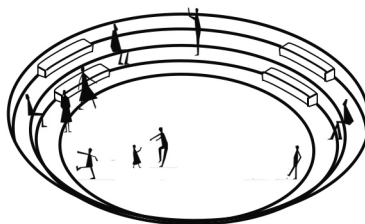
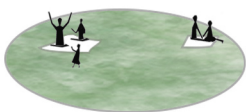
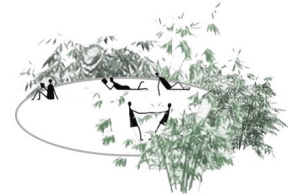
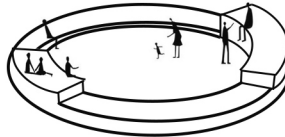
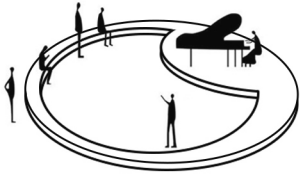
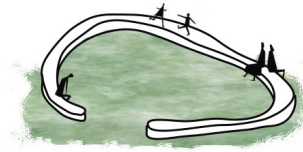
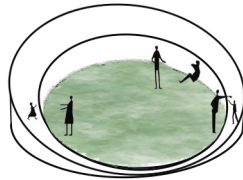
Bike Lane

South Parking



## Comfort Zones

Spaces that offer different activities and joyfull moments able to host all different kind of visitors.



## Project Layers

**Services:** Separate ambulance way for fast and easy access.

**Pedestrian:** Multiple easy accessibility for visitors and all the nearby residents breaking the boundaries and opening the hospital to the city.

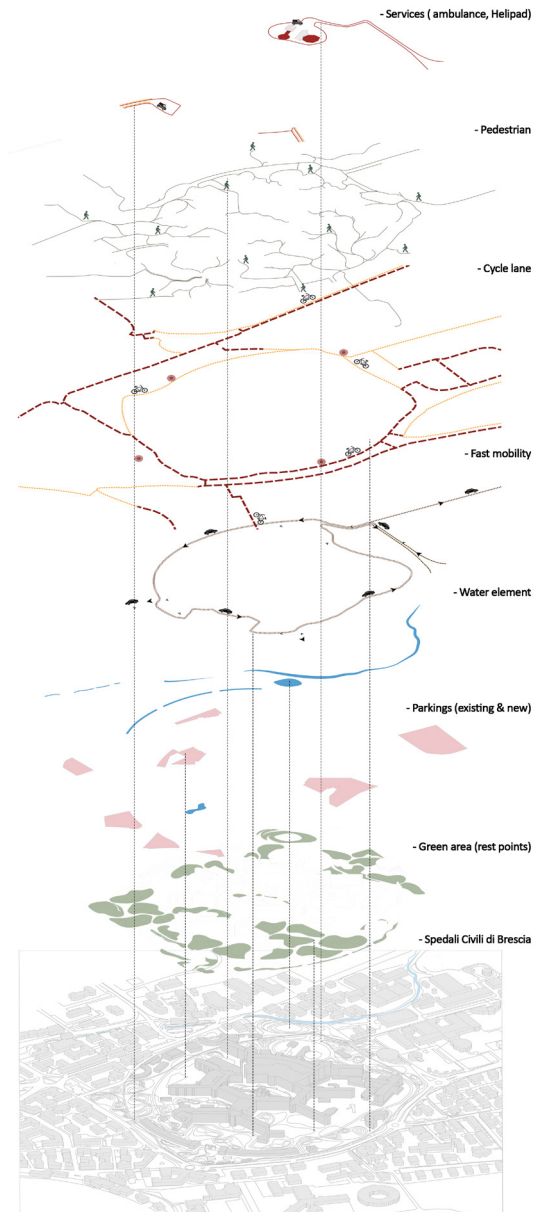
**Bike Lane:** Proposing bike around the hospital and connecting it with existing bike network of the city will help in increasing connectivity.

**Fast Mobility:** One way traffic road to provide easy movement of cars.

**Water elements:** connecting the existing stream channel to create bio lake and water wall to create a barrier for city and dead patients department.

**Parking:** 2 proposed parking inside the hospital area and exiting external parking for the visitors.

**Green Areas:** green mounds for different users; patients, hospital personal and nearby residents.





# 06

## Zoom Plans

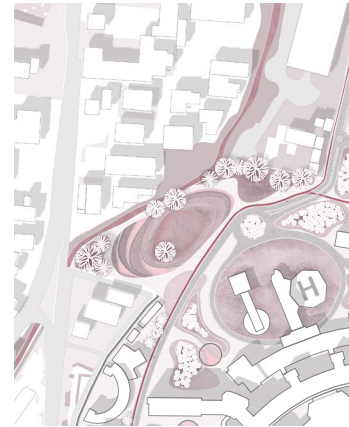
### ***Area 1 - Garden of Roses***

North area. One of the main entrances, consists of the cars entrance, separate ambulance entrance, helipad area and direct connection to the university.



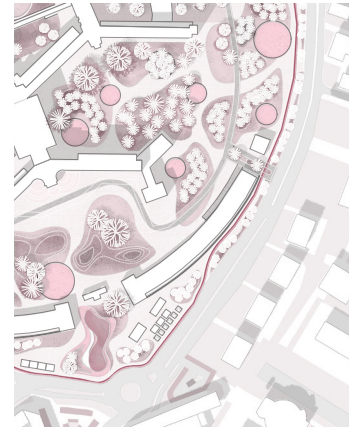
### ***Area 2 - Biolake***

West area. The water feature area, made by the Garza stream, the Biolake and the water wall to offer a detachment for the orbitory area from the surrounding.



### ***Area 3 - Aromatic Garden***

East area. With a side cars + ambulance entrance, the area where the elderly department is set, along with the East proposed car parking and a one way internal road.

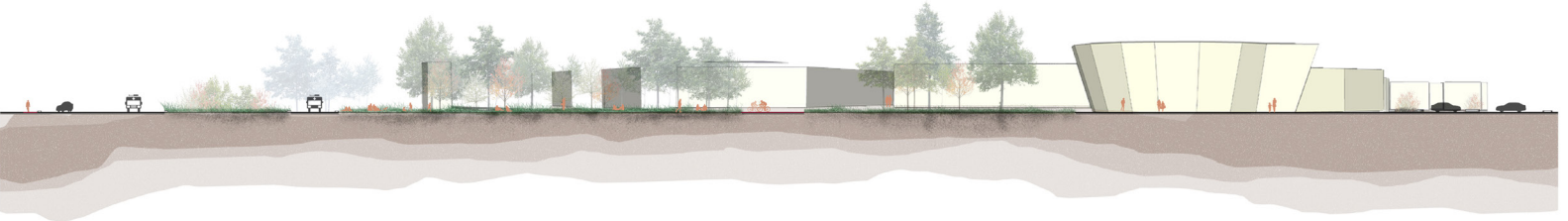
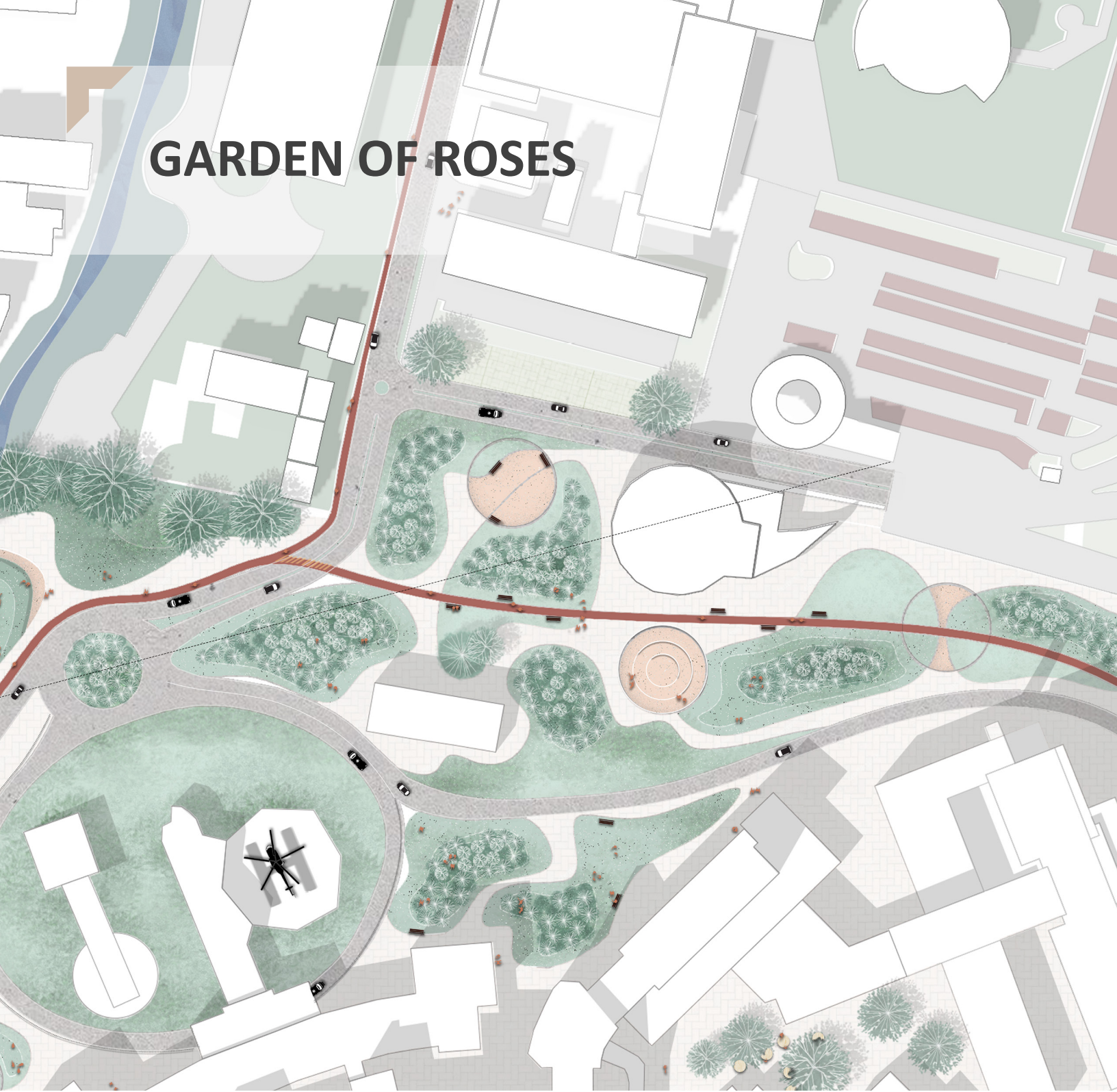


### ***Area 4 - Forest mosaic***

South area. Adjacent to the existing park, where the boundary wall does not exist anymore in order to be able to connect it with the children department.



# GARDEN OF ROSES



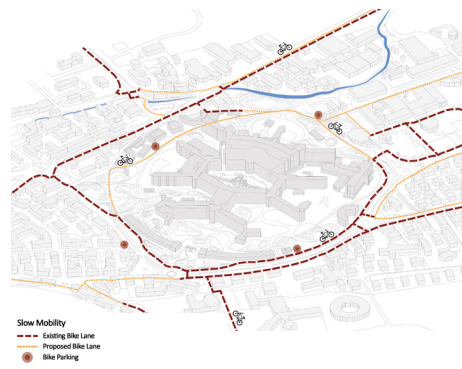
### ***Fast Mobility (Car)***

The overload of mobility and parkings in the hospital has led to the disappearing of its entity, the project will rehabilitate the area from this point of view by reducing the traffic pollution while still allowing the needed circulation inside it.



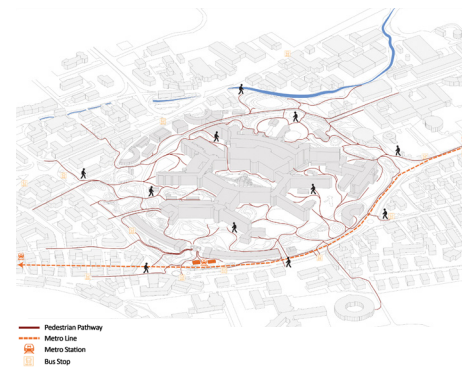
### ***Slow Mobility (Bike Lane)***

The green mobility, is such an important topic, Brescia is well connected in term of mobility, but it lacks of sustainable mobility. Offering a bike lane for the hospital not only encourage citizens to go green but also is an opportunity to recover the disconnected existing bikelanes around the urban area.

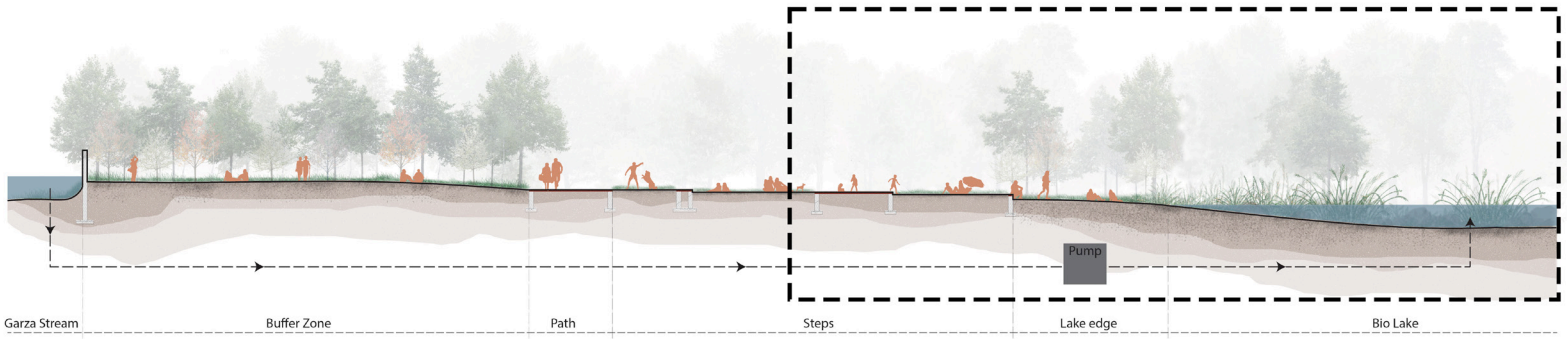
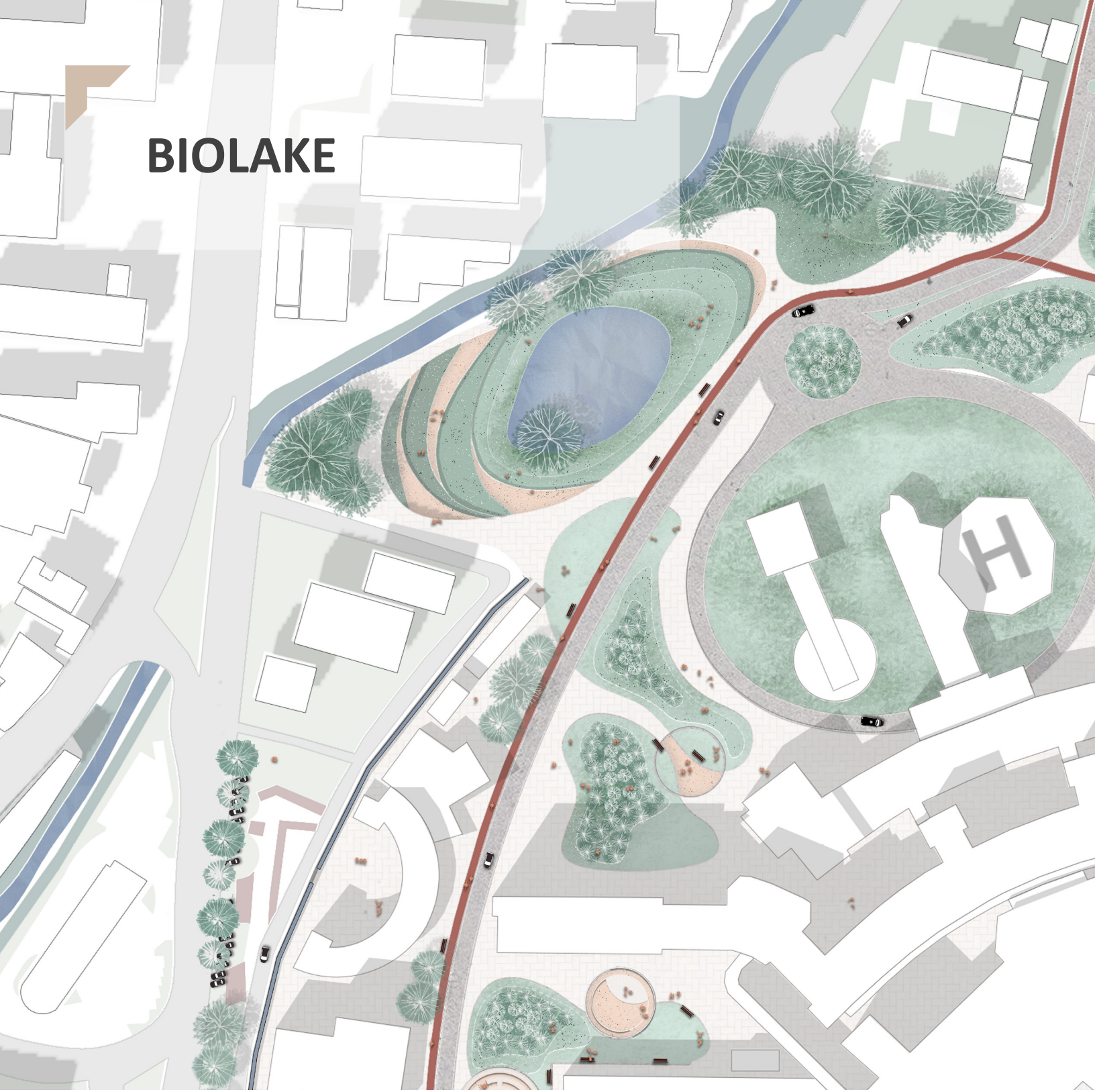


### ***Pedestrian***

From our site visit we have noticed the struggle of pedestrian circulation, undefined paths, lack of rest points and priority to cars. this project aims at flipping the coins and changing the priority order starting by offering a more comfortable area for pedestrians whether they are hospital staff, patients, relatives and visitors.



# BIOLAKE



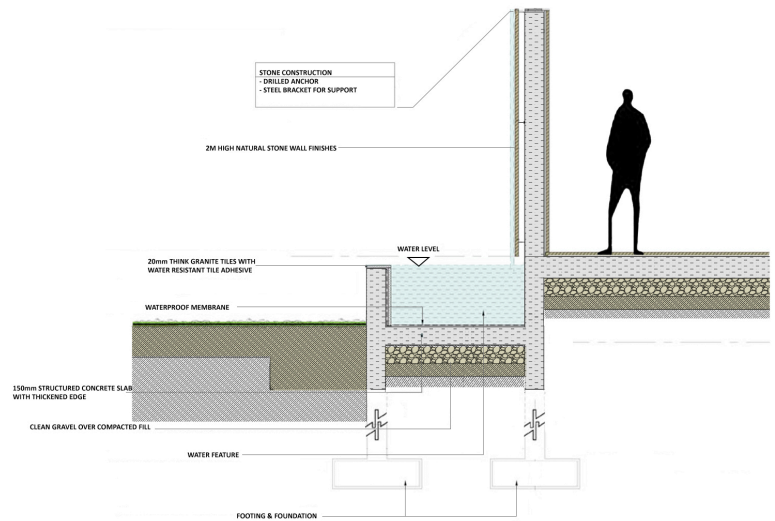
## BIOLAKE AREA

This area will focus on the water element of our project. The fact of have an adjacent stream has created this chance hard to leave.

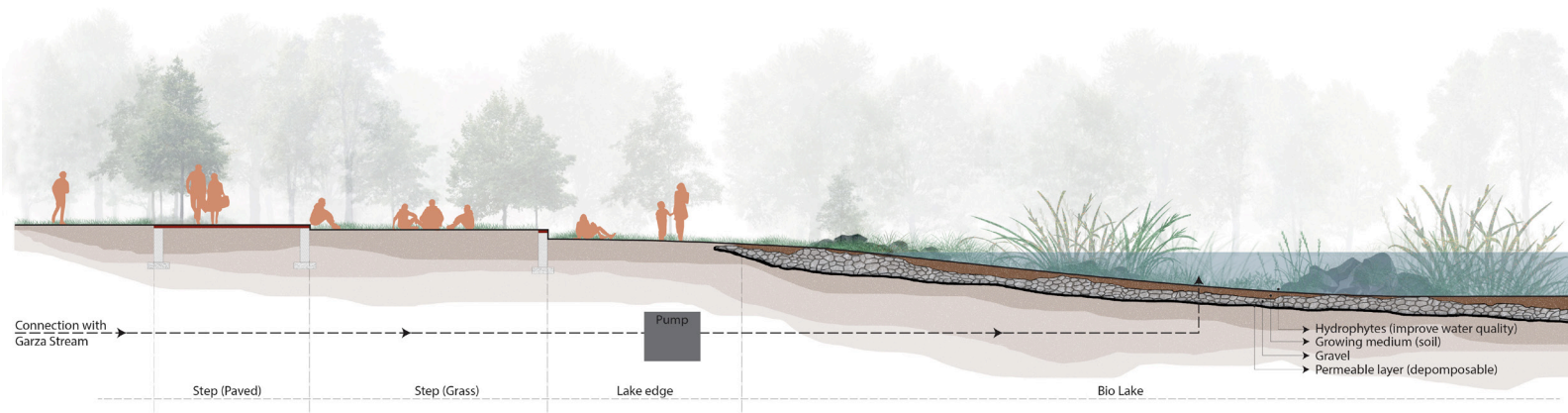
The use of water features as a form of landscape design can heighten the sense of relaxation and mental well being, Water features improve landscaping designs by adding sound and texture to the landscape. It also makes the surrounding appear more natural and relaxing for the visitors.

The sound effect will be given by the proposed water wall, a curtain of water tumbling down to form the feeling of a waterfall among the city.

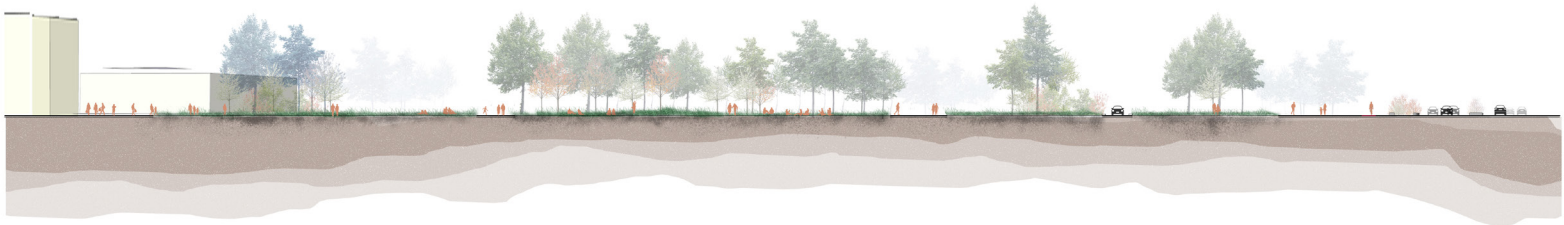
The biolake will instead play the role of attracting natural species and improve the ecosystem in the area, birds and dragonflies, the hospital will become a refuge for beneficial creatures, not only for humans.



Typical waterwall cross-section



# AROMATIC GARDEN



# FOREST MOSAIC





# BOTANICAL SELECTION

We are dealing with a delicate context, the hospital is a place of healing first and foremost, therefore the vegetational choice was based not only on an aesthetic ground but also functional, in a way for it to offer the optimal atmosphere for visitors but mostly for patients.

It was decided to opt for a variety of bamboo with particular coloring and different heights, planted in waves combining them with clusters of medium height trees and rosees bushes.

As well as looking attractive, each plant has a purpose. ***“The idea is to inspire people with the power of plants for both physical and emotional well-being,”*** says herb grower and the garden’s designer, Jekka McVicar.

The species choice was based trying to follow the LEED (Leadership in Energy Environmental Design) Certification. A U.S non-profit association that promotes and provides a global approach to sustainability, applied in over 100 countries.

The species are selected as to produce varying effects of color with the changing of the seasons according to the LEED certificate.

The goal was trying to earn as many LEED points as possible, assessing our Landscape based on different criteria that can help in earning LEED points, :

- On-Site restoration – We can receive up to 2 LEED points for restoring a part of the landscape to create a natural area that promotes biodiversity. The restored area must occupy at least 40% of the property’s footprint, but a portion of that amount can include a green roof under certain circumstances.

- Open space – By dedicating 30% or more of the property’s footprint to open areas that encourage people to enjoy the outdoors, 1 LEED credit can be earned. This can include lawn, hardscaped areas, and/or non-turf vegetation.



- Heat island reduction – up to 2 LEED points by taking measures that moderate summer temperatures. Some solutions that were adapted in the project included shade trees, vegetated planters, arbors and other vegetated structures, and green infrastructure.

- Outdoor water use reduction – LEED certified properties are required to demonstrate that they either do not need an irrigation system (past the first two years allowed to establish vegetation) or can reduce their watering by at least 30% over a calculated baseline. These savings must be documented and thus water metering is often required. For our project each species was assessed on the basis of the WUCOLS list (Water Use Classification Of Landscape Species), which makes it possible to determine the amount of water required for correct irrigation and thus minimize consumption.

- Local food production – Dedicating a portion of the site to food-producing plants and maintaining the project using integrated pest management (IPM) can earn 1 LEED credit. And this option is offered by planting the Aromatic garden area, which we'll see in detail later on.

In addition to that, other criteria may be used in the management phase of the project:

- Innovation: sustainable wastewater management – By re-using the building's wastewater (for example, from rainwater, cooling tower blow-down, shower and laundry facilities, air conditioner condensate, etc.) in landscape irrigation, 1 LEED point.

- Regional materials – in the hardscaped area of the landscape, using materials sourced from the region can help in earning the Regional Materials credit.

- Integrated pest management plan - The implementation of a pest management plan that includes documented landscape inspections and implementation of cultural practices that minimize the need to use control products is useful.

In order to be able to make the correct choice of plants according to the WUCOLS list, a study about the precipitation and weather in general of Brescia was needed.

The climate of Brescia is moderately continental, with cold, damp winters and hot, muggy summers.

The city is located in Lombardy, east of Milan, and at the foot of the Pre-Alps, whose proximity increases thunderstorms in late spring and summer compared to the lower Po valley.

The average temperature of the coldest month (January) is of 1.8 °C, that of the warmest month (July) is of 24.1 °C

Precipitation amounts to 890 millimeters (35 inches) per year: so, it is at an intermediate level. It ranges from 50 mm (2 in) in the driest month (February) to 110 mm (4.3 in) in the wettest (October).

**Winter**, from December to February, is cold, damp and gray. Temperatures often remain around freezing (0 °C) also in the daytime, especially in December and January.

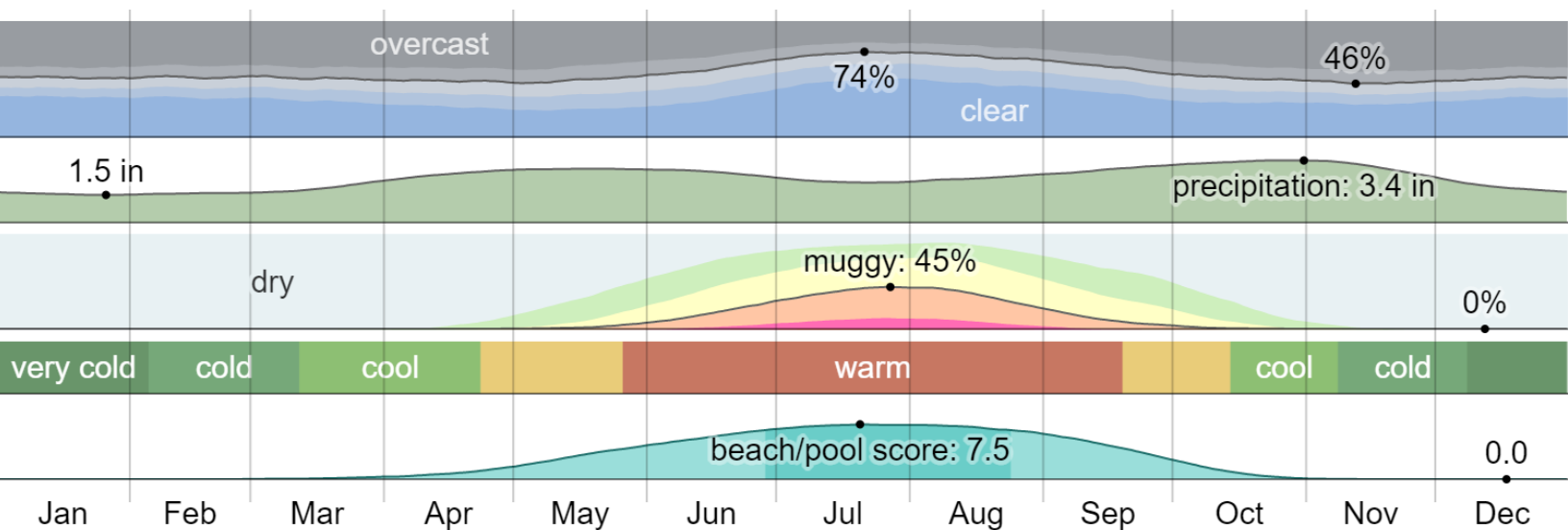
Typically, by the second half of February, the temperature tends to increase, and highs exceed quite often 10 °C.

**Fog**, which was once very common, has become rarer, and is formed only in periods with Atlantic high pressure.

**Wind** is usually weak or absent, except when the föhn blows, a warm, dry wind that comes down from the Alps and is able to bring clear skies and good visibility. When it blows, the temperature can exceed 15 °C even in the middle of winter.

**Snow**, in Brescia usually falls at least once every year, although it tends to melt soon enough. On average, around 25 centimeters per year.

**Summer**, from June to August, is hot and muggy, and generally sunny. The heat is felt because of high humidity and low to no wind.



BOTANICAL CATEGORY	BOTANICAL SPECIES	GROUP COLOR	ZONING	SQ.M	REF. IMAGE
<b>TREE</b>					
MAGNOLIA	<i>Magnolia grandiflora</i>				
	<i>Magnolia stellata</i>				
LIRIODENDRON	<i>Liriodendron tulipifera</i>				
CORNUS	<i>Cornus florida</i>				
	<i>Cornus kousa</i>				
	<i>Cornus nuttallii</i>				
PRUNUS	<i>Prunus avium</i>				
	<i>Prunus virginiana</i>				
SALIX	<i>Salix babylonica</i>				
<b>BAMBOO</b>					
BAMBOO GIANT	<i>Phyllostachys bambusoides</i>				
	<i>Phyllostachys nigra "boryana"</i>				
	<i>Phyllostachys nigra "henonis"</i>				
BAMBOO BUSH	<i>Sasa masamuneana</i>				
	<i>Sasa palmata "nebulosa"</i>				
BAMBOO GROUNDCOVER	<i>Sasa suboiana</i>				
	<i>Sasa pumila</i>				
	<i>Sasa pygmaea</i>				
<b>GROUNDCOVER</b>					
FESTUCA	<i>Festuca rubra</i>				
PENNISETUM	<i>Pennisetum massaicum</i>				
	<i>Pennisetum orientale</i>				
MISCANTHUS	<i>Miscanthus sinensis</i>				
	<i>Miscanthus transmorrisonensis</i>				
ROSA	<i>Rosa 'Aspirin'</i>				
	<i>Rosa 'Iceberg'</i>				
	<i>Rosa schneeflocke</i>				
<b>HYDROPHYTES</b>					
	<i>Carex riparia</i>				
	<i>Glyceria maxima</i>				
	<i>Glyceria maxima "Variegata"</i>				
	<i>Iris pseudacorus</i>				
	<i>Juncus effusus</i>				
	<i>Sparganium erectum</i>				
<b>OFFICINALIS</b>					
	<i>Hypericum perforatum</i>				
	<i>Laurus nobilis</i>				
	<i>Lavandula</i>				
	<i>Matricaria chamomilla</i>				
	<i>Plectranthus coleoides</i>				
	<i>Rosmarinus officinalis</i>				
	<i>Salvia officinalis</i>				
	<i>Thymus vulgaris</i>				

**TREES**

The choice of trees was an alternating of colors, the idea was to choose less genus variety, more species.

A combination between evergreen and deciduous plants that will offer different experience and coloring during the seasons.

*Magnolia grandiflora* have been chosen as an exemplar along with *Liriodendron tulipifera* representing a singular large tree

that offers shadow on the mounds of lawn. *Magnolia stellata* is located in the church area along beds of roses

The forest area is covered in various species of different heights of *Cornus* and *Prunus* fruit trees which establish visual continuity with the pediatric department entrance.

And finally, for the tree section, the *Salix babylonica*, one choice that was listed under the high water need in the WUCOLS classification, but the choice was legit as it's going to come in the Biolake area.

BOTANICAL CATEGORY	BOTANICAL SPECIES	GROUP COLOR	ZONING	SQ.M	REF. IMAGE
TREE					
MAGNOLIA	<i>Magnolia grandiflora</i>				
	<i>Magnolia stellata</i>				
	LIRIODENDRON	<i>Liriodendron tulipifera</i>			
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	<i>Cornus nuttallii</i>				
PRUNUS	<i>Prunus avium</i>				
	<i>Prunus virginia</i>				
SALIX	<i>Salix babylonica</i>				

**BAMBOO**










The bamboo represent the main section of the botanical selection, a green band with a background function.

An alternation between giant Bamboo, bush and groundcover, an evergreen context that empower the effect of the other trees and plants, specially in the flowering season.

*Phyllostachys* are plants with distinctive features which make them ideal for group formation both in the open ground and in containers as all its numerous branches start from the bottom to form a dense skirmish.

The decorative barriers created with *Sasa masamuneana* and *Sasa palmata* are among the most functional, as they create the cut when needed between the areas.

The bamboo groundcover area is suitable for creating spots both because they can be placed in full sun due to its drought tolerance and because, like other bamboos, they have a rapid and vigorous development. Its rhizome is highly invasive and is able to colonize large surfaces surrounding the planting area if a suitable containment sheath is not used. Which makes it perfect as groundcover.





















<b>BAMBOO</b>				
<b>BAMBOO GIANT</b>	<i>Phyllostachys bambusoides</i>			
	<i>Phyllostachys nigra "boryana"</i>			
	<i>Phyllostachys nigra "henonis"</i>			
<b>BAMBOO BUSH</b>	<i>Sasa masamuneana</i>			
	<i>Sasa palmata "nebulosa"</i>			
<b>BAMBOO GROUNDCOVER</b>	<i>Sasa tsuboiana</i>			
	<i>Sasa pumila</i>			
	<i>Sasa pygmea</i>			

**GROUNDCOVER**

*Festuca rubra* as creeping red fescue, is cultivated as an ornamental plant for use as a turfgrass and groundcover. It can be left completely unmowed, or occasionally trimmed for a lush meadow-like look it prefers shadier areas and is often planted for its shade tolerance, which is why it's been the choice for this project as we are dealing with an urban context, it will be mostly covered by the immense building of the hospital and the shadow of the trees.

On the edges of the hospital the wall have been almost entirely removed and instead a vegetative barrier of different species of *Pennisetum* and *Miscanthus* took place, These popular ornamental grasses have a graceful shape that fills the area with soft, airy texture, which makes it perfect as a visual barrier separating the internal bike lane from the road.

Finally, the rose garden is made up of a set of bamboo waves, in front of which are placed blooms of drooping white-flowered roses, a combination of different *Rosa* species.

GROUNDCOVER				
FESTUCA	<i>Festuca rubra</i>			 
PENNISETUM	<i>Pennisetum massaicum</i> <i>Pennisetum orientale</i>			   
MISCANTHUS	<i>Miscanthus sinensis</i> <i>Miscanthus transmorrisonensis</i>			   
ROSA	<i>Rosa 'Aspirin'</i> <i>Rosa 'Iceberg'</i> <i>Rosa schneeflocke</i>			     

**HYDROPHYTES**

For the Biolake area along the Salix, a choice of aquatic plants has been implemented.


Aquatic plants, such as marsh plants, submerged plants and water lilies, have the power to purify water in a natural way, thanks to the symbiosis that is created between these plants and the aerobic bacteria that live in their roots.

Wetlands plants capture oxygen from the atmosphere and transport it to the plant's roots. Then oxygen is released into the substrate around the roots, where aerobic bacteria live, which are able to break down pollutants and organic matter into inorganic substances available to plants.

The plants directly absorb part of the organic substances dissolved in water and produced by bacteria. This process allows to obtain a good quality water, purified from organic waste substances, pathogenic bacteria, viruses and heavy metals.

All aquatic plants, are useful for phytoremediation, but there are more or less suitable plants, depending on what you want to achieve.

Here the choice was based on the best marsh plants for submerged flow constructed wetlands with gravel substrate and water level plant collar.

HYDROPHYTES	
<i>Carex riparia</i>	
<i>Glyceria maxima</i>	
<i>Glyceria maxima "Variegata"</i>	
<i>Iris pseudacorus</i>	
<i>Juncus effusus</i>	
<i>Sparganium erectum</i>	









**OFFICINALIS**

Last but not least, the choice for the Aromatic Garden.

Along the way, leading to the Eldery department section of the hospital, a green area consisting of waves of different bamboo species, on a carpet of Festuca, beds of aromatic plants complete the design of the space.

Every plant in the garden had to be proven to be of benefit to man. For example rosemary, has been scientifically proven to help restore the memory.

Medicinal and aromatic plants today have a very important place in the aesthetic and functional aspects of plant design studies with leaf forms in different colors and textures and flowers in different shape and colors. Contrary to other landscape works, plants used in therapy gardens should provide sensory, memory and creativity stimulation. In this context, choosing the right plant species for the purpose of use and placing them in the direction of the desired effect are the main factors affecting the success of plant design.

OFFICINALIS	
<i>Hypericum perforatum</i>	
<i>Laurus nobilis</i>	
<i>Lavandula</i>	
<i>Matricaria chamomilla</i>	
<i>Plectranthus coleoides</i>	
<i>Rosmarinus officinalis</i>	
<i>Salvia officinalis</i>	
<i>Thymus vulgaris</i>	



# PAVEMENT SELECTION



Paving is a vital technique for creating a unique appearance of any project. One of the most important decisions in designing the landscape may also be the choice of paving material.

The main questions for this section were:

- How to Choose the Perfect Paving Material?
- How to create environmentally friendly and sustainable hardscape ?

The key points to work on were;

-Environmentally friendly: made from naturally occurring materials.

- Water permeability: binding of aggregate particles that allows excess water to pass directly through to the groundwater table.  
-Simple maintenance, materials that can be implemented on site and require less maintenance than others.

- Natural aesthetic : creating a loose natural-looking surface texture, while still maintaining the stability and durability that is needed.

- Dust reduction: the integration between greenscape and hardscape which help prevent dust from blowing away in the wind or being kicked up by traffic.

and finally, also for the pavement selection the choice was taken by giving a look at Sustainability / LEED® Compliance, in order to qualify for credits towards LEED® certification.

Each choice of material has its benefits and drawbacks, and some are better suited to unique uses and locations than others.

For this project it was opted for ecofriendly, permeable, natural-looking materials that will soften the strong impact of the hospital structure.

**EXPOSED AGGREGATE**

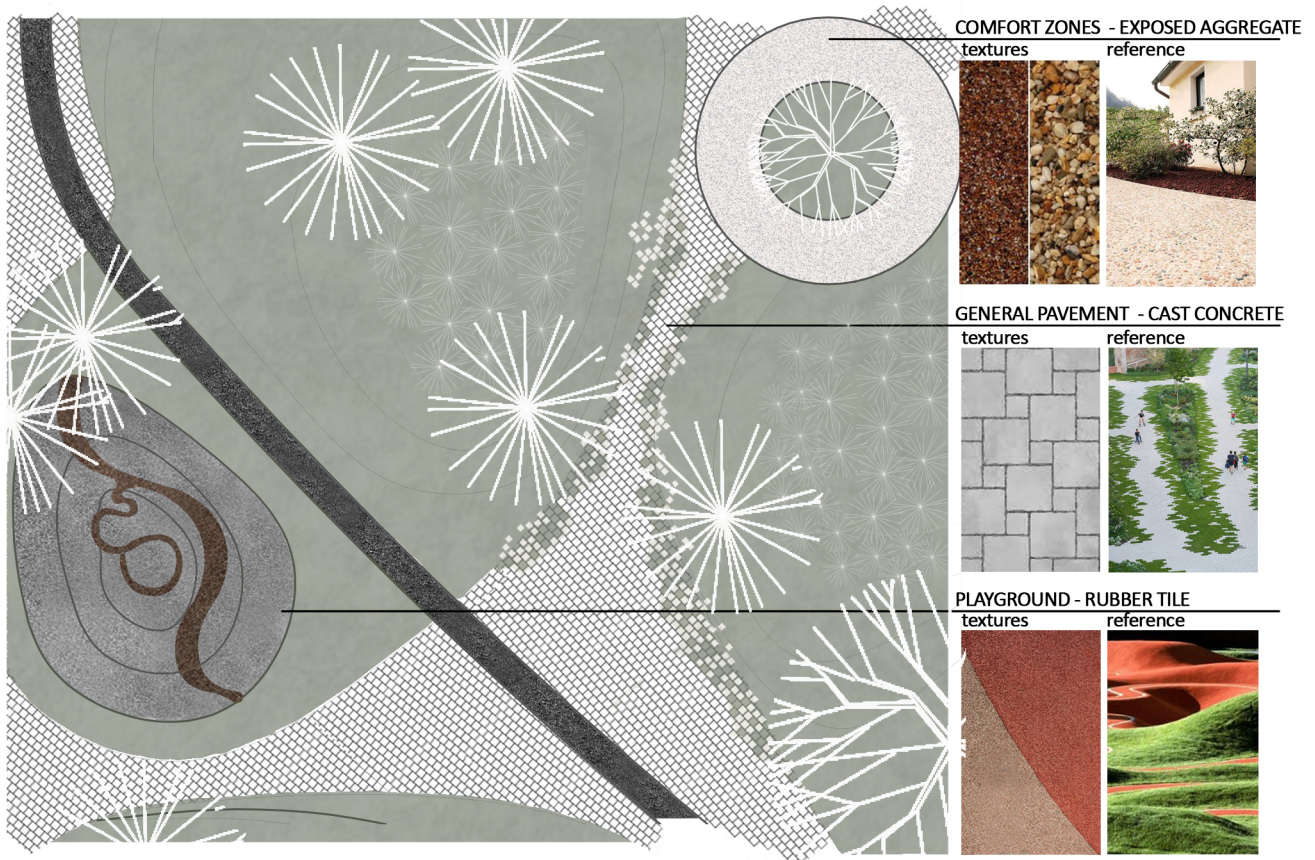
For our comfort zones we opted for aggregate, a mix of thin decorative stone cementitious bound system. It can last for decades and endure the long-term effects of temperature and extreme cold, known for its abrasion and impact resistance, easy to clean and maintain, non-slip & UV stable finish, and most importantly aesthetically pleasing.

**CAST CONCRETE**

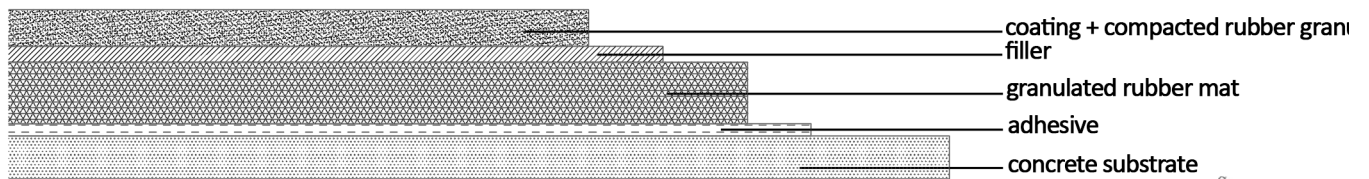
Concrete bricks combined with some other softer material. In this area, it was mingled with *Festuca* grass around the perimeter providing transition and protection and also a playfull touch, being the playground area.

**RUBBER TILE**

Rubber granule compound consisting of special polymers that ensure elasticity and UV. ray resistance. this material can be used to realise beautiful multi-purpose courts, for schools, parks and playgrounds.



TYPICAL CROSS-SECTION - Playground

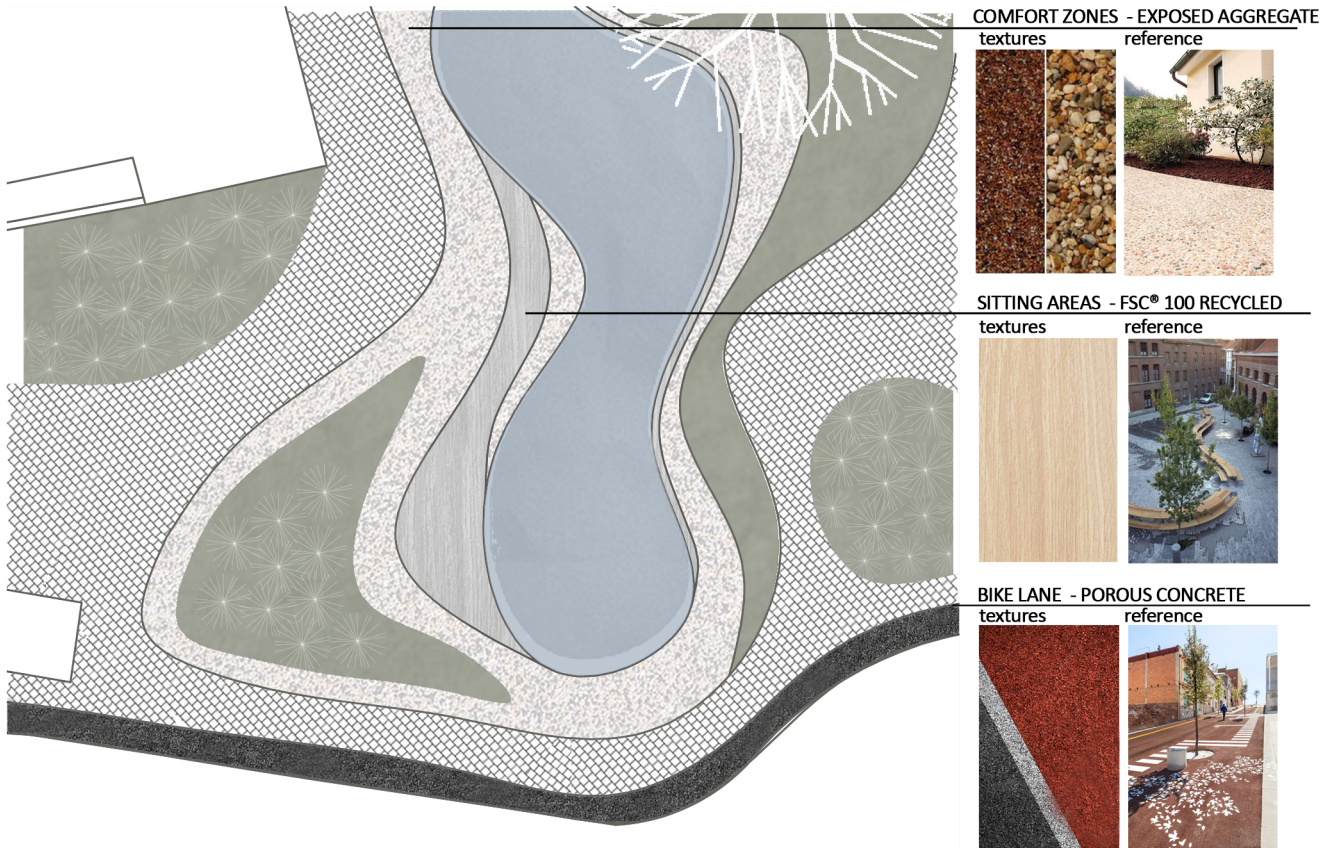


**FSC®- CERTIFIED HARDWOODS**

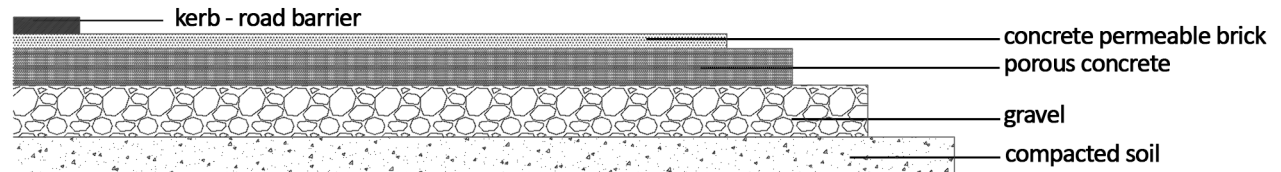
For the sitting areas - such as this one around the pool - we propose The FSC 100 per cent recycled, this rating indicates that the wood has been reclaimed from built structures that were demolished or retired, and that no new trees were cut down. What it offers: low maintenance; superior resistance to moisture, insects, fire, vandalism and decay.

**POROUS CONCRETE**

A solution suitable for sustainable slow mobility: a concrete that enables water drainage. This water infiltration not only helps to balance the environment but also reduces the need to maintain a drainage system. Paving materials such as porous concrete not only are sustainable but also resistant and can be used extensively.



TYPICAL CROSS-SECTION - Porous bike lane



**POROUS CONCRETE**

Being considered a resistant material which can be used extensively, the porous concrete works just fine also for cars paving. In order to compele with LEED certificate, we have opted for the concrete instead of asphalt. according to LEED® :

- Compared embodied energy and global warming potential for construction and maintenance over a 50-year life cycle: Asphalt pavement required 3 times more energy than concrete pavement
- Limit disruption and pollution of natural water flows by managing stormwater runoff . The Pervious Concrete has: 15-30% voids, Minimizes runoff to surrounding streams and lakes, Functions like retention basins, Recharges groundwater supplies.
- Reduced Light Pollution; 30% fewer fixtures can produce the same level of lighting on concrete compared to asphalt.

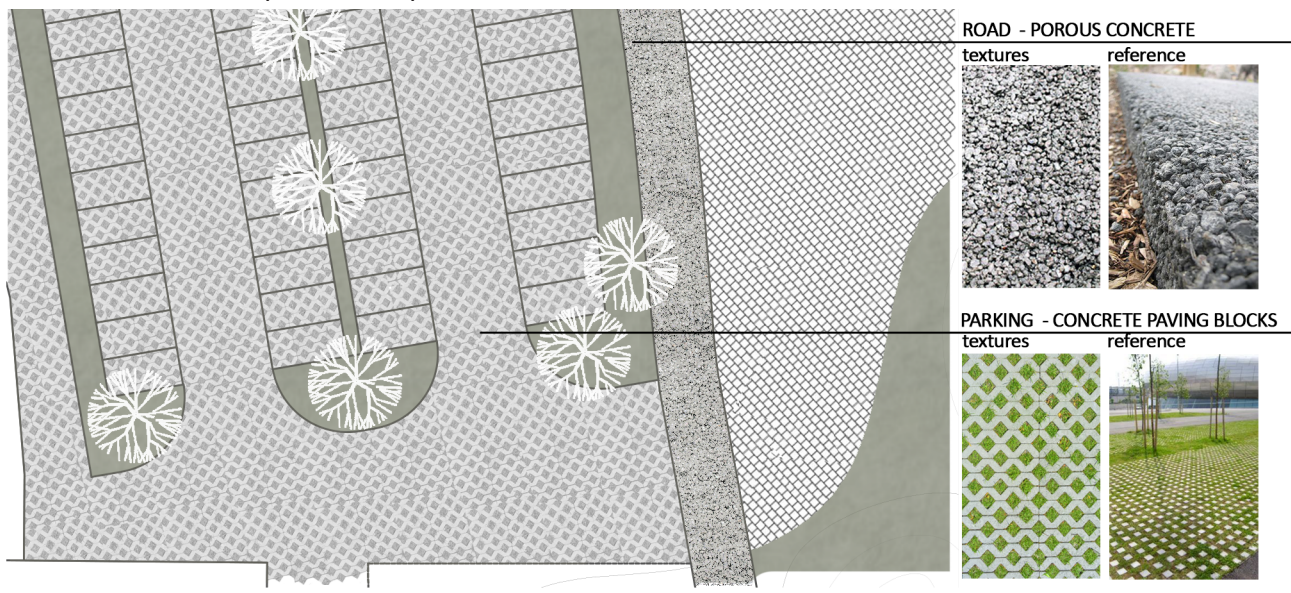
**CONCRETE PAVING BLOCKS**

Finally for the parking areas, using an open-grid concrete block paving system eliminates heat build-up in pavements and roads.

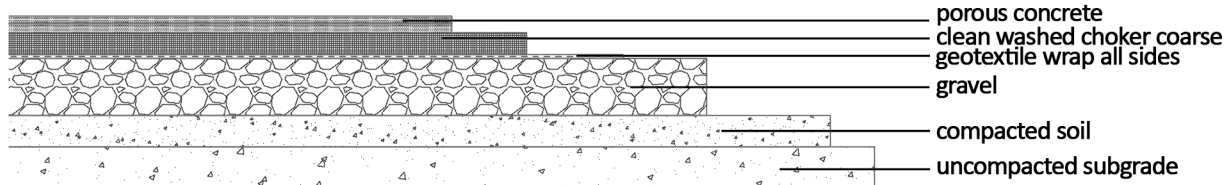
These open grid surfaces assist in allowing the surface area to remain cooler than the surrounding hard surface making up conventional pavements.

Advantages:

- allows controlled stormwater run-off,
- increased access to the groundwater table
- the reduction in the temperature of the paving
- Improved environmental conditions
- Enhanced safety.



TYPICAL CROSS-SECTION - Porous road





# AROMATIC GARDEN





# BIOLAKE





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