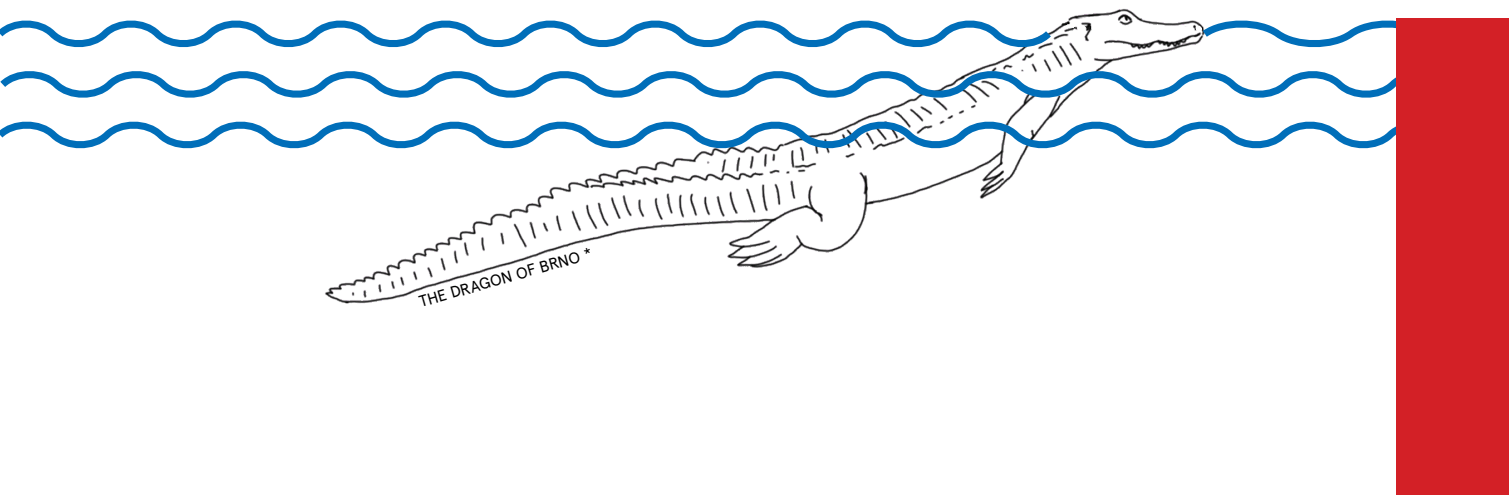


**MOBA**



# **SVRATKA RIVERFRONT**

## **001. COMPETITION BRIEF**

**ARCHITECTURAL AND LANDSCAPE DESIGN**  
**PUBLIC ONE-PHASE COMPETITION**

**MOBA STUDIO s.r.o.**

U Půjčovny 953/4  
110 00 Praha 1

tel.: +420 222 222 521  
www: moba.name

**THE CITY OF BRNO**

Dominikánské náměstí 196/1  
602 00 Brno

tel.: +420 542 171 111  
e-mail: informace@brno.cz  
www: brno.cz

**B | R | N | O**





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## FOREWORD OF THE ORGANIZER OF THE COMPETITION

A river is very often one of the most important conditions in the founding of a city, and a basic source of its life and functioning. In recent years, the river in the urban environment has emerged not only as a natural phenomenon, but as an attractive location for spending leisure time. City river embankments have, in the past few decades, become an added value that municipal governments from London to Warsaw have worked on cultivating and developing.

Paris's river-beaches have been in operation for over ten years now, and every year the city turns more attention to improving and activating further sections of land along the course of the Seine. The restaurants, clubs or cultural venues located along urban riversides in France or Italy – whether on ships or in former fish-warehouses – have reliably numbered among the most sought-after evening and night-time destinations, not only for their romantic surroundings but equally for the highly pragmatic reason that their visitors do not disturb the quiet of residential districts. Another reason for visiting river banks in a city is for sports: most often beach volleyball, swimming, kayaking, angling, running, cycling, or boat racing. And these activities are not only to be found in Europe's southerly climes: Austrian, German, or Swedish cities are making ever more intensive use of their own river-banks as well.

In the conditions of the Czech Republic, all too many urban river-courses have been forced into concrete-walled channels, offering very few opportunities for spending time along their length. A slow but definite trend since the fall of Communism has been to rectify these past errors, and make rivers accessible to city-dwellers as one of the few pieces of nature in the built environment – in other words, to transform a (relatively) purely functional solution into a space that offers not only much more natural anti-flood barriers to protect the residents, but also an environment that is attractive for actual use. The city of Brno is in a position to consider the revitalisation of the banks of the river Svratka through the realisation of several stages of anti-flood protection measures, which in conditions of increasing climactic shifts and other disturbing natural externalities have become more important and relevant than at any previous time. Studies of these measures will be made available to the competition participants, who are expected to subject them to a full professional critique, so that the designs not only achieve a functional, contemporary and aesthetically worthwhile landscaping plan for bringing both river and city into closer contact, but equally ensuring good protection against high waters. These two aspects should together, in the spirit of the slogan 'from concrete to nature', synergistically formulate the new shape of the Svratka.

Igor Kovačević  
MOBA

# ABOUT COMPETITION



The competition is international and open to all professionals who are legally able to operate as architects or urban planners pursuant to the laws of the relevant member state of the European Economic Area – EEA, European Free Trade Association – EFTA, and Switzerland that has a bilateral agreement with the EU. (In the Czech Republic it is pursuant to Act no. 360/1992 Coll., on the professional practice of authorised architects and on the professional practice of authorised engineers and technicians in the field of construction, as currently valid.). Due to the different legislative regulation in EEA, EFTA and Switzerland, it is enough to have one member of your team who fulfils this requirement. In case none of you are from EEA, EFTA, or Switzerland, you need to team up with a company or an individual fulfilling this requirement.

## FROM A LEGAL STANDPOINT IN THE COMPETITION ARE DISTINGUISHED:

### PARTICIPANT / PARTICIPANTS

- must fulfil the following all conditions listed in (4.1)
- may or may not be author of the proposal
- is a partner for negotiations
- is natural or legal persons



### AUTHOR / AUTHORS

- they may not fulfil requirements a) a f) (4.1)
- may or may not be a participant in the contest
- it is natural person
- relationship participant-author addresses the appendix 1

### COOPERATIVE PERSON / PEOPLE

- they may not fulfil requirements a) a f) (4.1)
- they do not have copyright on the proposal

<http://nabrezirekysvratky.cz>  
<http://zakazky.brno.cz/vyzvy>  
<https://www.cka.cz>

## COMPETITIONS TERMS

- 2. 12. 2016.**  
announcement of competition
- 13. 1. 2016.**  
visit of the locality
- 27. 1. 2016, midnight CET**  
submission of questions
- 28. 2. 2017, 3:30 CET**  
submission of the competition designs

## PRIZES

- 1<sup>st</sup> prize** 550 000 Kč  
20 370 €
- 2<sup>nd</sup> prize** 400 000 Kč  
14 800 €
- 3<sup>rd</sup> prize** 300 000 Kč  
11 100 €
- awards** 200 000 Kč total  
7 400 € total

# SUBMISSION OF THE COMPETITION DESIGNS – FOR YOUR REVIEW

**The contest is anonymous!**

**None of the evaluated part to the jury nor the package must appear logo, graphic symbol or anything that could lead to breach of anonymity!**

## 1x poster 900 x 2200 mm portrait

- ☐ 2 sketches to photo
- ☐ overall situation
- ☐ 4 arbitrary axonometric views
- ☐ scenario of the activities
- ☐ author's description of the anti-flood protection
- ☐ 4 cross-sections
- ☐ details of public spaces

## 3x portfolio of the design A3

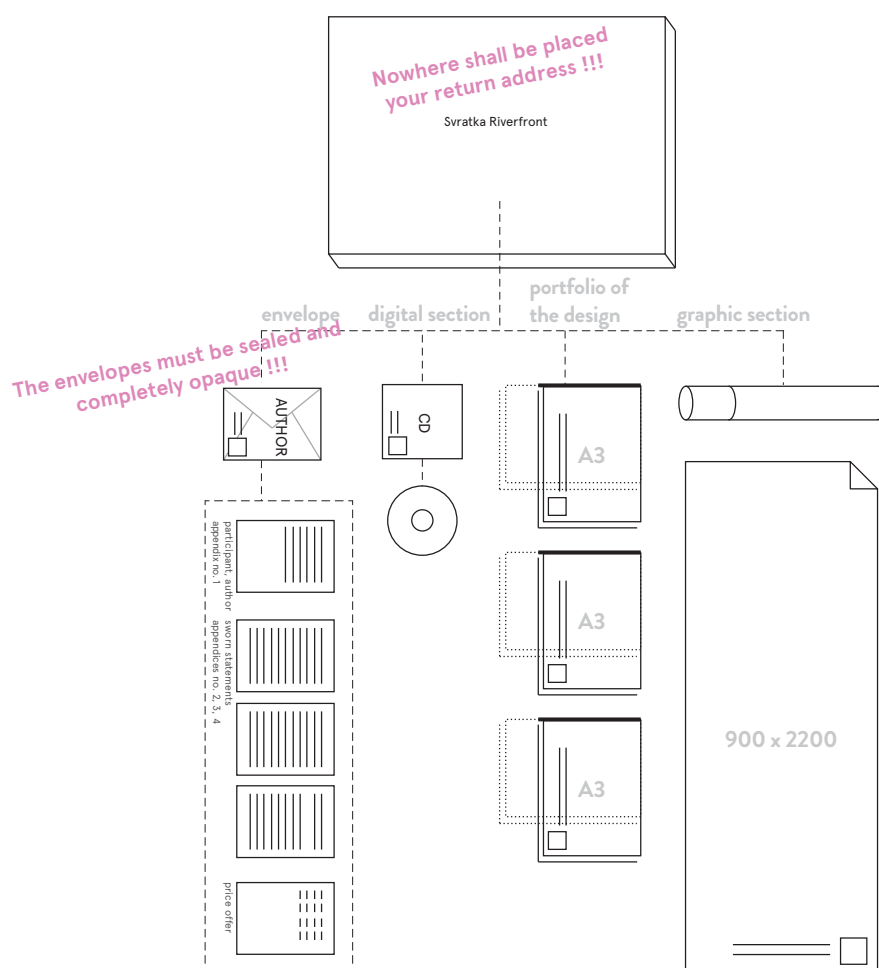
- ☐ annotation
- ☐ author's description of the landscape design and author's description of the anti-flood protection
- ☐ calculation of investment costs

## 1x CD / DVD

- ☐ poster (pdf, 300 dpi)
- ☐ portfolio (pdf, 300 dpi)
- ☐ annotation (doc)
- ☐ calculation of investment costs (xls)

## 1x envelope „Author“

- ☐ participants names and postal address, authors name and cooperating persons, bank information (appendix 1)
- ☐ 3 sworn statements (appendices 2,3,4)
- ☐ price offer for design work



## COMPETITION JURY

## INVOLVED MEMBERS



**Martin Ander**

- Deputy Mayor of Brno, Vicepresident of The Jury

Ander is a member of the Green party, and is filling his second term in the post of deputy mayor of Brno. He graduated from the program in mathematics and physics teaching at the Faculty of Sciences at Brno's Masaryk University, where he later received a PhD. He has long been active in environmental organisations, and is a co-founder of the Brno civic coalition "Station in the Centre".



**Jan Hodovský**

- General director of the Morava Regulatory Board (Povodí Moravy)

A specialist in water management, he served as the head of the Department of Water Protection at the Ministry of Environmental Protection and secretary of the Central Floods Commission. He took an active role in the preparation of the Environmental Protection Operational Program for 2007–2013.



**Petr Bořecký**

- Councillor for the construction and land development borough Brno-center

He is a professional architect as well as a city council member both in Brno and "Brno-střed" district. He works in the studio a53 architekti, located in Brno, and his party affiliation is with the movement ANO 2011.



ALTERNATE

**Filip Chvátal**

- President of Commission for construction, land development and strategic planning CCD Brno-center

A Member of the political party KDU-CSL member of the Commission for strategic and spatial planning and transport committee RMB. He specializes in issues of regional development, planning and transport. He works as a manager of Voluntary Association of the Municipality Šlapanice



ALTERNATE

**Petr Kunc**

- Deputy mayor of the city district Brno-Židenice for planning, transportation, and environmental protection

A member of the political party TOP 09, he is an authorised construction engineer and co-founder of the studio atelier.dwg. Among his political contributions is his promotion of the project ARTE!FAKT, which works to enrich public spaces with artistic objects created by students of architecture or art.

## COMPETITION JURY

### INDEPENDENT MEMBERS



**Aleš Burian**  
– President of The Jury

A native of Brno, he is an architect and urban planner, trained at the Faculty of Architecture at the Brno Technical University. In 1991, he and Gustav Křivinka co-founded the office Burian-Křivinka. In addition to many architectural realisations in Brno, the studio has also produced many interesting urban interventions, such as the revitalisation of historic town centres in Mohelnice, Havlíčkův Brod or Moravská Třebová.



**Emmanuel Jalbert**

A French landscape architect and urban planner, he graduated from the École nationale supérieure de paysage in Versailles. He worked with Alexandre Chemetoff and Michel Corajoud, then in 1991 founded with Annie Tardivon the studio In Situ, which he has directed since 2011 under the title SAS In Situ paysages et urbanisme Jalbert et associés. Among the most important realisations of In Situ is the complex revitalisation of the Rhône embankment in Lyon. Jalbert has worked on landscaping conceptions for the cities of Grenoble and Lyon, and has lectured at universities in Lyon, Grenoble, Versailles, Montreal and Geneva.



**Susan Kraupp**

Certified architect and city planner in Germany, she graduated from the Akademie der bildenden Künste in Vienna. Since 2010, she has managed her own atelier sk architekt&stadtplanung in Vienna, which has acquired many of its commissions through successful competition entries, most notably the general plan and further development strategy for the Danube Canal in Vienna in 2014, focusing on the strengthening of public space (Donaukanal Partitur), in collaboration with the studio GABU Heindl Architektur. Until 2016 she was a faculty member at the Institut für Städtebau – Technische Universität Graz.



**Michal Palaščák**

An architect and urban planner originally from Brno, he is a graduate of the Faculty of Architecture at the Brno Technical University. He works independently or in partnership with his colleague Roman Gal in the studio agparchitekti. Among the studio's realisations is the group of single-family houses at Červený kopec, and at present it is preparing the reconstruction of the market on Brno's central square Zelný trh. He lectures and heads an atelier at the private architectural school ARCHIP – Architectural Institute in Prague. He is a member of the civic association 'Řeky Brna krásnější' (Beautifying Brno's Rivers).



ALTERNATE

**Pavel Jura**

An architect and planner working in Brno, he is a graduate of the Faculty of Architecture at the Brno Technical University, where he has also long served as an external instructor. In addition to his architectonic realisations and projects, he has also been active in the publication activities of the 'Obecní dům' association focusing on architectural history, e.g. as a co-author of the monograph on Otto Eisler and the survey Brněnští židovští architekti [Brno's Jewish Architects]. During the present year, his design for the re-situated plan of the Brno main rail station, completed with Ivan Koleček, was judged the best out of seven invited studies.



ALTERNATE

**Klára Stachová**

A landscape architect, she graduated from the Faculty of Gardening of Gregor Mendel University in Lednice. She manages her own atelier KRAJINKA and in addition to design work has long been active in publication and public-awareness work focusing on the presentation of contemporary Czech and international landscape architecture to the general public. Since 2012, she has worked with Prague's Jaroslav Fragner Gallery, and is one of the authors of the exhibitions Czech-Scape and Landscape Festival.

## SUBJECT OF THE COMPETITION

The subject of the competition is the architectonic and landscaping design for the embankments of the river Svatka in the locality defined by the complex of the trade fair grounds to the west and the main rail station to the east (further specification is detailed in the competition assignment). The aim is to create a complex, full-scale revitalisation of the urban space in conjunction with flood-protection measures and simultaneously the formulation of a strategy for the active and passive uses of the previously neglected values that the Svatka presents for the city of Brno.

The purpose and aim of the competition is to find and reward the most suitable and the most interesting solution to the subject of the competition (i.e. the most suitable competition design), which fulfils the requirements of the announcer as contained in the present competition conditions and assignment. Among the prize-winning competition designs the City of Brno will look for partners that would work on the project documentation of the conversion of the riverfront of Svatka river that includes conversion of public space, landscape design and flood protection measures.





# SVRATKA RIVERFRONT

## ARCHITECTURAL AND LANDSCAPE DESIGN

## COMPETITION

# COMPETITION BRIEF

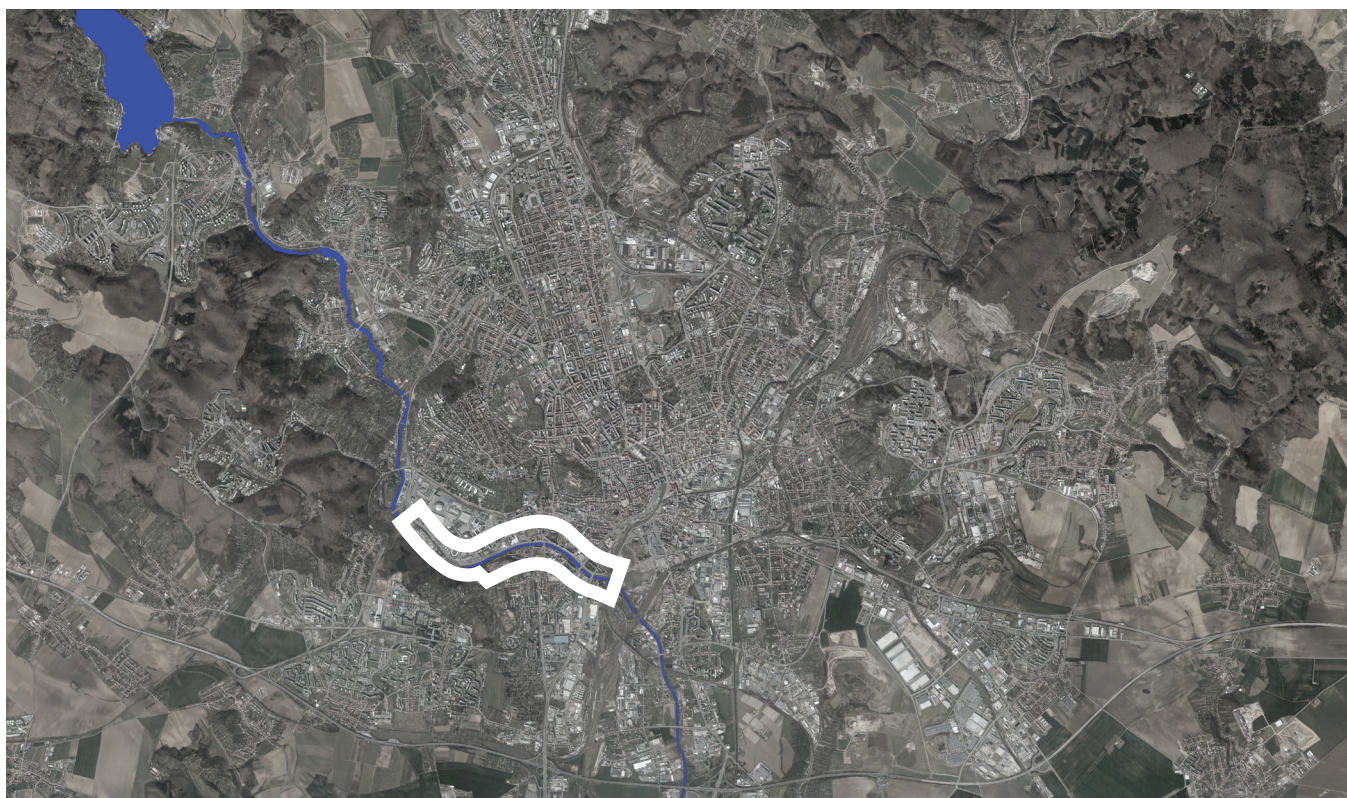
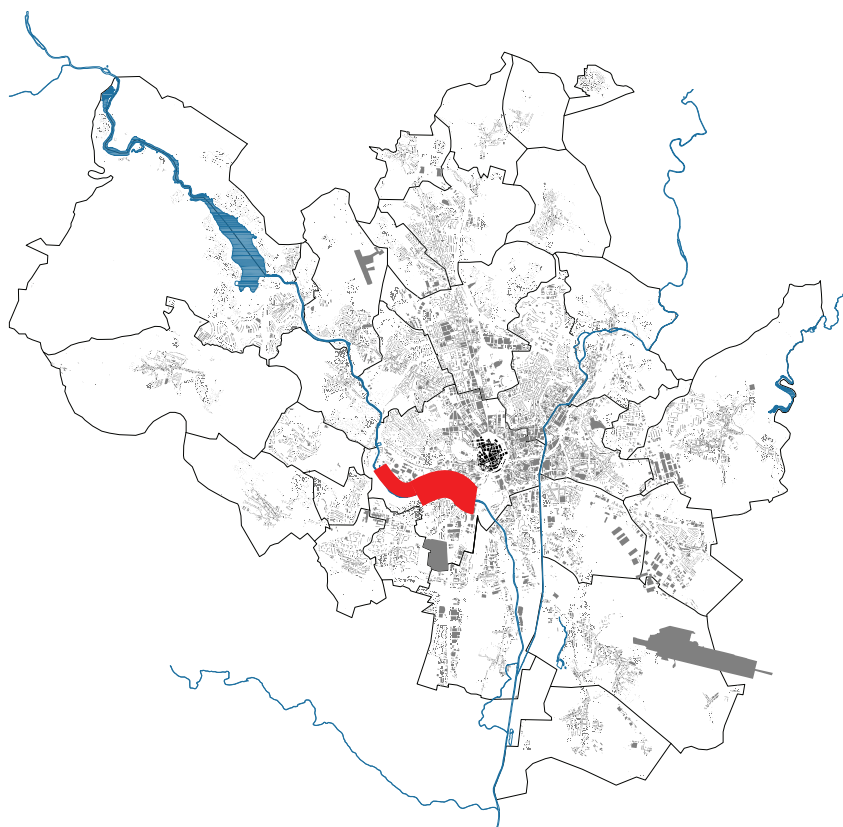
*This competition, taking as its goal the project of making the river Svatka more accessible while increasing the protection of property and lives among the citizens of Brno, is part of the city's vision for future development. As a result, we expect from the designs a strategic conception of an approach to planning the banks of the Svatka accompanied with a plan of considered 'acupuncture' interventions reflecting the changing character of the north and south banks from the east to the west. The design should also not forget the highly diverse social composition of the residents, who will use the embankments for strolling, sports or cultural activities in all possible forms and in all seasons of the year. In other words, the contestants are asked to present, in addition to the plans of the landscaping and flood protection, a program for the use of the land under discussion as a whole and in its parts – a kind of palette of scenarios and possibilities that suggest what could take place in this area.*

*Bearing in mind that the competition involves an actual investment program, it should be evident that in later phases of design work, the plan will need to be harmonised with other land-use studies currently under way, as well as the aims and priorities of the district governments. However, these limitations are not included as part of the assignment, since a sufficiently time-aware and flexible design could, at a later date, be altered to allow for other connections between the stabilised points of Brno's public space and the river.*

*Other limits arise from the urban plan of Brno. These will have to be taken into consideration in the competition, though at the same time it is necessary to recall that Brno's current land-use planning documentation will be undergoing revision, whether in the form of alterations or entirely new guidelines. As a result, complete fulfilment of the plan is not a requirement of the competition – though understandably any interventions that go against the plan should be thoroughly justified, and should present a solution that is not only different but unequivocally superior.*

*We expect from the contestants that they will make use, to the greatest possible extent, the potential offered by the immediate area of the river course – the large concentration of office and administrative construction, as well as residential; the close proximity of the rail station and the city centre at the eastern edge of the area, or the network of cycling paths. At the same time, it is necessary that all interventions – whenever possible – be conceived as close to nature. Interventions must also be thoroughly considered, in simplicity as well as complexity. We cannot forget that the channel of the river must, above all else, have sufficient capacity to ensure protection of the surrounding built areas from flooding: the designs should contribute intensified greenery to the embankments and create a 'habitable natural environment' that would bring the river-banks to life and add excitement to the dull functionality of a regulated river course. Along the banks of the Svatka, we should find not only flourishing vegetation, but a no less flourishing cultural-social life.*

## AREA OF INTEREST





## OLD BRNO

170,35 ha – 12 260 inhabitants

built-up area: 99,99 ha

The centre of Old Brno is the Mendel square, site of the original settlement, that currently serves as a significant traffic hub. Apart from compact development in majority formed by three- to six-storey houses, is also the Masaryk oncological institute or Starobrnno brewery. Everything is densely intertwined with many religious monuments. The East side the district is shaped by the main train station. The North border is defined by former city walls, the base of Špilberk hill and an extensive gardening colony. The western border is marked by the area of the Brno fairs. The southern side is clearly defined by the river Svatka bank. Many universities reside along the river.

## ŠTÝŘICE

332,65 ha – 8 600 inhabitants

built-up area: 201,84 ha

The cadastral area of Štýřice was formed by a radical cadastral reform in the late 60s of the 20th century by administrative act of merging several shattered neighbourhoods. That is one of the reasons why the name of this varied territory has never fully caught up. Northern and north-western part of today's older area consists of the former workers' colony from the first republic era called Kamenná (Stone Quarter). Along the river Svatka bank the Charity Hospital of Merciful Brothers and the stadium of Moravian Slavia are located. The very centre is formed by a housing estate. Its southern part covers a wide area of central cemetery of Brno, founded in 1883. Štýřice axis is represented by Vídeňská street, which conjoined with the streets Jihlavská and Heršpická, stand for important traffic arteries with connection to the nearby motorway. The western border of the district consists of Kohn's brickyard brownfield. Eastern edge, following Heršpická street, is formed by the most recent constructions, vast solitary buildings and complexes – mostly business parks and shopping malls. On the northern end of this edge is the Justice Complex, whereas the south is dominated by the tallest building of the Czech Republic – the AZ Tower.

## City of Brno

119,43 ha

5 830 inh.

## Old Brno

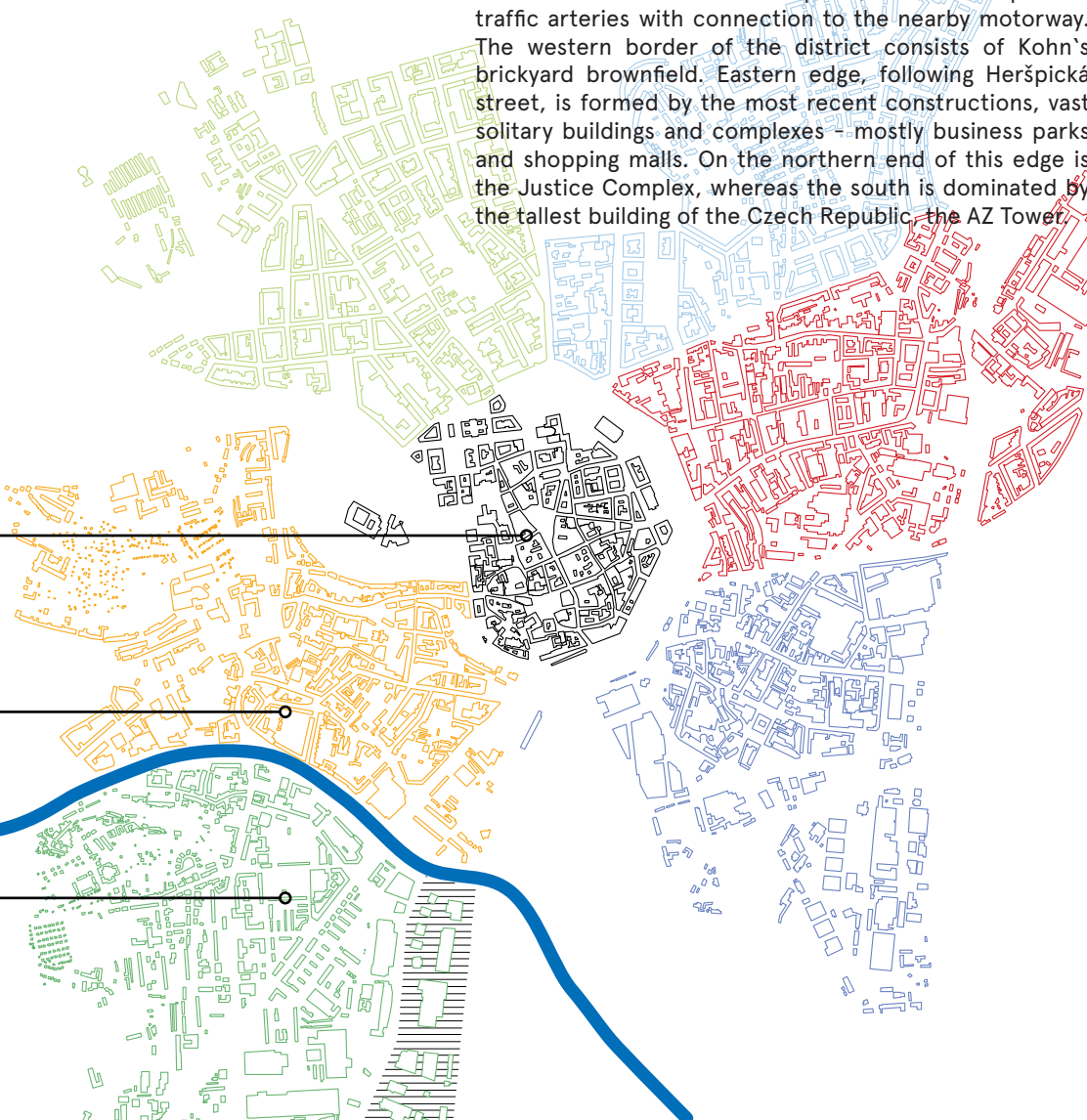
170 ha

12 260 inh.

## District Štýřice

332,65 ha

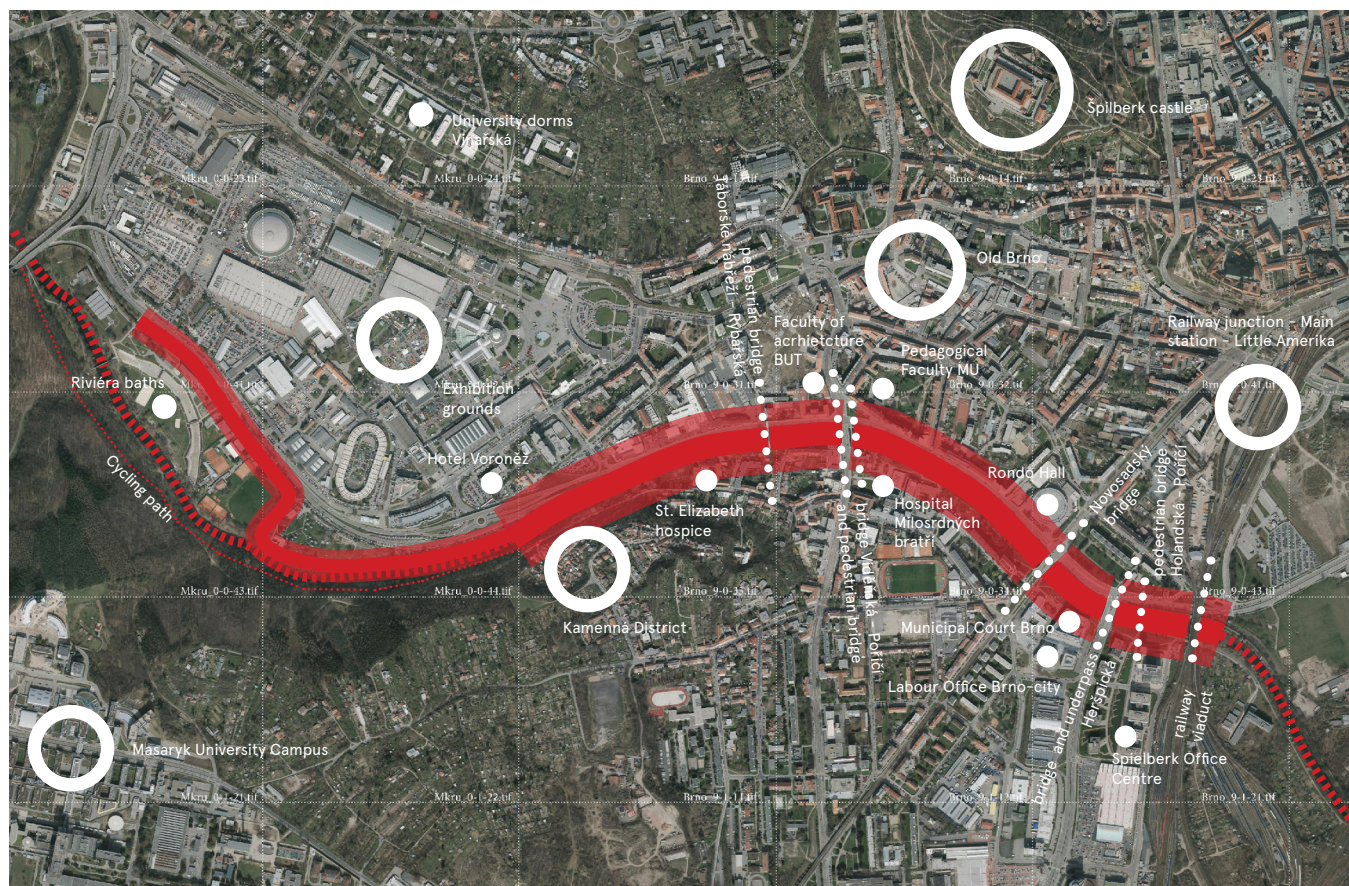
8 600 inh.



The territory under consideration is spread along the course of the Svatka for a length of roughly 3 km. On the left bank, it starts with the area between the Riviéra swimming baths and the exposition grounds, and on the right bank with the suburb of Kamenná kolonie. The ending point is the area of the rail viaduct between ul. Pražákova and ul. Uhelná. Lying between the street frontages of both river banks is an 'open public' space, the use of which is understandably defined by the rules for regulation of the watercourse, zoning-planning limitations and proposed anti-flood barriers, yet at the same time contains a great potential for the city and its residents.

The location addressed in this competition is the only actual contact point between the river and the city. Elsewhere, the Svatka leaves little mark on the built fabric, and is also here the least accessible. In other words, it is an incredibly complex land situation, yet for the contestants it is a major challenge, and for the city of Brno, a unique chance.

In the competition, the land addressed is assigned on a wider scale, so that the entrants can consider it within the broad context of the city. Realistically, though, any changes to the land will be defined by the public investment project for Stages VII and VIII of the anti-flood protection system. This fact should be reflected clearly in the competition design, and key interventions should be directed to the immediate tracts of land involved in this investment.





## AREA OF INTEREST

### CITY-FORMING ELEMENTS

#### Cycling Path

The area is traversed by the major cycling route 1, which forms the bicycle connection between Brno and Prague, and later joins cycle route 5, connecting Brno to Vienna. The cycling path leads along the entire length of the area under consideration, along the right bank of the Svratka where it forms the main communication route of the embankment.

#### Riviera Baths

A highly popular recreational and sports locality for Brno and its adjoining communities, the 'Riviera' dates back historically to the early 19th century, when physician Dr. Baier commissioned the construction of the classicist 'Badhaus'.

#### Hala Rondo

Hala Rondo (DRFG Arena) is a multipurpose hall located in the district of Staré Brno. The cornerstone of Rondo was laid in 1972, and the hall was officially opened in 1982. Currently, it hosts the hockey team Kometa Brno, as well as concerts, sports competitions, and cultural events. The seating capacity is now 7,700 spectators.

#### Kamenná čtvrť

The 'Stone Colony' (Kamenná kolonie or Kamenná čtvrť), often known as 'Kamenka', is a unique settlement in the district of Brno-střed (Centre), occupying a former stone quarry on the right bank of the Svratka. The 'colony' is in fact a network of narrow lanes and workers' cottages; from the 1960s onwards it has had the reputation of a refuge for artists and non-conformists. The settlement was created illegally in 1925 in the disused sandstone quarry as a self-built settlement of impoverished workers from the nearby brickworks. Up until the German invasion of Czechoslovakia in World War II, it had its own local government within Brno.

#### Železniční uzel – hlavní nádraží – Malá Amerika

In operation since 1839, the Brno and Břeclav rail stations are the earliest in the Czech Republic. Lying in an advantageous position at the southern edge of the historic centre, the rail station, traversed by the route of the first rail corridor, brings together rail lines entering from a total of seven different directions. For the past several decades, the position of the rail station has been the subject of discussion, with possibilities voiced for its relocation away from the Brno city centre. The year 2016 witnessed the latest international architectural competition so far, focusing on a new form of the rail junction but in its current situation. In connection with the building of the main Brno rail station, it is necessary

to mention as well the creative space in the buildings of the former 'Little America' (Malá Amerika) warehouses, which have recently emerged as a leading platform for cultural events in Brno.

#### Staré brno

Staré Brno (Old Brno, in German Alt-Brünn and in Brno's 'Hantec' slang 'Oltec') is a neighbourhood forming part of the governmental district of Brno-střed. It is situated along the valley of the Svratka below one of Brno's most significant landmarks, Špilberk Castle. The entire district has a strongly urban character, with its centre formed by Mendlovo náměstí. Among the institutions located here are the St. Anna University Hospital, the Masaryk Oncology Institute, or the Starobrna brewery. Staré Brno contains many historic monuments, such as the Gothic Augustinian Monastery (home to Gregor Mendel) with the Basilica of the Assumption of the Virgin Mary). The district emerged as far back as around the year 1000, and most likely held the status of a town by the 14th century. It was officially joined to Brno on 6 July 1850.

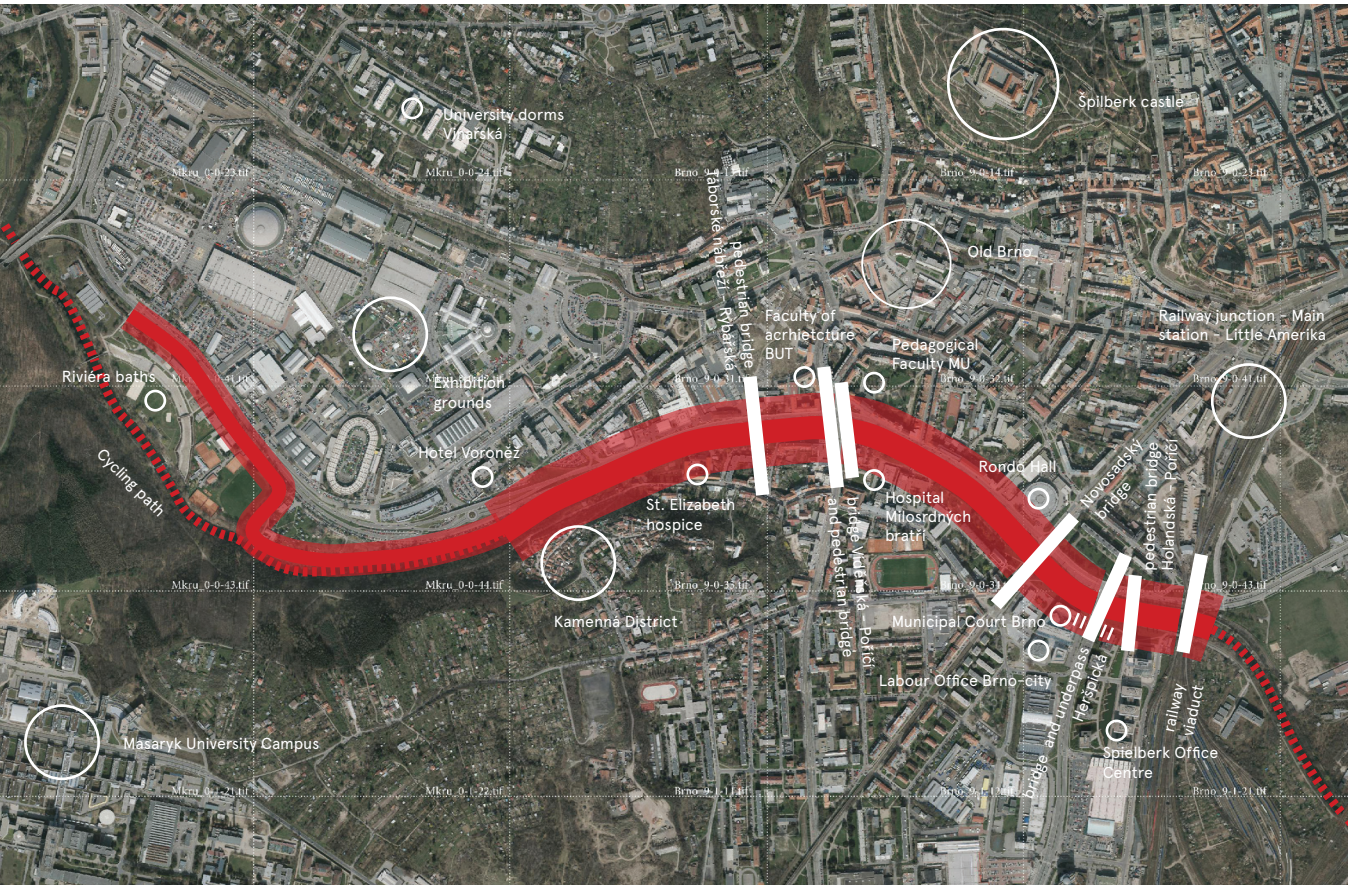
#### Exposition Grounds (Výstaviště)

Throughout the year, the expositions complex on the left bank of the Svratka hosts trade fairs, exhibitions, fashion shows, concerts and many other events. Preparations for an exhibition area in Brno started even under Hapsburg rule, though only in 1923 was an architectural competition announced for the urban plan of the complex. The conception of the area and the main pavilion were based on the winning design by architect Josef Kalous, with several of the pavilions designed by Brno's most significant architect of the era, Bohuslav Fuchs. Opened for operations in 1928, the Exposition Grounds form one of the most impressive Functionalist built environments in the Czech Republic. Currently, the Brno fairgrounds witness around 40 exhibition events per year; among the most extensive are the International Engineering Trade Fair or the Invox exhibition of information technology.

#### Nemocnice Milosrdných bratří

The oldest continually operating city hospital in Moravia, it is also – after Prague's Na Františku – the second oldest hospital in the Czech Republic. In November 2017, it will celebrate the 270<sup>th</sup> anniversary of its creation, being founded in 1747 by Count Johann Baptist Leopold von Dietrichstein. The hospital used the plans of the renowned Brno master builder František Antonín Grimm; at a later date, the late-Baroque Church of St. Leopold was added, notable for its oval floor plan and impressive fresco decoration by Josef Stern. The hospital served continually through the Napoleonic and Austro-Prussian wars, and was at the time one of the most modern in the Hapsburg domains. Currently, the hospital provides care to patients in up to 500 beds.

AREAS OF INTEREST  
BRIDGES OVER THE RIVER





### Rail viaduct

The corpus of the bridge supports the rail line from the main station in the southerly direction Rajhrad – Břeclav. Linking Vienna to Brno, the rail line was built in 1838 as an offshoot of the Kaiser Ferdinands-Nordbahn (Emperor Ferdinand Northern Line). The space of the present main rail station is now reached by a 673-m long viaduct, formed by 80 rounded arches (3 segmented arches over the Svatka mill-channel, 72 elliptical arches of the actual viaduct, and 5 segmented arches of the bridge across the Svatka).

A foot-path leading along the entire length of the Svatka river course within the city limits of Brno passes under one of the viaduct's arches.



### Holandská – Poříčí footbridge

The footbridge connects the complex Office Park Spielberk and the associated office buildings on the right bank with the embankment along ulice Poříčí, where it reaches the walking/cycling path.



## AREAS OF INTEREST

### BRIDGES OVER THE RIVER

#### Heršpická bridge and passageway

The road bridge leading from Heršpická ulice is a six-lane roadway. Bearing in mind its ties to the road network, the bridge's elevation level remains on the height of the embankment terrain, so that the pathway along the Svratka is forced to cross it on the level, having a negative impact on the convenience of foot traffic. On the right bank of the river, the walkway is routed under Heršpická ulice through a below-ground passageway.



#### Nové sady – Renneská bridge

This is the bridge extension of Renneská for tram and automotive traffic, crossing the river at the site of Hala Rondo.





### Víděňská – Poříčí bridge and the footbridge

The road and tram bridge emerged from Víděňská on the left bank, from which the historic main route from Vienna continues to the city centre as ulice Křížová. Located at the intersection on the embankment is the Faculty of Architecture of the Brno Technical University.



### Táborské nábřeží – Rybářská footbridge

This footbridge connects the embankment path on the river's right bank with ulice Rybářská, which in turn leads to the Brno Exhibition Grounds. The General Water Management Plan for the city of Brno plans a reconstruction of this bridge.



## PUBLIC DISCUSSION

The banks of Svatka river are a major public space in the city center and the competition's organizer, the City of Brno and the most affected districts, are interested in public opinion, which will help in making the difficult decision - how to implement flood control measures, while creating quality urban space.

What may represent Brno waterfront today? Or what is the ideal shape for the city of Brno? These are questions that were targeted in the public debate regarding the value of the river Svatka within the city.

Topics of discussion are incorporated into this assignment of the international design competition to aid the participants in the competition to orient in an environment of regulations and requirements provided by the official organiser of the competition, but also the wishes of citizens.

I go to the river to collect yellow plums, but getting down is actually dangerous - everywhere is steep and sometimes there are muddy slopes.

I'd love to see, for example, a dance hall or a cafeteria.

Competitors should have in mind that the movement of the water level is normally around 1.5 meters, and 3 m every 5-10 years.

Under the weir in Poříčí is a "water cylinder" which is necessary to circumvent if on a boat. If nothing were done with the cylinder itself, I wish that the way overland with the boat was improved - now it's really long.

For example, in Jundrov people are allowed to go to the river. We, in a housing estate in Kohoutovice, have nothing like that, so we walk through Jundrov. It would be nice to think about comfortable access to the river from the wider neighborhood.

To the original attractiveness of the site would certainly contribute a floating dam. Most of the time it could be anchored in the river and formed a floating pontoon bridge.

If there could moor houseboats, I would like to open a tavern in one of them.

I wish there were some playgrounds.

I'd like to see footbridges crossing the river at several locations.

Cyclists here overtook pedestrian space, the pedestrian can't feel safe here.

Beneath the Riviera is a place for winter bathing, but access to water is very uncomfortable, maybe even dangerous. It will be nice to think about winter use for bathing.

I wish there was a waterfront for everyday use, for walks.

Paths for cyclists and pedestrians should be rationally separated.

I wish it would not all be concrete, green is important to us.

Slower users – pedestrians and people with strollers – are at a disadvantage, also the movement of cyclists and skaters are not completely safe.

I'd be very glad for the opportunity to reach the river and also to cross it by a footbridge.

I think we should identify in the first place, the first point where it should begin. Where something should start to happen.

I'm canoeist and I would like to see, someday in the future, a new channel that connects this site and the area of former waterworks Pisárky.

The environment between the Faculty of Architecture and the river needs an intervention.

Architects should think about a much broader area, for example, to the bridge in Pisárky.

Conversion of the banks of the Ostravice river in Ostrava is a good example of how the river and the city began to recover.

Cyclists and in-line skaters already use the area, but they lack some facilities there, such as benches for changing shoes and so on.

I use the bike path from Kohoutov to Komarov, on the bike I am four times faster than if I use public transportation. Except that in the Riviera pool there is a slope and then I hit the 2 large traffic barriers. I wish that cyclists could ride more comfortably in this territory.

I've always liked natural shores, not much concrete, only natural beauty.

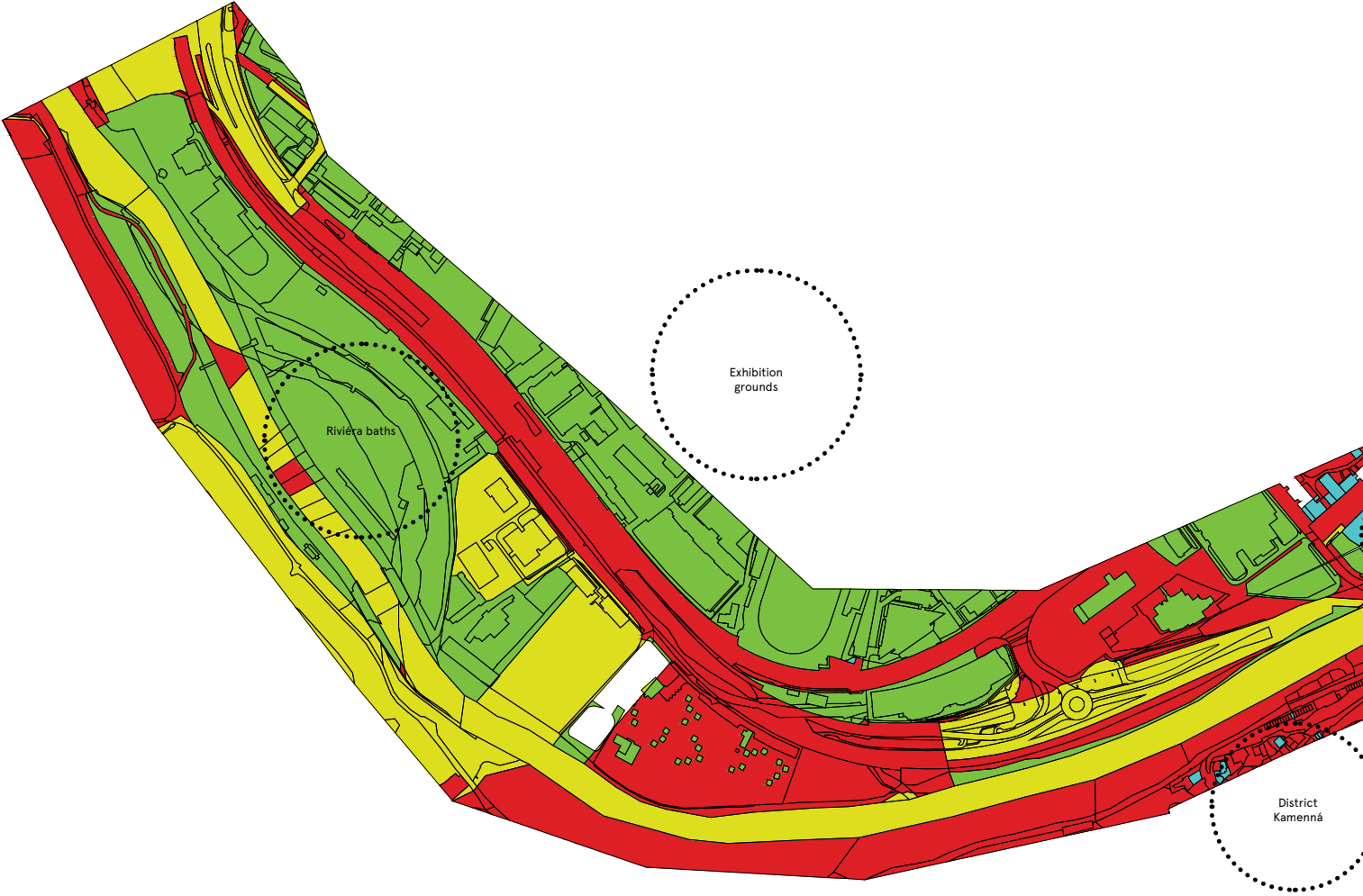
Riviera pool is a place that deserves some attention. Once it was really lively there. For example, the footbridge from the Riviera to the other side could be nice.

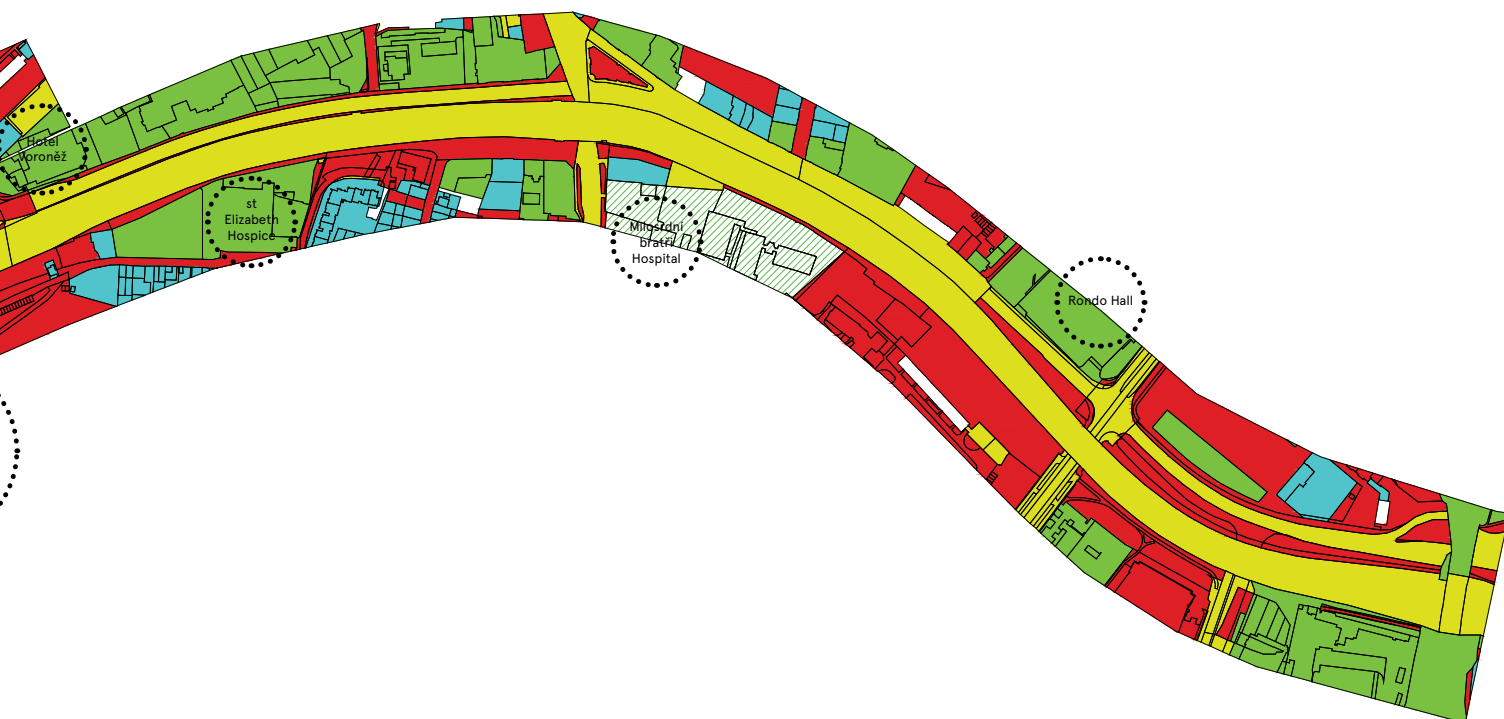
The potential of the river for everyday use, for walking, or to shorten your journey, is ignored.

I would like to find places near the river – attractive for families with children, where you can walk down to the water, soak your feet or lie down on a blanket.

PROPERTY MAP

- ownership of statutory city of Brno (100%)
- ownership of Czech Republic (100%)
- areas owned by stock companies of statutory city of Brno (100% or majority)
- areas of buildings owned by city of Brno and plots of different owners
- ownership of city of Brno (shareholder)
- ownership of individuals
- ownership of legal entity
- co-ownership of different sorts of owners (individuals or legal entities)







# NATURAL CONDITIONS

Brno lies at an average elevation of 227 m above sea level.

Average annual temperatures range from 8.5 to 9.0°C; the average monthly temperature of the warmest month of the year (July) is in the range of 18.5 to 19.0°C, while the coldest month (January) has an average of -2.5 to -2.0°C.

The city lies in the moderate rain shadow of the Bohemian-Moravian Uplands; the annual total precipitation is within the range of 450 - 500 mm.

The terrain is configured along watercourses leading into enclosed basins (Bystrcká, Žabovřeská, Pisárecká, Maloměřická), which towards the southern part of the town open outwards and gradually merge into the flat terrain open towards the southeast.

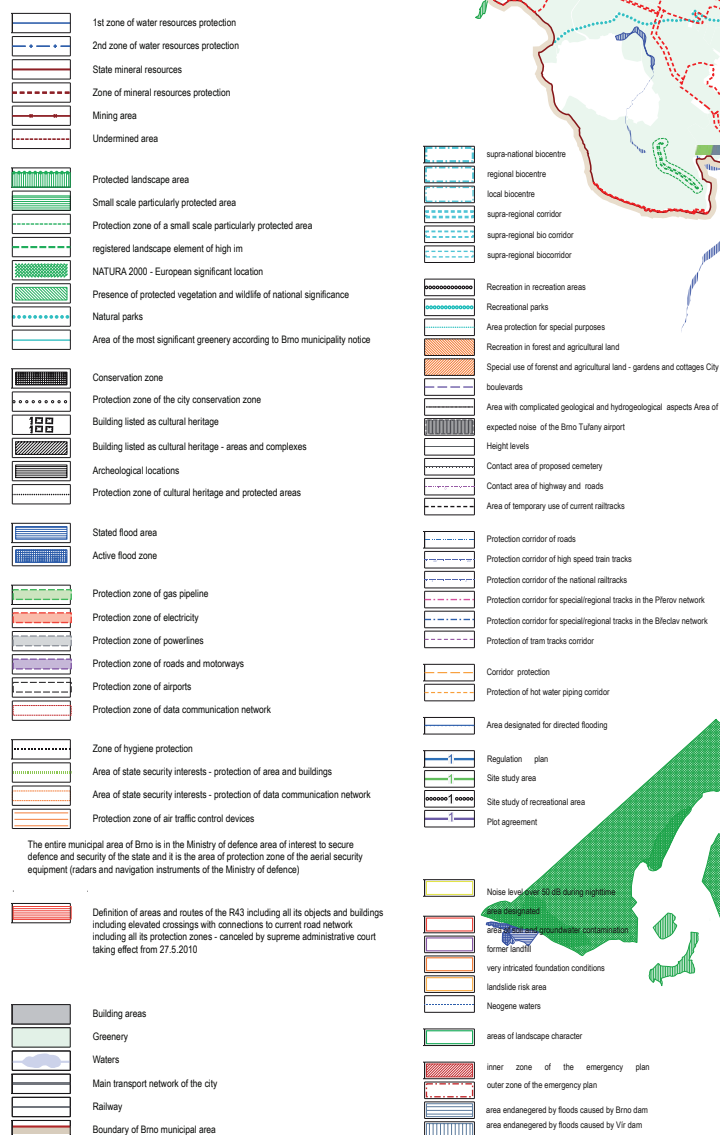
One exceptional feature of the city of Brno is its unique natural backdrop, in which the suburban landscape along with tracts of forest creates a natural green framework. This area is permeated with hilly forested areas separated by the valleys of the Svatka, Ponávka and Svitava waterways reaching into the built-up area of the city, which itself is marked by the final isolated outcroppings of the hills Kraví hora, Žlutý kopec, Špilberk and Petrov.

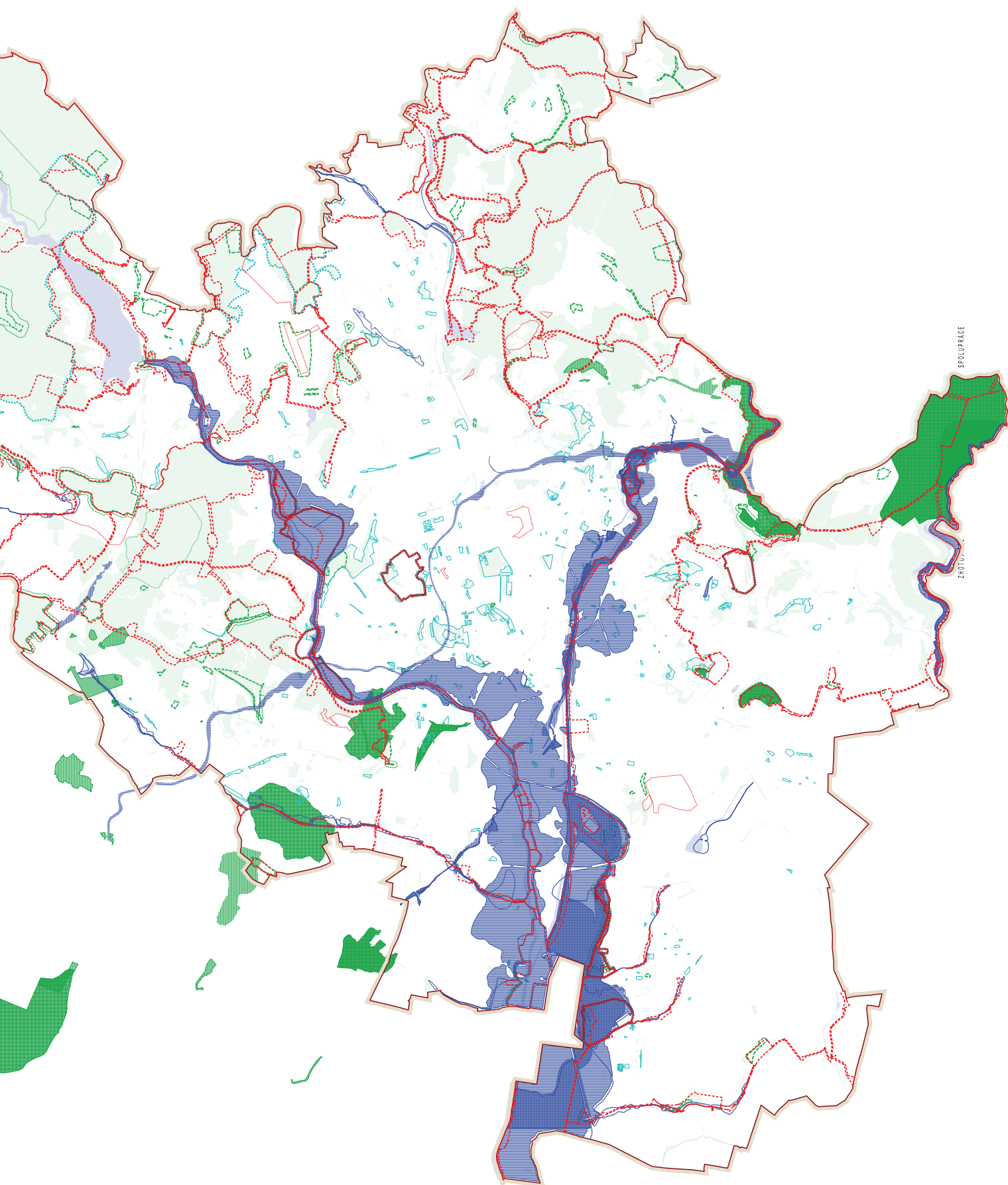
From the south, by contrast, the urban landscape is merged with the flat river basin of the Svatka and Svitava, meeting with an extension of higher land at the southern edge of the historic city core.

Brno lies atop mineral deposits of varying origins and ages. The youngest deposits are formed by various alluvia, loams and sands, which form a covering for older geological strata in the base.

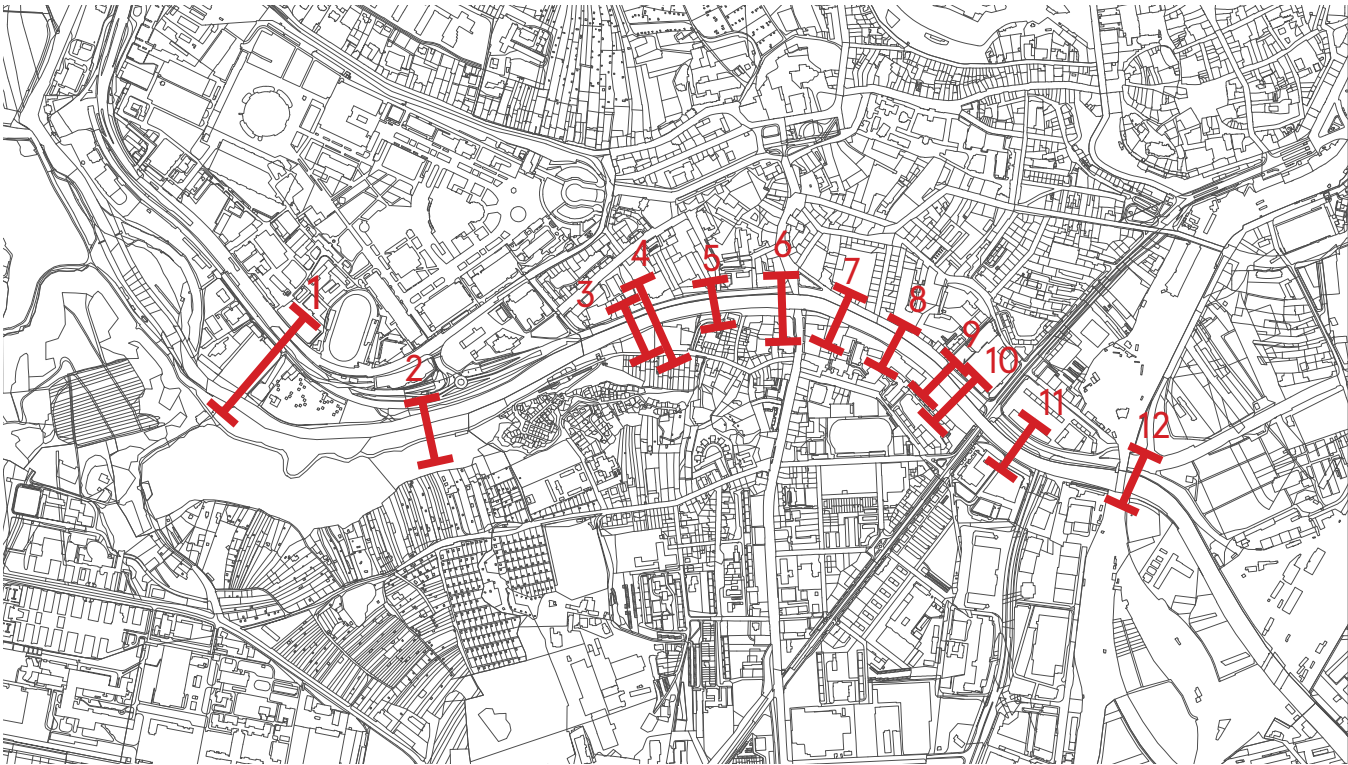
The most exposed basic soils are floodplain loams and river gravel-sands, with layers of loess and loess soil or, near larger buildings requiring deep-laid foundations, even maritime tertiary sediments, primarily of a clay type.

These maritime alluvial clays display, in contrast to bed-rock, somewhat worse geotechnical qualities, requiring special foundation techniques for construction. At the confluence of the rivers Svatka and Svitava, a significant part of the foundation ground is formed by river alluvials in the form of sandy gravels and in the topsoil deposits of floodplain clay-sand loam. Sandy gravels are, in terms of foundation construction, a highly suitable base with low compressibility. One disadvantage, though, is the higher water seepage. Problems for building foundations are primarily the infill of blind channels of the rivers, containing strongly plastic loams with a high percentage of organic materials. More demanding structures in the area of riparian valleys must, therefore, be grounded down to a stronger load-bearing geological base.

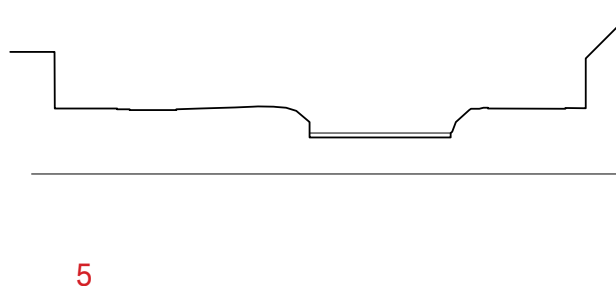
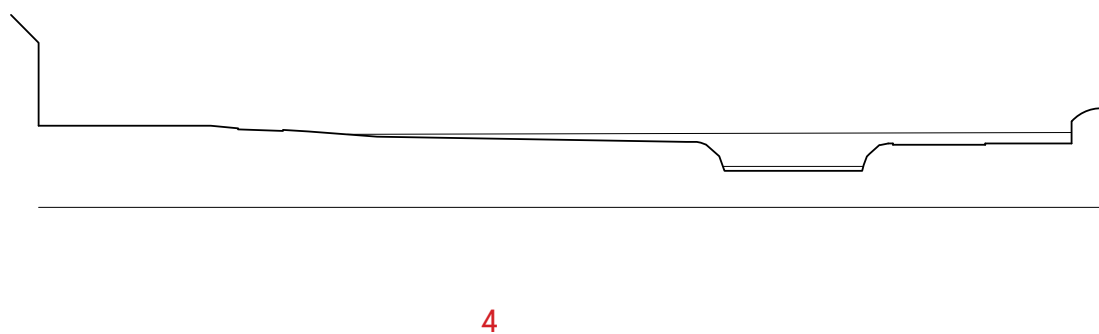
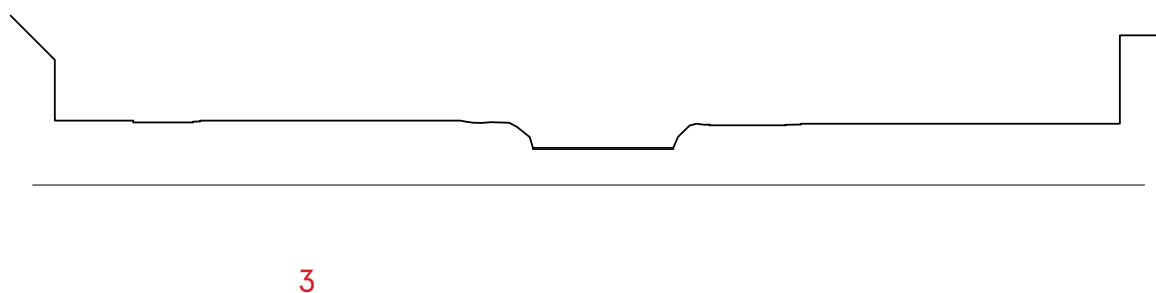
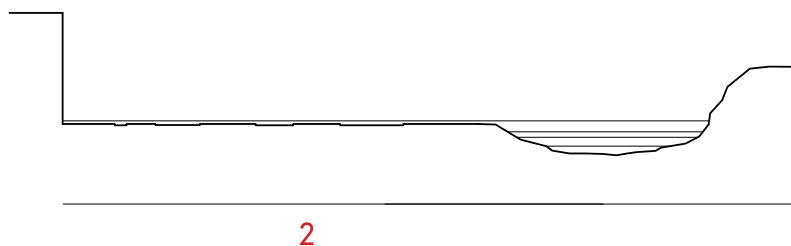
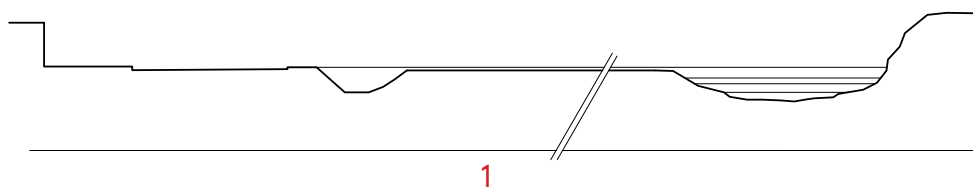


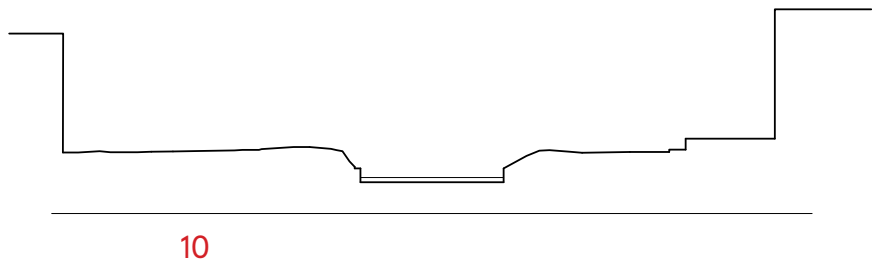
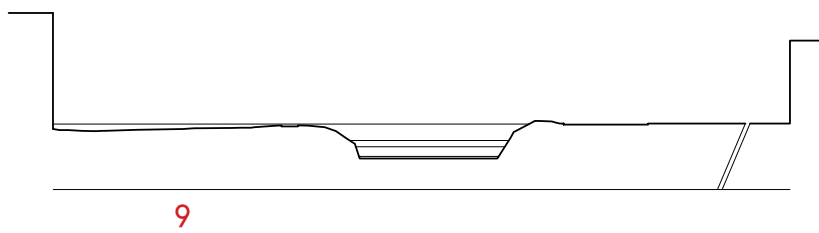
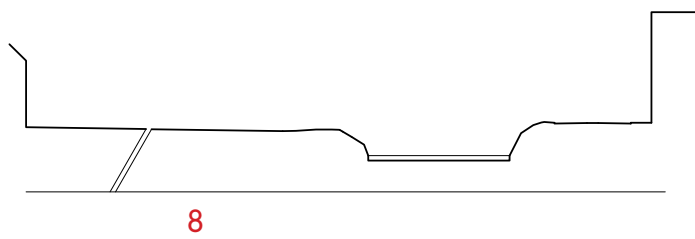
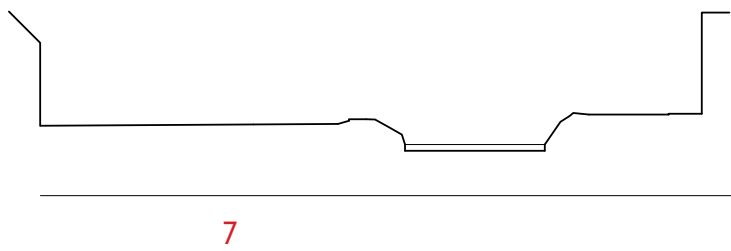
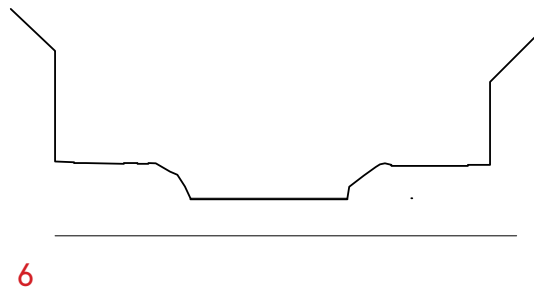


CROSS SECTIONS OF THE AREA



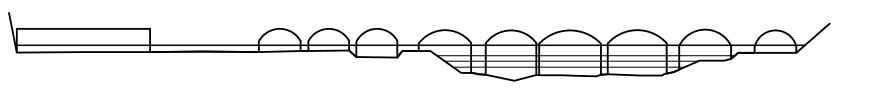






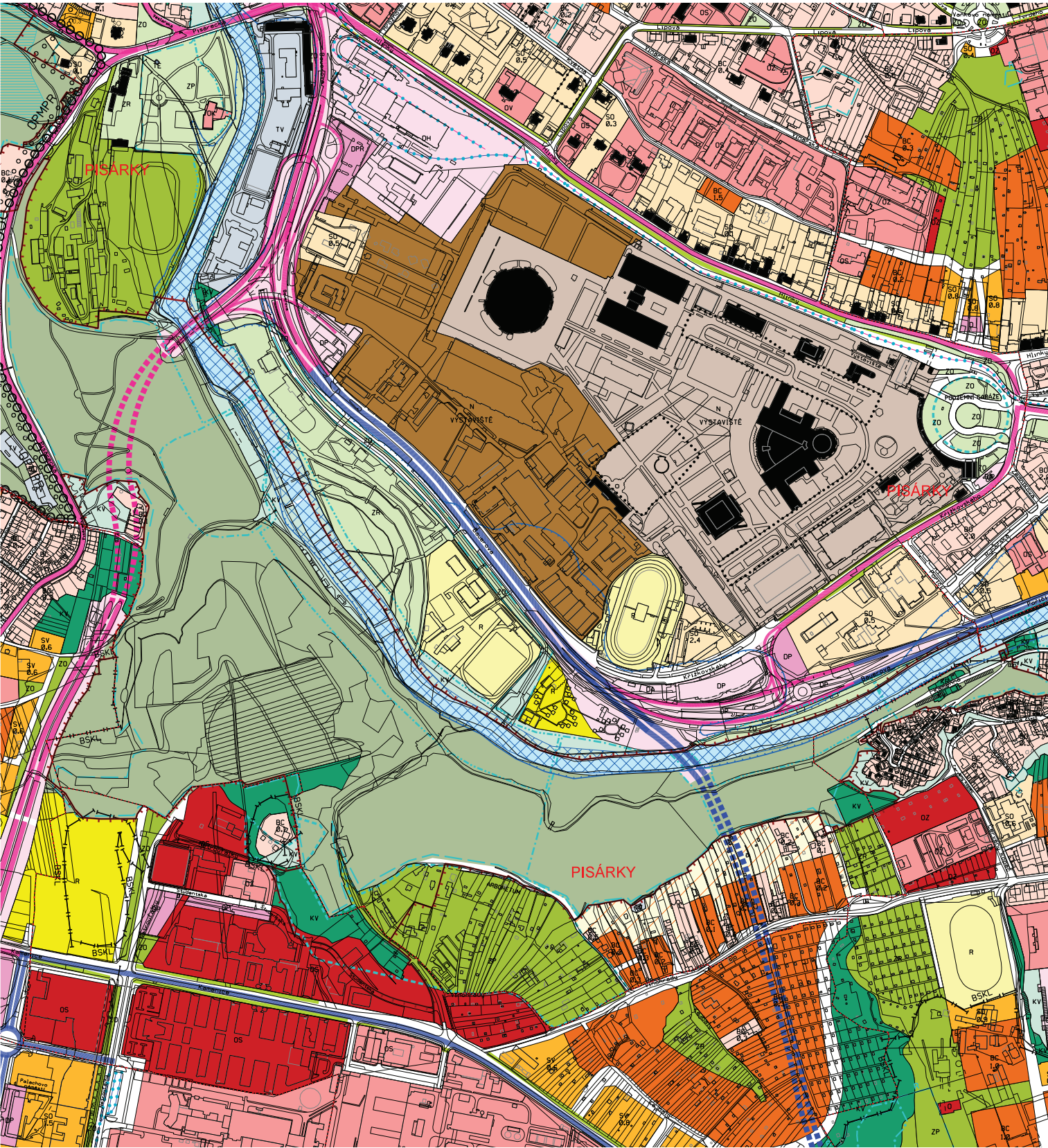


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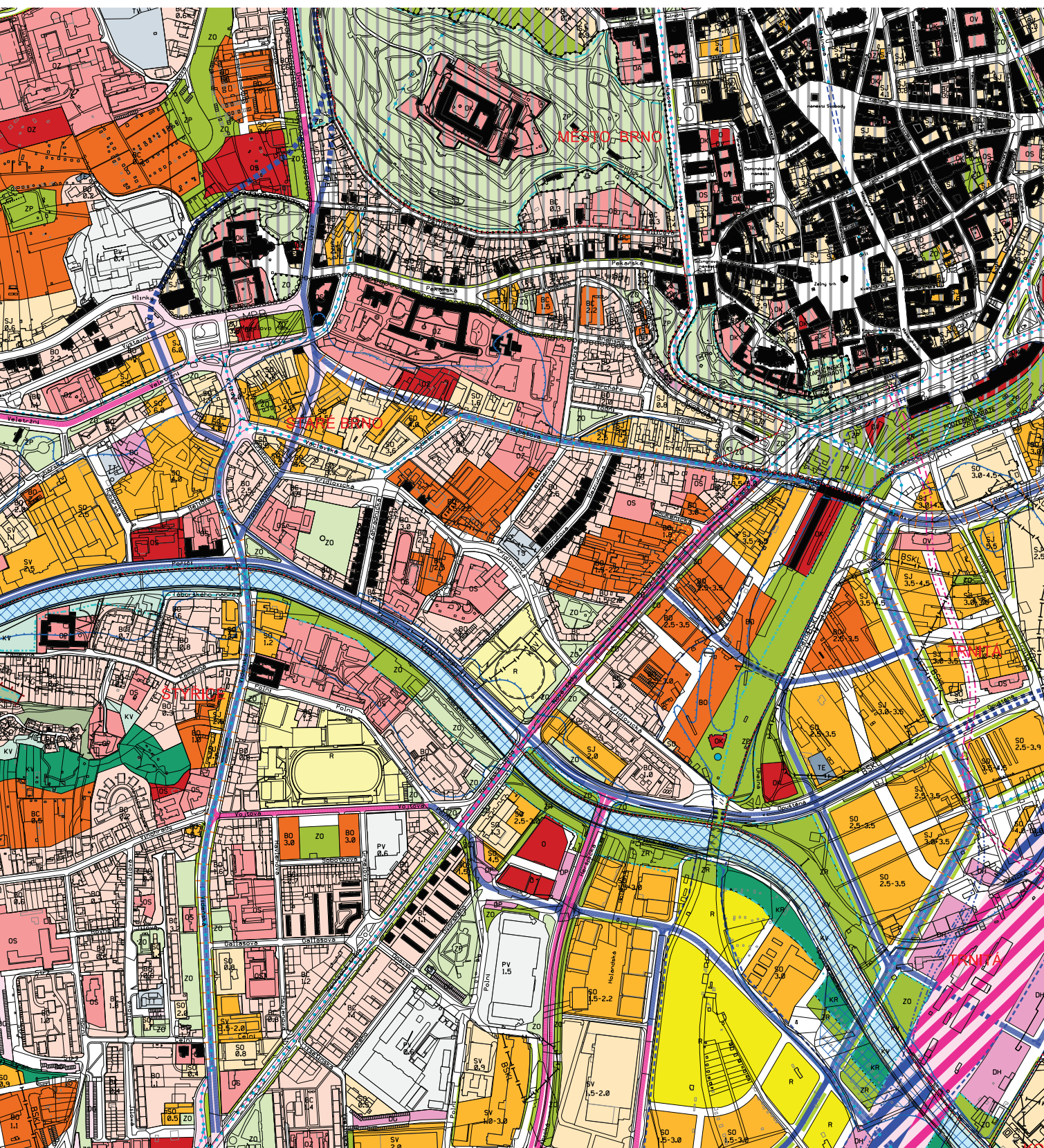


12

LAND-USE PLAN  
THE MAIN LAYOUT









LAND-USE PLAN  
KEY

CONSTRUCTION AREAS

FUNCTION (urbanistic) - purpose of area usage  
TYPE OF FUNCTION - detailed purpose of usage

**RESIDENTIAL AREAS**  
- mainly for living purposes

Types of function:  
- AREAS OF SUBURBAN HOUSING  
- AREAS OF SOLELY RESIDENTIAL HOUSING  
- RESIDENTIAL AREAS IN GENERAL

**BP BP** AREAS OF SUBURBAN HOUSING  
- serves mainly for suburban type of housing, or housing of rural characteristics (gross floor area of living in individual houses is more than 50%).

**BC BC** AREAS OF RESIDENTIAL HOUSING  
- serves for living purposes (GFA of living is more than 80%).

**BO BO** RESIDENTIAL AREAS IN GENERAL  
- serves mainly for living purposes (GFA of living is more than 60%).

**MIXED USE AREAS**  
- intended for mainly retail and production, authorities, administrative and cultural program that by it's operation doesn't disturb living in these areas

Types of function:  
- MIXED USE AREAS OF SHOPS AND SERVICES  
- MIXED USE AREAS OF SERVICES AND PRODUCTION  
- CENTRAL MIXED USE AREAS

**SO SO** MIXED USE AREAS OF SHOPS AND SERVICES  
- serves mainly for shops, services and administrative that doesn't disturb living in these areas

**SV SV** MIXED USE AREAS OF SERVICES AND PRODUCTION  
- serves mainly for production establishments and business premises that doesn't disturb living in the area in significant manner

**SJ SJ** CENTRAL MIXED USE AREAS  
- serves mainly for shops, services, authorities and administrative

**AREAS OF WORKING ACTIVITIES**  
- intended mainly for production establishments and industrial compounds

Types of function:  
- MANUFACTURING AREAS  
- INDUSTRIAL AREAS  
- AREAS OF AGRICULTURAL PRODUCTION  
- AREAS OF FOREST INDUSTRY

**PV PV** MANUFACTURING AREAS  
- serves mainly for manufacturing establishments, that doesn't negatively affect it's surroundings

**PP PP** INDUSTRIAL AREAS  
- serves solely for industrial establishments, which affect it's surroundings, but only in prescribed levels and hygienic norms

**PZ PZ** AREAS OF AGRICULTURAL PRODUCTION AND FOREST INDUSTRY  
- intended for placing of agricultural establishments and forest industry

**PL PL**

**SPECIAL AREAS OF RECREATION**  
- serves for large-scale recreation, sport, entertainment, recreational housing and accommodation. Mostly:  
- sport and entertainment compounds  
- sport compounds of organized physical education  
- recreational resorts

**R R**

**OTHER SPECIAL AREAS**  
- compounds of city or county importance, mainly:  
- large scale shopping malls, shopping establishments with excessive parking lots on the grounds  
- trade fairs, exhibition and congress compounds  
- scientific and research compounds, especially university compounds  
- large scale compounds of clinics and hospitals  
- zoo

**N N**

**AREAS FOR PUBLIC FACILITIES**  
- intended mainly for placing of structures and constructions serving general public needs

Types of function:

**OV OV** MUNICIPAL AUTHORITY

**OK OK** CULTURE

**OP OP** SOCIAL CARE

**OZ OZ** HEALTHCARE

**OS OS** EDUCATION

**OH OH** FIRE SAFETY

**OA OA** ARMY

**OB OB**

**AREAS FOR TECHNOCAL FACILITIES**  
- Intended for placing of structures and constructions serving to waste disposal and energy supplies

Types of function:

**TV TV** WATER-PIPING

**TK TK** SEWAGE

**TE TE** ELECTROCITY

**TP TP** GAS

**TT TT** HEATING

**TS TS** CONNECTIONS

**TO TO** WASTE DISPOSAL

**AREAS FOR TRANSPORTATION**  
- Intended mainly for placing of facilities of traffic services

Types of function:

**DH DH** PUBLIC TRANSPORT (supporting facilities included)

**DA DA** VEHICULAR TRAFFIC SERVICES (gas stations, maintance...)

**DP DP** SIGNIFICANT PARKING LOTS

**DPR DPR** "PARK AND RIDE" PARKING LOTS

**DG DG** GARAGES AND LONG-TERM PARKING

**DL DL** AIR TRANSPORT

**+** AIR TRANSPORT INTEGRATED TO OTHER FUNCTIONS

**TRANSPORTATION STRUCTURES, CONSTRUCTIONS AND PLANNED TRANSPORTATION DEVELOPEMENT, RESERVE**

**ROAD NETWORKS AND LOCAL PUBLIC SPACES**

**RAIL TRANSPORT**

SPARE AREAS

FUNCTION (urbanistic) - purpose of area usage  
TYPE OF FUNCTION - detailed purpose of usage

**AREAS OF LANDSCAPE GREENERY**  
- intended for preservation and renewal of natural values of environment  
- publicly accessible

Types of function:  
- AREAS OF LANDSCAPE GREENERY IN GENERAL  
- AREAS OF LANDSCAPE GREENERY FOR RECREATIONAL PURPOSES

**KV KV** AREAS OF LANDSCAPE GREENERY IN GENERAL  
Development of these areas is given mainly by natural processes. Regulations are targeting preservation of such natural processes.

**KR KR** AREAS OF LANDSCAPE GREENERY FOR RECREATIONAL PURPOSES  
Continuous greenery areas in a landscape serving recreation, relax and leisure activities in increased rate. Equipment and facilities in such areas serve to recreational purposes.

**AREAS OF CITY GREENERY**  
- publicly accessible

Types of function:  
- AREAS OF PARKS  
- AREAS OF RECREATIONAL GREENERY  
- OTHER AREAS OF CITY GREENERY  
- AREAS OF CEMETERIES

**ZP ZP** AREAS OF PARKS

**ZR ZR** AREAS OF RECREATIONAL GREENERY  
- recreational compounds  
- playgrounds  
- outdoor swimming pools  
- beaches  
- camp sites

**ZO ZO** OTHER AREAS OF CITY GREENERY  
- public spaces with park-like treatment  
- alleys  
- significant isolating and protecting greenery

**ZH ZH** AREAS OF CEMETERIES

**AGRICULTURAL LANDS ASSETS (ZPF)**

**AREAS SERVING THE FUNCTION OF FOREST (PUPFL)**

**AREAS WITH PREMISES FOR INDIVIDUAL RECREATION**  
- serves to concentrated individual recreation in recreational structures such as cottages, cabins and huts

**AREAS OF WATER AND WATER MANAGEMENT**  
AREAS OF WATER

**VH VH** WATER MANAGEMENT AREAS

**PT PT** MINING AREAS






## TRAFFIC ORGANIZATION

cur. lies | Route purpose








### RAILWAY ROUTES

 SIDETRACKS

### PUBLIC TRANSPORT ROUTES




 TRAM ROUTES  
 UNDERGROUND TRAM ROUTES  
 RESERVE SPACE FOR NORTH-SOUTH RAILWAY DIAMETRE CONNECTED TO PREROV TRACK WITH UNDERGROUND STATION  
 RESERVE SPACE FOR NORTH-SOUTH RAILWAY DIAMETRE CONNECTED TO BRECLAV TRACK WITH UNDERGROUND STATION  
 UNDERGROUND STATION

### VEHICULAR TRAFFIC ROUTES









 HIGHWAY  
 MOTORWAY  
 ROADS WITH 4 AND MORE STRIPS  
 ROADS WITH 2 OR 3 STRIPS  
 CITY BOULEVARDS  
 UNDERGROUND ROADS  
 RAMPS OF MULTI-LEVELLED ROADS

## PROTECTED AREAS




### PROTECTED AREAS OF UTILIZED NATURAL RESOURCES

 SPRINGS  
 ART.VRT ARTESIAN WELLS  
 ART.VODY SPECIFIED AREA OF ARTESIAN WATERS PROTECTION



### PROTECTED AREAS OF NATURE, LANDSCAPE AND GREENERY






 BIOCENTRE OF TERRITORIAL SYSTEM OF ECOLOGICAL STABILITY OF LANDSCAPE  
 BIOCORRIDOR OF TERRITORIAL SYSTEM OF ECOLOGICAL STABILITY OF LANDSCAPE  
 URBAN BIOCENTRE  
 URBAN BIOCORRIDOR  
 SIGNIFICANT LANDSCAPE MONUMENT (proposed)  
 SPARE AREAS WITH SPECIAL REGIMEN  
 RECREATIONAL AREAS  
 PROTECTED AREA OF PROPOSED PUBLIC CEMETERY

### PROTECTED AREAS OF MAIN LINES OF PROPOSED UTILITIES AND NETWORKS

 SAFETY AREAS OF GASLINES  
 PROTECTED AREAS OF ELECTRICITY LINES  
 PROTECTED AREAS OF HEATLINES

### OTHER PROTECTED AREAS

 PROTECTED HIGH-SPEED RAILWAYS CORRIDOR  
 PROTECTED AREA OF HIGHWAYS AND MOTORWAYS



 PROTECTION OF INTERESTS OF STATE SECURITY  
 AREAS OF ECOLOGICAL LIMITATIONS AND RISKS  
 AREAS OF PROOVEN CONTAMINATION OF UNDERGROUND WATERS  
 AREAS OF FORMER DUMP SITES  
 AREAS OF COMPLICATED GEOLOGICAL AND HYDROGEOLOGICAL RELATIONS

## BUILDING UTILIZATION RATE

0,8  
(0,8-1,2)  
Floor area ratio (FAR) is always designated as the maximum, in these cases as the minimum accessible m2 gross floor area (GFA) of 1m2 basic functional areas. Applying this to the parcel or parcels available for specific construction project, the calculation must be applied to the area of these plots.

## SPECIAL UTILIZATION CIRCUMSTANCES

 REGIMEN OF TEMPORARY USE OF ALL EXISTING RAILWAYS AREAS




 Areas damaged by high noise levels, intensity or ways of usage might be restricted  
 Definition of areas and route of R43 motorway with all its structures and related constructions including multi-levelled crossings with connections to existing roads. Also including all related protection areas. - Abolished by High Court 27.5.2010

## BUILT UP AREAS





 CITY BUILT UP AREA BORDERLINE

## LIMITATIONS OF AREA UTILIZATION






### PROTECTED AREAS OF UTILIZABLE NATURAL RESOURCES

 PROTECTED AREA OF DAMS AND WATERWORKS  
 MINERAL DEPOSITS  
 MINING AREAS OF MINERAL DEPOSITS




### PROTECTED AREAS OF NATURE, LANDSCAPE AND GREENERY

 ESPECIALLY PROTECTED AREAS  
 SIGNIFICANT LANDSCAPE MONUMENT (registered)  
 NATURAL PARKS, PROTECTED LANDSCAPE AREAS  
 AREAS OF EUROPEAN IMPORTANCE NATURA 2000



### PROTECTION OF MONUMENTS AND CULTURAL VALUES



 OBJECTS REGISTERED IN MAIN CULTURAL MONUMENTS REGISTER  
 CONSERVATION AND PROTECTED ZONES OF IMMOVABLE CULTURAL MONUMENTS  
 URBAN CONSERVATION AREA BRNO  
 PROTECTED ZONE OF URBAN CONSERVATION AREA BRNO  
 CONSERVATION AREAS OF GREENERY AND CEMETERIES

### PROTECTED AND SAFETY ZONES OF EXISTING MAIN LINES OF UTILITIES AND NETWORKS




 SAFETY AREA OF GASLINES  
 PROTECTED AREAS OF ELECTRICITY LINES  
 PROTECTED AREAS OF HEATLINE

### OTHER PROTECTED AREAS

 FLOODPLAINS  
 SPECIFIED ACTIVE ZONES OF FLOODPLAINS

 AREAS OF HYGIENIC PROTECTION  
 PROTECTED AREA OF EXISTING PUBLIC CEMETERY

## ADDITIONAL SYMBOLS

 cadastral area borderline  
 names of cadastral areas  
 area addressed in detail in subsequent authorized land use plan

# LAND-USE PLAN

## LAND USE AND REGULATIONS ACCORDING TO LAND-USE PLAN

From the standpoint of the land-use plan of the City of Brno (ÚPmB), the design is situated in an area for transport; in the areas affected by design the designation is 'other urban vegetation' (ZO), areas of 'general landscape vegetation' (KV), areas of 'recreational vegetation' (KR), and areas of 'park vegetation' (ZP).

In the areas of vegetation along Bakalovo nábřeží, plans have been made for a local bio-centre; this is considered as the area of most significant vegetation.

From the ÚPmB Regulation for Land Organisation (forming Appendix no. 1 to the commonly binding declaration of the statutory city of Brno no. 2/2004, the 'Binding Sections of the Land-Use-Plan' as currently valid) and from the blueprints of the ÚPmB, the following conditions are in force for the use of the land under discussion:

Land areas for transport are intended primarily for location of facilities for the systems of transport service of the city.

### FUNCTIONS OF AREAS OF LANDSCAPE VEGETATION

- are intended for the protection and renewal of natural and landscape values of the area,
- are publicly accessible.

A more detailed breakdown of use purposes is set by the functional types:

KV – AREAS OF GENERAL LANDSCAPE VEGETATION

KR – AREAS OF RECREATIONAL LANDSCAPE VEGETATION

The development of these areas is guided, above all, by natural processes. As a result, the land regulations are directed towards the protection of natural processes within the landscape.

Allowable:

- Natural or near-natural forest growth, groups of trees, individual trees with herbal undergrowth, bushes or grasses,
- Grass areas without trees, flowering meadows,
- Open grass/herbal growth, cliffs, plains, wetlands, water-management structures and structures for flood protection that retain vegetative components.

Also allowed in the area are:

- Pedestrian and cycling paths, small sacral structures, small structures especially for educational and research activity.

### KR – AREAS OF RECREATIONAL LANDSCAPE VEGETATION

Adjoining areas of vegetation in the open landscape serving to a greater extent for relaxation, human time in nature. Subordinated to this goal is the placement of built structures in the areas.

Allowable:

- Forest growths, groups of trees, individual trees with herbal undergrowth, bushes and grasses without limitations of spatial arrangement or typical buildings, grass surfaces within any class of maintenance intensity, productive permanent grass growth, various herbal species, water-management structures and structures for flood protection that retain vegetative components.

Also allowed in the area are:

- Pedestrian and cycling paths, small sacral structures, small structures and facilities, roadways, public lighting, water elements, beaches and recreational fields, tent camps, playgrounds, open horse-riding tracks with at most small structures, dog-training grounds.

Allowable under certain conditions:

- Individual structures for service and public dining, under the condition that they have a supplementary function, serve the needs of the recreational function of the area, and do not have the character of a closed club facility, i.e. serve the entire public.

### FUNCTIONS:

#### AREAS OF URBAN VEGETATION

- are those intentionally created as a replacement for an original natural environment,
- are publicly accessible and serve as areas for relaxation and recreational activities.

A more detailed breakdown of use purposes is set by the functional types:

ZP – PARK AREAS

ZR – AREAS OF RECREATIONAL VEGETATION

ZO – AREAS OF OTHER URBAN VEGETATION

#### ZO AREAS OF OTHER URBAN VEGETATION

Include specifically:

- Park-landscaped public spaces, linear vegetative plantings and street-side rows of trees, important insulation and protective vegetation



**ZP AREAS OF RECREATIONAL VEGETATION**

Include specifically:

- Recreational complexes, playgrounds, swimming areas, beaches, campgrounds

Allowable:

- water-management structures and structures for flood protection that retain vegetative components.

Allowable under certain conditions:

- Individual structures for service and public dining, under the condition that they have a supplementary function, serve the needs of the recreational function of the area, and do not have the character of a closed club facility, i.e. serve the entire public.

**AREAS OF OTHER URBAN VEGETATION**

Include specifically:

- Park-landscaped public spaces, linear vegetative plantings and street-side rows of trees, important insulation and protective vegetation

**BIO-CORRIDOR OF THE LOCAL SYSTEM OF ECOLOGICAL LANDSCAPE STABILITY**

(Act no. 114/1992 Coll., on the Conservation of Nature and Landscape, as later amended) with the following regulations:

For the purposes of this land-use plan, the concept of BIO-CORRIDOR is understood as a basic land area with the function of LANDSCAPE VEGETATION or FOREST SOIL FUND to the designated extent.

Allowed in these areas are:

- Species composition: tree species within the framework of the proposed target biotope
- Spatial structure: linear vegetative elements

Conditionally allowable are:

- Realisation of buildings, for regional elements only on the basis of agreed land-use planning documentation, for local elements the placement of buildings is not allowed.

Principles for organisation of technical infrastructure:

From the standpoint of principles of organising technical infrastructure, the area under discussion is affected by the placing of stabilised routes of the water system, routes of main sewage lines, stabilised routes for 110Kv wiring, extant gas piping, heat piping, and underground routing of electronic communication networks.

## FLOOD SITUATIONS

### PLAN FOR ADDRESSING FLOOD RISKS IN THE DANUBE WATERSHED

Naturally caused floods, which affect this area and significantly limit its usability in various times of the year, could be of several different types.

Winter and spring floods, caused by melting of the snow cover, often in combination with rainfall. These floods most often occur in mountain watercourses, and are further propagated in the lowland sections of larger river flows. Significant water mass and extent is encountered in situations when snowfall has been heavy beforehand at lower elevations. Example: March 2006 (Svratka, Dyje and other watercourses).

Summer floods caused by long-persisting regional rainfall, in which rain can last for several days and affects a relatively large area of land. At times, rainfall can arrive in two or more waves with an interval of several days, and cause two or more successive waves of flooding.

Summer flash floods caused by brief rainfall of high intensity, usually affecting a very small land area. These may occur any time on small watercourses, and have catastrophic consequences most often in sloping, fan-shaped watersheds.

Winter flood situations caused by ice formations even during relatively small flow volumes. These occur in sections of watercourses prone to the creation of ice blockages during the flow of ice-floes and blockages from icy slush. Example: February 2012 (Svratka).

In recent years of relatively mild winters often interrupted by temporary thaws, in which ice is removed from the beds of watercourses, this type of flood is no longer particularly significant.

In addition to natural floods, there could also occur floods brought about by catastrophes affecting dams and other water barriers, which are known as special floods. However, one relatively frequent phenomenon is the breaking of the weirs of ponds or other smaller water reservoirs, primarily from their overflowing during natural floods.

The area under consideration lies in a region with a significant flood risk – situated in the region Brno – ID PM 30 Svratka

source: „Plán pro zvládání povodňových rizik v povodí Dunaje“, Ministerstvo životního prostředí a Ministerstvo zemědělství a Plán dílčího povodí Dyje, Povodí Moravy, s.p.

[http://www.povis.cz/pdf/PZPR\\_dunaj.pdf](http://www.povis.cz/pdf/PZPR_dunaj.pdf)

[http://pop.pmo.cz/download/web\\_PDP\\_Dyje\\_kraje/](http://pop.pmo.cz/download/web_PDP_Dyje_kraje/)

map source:

[http://cds.chmi.cz/?id=115&lang=cs&presenter=CDSMap&wmapp=CDS&wmap=cds\\_project\\_115\\_mpn#center=-599958,-1160147&zoom=6](http://cds.chmi.cz/?id=115&lang=cs&presenter=CDSMap&wmapp=CDS&wmap=cds_project_115_mpn#center=-599958,-1160147&zoom=6)



Q 500



Q 100



Q 20

# ACTIVE ZONE AND FLOOD-PRONE AREAS

A sorely felt problem is flood protection for the city of Brno. Though the flood-prone area for overflow water has been already set for many small watercourses as well as the main ones (Svratka, Svitava, Leskava, Říčka, Jehnický potok, Ponávka, Ivanovický potok, Medlánecký potok and Moravanský potok), no systematic realisation of anti-flood protection has yet been made. In the area of the Svratka-Svitava confluence, there is an extensive flood-prone area that has prevented development in this locality, and forms a source of potential risk for residents. For completion in listing potential threats, it is also necessary to mention the risk of special floods caused by dam breakdowns in the Vír or Brno dams.

The proposed flow volume for flood protection construction is a hundred-year flood; in the case of the Svratka, it is a hundred-year flood without consideration of transformations influenced by the Vír and Brno reservoir dams.

The plan for Brno's natural flood protection system (PPO Brno) is conceived so that after realisation of the entire system on the territory of the city, it would operate independently of adjoining areas, and not have consequences that worsen the course of flooding in areas lying to the south of Brno along the course of the Svratka. Realisation of flood protection measures in the territory discussed in the present condition, therefore, may not have consequences that would worsen the course of flooding to the areas lying along the river's course.

For the design of the natural and near-natural flood protection systems, it is necessary to take into account the stipulations of the Water Act no. 254/2001 Coll., as currently valid, in particular articles 6, 46, 47, 52 and 67



## FLOOD-PRONE AREAS

Flood-prone areas of the river are set by the calculation for Q100 (for the Svratka, flow volume of 395 m<sup>3</sup>/s with height increase of 0.3 m, for the Svitava, flow volume Q100 = 180 m<sup>3</sup>/s with height increase of 0.5 m) not influenced by reservoirs in the watershed.



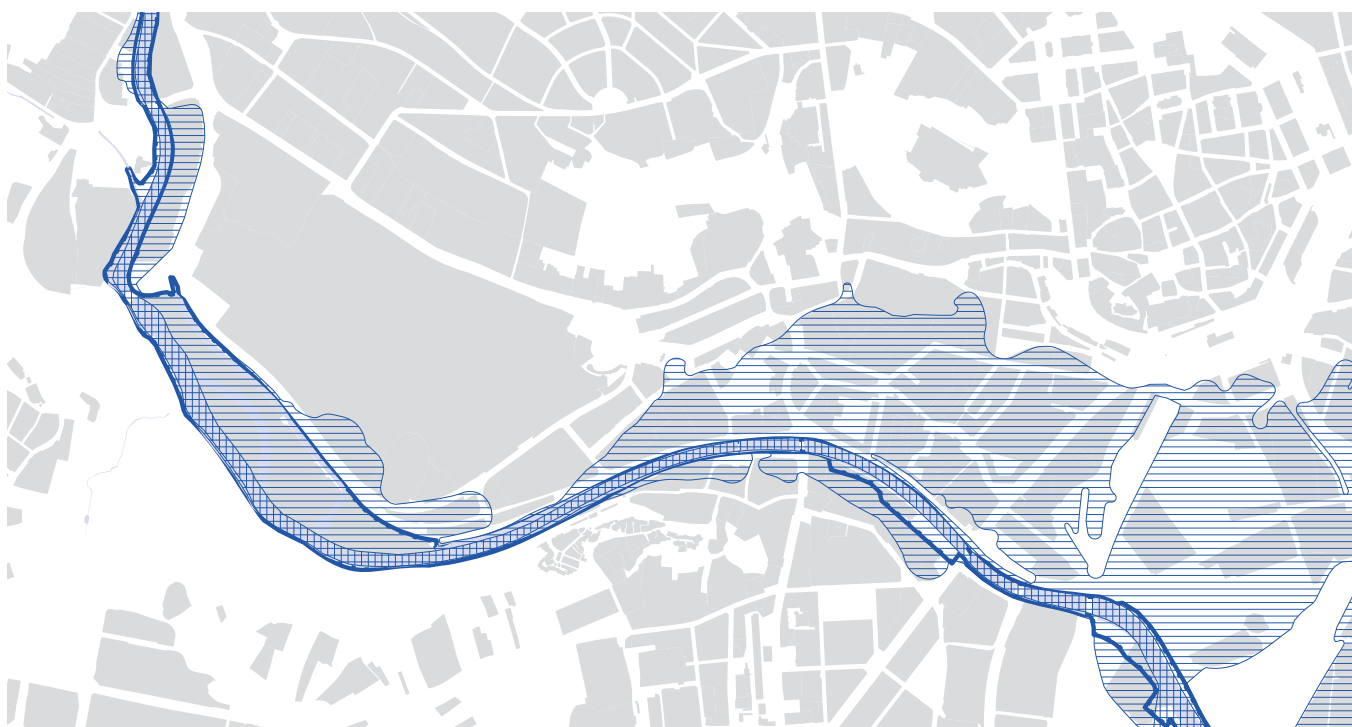
## ACTIVE ZONE OF FLOOD AREA

The active zone of the flood area is set administratively as the part of the flood area in which, according to article 67 of the Waters Act, no. 254/2001 Coll., as currently valid, limiting conditions are in place for its use. In the active zone, for instance, it is not possible to construct buildings with the exception of water regulatory works and necessary elements of transport and technical infrastructure, to store floatable material, to create fences and other similar barriers, etc.

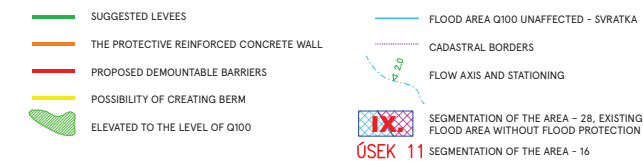


## DIRECTED OVERFLOW

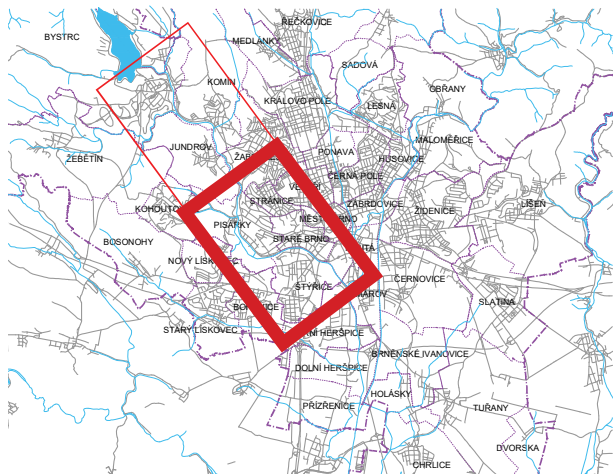
This is the area of overflow after realisation of the flood-protection measures (PPO). However, no systematic realisation of PPO has yet occurred. By 2014, partial flood-protection measures were realised in the form of a levee and a wall of length 558 m, which is only 1.42 % of the total planned length of 39 075 m. In 2016, an updated version was created of the investment plan for priority stages of flood protection.







## SHEET ARRANGEMENT



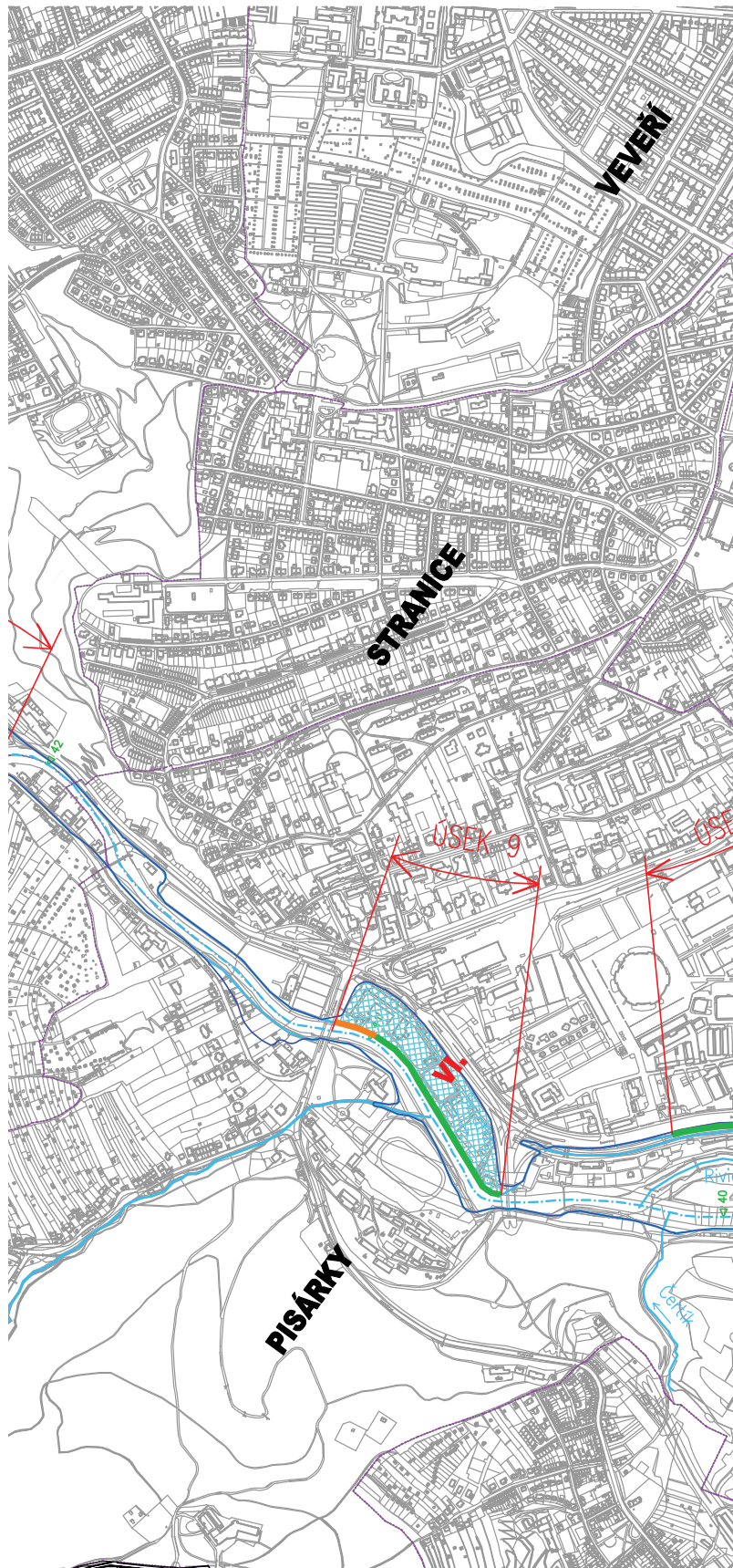
The main principle in the proposing of PPO was allowing overflow spillage in areas where it is possible. For achieving volume compensation as a consequence of realisation of PPO, it was proposed to expand the volume profile of the river bed; in the southern sections of the city in open land, overflow is possible.

In this plan, it is assumed that the space thus created will be further addressed in greater detail, with an eye to revitalisation of the river courses, focusing on the outdoor and recreational functions for residents.

In those places where for reasons of space it is not possible to expand the profile of the river bed, the proposal consists of earthen ramparts close to the watercourse, reinforced-concrete walls and local mobile barriers. Other measures include the 'capacitation' of unsuitable structures along the watercourse (weirs, bridges, walkways).

source: 'General Water Removal Plan for the City of Brno' (Generel odvodnění města Brna), Statutory City of Brno and Department of Urban Planning and City Development, City of Brno

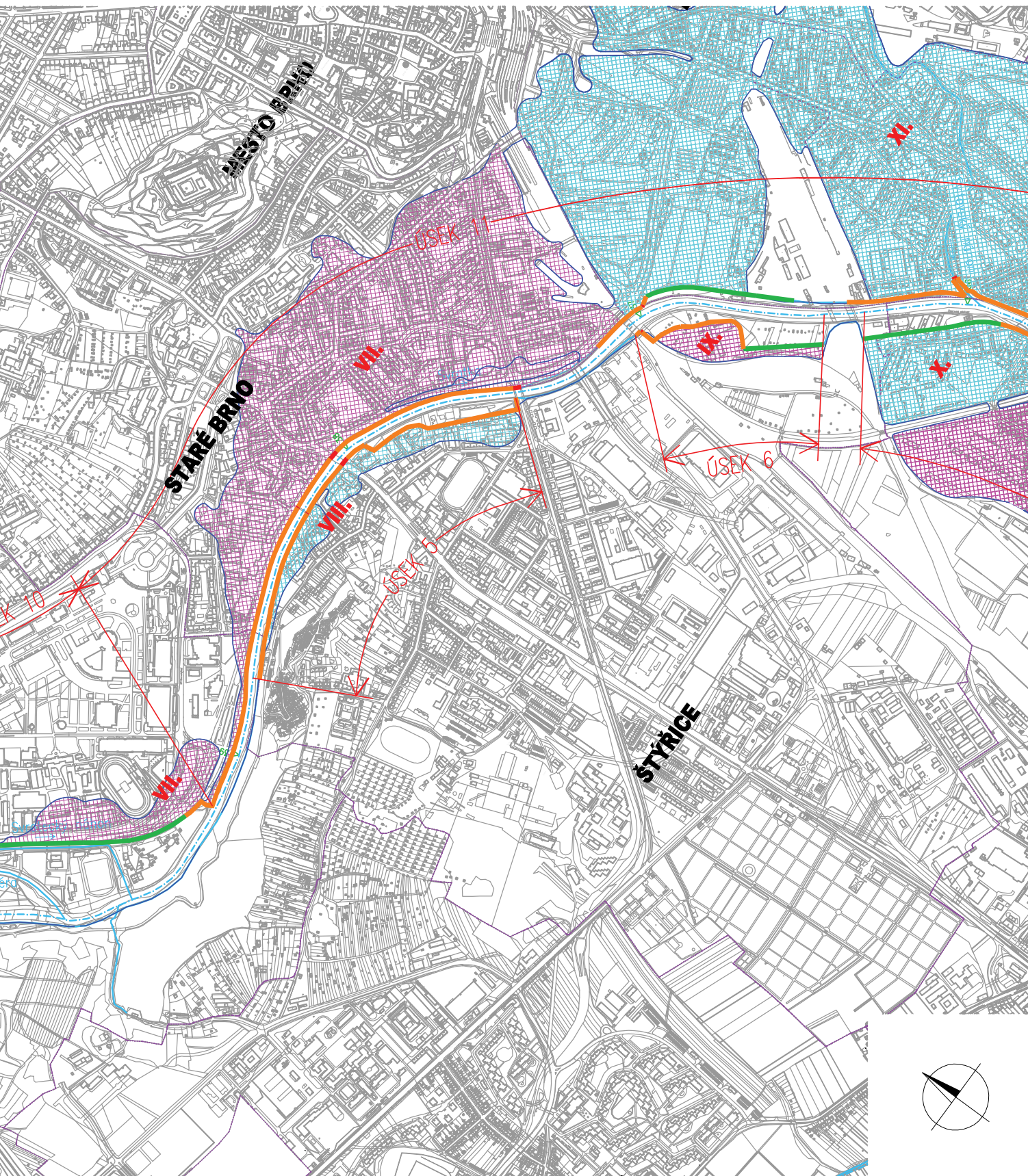
<https://www.brno.cz/sprava-mesta/magistrat-mesta-brna/usek-rozvoje-mesta/odbor-uzemniho-planovani-a-rozvoje/dokumenty/upp/generel-odvodneni-mesta-brna/>





# GENERAL WATER-REMOVAL PLAN

## CONCEPTION OF FLOOD-PROTECTION MEASURES FOR THE CITY OF BRNO





# FLOOD PROTECTION

## PLANNED FLOOD-PROTECTION MEASURES (PPO) IN THE AREA

The city of Brno lies at the confluence of two of South Moravia's major rivers, the Svatka and the Svitava. Through the gradual enlargement of the city, its current built fabric has in many places come quite close to the area of one or the other of these rivers, in particular the old industrial and residential construction along the banks of both the Svatka and the Svitava. Primarily, the historical circumstance of the growth of industry in the second half of the 19th century, a period with a lower flood occurrence, and the need for factories to take up river water, led to the construction of industrial enterprises in close proximity to the river banks. Often, the water uptakes were addressed through blockage structures (weirs) along numerous millraces, only a few of which have survived till today. Such construction had an unfavourable influence on the flood flows along these rivers.

The present state of the flood-prone area for the river Svatka is, in the section under discussion, primarily the artificial corridor of the river, even though in several sections the course has achieved a natural appearance. The Svitava, in turn, is primarily regulated.

The reason for the need to address the PPO is the possibility of repeating flood scenarios in the Czech Republic from the years 1997, 2002 and 2006 in the watershed of the Svatka. This scenario assumes that in the river basin, there will occur a precipitation episode of two intense waves of rainfall. The first wave will saturate the soil base and outflow water from the watershed will fill the reservoir capacities of the dams Vír I, Vír II and Brno. The second precipitation wave, in time around 4–5 days after the first, will flow with minimal absorption into the watercourses. The overflowing retention capacities of the reservoirs will, in turn, be unable to capture the flood wave, and thus the city of Brno will be threatened with a flood of Q100 (uninfluenced). In 1997, during a flow volume of Q100 for the reservoir Vír I, the reservoir was emptied for reasons of construction of the intake structure for the Brno regional waterworks. As a result, the flood wave was entirely captured. However, a similar case of two similar catastrophic rainfalls in a single week occurred in the Czech Republic again in 2002: in this instance, the city of Prague, below the Vltava cascades, was hit by a devastating 500-year flood following the same scenario.

### PROTECTION FROM FLOODS

In areas where the extent of flooding led to an unacceptably high level of flood risk, variant plans for flood protection measures have been proposed, including cost estimates for their realisation. Flood protection measures should be differentiated according to the character of the threatened areas.

The plan for flood protection measures in the city of Brno was divided into the following sections:

- Linear PPO preventing the overflow of flood-level water volumes.
- PPO in the sewage network that would prevent re-flooding from the watercourses and simultaneously allow for the functioning of the sewer network in terms of relief during rainfall episodes during floods.

source: 'General Water Removal Plan for the City of Brno' (Generel odvodnění města Brna), Statutory City of Brno and Department of Urban Planning and City Development, City of Brno  
<https://www.bрно.cz/sprava-mesta/magistrat-mesta-brna/usek-rozvoje-mesta/odbor-uzemniho-planovani-a-rozvoje/dokumenty/upp/generel-odvodneni-mesta-brna/>

At present, for this area anti-flood protection has been planned within the spirit of near-natural flood-protection measures. For the area under consideration, it involves Stages VII and VIII, which form part of the competition documentation. A full overview of these measures is included in Stage VII in these areas – Pisárky, Staré Brno and partially Štýřice. Stage VIII is entirely situated on the territory of Štýřice.

The updating of the investment plan assumes placement of PPO with priority on areas of land in the ownership of the City of Brno.

#### Affected plots for phase VII

cadastral area Pisárky:

905/1, 905/55, 908/4, 909, 910/1, 910/3, 944, 948/1, 948/9, 948/10, 948/12, 954/9, 1007/1, 1007/6 až 8, 1016/2, 1020, 1021, 1023/5, 1023/70, 1023/73  
 k. ú. Staré Brno: 878/4, 1383, 1384, 1387/2, 1388/2  
 k. ú. Štýřice: 701

#### Affected plots for phase VIII

cadastral area Štýřice:

79/2, 193/2, 193/3, 193/7, 193/9, 207/25, 207/46, 207/48, 207/50, 212/7, 385/10, 411, 412/1, 419/1, 419/2, 420/6, 426, 27/3, 640/3, 701, 764/1, 764/2, 766, 769, 774

In the course of realising the investment, it may involve parcels of land in the ownership of other parties as well.

# REVITALISATION OF THE WATERCOURSE

## NEAR-NATURAL REGULATION OF WATERCOURSES IN BUILT-UP AREAS

For the revitalisation of a watercourse in the open landscape, the key priority is its return to a near-natural state. Generally, this represents the replacement of the large, straightened, deep and high-capacity artificial riverbed with one significantly smaller, shallower and more varied in course. Frequently, the revitalising bed is undulating, to evoke the conditions of a natural meander. A significant goal is the reduction of the flood course: a smaller, more articulated riverbed supports the earlier and more extensive overflow of flood waters into the riparian environments of the banks.

By contrast, in built-up areas the first condition is for flood protection of the current structures. Hence, revitalisation is conceived differently from its role in the open landscape. Usually, the aim is to find a more varied, more naturally-shaped riverbed without causing any reduction in its flow capacity. Indeed, quite often it becomes necessary to increase the floodwater capacity for such instances. Then, the task known as 'flood opening' is applied. The flood channel is 'capacitated' through its expansion into open forms, which allow for the development of near-natural elements. At times, the flood-protection measures in built-up areas are strengthened through the creation of supplementary flow capacities, various parallel channels, protected flood channels or 'flood spillways'. If the shapes of these channels are close to those found in nature, these too can be considered as revitalisation elements.

Revitalisation of built-up areas is not performed only with the goal of improving the ecological condition of the watercourse. Usually, first priority is given to the requirements of strengthening flood protection for the built-up area.

It is necessary to seek out in the conditions of each locality the optimal combination of flood-protection effects and improvement of the morphological state of the watercourse and its riparian banks.

Wherever the primary aim is flood protection, care should be taken in following these principles:

- Protecting areas for natural flood overflows – not 'cutting off' the open riparian land with levees
- Looking for possibilities for the flood-protection measures to be supplemented with measures that improve the morphological condition of the watercourses and riparian lands.
- Make proportional compensation for necessary damages to the natural character and to areas for natural overflow

The chief possibility offered by a harmonised approach is to expand the near-natural space that could handle high flood waters.

In the sections of the river under discussion, the technical regulations created a prismatic channel with a widely opened trapezoidal cross-section, in which the predominant section of the outline is occupied by the angled slopes. The approach to revitalising this section could, as a result, start from the insight that the dry sloping sides of the river channel are, ecologically speaking, practically worthless, while the base channel (the lower section of the riverbed, under usual conditions occupied with flowing water), previously significantly reduced in the space of the regulated channel, could become the bearer of the ecological value of the watercourse.

In several partial sections, in turn, revitalisation could be performed through expanding the base channel – though the previous sloping sides would understandably either have to be pushed further away, or if there is no space for the overall expansion of the channel, at least replaced with more perpendicular constructions. It could be assumed that more sharply rising embankment construction, perhaps of gabion or masonry walls, would be extremely expensive, yet in addition to the environmentally beneficial expansion of the base channel this possibility would also acquire a larger flow-through section of the entire river channel for times of flooding.

source: Metodika Agentury ochrany přírody a krajiny ČR „Přírodě blízké úpravy vodních toků v intravilánech a jejich význam v ochraně před povodněmi“  
[http://www.povis.cz/pre/2015\\_oov/material\\_aopk.pdf](http://www.povis.cz/pre/2015_oov/material_aopk.pdf)

# FLOOD PROTECTION

## IMPLEMENTATION OF FLOOD PROTECTION OF THE CITY – STAGE VII AND VIII

The original investment plan (IP) was approved by the Resolution of the Brno City Council (RBC) no. R5/144 as of 11.05.2010, and at present is contained in the operational plan for investments of the City of Brno.

### DESCRIPTION AND DEFINITION OF THE INVESTMENT

The subject of the actualisation of the investment plan is the construction of flood-protection measures (hereinafter PPO) in 5 out of 28 stages on the courses of the rivers Svratka and Svitava on the territory of the City of Brno, as defined in the framework of the General Water Drainage Plan of Brno as of 2008 (hereinafter GWDP).

Individual stages are realisable independently, i.e. forming hydraulically enclosed units that guarantee the functionality of the realised section without regard for the completion state of the adjoining stages.

Risk analysis established the order of urgency for the construction of the stages. The ordering of priority stages was set as follows: XXII – XI – VII – XXI – VIII, in which Stage VIII was not a subject of the original IP.

The updating of the investment plan includes all five priority stages pursuant to GWDP, i.e. expansion of the subject of the IP to include Stage VIII and the subsequent division into two IPs for reasons of differing project preparation for the respective stages.

For Stages VII and VIII, the following competition has been declared 'Banks of the River Svratka', with the assumed date of announcing the results in 2017 and reflection of the competition results in the following session of the DÚR.

For stages XI, XXI and XXII, the project preparation will be started on the basis of current project documentation.

In the updating of the IP, the stages are ranked chronologically, without any setting of the geographical order. The reason for this is the difference in conditions for realising each stage, particularly with reference to the ownership relations and the current ZP; the order of realisation of the stages will only be set after the detailed verification of conditions for realisation in the course of project preparation.

### DEFINITION OF THE AREA AFFECTED BY THE REALISATION OF STAGES VII AND VIII:

#### STAGE VII

– left bank of the Svratka, river km. ca. 37.055 through 39.990, calculated stationing, i.e. 2.935 km

The overflow area of Stage VII lies in the cadastral district of Pisárky and Staré Brno in the district Brno-Střed on the left bank of the river Svratka.

The western boundary of possible overflow is formed by the 'Svratka millrace' (ulice Bauerovala); to the north, possible overflow would affect part of the Brno Exposition Grounds and the area up to ulice Křížkovského and Mendlovo náměstí, part of the St. Anna's Hospital complex, and to the east, the entire area around Nové Sady up past ulice Hybešova and towards the rail viaduct.

The PPO will be realised on the left bank of the Svratka primarily in the cadastral districts of Pisárky and Staré Brno, in the areas near the banks; reconstruction of the footbridge will also affect parcels in the cadastral district of Štýřice.

### OWNERSHIP RELATIONS:

In Stage VII, the PPO along the Svratka will be routed primarily along tracts of land owned by the city; only in the vicinity of Hotel Voroněž does it cross land owned by the sports association TJ Slovan Staré Brno. Along ulice Poříčí, land possibly affected by construction is owned by the Czech Government (the Road and Motorway Directorate and the Office for Government Representation in Property Affairs); in the final section between the DRFG Arena and the ulice Uhelná bridge, the PPO are again planned on property in city ownership, with possible contact with land held by the national government (the Road and Motorway Directorate) and Czech Rail.

### AGREEMENT WITH THE VALID BRNO CITY PLAN:

According to the currently valid city plan for Brno, the PPO of Stage VII are proposed for areas of other vegetation (ZO), where they are not allowed, and areas for transportation, where they are.

Realisation of Stage VII assumes a change in the city plan.

#### STAGE VIII

– right bank of the Svratka, river km. ca. 37.055 through 38.585, calculated stationing, i.e. 1.530 km

The overflow area of Stage VIII lies in the cadastral district of Štýřice on the right bank of the river Svratka. The southern edge of possible overflow is formed by ulice Kamenná, Polní and Renneská třída. The PPO will be realised on the right bank of the Svratka in the cadastral district of Štýřice.

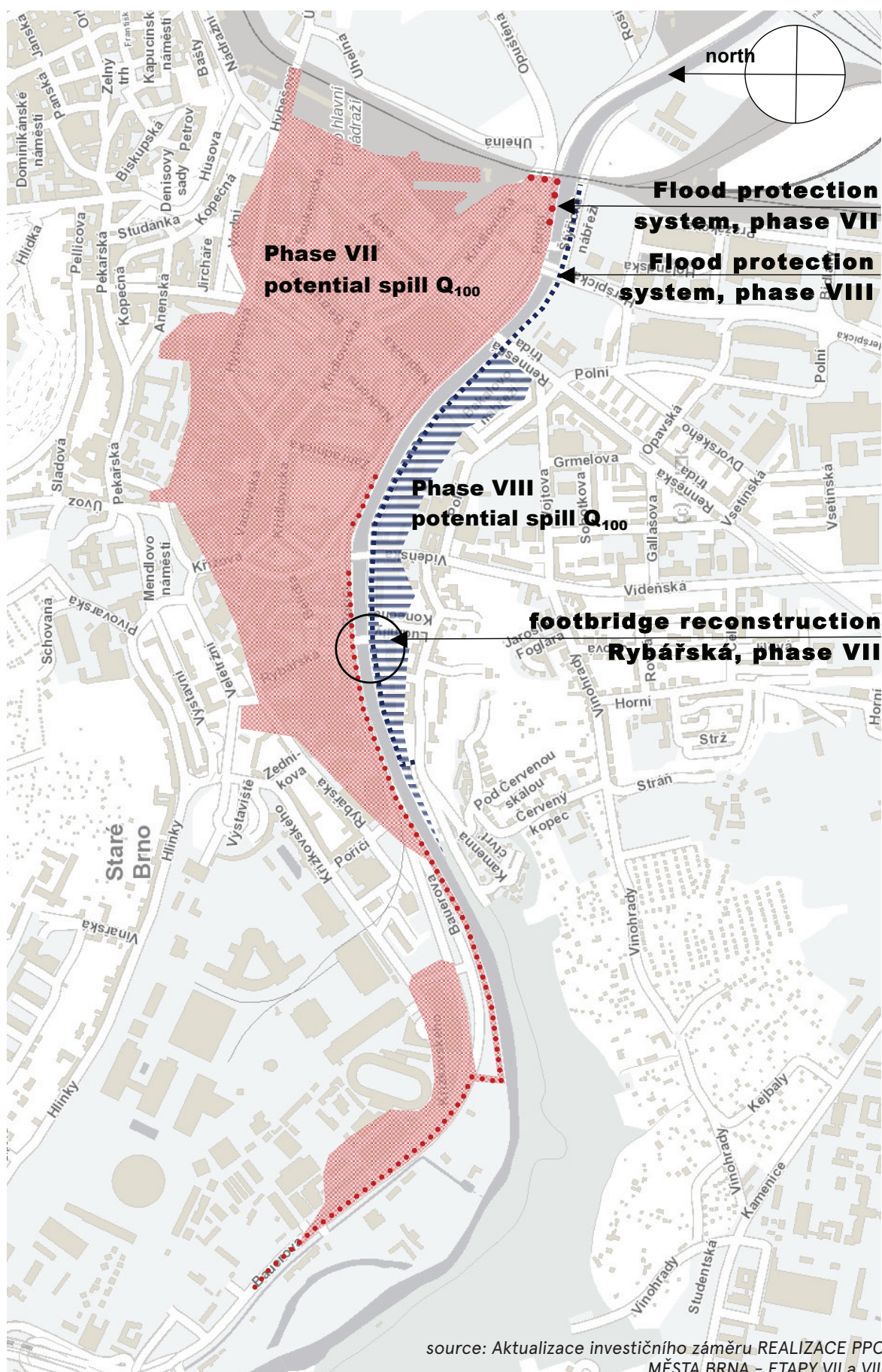
### OWNERSHIP RELATIONS:

In Stage VIII, the PPO in the section from Kamenná kolonie up to Vídeňská ulice is planned entirely on city-owned land. In the section between ul. Vídeňská and Renneská, construction will affect both city and national land, as well as private plots (individuals and the Order of the Brethren of Mercy), in the section between Renneská and Heršpická ulice it is possible to route the PPO entirely along city land, and in the final section up to the bridge from ulice Uhelná the affected plots will be in city, national and private ownership.

### AGREEMENT WITH THE VALID BRNO LAND-USE PLAN:

According to the currently valid city plan for Brno, the PPO of Stage VIII are intended for areas of landscape vegetation (KV) and recreational vegetation, where they are allowed, and other vegetation (ZO), where they are not allowed. In the vegetation areas along Bakalovo nábřeží, a local bio-centre has been proposed, these also being the areas of most important vegetative cover. Realisation of Stage VIII assumes a change of the city plan.





## MEASURES PROPOSED ON WATER COURSES

Protective earth levees are the priority solution; if the extent of built-up areas allows for it, these are planned to be set back from the river to preserve the maximum of the natural inundation space. At the crown, they are planned in standard dimensions, with a width of 3.5 m and reinforcement of the crown with macadam and heated gravel (access for maintenance vehicles, possible cycling paths), with the pitch of the slope horizontally and vertically in proportions 1:2.5, with compost removed and planted with grass. The levees will always be raised at least 0.3 m higher than the level of a Q100 uninfluenced flood.

The levees will be created using a binding joint in the foundation joint, and supplemented with a thin-walled vibration wall, to prevent the breakdown of the ground below the levee. The depth of the wall in the ground is set, by estimation, at roughly two times the height of the levee above the surrounding terrain.

In sections with set-back levees, current berms are proposed (i.e. grass-covered 'flood-parks' with dispersed vegetation), at a lowered height so that the capacity of the channel-base of the bed would be Q1 to Q5. Berms may have stepped height levels, for reasons of conforming to the minimal coverage of 1.0 m of rainwater drains. All shafts in the location of the berms must be built to be watertight. The terrain in the vicinity of the shafts will be reinforced e.g. by piled stone, with the surface smoothed and planted with grass, or if necessary reinforcements will be constructed (e.g. gabion walls).

At locations of limited spatial conditions from extant construction, beside bankside roadways etc., the proposed solution is reinforced-concrete (RC) angled walls of smoothed concrete given overhanging eaves, with additional surface treatment up to the designer. These will be created with a consideration of the local geological conditions and the assumed height of the overspill waves above ground level. The walls will be constructed (particularly in visually exposed sections) to around the height of a standard balustrade (ca. 1.1 m); in the event that it becomes necessary to protect the land above this height, the PPO will usually be addressed through combination with ancillary mobile barriers. Under unfavourable geological conditions, the RC walls will be supplemented with a clay-cement underground wall to prevent water from breaking through the ground soil and threatening its stability.

Mobile barriers are planned in all circumstances in locations of necessary transport accessibility outside of times of flood, and as a supplementary height to the flood-protection walls. Included with the mobile barriers must be reinforced-concrete strips with mounting bases correctly affixed to the earth levees and to the ground.

Capacitation of structures on the watercourse is intended for selected footbridges; capacitation of weirs (including traverses and canoeing sluices) is not part of the IP; the investor for these components will be the company Povodí Moravy, s.p. In the case of the footbridges, it is proposed

that the bridge deck be raised so as to ensure the required safety reserve of 0.5 m above the proposed flood level for Q100 (ČSN 73 6201 Design of Bridge Structures, 10/2008). Modifications to current footbridges will need to be addressed in connection with the adjoining communication routes. Capacitation of road bridges is not a subject of the IP.

Note: In the case of weirs, it is proposed to lower the fixed fall edge by around 1.0 m; retention of the current level of continual retention of the river flow will be ensured through the use of mobile retaining constructions. Included in the reconstruction of the weirs is also the construction of fish traverses to allow for migration of fish, and the construction of canoeing sluices to allow for recreational boaters to cross the weirs.

## MEASURES PROPOSED FOR DRAINAGE NETWORKS:

Protection of drainage networks in a flood-prone area is connected to the plan for PPO on the river courses, and includes securing the drainage system passing through the flood-prone area with concrete-backed piping or its reconstruction (replacement), and the reconstruction (replacement) of the entry chimneys into the drainage with the inclusion of watertight lids or extending the watertight chimneys above the Q100 level, including reinforcement of the chimney bases.

Protection of the drainage network from the influx of water in Q100 as a result of backwash swelling, and from the flooding of buildings with rainwater. The current state of the drainage was performed within the framework of preparing the GWDP.

IN locations with sufficient accumulation capability of the drainage network, in the shafts in front of the outflow objects barriers are planned to prevent river water from flowing into the drainage; in the event of low accumulation capacity of the drainage network, pumping stations for rainwater are proposed.

source: Actualisation of the investment plan 'REALISATIONS OF PPO FOR THE CITY OF BRNO – STAGES VII AND VIII'



**STAGE VII**

– left bank of the Svratka, river km. ca. 37.055 through 39.990, calculated stationing, e.g. 2.935 km

**MEASURES ON THE BANKS:**

The PPO of Stage VII starts beside the Riviera swimming baths. The GWDP assumes the construction of an anti-flood levee with a length of ca. 740 m, the PB PPO also considers the variation with a possibility of building a RC angled wall along the left bank of the Svratka millrace of roughly the same length for reasons of minimising the amount of land necessary to acquire and of interventions in the current infrastructure (with breaks and mobile at points of foot/vehicle entrance). A differing solution for the PPO ends roughly at the area of the cycling stadium (ca. river km 39.250). In addition, the proposal included a RC angled wall in combination with mobile barriers, in a position respecting the current infrastructure and terrain profile. With the exception of the space of ca. 200 m in the section in front of Hotel Voroněž, the wall is planned entirely on city land, up to ulice Vídeňská. Between Vídeňská and Renneská, the PPO continues with the construction of a RC angled wall, though this can be omitted at several points for the reason of sufficient ground height on the left bank. In the line of the PPO, it could be possible to propose only an insulating wall.

In the space between ulice Renneská and ulice Heršpická, no PPO have been planned. Between ulice Heršpická and the bridge at ul. Uhelná, there is a proposal in the GWDP for construction of a RC angled wall close against the riverbank and its connection to the bridge; the PB PPO assumes the removal of the rail siding and the resulting possibility of shifting the berms (for reasons of capacitating the river profile) from Stage XI below the bridge to Stage VII, and thus shifting the wall up to the boundary of the berm. Until the point of completion of construction of Stages VII and XI, it is proposed to separate the two hydraulically independent sections with mobile barriers.

**RELATED MEASURES:**

Capacitation will take place on the Rybářská footbridge (river km. 38.229) – this is a subject of the IP 'Bridge no. BM-560, footbridge from Tábořského nábřeží across the Svratka', IP approved by RMB R5/124 on 27.10.2009 and included in the operative plan of investments.

Necessary relocation of the utility infrastructure will be performed (water pipes, communications cables).

**MEASURES FOR THE DRAINAGE NETWORK (watershed of the main drainage line B):**

Necessary alterations will be made to the drainage outflows and installation of terminal shutters.

A total of 4 relief and 4 lock chambers will be built.

In this section of the Svratka (37.043 up to 40.130 river km. – calculated stationing), there are other structures in the watercourse that according to the GWDP fail to meet the demands of a Q100 non-influenced flood, but for which the capacitation is technically and logistically very complicated. These are the road bridges in ul. Vídeňská, Renneská and Heršpická. In the course of heightened flood risk, these bridges will be under continual supervision.

**STAGE VIII**

(right bank of the Svratka, river km ca. 37.055 up to 38.585, calculated stationing, i.e. 1.530 km)

**MEASURES ON THE BANKS:**

The start of the route of the PPO in the area below Kamenná kolonie is planned using a RC angled wall in combination with mobile barriers, and in two variants – either in the longer route along the right bank or the shorter route through connection to the higher terrain with natural overflow allowed in the forested section. Alongside the Cloister of St. Elizabeth, the route is also given two variants: either continuing along the bank or at the boundary of the cloister's fencing. From this point up until ulice Vídeňská, the RC angled wall will be placed forward towards the embankment wall, for reasons of insufficient space.

In the section between ul. Vídeňská and Renneská, protection is planned to use smaller RC protective walls. A variation is to lower the bank through stepped terraces, which would significantly increase the flow capacity of the river outline, with a direct influence on the height (or the absence) of any measures on the left bank (Stage VII). The terraces could then be used for temporary recreation, cycling routes etc. Then, in essence, the line of the PPO respect the route of the walls, but is planned in the form of mobile barriers. Between ul. Renneská and the bridge at ul. Uhelná, no PPO was proposed in the GWDP. In the PB, PPO is again proposed through lowering the banks as terraces, yet this would remove the highest point of the terrain and thus create a need for a plan for the new set-back line of the PPO with the assumed use of mobile barriers. The extent and direction line of the terraces will respect the coverage of the drainage intakes for at least 1 ma, and the placement of a passageway for cyclists below the ul. Uhelná bridge.

**RELATED MEASURES:**

None are expected.

**MEASURES FOR THE DRAINAGE NETWORK (watershed of the main drainage line A):**

Within the framework of the administration of the GWDP, in 2014 the concept of water drainage in the watershed of drainage line A was changed; for this reasons, it is necessary to plan the PPO on the drainage network in the watershed of Line A differently. In the original plan, there were no conditions specified for large-scale changes, only for the improvement of the drainage outflow and installation of end shutters.

The necessary adjustments to the drainage outflows and installation of end shutters will be performed.

**FOR BOTH STAGES:**

Within the framework of preparation of the investment, spaces will be proposed for storage of mobile barriers and their administrator/operator specified. Future construction of warehouses for mobile barriers is not part of the actualisation of the IP.

*source: Actualisation of the investment plan 'REALISATIONS OF PPO FOR THE CITY OF BRNO – STAGES VII AND VIII'*

# NEAR-NATURAL FLOOD PROTECTION

## PLANNED NEAR-NATURAL FLOOD PROTECTION (POP) OF FLOODPLAINS OF MAIN WATERCOURSES IN THE CITY OF BRNO – PHASES VII A VIII SVRATKA RIVER

### PHASE VII

#### SO 07 (structure 07) Pisárky–Brno

Is situated at the 37,055 – 39,990 km on the left bank of the river Svatka all the way from viaduct Uhelná to the site of Riviéra and Brno fairs. This part of the river has enough capacity even for the level of Q100 uncontrolled floods. SO 07 (object 07) is of the highest importance of construction of the flood measurements for the Brno municipality.

#### SO 07.1 (structure 07.1) Ground antiflood wall

(alternatively a reinforced concrete wall) at 39,250 – 39,990 km of overall length 740 m and height of approximately 0,90 m

Embankment is of these parameters:

Width at crest is 3.5m, slope is 1:2.5 and it is grassed over. Embankment is 30 cm higher than Q100. It is located at the current pavement; thus, the crest is reinforced by asphalt and the bedrock consists of gravel.

In this sector, demountable construction will be used in five occasion, substituting the entire height of the concrete wall. Three of them are to be used at the river access, one is at the entrance to nearby area and other leads to the parking lot garage.

Underground part of all floods measurements is a thin vibrated wall, elongated into bedrock according to the principles mentioned above.

**SO 07.1. (structure 07.1) Reinforced concrete anti-flood wall** in combination with demountable at the 38.090 – 39.250 km located at the Poříčí street of overall length 1885 meters and height 1.80 meters. Because of this the measurement is designed as combined with sill ledge of height 1.10 meters (that will also serve as a crash barrier of the parallel street Poříčí) the necessary height is then achieved by demountable wall structure in the case of floods. At the landing of the footbridge the measurement is entirely designed as a demountable structure.

Because of spatial problem this reinforced concrete wall is founded on piles. The reason is the current water piping and sewer.

**SO 07.1. Demountable construction** at 38.229 kilometre, height 1.70 m and of the overall length 5.0 meters.

**SO 07.1. Anti-flood reinforced concrete wall** at 37.885 – 37.210 kilometres, height 0.20 m and of the overall length 115 meters. Here the banks nearly reach capacity of Q100 water level, it is only missing 0.30 m above the Q100 water level.

**SO 07.1. Reinforced concrete wall** at the 37.055 – 37.210 km, height 1.70, overall length 170m and demountable construction of 3 meters length located at the pavement.

**SO 07.1. Demountable construction** 1x70 m with continuity to the higher grounds close viaduct at the street Uhelná and two passages under the viaduct Uhelná towards the main station. Both of length 2x 16.0 m. These serve as a division between two hydraulic independent sectors (SO 07 and SO 11). In the case of completion of both sectors this measure is redundant.

source: Přírodě blízká POP a revitalizace údolní nivy hlavních brněnských toků – SO SVRATKA

### Initiating investments:

Relocation of the current utilities.

Reconstruction of footbridge Rybářská at 38.229 km placing bridge deck with precautionary for Q100.

Integral part of the proposal SO 07 is addition of sewage valves at all permitted outfalls. Those not allowed by authorities are to be removed without compensation.

### Phase VIII

#### SO 08 Štýřice – Poříčí

Situated at the 37.055 – 38.585 km on the right bank from the viaduct Uhelná all the way to the higher grounds under Kamenná kolonie.

**SO 08.1. Reinforced concrete wall** in combination with demountable construction at the 38.054 – 38.585 of the overall length 558 m and approximate height 1.60 m . Because of this height, the measure is designed as a combined one. Sill ledge of 1.10 m in combination with demountable construction to reach the necessary height in the case of floods. Underground part of the floods measurements is a thin vibrated wall elongated into bedrock according to the principles mentioned above.

**SO 08.1. Anti-flood barrier** is hereby demountable construction at the 37.459 – 38.043 km of height 1.40 m and the overall length 585. Underground part of the floods measurements is a thin vibrated wall elongated into bedrock according to the principles mentioned above or alternatively pile wall in the case of present infrastructure and spatial issues.

**SO 08.1. Demountable construction** at 38.229 km of height 1.70 m and the overall length 5 meters.

**SO 08.1. Antiflood barrier** consisting of underground sealing wall of length 163.0 m ř. km 37.055 – 37. 257 of length 196.0 m .

#### SO 08.2. Opening the river bank to the public

Creating terraces for recreation and cycle paths at 37,459 – 37,930 km, of length 472 m. It is proposed as 4 different levels that must respect 1 meter soil protection of the sewage. These terraces allow the access to the river and can be used for recreation. The top level will serve as a cycling path. The steps of height 0.80 m are proposed as concrete with cladding by either stone or wood. The horizontal part is grass with occurrence of woody plants. The final design is to be elaborated by architects in collaboration with flood measures experts and caretaker of utilities.

#### SO 08.2. Opening the river bank to the public

Creating terraces for recreation and cycle paths at 37,285 – 37,435 km of length 172 m and 37,055 – 37,257 km in the overall length of 190,0 m.

Integral part of the proposal SO 08 is addition of sewage valves at all permitted outfalls. Those not allowed by authorities are to be removed without compensation.

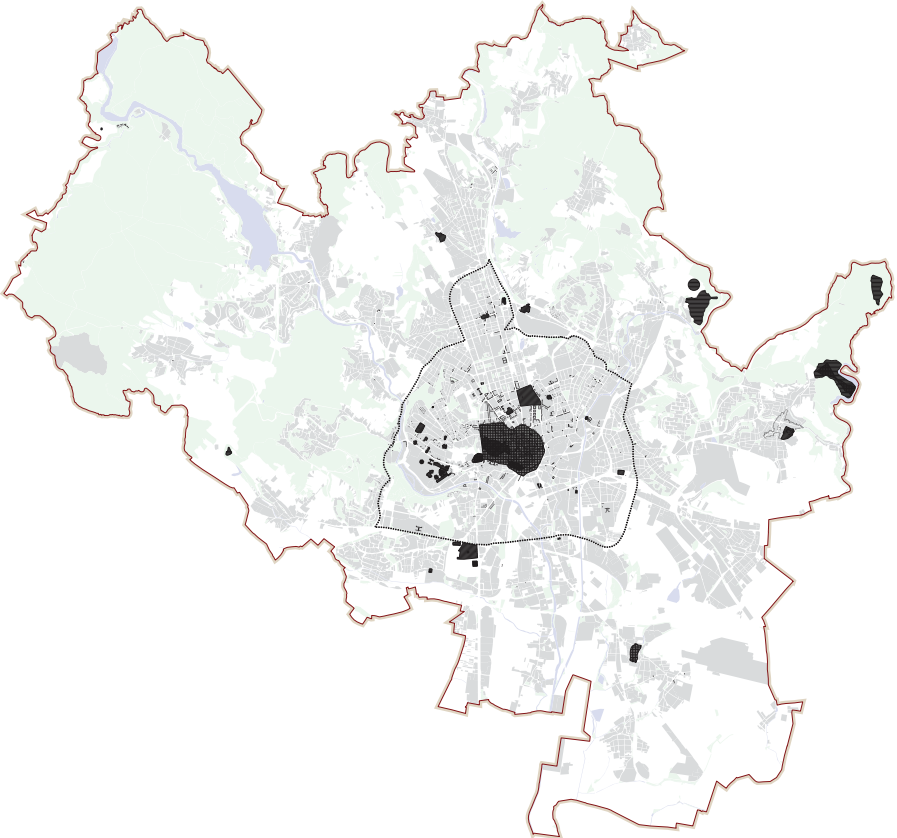






HERITAGE PROTECTION

- Conservation zone
- Protection zone of the city conservation zone
- Building listed as cultural heritage
- Building listed as cultural heritage - areas and complexes
- Archeological locations
- Protection zone of cultural heritage and protected areas





# TERRITORIAL SYSTEM OF ECOLOGICAL STABILITY

## BIO-CENTRE OF THE LOCAL SYSTEM OF LANDSCAPE ECOLOGICAL SUSTAINABILITY

Allowed in these areas:

- Species composition: tree species in the framework of the proposed target biotope, synusia of vegetation without mechanical regulation, without mineral fertilisers and without chemical protection
- Spatial structure: tree growth

Conditionally allowed:

- Realisation of buildings, for regional elements only on the basis of agreed land-use planning documentation, for local elements the placement of buildings is not allowed

## BIO-CORRIDOR OF THE LOCAL SYSTEM OF LANDSCAPE ECOLOGICAL SUSTAINABILITY

Allowed in these areas:

- Species composition: tree species within the framework of the proposed target biotope
- Spatial structure: linear vegetative elements

Conditionally allowed:

- Realisation of buildings, for regional elements only on the basis of agreed land-use planning documentation, for local elements the placement of buildings is not allowed

## URBAN BIO-CENTRE

Allowed in these areas:

Species composition: tree species corresponding to the functional typology of the park (park, green recreational area, cemetery, other vegetative areas). Synusia of vegetation without restrictions

Spatial structure: tree growth, groups of trees, individual trees

Conditionally allowed:

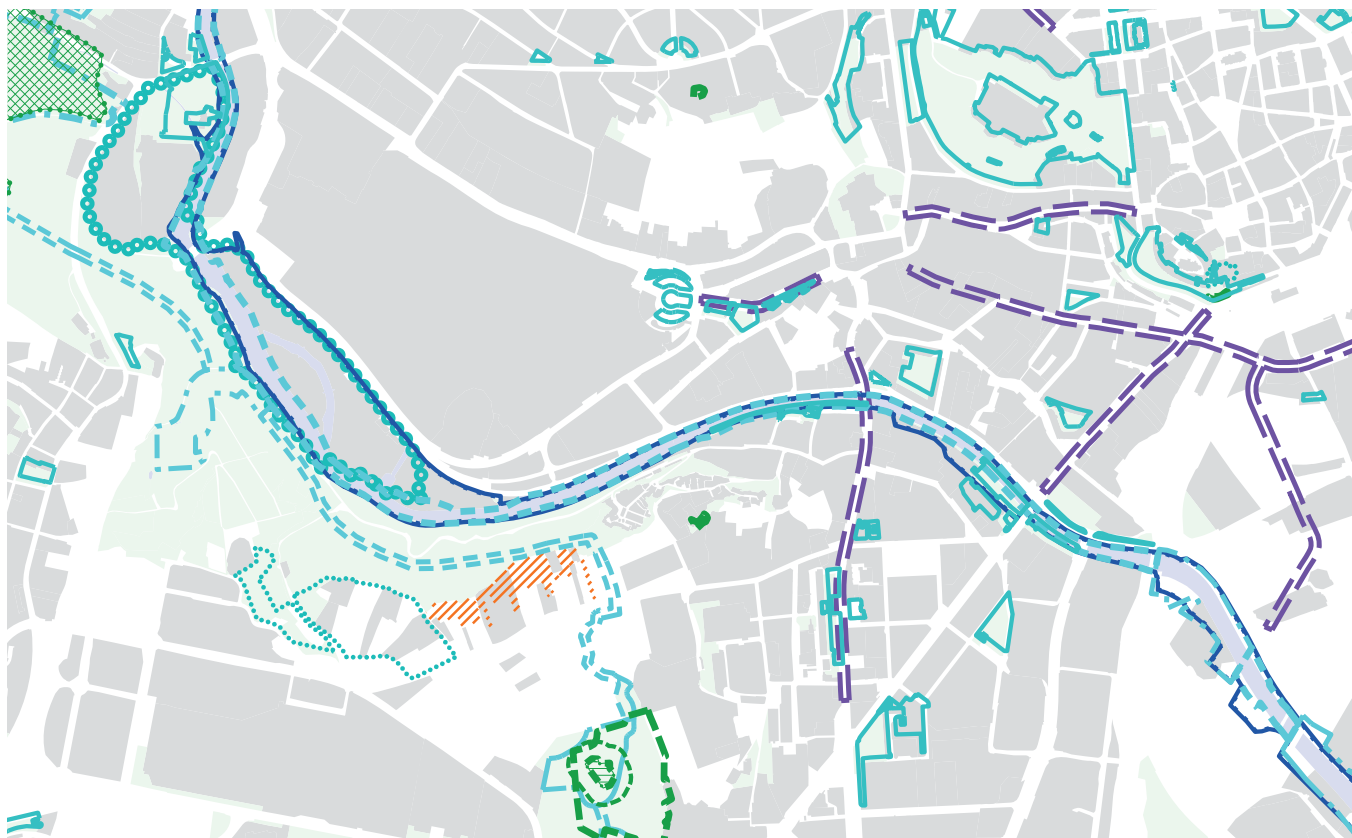
Realisation of buildings, for regional elements only on the basis of agreed land-use planning documentation, for local elements the placement of buildings is not allowed

## URBAN BIOCORRIDOR

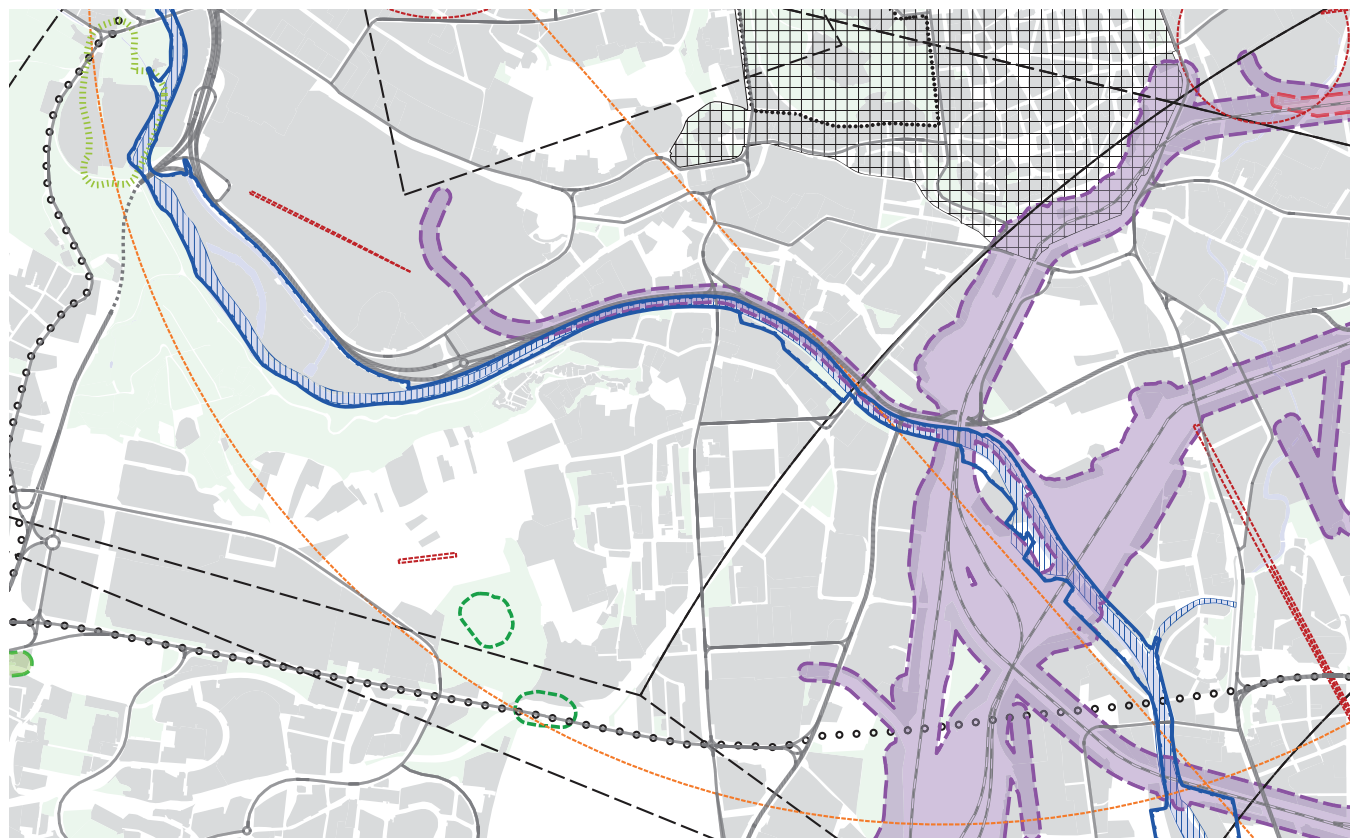
Allowed in these areas:

- Species composition: vegetative elements without restriction
- Spatial structure: linear vegetative elements
- Realisation of buildings, for regional elements only on the basis of agreed land-use planning documentation, for local elements the placement of buildings is not allowed

	Building areas
	Greenery
	Waters
	Protected landscape area
	Small scale particularly protected area
	Protection zone of a small scale particularly protected area
	registered landscape element of high im
	NATURA 2000 - European significant location
	Presence of protected vegetation and wildlife of national significance
	Natural parks
	Area of the most significant greenery according to Brno municipality notice
	supra-national biocentre
	regional biocentre
	local biocentre
	supra-regional corridor
	supra-regional bio corridor
	supra-regional biocorridor
	Recreation in recreation areas
	Recreational parks
	Area protection for special purposes
	Recreation in forest and agricultural land



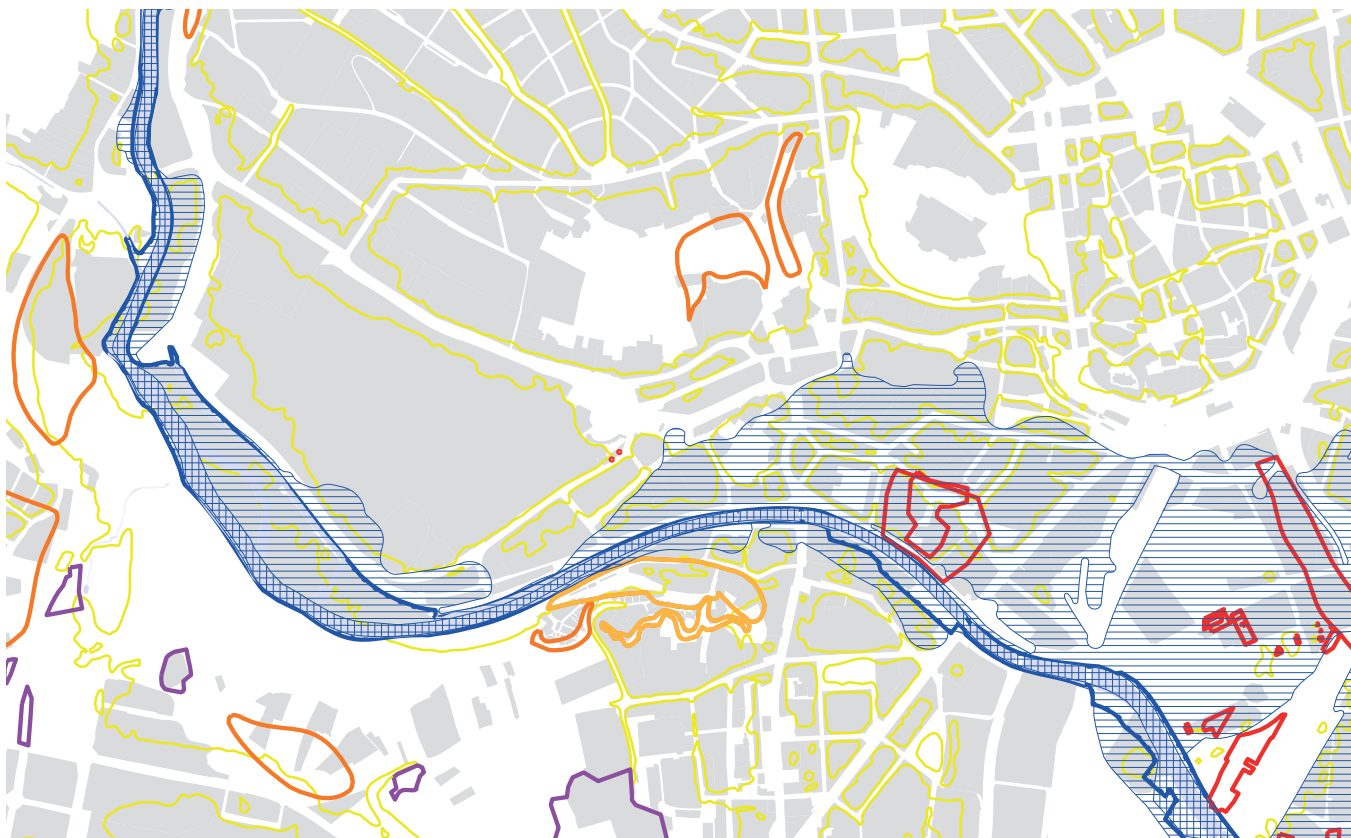
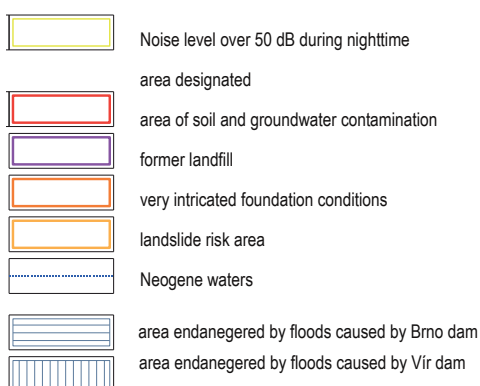
## PROTECTED ZONES



# RISKS AND ENVIRONMENTAL BURDENS

Regarded as environmental burden is serious contamination of the mineral environment, below-ground or surface waters, caused by the wrongful handling of dangerous substances in the past (specifically petrochemicals, pesticides, PCB, chlorinated and aromatic hydrocarbons, heavy metals etc.).

Regarded as risks in the area are areas with threat of landslides, areas that are immediately at risk for flooding, and areas with noise burden generated by adjoining roadways.





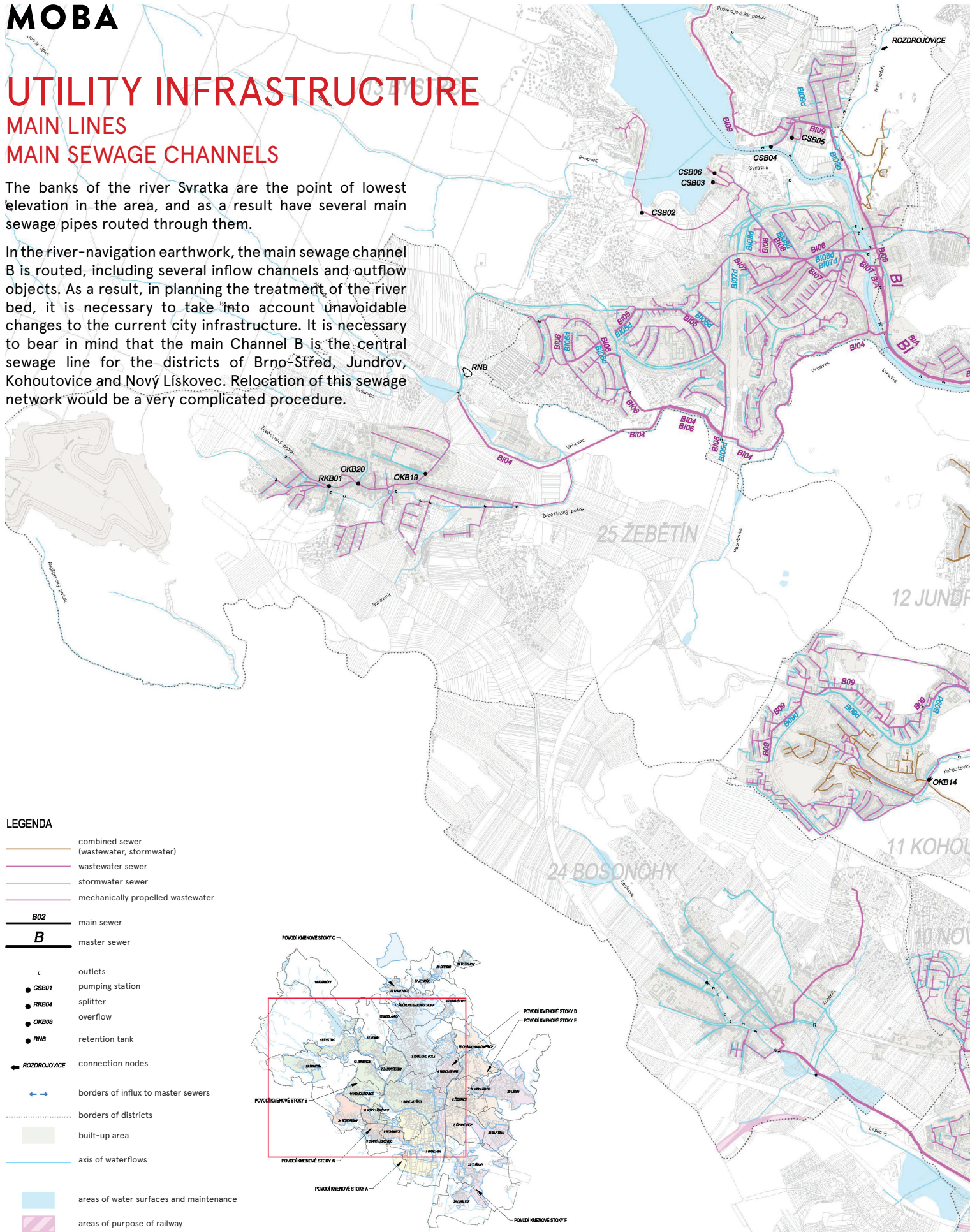
# UTILITY INFRASTRUCTURE

## MAIN LINES

### MAIN SEWAGE CHANNELS

The banks of the river Svatka are the point of lowest elevation in the area, and as a result have several main sewage pipes routed through them.

In the river-navigation earthwork, the main sewage channel B is routed, including several inflow channels and outflow objects. As a result, in planning the treatment of the river bed, it is necessary to take into account unavoidable changes to the current city infrastructure. It is necessary to bear in mind that the main Channel B is the central sewage line for the districts of Brno-Štřed, Jundrov, Kohoutovice and Nový Lískovec. Relocation of this sewage network would be a very complicated procedure.









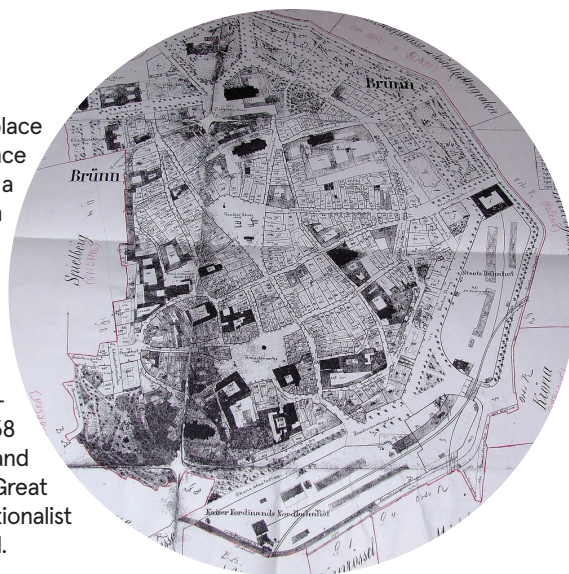
# HISTORY OF THE CITY OF BRNO



The current Old Brno was established around 1000 at a ford across the River Svatka as a settlement that gave the town its name. In 1243 Wenceslas I. awarded Brno its first urban privilege so that Brno was ranked among the royal cities. In their heyday in the 14th century there were located inside the city walls about 1,000 houses and 11,000 inhabitants. In the 17th century, the city became an impregnable baroque fortress – withstood a siege by the Swedish army in 1643 and 1645 and by the Prussian army in 1742. The industry began to develop as early as since 1763, when the first textile factory was founded here.

In 1864 the demolition of the city fortifications was completed and on its place Brno gradually gained the first park area (later replaced by a ring road). Since the second half of the 19th century the southern area of the city was of a primarily industrial character, supported by the construction of railways with an extensive storage sidings located near the river Svatka. Most industrial sites dealing mainly in textile and machinery production were closely tied to the rivers.

In the last quarter of the 19th century, the newly built town theatre was the first in Europe fully equipped with electric lighting, the first Czech bookstore and the Czech Technical University in Brno were founded. In the years 1896–1916 the historical centre underwent an extensive redevelopment, where 238 houses were demolished. By connecting two neighbouring cities (Kralovo Pole and Husovice) and 21 other municipalities to the city of Brno in 1919 the so called Great Brno with an area of 12,379 hectares was established. In 1930 the famous functionalist villa Tugendhat was built and during 1936–1940 the Brno dam was constructed.



In the years 1944–1945, Brno became the target of several American and Soviet air raids, which in addition to the housing stock significantly damaged the industrial suburbs in the south and southeast of the city.

With the onset of the communist regime after 1948 the industrial production became centralized and subsequently also started to decline in the area. As a result of administrative reform in 1949, Brno lost the status of the statutory city and of the capital of Moravia and Silesia. This marginal position was partly compensated in the mid-fifties by the restoration of the pre-war trade fair and exhibition tradition. The new, politically important identity of Brno as the „city of international fairs“ resulted in several major construction projects.

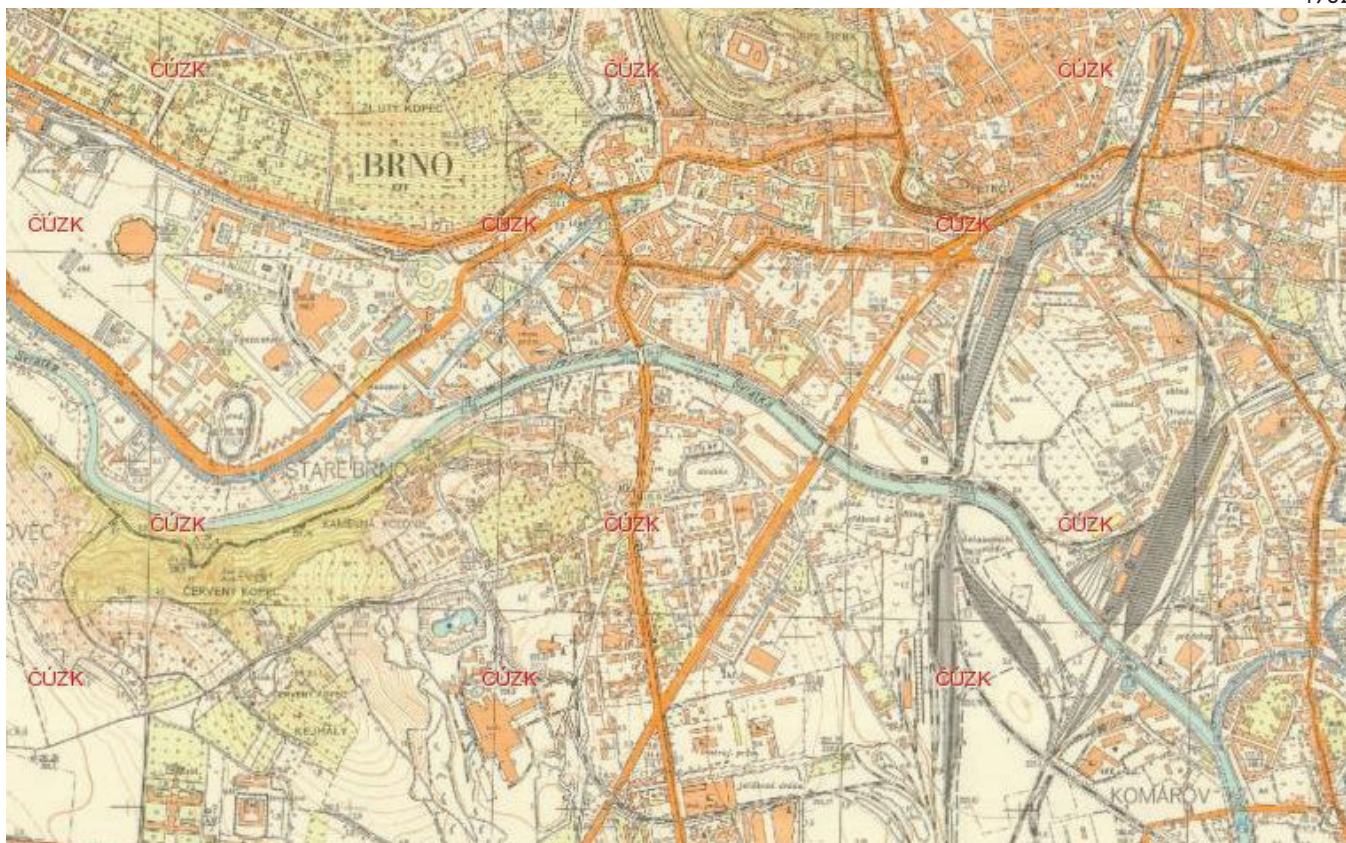
Since 1990 Brno became the seat of major nationwide institutions (Constitutional Court, Supreme Court, Supreme Administrative Court, Office for the Protection of Economic Competition, the Ombudsman's office). In 1994 the last valid master plan of the city of Brno was worked out, which counts with the placement of the main train station in the displaced position.

After 2000 some of the former industrial areas were revitalized, where now the zones for retail, housing and services emerge (typically Vařkovka Gallery in the Trnita street).

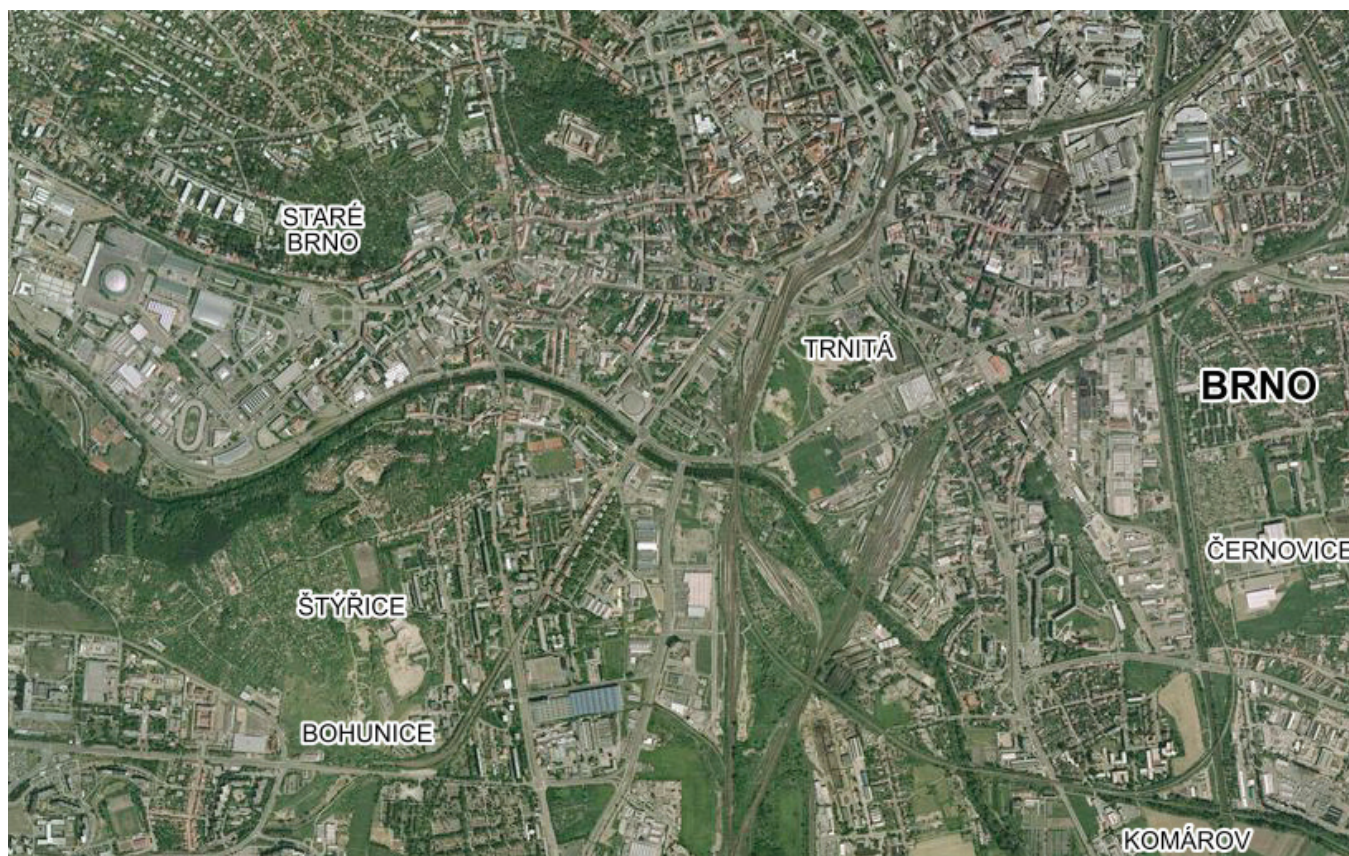




1952





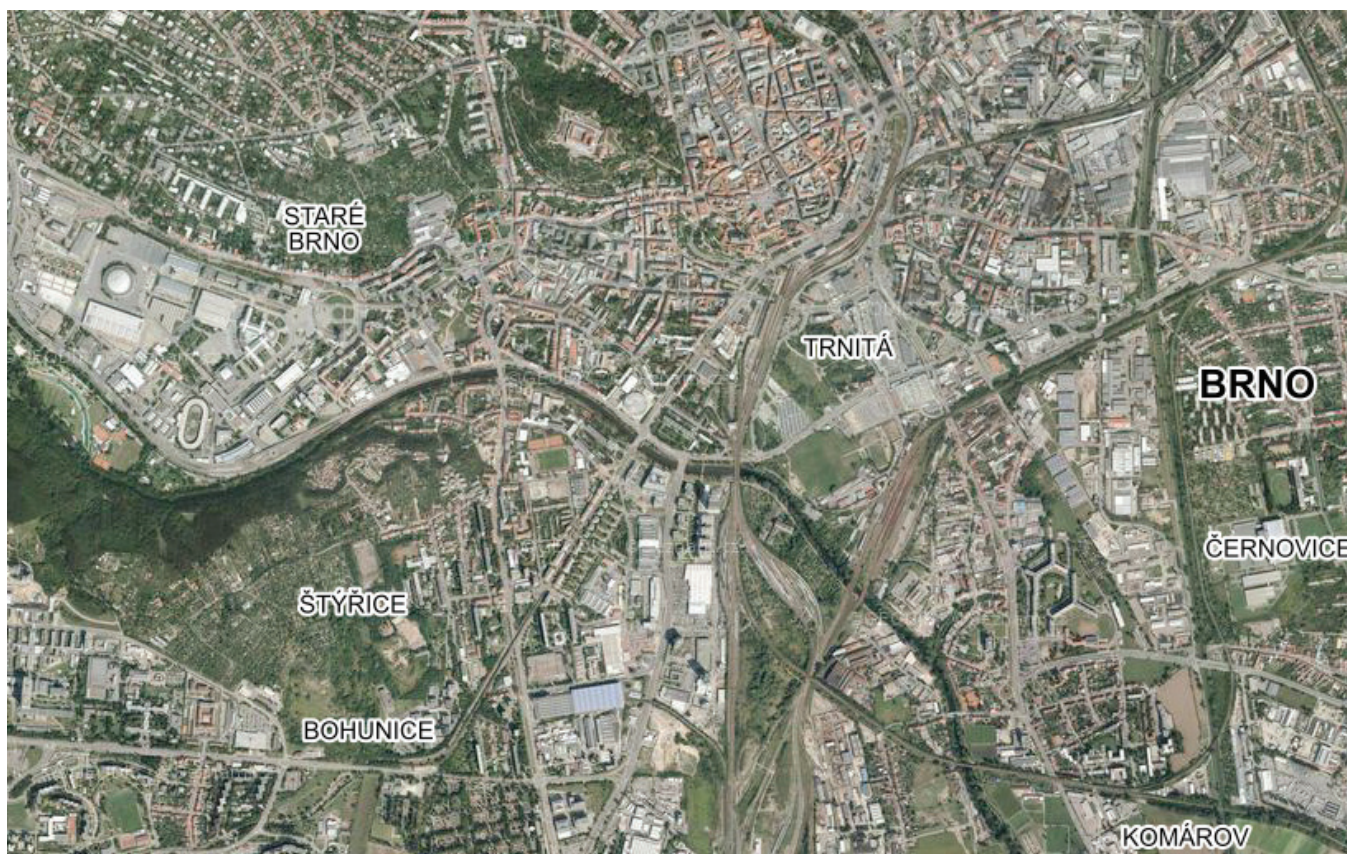


2003

2005

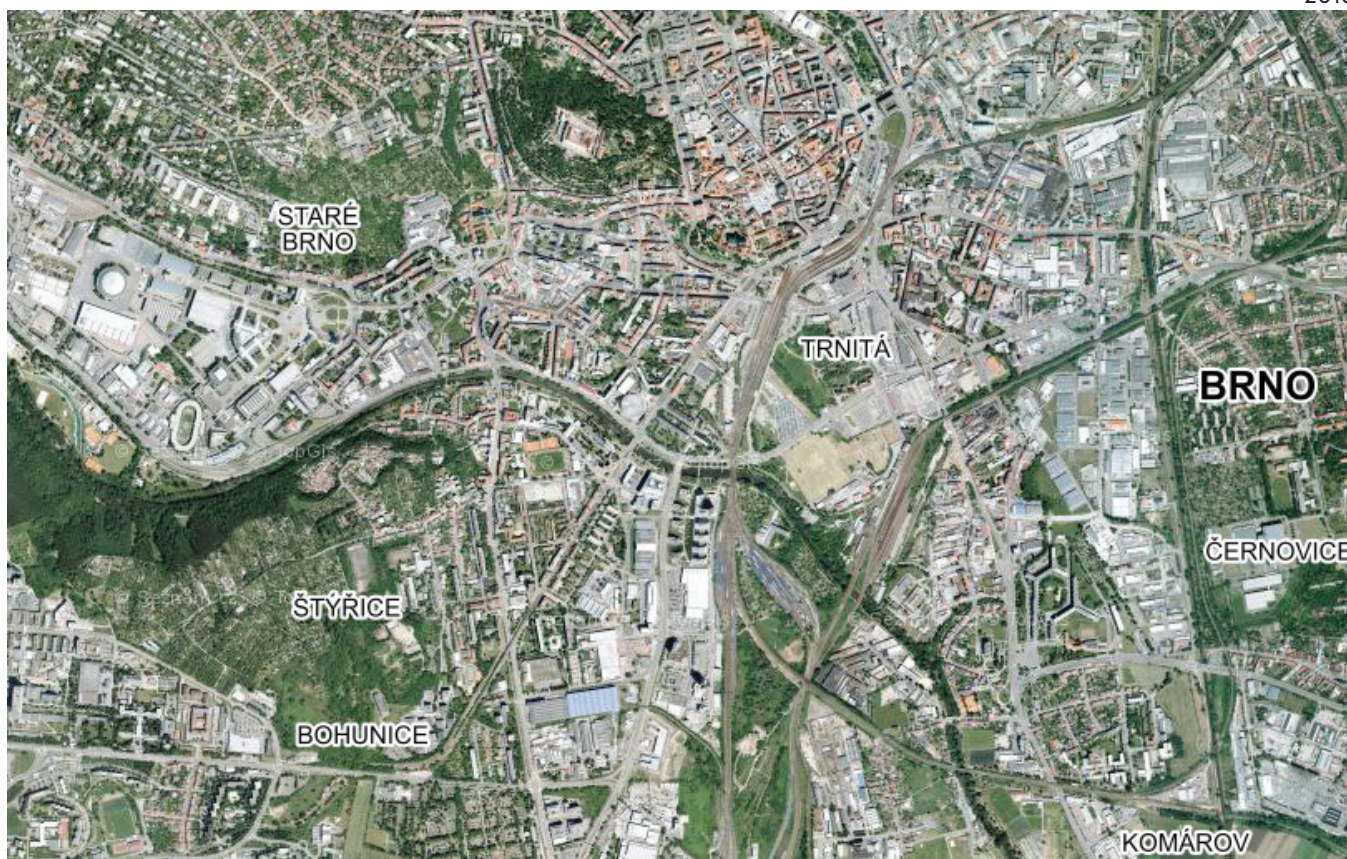






2012

2016





# HISTORY OF THE WATERCOURSES IN THE AREA

The confluence of the Svatka and Svitava in the area below Petrov was accompanied by vast marshes that since the founding of the city of Brno limited to some extent handling of that territory, on the other hand, provided natural flood protection.

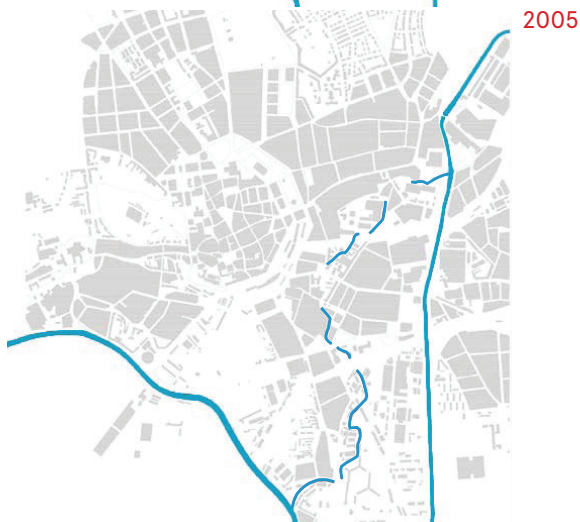
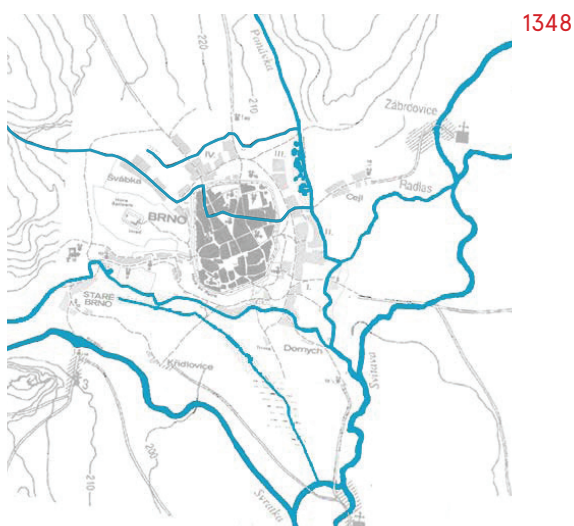
In the 13<sup>th</sup> century, when the water was not sufficient to meet the needs of the city (defense, fires, mills, malt houses, spas ...), the channels and millraces were built using withered arms of both of the rivers and the riverbed of Ponavka. Thus Svitavský and Svratecký millrace was created. It deviated from the original riverbed at Kamenný Mlýn in Pisarky, continued through Stare Brno along the southern city walls toward the eastern suburbs.

Today, its flow can be traced mainly because of the eloquent names of the streets, such as Rybařská (fishing), Jirchaře (curriers) or Vodní (water). For example, in the mentioned Vodní street there were famous public baths since ancient times and also a historic aqueduct led from there that through Petrov distributed water to the fountains in the city centre. The spa is still in this area, the historical water supply no longer.

In the second half of the 19<sup>th</sup> century, the marshy areas were gradually and extensively adjusted, as a result of which there was a small construction boom and the area near the confluence of Ponavka and Svitavský and Svratecký channel has been de facto built-up completely. The channels between buildings around the streets Dornych and Křenova created romantic hideaways, which were called „Little Venice.” Today, again, only street names remain, such as Mlynksa (mill).

During the 19<sup>th</sup> and 20<sup>th</sup> centuries, the water gradually disappears from the city. Svatka and Svitava are, undoubtedly also due to bringing railroads and industrialization of adjacent parts, regulated, their flows straightened. They move away from the centre, their confluence is moved out of town. Svratecký millrace is filled up and Ponavka becomes an underground sewer.

The importance of the river for Brno can be read today only from local names, Svatka nor Svitava do not have accessible waterfronts that could connect them with the surrounding town, they represent barriers more than anything else. In the event of heavy rains the runoff water filling the paved riverbeds has nowhere spill, flows faster and with more force. And so the last (and a little bit unfortunate) reminder of their presence is to monitor their inundation during floods.



# THE VENICE OF BRNO



surroundings of Křenová street



covering of the Ponávka at Cejl



Vodní street



Ponávka river