ETH Zurich Department of Architecture
ARCHITECTURE OF TERRITORY
Chair of Architecture
and Territorial Planning
Professor Milica Topalović

Beograd Unbuilt (2/2)
Fall 2018

Makiš Vodeni Izvori

Makiš Water Springs: Archipelago of Water Bodies

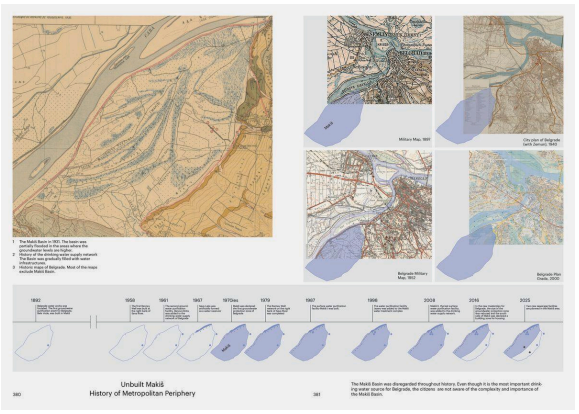
Mirjam Kupferschmid and Androniki Prokopidou

The Makiš Basin lies south of New Belgrade, between the foothills of the Šumadijan Mountains and the Sava River. It serves an essential role as Belgrade's largest water reserve and catchment area. Most of the wetland is used for agriculture and forestry, but it also functions as a flood basin for the Sava River. The two main drinking water treatment facilities of Belgrade, Makiš 1 and Makiš 2, sanitise the water pumped from the ground near the riverbanks to feed into the city's freshwater system.

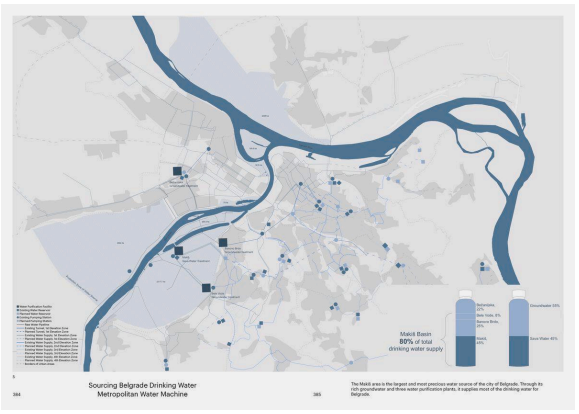


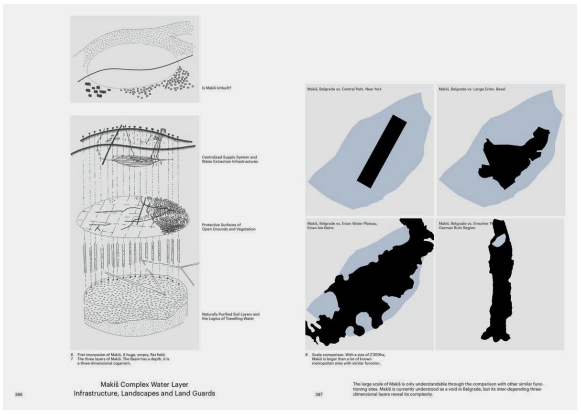
Apart from small informal settlements that have formed along the drainage canals and in the forests, the vast plain of the Makiš Field is mostly uninhabited. A regional highway runs straight through the basin, connecting several large industrial complexes to the city and airport: logistics warehouses, pharmaceutical and petrol industries, and Belgrade's marshalling yard. The construction of a new residential-business complex, dubbed Tesla City, was announced on 21 July 2017. Planned for 31,000 inhabitants, the new complex will start with a mixed-use residential and commercial area surrounding a 25-storey skyscraper. There are also plans to construct Belgrade's first underground railway line between Tesla City and another large-scale proposal at Ada Huja, which would pass by the Belgrade Waterfront development. Both projects received heavy criticism from planning officials and architects, especially since both terminuses are un-urbanised heaths.

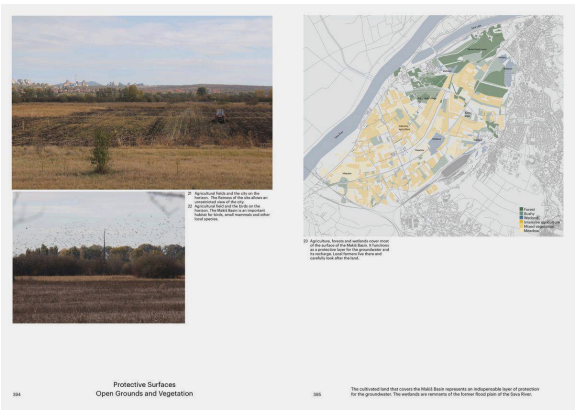


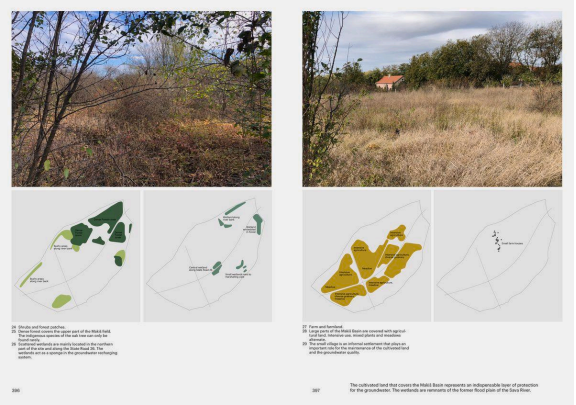


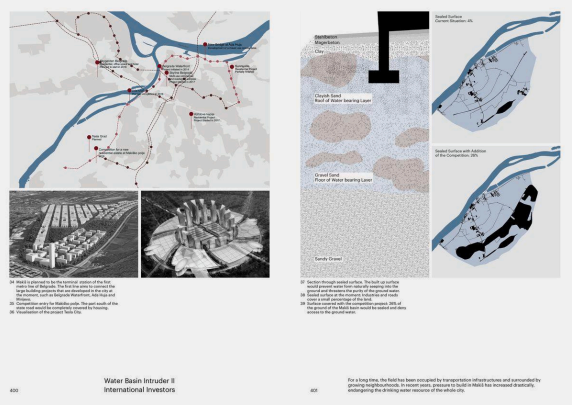


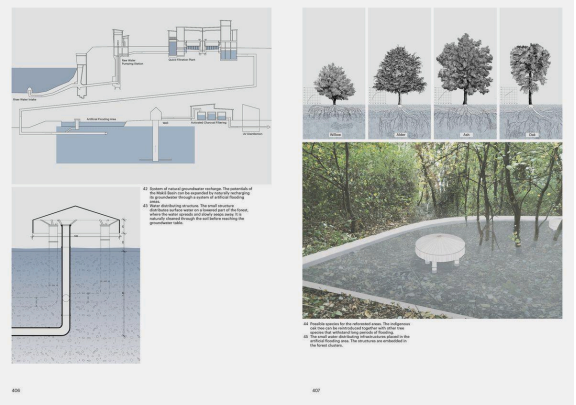




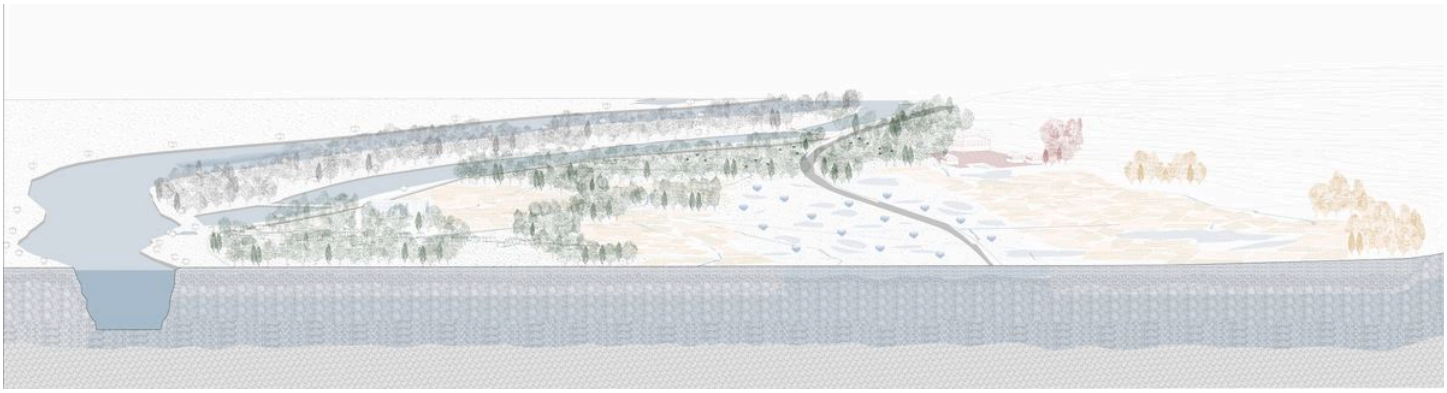




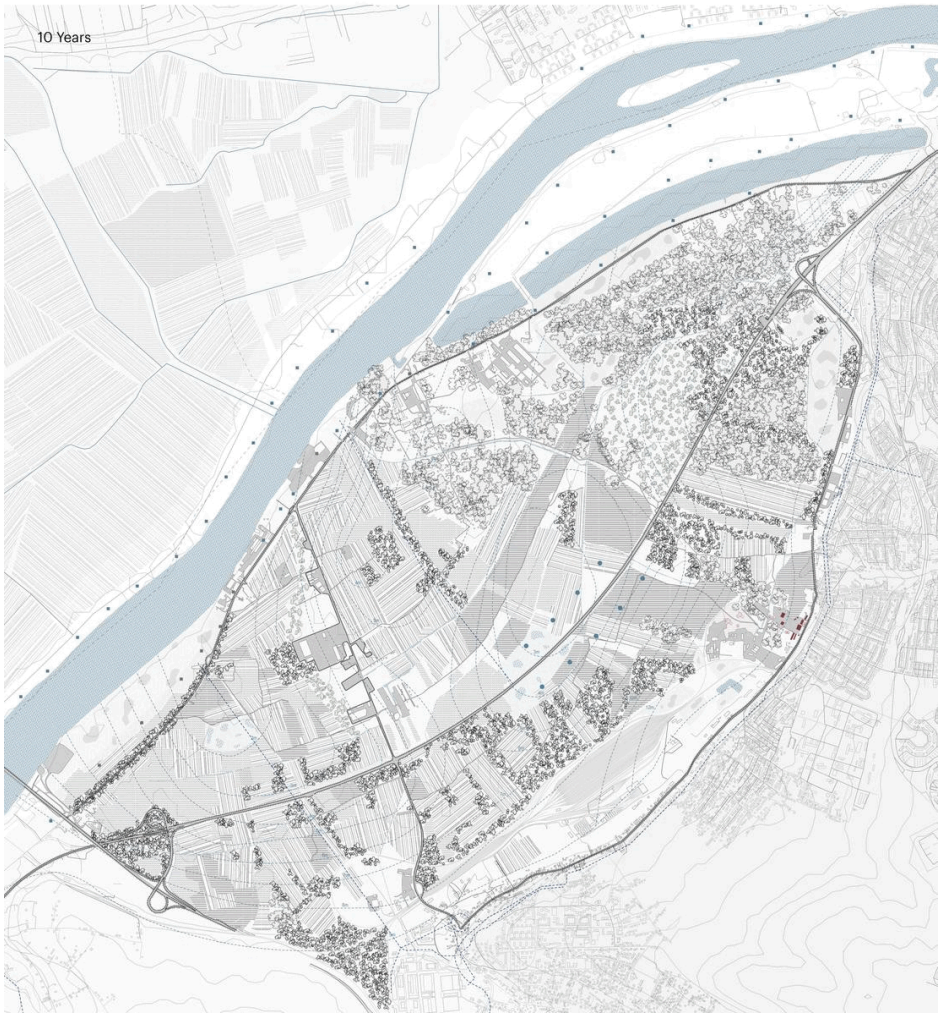




Today, Sava River's centralised water purification process is exclusively dependent on the Makiš complex and its three facilities. The risk of a potential collapse of the drinking water supply of Belgrade is high. The project explores possibilities of hybridising the landscape of Makiš Basin, as the hydrological and operational backbone of the city is challenged by new development to arrive. Establishing a landscape system or Archipelago of Water with a wide range of water-related facilities, public sites, and land uses will allow the active protection of Belgrade's drinking water. An Archipelago of Water Bodies is spread across the site, creating a sustainable decentralised public water supply landscape, less prone to failure than the existing centralised system. Resurfacing networked water, instead of hiding it in underground and technical infrastructure, will raise awareness about Makiš as a drinking water source on the metropolitan scale.



Future view over Makiš Springs.



Future Makiš landscape expansion: Makiš Springs will adopt its new identitiy in subsequent phases. The water supply infrastructures are added in accordance to population growth rates. The interdependences of the water infrastructures will guide the different phases.

ACKNOWLEDGEMENTS

We would like to thank Dušan Čavić and Dušan Šaponja for guiding us through Makiš and sharing their broad knowledge about the site with us throughout the semester. Also, we would like to thank Vladimir Mandić, an engineer at the Makiš water treatment plant, for patiently explaining to us all the processes of the Makiš water purification facilities. Additionally, we thank Ružica Stričević for answering our numerous questions about the agriculture in the area of Makiš. Thanks to Sara Lazarevic, an architecture student at ETH, for explaining to us the artificial groundwater recharge in Lange Erlen, Basel and allowing us to use the wonderful drawings she produced together with Ellen Reinhard in the Studio of Tom Emerson. Many thanks to Branko Milivojević, Luka Misić, and Pavle Nikolić for the productive collaboration during the seminar week and for showing us the built Belgrade.

SOURCES

- Babac Dušan, Pavle Babac. “Wells with Horizontal Drains.” Belgrade. 2009.
- “Belgrade in 1897,” *Infrastruct*. Accessed December 2018. https://infrastruct.files.wordpress.com/2015/06/1897-belgrad.png
- “Belgrade Military Map.” *Military Geographical Institute*. Accessed December 2018. http://www.vgi.mod.gov.rs/english/products/analogue/etk100/map.html
- “Beoland.” Results of an urban-architecture design competition of ideas for part of Makisko Polje, Municipality of Čukarica. Accessed December 2018 http://www.beoland.com/en/results-urban-architecture-design-competition-ideas-part-makisko-polje-municipality-cukarica/
- “BK Group.” Tesla Grad. Accessed December 2018. http://www.abk.rs/projekti/
- Dimikić Milan A., Brauch Heinz-Jürgen and Kavanaugh Michael. “Groundwater Management in Large River Basins.” London. IWA Publishing Alliance House. 2008.
- Grischek Thomas,Bartak Rico. Session 2: Bank filtration well design, construction and operation. Lecture at Hochschule für Technik und Wirtschaft Dresden. Accessed December 2018. https://www.mwa.org.my/pdf/Session_2_Grischek,Bartak_RBF_wells_print.pdf
- "Map of Belgrades Biotopes."Accessed October 2018. https://gisbiotopa.Belgrade.gov.rs/Map
- “Plan Grada.” Belgrade Travel Guide. Accessed December 2018. https://distination.co/Belgrade-travel-guide-pdf/
- “Stadtplan von Belgrad (mit Zemun).” Accessed December 2018. http://maps.mapywig.org/m/City_plans/Balkans/STADTPLAN_VON_BELGRAD_(MIT_ZEMUN)_15K_6\.1940\.jpg
- Stankovic Ivan. “Experiences with Ozone Treatment Of Drinking Water in Yugoslavia, in Ozone Science and Engineering.” *Ozone: Science and Engineering*. Vol. (1992). 101–21.

This work by Mirjam Kupferschmid and Androniki Prokopidou was created as part of the design studio Beograd Unbuilt (2/2) at ETH Zurich in Fall 2018. The PDF is intended for educational purposes only. Its commercial distribution is strictly forbidden.

© 2025, Architecture of Territory

Architecture of Territory
Professor Milica Topalović

TEACHING TEAM
Hans Hortig
Karoline Kostka
Metaxia Markaki
Ferdinand Rabe von Pappenheim
Milica Topalović
Adrianne Wilson

Prof. Milica Topalović
ETH Zurich
ONA G41
Neunbrunnenstrasse 50
8093 Zurich
Switzerland
+41 (0)44 633 86 88
www.topalovic.arch.ethz.ch