



SHAPING NEW CITY DISTRICT

WROCLAW WEST END

edited by **Izabela Mironowicz & Joanna Majczyk**

SHAPING NEW CITY DISTRICT: **WROCŁAW WEST END**

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Izabela Mironowicz
and Joanna Majczyk

Wrocław, 2017



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CONTENT

8 PREFACE

- 9 | Izabela Mironowicz & Joanna Majczyk
- 10 | Rafał Dutkiewicz
- 12 | Cezary Madryas
- 14 | Piotr Lorens
- 16 | Petr Salak

18 INTRODUCTION.
International Urban Workshop as a Supporter of Delineating Creative Urban Policies for Wrocław’s West End
Izabela Mironowicz

- 28 CASE STUDY**
Tymon Dmochowski, Adrian Porada
- 30 | **Urban Structure and Urban Tissue**
 - 35 | **Environment**
 - 38 | **History**
 - 42 | **Transport**
 - 48 | **Infrastructure**

- 54 LEARNING**
- 56 | **Wrocław – to the West**
Maciej Hawrylak
 - 66 | **The Sub-Urban Toolbox: Introducing the Subsurface Early into the Urban Planning Process**
Ignace van Campenhout *et al.*
 - 76 | **A Sustainable Green Urban Strategy for Wrocław’s West End**
Khalid Zakaria el Adli Imam
 - 84 | **New Approaches to Strategic Planning**
Guy Vloebergh
 - 92 | **Effects of Neo-Liberal Urbanism in Wrocław West End**
Laura Verdelli

- 102 DESIGNING NEW CITY DISTRICT**
- 105 | **Green Trail**
 - 117 | **WE**
 - 127 | **Healthy Way to Development**
 - 141 | **The Brain of the City**

152 NEW CITY DISTRICT: A DREAM OR A NECESSITY?
Agnieszka Wójtowicz-Wróbel, Magdalena Mayer

170 CONCLUSION. Developing Urban Narratives
Izabela Mironowicz



PREFACE

In 2017 City of Wrocław was finalising work on the draft version of the new Master Plan. Prominent goals for the spatial development within this new framework are: ensuring more compact, energy efficient and sustainable city.

One of the challenging issues which new Master Plan has to face in this context is how to shape the structure of the western district of Wrocław. Shortly this place can be portrayed as an extremely fragmented great development potential for the city.

City of Wrocław would like to elaborate different scenarios for the future development of its western part. This is why two international organisations – International Society of City and Regional Planners (ISOCARP) and International Tunnelling and Underground Space Association (ITACUS) – were invited by the Mayor of Wrocław, dr. Rafał Dutkiewicz, to organise international professional urban workshop in order to produce new, fresh visions for this district and concepts for its future form.

The classical triple helix structure requires involvement of the university. Wrocław University of Science and Technology, with its oldest in Poland programme in Spatial Planning run at the Faculty of Architecture offered support of urban planners, architects and students. Faculty of Civil Engineering shared its outstanding knowledge and experience in underground urban spaces.

Governmental, professional and academic expertise formed solid foundations for the work of international practitioners in urban issues, which came to Wrocław on 14th May 2017. After one week of intense and creative effort they delivered four coherent, original, alternative scenarios which can inspire the city in its further planning processes. All of them raised vibrant debate and re-formulated a few planning ideas about Wrocław's West End.

The group of young international experts in urban issues – planners, architects and engineers – were guided by the team of international tutors: professionals and academics. Local specialists unfolded complexity of urban structure of the city and shared their in-depth understanding of Wrocław's urban fabric. Non-governmental organisations: Society of Polish Town Planners (TUP), Association of Polish Architects (SARP), Chamber of Architects (DOIA) generously supported event in terms of both content and organisation.

The workshop was held under the auspices of Rector of Wrocław University of Science and Technology, professor Cezary Madryas.

This publication, with the contribution of the participants and tutors of the international professional urban workshop, organised within the framework of ISOCARP Young Planning Professionals' Programme and ITACUS Young Professionals' Think Deep Programme, explores possible paths of urban development of the western part of Wrocław in the theoretical perspective of sustainable urban development and integrative planning process.



Wrocław University
of Science and Technology

Izabela Mironowicz
and Joanna Majczyk

Editors

In 2016 Wrocław was a European Capital of Culture. For us, residents of Wrocław, this title did not mean and does not mean today a row of cultural events, it actually means a long process, which includes also an art of every-day life. Our application for this honourable title aimed at presenting Spaces for Beauty both to European and our own citizens. In doing so we were hoping for strengthening the sense of community on many levels: local, regional, European...

The framework for the ECC 2016 included 8 arts. Zbigniew Maćków, a curator for architecture, stated: *Step by step, we learn to properly use the city and we are becoming an aware and active population.* From this point of departure Municipality of Wrocław, a group of architects and urban designers, active NGOs and urban activists got involved into the project linking tradition with the vision of tomorrow. We tried to "regenerate" innovative urban ideas.

In 1929 one of the six housing estates created by the Werkbund across Europe was built in Wrocław. An innovative look at the process of urbanisation, growing cities, social expectations for better quality of life and modern technologies in construction – these were the driving forces at the time for urban planners and architects to deal with great transformation of European cities. These Werkbund estates considerably influenced our understanding of what good and affordable housing should deliver. The neighbourhood in Wrocław was created as "Wohnung und Werkraum Ausstellung" (WuWA) – Housing and Work Exhibition.

Today we are facing even more difficult challenges: how to adapt our cities to the climate change, how to deal with an air pollution in urban areas, how to moderate our land expansion and energy consumption, how to include migrants in urban communities... This is why, after almost 90 years, we wanted to get back to the idea of a modern housing estate which would meet challenges of today.

This idea includes also public responsibility for good housing, which provides variety of activities: from sport to education, from culture to commerce - a real housing and work space. City of Wrocław offered 40-hectares land located near Municipal Stadium and a group of architects in collaboration with social and institutional partners developed a design for "Nowe Żerniki" – model housing neighbourhood of 21st century. This undertaking was one of the flagship projects of the architectural track of activities within the framework of the European Capital of Culture. It was especially important for us, because this would not only signify new lifestyle of the residents of Wrocław but also new way of doing: collaborative, participative, inclusive. These are the real cultural values.

We see "Nowe Żerniki" as a generator of an evolving urban structure of western Wrocław. We would like to explore variety of options for the future development of this part of our city, which recently has been considerably improved in terms of accessibility and big public investments. International Society of City and Regional Planners (ISOCARP) in collaboration with International Tunnelling and Underground Space Association (ITACUS) responded to our invitation to help us develop innovative ideas how to transform western part of Wrocław in the framework of their Young Planning Professionals' Programme (YPPP) and Young Professionals' Think Deep Programme (YPTDP) respectively. Young planners from all over the World and students from Wrocław University of Science and Technology were working on possible solutions here in Wrocław in May 2017 under the guidance of distinguished international tutors - both from academia and practice. The results of their work initiated vibrant discussion on possible directions of the future development of our city. I sincerely believe that their contribution to our thinking about development of the western part of Wrocław will be used in our policies, plans and projects.



dr. Rafał Dutkiewicz
Mayor of Wrocław



Wrocław University of Science and Technology, being a leading scientific and educational centre in Poland, is deeply interested in transferring knowledge to industry, creating innovations and also in cooperating with business, local government, scientific-research centres and professional organisations.

A few faculties of our university, particularly Faculty of Civil Engineering, are involved in cooperation with International Tunnelling and Underground Space Association (ITA) and especially its Committee on Underground Space – ITACUS. Faculty of Architecture continues successful cooperation with international professional organisations, including those dealing with urban development like International Society of City and Regional Planners (ISOCARP).

ITA is our prominent partner in the 13th International Conference "Underground Infrastructure of Urban Areas 2017", which has been successfully organised by Wrocław University of Science and Technology in October 2017.

This conference links two important topics: underground infrastructure and development and well-being of cities. The latter were in the centre of the Young Planning Professionals' Programme (YPPP) that ISOCARP has been running for over 25 years. Recently ITACUS has set up of a Young Professionals' Think Deep Programme for young members (YPTDP), which is a platform of cooperation with ISOCARP on cross-disciplinary studies on underground urban planning issues. This joint endeavour began with the workshop in Glasgow in 2016 and then both organisations, taking into account our experience and knowledge, addressed our university to help them structure and develop the content of the second joint ISOCARP-ITACUS workshop in Wrocław. We had many reasons to answer positively to this request. Our long-standing collaboration with both organisations was only a point of departure.

Our Master programme in Spatial Planning run at the Faculty of Architecture has been awarded in 2015 (as the only programme in Poland) AESOP Quality Recognition Certificate. This certificate proves that the programme fulfils the European standards of quality of planning education recognised by the AESOP Charter and complemented by an effective internationalisation of teaching. We, therefore offered help of academics involved in teaching in this programme and also our colleagues from the Faculty of Civil Engineering who are the leading experts in underground infrastructure. Our students from the MSc in Spatial Planning were invited to join the workshop as participants, which created for them excellent opportunity to work in the international, professional, multidisciplinary environment.

We see the future of science and technology in synergies that arise from multidisciplinary approach and also in cross-institutional collaboration.

The added value of the workshop was a real case study selected in cooperation with the city of Wrocław. Being the biggest academic institution in Lower Silesia, Wrocław University of Science and Technology feels responsible for significant contribution to the development of the cities and towns in the region.

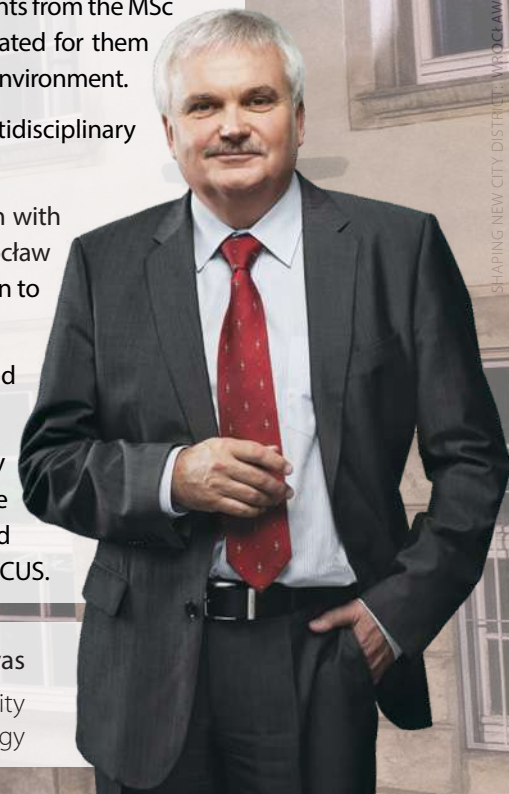
Finally, the publication which follows the workshop can promote our expertise and methodology both in urban planning and underground space technologies.

I sincerely believe that this book offers new ideas to our city and reflects creativity of young professionals in urban planning and underground infrastructure working under the guidance of academics from Wrocław University of Science and Technology and professionals from our partner organisations – ISOCARP and ITACUS.



Wrocław University
of Science and Technology

prof. Cezary Madryas
Rector of Wrocław University
of Science and Technology



This publication summarizes the second in a series of workshops organized jointly by ISOCARP – International Society of City and Regional Planners and ITACUS – International Tunneling and Underground Space Association – and developed within the framework of Young Planning Professionals (YPP) – Young Professionals' Think Deep (YPTDP) Programmes. The event was hosted by the City of Wrocław (Poland) and took place in-between May 14th-21st 2017. The theme of the workshop – **Shaping the New City District – Wrocław West End** – reflected the intention of undertaking works on integrated planning for urban development which takes into account not only urban design of overground space but also includes discussion on innovative modes of underground spaces utilization. The intention is that the results of this event shall contribute towards producing a set of case studies allowing in-depth analysis of interrelations between city planning focusing on urban design and underground space utilization and infrastructure provision.

This workshop was at the same time a part of the ISOCARP's Young Planning Professionals' Programme, which since 1991 brings together young professional urban planners from all parts of the world. The YPP Workshops provide an opportunity to work together as a closely-knit team. The workshops are hands-on and aimed at establishing a good working relationship with young colleagues from all parts of the world, while working towards results in a very short period of time. Within the framework of the YPP/YPTDP Workshop it was intended to bring together a group of Young Professionals (up to 35 years old), both of Polish origin and coming from overseas. This group included urban designers/planners/architects, civil engineers/underground space specialists (such as geologists, hydrogeologists, tunnel and geotechnical engineers) as well as a bunch of local planners and underground space specialists. Therefore, the workshop aimed to provide young planners and underground space specialists responsible for, or participating in, the shaping and development of cities, with the principles and practices of effective contemporary urbanism with special focus on interrelations between above and below ground urban design, quality of place, connectness, land use, as well as underground space utilization and infrastructure provision. In addition, the objective of the workshop was to provide the workshop participants with hands-on practical experiences associated with one of the most important sites for the future development of the City of Wrocław.

A project site was chosen jointly by ISOCARP, ITACUS and representatives of the Wrocław Municipality. The decision was made jointly to focus on the area of Wrocław West End – an emerging district anchored by the new settlement of Żerniki, municipal stadium, new by-pass road, new railway connection and other recent developments. The site is a priority development area for Wrocław, and – as such – was a subject of numerous planning exercises over last years. One of them marks the development of the new, comprehensive and focused on very strong urban design housing area in Poland. This is the project called "New Żerniki", which includes not only coordination between production of housing and infrastructure – both technical and social – but also development of a new (at least in Polish realities) concept of stimulating community development within the newly created, private-led settlements. As such, the project continues the tradition of WuWA – Wrocław Housing Exhibition developed in the 1920-ties and intended to become an "exemplary settlement" and reference point for the discussion on principles for housing districts planning and development patterns during the interwar period. Following this example, Nowe Żerniki development was also intended to become a point of reference for contemporary housing projects, undertaken both in Wrocław and in other Polish cities. As such, the project was awarded the ISOCARP Award for Excellence in 2016. It was recognized for its comprehensiveness and novel approach towards contemporary planning and coordinated development of human settlements. Therefore, lessons learnt from this project served as the basis for workshop participants' considerations regarding the future of the entire district.

At the same time it was intended that workshop outputs provide examples of the comprehensive (strategic) urban development approaches for the chosen site which the host city can endorse or take on. Understanding how to stimulate comprehensive urban development using various planning approaches is a key current topic for the city which has been successfully undertaking various development and redevelopment projects in last decades.

Young Planners worked in a studio setting under the guidance of experts selected from among the members of ISOCARP, ITACUS, Society of Polish Town Planners, Society of Polish Architects, Chamber of Architects, Chamber of the Polish Republic, Wrocław University of Science and Technology, Gdańsk University of Technology and other partner organizations. But the development of this workshop – as well as this book – would not have been possible without the hard work of the workshop coordinators as well as representatives of both societies. I would like to take this opportunity to thank all of them – with special thanks conveyed to our colleagues from Wrocław Municipality, including Mayor of Wrocław dr. Rafał Dutkiewicz as well as Head of the Department of Development and Architecture of Wrocław Municipality, dr. Jacek Barski – who made a tremendous effort in order to make it a success. In addition, words of appreciation go to our tutors – prof. Khalid El Adli, Guy Vloebergh and Ignatius van Campenhout. This team was supported by prof. Laura Verdelli and dr. Zuzanna Ladzińska. But the main words of appreciation shall go to our local coordinator, prof. Izabela Mironowicz representing Wrocław University of Science and Technology as well as Society of Polish Town Planners. Her hard work allowed mobilizing the very successful local team, which was responsible for all organizational works. Thanks to Their efforts the workshop could run smoothly and be concluded in a way allowing fulfillment of its objectives. Also, I would like to extend my thanks to all members of the ISOCARP headquarters staff for their help in the process of workshop organization. In this respect special thanks go to Gaby Kurth and Monica Ornek.

Finally, I sincerely hope that the workshop results – included in this publication – will become a reference document both for future discussion on redeveloping the workshop site and for the development of similar initiatives in cooperation with various partners in different parts of the world.



prof. Piotr Lorens
Vice-President Young Planning Professionals

International Society of City
and Regional Planners

At ITACUS (International Tunnelling and Underground Space Association's Committee on Underground Space) we believe in an urban underground future. The urban underground space in our experience is an often-overlooked asset of cities. An asset that could play a vital role in the quest many cities are undertaking to combat lack of space. Cities need space for housing, for infrastructure but also for public spaces. As demands on cities grow in terms of spatial requirements, the urban underground can be a solution to a lot of these issues.

The International Society of City and Regional Planners (ISOCARP) has an active Young Planning Professionals' Programme (YPPP) that has been running for over 25 years. Each year one or more cities invite young planners to their city to study a particular planning case and come up with scenarios on how to move forward. The great success lies in the fact that a city can, obtain a fresh and innovative look at a real life planning case with just a small investment. The city also directly contributes to the young planning professionals gaining valuable experience through real-life case development and its presentation.

ITACUS sees this programme as an ideal example of how to actively involve our ITA Young Members and make them part of a cross-disciplinary cooperation with ISOCARP Young Planners. ITACUS has therefore set up of a Young Professionals' Think Deep Programme for young members (YPTDP), working together with ISOCARP. The core idea is to combine the proven methodology of ISOCARP's YPPP with the concept of working cross-disciplinarily on underground planning issues. The results of the foreseen five YPTDP case studies will be collated into a follow-up publication to Think Deep and presented at the ITA World Tunnelling Congress (WTC), ISOCARP World Congresses and the ACUUS World Congress.

The YPTDP in Wrocław was the second workshop and we applied lessons learnt from the first YPTDP we conducted in Glasgow. This time we invited more urban planners and architects and less geotechnical and tunnelling young professionals as this is mainly a planning exercise. The Wrocław city has an incredibly rich history and population of around 600.000 people. As the city grows the challenges are on the increase, such as traffic congestion, surface floods, energy supply constraints, utility road works and others. We are really pleased to see that the optimised use of underground space can ease the pressure and help Wrocław to thrive.

INTRODUCTION

International Urban Workshop
as a Supporter of Delineating
Creative Urban Policies for
Wrocław's West End

Izabela Mironowicz

Wrocław University of Science nad Technology,
Faculty of Architecture



URBAN CONTEXT

Wrocław is the dominant city of Lower Silesia, the 4th largest city of Poland with 635.000 residents (2015) and 1.2 million inhabitants in the metropolitan area.

The region has always been on the crossroads of Central Europe. Geographically Lower Silesia is located mostly in the basin of the Odra River, which together with four other rivers (Widawa, Oława, Ślęza, Bystrzyca), creates the landscape of the city. Five European capital cities are within 400 km distance: Prague, Warszawa, Berlin, Bratislava and Vienna.

The city, with its turbulent history, is proud of its urban heritage which could be traced back to the 8th century, its economic development and its academic profile with 100.000 students enriching urban life.

The existing Master Plan (adopted in 2010) portrays the urban structure of Wrocław as a linear arrangement of housing and economic activity stripes which run parallel to Odra river (**Fig. 1**). The structure of urban centres constitutes the second layer of this interpretation. Two centres – the main centre located in the historic city core and in the southern "retail" gateway to the city – already exist,

while the West Pole was considered (in this Master Plan) to become a generator of an urban fabric in the western part of the city. Taking into account that Wrocław's urban structure looks geometrically "unbalanced" with the main centre moved towards east and realising that at the same time the primary development areas are located in the western part of the city, the concept of three centres could be justified as a solid basis for the future territorial development of the city.

This paradigm, formulated already in 90s, has been recently redefined. In the draft Master Plan, which in spring 2017 was presented by Municipality for public and professional consultations, the hierarchy of urban centres has been re-composed (**Fig. 2**), however the idea of the linear structure of the city persisted. This concept was and still is questioned by many urban planners. They perceive Wrocław's urban structure rather as a concentric system built on the historic nucleus. Analysing both historical growth of the city and current land use (**Fig. 3**) it is evident that this actually could be one of the possible interpretations of urban structure.

The diagnosis of urban structure is essentially important for the western part of the city. It is evident that Wrocław's urban tissue is fragmented (**Fig. 3**) and the concept how to outline urban form, which would follow both requirements of sustainable and sufficient development remains crucial. This is why the Municipality and Mayor of Wrocław challenged the participants of the YPP Workshop with this fundamental question about future development of the western part of the city. Any solution of this problem shall also consider carefully accessibility to the underground infrastructure and the technical equipment of the entire city and, especially, its western district (**Fig. 4-10**).

In this context, Mayor of Wrocław wanted to study alternative scenarios, which would help him to evaluate the existing concepts for shaping this part of the city.

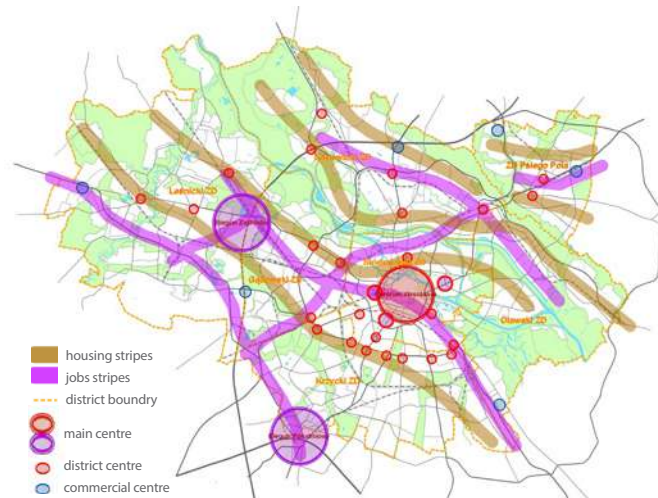


Figure 1
Interpretation of the structure of Wrocław 2010:
linear arrangement and location of urban centres



Figure 2
Interpretation of the structure of Wrocław 2017:
linear arrangement and location of urban centres

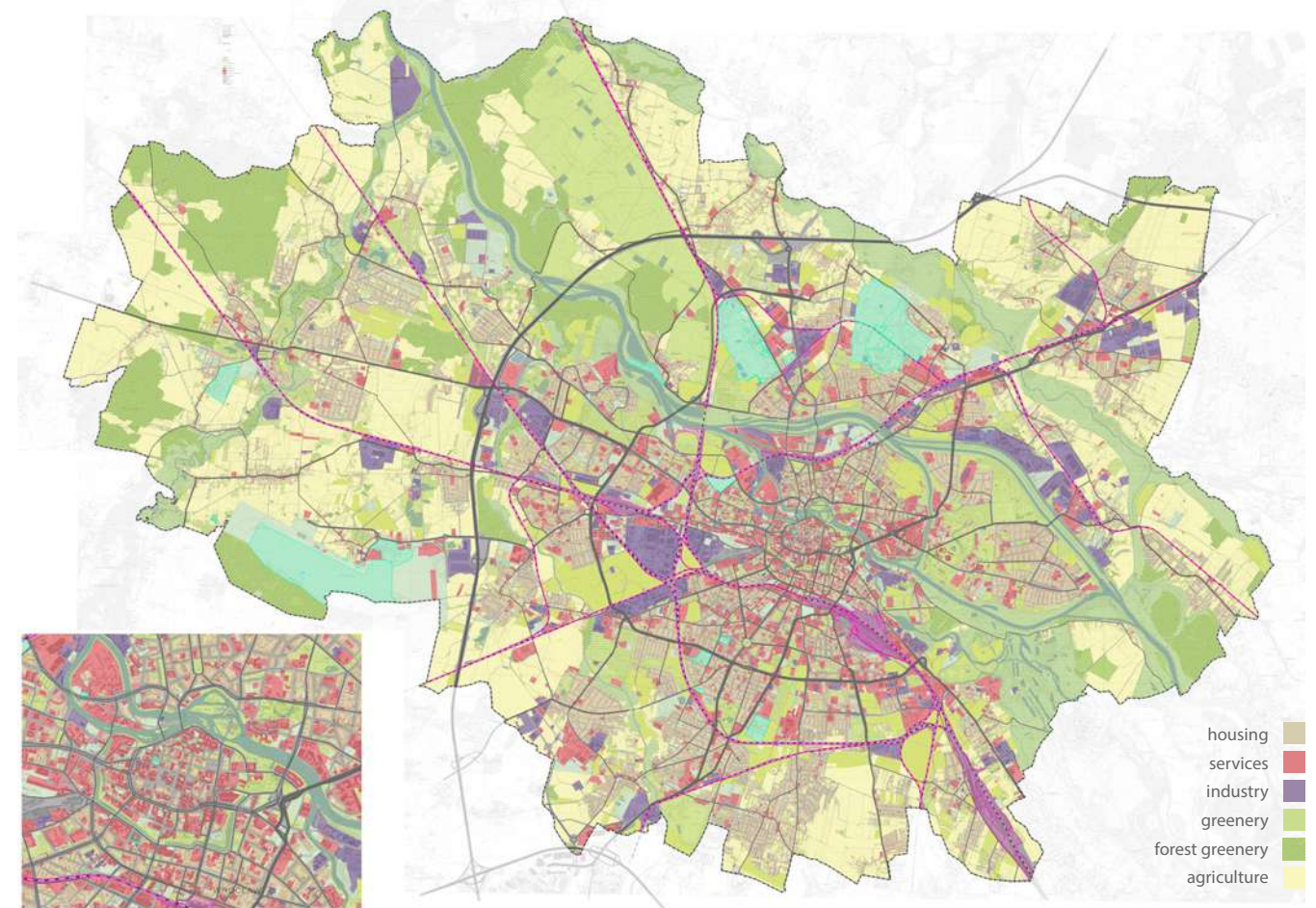


Figure 3
Land use in Wrocław, 2017

TOPIC AND TASK

Beginning of the 20th century was revolutionary in nearly every European city, yet Wrocław (then Breslau) was an "urban laboratory" where different kinds of civic innovations have been carried out. On the one hand "great urban projects" fuelling urban visions until now, like Centennial Exhibition with its iconic building – Centennial Hall, have been conceptualised, designed and erected. On the other hand "social innovations", like variety of the concepts of affordable housing, "model" urban neighbourhoods, open spaces for citizens have been put in place. Significant example of these social innovations would be WuWA ("Wohnung und Werkraum Ausstellung") – "Living and Working Space building exhibition", one of the six model housing estate built by Werkbund in the wake of 30s of the 20th century.

In 2012 Wrocław was one of the cities hosting European Football Championship (EURO). The major investment for this event was a new Municipal Stadium, located near the junction of the motorway bypass connecting A4 (West-East) motorway with the express road to Warsaw (**Fig. 11**). The Stadium is served by all kinds of public transport: trains, buses, trams. The Municipality aimed at using this extensive public investment as an attractor for private development in the vicinity. The very place – a West Pole – was meant to become an accelerator generating new urban fabric in the western part of Wrocław. This however has not happened.

The city sees lack of housing areas in the surrounding as a significant factor of this absence of private interest in developing the land. Here the tradition of building exhibitions dated back in the first half of the 20th century can be considered as a promising tool which could actually both attract private investors and intensify housing in the western part of Wrocław.

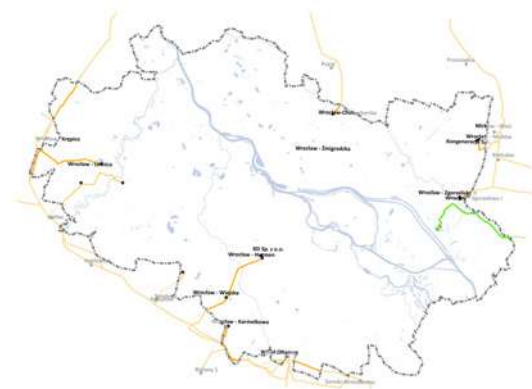


Figure 4
Gas and oil pipelines

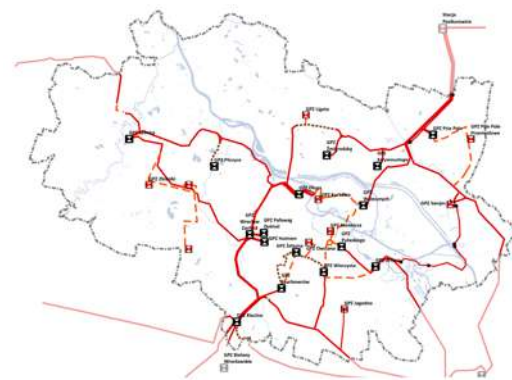


Figure 5
Principal electric power network

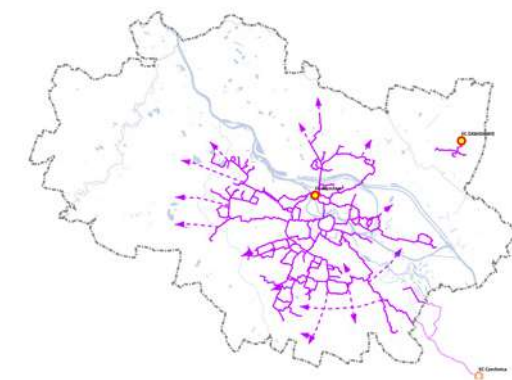


Figure 6
Central heating networks

Using 40-hectares of the municipal land, the city in cooperation with the Association of Architects (SARP), Chamber of Architects, private developers and non-governmental organisations decided to initiate a project called "Nowe Żerniki" ("New Żerniki")¹ which would sketch a new model of housing neighbourhood. The central idea of this project is to continue tradition of progressive model housing neighbourhoods in Wrocław (like WuWA) and – together with developers and social partners – design a housing neighbourhood, which would meet expectations of the people living in a European city in the first quarter of the 21st century. This project is supposed to serve as a good practise for designing new urban mixed-use, complete structures.

The first phase of this project is under construction.

The task for the participants of an Urban Workshop was, in this context, to outline and design new urban structure of the western district of the city of Wrocław – West End. The new urban strategy shall form solid foundations of both outline and design. It shall built on two investments: Municipal Stadium and Nowe Żerniki. It shall deliver ideas about possible and desirable forms and functions which would shape this part of the city anew.

The result of the YPP-YPTDP Workshop could be a substantial contribution to the ongoing discussion on the new Master Plan for the city of Wrocław.

FORMAT AND METHODOLOGY

In 2012 with Nikos Karadimitriou we analysed advantages of a workshop as a vehicle of expanding capabilities of ideas in the process of collaborative planning [5]. This our study was looking at innovative forms of organising public involvement in the planning process.

There is, however, much more opportunities in workshops. They could not only engage local stakeholders but also generate new ideas and concepts in place-making. For this kind of outcome professional workshops, mixing creatively different planning traditions, approaches and patterns could be especially useful. Professional urban workshops are not meant to produce the only and ultimate solution for the specific place but rather to increase an inspirational power of different ideas, concepts and designs. In that sense they can built on and expand the ECTP's view of planners as expert "placemakers" capable of transforming ideas and ambitions into spatial realities.

¹ "Żerniki" is a name of a former village neighbouring the municipal land.

From the point of view of the city a professional urban workshop has an advantage of analysing the local problem in the external, international perspective with the qualities of professional, profound knowledge and experience. This does not mean, that the local urban planning professionals failed to deliver good solutions. On the contrary, sometimes the result of the work of the professional urban workshop can confirm that the concepts produced locally which are to be implemented are desirable. It only gives an opportunity of widening spectrum of possible solutions with the guarantee of meeting high professional standards. This could offer good study documentation for the local environment both professional and political, not to mention social partners in planning processes.

For the urban planners and also for other professionals involved in planning urban development – like those responsible for underground infrastructure for example – it is crucial to study, analyse and understand as many cases as possible. This gives unique experience to all urban professionals in investigating all kinds of problems they can meet in their professional practice. It expands their planning capabilities and deepen their understanding of the very nature of cities.

This is why the learning process during the professional urban workshop is mutual: the city learns from outside and planners participating in the professional urban workshop learn from the specificity of the place.

During the ISOCARP YPP-ITACUS YPTDP Workshop, which took place in the second half of May 2017 in Wrocław, participants working in four groups, were supposed to define various visions and scenarios of development for the West End. Young professionals got an assist of the students of the Master programme in Spatial Planning run at Wrocław University of Science and Technology, Faculty of Architecture. The students joined each group as the youngest professionals offering also in-depth knowledge about local context and circumstances. They also prepared all the initial studies for the workshop participants and tutors. This part of their work is presented by Tymon Dmochowski and Adrian Porada in the following section of this publication.

During the workshop mixed methods were used: lectures introducing the topic or discussing more theoretical background of urban development, brainstorming discussions, debates within the groups under the guidance of tutors, interim presentations.



Figure 7
Sewage system: existing network

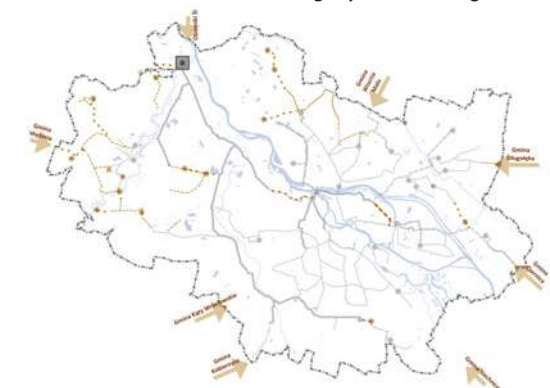


Figure 8
Sewage system: planned elements

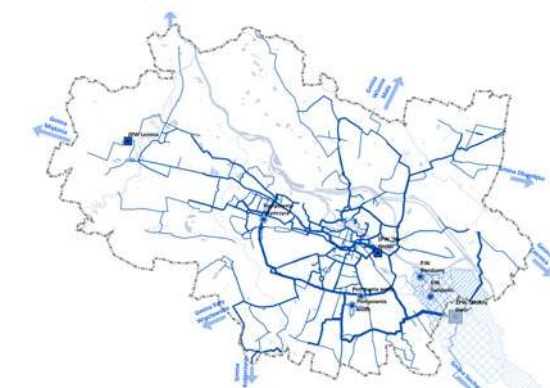


Figure 9
Water supply: existing network



Figure 10
Water supply: planned elements



Figure 11
Location of the Municipal Stadium.
Wrocław transportation system in the background

I was honoured to chair the group of tutors, which included: **Ignace van Campenhout** (Gemeente Rotterdam Stadsontwikkeling, ITACUS), **Michał Ciesielski** (Wrocław Development Office, Society of Polish Town Planners), **Katarzyna Ganowska** (Wrocław Development Office), **Maciej Hawrylak** (Wrocław University of Science and Technology, Society of Polish Architects), **Andrzej Kolonko** (Wrocław University of Science and Technology, Faculty of Civil Engineering), **Zuzana Ladzińska** (Slovak University of Technology in Bratislava, ISOCARP), **Radek Lesisz** (Institute for the Territorial Development), **Zbigniew Maćków** (Society of Polish Architects, Chamber of Architects, Wrocław European Capital of Culture 2016 — Curator of the Programme in Architecture, Coordinator of Nowe Żerniki), **Sylvia Słopak** (Wrocław Development Office), **Laura Verdelli** (François Rabelais Université de Tours, École Polytechnique, ISOCARP), **Guy Vloebergh** (OMGEVING Landscape-Architecture-Urbanism, ISOCARP) and **Khalid Zakaria el Adli Imam** (Cairo University, EAG Consulting, ISOCARP).

Magdalena Mayer-Wydra offered the content assistance and coordinated the entire work, while **Magdalena Wieczorek** was helping with the general organisation.

Participants had an opportunity to meet Mayor of Wrocław, dr. **Rafał Dutkiewicz**, who shared with them his vision for the city. Dr. **Jacek Barski**, Head of Department of Architecture and Development, **Piotr Fokczyński**, Chief Architect of the City of Wrocław, **Anna Sroczyńska**, Head of Wrocław Development Office and **Natalia Golis**, Deputy Head of Wrocław Development Office discussed with the participants of the workshop issues concerning western part of the city and challenges city is facing in the process of its development.

Five intense days of work finished on 19th May in Wrocław Town Hall, where participants of the workshop presented their work to the municipal officials, City Council members, urban planners from Wrocław Development Office and local professionals.

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FIGURES

Figure 1. Interpretation of the structure of Wrocław 2010: linear arrangement and location of urban centres (source: Wrocław Master Plan 2010, http://www.geoportal.wroclaw.pl/en/development_study/, Fig. 5, accessed 26.10.2017).

Figure 2. Interpretation of the structure of Wrocław 2017: linear arrangement and location of urban centres (source: draft of Wrocław Master Plan 2017, http://www.geoportal.wroclaw.pl/en/maps/studium_projekt/, accessed 26.10.2017).

Figure 3. Land use in Wrocław, 2017 (**Figures 3-10** based on the draft of Wrocław Master Plan 2017, http://www.geoportal.wroclaw.pl/en/maps/studium_projekt/, accessed 26.10.2017).

Figure 4. Gas and oil pipelines.

Figure 5. Principal electric power network.

Figure 6. Central heating networks.

Figure 7. Sewage system: existing network.

Figure 8. Sewage system: planned elements.

Figure 9. Water supply: existing network.

Figure 10. Water supply: planned elements.

Figure 11. Location of the Municipal Stadium. Wrocław transportation system in the background (based on the draft of Wrocław Master Plan 2017, http://www.geoportal.wroclaw.pl/en/maps/studium_projekt/, accessed 26.10.2017)



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She was Secretary General of the Association of European Schools of Planning from 2011 to 2015. She worked towards closer cooperation between European planning organisations: AESOP, ECTP-CEU, IFHP, ISOCARP. She initiated new projects strengthening this cooperation, including "Lecture Series" and "European Urban Summer School".

She is a member of two working groups within Polish Academy of Sciences, Committee for Spatial Development. She is also a member of the Main Board of the Society of Polish Town Planners with the responsibility for international cooperation. Currently she coordinates the content of the 6th Congress of Polish Urbanism.

With more than 100 publications Izabela is a prominent theorist in urban planning and urban studies as well as in planning education. Her recent books include "Modele transformacji miast" ("Models of Urban Transformation"), 2016, "Analiza funkcjonalna osiedli Wrocławia" ("Functional Analysis of Wrocław's Neighbourhoods"), 2017 and "Manifesty urbanistyczne" ("Urban Manifestos"), edited with Tomasz Majda, 2017.

WROCŁAW WEST END. CASE STUDY

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URBAN STRUCTURE AND URBAN TISSUE

The aim of this chapter is to study the structure of the western district of Wrocław in terms of its functioning and spatial issues. This section is describing the conditions and problems that are observed today in term of shaping the urban tissue and its functioning. The morphological types of settlements, visible in the area and the basic elements characteristic for this district are mentioned in this part.

Looking at the urban tissue of the Western Wrocław we come to the conclusion that this structure is distinguished by quite a large diversity of functional-spatial systems with set of different characters of development. It is an element very characteristic for the area of Wrocław, having historical, spatial, environmental and planning conditions, which caused current outlook of this district, but also caused several problems and conflicts in the spatial structure of the whole city. It is worth mentioning that this part of the city was largely connected to the area of Wrocław in the 20th century. The boundaries of Wrocław have been significantly expanded, and the areas of former villages and towns have been incorporated into new settlements¹. The development of new areas is primarily housing or even single-family housing, based on greenery and low density of population. These types of settlements come mostly from the first half of the 20th century, or were built right in the post-war period. The individual urban systems, as they gradually increased the area of the city, were transformed and eventually shape today's structures, which will be described in this section. The housing can therefore be regarded as the leading function in the area of development, characteristic for the whole area of study. The western part of Wrocław is distinguished by a multiplicity of spatial and functional types which, however, seem to be quite difficult to read and systematize. The area of study is characterized by a distinct distribution of particular systems and quite chaotic spatial development, especially in recent years. This primarily due to the structure of this district, the fact of existence of many spatial barriers that cannot be managed over a long period of the time, but also by the individual investment processes.

Individual urban units are largely disconnected from the relatively compact structure of Wrocław downtown and contiguous housing estates. The location of the settlements and course of the Wrocław motorway bypass have caused some kind of barrier to their further development and continuation of the development towards the city. A lack of influence of the main communication arteries over the spatial development in this side of the city is visible as well. The presence of the tram line and the transport corridors, (i.e. Kosmonautów street) make rather a "reversal" of development than its continuation. There are quite large breaks in the built environment, especially in the area between Żerniki and Złotniki, which for years have not been managed in a proper manner. This situation makes the urban structure of the western district of Wrocław very diffuse and difficult to determine the direction in which the district should be developed. Only Stabłowice and Złotniki estates can be considered as a fairly compact and readable structures, still being supplemented and continued through the new investments. Quite a big problem is visible in the area of estates such as: Rędzin, Pracze, Mokra, Żar, etc. which are clearly isolated and separated from the rest of the city. The lack of continuity in the area of such estates is clearly visible. Taking into account the stage of population density, this indicator is relatively low comparing to the rest of the city [1].

¹ Detailed description of the process of territorial development of the city of Wrocław is presented in the section "Wrocław - to the West", especially Fig. 9. p. 59.

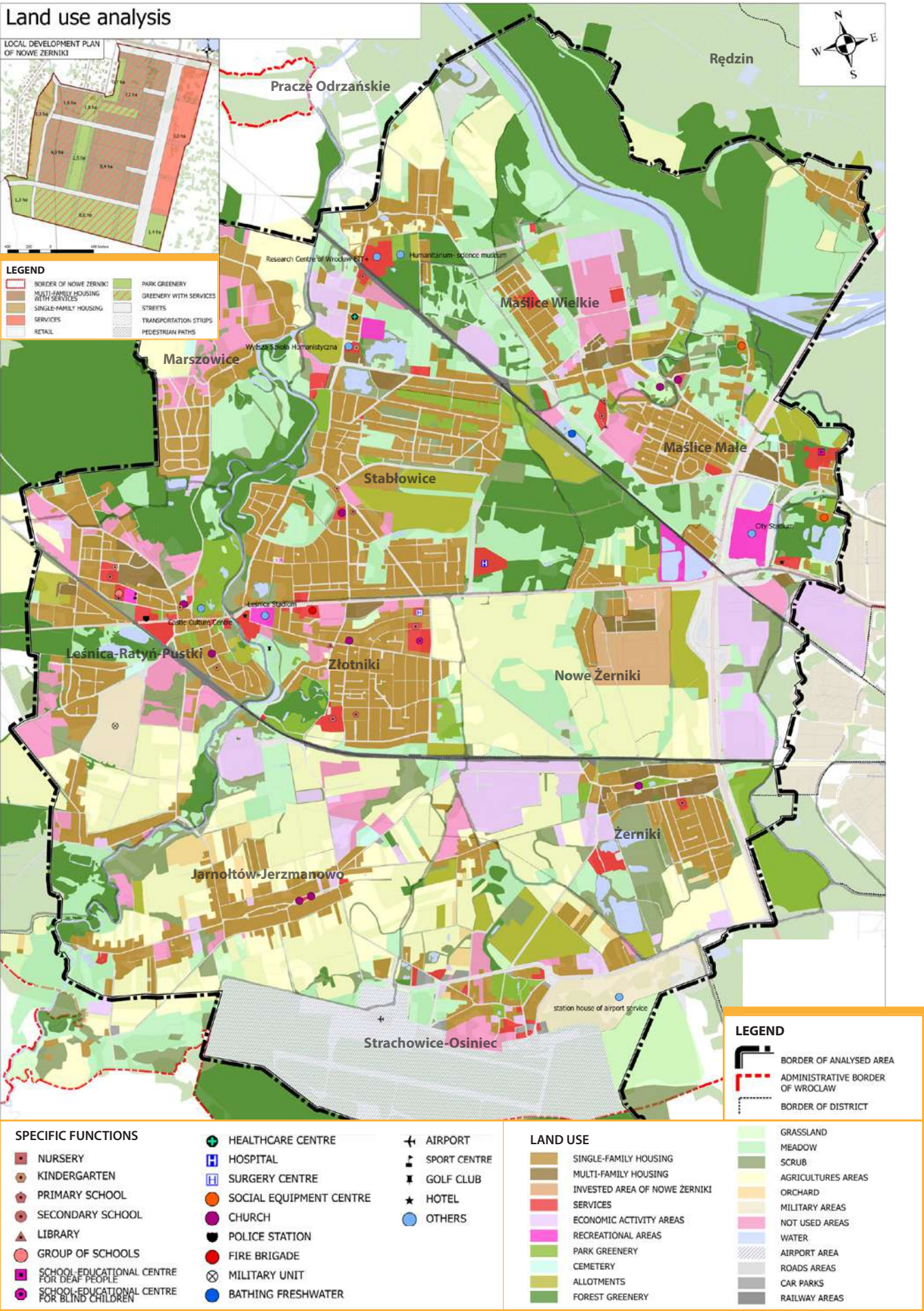


Figure 1

Different types of development units are specified by the varying degrees of development density. There are residential areas with rather high intensity of development, but also very thin spatial systems of old villages and settlements built in recent years. In other words, we can consider the entire development area as a highly mixed structure, consisting of many spatial-functional sub-systems. Presented conditions contributed to the current appearance of the district, where it is possible to distinguish several characteristic spatial systems, which are permanently integrated into the urban structure. Looking at the [3] we can distinguish several units with separate functional and spatial characteristics:

- **small-town units** – areas of former independent towns with a functional and spatial structure, characterized by a low density of buildings, rather compact spatial layout, consisting of development in both urban block and free-standing buildings. Specific for these units are the presence of squares, green squares and streets of commercial character. Often these units are still a kind of significant service centers, having the local character and purpose. In the whole Wrocław we can find only three examples of such units. One of those is Leśnica with a castle-park complex from the 12th century [3, p. 1014]. The very characteristic for Leśnica estate is the presence of a service-oriented space in the form of a main street, still serving its function [3, p. 44].



Figure 2



Figure 3

- **units of former villages** – the areas of former villages incorporated to Wrocław. Most of these units are preserved with a particular main street or square, sometimes enriched by former land estates. The areas of former villages are characterized by an unfocused development, lack of transparency of the functional-spatial structure and low level and accessibility of basic services. The chaotic spatial development, the development of areas used by agriculture and the gradual disappearance of typical rural functions is very typical for them. The examples of such units: Jerzmanowo, Jarnołtów, Żerniki, Pracze [3, p. 46].

- **incomplete single-family housing units** – the housing estate with a rather compact structure and a spatial layout, consisting of residential buildings, a distinct grid of streets and a greenery. They have been built in Wrocław since the first half of the 20th century and are expanded to the present day. These systems are usually quite repetitive and homogeneous, making it easy to read in the structure of the whole city. These areas have a high intensity of development, low population density. Despite this, they are specified by a very low level of basic services, i.e. schools, kindergartens, service centers, etc. These settlements were developed especially during the post-war period, but unfortunately in many cases they are not continuing the spatial arrangement which is typical for a given settlement. The low level of equipment in public spaces or common green areas is very visible in such area. Examples of such units: Stabłowice, Złotniki, Żerniki [3, p. 42].



Figure 4



Figure 5

- **mixed housing units** – mixed spatial units, both multi-family and single-family. Typically, these are existing housing settlements supplemented by the multi-family housing, less intensive development and mixed spatial layout. Most of these units are incomplete and show a high degree of spatial chaos and lack of spatial-functional reference to the neighborhood through the individual investment processes, especially in last years. Very often, these units are not equipped with basic and commercial services and have the visible lack of public and green spaces for the inhabitants. New housing investments of this type are usually gated communities. Among complete units of this kind the TBS Stabłowice and Nowe Żerniki housing estates with a coherent layout and specific urban design. Examples of such settlements: Stabłowice, Maślice, Złotniki, west part of Leśnica [3, p. 34].

New investments in the area are primarily investments in multi-family housing, which are often equipped with commercial services in the ground floor or nearby the development. Also interesting is the attempt to design a typical urban fabric adding the development with higher density, as in the case of new investments at Stabłowice. However most of them are not completed at whole.

In this part of the city extensive open spaces (not necessarily high quality urban greenery) and agricultural areas can be found. They represent a significant part of the whole area and sometimes even fill the gaps in the development. It is very typical to re-use agricultural parcels for housing purposes. This type of development is particularly intensified in the southern part of the area of study, in the former villages, which blur the boundaries of specific rural units. In the west Wrocław we can also distinguish mixed use functions and industrial development, i.e. industrial, warehouses, storage facilities, but also military and post-military facilities. These are mostly single clusters rather isolated from housing development, and sometimes conflicting and ecologically threatening in the area, such as in the case of Chemical Factory in Złotniki, very close to the Bystrzyca river. However, industrial sites or military units are becoming a problem, which are, as in the case of Maślice, possible to reuse for new purposes and functions. Over the years they have been closed to the spatial development, but today they can become very valuable for new functions.

As it was mentioned earlier, the area of study is characterized mostly by housing development. It is worth mentioning at this point about services. Due to its proximity to the city center and the distinct centralization of services at the city level, the western district of Wrocław is characterized by a relatively low level of provision of both basic public and commercial services. The housing estates suffer from a deficit of services such as schools, kindergartens, or health care facilities. Despite this, we are able to distinguish several types of service centers having the varying degrees of impact:

- **multifunctional service centers** – service centers, whose coverage is limited to the individual units. We can certainly distinguish the service center in Leśnica, which is the result of historical conditions due to the existence of the former town [4, pp. 17-18],
- **specialized service centers** – service centers, which range across the whole city. We can definitely distinguish the area of Lower Silesian Specialist Hospital at Fieldorfa street, Wrocław Research Center EIT + or the International Airport in Strachowice [4, pp. 17-18],
- **other centers of mixed character and impact range.**

Large dispersal and obvious disability in basic public services make it more worthwhile to take a more comprehensive approach to design the units based on broadly understood basic services. The lack of the services is also connected with a fairly large deficit of public spaces together with a high degree of open spaces in the district. Public spaces can be mostly found in the form of squares or green areas located in the housing estates, rarely as public places. Most of the public spaces are located in the area of Leśnica estate of the small-town character and the presence of the palace-park complex. On the individual housing estates, both single-family and multi-family, public spaces are negligible.

The environmental analysis covers the area limited by the Odra river to the north, Ślęza river to the east, Wrocław Airport to the south and Bystrzyca river to the west. It is safe to say that it is surrounded by rivers, and in fact, they are crucial to the proper understanding of the challenges for planning in this area. Wrocław's west end is one of the least urbanized areas of the city. With forests, meadows and farmlands dotting the landscape, which is not yet fully filled with housing or other solid urban forms. This contributes greatly to the natural values of this area and should be considered as such during any kind of development plans [4, pp. 23-39].

WATER

There are three main rivers to mention when analyzing this area. Each of them is unique in size, importance and natural value. Additionally the area is enriched by several streams canals or temporary water flows, that are not described here, due to their low importance in large scale planning. However they should be taken into consideration in smaller scale and can be found on the map visible in environmental map if needed.

Odra river, the largest and most important one, flows north in the northeastern part of the analyzed area. It is the only river, considered here, that possesses an embankment. However, there are many breaches to be found in places where streams join the river. Areas near those streams are prone to flooding.

Bystrzyca river is largely undeveloped, it is one of the most precious natural areas within the analyzed area. Large part of the flow goes thru forests meadows and parks. A significant part of it is a Nature 2000 area. The potential flood area of this river is not big on its own, however, the part where it joins Odra causes a huge potential threat, as it already was visible during flood of 1997.

Ślęza is perhaps of least significance for the analyzed area. Produces little threat during floods. It's fringe location, connected with the fact of a large barrier, like the Wrocław Motorway Bypass, separating it from the rest of our area, makes it of little use. However, it creates a large potential for natural value of the area and can be used if developed wisely.

Additionally the area is dotted with occasional water basins and reservoirs.

LAND COVERAGE

There are several parks found within the analyzed area. Each poses a unique natural value for this area and should be considered as such during planning efforts. Those located along the Bystrzyca river can be considered as most important ones and could see larger use if Bystrzyca was to be developed for more recreational-friendly use.

The areas marked as forests and meadows are leftovers of a much larger natural structures. Regardless they are still hold significant value for this area and should not be treated as potential land development sites.

The rest of the non-urbanized area is either a farmland, an orchard of an allotment garden. Each of those represents a much lower natural value. Allotment gardens as a rather outdated idea of an old system, should undergo through process of evaluation in order to develop a less wasteful way of use for this areas. One that will not only satisfy the community but also the private allotment owners.

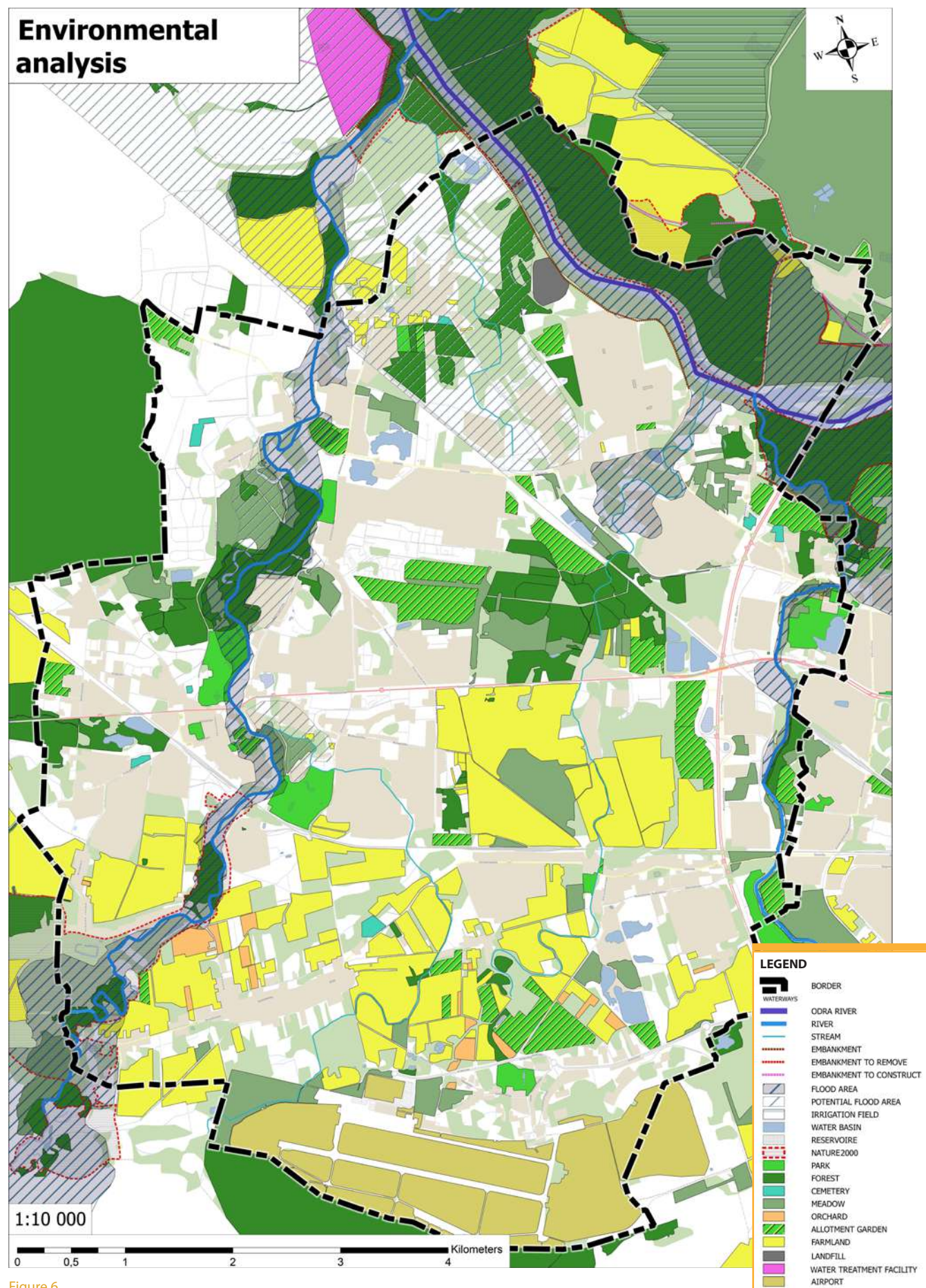


Figure 6

FORMS OF NATURE PROTECTION

There are several areas within the analyzed region that are legally considered as protected. This include Nature 2000 areas along the southern part of Bystrzyca river, lower end of Ślęza river and northern bank of Odra. It is crucial to remember that Nature 2000 does not completely forbid development within its areas, only limits them in order not to disturb the animal habitats located there. Any potential development should act according to the restrictions and guidelines presented by such form of protection, but not necessarily resign from investment altogether [4, pp. 25-27].

ENVIRONMENTAL HAZARDS

The environmental hazards on the analyzed area include, but are not limited to – flooding, air and water contamination. The most obvious, which are the floods, covers a large area around the Bystrzyca and Ślęza rivers. Additionally streams that flow into Odra, generate a sizable flooding area. Odra itself is relatively safe due to the embankment.

Sewage treatment plant lies just beyond the northwestern border of the analyzed area. There's a chance of a methane air contamination caused by the byproducts of biological and chemical sewage system plant. Unsanitary waste from cleansed waste water can also cause soil and water contamination if not stored properly. Finally any flooding of the cleaning tanks risks large water pollution.

Finally the landfill, located in the northern part of the area, near the embankment. While, specially covered by soil and shielding materials, in order to create an artificial hill, it can still be considered as an environmental hazard due to possible gas emissions and bio-chemical reactions happening under the covering layer.

AIR AND NOISE POLLUTION

Car traffic within the analyzed area is mostly transit circulation. All of the main roads, that spearhead this transit, exceed the norms of noise generation. Train tracks also create large noise during train transit. Additionally, the planes bound to the airport cause significant noise within their landing radius, in the southern side of the area.

The air pollution has two main sources. First the previously mentioned car transit (proximity to the Wrocław's road bypass contributes to this factor) and secondly, during the winter season the individual heating from single family housing. As stated in the infrastructure analysis, this area of the city is not connected to the main heating network, and it is only planned to be so in the future. The pollution created by individually supported, and often outdated, heating systems is devastating to Wrocław's air quality.

HISTORY

Majority of a west side of Wrocław was incorporated to the structure of the city in 1928. Extensions of a city border extended towards suburbs – today districts of Kozanów, Gądów Mały, Kuźniki, Nowy Dwór, Pilczyce and Muchobór Mały. They are located on the right side of the Wrocław’s bypass. Żerniki, Stabłowice, Maśliwe Wielkie, Prace Odrzańskie, Janówek and Ratyń, were villages before and were transformed into housing estates. Many of them preserved their rural structures and character. Changes to the outline of the city also included a small town of Leśnica within the new city borders.

In 1973 Wrocław included additional areas to its expansion. Villages of Jarnołtów, Jerzmanowo, Osinice and Strachowice located on the south from Leśnica, became a part of the city. Additionally villages of Żar, Mokra and Marszowice became part of Wrocław as well [1; 5].

HISTORICAL URBAN STRUCTURES

From 1928 [1; 5]:

- **Maślice** – Structure of Maślice includes two parts called Maślice Wielkie and Maślice Małe. Both parts contain historical urban structures and were included to Wrocław in 1928. First information about Maślice Wielkie, the oldest part, comes from the 12th century. The structure of the village is preserved partially along Maślicka Street. Separately from the village, but in the neighbourhood, had been developing the settlement Maślice Małe. Nowadays Maślice Małe is located near streets: Nasienna, Pasieczna, Sadownicza and Hodowlana. The historical structure of Maślice Małe was built in 1919 to 1945 and now is a part of larger estate, not well visible. To the north of the village in 1945 was implemented a next project of housing estate, which today with the old structure of the Maślice Wielkie and Maślice Małe and contemporary investments, creates district Maślice.
- **Prace Odrzańskie** – an old village located to the north to the Stabłowice. First information in historical origins of Prace comes from the 12th century. A structure of the village is well-preserved and includes buildings next to streets: Stabłowicka, Brodzka and Karczemna. A medieval historic church with a historic presbytery from the 16th century remains in the former village. Moreover, in Prace Odrzańskie there is an old complex of the hospital and settlement designed for patients with a park, nowadays used as a research centre.
- **Stabłowice** – a dispersed district which contains Stabłowice Stare and Stabłowice Nowe. First village in Stabłowice comes from 13th century. A historical structure of the village creates Stabłowice Stare of today. In the second half of 19th century in this part there were also a cotton mill with housing for workers and a park. In the 20th century before 1945 a housing estate was developed in Stabłowice Stare. Structures of the cotton mill and housing estate are well preserved, structure of the village is less preserved but still legible. At the end of the 19th century village buildings had been partially replaced by tenement houses. Extension of housing estate to the south took place in first part of the 20th century in a quarter of streets: Starogajska, Porębska, Drogosławicka, Boguszowska, Żółta and Jeleniogórska. This historical urban structure comes from the 20th century and is called Stabłowice Nowe. The most valuable part of urban structure was listed in a regional register of historic areas.

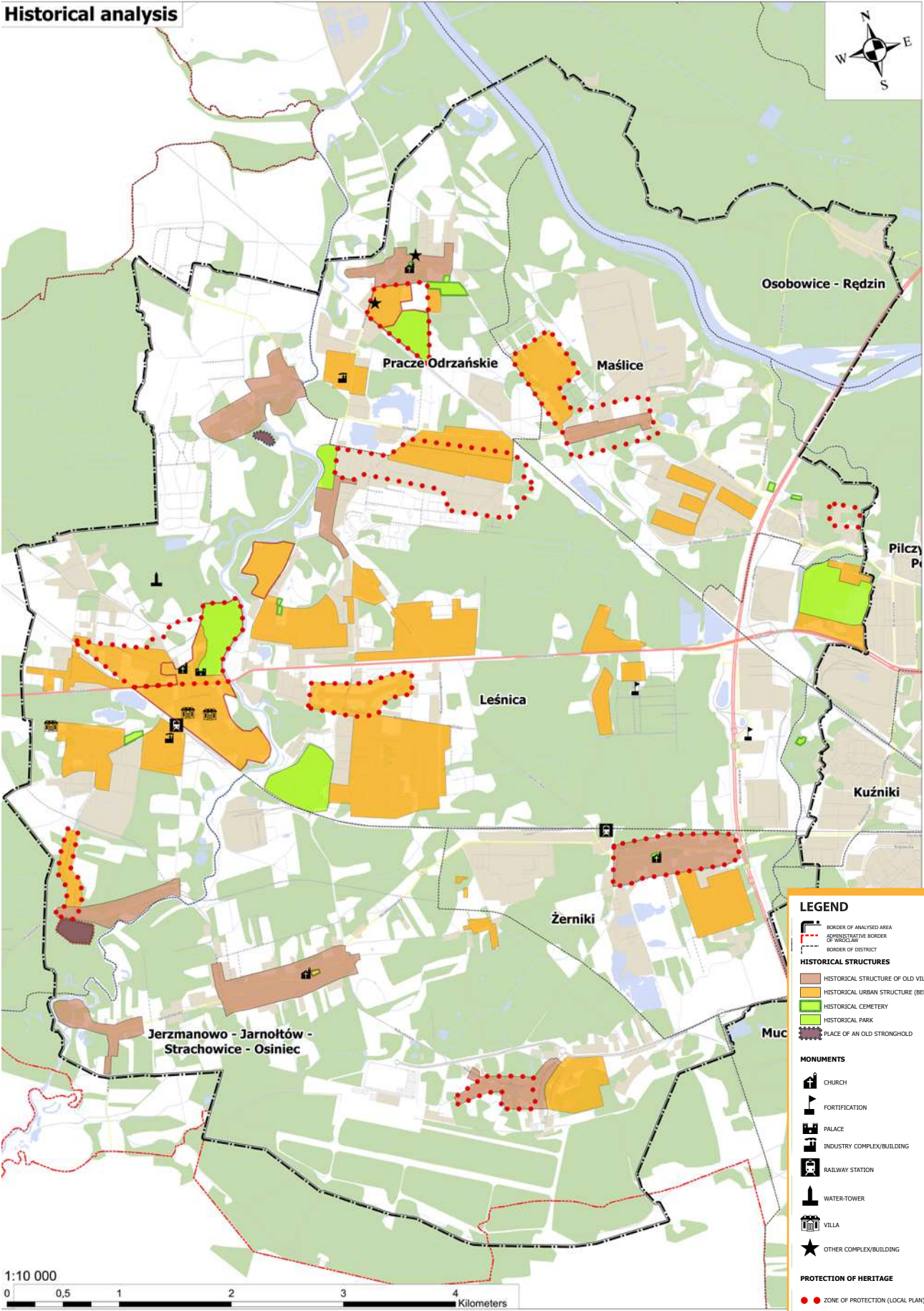


Figure 7

- **Złotniki** – historic urban structure. First information in historical sources comes from 13th century, but a country housing was mainly replaced by tenement houses. On the beginning of the 20th century Ernst May, architect and urbanist, proposed a modernism district, which was partially realised along the Rajska Street. Remains of a park which was previously connected to a manor can be also found here.
- **Gajowe Settlement** – historic urban structure next to the Trójkątna and Lewa Streets. The structure evolved from the 16th century.
- **Żerniki** – a historic structure of an old village which comes from the 14th century. In a district exists preserved historic church from medieval times. The structure of the village is not well preserved. Aside from the church, there is also a historical railway station from the 19th century and a "new" urban structure in the north, built before 1945.
- **Leśnica** – the biggest urban structure added to Wrocław in 1928. Previously Leśnica was a town with a palace, but during the war in the 17th century was completely destroyed. After that, structure was reconstructed, but in different way. Villas and tentment houses were built, many of which remain there to this day. Historic urban structure is located along Średzka Street, with a public square called small market, and next to Krępicka, Eluarda, Małoszyńska, Nieperzyńska and Sosnowa Streets. In Leśnica still remains small historic palace with great park. Other monuments are: church, villas, railway station and post-industry complex.
- **Pustki** – historic urban structure of military barracks from the beginning of the 20th century. Previously farm building under control of Ratyń. The complex of barracks was built after inclusion of Pustki to Wrocław. The historical structure is located next to the Serowska, Klonowa and Trzmielowicka Streets. In Pustki there is also a preserved historic villa.
- **Ratyń** – a historic structure of an old village located in a neighbourhood of Gromadzka Street, Wojska Polskiego Street, Szkolna Street and Beskidzka Street. The modern district dated back in the beginning of 20th century is located to the north of the structure of old village. Close to Ratyń was found a location of the prehistoric stronghold.

From 1973 [1; 5]:

- **Jerzmanowo** – historic structure of an old village Jerzmanowo. Structure of building is well preserved and visible. In the centre remains a historic church from the 14th century. Historic structure is located in a region of Jerzmanowska, Adamczewskich, Płużna, Gałowska and Kośnego Streets.
- **Jarnołów** – historic structure of an old village Jarnołów. Structure located close to Jarnołowska and Samotworska Streets. First mention of this village comes from the 13th century and concerns a mill located there.
- **Marszowice** – historic urban structure of an old village Marszowice. First information found about Marszowice comes from the 14th century. Historic structure is located near to streets Marszowicka, Bojanowska, Wilkszyńska and Główna. Well preserved to our times.
- **Strachowice** – historic urban structure of Strachowice includes an old village. This structure is located near to the airport and contains also historical compex of military barracks.
- **Osiniec** – small complex of farms which belonged to Strachowice. A structure of this small settlement was built before 1945.

NOTABLE HISTORIC MONUMENTS [6]

| Name | Description |
|---|--|
| Church of St. Ann in Prace Odrzańskie with the presbytery | Located on the Brodzka Street. Church comes from the 16-17 th century; was modernized and rebuilt during the years. Some elements of original equipment were preserved. |
| Hospital complex with park in Prace Odrzańskie | The complex is located on the Stabłowicka Street and was built from 1900 to 1913. The complex includes about 20 buildings, houses for patients and doctors, administrative buildings, warehouse, fire station, stable etc. The complex is connected with the park. |
| Cotton mill in Stabłowice | Industrial plant located on the Stabłowicka Street; built in 1890. Cotton mill "Wrocławska Przędzaln Czesankowa" was working here until 1999. Buildings were taken over by other companies. |
| Church in Żerniki | Church located on the Żernicka Street; comes from the 13 th century. |
| Railway Station in Żerniki | Railway station in Żerniki comes from the 19 th century. |
| Palace in Leśnica with park | The palace complex in Leśnica is located on the previous place of the castle and prince's residence. The palace was demolished and rebuilt many times, existing state comes from around 1960. |
| Railway Station in Leśnica | Railway station located on the Rubczaka Street. Building comes from the half of the 20 th century and wooden platform shelters come from 1900. |
| Water-tower in Leśnica | Water-tower located on the Polkowicka Street comes from 1915. |

TRANSPORT

ROAD NETWORK

Road network located within the development area is crucial for proper functioning of the transportation system in the entire Wrocław. Status of highest importance is held by a highway (city bypass) that runs from the border with Germany into direction of Warsaw, thru Wrocław.

The main artery is represented by the Kosmonautów street, leading from municipal stadium towards Leśnica and beyond. A new road leading to Leśnica, this time from the southern side (airport), is being constructed and will provide a feasible alternative for reaching the city and is likely to reduce traffic at Kosmonautów street.

The remaining road network, aside from the street that leads to airport, serves only local purpose. It is erratic, chaotic and disconnected, much like the urban structures that dot this area. Hence the efficiency of such structure is miniscule, as each of this networks was planned separately and was not intended to fit into a larger structure. Any attempts to unify this area should take that into an important consideration [4, pp. 44-47].

RAILWAY LINES

There are four railways stations located within the analyzed area: Wrocław Stadion, Wrocław Żerniki, Wrocław Pracze and Wrocław Leśnica. They are station of regional importance therefore the train that stop there are of regional rank. Their location in the west part of city determines western direction.

The most frequent directions are Wrocław Main Railway Station, Legnica, Lubą Śląski and Węgliniec, Jelcz-Laskowice, Bolesławiec, Wołów, Zielona Góra and Głogów. Schedules of these station shows that there are at least 2 trains every hour, aside from nighttime.

PUBLIC TRANSPORT

The analysed area is moderately served by the public transport system (areas in vicinity of main roads are well-connected). Tram lines run along the main artery which is Kosmonautów Street. It is also the important part of collective transport network in Wrocław. The higher number of trams and buses go in the most frequented direction, which is a city center by mentioned arteries. Bus stops are located mainly at the tram stops or in vicinity of main streets. The public transport hubs are located at the intersections of main streets. The largest public transport hub is located in Leśnica itself. It also serves as the terminal station for trams that go in that direction. During the night, only a few buses transit thru this area.



Figure 8

Trams

The following trams lines serve in this area:

- 3 – Plac Jana Pawła II – Rynek (Old Town) – Księża Małe;
- 10 – Plac Jana Pawła II – Rynek (Old Town) – Plac Grunwaldzki – Biskupin;
- 20 – Plac Jana Pawła II – Rynek (Old Town) – Arkady Capitol – ul. Hallera – Oporów.

These lines allow transit to south, east and south-eastern parts of Wrocław, yet no line exists that would cover northern areas – such as Karłowice, Psie Pole or Różanka.

Buses

Buses lines are provided to every housing settlements within analyzed area.

There are seventeen bus lines which go towards following directions:

- north → Leśnica – Prace Odrzańskie (123; goes every 30 minutes);
- north-east → Żerniki – Poświętne (129; goes every 30 minutes);
- north-west → Leśnica – Mokra (137; goes every 60 minutes), Leśnica – Brzezina (937; goes every 60 minutes but during rush hours (2-7.00 p.m) every 30 minutes), Leśnica – Wilkszyn (923; goes just a few times during a day);
- cetral part of the city → ul. Wojanowska – Old Town District (Plac Jana Pawła II) (102; goes every 30 minutes but during rush hours (5-9.00 a.m and 2-7.00 p.m) every 10-15 minutes), Prace Odrzańskie – Plac Jana Pawła II (103; goes every 30 minutes but during rush hours (6-9.00 a.m) every 10-15 minutes), Rędzńska – Plac Jana Pawła II (104 goes every 30 minutes but during rush hours (6-9.00 a.m) every 10-15 minutes), Air Port – ul. Dworcowa (106; goes every 20 minutes), Jornałtów – Świebodzki Train Station (109; goes every 30 minutes but during rush hours (7-9.00 a.m and 2-6.00 p.m) every 15-30 minutes), Leśnica – ul. Dworcowa (148; goes every 15 minutes but after 7 p.m every 30 minutes), Samotwór – Świebodzki Train Station (609; goes almost every 60 minutes);
- east → Leśnica – ul. Kwiska (101; goes every 30 minutes but during rush hours (5-9.00 a.m and 2-7.00 p.m) every 15 minutes);
- west → Leśnica – Żar (138; goes just a few times during a day), Leśnica – Ratyń (117; goes every 60 minutes but at some hours every 30 minutes (9.00 a.m., 11.00 a.m., 1.00 p.m., 7.00 p.m., 9.00 p.m.)), Leśnica – Lutnia (938; goes almost every 60 minutes) , Leśnica – Gałów (917; goes every 1-1,5 hour).

As it is easy to conclude, the buses serve much larger areas than trams.

The Agglomeration Railway of Wrocław

The analyzed area is served by the agglomeration railway. The railway route runs from the Main Railway Station towards Wołów, passing following small stations: Wrocław Mikołajów, Wrocław Kuźniki, Wrocław Stadion and Wrocław Prace.

Cycling routes and pedestrian paths

According to the Cyclist's Map of Wrocław, cyclist routes are to be located only along main and secondary streets. First of them leads from the Wrocław's Stadium to Leśnica Settlements. Second path goes directly from Nowy Dwór Settlement to Wrocław Airport and the third one is located in the northern part of analyzed area and leads from Wrocław Stadium to Stabłowice Settlement. The mentioned cyclist paths are separated from vehicular traffic paths.

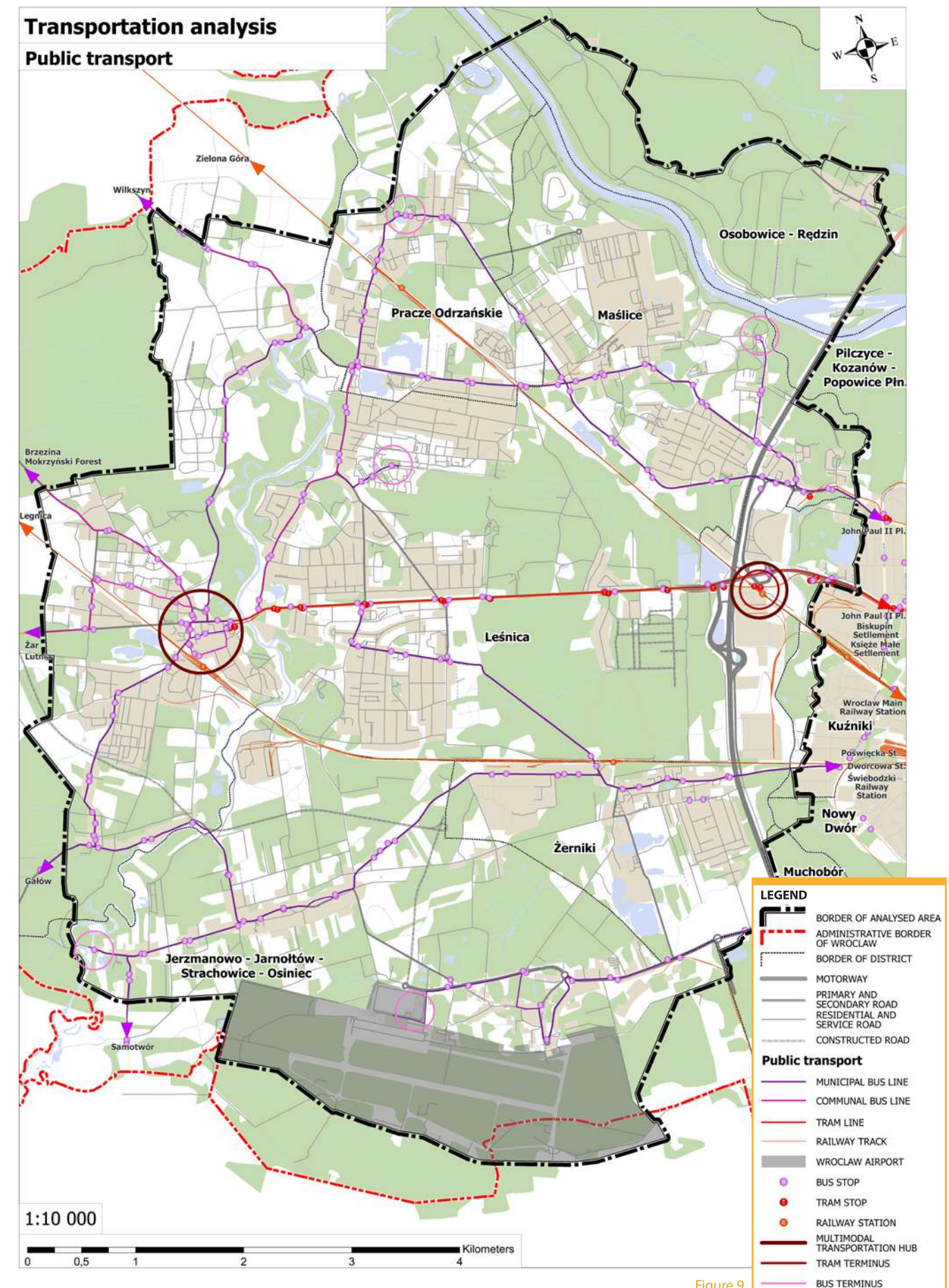


Figure 9

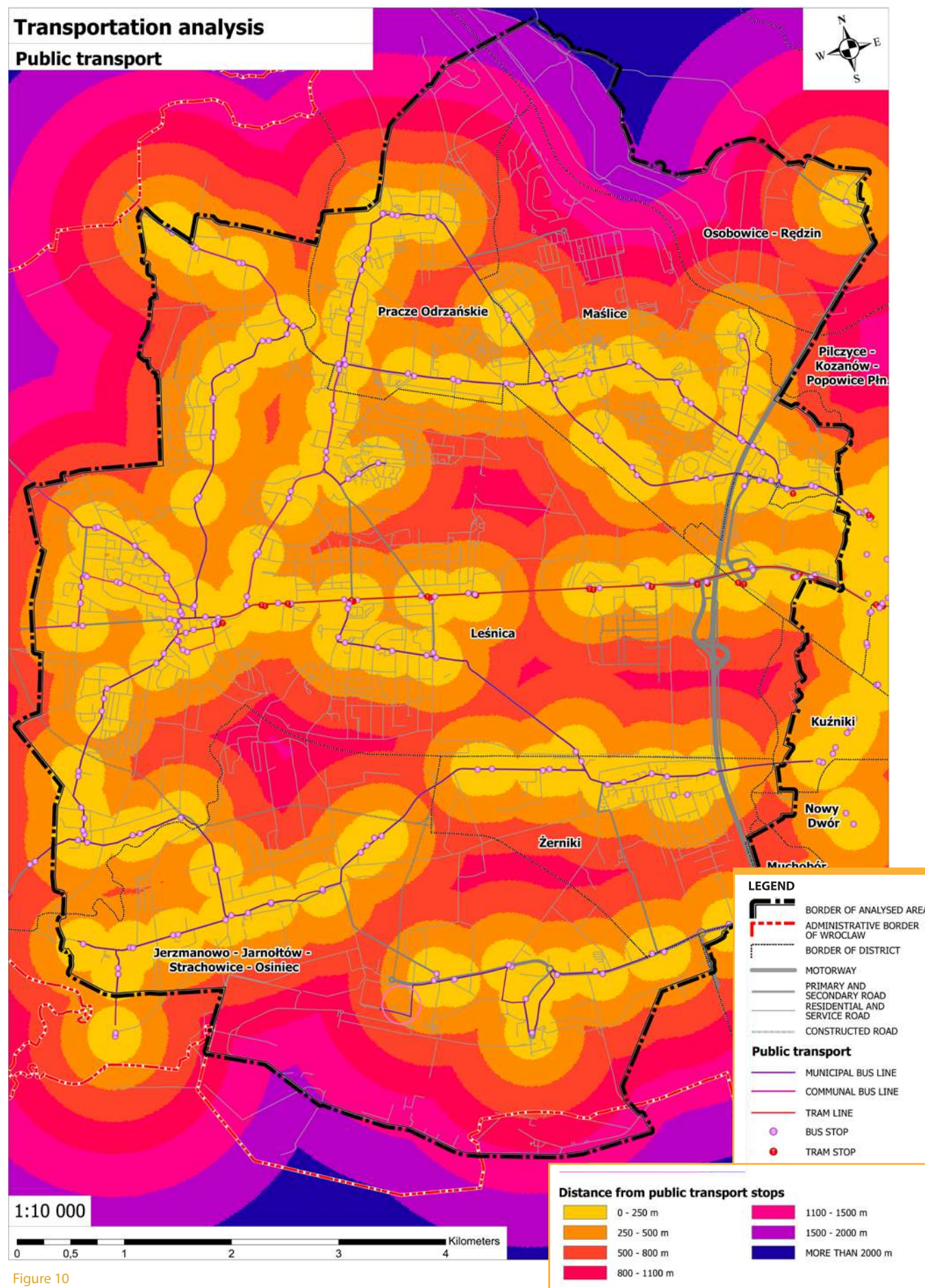


Figure 10

Housing settlements are not equipped with any form of cyclist infrastructure. Additional paths are located on the green areas such as: Leśnicki Park, Złotnicki Park or open spaces around Jerzmanowo.

Pedestrian sidewalks are mostly located along the main and secondary streets. They are built around new housing (single-family and multi-family housing) settlements as well. This pedestrian areas are well maintained and wide. Pedestrian paths are also located on the green areas like Leśnicki Park or Złotnicki Park. There are little to none pedestrian paths along the roads within the old housing areas such as: Jerzmanowo or Ratyń. Moreover, those that exists are narrow.

WATER WAYS

Despite the fact that entire analyzed area is surrounded by rivers, no form of steady water transport is present. However, this does not mean, that this area is ill equipped to poses some. On a contrary, the northern part of the district could be well served by the Odra river transportation if proper infrastructure were to be developed. The current Master Plan for the city of Wrocław does take into consideration a large are by the southern bank to develop a port. However, in order for it to work, massive hydrotechnical investments would have to be developed. Such investment surely goes beyond the scope of the analyzed district and would require a combined effort of the entire municipality.

AIR TRAFFIC

The Wrocław Nicolaus Copernicus Airport is located in the southern part of analysed area, about 10 km away from the city center. Thanks to the Wrocław motorway bypass, the airport is easily accessible for passengers driving from direction of Warsaw along the S8 road which changes to A8, from Poznań along the national road no. 5, as well as for those driving to the airport from the south, along the national road no. 8 and for the passengers driving along the A4 motorway.

Since 2003 the airport has recorded rapid increase in passenger traffic. Within 5 years the number of passengers increased approximately five times. Its capacity is almost 4 million passengers per year and it is likely that it will reach as much as 7 million within few years. The airport provides its services to network carriers which offer flights to the major hubs in Europe provided by national operators (LOT, Lufthansa) and low-cost carriers (Ryanair, Wizz Air) as well as charter airlines hired by tour operators [7].

CONCLUSIONS

The transport network within this area is greatly neglected on the local level. Chaotically placed roads and only one main artery leading to the city center make it hard to use car in an efficient way. Public transportation is hardly an alternative due to its state that can be described as mediocre at best.

On the other side the proximity to the highway bypass and an access node to it, along with the existence of airport and possibility of water transport on Odra river, create a great potential for coherent and efficient road development. Any plan should take cohesion of sparse networks as a priority.

INFRASTRUCTURE

As part of the analysis, the technical infrastructure of the city, supply of water, gas, electricity, heat and sewage systems were described.

WATER AND SEWAGE SYSTEM

In the area of Wrocław, the main point of water collection is the Oława river, located on the eastern side of the city. Major water collection points are located outside our area and are mainly surface access points and infiltrated water ponds. The deep water intake for household and communal purposes is located in the area of Leśnica at Polkowska street. There are 3 water treatment stations in Wrocław, one of which is located in Leśnica, but with a low production capacity, so its power is only able to supply the local settlements. The individual water supply networks are located along the main communication arteries, serving water on the individual settlements. Some new water networks are planned mainly on the north site of the western Wrocław, but also as a north-south main line. The individual water supply is shown on the Fig. 11.

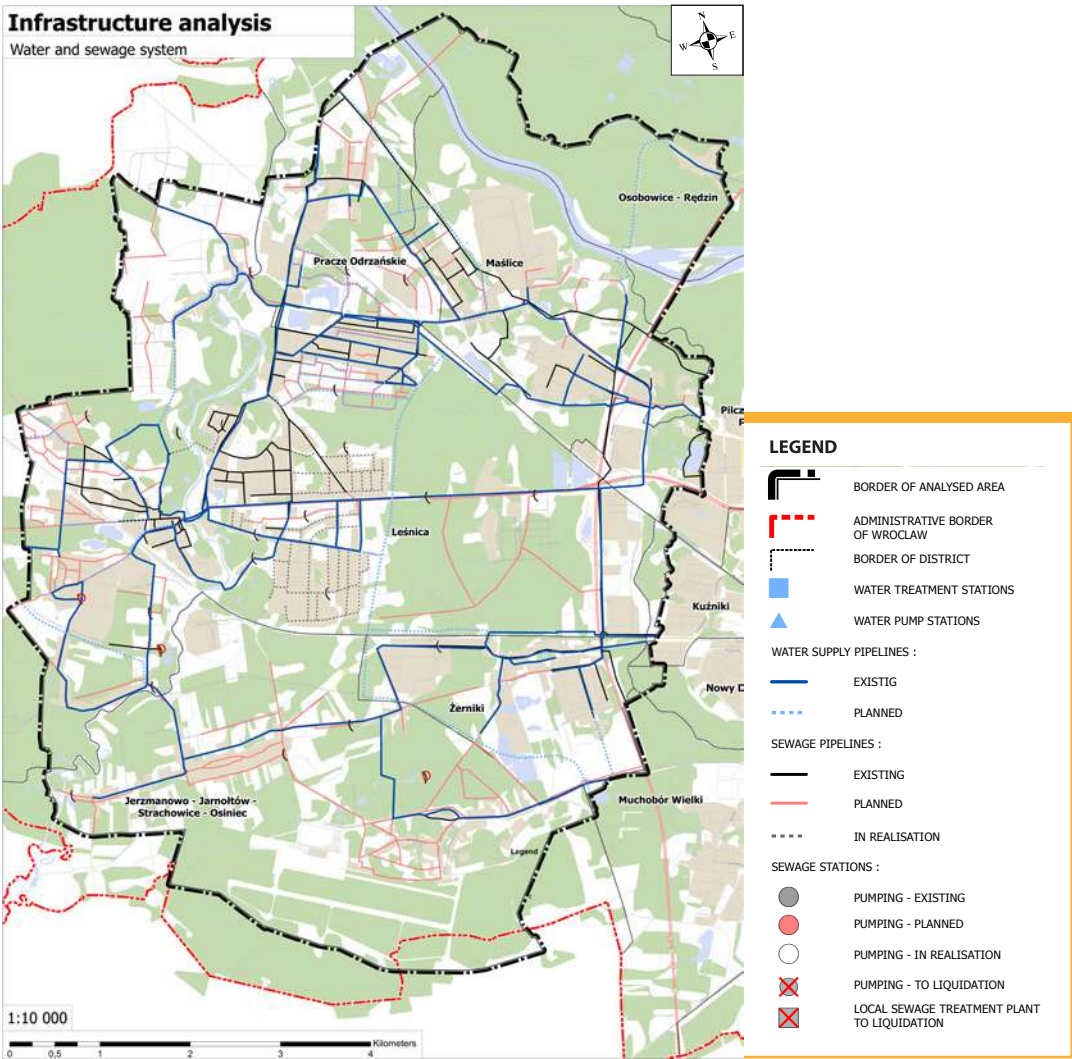


Figure 11

The situation of the sewage system looks differently. Sewage system is available mainly in the northern part of our area. The sewage network is currently under construction in the area of Stabłowice and Złotniki. Almost all the areas of the former villages and the south-western part of the area of study does not have an access to the sewage system. The existing and planned networks are shown on the Fig. 11 [4, pp. 66-68].

ELECTRICITY SYSTEM

The main source of supplying Wrocław with the electricity is the 110 kV and 220kV high voltage network in the form of overhead networks running from different directions and coming to the city in the form of power transmission overhead networks assisted by the Wrocław Heating Power Company "Kogeneracja" S.A. including one Heating-Electric Power Plant at Łowiecka street and the second one in Siechnice. The electro-energetical networks are linked with the set of energy-power stations which also feeds nearby towns with electricity including two stations in the area of western Wrocław. Other lower voltage networks are in the form of overhead or underground networks with local transformer stations. The route of the electrical network is shown on the Fig. 12 [4, pp. 71-77].

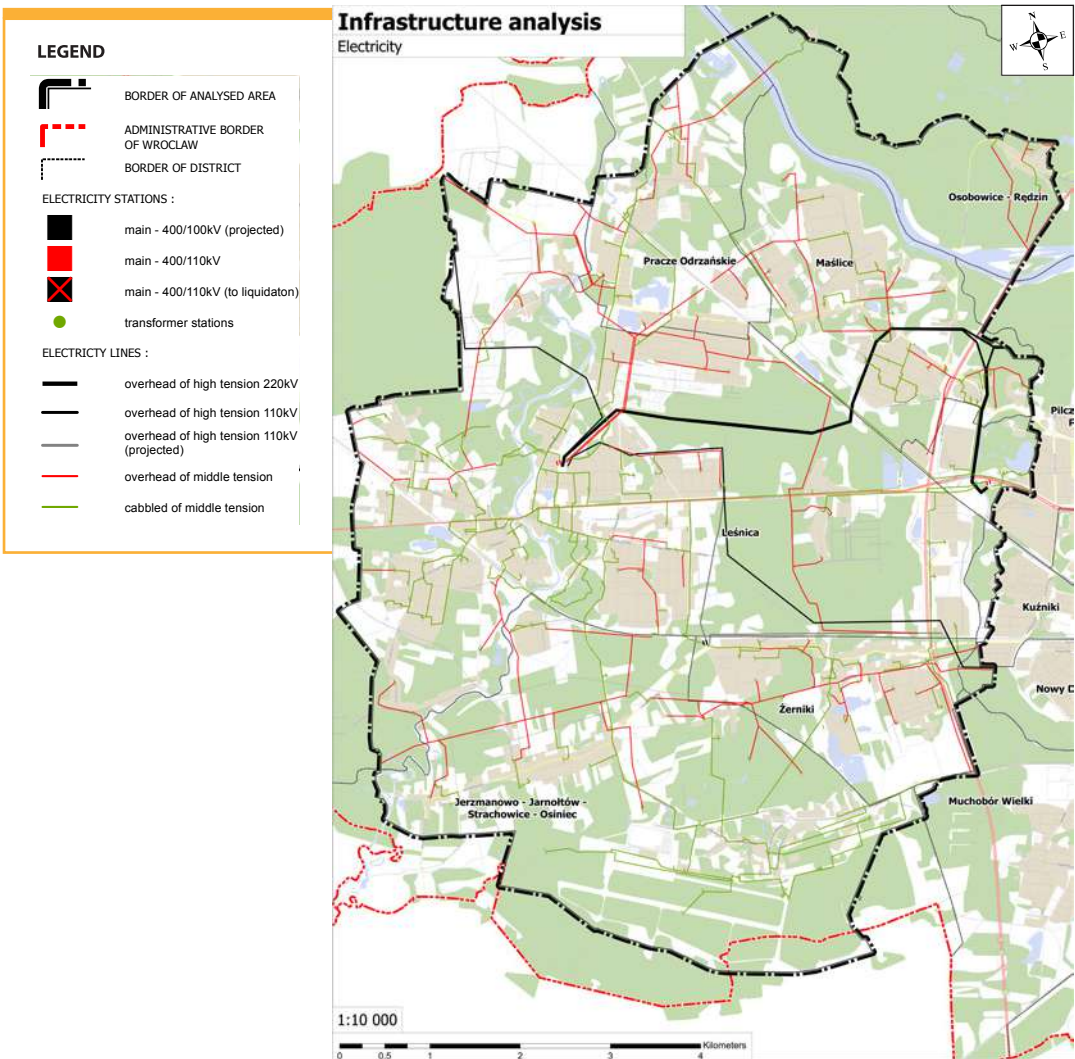


Figure 12

GAS AND HEATING SYSTEM

Wrocław is powered by a high methane natural gas. The gas is delivered to the city via the bypass of the high pressure gas pipelines. The gas pipeline bypass is located outside the city limits and connected to the main gas pipelines. The gas network is shown on the map no. 3 with the location of gas reduction stations. On the west part of Wrocław are located 16 stations, of which there are 3 stations of the first stage of gas pressure and 13 stations of the second stage of gas pressure. As far as the heating system is concerned, heat is supplied to the individual part of the city by means of a city heating network. Heat production is dealt with by the 3 Heating-electric plants belonging to "Kogeneracja" S.A. including the City Heating-Electric Plant at Łowiecka street. In our area the heating networks do not exist. The expansion of the heating network to the western part of the city is planned, as well as the expansion of the heat supply area, what is shown in the Fig. 13 [4, pp. 73-76].

WASTE SYSTEM

In the area of Wrocław we can find individual objects related to the waste management including the areas of landfill sites, which are currently closed. Waste management facilities include most of the facilities located in the West of Wrocław, they are as follow: waste handling, waste composting plants, waste processing plants, selective waste collection sites, waste water disposal sites and several waste collection facilities. However, the municipal waste is not stored in the area of Wrocław and is transferred to the regional landfills [4, pp. 73-76].

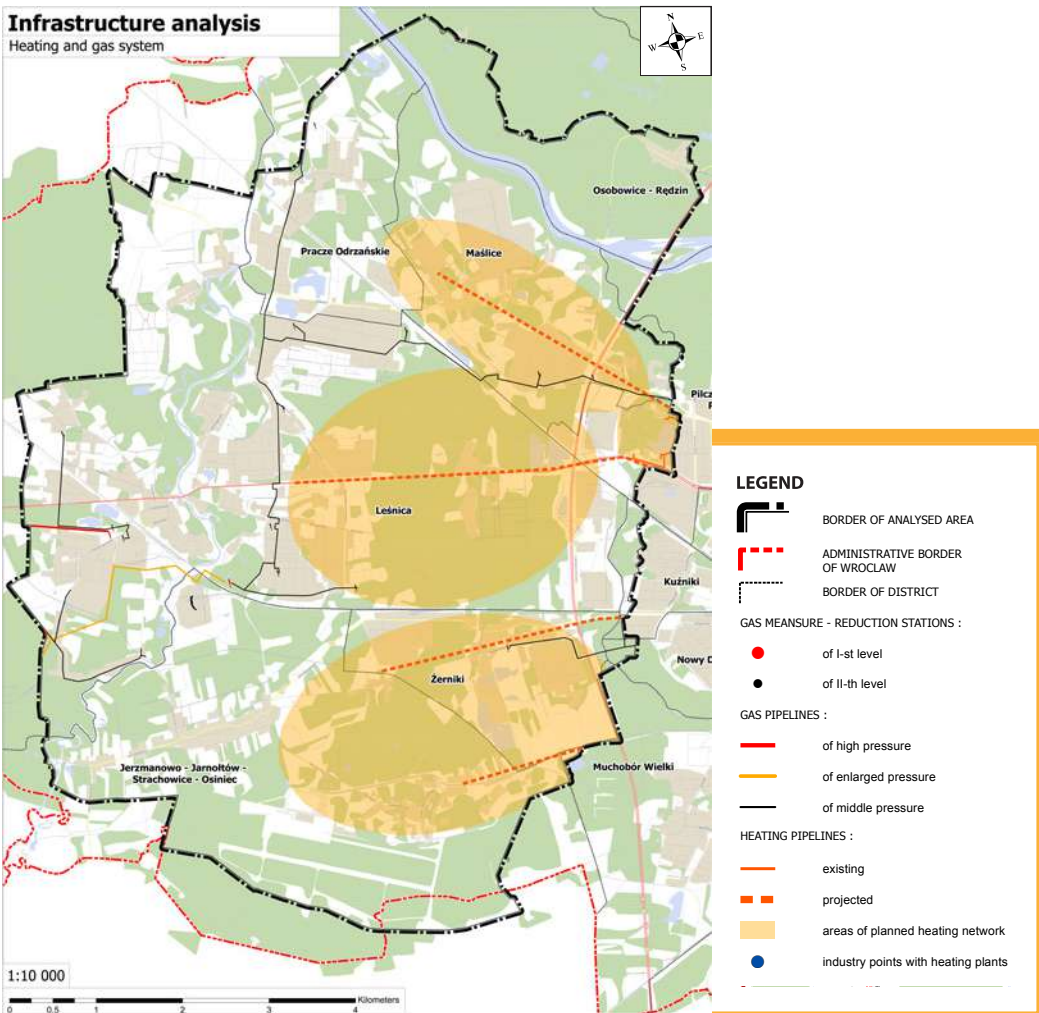


Figure 13

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- [7] <http://airport.wroclaw.pl> [26.10.2017].

FIGURES

Figure 1. Land use analysis.

Figure 2. Small town units (source: <http://ukosne.gis.um.wroc.pl/?hg=658>).

Figure 3. Units of former villages (source: <http://ukosne.gis.um.wroc.pl/?hg=658>).

Figure 4. Single-family housing units (source: <http://ukosne.gis.um.wroc.pl/?hg=658>).

Figure 5. Housing units with low-key character (source: <http://ukosne.gis.um.wroc.pl/?hg=658>).

Figure 6. Environment analysis.

Figure 7. Historical analysis.

Figure 8. Transportation analysis – Transportation network.

Figure 9. Transportation analysis – Public transport.

Figure 10. Transportation analysis – Public transport.

Figure 11. Infrastructure analysis – Water and sewage system.

Figure 12. Infrastructure analysis – Electricity system.

Figure 13. Infrastructure analysis – Heating and gas system.



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LEARNING



WROCLAW – TO THE WEST

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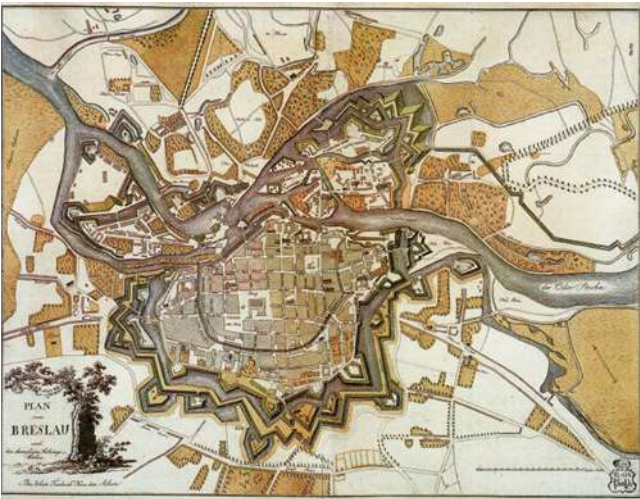


Figure 1
Wrocław, city plan, 1807 ("Plan von Breslau und den ehemaligen Festungs-Werken", F.G. Endler, 1807)



Figure 2
Wrocław, city plan ("Plan von Breslau"), before 1824 (after the demolition of the walls)

At the beginning of the 19th century Wrocław (Fig. 1), just like Poznań, was a relatively small Prussian city. An important one, but "small", without a possibility to develop due to its defensive character. It was not until the demolition of the city walls and fortifications, which started in 1807 and lasted until 1838 (Fig. 2), that quick urban and economic development began. It was further facilitated by the new city charter passed in 1808, which made it possible to include suburban areas in the city territory and consequently increase its size many times – from 133 ha to 2,046 ha.

The 19th century marked Wrocław's heyday, which was connected with the development of industry and railway transport. At first the railway expanded eastward, in the direction of Olawa, then to Upper Silesia, to finally reach the Vienna-Warsaw connection (Fig. 3). A direct train line to Berlin opened in 1846, later followed by links with Vienna and Dresden. The spread of tramway infrastructure demonstrates that the city mostly expanded to the south and to the west (Fig. 4). In the early 19th century Wrocław struggled with a number of problems, similar in character to those faced by most European cities. However, a comparison with Cologne and Frankfurt am Main (Fig. 5) shows huge disproportions in the ratio of inhabitants to territory, which probably contributed to Wrocław's overpopulation, bad sanitation, lack of social infrastructure and difficulties connected with spatial development. These issues changed the development policy of the municipal authorities.

The second stage of Wrocław's rapid growth occurred in the interwar period, when the political and economic situation after the first world war stabilised. Between 1924 and 1928 the city saw the most spectacular expansion of its administrative borders (Fig. 6) resulting from the addition of the suburban communes (Fig. 7). The expansion basing on the results of a competition (1921–1922) and the subsequent planning work is considered to have been a major achievement. The first general plan of dividing Wrocław's territory was prepared by the Municipal

Expansion Office in 1924. The adopted solutions drew upon the best examples inspired by the competition submissions as well as previous plans, including those by Max Berg, the Municipal Construction Advisor. In 1921 he published his urbanistic-architectural Manifesto, which outlined the modern principles of planning the urban development of agglomerations on the example of Wrocław. At that time various conceptions of development were analysed, from organic growth of the existing territory on the basis of a concentric layout to the idea of satellite towns (Trabantenstadt) situated around Greater Wrocław (Fig. 8). The latter was particularly appreciated because it followed the tenets of the then popular idea of the garden-city and was compatible with the trend to decrease the density of urban structures. The implementation of the model based on organic growth would be difficult due to natural factors (Fig. 9). Growth to the north was limited by the river and the need to build bridges; a similar obstacle was in the east, where the main water sources were located, while in the south lay high-quality arable land (Fig. 10). After the construction of the motorway in the 1930s it was the last-mentioned element that became a natural obstacle to territorial expansion of the city.

The period after the second world war was a new chapter in the history of the city. The war not only resulted in huge damage (Fig. 11), but also caused far-reaching changes to the socio-economic system connected with the shifting of Poland's territory to the west (the "regained" territory of the Piast dynasty) and losing the eastern borderland. What followed was a fresh look at the city, its potential and the possibility of development. Since the new territory was for a time treated as "no man's land" (for fear of another shifting of national borders), it became possible to create bold new rules in order to highlight the "Polishness" of the western borderland. A radical departure from the pre-war situation.

Development in the early years after the second world war was largely based on rebuilding and alteration (Fig. 12), which for economic reasons had to respect the existing infrastructure, beginning with the grid street plan and the underground infrastructure. Bold solutions were first put forward for the gravely damaged areas in south Wrocław. On the one hand, the idea was based on a continuation stemming from the existing infrastructure, and on the other – on endowing the area with a new character in keeping with the social and political policies. Thus building the new Wrocław bore a deep mark of Polishness, which was supposed to eradicate the German roots. It is most evident on the example of Wrocław's first large district – Wrocław-

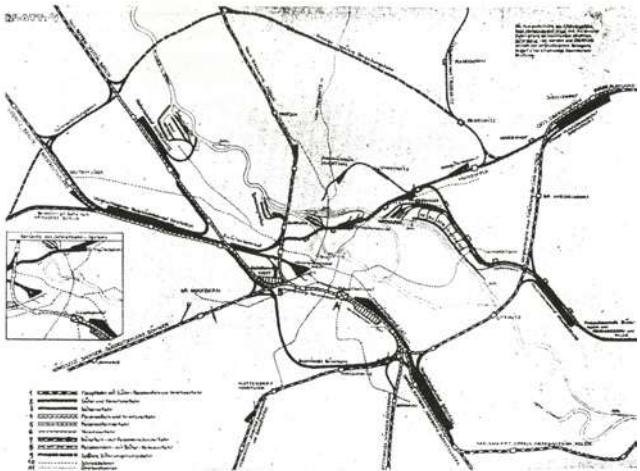


Figure 3
Wrocław, transport system based on passenger and cargo trains, competition entry from 1912

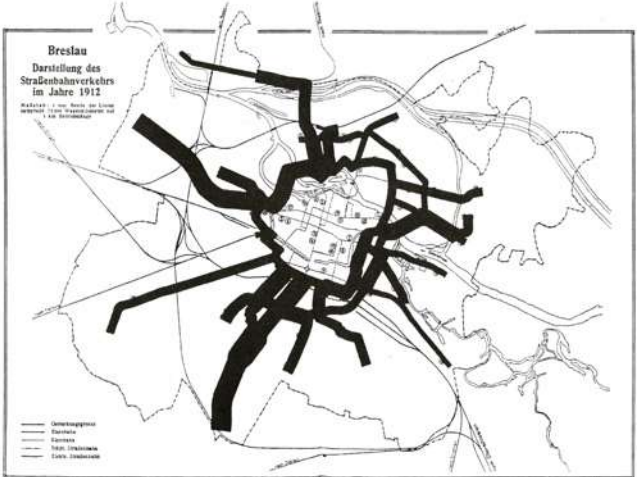


Figure 4
Wrocław, illustration of tramway traffic from 1912

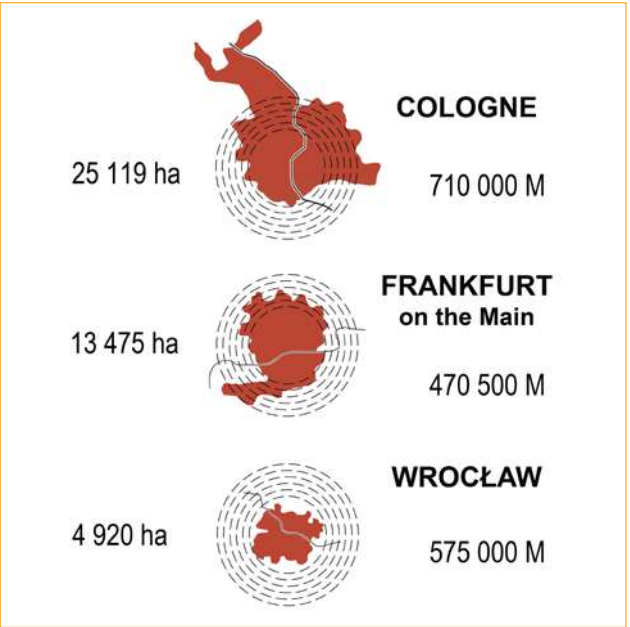


Figure 5
Comparison of the territory and population of Cologne, Frankfurt on the Main and Wrocław, 1926



Figure 6
Wrocław Zoning Plan with the limits of the new zone Staffelbauklasse, added in 1926

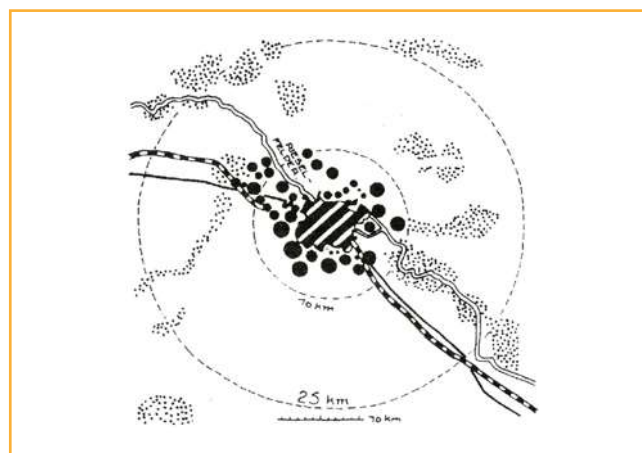


Figure 7
Expansion of Greater Wrocław resulting from the addition of suburban communes – according to the plan of the Municipal Expansion Office (as interpreted by E. May)

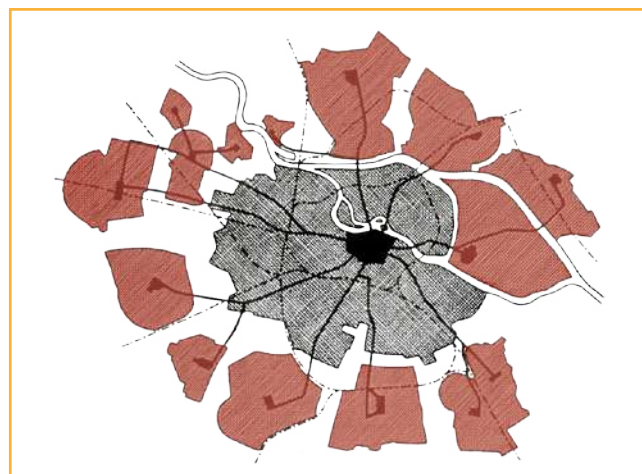


Figure 8
A diagram of transport links between satellite towns and the parent city submitted to the competition for the plan of Wrocław

South, located along the axis of Powstańców Śląskich St (Fig. 13). The new housing estates making up the district – Anna, Barbara, Celina and Dorota (Fig. 14) – unambiguously highlighted the principles of the time with regard to urban planning and especially the social considerations. Post-war modernist conceptions also manifested themselves in other countries, such as Great Britain, the Netherlands or Germany, in particular in large cities with equally large war damage. Creating new rules became the functional and spatial norm in those cities, most of which are nowadays returning to traditional urban planning understood as continuation of and respect for the historical principles of spatial development, especially in the centres.

The southward direction of development (Fig. 15) became the new challenge after the period of natural growth based on reconstruction and alteration of the existing elements of infrastructure came to an end. Plans made until the early 1970s (whose timeframe reached the year 1985) followed a doctrine of growth based on the city's concentric layout (Fig. 16). Wrocław increased its territory in the 1950s, and again in the 1970s, when certain emphasis was put on the westward direction. Those plans, however, reflected a natural desire to become more connected with central Poland, especially Warsaw, and not Berlin, as demonstrated by the fact that the main ring road of the city was situated on the east (Fig. 17). The change of the route of the ring road in the late 1970s was largely dictated by taking into account the only remaining undeveloped land in the city and the ensuing predictions concerning the direction of development. This choice was favoured by the lack of natural obstacles (except for mental ones) and the possibility of unhindered territorial expansion without the need to build bridges. The only limits would be imposed by road and railroad infrastructure. The latter, in spite of declarations of basing residential development on rapid urban railway, has not materialised even to a symbolic degree yet.

The harbinger of thinking about the potential westward development of the city was the competition for the West Strip of Wrocław Agglomeration, called by the SARP Association of Polish Architects in 1974 and Concept for Agglomeration Development based on result of that competition (Fig. 18). This undertaking was comparable with the plans made in the 1920s, because it would also entail a territorial increase. However, the duality of thinking about public transport in the West Strip was most visible in the competition for the new residential quarter Gądów-Airport (Fig. 19). The chosen work, which was based on

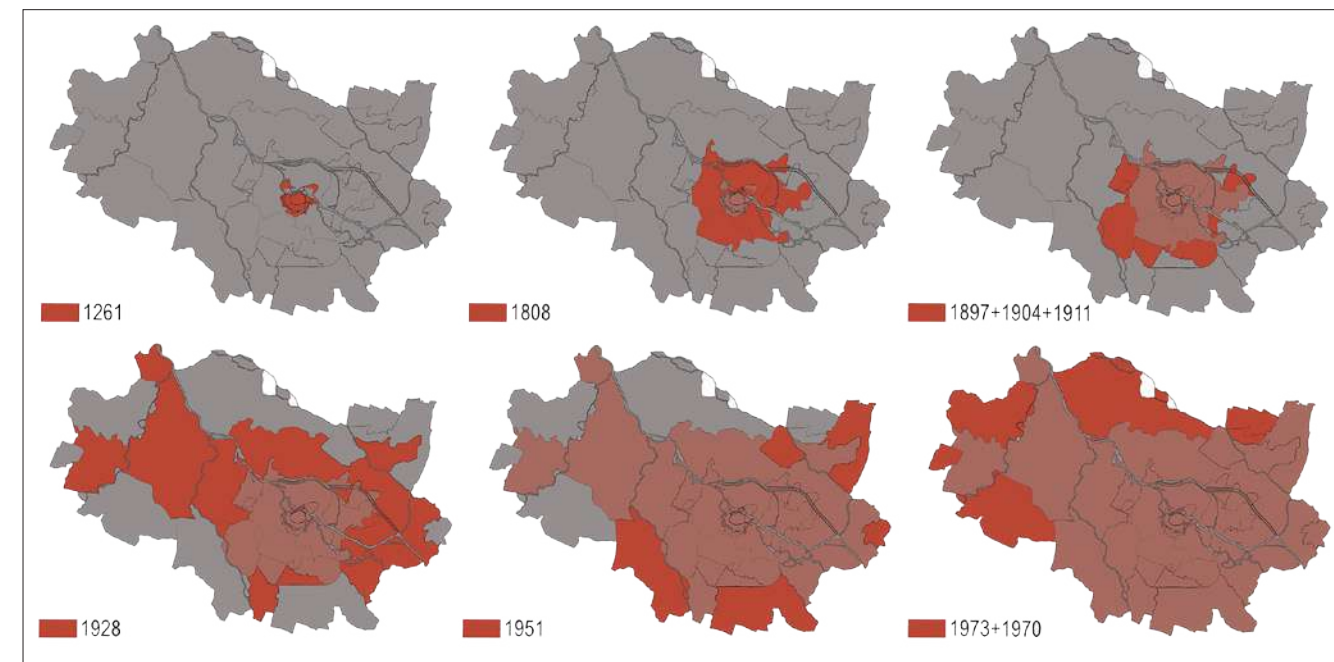


Figure 9
Determinants of growth

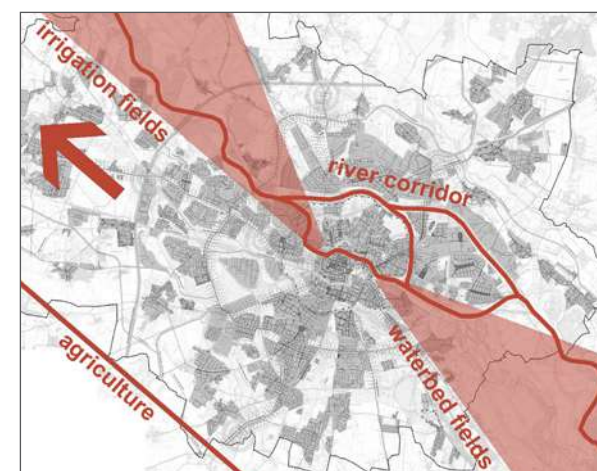


Figure 10
Determinants of growth

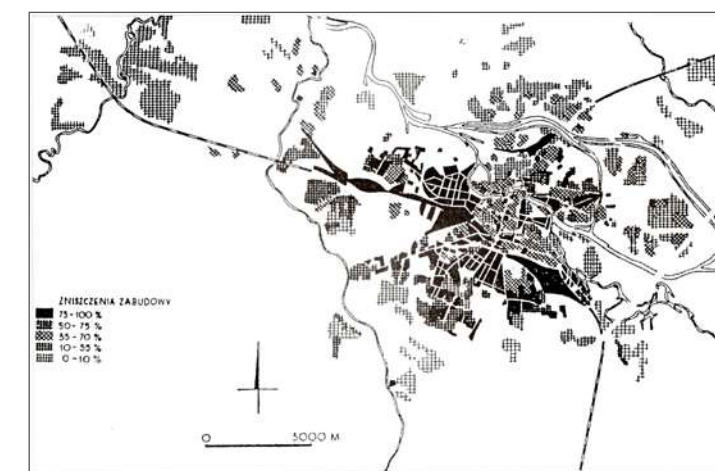


Figure 11
Map of war damage of Wrocław, 1945

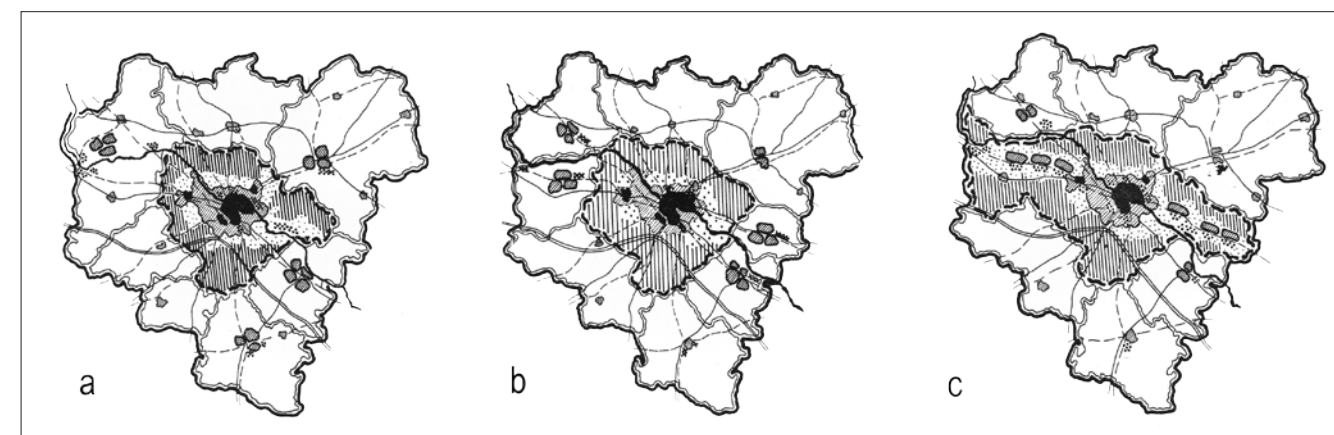


Figure 12
Spatial development plan, 1968, a) nest clusters layout; b) satellite layout; c) strip-based layout, Odra

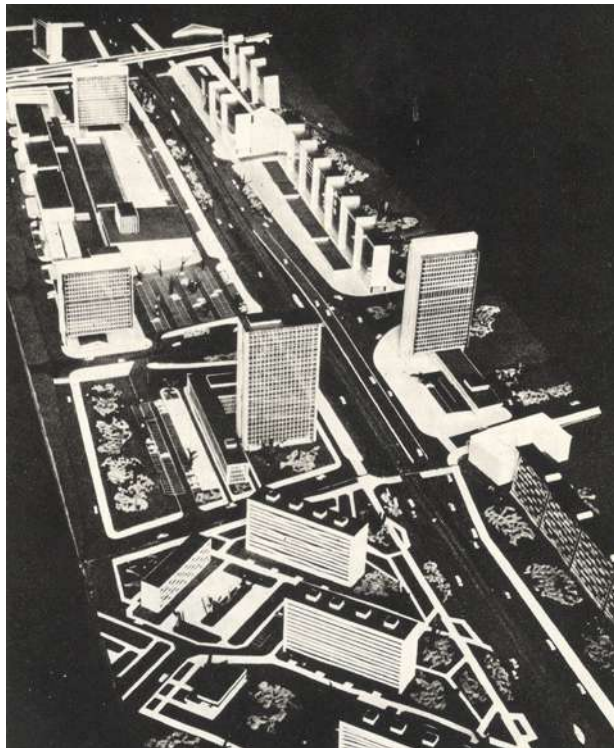


Figure 13
Wrocław, commercial centre on the axis of Powstańców Śląskich St, scale model. Photo by Julian Łowiński

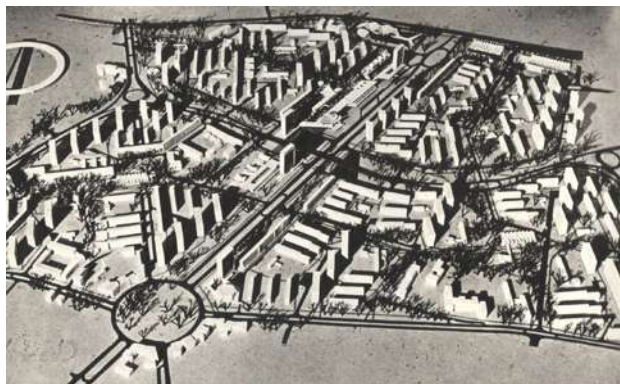


Figure 14
Wrocław-South District, scale model. Photo by Julian Łowiński



Figure 16
Outline of the general plan of Wrocław until 1975

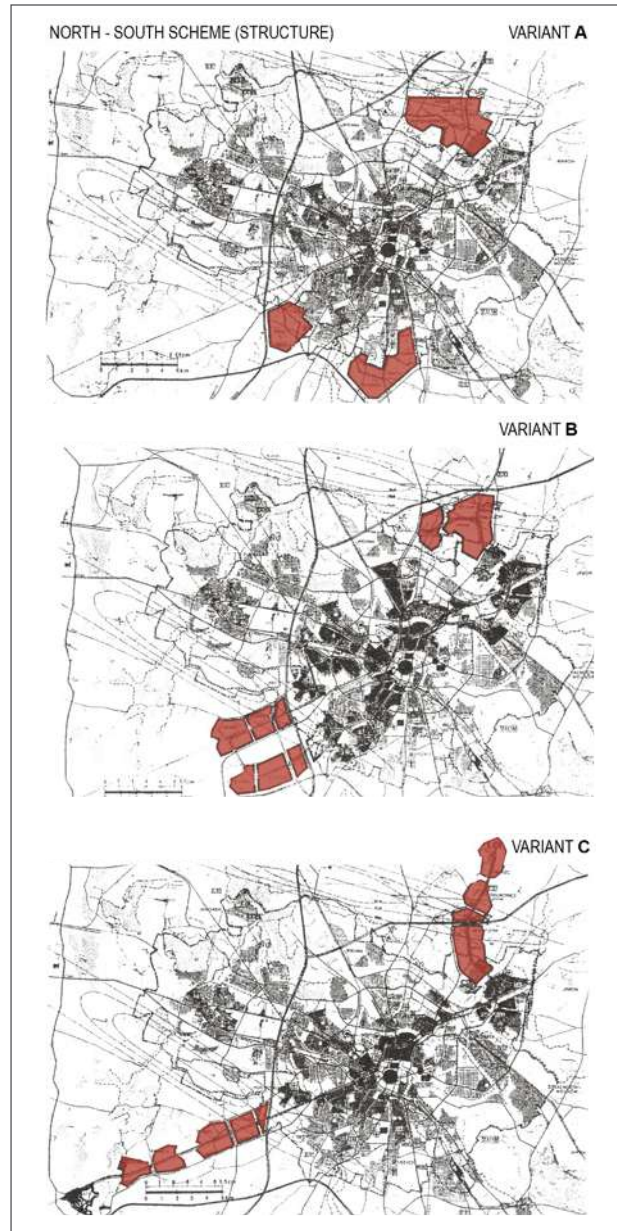


Figure 15
Case studies for the general plan of Wrocław until 1985



Figure 17
Outline of the future general plan of Wrocław until 1985

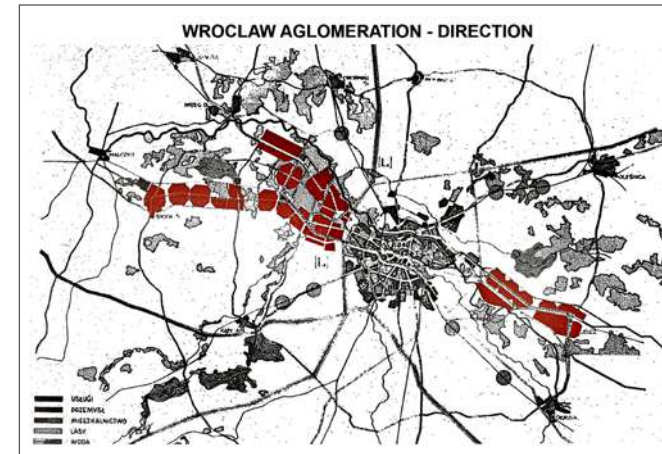


Figure 18
Concept of the general plan of Wrocław until 2000

an enclosed concept of a housing estate separated from the urban structure, followed the principle of large city blocks with service outlets within them and commercial and recreational passages leading not towards the most important elements of the estate – the train station or the main street – but parallel to them. This solution results today in the need to adapt the developing structure to the increasingly important artery of Kosmonautów St and its continuation, Średzka Axis.

In the 1970s and 1980s the westward expansion of Wrocław assumed the form of mostly single-family housing (Fig. 20) as a natural continuation of the pre-war development. A lack of a clear plan basing on competition principles from the 1970s made it impossible to unambiguously specify the main functional and spatial parameters for the area. It was the decision to build Wrocław ring roads, especially the orbital ring road, on the western side of the city that provided an impulse to consider the westward direction as an important way of development for the city and the entire region. The construction of the Municipal Stadium for Euro 2012, which initially contained a shopping centre, was the first confirmation of the importance of the assumed principles of development. The second one is probably the construction of Nowe Żerniki housing estate (Fig. 21), which reveals the true potential of the area, somewhat contrary to the previous decisions assuming that the character of housing complexes situated along Średzka Axis would be that of a small town. Moreover, Nowe Żerniki has been the first estate since the 1970s that is big enough to provide its inhabitants with proper conditions. The estate can and should become the benchmark for the spatial development of the future West Strip.



Figure 19
Wrocław, Gądów-Airport residential district, competition entry, scale model

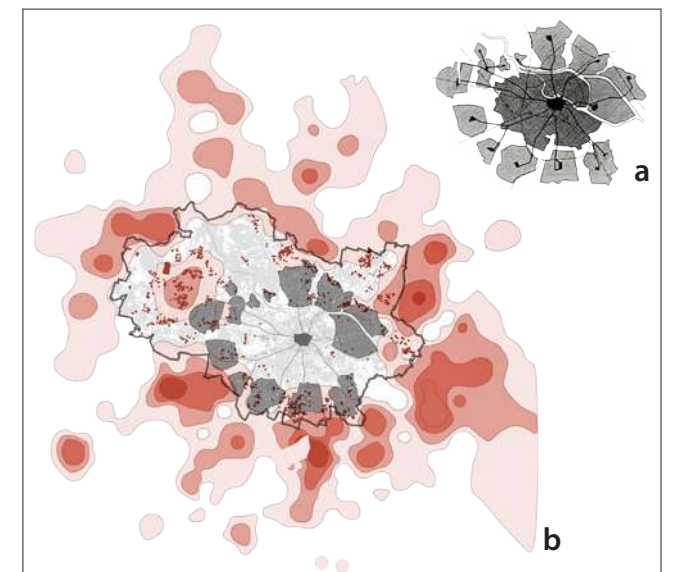


Figure 20
Single-family housing located outside the city limits (b) versus satellite system approx. 1921 (a)

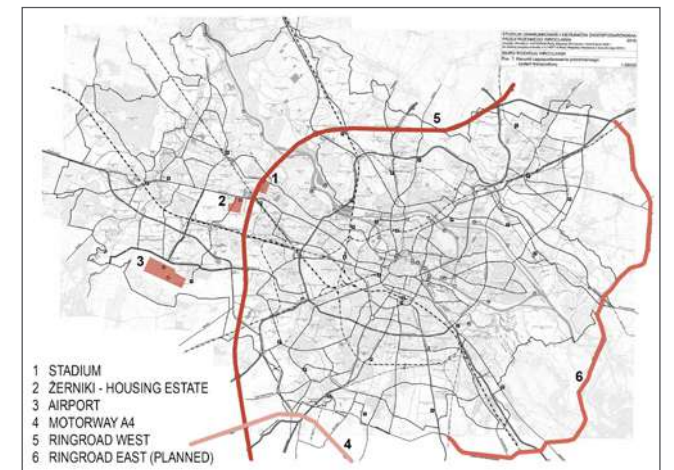


Figure 21
Wrocław, New investment on the west marked on the Transportation System

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FIGURES

- Figure 1.** Wrocław, city plan, 1807; "Plan von Breslau und den ehemaligen Festungs-Werken", F.G. Endler, 1807 (source: <http://fotopolska.eu/612364,foto.html?o=b9973>).
- Figure 2.** Wrocław, city plan ("Plan von Breslau"), before 1824 (after the demolition of the walls); (source: Łukaszewicz, P. (ed.) *Ikonomia Wrocławia*, t. I, Wrocław: Grafika 2008, p. 179).
- Figure 3.** Wrocław, transport system based on passenger and cargo trains, competition entry from 1912 (source: [2] il. 89).
- Figure 4.** Wrocław, illustration of tramway traffic from 1912 (source: [2] il. 77).
- Figure 5.** Comparison of the territory and population of Cologne, Frankfurt on the Main and Wrocław , 1926 (source: [2]).
- Figure 6.** Wrocław Zoning Plan with the limits of the new zone Staffelbauklasse, added in 1926 (source: [2]).
- Figure 7.** Expansion of Greater Wrocław resulting from the addition of suburban communes – according to the plan of the Municipal Expansion Office (as interpreted by E. May); (source: [2]).
- Figure 8.** A diagram of transport links between satellite towns and the parent city submitted to the competition for the plan of Wrocław (source: [2]).
- Figure 9.** Determinants of growth.
- Figure 10.** Determinants of growth.
- Figure 11.** Map of war damage of Wrocław, 1945 (source: [3]).
- Figure 12.** Spatial development plan, 1968: a) nest clusters layout, Odra; b) satellite layout, Odra; c) strip-based layout, Odra (source: [4]).
- Figure 13.** Wrocław, commercial centre on the axis of Powstańców Śląskich St, scale model (photo by Julian Łowiński).
- Figure 14.** Wrocław-South District, scale model (photo by Julian Łowiński).
- Figure 15.** Case studies for the general plan of Wrocław until 1985 (source: [3]).
- Figure 16.** Outline of the general plan of Wrocław until 1975 (source: [3]).
- Figure 17.** Outline of the future general plan of Wrocław until 1985 (source: [3]).
- Figure 18.** Concept of the general plan of Wrocław until 2000 (source: [3]).
- Figure 19.** Wrocław, Gądów-Airport residential district, competition entry, scale model (source: [4]).
- Figure 20.** Single-family housing located outside the city limits versus satellite system approx. 1921 (based on source: [5]).
- Figure 21.** Wrocław, New investment on the west marked on the Transportation System.



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As a member of the Association of Polish Architects, currently at Main Board, in the years 2009-2015 was the president of the Wrocław branch, a co-organizer and participant of urban and architectural workshop for the residential estate of the European Capital of Culture 2016. Co-founder and director of the Lower Silesian Festival of Architecture and interdisciplinary Workshops ACUPUNCTURE.

THE SUB-URBAN TOOLBOX: INTRODUCING THE SUBSURFACE EARLY INTO THE URBAN PLANNING PROCESS

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INTRODUCTION

The subsurface is an important constituent of the physical environment of cities. We live on top of it and we have to deal with the structure and properties of the subsurface and occasionally with the hazards it presents.

The subsurface is the technical space, the engine room of a city. It houses networks (tunnels, cables, sewage, drainage) and space for storage (cellars, parking lots), it offers heat and sustainable energy, and it is also the natural system that is crucial for a stable green, healthy and liveable city [1]. The more use we make of subsurface space, the more surface space we free for the one function that cannot do without daylight and fresh air: living (Fig. 1).

The rapid expansion of our cities, the effects of climate change, and the urgency for an energy transition make the intelligent and efficient use of the subsurface urgent. For this to happen, those who are responsible for decisions which guide the expansion of our cities, need to be made aware of, and appreciate, the potential opportunities, and challenges, which the subsurface presents.

Despite this, the urban subsurface is in fact still largely "out of sight, out of mind". This is in part due to the fact that information about the subsurface of cities is often not readily accessible, if indeed it is even available, and if available, the information is typically in forms only understandable to geoscientists. As a consequence urban planners generally lack insight with respect to the subsurface, which they regard as "difficult". They make their plans at ground level in 2D and in their plans the use of the subsurface follows the use at ground level: the foundations of a building, a subsurface parking facility for a block of buildings, cables and pipelines that connect buildings. The subsurface remains the exclusive domain of the engineer and in the urban planning process "engineering follows urban planning". This regularly leads to financial complications, delays (unforeseen ground conditions are a major uncertainty in urban infrastructure projects) and potentially to conflicting uses of the subsurface. It can also limit, and in some cases preclude, multiple uses of the subsurface which could otherwise happily co-exist.

Urban planners should regard the subsurface as part of the public space, and present their concepts in 3D volumes. Subsurface specialists and engineers should be involved as early as possible in the urban planning process: engineering "hand in hand with urban planning".

By considering the subsurface during the early planning stages restrictions of the subsurface are recognised in a timely manner, costs and delays can be avoided. Opportunities the subsurface has on offer concerning sustainable use of space and energy can be fully exploited and "smart combinations" (archaeology and subsurface parking, remediation and shallow geothermal) can be made to improve the exploitation of plans. This way the interests of all stakeholders will be balanced.

This requires that urban planners gain greater insight with respect to the subsurface (imagination is the basis for formulating ambitions) and vice versa that subsurface specialists get a feeling for the world of urban planning. Time should be spent by urban planners and subsurface specialists gaining more insight in each other's work, attitude, background and environment. Sincere interest in each other implies two-way communication, not only about subsurface information, but also concerning the content of projects and the challenges that could arise [2].

Transforming the relationships between experts who develop subsurface knowledge and those who can benefit most from this knowledge, urban planners and decision makers, has been, and remains, the key aspiration of Sub-Urban.

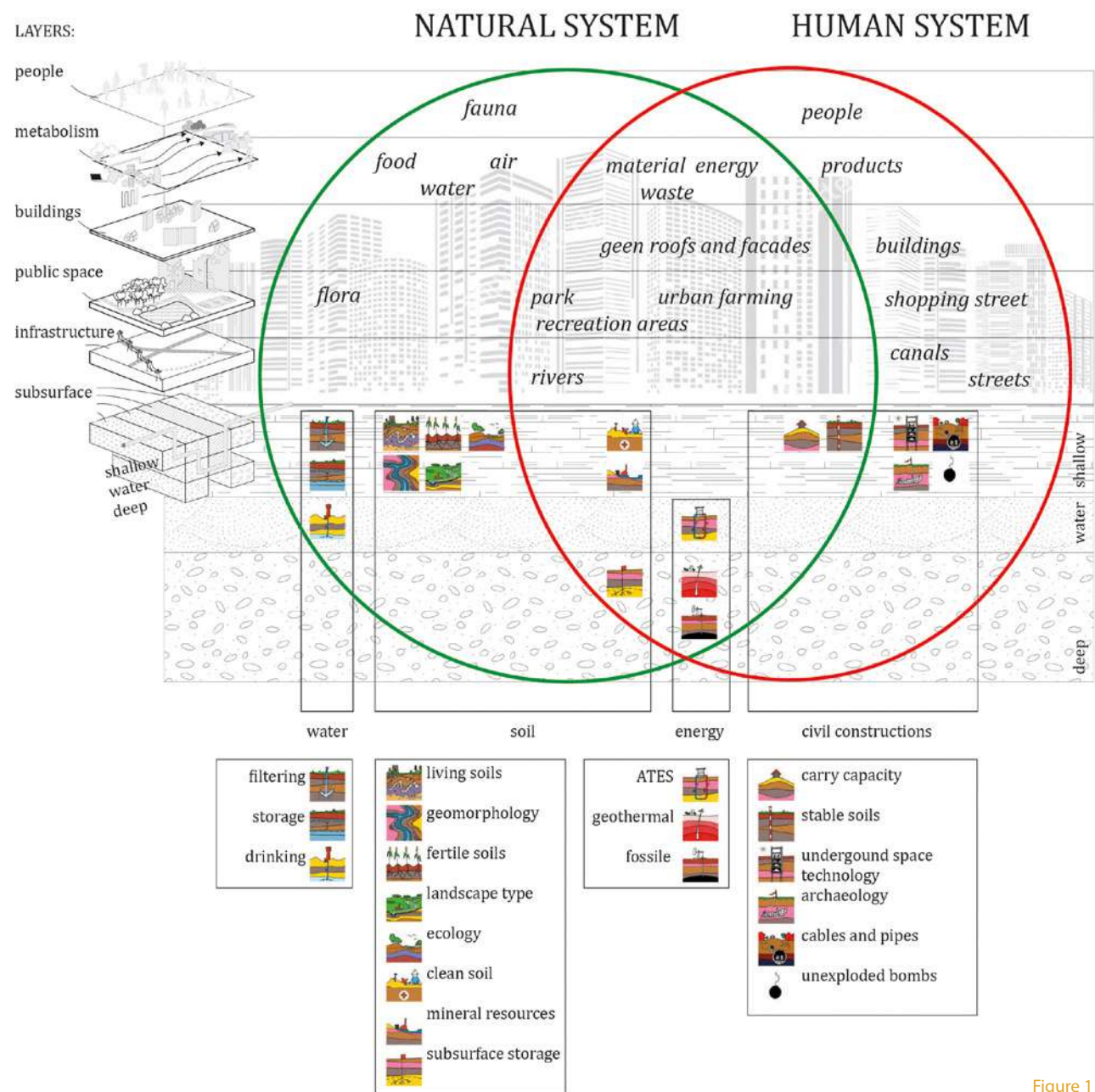


Figure 1

SUB-URBAN

Sub-Urban was initiated in 2013, as a European Cooperation in Science and Technology (COST) Action (TU1206), with the intention of improving understanding and use of the ground beneath our cities and with a formal lifespan of 4 years. (http://www.cost.eu/COST_Actions/tud/TU1206).

The action aims were to provide those who manage the cities with knowledge and tools that enable them to:

- Maximise the economic, social and environmental benefits of their subsurface resources;
- Recognise and manage responsibly the conflicting demands placed on the subsurface of our cities;
- Safeguard through informed stewardship the subsurface ecosystem services on which cities depend and so their sustainability.

Sub-Urban activities have involved the development of a network of >150 researchers, (17 Geological Survey Organisations, 22 Research Institutions) and 23 actively participating cities.

OBJECTIVES AND TARGET GROUPS

The main objectives of Sub-Urban were:

- to provide a long-needed contribution to greater interaction and networking between experts who develop urban subsurface knowledge and those who can benefit most from it: urban decision-makers, practitioners (private consultants and contractors) and the wider research community;
- to co-ordinate and share current world-leading research and knowledge about the subsurface in the participating European countries;
- accelerate the uptake of subsurface modelling workflows by researchers and the development of tools to support urban subsurface decision-making;
- inform policy- and decision-makers from the City-partners, and demonstrate to them, the importance of the subsurface and of using subsurface knowledge at an early stage in urban decision making;
- transform delivery and impact of subsurface data and knowledge to enable policy makers to make better informed decisions for a range of key subsurface issues and to incorporate these in urban policies;
- the Action will seek to bridge the different "cultures" between different groups (e.g. geologists and urban planners think about, and use, information differently) so that they acquire a common understanding about the use of subsurface knowledge.

DELIVERABLES

Sub-Urban deliverables comprise reviews of the state-of-the-art with respect to planning and use of the subsurface, reports on Short-Term Scientific Missions (exchange visits between colleagues in the Sub-Urban network), multi-disciplinary workshops, contributions to conferences and scientific publications. These deliverables can be found on the Sub-Urban website <http://sub-urban.squarespace.com/#about>. The website also offers access to the online Toolbox.

THE TOOLBOX: METHODOLOGIES AND CULTURES

The online Toolbox was formally launched during the Sub-Urban Conference in Bucharest, March 2017, <http://sub-urban.squarespace.com/toolbox-1/>. This followed some workshops at various locations across Europe (Skopje, Ostrava, Novi Sad, Trondheim), during which earlier versions of the Toolbox were presented as a "work in progress".

The Toolbox draws together a wide range of material, including recommended methodologies and workflows, case studies, reference documents, reader lists, external web sites and other supporting materials and documents.

It also shows examples of how to bring together professionals from various disciplines; each discipline having its own culture, its own way of handling data, information, modelling and visualisation. By bringing these groups together, the Toolbox acts as a platform where the communities of urban planners, subsurface specialists and decision makers can meet.

The Toolbox serves as inspiration for other cities and organisations and can help them to move ahead with their aspirations, in their own ways. It gives the users a feel for what can be achieved in their own organisation and helps them to address issues with a fraction of the costs. It is designed to be used as a training tool during workshops.

THE TOOLBOX: STRUCTURE AND CONTENT

To easily navigate through the Toolbox, we make use of a metaphor: a bicycle. In this metaphor our knowledge of urban planning is represented by the front wheel and the knowledge of the subsurface is represented by the back wheel. Turning this knowledge into action, the interface for bringing urban planners and subsurface specialists together, is represented by the crank; via the crank the bike is put into motion. The decision-makers, addressing the city needs, sit on the saddle; they decide when the bike moves and in which direction. The bike concept divides the Toolbox into sections, each section containing one or more topics. The structure of the Toolbox therefore reflects the challenges that were addressed by Sub-Urban and provides different entry points for users, depending on their backgrounds and needs (Fig. 2).

For most of these topics users of this Toolbox can find "highlights" such as good practices and best efforts as well as gaps in our knowledge. Names, email addresses and telephone numbers of Sub-Urban participants are given so that interest in a topic can easily be followed up.

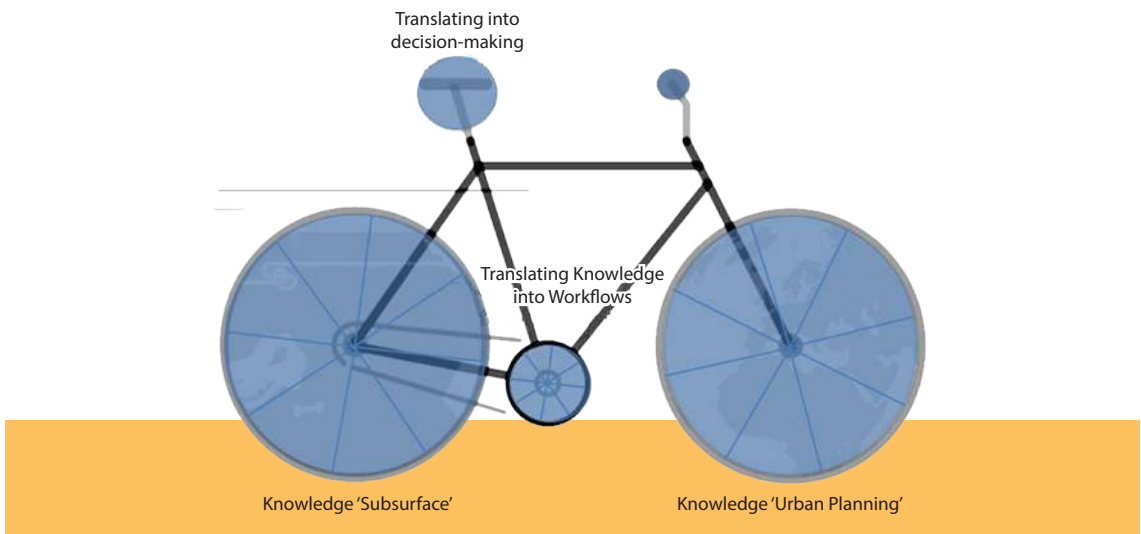


Figure 2
Navigating through the Toolbox

THE BACKWHEEL: sharing state-of-the-art geoscience knowledge within the geoscience community, and with urban planners.

Challenges

Knowledge about the subsurface is currently fragmented. The different disciplines active with respect to the subsurface are generally organized in teams along disciplinary lines. Archaeologists, geohydrologists, environmental - and cables and pipelines specialists, geotechnicians, and ecologists all have their own professional conventions and standards of working and presenting their information. There is no standard for an "integrated subsurface model". The subsurface specialists generally present their data in a fragmented and largely incomprehensible way to urban planners.

For most city planners and developers the subsurface is essentially unknown territory. Regarding the subsurface as an integral part of public space and subsequently including the subsurface as a matter of course within the urban planning process is not yet standard practice. For most urban planners the subsurface equates to "costs and delays". Opportunities are not routinely appreciated.

Sub-Urban actions

Sub-Urban established a network of urban geoscientists, mainly from European Geological Survey Organisations and universities, but including other researchers also, to draw together and evaluate their urban geoscience research, often world-leading but typically fragmented, and especially in monitoring, 3D/4D characterisation, prediction and visualization. Examples of existing good practice and best effort were identified, and shared across Europe and beyond amongst the geoscience community; these are presented in the Backwheel of the Toolbox.

The spokes of the Backwheel represent the topics that were evaluated: Data acquisition and management, 3D urban subsurface modelling and visualization, Groundwater and geothermal monitoring and modelling, Geotechnical modelling and hazards, Geotechnical data and hazards, Subsurface geochemistry, and Cultural heritage. The highlights can be found in the synthesis report "Opening up the subsurface for the cities of tomorrow" [3].

Because the evaluations of good practice and techniques were described in relation to needs expressed by City-partners, the Frontwheel also gives urban planners the opportunity to familiarize themselves with the subsurface.

THE FRONTWHEEL: giving Subsurface specialists insight to the world of Urban Planning

Challenges

Underground specialists and urban planners tend to work in different departments and/or organisations. Just as urban planners lack insight with respect to the subsurface, so do subsurface specialists lack insight with respect to the world of urban planning as they generally are not pro-actively involved in the urban planning process.

Sub-Urban actions

The Frontwheel takes the perspective of urban planning practice as its starting point, from the vision that societal challenges and improvements are mainly defined within the context of urban planning. A review of the prevailing state-of-the-art with respect to knowledge, planning, and use of the subsurface was established in a series of reports for 17 selected cities across Europe. These reports (all available on the Sub-Urban website www.sub-urban.eu) contain detailed descriptions of geology, city setting, planning issues with the subsurface, economical aspects, state of infrastructure, governance, legal framework etc. A synthesis of these is contained in the report "Out of Sight, Out of Mind" [4].

From these reports it is clear that for any planning approach the size of the city, its population, whether it is prosperous or poor, isolated or not, what the policy and legal frameworks are, etc., makes a fundamental difference. However, an urban typology that is applicable to our particular project was not readily available and therefore establishing such typology was done in the framework of Sub-Urban and applied to our selection of cities.

Also, within the framework of Sub-Urban a 3-Dimensional Evaluation Framework was established, with the main topics of urban planning practice, (driving forces of urban renewal, scale, planning stage, geography, planning regime and data availability) as dimensions along 3 axes (the spokes of the front wheel). This evaluation framework has been translated into a real database framework for "subsurface inclusive" planning cases in Sub-Urban cities. With this Evaluation framework, urban planners from outside the Sub-Urban network can select cities from the database, that are similar to their own in size, geography, economy and in planning conditions and furthermore select cities that deal with similar subsurface issues.

THE CRANK: Urban planners and Subsurface specialists pro-actively working together

Challenges

Even though knowledge about the subsurface might be available, it might still not be used in the urban planning process. This could have to do with (lack of) data sharing, communication issues (urban planners and subsurface specialists, speak different languages and so a degree of "translation" is required), legislation, economic issues etc.

Sub-Urban actions

The Crank of the Toolbox shows the examples of how Sub-Urban has started to transform the relationships between above ground and below ground communities.

Short-Term Scientific Missions were organized: exchange visits between colleagues in the Sub-Urban network, enabling experience to be gained, and knowledge to be exchanged and gathered for the benefit both of the participant, and of the Action as a whole.

A series of workshops throughout the duration of the Action has allowed interchange of knowledge and exploration of new ideas. Each workshop has concentrated on key topics and has involved participants from various disciplines. During these workshops, there were lively discussions between the "suppliers" of subsurface information and those on the "demand side" and in this way, the alignment of "demand" and "supply" was continuously improved. Underground specialists became more sensitive to the way of thinking and to the specific needs of urban planners and vice versa. A bond grew between subsurface specialists and urban planners. New opportunities appeared and smarter solutions were found during the discussions. The time spent in preparation of the workshops appears to be a productive investment that actually speeds up the planning process and also helps in terms of savings.

Links were established with sister-organisations with similar interests (albeit from somewhat different perspectives) in the subsurface and urban planning (ITA, ACUUS, ISOCARP).

One of the conclusions of Sub-Urban is that cooperation between all disciplines involved in urban planning with the subsurface can be greatly improved by using a common integrated above ground level/below ground level 3D model. As a consequence, Sub-Urban proposes what it refers to as the Geo City Information Modelling (GeoCIM) concept. GeoCIM is proposed for City Quarter to Conurbation scales, combining subsurface and above-ground models. Having a GeoCIM during the initial stages of early planning would enable a holistic urban planning [5].

THE SADDLE: Reaching the decision makers, linking the subsurface to the City Needs

Challenges

If we consider integrating subsurface disciplines as the first goal of our action and bridging the gap with the urban planners as the second step, informing and empowering policy and decision makers is the next step in reaching our goal: safeguarding subsurface ecosystem services, managing georisks, making a difference to our big cities... in Europe and beyond. Consideration and understanding of both above and below ground will allow the cities to better realise their ambitions for further densification and greening. Therefore sub-surface specialists need to be able to talk the language of the decision- makers and fit their contribution into major action programs.

Sub-Urban actions

For a city to continue to be successful, it is essential that further urbanization and densification occur, but in a sustainable way such that changes in the economic, social, cultural and social fields and can also be accommodated. Urban resilience is the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience. The 100 Resilient Cities (100RC) programme, pioneered by the Rockefeller Foundation, is dedicated to helping cities around the world become more resilient to the physical, social and economic challenges that are a growing part of the 21st century. Consideration and understanding of both above and below ground will allow the city to better realise its ambitions. Sub-Urban partner cities Lisbon, Rotterdam, Glasgow and Belfast are also members of the 100 Resilient Cities network. These cities are in various stages of developing their resilience strategies that will incorporate the subsurface. Sub-Urban is playing a role in coordinating their subsurface contributions.

The European Innovation Partnership on Smart Cities and Communities (Smart Cities) is an initiative supported by the European Commission which brings together cities, research institutes and industry partners that aim to develop and implement integrated smart city solutions. Sub-Urban is contributing to this initiative under commitment TU6985, part of the Integrated Planning / Policy & Regulations Cluster of Smart Cities.

The Saddle of the Toolbox would be the entry point to the Toolbox for decision makers. It has many examples of how the subsurface contributes to a better living environment.

SUB-URBAN NEXT

Within its formal lifespan of 4 years (2013-17), the COST Sub-Urban Action (TU1206) has achieved a measure of success in bringing together: urban subsurface research, capability, and good practice, and in making it accessible, and readily useable through an online Toolbox, for use by subsurface experts, urban planners, and other urban decision and policymakers.

However, the Sub-Urban network is looking forward, and in several directions. These are intended not simply to extend the life of the network, but to expand its critical mass, extend its influence, and increase its impact, locally, regionally, nationally, and globally. In this regard, linkages with other networks whose aims and objectives overlap with Sub-Urban, and which have global reach, have, and are being developed and will be crucially important in maintaining momentum. In this regard, a further Sub-Urban publication ("European Solutions for Global Challenges") is currently under preparation, and is intended for release in mid-2018.

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FIGURES

Figure 1. (source: Hooimeijer and van Campenhout, 2016).

Figure 2. Navigating through the Toolbox.



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Ignace (1956) studied Geology at the University of Amsterdam. Thereafter he joined Shell in 1983, working as exploration geophysicist in UK, Africa and Asia. In 1997 he started working for Halliburton Professional Services as workflow consultant, auditing exploration companies in UK, Russia and FSU. Since 2001 his work for the City of Rotterdam Engineers involves 3D modelling of the subsurface in order to facilitate integral subsurface evaluation in urban development projects. He initiated the "2D underground scan" and recently the 3D "subsurface serious game" and organises workshops on integrated planning for urban planners and subsurface specialists as well as the biannual IABR Urban Underground event. He represents Rotterdam in Sub-Urban, a European network to improve understanding and use of the ground beneath our cities. Since 2011 he is also active as geophysicist for the geothermal energy division of Brabant Water.

A SUSTAINABLE GREEN URBAN STRATEGY FOR WROCLAW'S WEST END

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INTRODUCTION

The city of Wrocław like many other world cities today, is facing numerous urban challenges among which are rapid urbanization, climate change and a shrinking public budget which could eventually lead to an unsustainable urban future for the city and its surrounding environments. Flooding, fragmentation, congestion, destruction of natural habitats as well as limited accessibility to services and amenities are among the many pressures on the cities' critical infrastructure and resources.

Mitigating these challenges without compromising the city's future thus warrants re-examining urban development practices and policies; creating awareness and understanding of the connections between the city, its environments and the West End; as well as developing a "Sustainable Green Urban Strategy" to guide development and help create a vibrant and livable community. The urban strategy should ensure that the West End is connected at the local and regional levels; is competitive economically, socially and environmentally; is appealing to residents and visitors, and attractive to capital investment.

In recent years, the city of Wrocław invested heavily in the construction of a sports stadium at the outskirts of the West End. Envisioned as a development node, the stadium was thought to instigate development and incite local population to relocate to the West End, but had little success. To date, the stadium remains mostly underused.

Sustainable urban strategies should thus explore the nature and complexity of the city and its differentiated districts while providing city officials, stakeholders and professionals with the basic concepts, best practices, tools and knowledge to guide sustainable development. It should be grounded in the principles and practices of effective sustainable city development while introducing overarching concepts and systems that make cities sustainable. The goal being to minimize consumption of space and natural resources, effectively manage urban flows and growth, ensure equal access to resources and services, protect the health of the urban population, maintain cultural as well as social diversity, and support biodiversity [3].

For the West End, this entails satisfying the following objectives:

- preserving the city's natural and cultural resources exemplified in the river and open fields; linking places of interest and historical sites;
- connecting the West End at the local and regional levels while ensuring provision of municipal services and amenities;
- mitigating possible flood impacts;
- preserving scenic views and corridors;
- promoting interpretive educational opportunities;
- supporting ecological functions;
- providing a healthy living environment (with special attention to soil and water);
- utilizing green energy and transit modes; and
- creating safe living conditions.

SUSTAINABLE SPATIAL CONCEPTS AND PRACTICES

Environmental, economic and socially responsible concepts and practices are key for successful sustainable urbanism. Envisioning an effective sustainable urban strategy for the West End demands an understanding of the concepts, principles and practices of sustainable city development.

– Sustainable land use planning

Land use planning and policies play a major role in sustainable development and should be coordinated with transportation planning to maximize efficient use of space. Innovative planning based on the values of sustainability should also be practiced ensuring attractiveness of the urban setting, effectiveness, usability and successful integration of new developments into existing environments [8]. Due to its many benefits, concepts such as compact planning, transit oriented development, buffering, preservation of natural landscapes as well as grouping of compatible uses ought to be incorporated in any comprehensive planning approach.

– Innovative housing strategies

Housing strategies ought to focus on regenerating places and increasing housing affordability while allowing for choice. A comprehensive housing strategy should target delivering quality mixed tenure housing in opportunity areas in proximity to transit where future housing capacity and potential for jobs creation is greatest (London Borough of Hammersmith & Fulham, 2015). Housing should be considered in any comprehensive planning approach while ensuring that it is accessible to communal services and amenities, meets the needs and aspirations of its tenants, sustains personal and community safety, and adopts innovative construction techniques. It should be affordable, accessible, attractive and supports choice.

– Sustainable mobility and transportation

Both transportation and land use planning are intertwined and should be integrated to ensure accessibility to municipal services and amenities while offering flexibility and choice [8]. Development of an integrated multimodal approach to transportation and land use planning reduces demand on any single transport mode and could afford both the city of Wrocław and the West End higher density development opportunities around intersecting modes. A multimodal system of pedestrian and bicycle paths, public transit lines as well as vehicular roadways affords community residents much needed alternatives while contributing to sustainable city development by reducing pollution and conserving public open spaces.

– Greening the urban environment

In an urban context and due to rapid urbanization, barriers are created resulting in fragmentation of land uses and open space as well as displacement of natural ecosystems by new land-use developments (Geneletti, 2004; Laforzezza et al., 2008; cited in [4]). Improving the functional and spatial connectivity of these landscapes is a prerequisite to sustainable city development (Grimm et al., 2008; Hodgson et al., 2009; cited in [4]). *A solution to this challenge lies in developing a green infrastructure that considers the landscape as an overall blanket of inter-related ecosystems in which single components interact with each other through a multitude of elements* (Weber et al., 2006; cited in [4]).

From a planning perspective, greening the urban environment refers to an approach that utilizes the natural environment as a green infrastructure. The goal being to maximize its functions through regulatory or planning policy and or mechanisms that ensure protection of the natural environment (Benedict and McMahon, 2006, cited in [4]). The concept is recognized as a valuable approach for spatial planning and consists of an interconnected web of open spaces (nodes) and linear connecting corridors (links) that afford communities positive health and economic benefits while providing opportunities for recreation and non-motorized transportation.

Moreover, energy conservation and renewable energy, sustainable building practices, green governance and economy as well as recycling and waste management are key sustainable city development principles and practices that ought to be integrated in any comprehensive planning approach.

WROCLAW'S SUSTAINABLE URBAN STRATEGY

Managing critical resources can be challenging, yet balancing growth and conservation in the West End is achievable if incorporating sustainable urban strategies and concepts.

Hence, to realize the values of sustainability and ensure that the West End is inclusive, safe and resilient as well as livable and vibrant, a list of "Green Sustainable Urban Strategies" have been formulated. The proposed strategies are intended as an introduction, an insight into effective sustainable development of the West End. They are by no means comprehensive, but serve as a prelude to aid formulate a strategic vision and development plan for the West End. The proposed urban strategies illustrate the overarching concepts and systems that ought to guide sustainable development in the West End.

– Connect with nature

As an environmental resource, the Odra river basin constitutes a major component and asset to sustainable urban development in the West End. If efficiently planned and managed, it could afford residents of the community multiple opportunities for recreation and awareness providing economic, social, ecological, educational as well as visual benefits. Yet, current urbanization schemes seem to have characterized the river corridor as a threat instead of an asset placing little or no value on connecting and integrating it with ongoing development. Opening-up the waterfront and connecting the inner core of the district to the river via an integrated network of pedestrian and cyclist paths and greenways is a strategic spatial decision (Fig. 1). Providing access to the waterfront via an interconnected web of open spaces and connecting corridors affords communities positive health and economic benefits while providing opportunities for recreation and non-motorized transportation.

This green infrastructure composed of natural open spaces, parks and trails offers safe routes for pedestrian commuting and cyclists and should be integrated in development schemes. Not only does it serve as recreational and ecological corridors but also as buffer zones to control development, shape growth patterns and soften urban

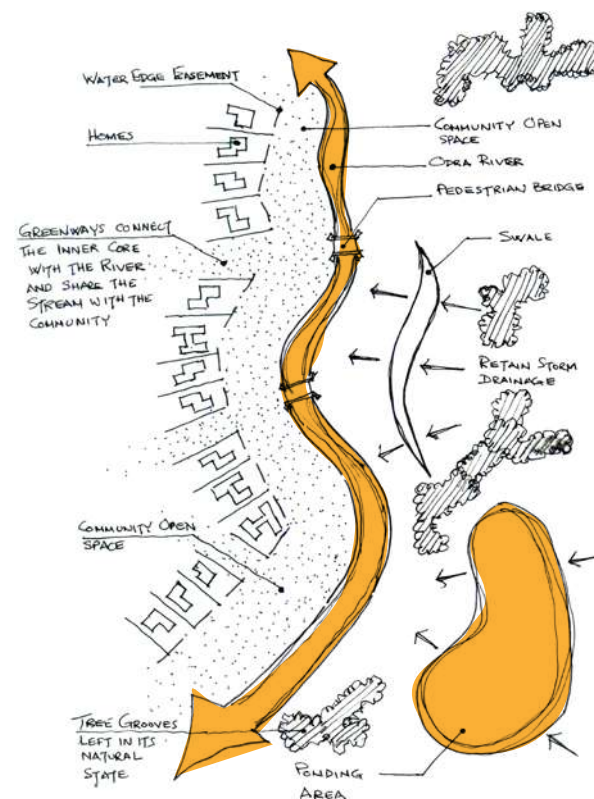


Figure 1
Connecting the inner core to the river via an interconnected web of greenways

edges. The goal of which is to preserve the natural resources, scenic landscapes and corridors, enhance the quality of life, help sustain clean air and water, support ecological functions, as well as provide multiple opportunities for recreation and interpretive education.

– Connect people to places

The West End encompasses several significant and heritage sites. Linking people to places of interest as well as to natural and historic sites through an interconnected network of pedestrian and cyclist paths and open spaces affords residents of a community access to the outdoors for leisure, recreation and non-motorized transport. Paths linking people to community resources provide residents of a community access to services and amenities including parks, natural and cultural resources.

As an integral part of West End's Sustainable Green Urban Strategy, a "Green Trail" linking people to places should be incorporated. Pedestrian and bicycle trails should be carefully planned and designed as a central and intricate component of the green infrastructure providing real ecological, social and economic benefits. It should connect communities to each other and to urban centers linking places of interest (Fig. 2). The "Green Trail" system should also connect the West End with the city of Wrocław, be readily accessible, preserve natural and cultural resources, preserve scenic view and vistas, mitigate adverse environmental impacts, offer choice and a variety of experiences, serve multiple objectives, avoid user conflict, be safe and secure, incorporate an integrated system of rest areas, have minimal negative impact on environment, and incorporate a way-finding as well as a signage system [6].

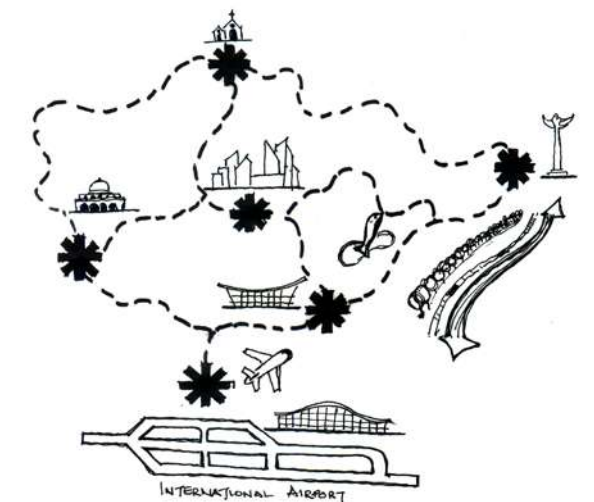


Figure 2
Linking People to places of interest via a "Green Trail" system has real ecological, social and economic benefits

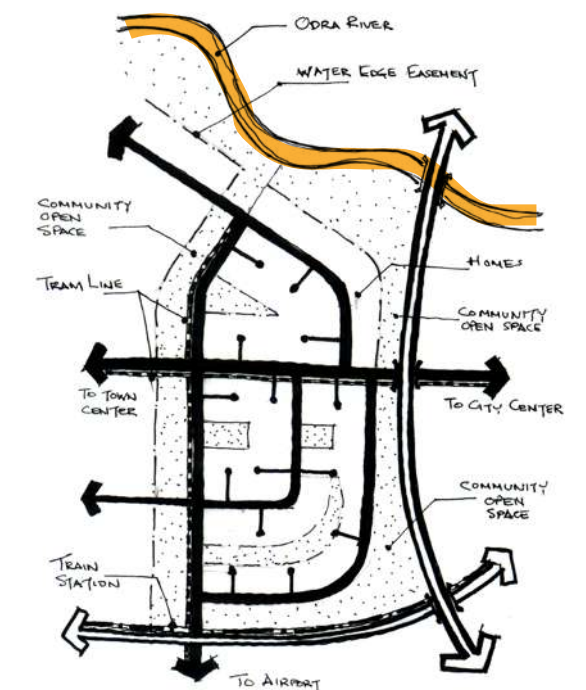


Figure 3
Maximize accessibility via an integrated network of multimodal transportation system

– Maximize accessibility

The West End is part and parcel of the city of Wrocław, yet with limited tram and light rail services. As a sub-urban zone, the West End should be well connected at local, regional and international levels. On the one hand, it should be connected to the city core and urban center via a green multimodal transport system (Fig. 3). On the other hand, the international airport serves as a transport hub affording the West End a multitude of opportunities for development. Maximizing access to public transport is a strategic decision for the West End. An integrated well-connected multimodal transportation network based on transit oriented development (TOD) that supports mixed use development will enhance economic value. It is thus critical to establish an integrated multimodal transport system to ensure efficient connection with the city and within the district - while limiting through traffic.

– Compact planning

Compact planning is a powerful strategy for reducing development footprint as it has been proven to be the most efficient, profitable and desirable form of development [5, p. 10]. The concept holds countless benefits including but not limited to more efficient use of infrastructure, enhanced transportation options, conservation of natural landscapes, increased efficiency, higher economic value, improved air quality and improved health. Compact planning also lends itself to a variety of housing and transportation options including walking and cycling and could be achieved in urban settings or where a town center is desired. This could be achieved through small lots, higher densities and a connected street system. The West End should adopt compact planning specially in the town center.

– Create distinctive and differentiated districts

Quality urban character provides neighborhoods, districts and cities with distinctive traits that are an outcome of detailed planning excellence [2]. It contributes to the livability of urban space and public realm affording residents and visitors alike a sense of place and identity as well as safe, attractive, vibrant and livable communities. Creating a distinctive character and identity for the West End as well as for differentiated districts is a strategic goal with multiple benefits. Gateways, historic and cultural landmarks, streetscape, public art, urban landscapes, scenic corridors and edges are among the many character giving elements and components of urban form that enhance the sense of place and identity.

– Preserve flood plains for community use

River basins should be treated as a resource and asset, an ecological corridor, a greenway, blue-way, self-sustaining and refreshing [7, p. 53]. These ecological corridors support wildlife, native species and bio-diversity, enhance air quality and offset and mitigate ills of urbanization. The Odra river is no exception, holding basins should be pre-planned and designed to serve a double purpose. In addition to their primary function, ponding areas and swales along the riverfront could serve recreational purposes affording residents and visitors natural hiking as well as leisurely strolls along a scenic corridor (Fig. 4). Playgrounds, parks, picnic and outdoor sport facilities planned along the blue-way should be planned to complement existing stadium facilities. This intricate and integral sports and recreational infrastructure should serve both the West End as well as the city at large.

Taking into consideration the above discussion, it is safe to conclude that Wrocław's proposed "Sustainable Green Urban Strategy" could guide an effective and sustainable development of the West End. Yet, even though the proposed strategy holds numerous gains for the community with potential environmental, social and economic benefits, it should only be put into action after further investigations are undertaken as part of a comprehensive planning and development approach for the West End.

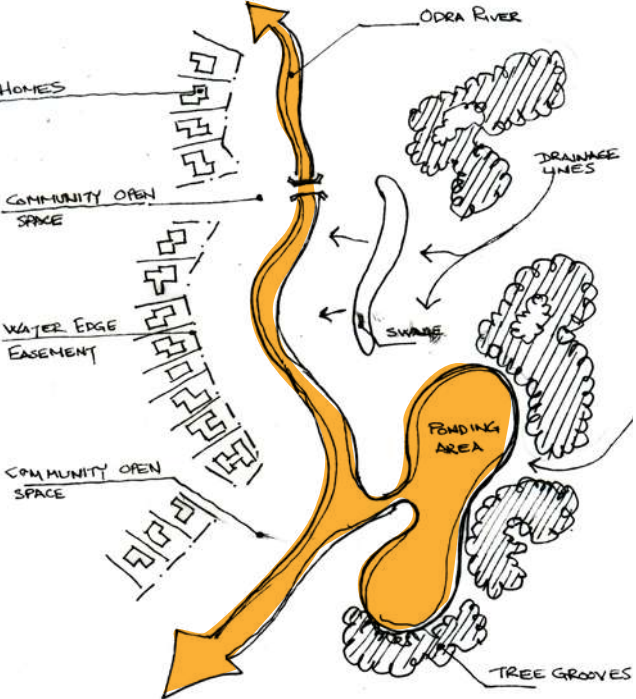


Figure 4
Ponding areas along the river should serve a recreational and ecological purpose in addition to its primary functions as a holding basin

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FIGURES

Figure 1. Connecting the inner core to the river via an interconnected web of greenways.

Figure 2. Linking People to places of interest via a "Green Trail" system has real ecological, social and economic benefits.

Figure 3. Maximize accessibility via an integrated network of multimodal transportation system.

Figure 4. Ponding areas along the river should serve a recreational and ecological purpose in addition to its primary functions as a holding basin.



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NEW APPROACHES TO STRATEGIC PLANNING

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INTRODUCTION

Planning involves a constant struggle to achieve substantial outcomes. This requires the elimination of the defensive, inward looking, compartmentalized mentality in the public sector at all levels. It requires a change in the relationship between central and local agencies and the "creation" of far more trust, resources and power for innovation and responsibility. It requires new bonds of trust between public agencies and the citizen, and the building of trust and a desire to participate in tackling local problems [10].

In planning theory there is a clear discourse about learning from practice [15] and about "listening" to planning practice rather than simply looking at it [18]. Forester and Hillier focus on planning and design practitioners to learn about the challenges of their practice. Therefore, this paper focuses not on the planners but rather on the outcomes and the actors involved in the YPP-YPTDP project.

This paper is written from a (shortly) insider's perspective, as one of the supervisors of the YPP-YPTDP workshop.

A CLEAR AND DYNAMIC PROCESS ARCHITECTURE

From the results of the workshop to the realization of West End, there is still a (long?) way to go. To achieve goals you need a strategy [22]. As presented at the final workshop presentation in the City Hall of Wrocław, a three-track approach could be the framework for the process. The rationale for the division into three working tracks lies in the different objectives and character of the planning activities, and the different and complementary skills to be used in the process. The three working tracks, which can be seen as sub-processes [22; 23; 24; 25; see also: 4; 5; 6] are:

- a first track for the elaboration of a strategic plan (a framework, a long-term programme and a short-term action plan);
- a second track to manage every day life, extinguishing fires, scoring points, and creating trust by solving problems through actions on a very short term;
- and a third track for the involvement of the key actors in the planning process [23].

The proposed tracks should not be viewed in a purely linear way, but rather as a permanent, often incremental interaction of sub-processes in specific places and specific contexts. The context forms the setting of the planning process, but it also takes form, and undergoes changes in to the process [11].

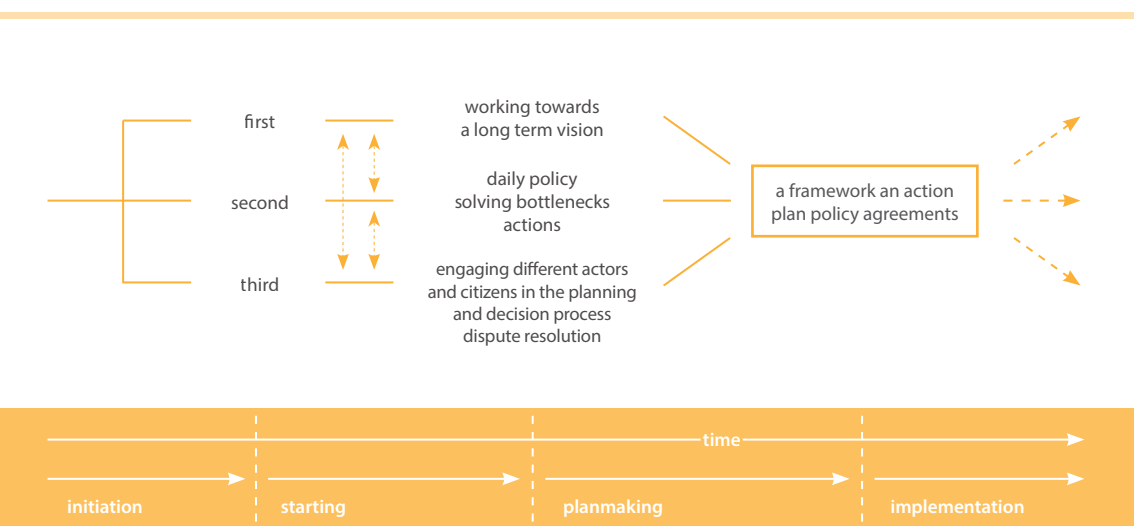


Figure 1
Three-track approach

PRODUCT, CONTENT AND INSTRUMENTS

The final product, after working a certain period on those three tracks, should be a strategic plan that can be accepted by the Municipality. It contains a long-term vision for the development of the West End, a long-term program and a short-term action plan. According to [26], *framing is a way of selecting, organizing, interpreting and making sense of a complex reality so as to provide guideposts for knowing, analyzing, persuading and acting. It is a perspective from which an amorphous, ill-defined problematic situation can be made sense of and acted upon*. A framework makes long-term planning possible and is also very important for the private sector, because visions and concepts create an image of a dynamic future and give a meaning to isolated issues, problems and opportunities. Often a commitment relating to short-term actions is difficult and the discussion endless.

TOWARDS INTEGRATED TERRITORIAL DEVELOPMENT

This proposed territorially based and integrated approach is certainly not new. It capitalizes on challenges in the social, political and physical fields [6] and on the fact that authorities do not succeed in successfully tackling specific local circumstances with generic and global policies and measures. The approach can be understood as part of the planners' response to changing conditions in increasingly networked societies where power and information are widely distributed (see also [8; 9]), where differences in knowledge and values among individuals and communities are growing, and where the accomplishment of anything significant or innovative requires the creation of flexible linkages among many actors [7]. The approach focuses on:

- the selection of (strategic and feasible) key issues;
- horizontal and vertical integration;
- the necessity of co-production of the main actors (authorities, civil society, private sector, etc.);
- coping with a growing awareness of complexity;
- dealing with very diverse interests;
- the specific versus the generic;
- the development of specific instruments (policy agreements, territorial envelopes), spatial concepts and projects;
- the implementation of policies through actions ranging from short term to long term [25; 2].

FROM A THREE-TRACK APPROACH...

The creation of a vision is a conscious and purposive action for the purpose of representing values and meanings for the future. Power is at the heart of these values and meanings (strategic rationality). That frame should express the intended future of an area for the long term, taking into account values, interests of stakeholders, opportunities and strengths. It provides the basis goals, concepts and some long term programmatic objectives. Furthermore this frame determines the type, the nature, the structure and strategy to be employed in the construction of policy in given circumstances and conditions. Such a frame may not be a blueprint and must be flexible. In this way it can be a source of inspiration and discussion, a source for creativity, dynamism and renewal. A vision has to be a political statement, inspiring , giving motives for discussion and translatable into concepts, goals and objectives [25; 2; 3].

Track 2 concerns acting in such a way as to make the future conform to the vision constructed in track 1 and to tackle concrete problems, projects and opportunities in the light of this vision.

As traditional spatial planning has hardly any potential for concretizing strategies, track 3 involves the relevant actors and stakeholders that are needed for their substantive contribution, their procedural competence and the role they might play in gaining acceptance and basic support, and in providing legitimacy and the means and instruments for implementation. The technical skills, as well as the power to allocate sufficient means to implement the proposed actions, are usually spread over a number of diverse sectors, actors and departments. Integration in its three dimensions – substantive, organizational and instrumental (legal and budget) – is at stake here [25].

...TOWARDS INCORPORATING A FOURTH TRACK

A fourth track for a more permanent process (mainly at the local level) involving the broader public in major decisions was deemed necessary. This track is about an inclusive and more permanent empowerment process [14; 16] involving citizens in major planning processes. In this co-creationprocess citizens learn about each other and about different points of view, and they come to reflect on their own points of view. To make formal decision-making and implementation more responsive to the agreements reached during "plan-making" and to context within which the agreements were reached, the four-track approach invites politicians, citizens, sector experts and the arenas in which they meet to be active from start to finish. This means the entire range of activities, including the agenda setting, the design of plans, the political ratification and the practical implementation (see also [13]). The proposed four-track approach cannot change the power relations, but we are confident (see also [14; 21; 19; 17; 4; 5]) that the process of empowerment, as developed in track 4, will give planning a new democratic mission and support wider collective efforts to change such relations.

CONCLUSION

The work of the YPP-YPTDT workshop can be used to make a strategic plan for the West End. The presented three or four track planning methodology as a form of "participatory planning" can be used to create spatial and sustainable transformations in the West End during next decades. Next to the city planning administration the Agglomeration Development Agency (ARAW) could be a public real estate organization that coordinates strategic projects to implement the masterplan West End. Besides coordination and creating willingness and support for the masterplan, ARAW could link public to private investments, for example realizing the Green Trail or the Incubator Park.

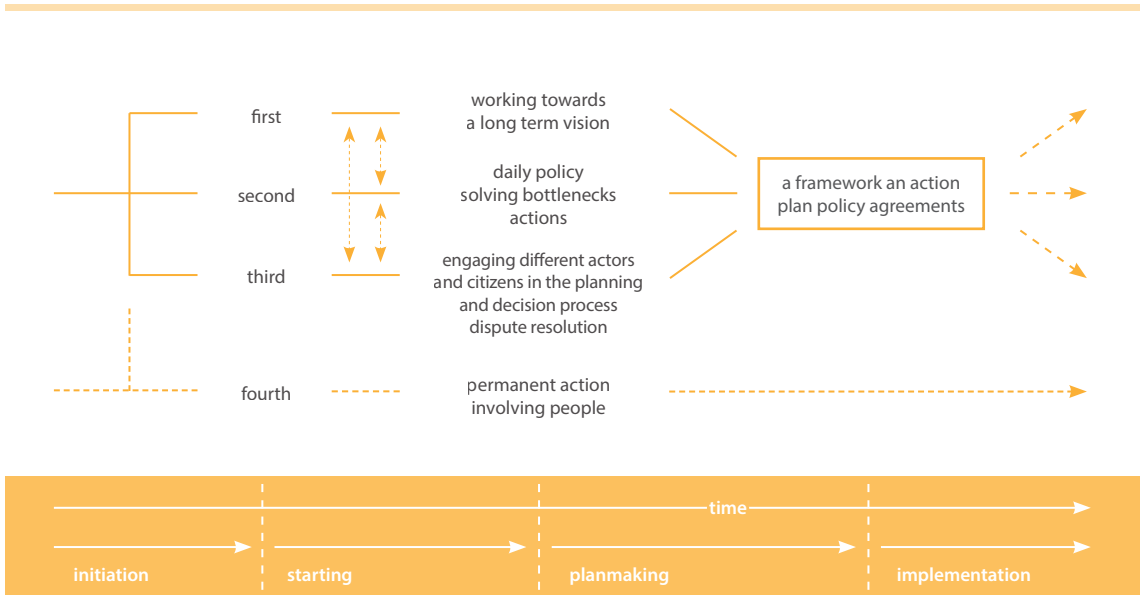


Figure 2
Four-track approach

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He can fall back on a rich experience in a wide range of study projects for various spatial structure planes, town planning advice, research contracts, feasibility studies and spatial implementation plans. His career is marked by a constant drive for innovation and improvement in complex process management and strategy advise.

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- Substantive and process-oriented supporting planner for the municipal spatial implementation plan of the Port of Antwerp
- Supervisor for the strategic plan for the Ghent Canal Zone project
- Project supervisor and monitor in the project Space for Ghent 2030 and the evaluation of the strategic spatial structure plan for the city of Antwerp.

EFFECTS OF NEO-LIBERALISM URBANISM IN WROCLAW WEST END

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INTRODUCTION

In recent decades in most of Central and Eastern European (CEE) cities we can observe a more or less voluntary turn towards neo-liberal urbanism. This effect started first with decentralisation, directly followed by a process of deregulation of land market, privatisation of housing and housing construction that became the major features of policy-making, housing policy and urban planning.

The first input to this shift has been strongly suggested by the World Bank¹ orientations concerning economy in general and urban sector in particular. *A number of national governments of CEE countries and many CEE municipalities followed the proposed framework described in **Housing Reform in Socialist Economies** (1990) and **Enabling the Markets to Work** (1993) and established neo-liberal policy regimes at the national as well as on the urban level (Harloe, 1996). Within these two policy papers the authors described explicitly how housing markets and urban policy have to be restructured, privatised and deregulated* [28].

Deregulation, decentralisation, privatisation and commodification became the main pillars of public policies and drastically transfigured the landscape of the former socialist system opening the door to the action of powerful groups of private stakeholders, in particular in the sector of buildings construction. *Housing offers an excellent research site to grasp the reconfiguration of the state and the complexity of private and public at the local level* [3].

If, following some scholars, we assume that not only socialist city [e.g.: 5; 7; 13; 20; 29] but also post-socialist city [33] exists, we can generally observe that *the state no longer has a monopoly on urban development since it has relinquished ownership of the majority of urban land, real estate and means of production; resources including land and property are distributed according to market principles* [15]. Of course, if we can start with this generalisation, we also have to detail specificities of each situation and breakdown different contexts that show that there are several post-socialist city types, and that we can at least identify *five key elements of spatial composition: overall spatial articulation, scale of urban development, functional balance, building typologies, and urban aesthetics* [15].

This section observes the specific situation of a medium size post-socialist city in Poland and tries to decrypt the space reconfiguration between uncontrolled sprawl and local institutions efforts to reorganise urban growth.

What we can today observe, in this specific case study, is the functioning of the recent neo-liberal organisation in a combination with the past socialist system and "model". In fact, some remaining of the past values plus some Western European influences lead to a contradictory overlapping between neo-liberal urbanism and the role of the public institutions in supplying inhabitants with infrastructures, services, networks and the connection public open spaces (streets and roads, squares, and land of public utilities)² where no compensation by the developers is asked. *Yet, the legacy of socialist urban*

¹ But also by the International Monetary Fund or other transnational policy networks and actors.

² Ordinary and daily life public spaces, made in the "interstices", not to be confused with staged or propaganda public spaces, once

planning and imagination has neither just disappeared, nor did it come to coexist peacefully with the new. Rather, the story is one of conflict and hybridity, of replacement as well as of recodification [6].

This chapter would like to raise the question of the unequal relation between developers (by definition profit makers) and public institutions (if the concept of public service realm still has a meaning³) in the making of a contemporary peri urban polish city. *Naturally, the dismantling of the socialist system, with the ensuing shift in the balance between the public and private realms, has led to a massive reorganization of public space within the changing structure of the post-socialist city* [31].

DATA AND METHODS

This section is not a scientific article but more a reflexion article to open perspectives and debates. Results are based on an analysis of (i) a set of maps based on data collection and systematisation by the students of the Faculty of Architecture of the Wroclaw University of Science and Technology⁴. The maps collect and structure data on Wroclaw (and Wroclaw West End in particular): existing land use, environmental issues, existing roads and public transports systems, urban regeneration plan, and existing infrastructures (water, sewage, central heating and hot water, electrical power and gas). Maps overview is completed by (ii) personal observations on site during May 2017: ongoing and completed secluded neighbourhoods' projects, public works, and projects of public infrastructures, in Wroclaw West End. During this short period of time (iii) discussions interviews were also conducted, with key informants such as architects, residents as well as urban planners of the municipality. Moreover, (iv) a closer look at the main policy papers and planning documents that have framed Wroclaw's urban development in general, and the growth of gated communities in Wroclaw West End in particular, was realised.

CASE STUDY

The specific case of the Wroclaw's West End district was chosen since it offers the perfect opportunity to observe this perverse and unsustainable combination of neo-liberal and post-socialist urbanism. The West End zone is a recent urban expanding zone, where some elderly low-income households pre-exists, which is distant from the historic urban centre, unplanned, of a no easy access due to several urban fractures (motorway bypass, railways, and river corridors – the Odra river and two of its tributaries), scattered with some environmental fragile zones and flood prone areas, with a very low housing density (and even littler diversity) and with little infrastructures (mostly located in the former independent town Leśnica, incorporated in the city boundaries in 1928). Some city limits constraints, the saturation or other vocation of other remote districts (the Southern Pole is typical retail and industrial pole, for example), the opportunity offered by the location of the International Airport (which is experiencing an important traffic implementation in recent years) and the recent construction of the Municipal Stadium, point out this district by default. The so called Western Pole appears as the place identified by city's general Master Plan to create a generator of urban structure. In a very fragmented urban structure the local plans allow for housing development big portions of Western and Southern Poles. The existing very fragmented urban structure is, in particular, the result of the incorporation of a lot of former villages into the city boundaries. The villages are still expanding in an uncontrolled way and they have never been inserted in a coherent structure.

diffused in socialist cities (before and during the struggling for democracy) nor with one of the three types of «public places», regrouping the modern functions of urban public space: communicative, inclusive, creative and entertainment, described by Elena Lebedeva [17]. They are more what remains in negative after the shift from a period where – in some countries - all urban land was public to a period where what is not private is public.

³ Here it is useful to follow Low and Smith's (2006) distinction of public sphere as a political concept and public space as a physical concept, with public realm being where the two concepts coincide [36].

⁴ Presented in a section "Wroclaw West End. Case Study" of this same publication.

RECENT HOUSING DEVELOPMENTS IN WROCŁAW'S WEST END

Politico-economic causalities and context, relations to different spatial scales (in particular global vs local), and circulation of urban models, influence logics and strategies of private stakeholders and developers that are involved in the production of recent and contemporary urban fragments. Such as some macro-economic factors: Economic growth; Globalisation and European integration.

The actual urban development in Wrocław is mostly ruled by private investors, developers, and real estate constructors. The new housing demand, created by better population living conditions and economic possibilities, calls for large realisation of selective neighbourhoods. Due to some opportunities, the city's West End sector is particularly attractive, reduced price of (agricultural) land and availability of land (and specifically of big plots) are important factors. But most of all what encourage speculative building (apart from the neo-liberal system) is the weak legal framework:

- weak strategic spatial planning;
- absence of staging tool for constructing real estates (as to attract more inhabitants);
- absence of horizontal and vertical coordination.

“While the absence of such a general urban planning guideline was of minor importance before 1989, since the state was omnipresent anyway, it became problematic with the withdrawal of state responsibility in the early 1990s [28].

The strategic spatial plans do not include non-yet urbanised areas, which means that this sector, even being legally inside the municipal limits, is not covered by constraints and rules that are applicable to the inner city. Only local plans exist, and they transform big portions of the existing agricultural land in "housing development" zones. This opens wonderful opportunities for new estates, and their distribution is only ruled by the (weak) price of the land, which means the farer and the less connected, the more convenient.

Developers exploit a situation which allows them to operate without formal constraints, to answer to a growing housing demand (and ensure profits) and to rely on public institutions for any network and connection from "the gate to the city".

This important increase in urban sprawl is evidently causing well known consequences:

- need of infrastructures and networks;
- increasing of pollution;
- conflicts in land use between agriculture and housing;
- transfiguration of rural landscapes;
- attainment to biodiversity.

Today, much of the new prestigious housing developments take place in the large area of the former independent town Leśnica, close to zones of environmental interest, surrounded by agriculture, at a dozen of kilometres from the city-centre. The estimated number of new residents for the housing investments completed before the end of 2015 in Wrocław's West End is approximately 28,500 (the total urban population being around 632,000 in 2017).

THE CURRENT SUCCESS OF SECLUDED NEIGHBOURHOODS

Secluded and private neighbourhoods represent a rather new trend in housing in Wrocław. Before 1989 they were little known in Poland. This has changed profoundly over the last 15 years. We can nowadays speak in Wrocław, but the phenomenon is shared by many other CEE cities, of a boom in gated communities' type of housing, especially in the West End district.

“In the cities of East Central Europe high-status gated residential enclaves emerged after the collapse of communism symbolizing the new dimensions of social segregation brought about by the post-socialist transition [16].

The imagination and symbolic of gated communities is what nourishes the expectations of residents and what is promoted by developers via the marketing: the dream of a privately-owned residence; of quality, design and modernity; surrounded by green spaces; where we can share to be among pairs [1]; and where public access is restricted as to assure security. The whole, representing the expression of an individual choice in a consumption-orientated capitalist society [4].

To those individualistic reasons, it is also necessary to add, in Wrocław in particular, the poor conservation status of the neglected old collective housing stock and historical residential areas of the historic centre [22].

“There are several explanations to gated communities' popularity in Poland since the mid-1990s; among these, we find the following: free market forces where the developers of housing set the agenda on the housing market whereas local and central authorities lack resources and adequate regulations, the spread of fear of crime and the need of security, and the increasing fragmentation of urban space as a result of disarray in the sphere of urban planning [23].

The reasons that drive this type of choice from the point of view of the inhabitants are even more simple and understandable:

- wish to become owners;
- wish to live surrounded by a rural (while not bucolic) context being close to urban services;
- better quality of life and lesser concentration of population;
- higher life level;
- availability of a private car;
- availability of bigger space per person;
- type of housing.

All those reasons overlap the wish to escape from some constant urban problems, such as: bad quality of air, noise, pollutions, insecurity, social problems, absence of green spaces, ..., even if the distance between residence and work place negatively influences many of the positive factors.

Plus, as Gądecki says, the gated community phenomenon can be read, in the local context of the formation of the middle class in Poland, as a socio-cultural construct where everyday consumerism and normal objects can be converted into symbols and where the *purchased social status, thanks to a specific lifestyle or ostentatious consumption, is not limited just to decorate private spaces, but requires a determined performance played out in an appropriately public view* [9].

THE ROLE AND LIMITS OF THE PUBLIC SERVICE

The deregulation of the economy that followed the change to the post socialist system also implied a certain withdrawal of the state as a service provider. *Shifting boundaries between public and private space redefine state-society relationships and the interplay between diverse claim making actors, and thus alter the distribution of power and resources within communities* [20].

But some of the long-lasting culturally routines and value systems survived the Socialist period and influence the social expectations about state versus personal responsibilities [20]. Which means that the Wrocław's local institutions inherited of the State role of providing infrastructures, services and networks even to the recent and distant new housing developments. The Municipality has, so far, no clear overall strategy to try to anticipate and control this urban growth and is in the position of only follow, and with costly investments, the market's choices. Neo-liberal urbanism assigns to the public actors only a role of facilitators and delegitimate their active involvement. But some scholars [e.g. 2] theorize that the new function of public institutions is not in doing, but in creating the circumstances to let the others do.

In this framework, as to reduce the impact of this extremely not cost-efficient way for public institutions to support new housing constructions, the Municipality of Wrocław is actively reacting. In very recent years, to try to redirect the way developers are leading the urbanisation of the West End sector, it promoted a "virtuous" urban project called Nowe Żerniki (the effective City contribution to the project is 40 hectares of land). The project is based on some smart cities and sustainable development principles: environmental (rain water harvesting, green energy production, energy efficiency of the buildings) and social (absence of curtained fences, existence of quality public spaces, inhabitants social mixing) philosophies, supposed to "give the good example". *This new urban structure shall - in the intention of city - overcome spatial fragmentation of the western part of the city* [19]. The Polish Chamber of Architects organised the process of designing the new neighbourhood and the first phase of the project is actually under construction. The first stimulus of the project should be the memory of Wrocław being an "urban and social laboratory" in the early 20th century, when new models of urban living were tested, in particular via the model housing estate WUWA ("Wohnung und Werkraum Ausstellung" – Living and Work Space). The model for instance remains the one of plenty of so called "eco-districts", where the promoted worthy behaviours are only applicable at the interior of their boundaries and that appear as surfaces "cut out of the context", *in primis* in terms of articulation with the rest of the town, concerning transportation and pedestrian scale for example.

Even if the main idea of smart city is controverted, seems demagogic and if some scholars even point it out as an expression of the neo-liberal ideology [11], we can assume that this project constitutes a first operational answer to the unrestricted power of housing private actors and investors. And, if we assume that increased demand expectations are decisive [12], then we can argue that if citizens are more conscious and advised, their demands should positively influence the housing market proposals...

CONCLUSIONS

In recent decades, the advent of neo-liberalism in post-socialist society affected the urban and housing spheres and somehow delegitimate public institutions. The situation is rapidly evolving, following different directions and models in different countries, but globally tending to a more balanced and equilibrate relation of power and influences inside the systems of actors. During the transition period, we can observe public institutions compressed between the free market economy ruled by developers and their primary role of supplier of decent life conditions to citizens.

In conclusion, in Wrocław West End we assist to a situation where private investors, developers and housing constructors exploit the possibility of finding not expensive big extensions of land coupled with the exemption of law constraints about planning and construction, obliging, at the same time, the public institutions to provide this unconnected and remote newly built up zones with costly roads, networks, public transports, and services.

One of the justifications of the completion of these urban fragments is suggested to be the recent development of a middle class in Poland that created a specific demand for exclusive housing residences, reinforcing physically the social and spatial distance between classes. These new forms of secluded neighbourhoods also (re)present the perfect image of prestige and new lifestyle [8].

Nonetheless, the location of these estates creates a great consumption of land, the decline of agricultural land, regular congestion and commuting problems and the attempt to some fragile natural areas with high environmental value. The uncontrolled sprawl encourages the middle class to abandon the city centre and its historical (even if poorly preserved) housings blocks. This phenomenon also broadens the social segregation that rapidly gained post-socialist cities and reduce significantly one of the major indicators of urbanity: the density/diversity ratio [18].

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Laura Verdelli focuses her researches:

- on the processes of identification, protection and valorisation of cultural landscapes in the Mediterranean;
- on the contemporary dynamics engendered by the above mentioned processes (particularly in UNESCO's labelled sites);
- on the interactions between heritagization and (strategic) spatial planning.

DESIGNING NEW CITY

DISTRICT





Shaping The West End

TEAM MEMBERS

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GREEN TRAIL

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VISION

The Green Trail concept delves deep into the potentials of West End. After decades of car-driven urban expansion, the project bucks the trend by putting people first, cars second by introducing a whole new public realm network. Reflecting the core values of heritage and culture, innovation, sustainability, enrichment and environment, Green Trail proposal aims to create a piece of city that is identified by its distinctive green trail and growing business sector, where you can live, work and play all in one place but simultaneously being connected to the city.

STRATEGIC PLAN

Analysis

Trying to have a well understanding for the current situation, a SWOT analysis conducted (Fig. 1) that reminded us as a result with the Rubik's Cube that full of colorful parts need to be reorganized. West End contains many potentials (Airport, Stadium, Heritage area,... etc.) that fragmented and not fully used. Our mission is to solve this Rubik's Cube through connecting these potentials together and fill the gabs with a coherent way that enhancing a comprehensive strategic plan for West End.



Figure 1
SWOT

Economic development

Tackling urban development leads to the economic base for the development. According to the Real Capital Analytics the total volume of transactions concluded in Europe was 23% higher in 2015 than the year before and exceeded EUR 285bn. Nearly 41% are concerned the office sector [2]. The total investment volume in Central Eastern Europe countries amounted to EUR 11.5bn and noted an 18% growth, when compared to 2014. The region of Central Eastern Europe has drawn investors' attention (Fig. 2) led by Poland in terms of volume of investment transactions.

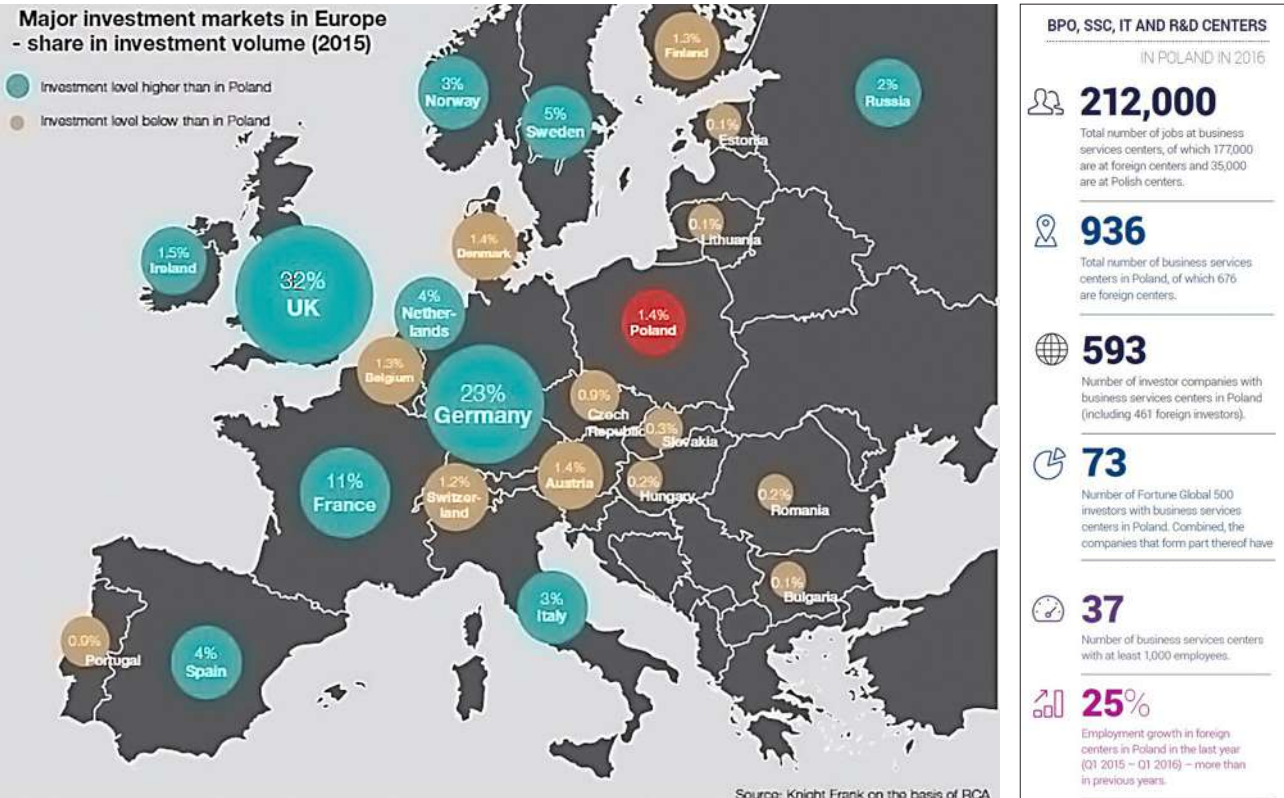


Figure 2

Number of facts shown in Fig. 3 show an increasing demand on office space as Poland became major European destination for Business Process Outstanding (BPO) and Shared Services Centers (SSC) services [1]. Within Poland it is remarkable that Wrocław and Warsaw take the second place in terms of number of employees in BPO, SSC, IT and R&D centers in business services (Fig. 4). Inside Wrocław, the western business district hosts 31% of existing office market supply [2].

Based on the previous facts, Green Trail project utilized these opportunities to enhance the West End as a place to live and work. The growth rate of the number of companies and the attractiveness of Wrocław for business depend greatly on the convenience of the transport system and the level of its development.

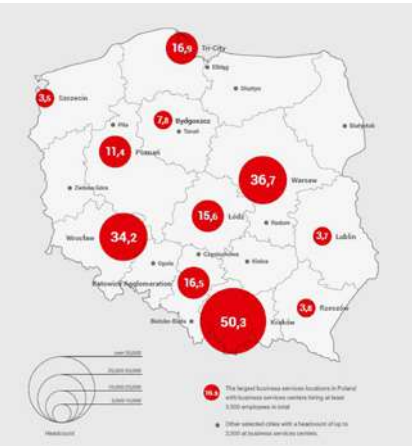


Figure 3

Figure 4

Public transport

There are over 60 daytime bus services and a dozen or so night bus lines in Wrocław. Additionally, over 20 tram lines operate here. Concerning transport connection between West End and the rest of the city, it is evident that this district is well linked by public transport which comprises bus lines, tram lines, railway, pedestrian sidewalks, bicycle paths and a motorway. However, with the development of this district, the existing system will, in time, become overloaded. Therefore, it is necessary to take proactive measures to increase the capacity of existing system and introduce new types of transport.

Problems:

- very crowded trams and buses;
- very slow travel from one side of the city to another (From Wrocław Główny station to the recreation area it takes 34 minutes by tram to cover the distance of 11.96 km with avg. speed 21.6 km/h);
- large number of stops (avg. distance 540 meters);
- all types of transport are routed in one layer.

Hydrological and geological conditions

Wrocław city is situated on Odra river, which flows from the northern part of the city to the west. Since Wrocław is mainly located on plain terrain and is crossed by a large river, there is a high probability of a part of the city being flooded. West End includes Bystrzyca river zone which also imposes a danger of floods.

Geological conditions are also unfavourable. At 20-100 m near the surface, there are Quaternary formations, mainly soft sand and gravel soils. The groundwater is high (1 m under the surface) part of the city is in a high flooding risk zone (Fig. 5).

During design process, it is very important to take into account these facts to prevent substantial damage to new buildings and infrastructure.

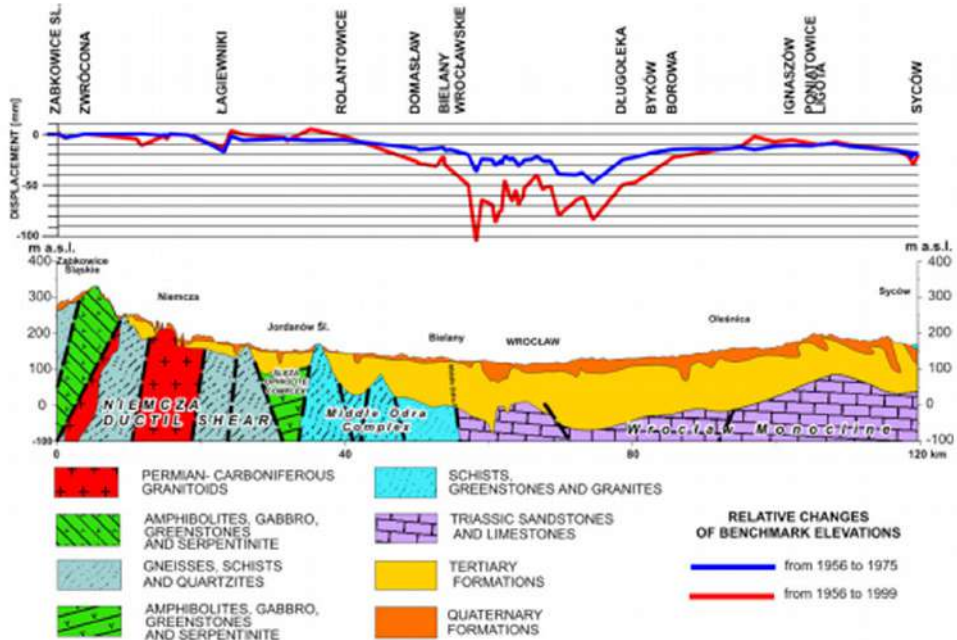


Figure 5
Simplified geological profile along the Zabkowice Śl. – Wrocław – Syców levelling line

CONCEPT

- **Connectivity through green ways** preserving & improving green spaces while increasing human mobility.
- **Enhancing the business & service sector** promoting the IT, outsourcing and business services alongside the stadium.
- **Creating an identity** the west end to identify as an urban green district within the city, the "West End Trail".

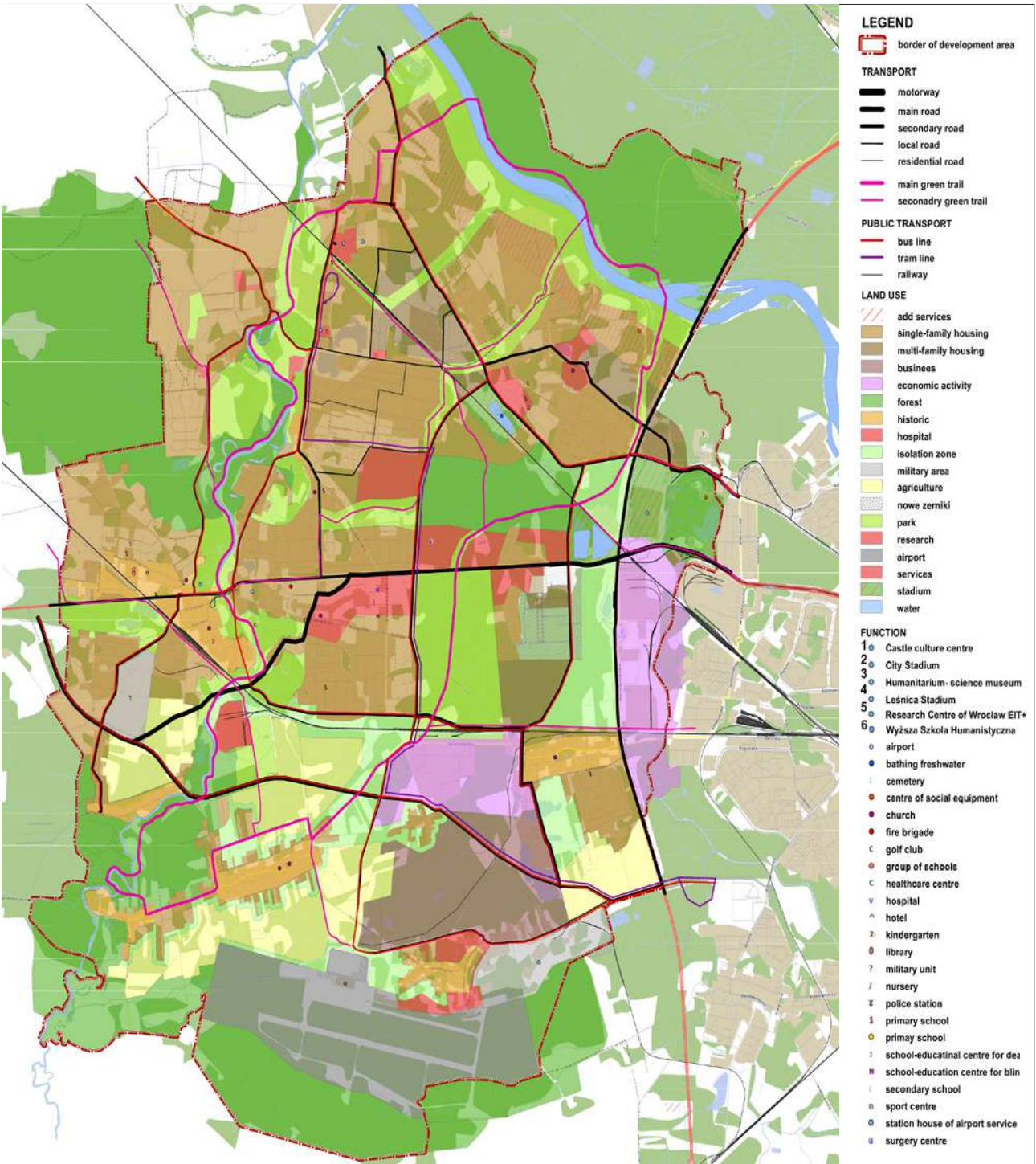
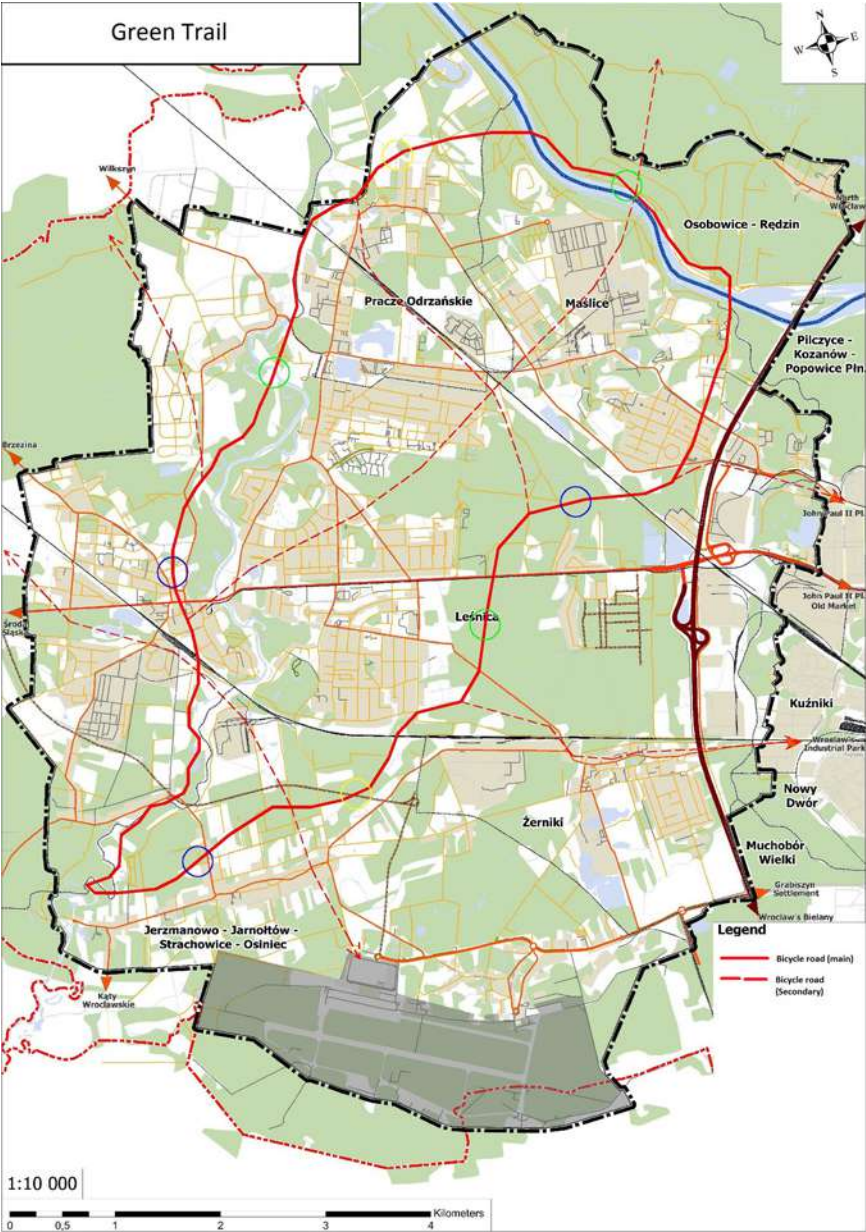


Figure 6
Masterplan

Green trail

A bicycle path will encircle the West End and connect the green zone with the river’s coast, residential area and business zone, and the airport. Also, the bicycle path will have 4 connections with the existing bicycle routes. The starting point of the cycle track will be the Wrocław Stadium (Fig. 7).

| Green Trail characteristic: | Intersections: |
|--|---------------------------|
| Total length of the main track: 21.5 km (ring) | Bicycle-railway: 5 |
| Total length of the secondary tracks: 26.5 km | Bicycle-motorway: over 20 |
| Pavement: mixed (mainly rigid) | Bicycle-river: 3 |
| Number of connections with the city: 4 | |



The green road around the residential and historical districts should contain all types of sports activities in the fresh air:

- Parkour area;
- Skateboard park;
- Workout zone;
- Playground equipment;
- Climbing wall;
- Yoga place;
- Multifunctional green area;
- Forest Labyrinth;
- Rope town.

Figure 7

To express the idea farther, a distinct plot was chosen surrounding the stadium as one of not fully used potentials in West End. As shown in Fig. 8, the green trail takes the people through green area, stadium, and the recreational area to the river.

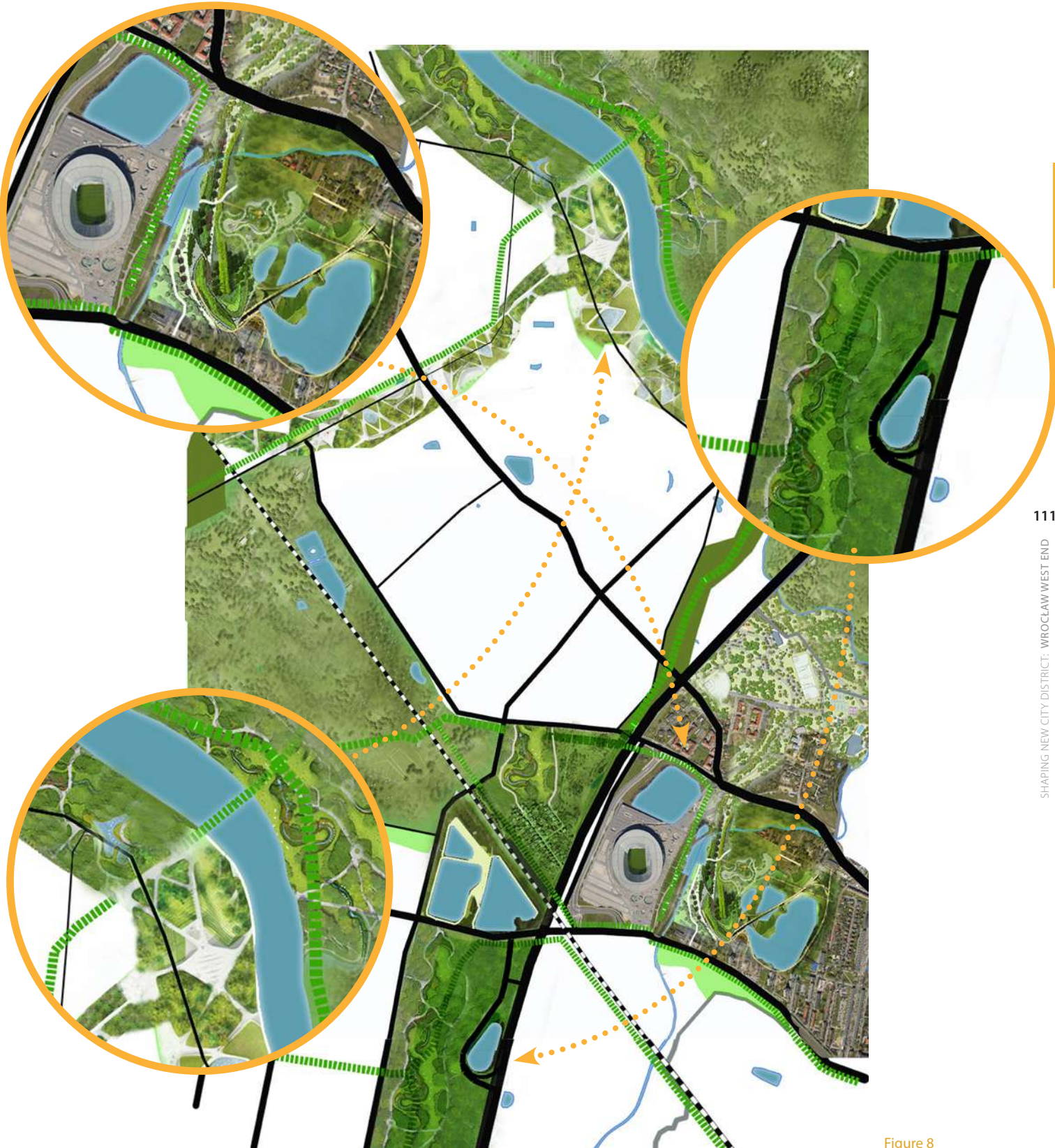


Figure 8

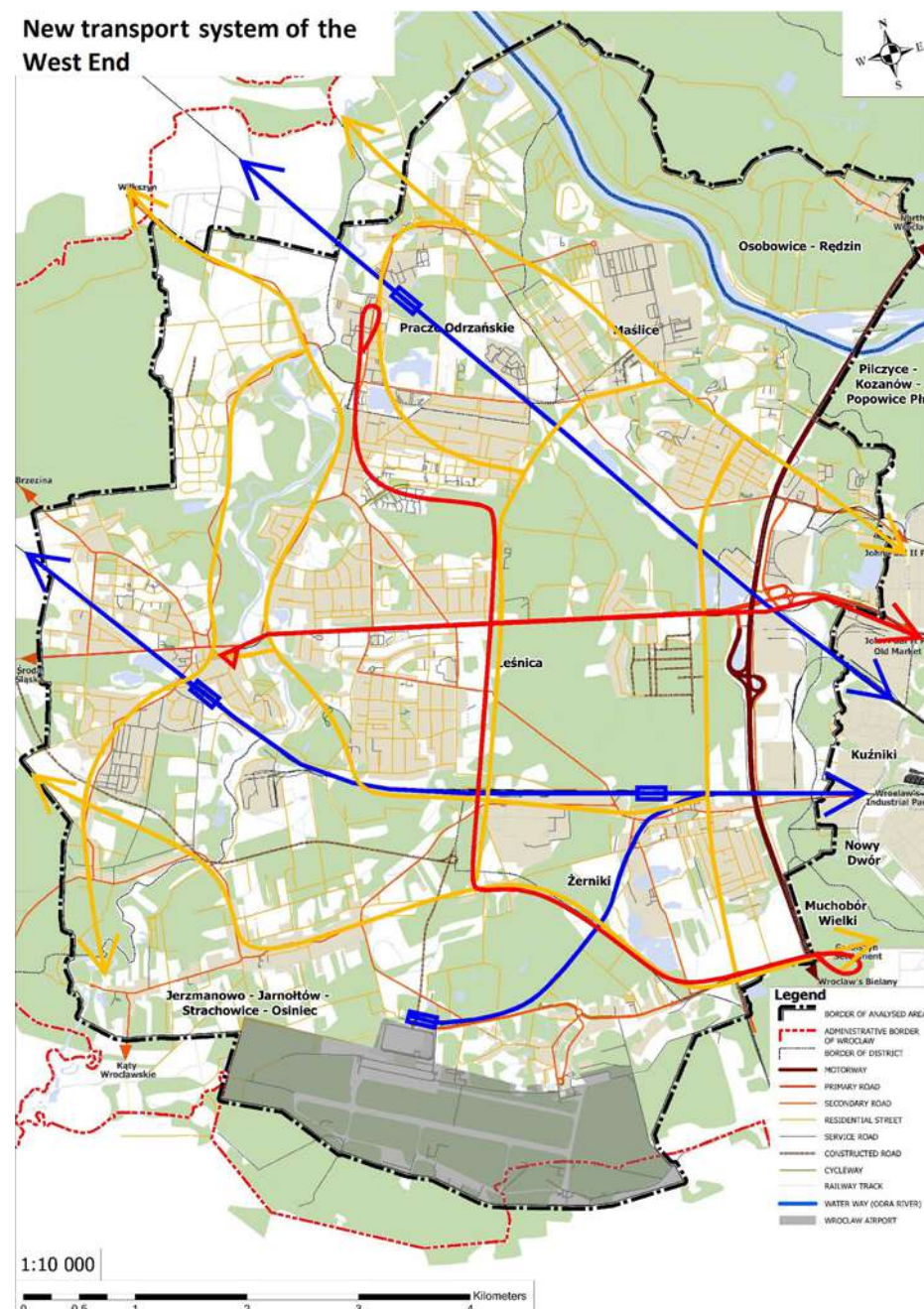


Figure 9
Proposed transport network of the West End (not include light metro):
Yellow – Bus line; Blue – Railway; Red – Tram line

Proposed transport system

Type of the transport:

- Motorway: max. distance: 11.6 km; average speed: 24 km/h; maximum travel time: 29 min;
- Tram line (existing and new):
 - line 1: total length: 6 km; average speed: 20 km/h; maximum travel time: 18 min;
 - line 2: total length: 10,4 km; average speed: 20 km/h; maximum travel time: 31 min;
- Bus line (diesel or ecological electric battery bus): max. distance: 11.6 km; average speed: 18,2 km/h; maximum travel time: 38 min;
- Railway (existing and new connection to airport):
 - track 1: total length: 4,5 km; average speed: 30 km/h; maximum travel time: 9 min;
 - track 2: total length: 6 km; average speed: 30 km/h; maximum travel time: 12 min;
 - airport connection: total length: 3,5 km; average speed: 30 km/h; maximum travel time: 7 min;
- Light metro (medium-capacity rail transport system);
- Bicycle path (Green Trail): max. distance: 9 km; average speed: 15 km/h; maximum travel time: 36 min.

2.4



Figure 10
Variants of the light metro route: Red – route 1, Blue – route 2

Light metro

In terms of traffic volume, light metro occupies an intermediate position between metro and high-speed tram. The main difference from a high-speed tram is complete separation of the light metro from the rest of city transport. Compared with conventional metro, it is distinguished by a reduced number of cars in a train and, as a consequence, smaller station size. All these parameters lead to significant reduction in the project costs. Light rail route can pass underground, in one level with other land transport, under the ground and over the ground. The on-land location of the line significantly reduces the construction costs.

In Wrocław, there is a railway that could perform the same functions. However, there would be one big drawback: on the railway, it is impossible to increase traffic density of trains to equal the level of metro or tram. The existing railway line has already been laid, and the city was built taking into account the technological zone of the road. At the same time, light metro can be flexibly integrated into the city landscape, and, by connecting important districts, facilitate the development of the new West End area and bring it closer to the rest of the city by reducing travel time from 50 to 15 minutes. This will make the new area significantly more attractive from economic perspective.

Technical parameters:

- number of cars: 3
- distance between stations: 2-4 km
- average speed 30-60 km/h
- number of people 300 p/car
- total length 17 km

Solution for geological, hydrological and flooding problems

There are great concerns about the idea of building underground tunnels due to a high level of groundwater and the threat of flooding. All these problems can be solved when choosing light metro while undertaking relevant technological decisions. As not all the territory of Wrocław is in flood-prone areas, laying routes in risk-free zones will be sufficient to solve transportation problems. Underground sections can be located in flood-safe areas, as well as in the historical part of the city. Ground route can be laid along highways or built in highway itself, while overground lines can be laid to pass through flood-prone areas. To protect underground structures from flooding, all construction elements, e.g. exits and entrances, ventilation shafts and tunnels, can be equipped with special floodgate. The problem of a high level of groundwater can be solved by tunnelling at certain depth to avoid emersion. Subway stations can be located above the ground, and in underground sections they can be combined with structures on the ground, which will be an additional load to avoid emersion.

Ecology

To improve ecology situation in this district proposed using next measures:

- Transport solutions;
- Battery electric bus;
- Using source of energy
- Solar energy;
- Geothermal energy;
- Water energy.

| |
|---|
| Battery energy bus: |
| Maximum distance on one charge: 300 km |
| Full charge time: 3h |
| Fast charge time: 30-90 seconds during the stop |
| Infrastructure: Charging station at the ends of the route; fast charge equipment at bus stops |
| Advantages: |
| Less noise, less pollution, combining advantages of tram line with flexibility of bus transport |
| Disadvantages: |
| Need to construct and equip charge station |

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FIGURES

- Figure 1. SWOT.
- Figure 2. Major investment markets in Europe - share in investment volume (2015) (source: Knight Frank on the basis of RCA).
- Figure 3. BPO, SSC, IT AND R&D CENTERS IN POLAND IN 2016 (source: [1]).
- Figure 4. EMPLOYMENT IN BPO, SSC, IT AND R&D CENTRES IN VARIOUS BUSINESS SERVICES CENTRES (source: ABSL, Modern services sector in Poland 2017 report).
- Figure 5. Simplified geological profile along the Ząbkowice Śl. – Wrocław – Syców levelling line (source: [3]).
- Figure 6. Masterplan.
- Figure 7. Green Trail.
- Figure 8.
- Figure 9. Proposed transport network of the West End (not include light metro).
- Figure 10. Variants of the light metro route.



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INTRODUCTION

Concept of development of the new urban area, Wrocław West End "WE" is an urban dimension document. The idea is to present a vision of the development of the area within designated boundaries. The concept is a document defining the direction of development, taking into account the current status of the area investing and guidelines resulting from planning documents. Relationship between planned investment processes and structure of existing management are formed in a proper way. The vision is a base that will make use of economic potential of the area, while taking care for the preservation and protection of environmental values. A particularly important issue is a design of the vision. The vision has an important project task, to create, adapt and maintain solutions that will make the most improvement quality of life of the area residents, those present and forthcoming ones. Furthermore, the vision is not a closed concept. It does not close the possibility of making changes and following constant development of the area. In brief description, the vision is a base to set directions and provide present and future development.

WE "West End" project has the task of refreshing the image and introducing the new identification not only of the specified area, but of the whole city, Wrocław. As the area is part of the city, it has to be connected, live and created. As the concept assumes possibility of a stage investment realization. The whole concept consists of strategic vision, development goals, model of development, master plan, site plan, and selected technology solutions.

The vision of the strategy is based on grid connections network of the most important places, which are: football stadium in the west; the airport in the south; Leśnica in the east; science centre in the north. These parts form a circular and cross connection of the whole area. The strategy provides development of the green zone in the north, which is natural boundary of the area. Furthermore, such an assumption creates one of the circular links, in that case between football stadium and Leśnica, including the riverside and science centre. Another issue of the strategy is development of the airport and bypass area as well. Complementary and significant part of the strategy is urban tissue, that covers the majority of the area. The strategy goal is to convert an urban tissue from fragmented structure to complete one. Such purpose is based on the new ideas of housing development, Nowe Żerniki project. The strategy issues are supported with key development goals like: sustainable development; providing mobility of area residents; make the area more efficiency according to housing and technology; environmental protection, especially of the riverside; investment in innovation; creation of local identity; taking care about urban heritage; create the whole city more walkable and compact as well as.

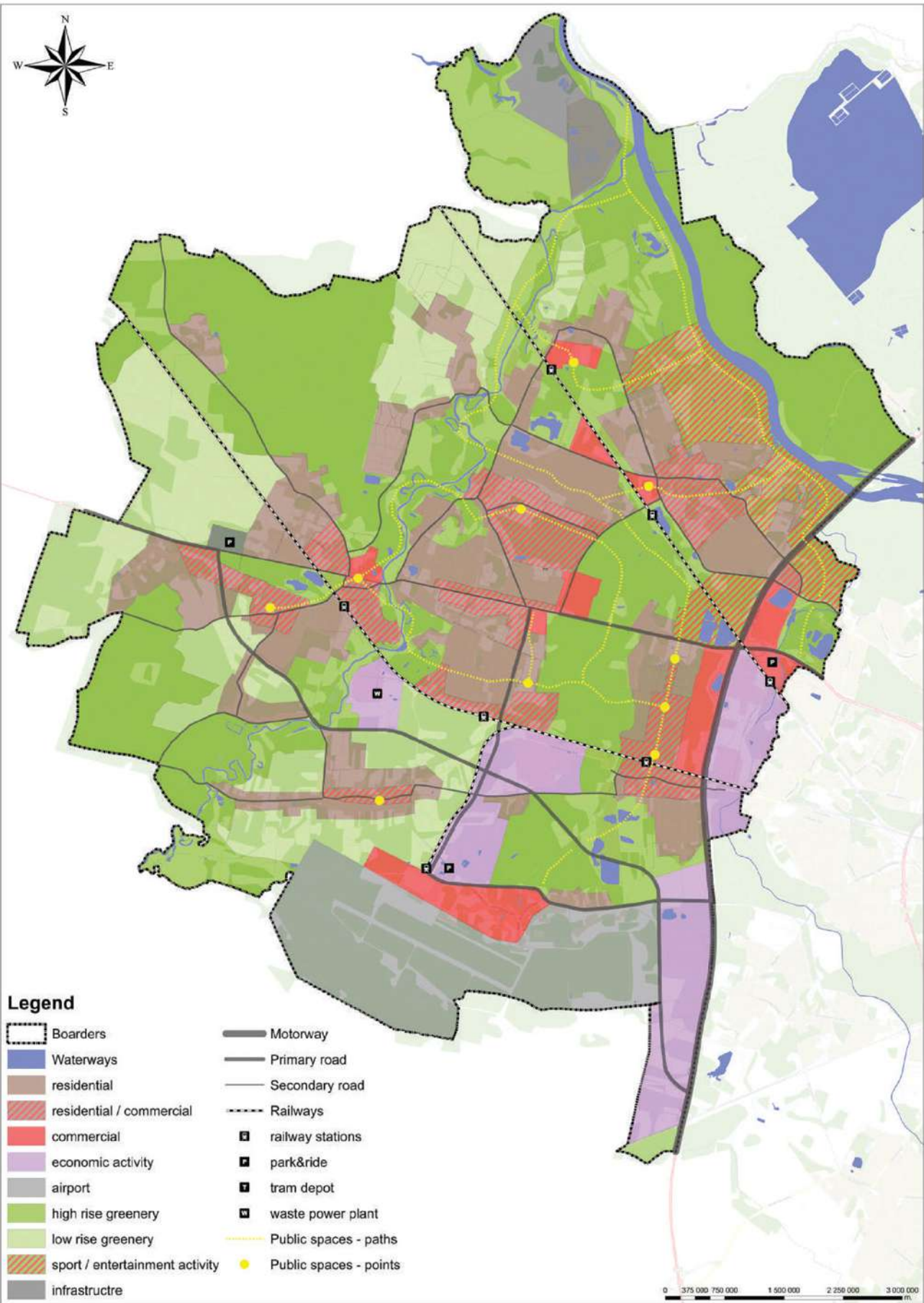


Figure 1
Masterplan

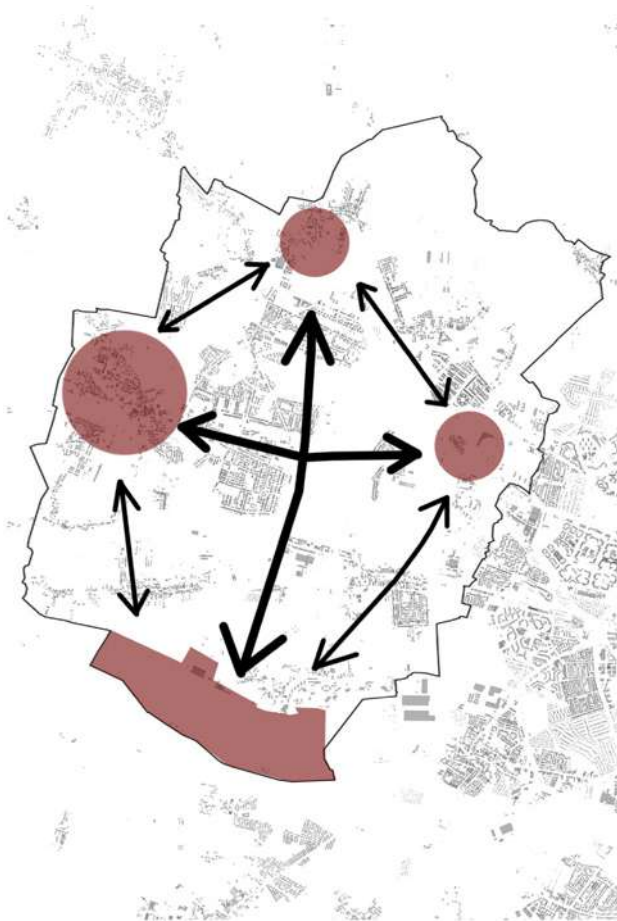


Figure 2
Functional connections - scheme

Functions

The assumption of the project is an attempt to systematize and reorganize the spatial disparities of development in this part of the city. These systematizations are implemented by limiting an extensive urban sprawl and delineating the clear boundaries of the possible development. The new residential development will be created as a supplement to the existing urban tissue and in the form of "clusters" connecting the development between the individual settlement units. The purpose of completing the development is to form a clear and distinctive urban system that create a coherent and compact structure with a mixed-use and dominant architecture. This multifunctional character and creation of local centers will allow to build an attractive and modern settlements, fully equipped with the individual services of the primary (i.e. schools) and supra-primary level (i.e. commercial spaces). In the northern part of the area the single-family and multi-family housing mixed with services will be continued. It is also necessary to develop service functions for residents of settlements to meet the basic needs. The southern area will be characterized by multifunctionality of housing, services and economic activities. The location of such economic activity seems to be the most appropriate in this area due to the lack of development and proximity to the motorway or airport. The particular lack of such functions is very viewed in this area. Regarding this that kind of development can generate new jobs and contribute to the extension of the functional offer of the district. A very important element of the whole project is the attempt to systematize the development of the former villages area. These areas are particularly exposed to uncontrolled sprowl of development, what makes it important to reduce the area of a new development and to delineate visible boundaries between built-up and free green areas.

Transport

The spine of the entire urban layout is the public transport in form of roads equipped with tram, bus and railway lines with a dense number of stops. Such a communication system allows the development of local service centers around the public transport stops significantly reducing the time and distances of residents journeys from the city center and restricting the use of wheeled vehicles as the dominant kind of transport. The A8 motorway, which distributes the transit and truck traffic, is a very important transport route in this area. This traffic will be gradually reduced due to the class of public roads in the area of study. The main transport axis are undoubtedly the Kosmonautów street, Leśnica bypass and road connection with the airport. However, car communication should be directed by the Leśnica Bypass towards the highway and downtown.

Thanks to this, the traffic will be reduced on the main route in the development area – Kosmonautów street. Additionally the connection with the city center will be simplified. The car and transit traffic will be minimized within the center of Leśnica estate. According to this will be possible to build the open public spaces and significantly increase the space quality nearby. A very important traffic axis will be a new connection between the airport and Kosmonautów street. This will allow the faster access to the western settlements of Wrocław. The remaining roads will be the connections between the individual settlements within and outside the development area. It is also very important not to forget about the inner roads. The area of the calm traffic should be expanded as much as possible inside the residential estates. However, the most important element will be the public transport, as mentioned earlier, through the tram bus and railway lines. It is important to increase the number of tram lines in the development area by constructing new ones, especially in direction of Maślice and Stabłowice settlements. New tram lines should run inside the estate and the distribution of accessibility to the tram stops should be fairly regular. This will allow greater accessibility to the public transport in the areas with relatively high deficit in accessibility to public transport.

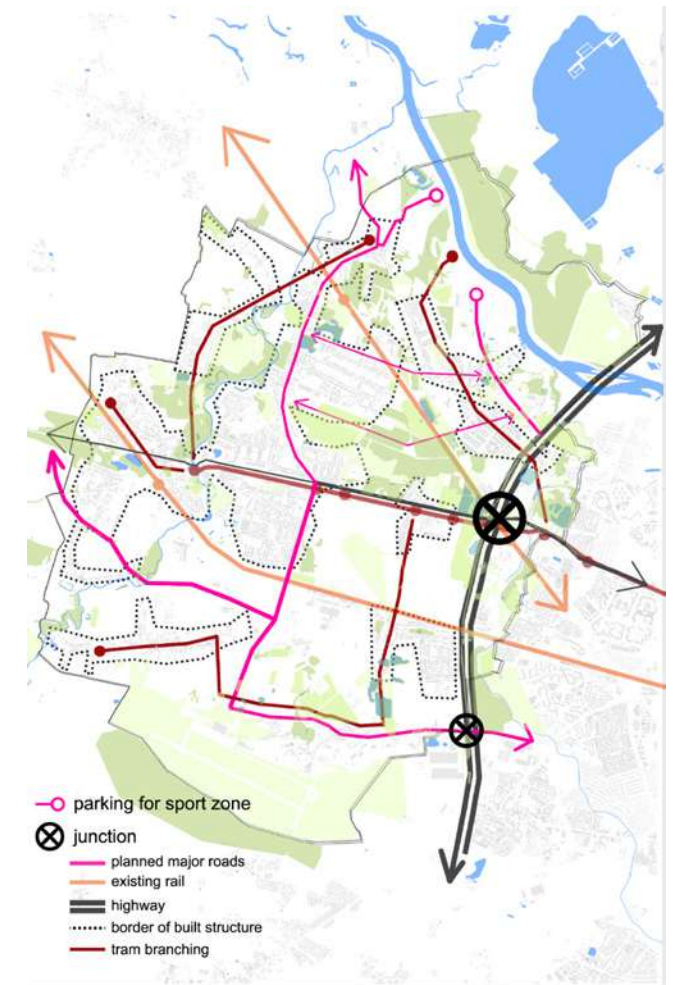


Figure 3
Transport - scheme

Public spaces

A very important element of the whole project is the system of public spaces and pedestrian paths. The area of study is characterized by a significant deficiency of this types of space which considerably lowers its attractiveness and constitutes a lower quality of residence. The aim to solve this problem is to create the public spaces in the areas of existing development through their modernization or construction together with giving them a multifunctional character. These spaces should be designed in such a way that their offer is available and dedicated to all the age groups. In the other areas the public space should be realized through the new development and as the continuation. This is extremely important when building a modern, sustainable district. The public space itself should be created through the "new walls" of development. They should be created as the multifunctional ones and offer different kind of activities. Public spaces in the project area will be suited to the character of the place. These will be both public spaces within the settlements, historic shopping axes in the area of Leśnica, recreational areas on the Odra river and others. In addition to the point public spaces, linear axes in the form of pedestrians and cycling paths will be also designed. All spaces will consist of one clear system which will certainly differentiate the district and increase the quality of residence in this part of Wrocław. It is necessary to use the Odra riverbank for recreational and sports purposes. In this area it is possible to carry out walking and cycling routes, ecological paths, recreational facilities and sports facilities. It will be necessary to revive the area nearby the city stadium by increasing the range of sports and building new sports facilities. In this way it is possible to develop a multifunctional district used for the different kinds of sport.

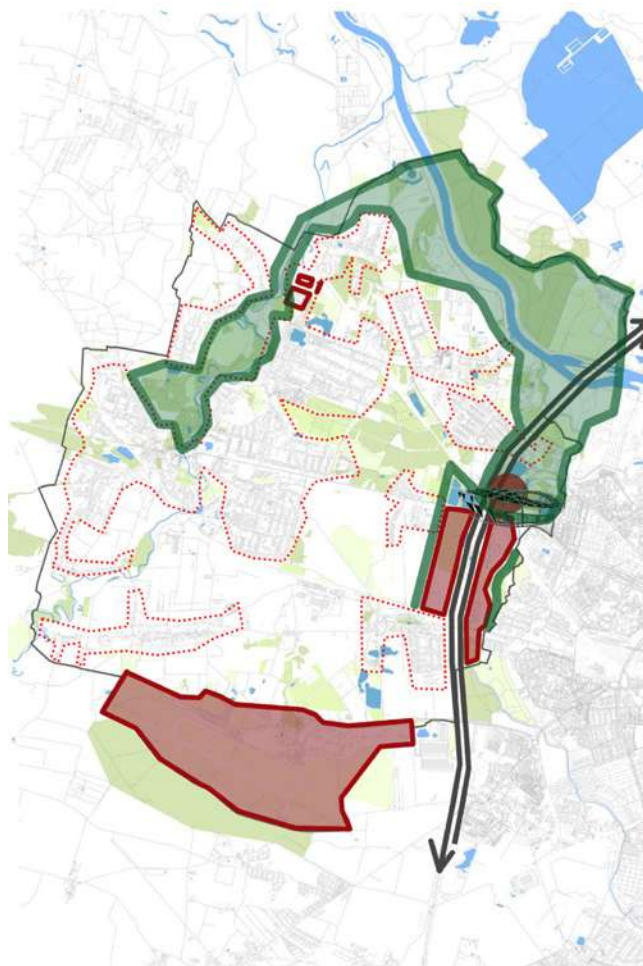


Figure 4
System of greenery - scheme

Greenery

Taking into account the current conditions and challenges of the new urbanism, the greenery in the area of study becomes an overriding element. In our project are located green areas, including forests, parks and part of the Odra and Bystrzyca river valley. These areas require special treatment and protection. It is important to set the boundaries for the development of these areas in order to prevent uncontrolled use of potential green areas. It is important to cultivate the existing ones as well as to create new green areas that will complement the emerging development. Greenery will be implemented in the form of green connections and "bridges" between the development. It is important to use the central development area - the area between Żerniki and Złotniki settlements. In this area it is possible to create a park and a "green belt" between the settlements. In case of greenery we cannot forget about the Odra and Bystrzyca rivers. These are floodplains of the river valley, so their use should be strictly planned. Due to its very high potential, these areas can be used for recreational purposes and for field sports. Such features do not interfere strongly with space and additionally will certainly make the district's functional offer more attractive. Newly built development should be equipped with the green areas for local residents. In the project the whole district should realized in the spirit of "green city" through the green gardens, boulevards, squares, parks, streets, etc.

Services

In time of creating a development concept, we can not forget about the services. They should be properly shaped and be the result of the appropriate analysis of demand for particular services. The project assumes the formation of a hierarchy of service centers from the local ones to the supra-local ones, serving the entire city. Every newly built development should be shaped in such a way to shorten the distances and the availability to the basic services. Local service centers should be located inside the housing estates or at important transport nodes, such as railway stops and along communication axes. Such local service centers should be connected with the public spaces and equipped with basic services such as schools, kindergartens, health centers, libraries, cultural centers, etc. At the same time, commercial spaces, offices or work spaces should be created in such centers. Supra-local centers are certainly those that serve the entire city. They are: the airport, stadium, new hospital and science and research center at Pracze estate. Strengthen and expand their functions with new and complementary public spaces to develop attractive centers.

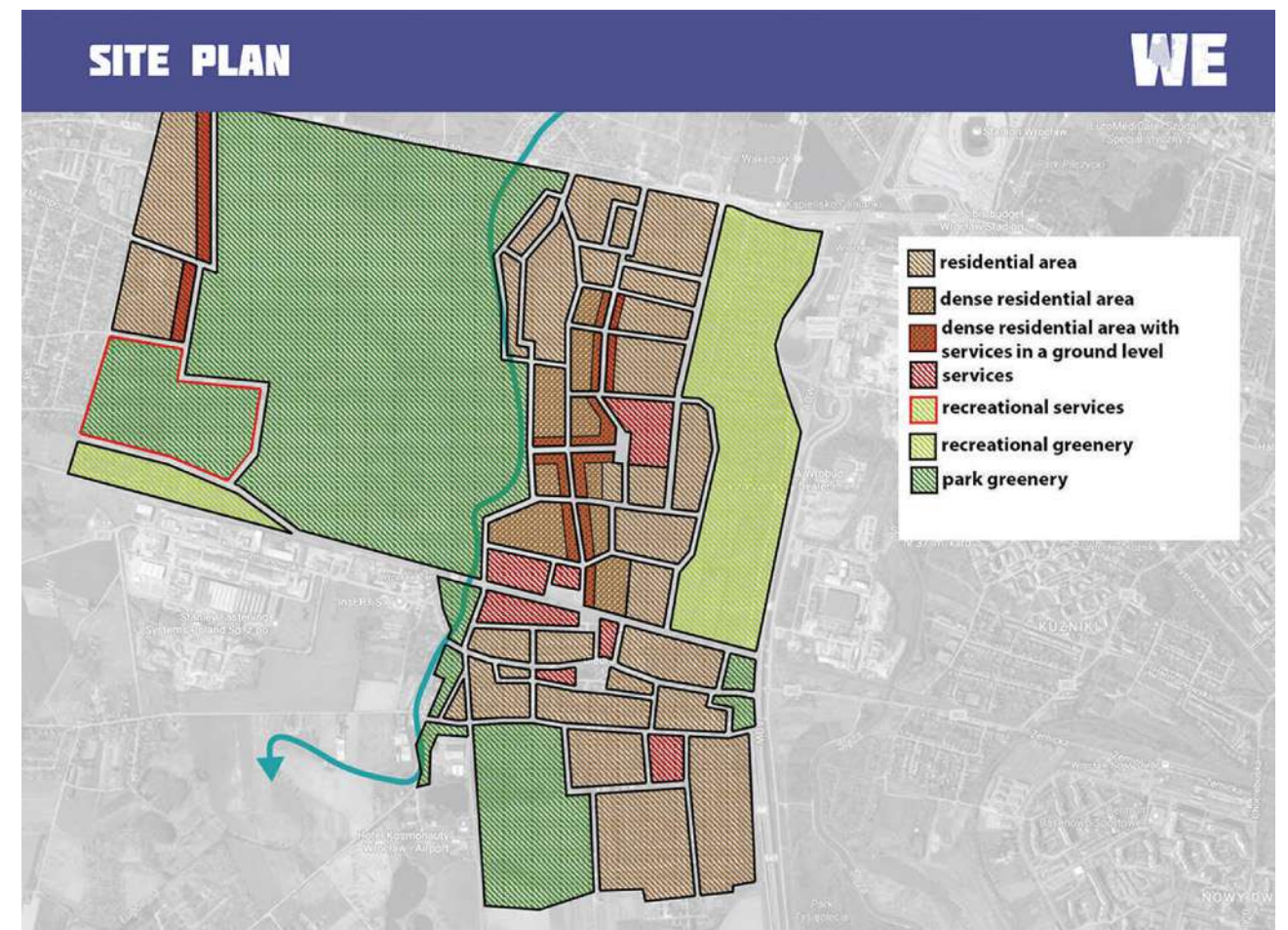


Figure 5
Site Plan of Nowe Żerniki Neighborhood

SITE PLAN FOR NOWE ŻERNIKI NEIGHBORHOOD

The main aim of the project, in a scale of Local Plan, was creating a space that, in a best way, comply the initial assumptions included in a concept of the whole designated area: Wrocław West End as an alternative, new and attractive place to live in. Area chosen for more elaborated development is delimited between Wrocław's bypass from the east, Kosmonautów Street from the north, housing estate Fabryczna from the south and Kamiennogórska Street from the west side (housing estate Złotniki).

Elaborated territory consists of three main areas with already existing development, which were decided to be joined into one structure, due to a fact that housing estate Fabryczna already representing one spatial system with Żerniki (in the south) and newly designed Nowe Żerniki (the north side). Separated spatial structure is housing estate Złotniki, located in the west side. In each of listed structures can be observed various types of urban tissue: multi-family housing from the time of centrally planned economy, contemporary multi-family housing, terraced housing, detached houses on separated plots of low density and less often encountered villas located on much bigger plots. In the central part of delimited area, there are open spaces (partially cultivated agricultural areas, partially wastelands), giving the opportunity of creating new recreational areas and a river being, in that scale, an attractive natural element. Especially important condition and project guideline is rail line, which could bring a chance of much better accessibility of this site towards the center of Wrocław.



Figure 6
Activities in green areas

Designed area, encompassed with the Site Plan – according to the main conceptual assumption – is intended to provide an attractive alternative for those, who for new, attractive development area in quiet and calm neighborhood, at the same time providing an opportunity of interesting forms of spending leisure time after work or during the weekends – active holidays or other forms of recreation in green area surroundings. As far as the housing development is concerned, there are planned different types of development, in order to provide for different needs of buildings. In relation to foregoing Site Plan it is arranged to create new sites of housing development, as well as complement existing one with: multi-family housing with relatively high density, frontage housing (along squares and main network of public spaces), terraced housing, semi-detached housing, detached housing on selected plots and objects of villa housing on bigger plots. This way is considered to be the best to satisfy the needs of people who desire housing of a high standard, as well as those, who are looking for not that big apartment in an attractive neighborhood little further from the city clamor, but on the other hand giving an opportunity of comfort and fast transport to the center of Wrocław (ex. flow to work, basic services and recreational services in a place of living).

In the west side of the described area, connecting three housing sites, there is a proposal of three squares, which purpose is to concentrate basic services (local shops, kindergarten, primary school and so on), connected with the network of services in the north-south direction. Services, chosen on the grounds of their character, are partially located on selected plots and some of them on the ground levels of mixed function residential-service buildings, functionally complementing frontages of squares and streets. One of the mentioned squares, except of providing basic services to the residents, represents an attractive public space next to the train station. Project provides for use of the rail line to create the suburban rail, which enable the residents of designed area fast and easy access to the center of Wrocław. Housing of higher plot ratio is located in the central zone of housing estates and bigger plots housing with lower plot ratio in the peripheral zones instead. From the west side a natural boundary is created by a river Ługowina, along which are planned pedestrian routes and allowed services in the ground levels of buildings alongside, creating attractive public space of a local riverfront.

As it was already mentioned before, three housing estates: Nowe Żerniki, Żerniki and Fabryczna are compositionally connected into one urban structure with attractive public space within north-south axes, completes with previously described squares and attractive riverfront. Housing estate Złotniki is completed with housing development in its east side with permission to upgrade them with services in the ground floors. These services are located on the contact point with newly designed green recreational area, what allows a comfortable use to the residents of the housing estate, as well as the people taking use of the attractions in the recreational, green part of this site. Contact point of residential-service housing enabled completion the project offers in this region with such types of services that can benefit and higher their values due to a fact of close location with green spaces and consolidated areas in this site (ex. dance schools or outdoor yoga classes, cafes, tea shops, restaurants giving an opportunity to sit outside in summer gardens and taking benefits of nature proximity. Designed recreational area is located in the central part between east side located housing estates and housing estate Złotniki in the west. These are mostly areas of low green areas, performing a function of recreational character.

In this area, there is also planned a network of pedestrian and cycle paths, sports grounds and playing fields enabling different types of physical activity. There is also a space giving an opportunity of outdoor concerts organization, theatrical performances or summer open air cinema and so on. Designed green space will also be served as place for picnics or a place of different kind of recreation in a contact with nature. Green space in the east part linked with the watercourse enables creation of river park with various plantings and as a succession implementation of some kind of educational trails with experimental set-ups for the youngest users. Areas with higher greenery are also designated for various forms of activity. It is planned to create there an adventure park, playgrounds for children, where greenery can be used as natural elements of this activities (tree houses, dandle boards and many more). Different kind of a green space is cynological park located between housing estates and the bypass. This area provides two functions at the same time. On one side it is used as an insulation green area enabling separation housing estates from noises of the bypass and on the other hand it is a space of a cynological park, where dog owners can spend some time with their pets. Proximity of this site with the bypass is not a barrier when it comes to such an investment, quite the opposite – allows quadrupeds to accustom to city clamor and work with a pet in so called "dispersion environment", what is very much required in many cynological sports.



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HEALTHY WAY TO DEVELOPMENT

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ANALYSIS

General view

The site is situated in western part of Wrocław and represents a district of the city of West End. The territory has a strong natural attraction with a high amount of green zones. Three streams flow in the area from south to the north and join the river Odra.

Based on our observations, it can be argued that the territory is fragmented and divided into separate suburban formations. These areas lack connectivity between each other regarding transport, daily migration, cultural links, etc. In fact, new housing has turned into dormitory areas, being culturally and commercially dependent on the central parts of the city. Despite the satisfactory quality of housing, the new areas are essentially lifeless concerning activities and social interactions. Organization of local public spaces as a significant element of urban life was not taken into account. The similarity of districts, lack of identity, in fact, present the consequences of urban dysfunction.

The absence of data analysis (growth rate, internal and external migration, etc.) make the strategic vision of the site and a whole city challenging. Lack of regulations caused difficulties in planning social development, especially in defining the capacity of needed objects of social infrastructure (schools, kindergartens, hospitals and medical centers, daily services, etc.). According to our diagnosis, the process of degradation of the urban environment can continue even further. Special measures should be taken to reveal the existing strengths of the territory, its cultural and recreational potential.

Besides the alarming issues, the territory has attractive elements (potential points of growth). Green areas with the local forests and streams of the Odra river form a recreational structure, "green link" between the suburbs which is worth increasing and making more open and welcoming for the citizens. Water tower "wieża ciśnień Leśnica", the main street of leśnica, "Zamek" can add identity to the area, being unique landmarks. With a new strategic vision, many of the abandoned elements of the territory can turn into real benefits. The existing stadium, which causes financial losses nowadays can be integrated into the new sportive cluster. City hospital is a starting point in forming the medical area with laboratories, research, and educational centers.

The site has all conditions for the establishment of necessary state organizations, which is a strong advantage for future investments. Relative proximity to the airport contributes to the global development of future clusters and subsequently to international integration. Existing transport infrastructure supports the idea of creating attractive centers of various activities, including management. Railway stations are being prerequisites for residential development. The mixed used development of the site, its filling with activities can form a new attractive, lively and interesting type of suburban life.

Main described ups and downs of the territory are summarized represented on the Fig. 3.

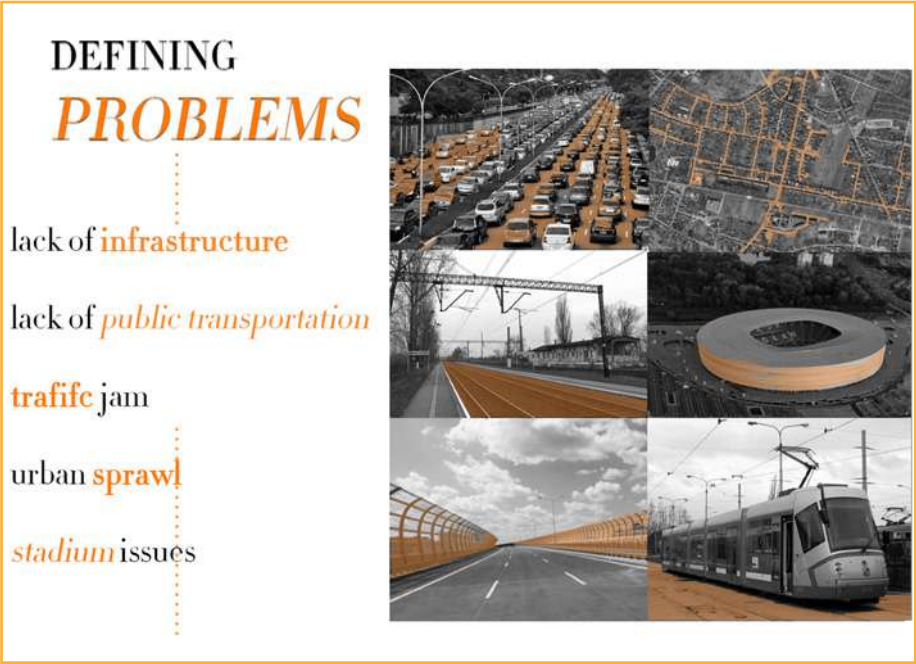


Figure 1
Defining Problems



Figure 2
Finding Solutions

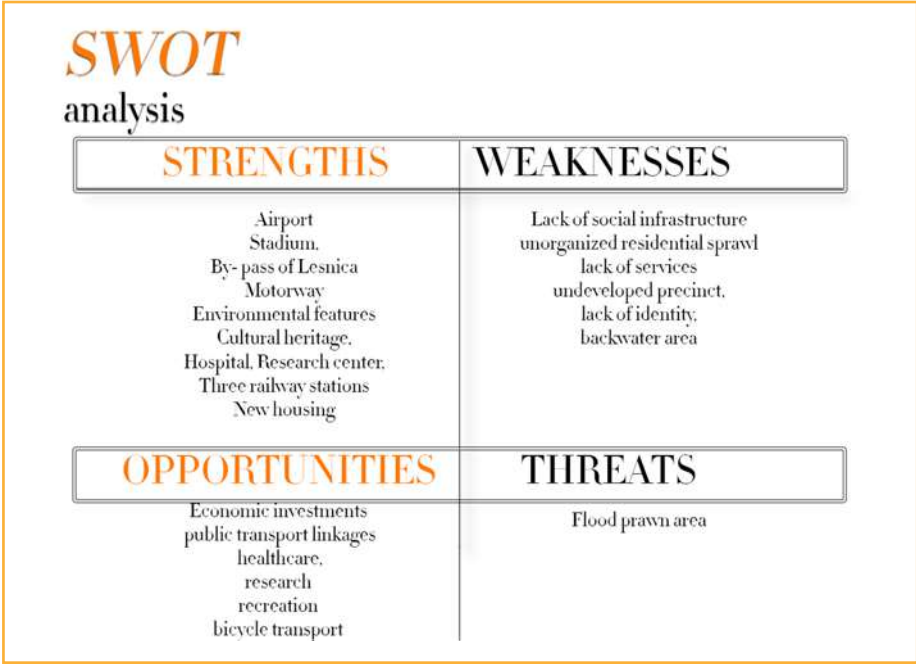


Figure 3
SWOT-analysis

Idea and Vision

Our vision is to increase social life and activities in the area, and forming a new city spirit and community pride. We seek to bring life into the west end through the improvement of public spaces, infrastructure and preservation/improvement of the existing greenery.

Upon analysis of the brief, the 1st problem we encountered was the use of the terminology "west end". In psychology, it is commonly agreed that words and the use of certain phrases can create a positive or negative impression in people's minds. Our 1st aim is to recreate the territory by giving it a name that does not give the impression of an area at the end of a vibrant city, instead we seek to create an image of a centre/ "west centre", where one imagines a city within a city. By using the term "centre" we want to create an idea of a territory that has a heart and possibility to grow from a central position, i.e. grow from the inside out. The aim is to create a satellite city within the city of Wrocław. This means that the territory has to be independent, self-sufficient and self-reliant.

In order to create a centre, the territory will require a heart which would be a central area that should be the focal point of social interaction and generate revenue while being unique to the territory in the bigger city context. It will also require accessibility by means of different modes of transportation. The area also has to have a comprehensive zoning plan in order to combat urban sprawl. The existing landmarks need to be celebrated and require links that create a common language through the territory.

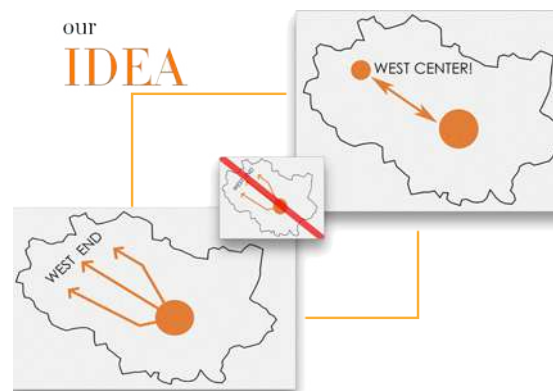


Figure 4

We aim to achieve this by the development of multifunctional clusters with various activities (health, research and government) within a centred avenue that is easily accessible from any direction. By bringing these industries together, we aim to advance the city's health and research capabilities, bring together the people and government, while creating a vibrant centre that celebrates diverse activities.

We also aim to improve the spirit of the city by enhancing existing green spaces and by creating green ways that connect importance components of the area. We want to make the city as walkable as possible and also introduce more cycling possibilities.

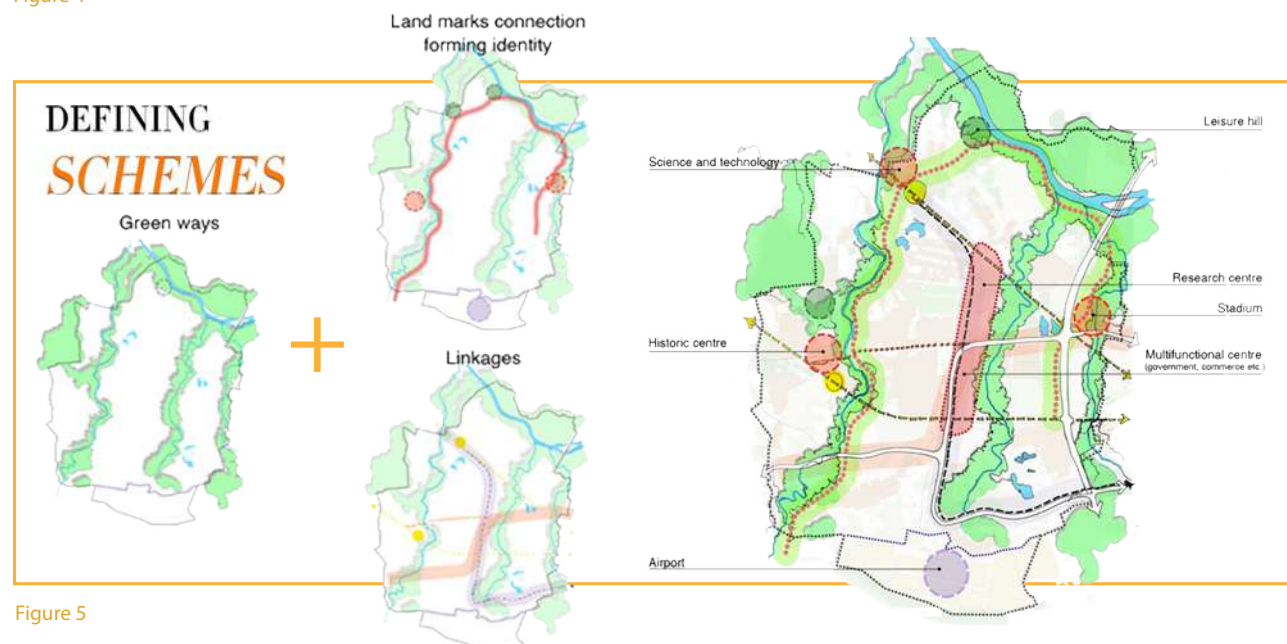


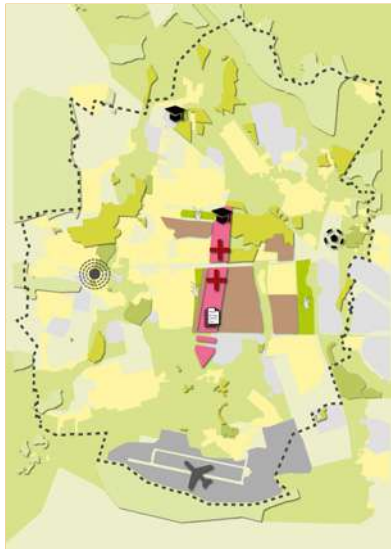
Figure 5

Main development areas

The distinct points of the area came to the foreground during the analysis. These include: the existing research centre, the historical centre, the municipal airport and the newly built multi-family residential developments in the vicinity of the stadium built by the city for the Euro 2012 championships. After analysing these points, new, previously missing functional solutions - that would be complementary to existing ones and that would at the same time constitute a motor of growth of the development of the area of the city in question - were outlined. Thus, green corridors, which were marked for preservation and reinforcement, and which delineate the main directions of the city's development, were highlighted. The main forms of use within the new area would be focused on the site adjacent to the stadium, and thanks to the reinforcement of the circulation network, the development of the entire western part of the city would be coherent and harmonious.



Figure 6
Masterplan Wrocław
West Center - main
development areas



Land use

The filling in of the existing network of single-family residential buildings was proposed, in addition to the introduction of new areas for residential development, with emphasis being placed on the concept of urban farming. The introduction of areas of multi-family residential buildings with commercial spaces on ground floors was proposed as well. It was decided that the circulation network for both designed and existing areas should be reinforced, in addition to the adding of complementary commercial and service areas, at the same time forming a new functional centre of the area in question, with the dominating form of use being healthcare.

Figure 7



Greenery and environment

The overarching goals in terms of greenery were associated with the preservation of the existing character of the nature of this area. This was tied with the strict protection of tall greenery – the forests, as well as areas forming the immediate surroundings of the river. In addition, the reinforcement of "Green belts" was planned through the proposing of new recreation-related forms of use in this area. The problem of preventing floods - a very serious concern - was remedied by an additional buffer zone.

Figure 8



Transportation

Attention was also paid to the transport development of the territory. One of the main goals was the revealing of the existing network potential and organizing new connections, which will be suitable for the increasing future traffic and pedestrian flows. The west end currently has one major road that runs through the territory. This road is plagued by traffic jams by daily commuters that travel to Wrocław city centre every day. By running through the centre of the west end, the road creates a boundary that divides the area. New link from Leśnica's bypass to Lotnicza Street was planned to connect the fragmented area and increase the capacity of the road network for the future center (the planning heart of the west end). Our team tried to turn the quite rigid horizontal network into the proportional structure. We aim to re-route this major road in order to combat the existing conditions, as well as create a link between the Wrocław city centre, via the airport, to the research centre.

Figure 9

Public transportation

To increase the attraction of the area improvement of public transport was also taken into consideration. North-south direction of new tram route was planned to connect Muchobór Neighbourhood, Airport, West Centre and the EIT+ Research Centre and with existing lines from Leśnica to the Wrocław's Centre. The existing tram from the city to the airport was extended with establishing new tram stops. Tram line should connect all the important clusters (research, government, sport, and culture). We are also proposing the addition of new bus lines in the area. A new tram depot will also need to be developed. The system of the bike and pedestrian paths along the green could be a real benefit for the whole city, which will attract more people and popularize active way of living.

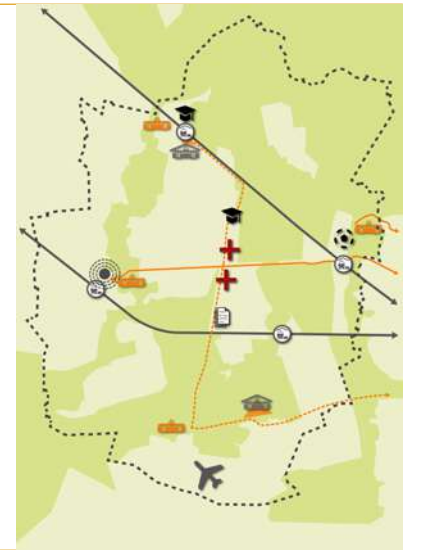


Figure 10

Leisure and Culture

The place is attractive for its natural qualities. Green areas and river streams are forming a green structure, being essential elements in developing and making the city environment comfortable for people. Separated from each other green spaces were connected by the pedestrian, touristic and bike ways. The fragmented greeneries, parts of forest turned into a city park, specific green belt with developed leisure infrastructure.

Along the belt small cafes, eco-friendly kiosks, coffee stations, small libraries, and objects of street/urban art should be arranged to popularize the area and change the attitude to suburban life. A new spirit was brought to the unique and abandoned places: the hill in the eastern part of the belt could be a place for live open concerts and events, a place for skating. Historical castle forms a cultural zone with exhibitions and educative activities. The water tower can serve as a modern and catchy place for public gatherings. Existing ponds and green fields can be used for outdoor sport, supporting the aim of the sports cluster.

In fact, the green belt will form a system of leisure, being "green and calm" on the one hand and "active and fun" on the other.

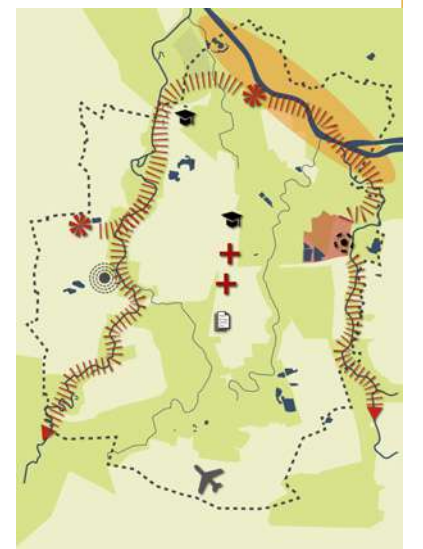


Figure 11

Development of Public Spaces:

Organization of public spaces was taken into our consideration as they play a significant role in the daily urban life. Social and public activities enriched residential districts, attracting more citizens to the new public spaces with related daily services and places of public catering. Economic development, the increase of social life and activities, forming a city spirit were the goals of organizing the urban structure. Four main types of public spaces were set up in a project (Fig. 12):

our VISION

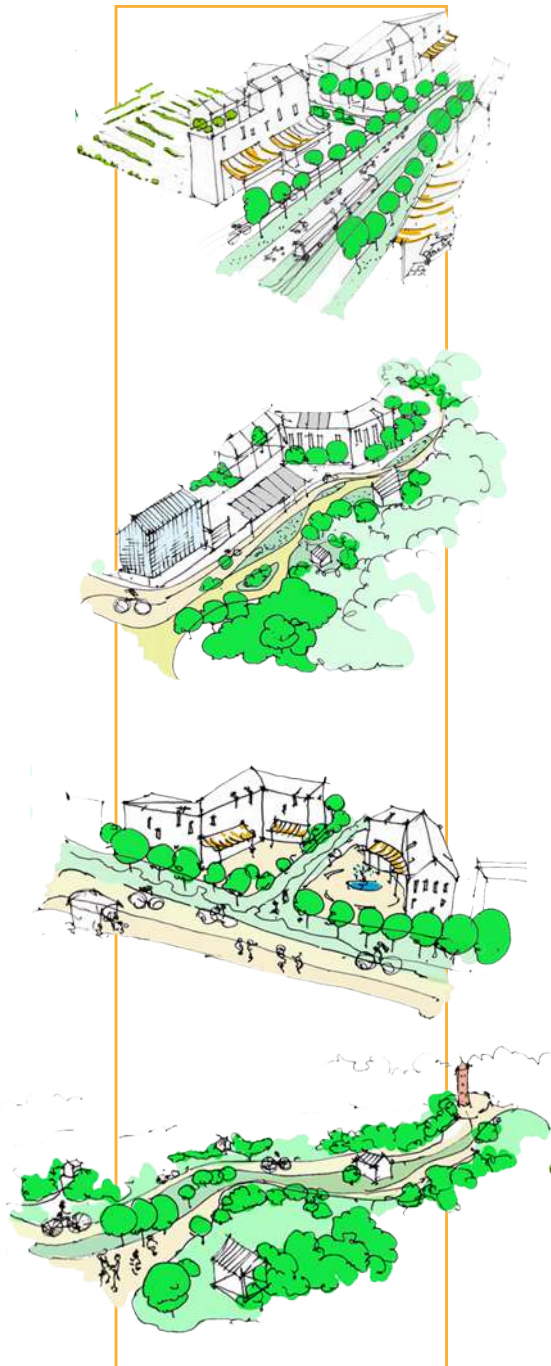


Figure 12
Development of public spaces

1. City avenue
2. Cluster vs Forest
3. City square
4. Recreational park

1. **City Avenue.** With the aim of creating the spirit of the city and city life, a lively avenue was formed with green spaces and trees. Along the main public transport artery, a bicycle traffic is planned, which will increase the popularity of the avenue among the citizens. Along the busy street, small shops will be organized where local vegetables and fruits could be sold from nearest "urban farms". Formation of this kind of public space can help the popularization of such farming. All the participants of the urban life (pedestrians, cyclists, sellers, etc.) can meet in this lively urban corridors.
2. **Cluster vs Forest.** Such a type of public space will solve the problem of the proximity of buildings to the forest. Along the new public or residential housing, wide paths should be organized with elements of a landscape design (small terraces, tiny city libraries, eco-friendly kiosks). Along the paths, bicycle routes can also be arranged. A citizen should feel the difference between a living city avenue and a quiet public space.
3. **City square.** Compact urban squares represent such public spaces with pavement and landscaping inside the residential quarter (approximately squares should be 50 m in length). Such public spaces should be located every 400 m to create a residential area more lively and attractive. On the square elements of urban design should be arranged (benches, fountains, city swings and playgrounds). The seasonality of such areas (Christmas fair in winter, live concert in the summer) will give the impression that the city lives and changes with its inhabitants.
4. **Recreational park.** A distinctive feature of the project was the creation of a green belt/structure which is dedicated to unite all the important places in the city. The green frame is essentially a green public park place. The park should include comfortable paths (pedestrian and bicycle), small eco-friendly objects.

WROCLAW WEST END: RISKS AND UNDERGROUND SPACE' POTENTIAL OPPORTUNITIES

The risk

Area with high groundwater level, the Wrocław West End is covered by three major rivers: the Odra river to the North, the Ślęza river to the east and the Bystrzyca river to the west. According to environmental analysis (Fig. 6 in the chapter "Wrocław West End. Case study", p. 36), these rivers produce a flood risk area within their surroundings, creating a significant threat to the region. The Odra river, the largest one, has already precedents of historical flood impacts (e.g. 1997 Wrocław Flood) and with climate change on going, rivers overflows may happen more often. Therefore, addressing this issue should be a priority within the development of this region.

The suggested solution

In view of the aforementioned issue, the solution proposed was the implementation of a natural pond for flood management. Located within the major flood risk area – between the Odra river and the Bystrzyca river – a depression would be created aiming to protect the nearby habitation areas. While functioning as a contention for the river flows during periods of heavy rains, the pond area would also work as a green leisure spot for the local residents.

Further opportunities

Although the solution adopted for the flood risk may be efficient for the time being, there exists further opportunities to resolve this issue lying underneath the surface area.

As seen in the geological profile (Fig. 13 and Fig. 5 in the chapter "Green Trail", p. 108), Wrocław rely – at approximately 100 m of depth – in sandstone and limestone. Being the sandstone a porous rock, herein it represents a potential layer for water storage – where the rock appears unsaturated; consequently, offering an alternative solution for the flood problem. Besides storage, the underground space in question could also provide water supply for the region – in case of aquifers existence, contributing to the self-sufficiency of the West End District.

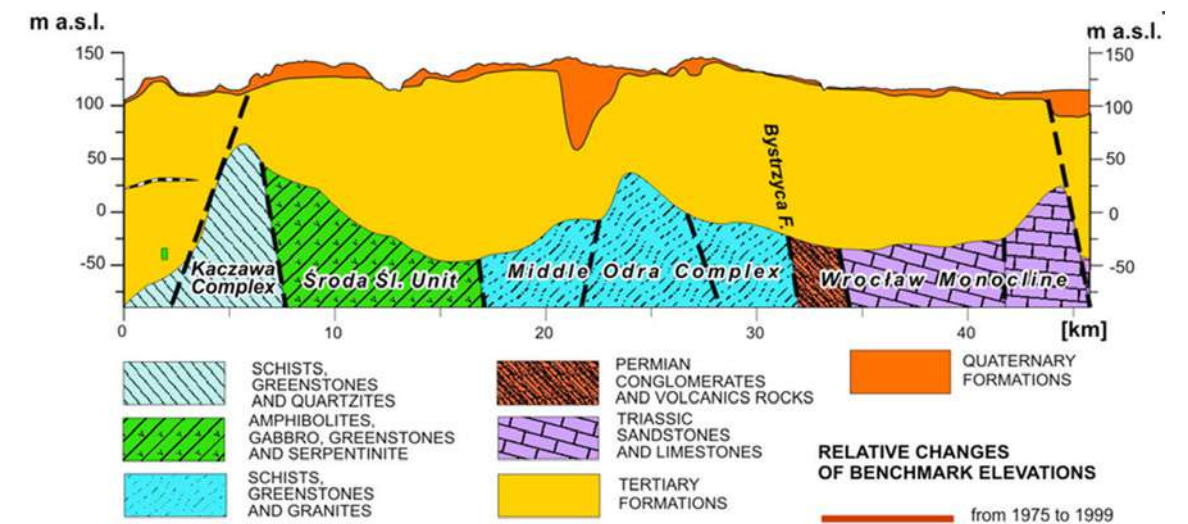


Figure 13
Simplified geological profile along the Kawice – Wrocław levelling line

Furthermore, the existing presence of water in deeper subsoil layers could contribute to the generation of renewable energy using shallow geothermal units; helping to tackle the current air pollution issues of the city.

Although further ground investigation in the region would be necessary to provide more detailed information, the underground space offers potential opportunities to deal with the currently faced issues, collaborating to make the West End of Wrocław more sustainable and resilient.



Figure 14
Focus area - land use



Figure 15
Focus area - greenery and environment

Focus Area

From the New Wrocław West End's Masterplan emerges a central Focus Area. It is planned along new road connection between Leśnica's bypass and Lotnicza Street as a core of the district. Focus Area connects and includes research centre, hospital, Medical University's facilities, housing and greenery into mixed-use sphere arranged alongside a wide boulevard. The main idea behind this was to create a fully equipped satellite district with clear structure, which takes advantages of its location and provides added value to it. All the concepts will be described in the following sections.

Land Use

Previously described as a mixed-use sphere, the Focus Area has few main points, which will be described below. Existing, newly built large hospital and the EIT+ Research Centre were the starting points of our thinking about the northern part of the focus area. Main concept is to connect these two institutions and create on this site Medical Research Centre in cooperation with Wrocław's Medical University, of which facilities and small campus is located in the north of hospital. North-west side is dedicated to new multifamily housing and contains existing single-family housing. In the north-east public park and urban farm was located.

Southern part of the Focus Area is arranged alongside Boulevard, which is surrounded by buildings with mixture of purposes but all of them are required to have services (restaurants, shops, cafes, bakeries, workshops, etc.) on the ground floor, easily accessible from the street. Rest of the mixed-use area is dedicated to the offices, education and City Hall institutions and departments. In our opinion, decentralization and relocation to the West End some of the departments, such as Transportation Department or City Planning Department will improve position of the West End in the perspective of the City and will contribute to the further development of the district. Single-family housing in the south-west part of Focus Area is isolated from the service area by a stripe of urban farm and greenery. South-east part is dedicated to the new multi-family housing with all additional services e.g. schools, kindergartens, nurseries. Road infrastructure of this new housing estate connects with New Żerniki Estate. Additional connections between these two housing districts are via green roads and river park. Environment and greenery aspect will be described further in the next section.

Greenery and environment

Beside tree alleys, pocket parks along boulevard, there are three main types of greenery in the Focus Area – urban farms, parks and green corridors as a linkage. Main large public park is planned in the north-east area, nearby the Medical Centre. It is planned in the way that the further from buildings, the more bushy and wild it became. What is more it is linked to the housing districts on another side of the Boulevard via green corridors. Smaller park is located in the south along the stream and it connects new development with the Nowe Żerniki district. Urban farming is considered as an idea which will promote sustainability and healthy lifestyle, hence few areas on the plan were dedicated to it, e.g. in the north-west housing district or as a buffer between mixed-use buildings and single-family housing in the south-west.

Since pollution and smog are the main issue in Wrocław, it is necessary to promote public transportation, and new investments – such as in the Focus Area are required to be eco-friendly. Green roofs and walls as well as water sensitive management should be applied in this area.

Transportation and Public Transportation

The Spine – A Boulevard. As previous study showed, road linkage from Leśnica's bypass and Lotnicza Street in the north is necessary (as it is shown on the masterplan, new road will not only connect these two routes, but also will be extended to the airport in the south and EIT + Research Centre in the north-west part of the area) and since it is a main connection from west to the Wrocław's city centre, it will generate large car flow. Although it should be planned carefully as a Boulevard – wide enough to contain 4 car lines, 2 lines dedicated only for a public transportation (bus and tram), trees alongside, bike lanes, pedestrian paths, pocket gardens etc. Recalls this road to be the spine of the new district, it should be a representative part as e.g. The Champs-Élysées in Paris.

Designed Boulevard is divided into two, slightly different parts. Southern part will be more overstretched because of its regional importance (main link to the Wrocław from west), hence additional 2 car lines. Although to underline representativeness and to enhance importance of the core, between the road and railways a two-level intersection is designed – railways above as a gate to the district and a road, which becomes a boulevard to the other side. In the north – from Lotnicza Street to the railways boulevard is tighter and has more leisure facilities like market places and pocket parks.

New tram and bus line is provided and whole focus area is included into City Bike network. Good public transportation's quality has a crucial role in further development of this area. New lines connect Muchobór Neighbourhood, Airport, Focus Area and the EIT+ Research Centre and with existing lines from Leśnica to the Wrocław's Centre, whole West End is well connected with rest of the City.



Figure 16
Focus area - example urban gardening



Figure 17
Focus area - transportation



Figure 18
Focus area - public transportation

CONCLUSION

The west centre is an area that has already established the basics needed for a city to flourish. These basics being the landmarks, recreational areas (possible sport precinct), a hospital and proximity to an airport. We aim to improve the west centre by adding to the existing, improving accessibility and celebrating the greenery that exists. By so doing, we see more opportunity for the inhabitants to be accepting of the proposed changes to the existing fabric.

BOULEVARD
CROSS SECTION



Figure 19
Focus area - boulevard cross section

FIGURES

- Figure 1. Defining Problems.
- Figure 2. Finding solutions.
- Figure 3. SWOT-analysis.
- Figure 4. Our idea and vision.
- Figure 5. Defining schemes.
- Figure 6. Masterplan Wrocław West Center - main development areas; source.
- Figure 7. Masterplan Wrocław West Center - land use.
- Figure 8. Masterplan Wrocław West Center - greenery and environment.
- Figure 9. Masterplan Wrocław West Center - transportation.
- Figure 10. Masterplan Wrocław West Center - public transportation.
- Figure 11. Masterplan Wrocław West Center - leisure and culture.
- Figure 12. Development of public spaces.
- Figure 13. Simplified geological profile along the Kawice – Wrocław levelling line (source: Grzempowski, P., Badura, J., Cacon, S. Przybylski, B. *Recent vertical movements in the wroclaw section of the Middle Odra fault zone*. Acta Geodyn. Geomater., Vol. 6 2009).
- Figure 14. Focus area - land use.
- Figure 15. Focus area - greenery and environment.
- Figure 16. Focus area - example urban gardening.
- Figure 17. Focus area - transportation.
- Figure 18. Focus area - public transportation.
- Figure 19. Focus area - boulevard cross section.





The Brain of the City

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THE BRAIN OF THE CITY

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INTRODUCTION

In order to highlight the characteristics of the West End of Wrocław, we conducted a site analysis. Using the strengths of the site, we were able to create a unique concept of the district while minimizing the impacts of weaknesses by design. The purpose of redesigning the West End of Wrocław is to attract new people to the district through the transformation of an identity.

Initially, we conducted a SWOT analysis to identify the strengths, weaknesses, opportunities and threats of the site, helping us understand the location and situation. Our contextual understanding of Wrocław helped develop our concept: "Brain of the City", which is a self-sustaining ecosystem and a proposed unified vision for the City of Wrocław.

ANALYSIS OF THE CONTEXT & CURRENT SITUATION

Several villages were introduced to Wrocław's city boundaries between 1928-1973, developing into a rural district surrounding Wrocław's downtown. The villages were zoned as rural spaces where they continue to represent the agriculture sector and character. Historical use of agricultural lands is still strongly visible.

Analyzing current situation and aims of elected city representatives, we put ascent on potential synergies between different urban systems. Globalised world cities increasingly depend on regional, national and international trade and services, and Wrocław is already a regional center. Wrocław is also a center for many national activities, hosts representatives of international companies for Poland, and has a great opportunity for further development in this direction by capacity building and enlargement of city.

As Frederick Law Olmsted stated in "The Public Park Movement":

“...the larger a town becomes because simply of its advantages for commercial purposes, the greater will be the convenience available to those who live in and near it for cooperation, as well with reference to the accumulation of wealth in the higher forms, — as in seats of learning, of science, and of art, — as with reference to merely domestic economy and the emancipation of both men and women from petty, confining, and narrowing cares. It also appears to be nearly certain that the recent rapid enlargement of towns and withdrawal of people from rural conditions of living is the result mainly of circumstances of a permanent character. We have reason to believe, then, that towns which of late have been increasing rapidly on account of their commercial advantages, are likely to be still more attractive to population in the future, that there will in consequence soon be larger towns than any the world has yet known, and that the further progress of civilization is to depend mainly upon the influences by which men's minds and characters will be affected while living in large towns [2].

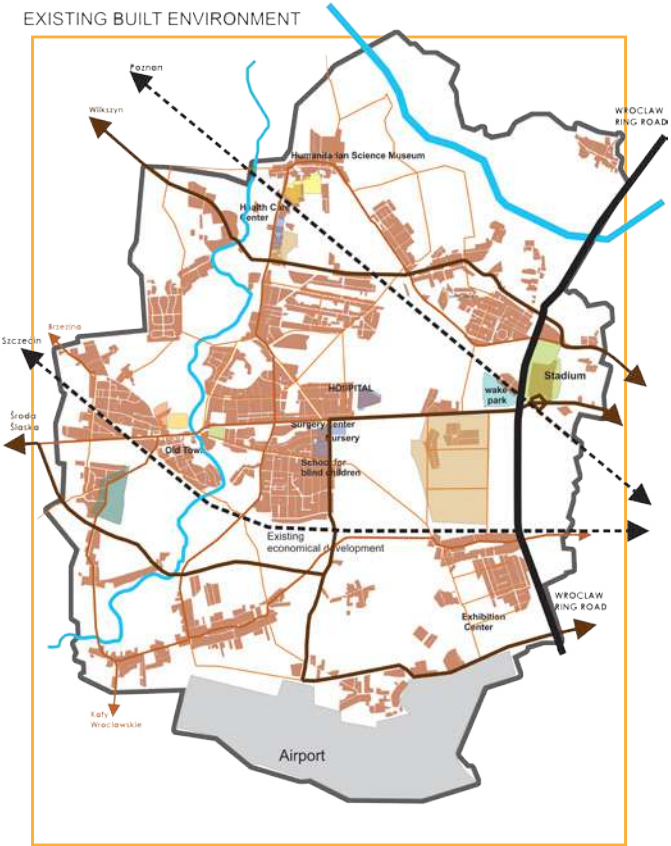


Figure 1

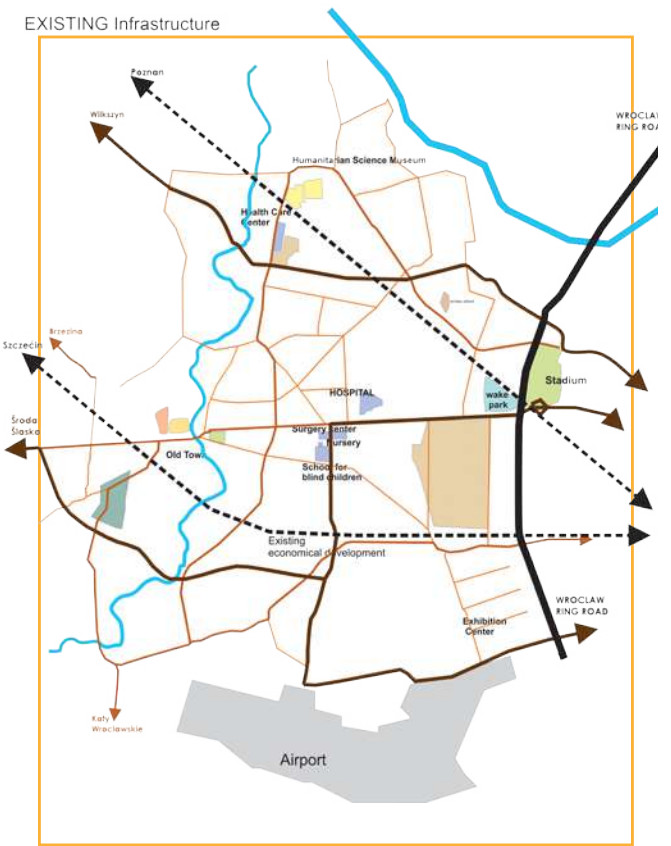


Figure 2

Wrocław has a lot of potential in its existing systems of area but further urbanization should create living patterns that harmonize with environment. Current activities are grouped in closed, usually monofunctional, blocks and separated by open space. The disconnected blocks have a fragmented connection system with a large amount of unutilized space (Fig. 1).

The subject area has no spaces with mixed land use, which meets urban resident needs in its intersectional forms (home / playground / meeting place / grocery shop / sports / school / public transport / business zone / health clinic / municipal office, etc...). According to our analysis, the current zones seem to be randomly generated in this area and are missing connectivity of public transport, bicycle and pedestrian routes, quality and safe open spaces. In addition, many activities that could attract further populations don't exist in this area, such as public services and community centers (Fig. 2).

One of the main challenges is the application and organization of these activities to create "positive" space around instead of current unshaped "negative" space. However, our approach is eloquently summarised by Matthew Frederick, in his "101 Things I Learned in Architecture School": *The Chinese symbol for crisis is comprised of two characters: one indicating "danger", and the other, "opportunity". A design problem is not something to be overcome, but an opportunity to be embraced. The best design solutions do not make a problem go away, but accept the problem as a necessary state of the world. Frequently they are little more than a eloquent restatement of the problem [1].*

Our SWOT analysis is summarised below:

Strengths:

- city’s vision of Wrocław development as modern, sustainable, European 21st century city, a place of new ideas and new people;
- growing economy - existing factories and development centers of many foreign and domestic corporations, Wrocław Technology Park and Wrocław Industrial Park;
- greenery, and the existence of a water body;
- open spaces that can be connected;
- existing infrastructure (Airport, Railroads, Highway);
- existing activities/buildings (Hospital, Stadium, Research center, Lesnica town center, various residential areas with existing infrastructure).

Weaknesses:

- underground water;
- traffic systems as space barriers (highway, railroad, airport);
- lack of connection of different parts of area;
- urban sprawl.

Opportunities:

- new free space in combination with existing activities as space points of development (Research center, Leśnica town, hospital, airport etc.);
- incensement of mobility routes through linking connecting corridors ;
- promote cycling (convenient terrain and no limitation by street profiles);
- use of renewable energy sources;
- urban gardening – preservation of quality agricultural lands within city development.

Threats:

- floods;
- air pollution, especially during the winter;
- noise (airport, highway, railroad and etc.).

CONCEPT: THE BRAIN OF THE CITY

We are witnessing the impact of technology and how it is reshaping contemporary living and directing the way we function within our offices, our homes, the way we connect and interact within society. Technology seems to be coding the way we live and survive!

Traditional city planning is being pushed to the side as the new era of technology appears, and there is a need to reflect the increasing dependency on technology with city planning. Cities affect every aspect of urban life, starting from environmental wellbeing and economic efficiency to health and livability.

In our case study, Wrocław is a city where the focus of the current major developments are oriented at the city center, and in the other hand, West End is the west part of the city with some of the main landmarks of the city (Fig. 3), an asset, left aside from the wave of new urban developments and interest of current developers. Considering West End’s strategic layout as a zone and connection with the city center, our conceptual proposal aims to apply inclusive urban planning tools in such form that will affect the way we as a collective society perceive and use different parts the city.

In this way, we propose the West End to become a zone that creates its own self-sustaining identity within the city, in hopes to benefit its citizens and take a very important mission to serve not only the city of Wrocław on a state level, rather serve the country of Poland, Europe and beyond (Fig. 4).

West End’s current urban fabric, elements of used and unused spaces, gives the possibility to think and adopt a complete urban regeneration and turn its infrastructure from a "calm and left-aside asset" to a space where it call all be processed and then delivered, with the potential to improve, revolutionize or in other words be perceived as The Brain of the City.

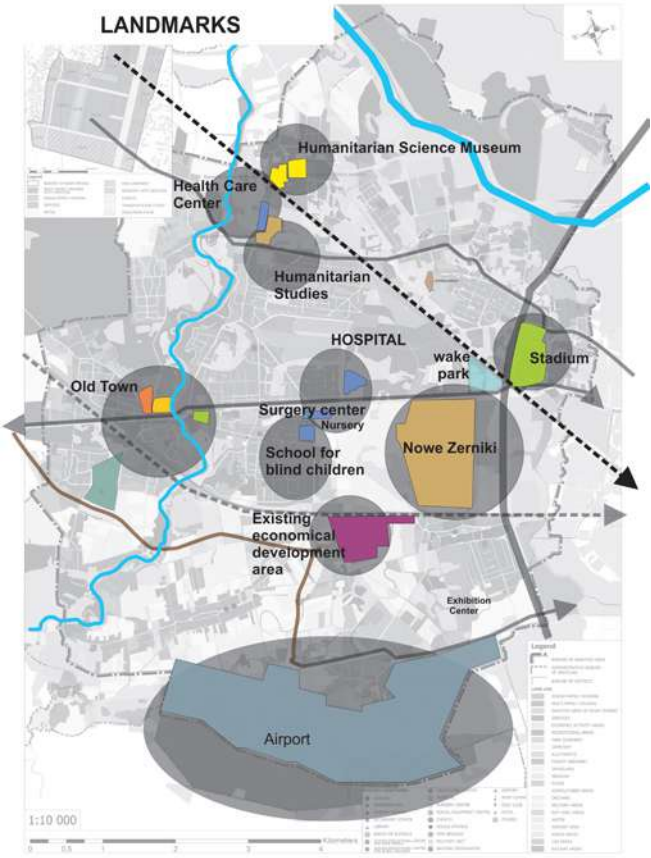


Figure 3

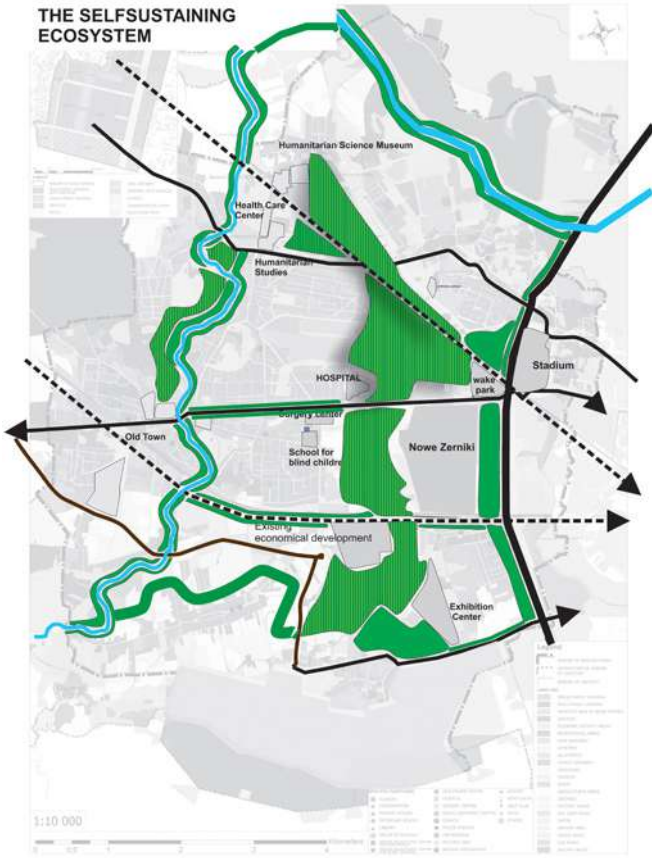
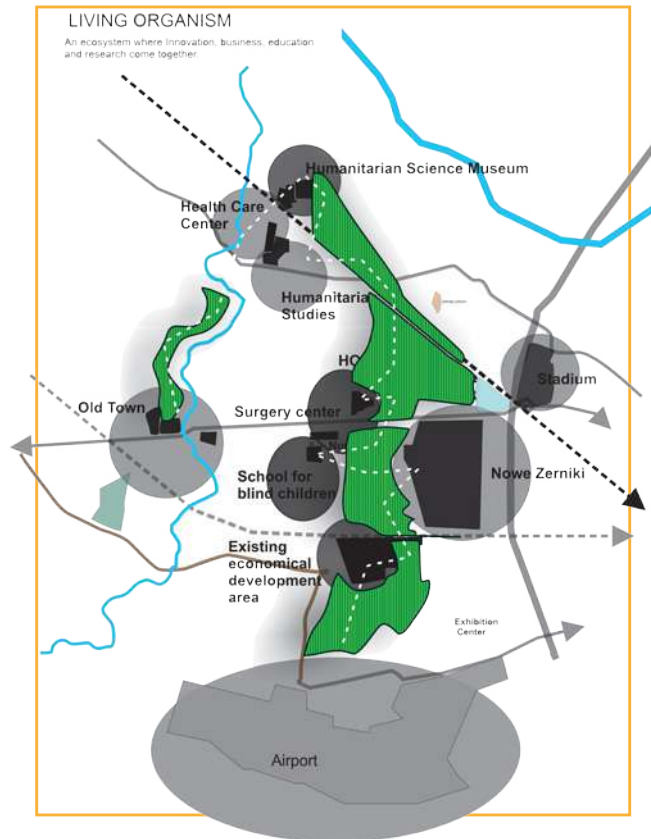


Figure 4



INCUBATION PARK

City Airport, City Stadium, City Hospital, Humanitarian Science Museum, Surgery Center, Nursery, Hospital for Blind Children are within the boundaries of West End, and serve as very strong landmarks. Together, these landmarks portray a common demand for something that links them all to the century of Innovation, something that manifests their level of importance and makes them communicate and function as one living organism (Fig. 5).

Nowe Zerniki, considered as a pilot project towards innovative housing in Wrocław, is also located within the boundaries of the West End. Together with Old Town and existing West End Economic Development Area, has developed the opportunity to complete the palette of functionality and revamp the concept for reshaping the innovative ways to make better use of space and infuse contemporary living (Fig. 6).

Based on our team's analysis, which takes into consideration the current era of urban planning and the demand for the urban development strategies from the city level/Municipality, we propose an ecosystem where innovation, business, education and research come together and penetrate the "negative" areas as a so called Incubation Park (Fig. 7).

Incubators are innovative programs designed to accelerate the successful developments of entrepreneurial companies through an array of business support resources and services, developed and orchestrated by incubator management and offered both in the incubator and through its network of contacts (Fig. 8).

In this manner this will contribute in boosting the current economic development area within the zone while Research and Technology Parks, on the other hand, will tend to be large-scale projects that house everything from corporate, government or university labs to very small companies, affecting and supporting City Hospital needs, School for Blind Children, Surgery center, Institution for Human studies and the science developments of Humanitarian Museum (Fig. 9).

Within European Union countries, there are different private and public funded programs that offer support in form of consulting, mentoring, prototype creation, other services and co-funding for them. Therefore, the Incubation Park located in West End with the proposed phases of development will provoke the interest of different types of stakeholders such as developers, business partners, researchers, public and private sector and simultaneously will attract a large demographic of young people from all over the country and beyond to Wrocław. The Incubation Park will fulfill the Mayor's request to develop Wrocław into a city where people of all demographics live, work and play (Fig. 10).

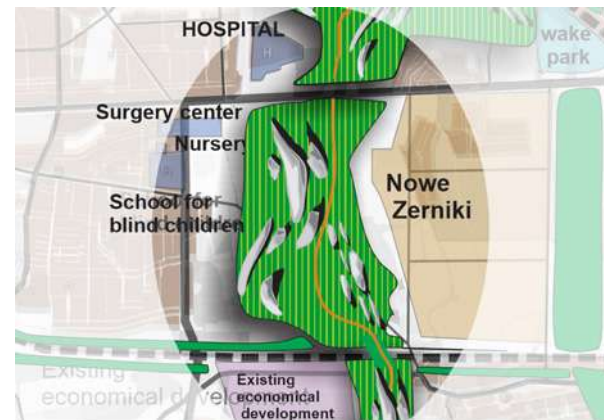


Figure 6
Incubation Park proposal, detailed sketch



Figure 7



Figure 8



Figure 9

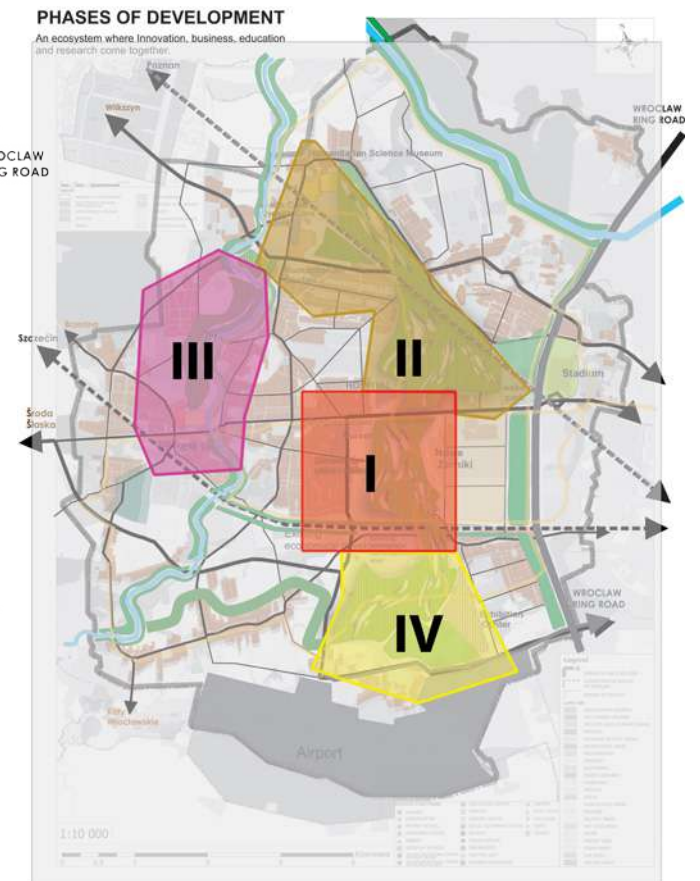


Figure 10

THE SELF-SUSTAINING ECOSYSTEM- ECOLOGICAL SOLUTIONS

In spite of the fact that the average Wrocław soil (>25 meters deep) is composed of stable sand, which is suitable for a feasible tunnel construction to improve the public transport system like metro lines in the future, it is important to consider that pedestrians want a city without any obstacles. In other words, pedestrians do not want to cross huge underground bypass slopes while walking. Although it is always necessary to carry out some geotechnics probe holes to determine the main parameters and characteristics of the soil site where a project is planned, it should be taken into account that above 25 meters deep, the soil composition is a kind of soft soil (see **Fig. 13** in the chapter "Healthy Way to development", p. 128), a pedestrian tunnel in a saturated clay soil would tend to float in the worst case (**Fig. 11**). On the other hand, if this by pass is designed above 25 meters, a cut-and-cover construction method should be used, otherwise an tunnel boring machines with earth pressure support are a preferred option. So called Earth Pressure Balance Shields (EPB) turn the excavated material into a soil paste that is used as pliable, plastic support medium. This makes it possible to balance the pressure conditions at the tunnel face, avoids uncontrolled inflow of soil into the machine and creates the conditions for rapid tunnelling with minimum settlement.

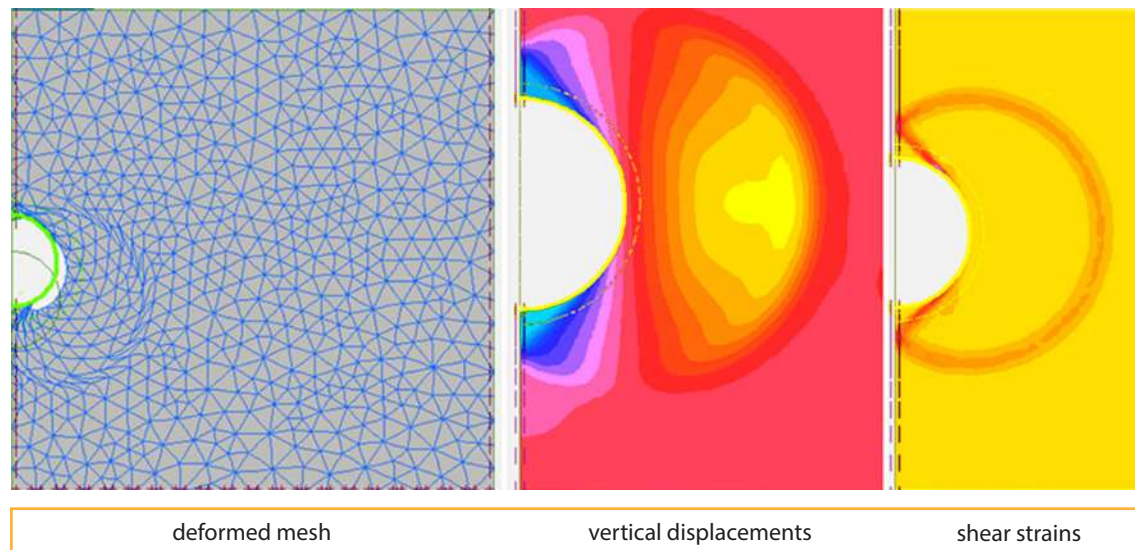


Figure 11
Finite element results of a saturated clay tunnel

As a result, from an economic point of view with regards to the development of green zones, the Incubator Park and its huge natural corridors that our team have proposed in The Brain of the City, the Eco bridge option serves as a suitable idea for it complies with the ultimate and serviceability vibration limit state in order to avoid resonance effects and is cheaper than using jet grouting in the tunnel to reduce the water pressure and to avoid flotation (**Fig. 12**).

Moreover, it is advised to address the geology composition of the soil in the west of the city in order to optimize appropriate locations to develop housing or a central business center, which requires taller buildings than the first one.

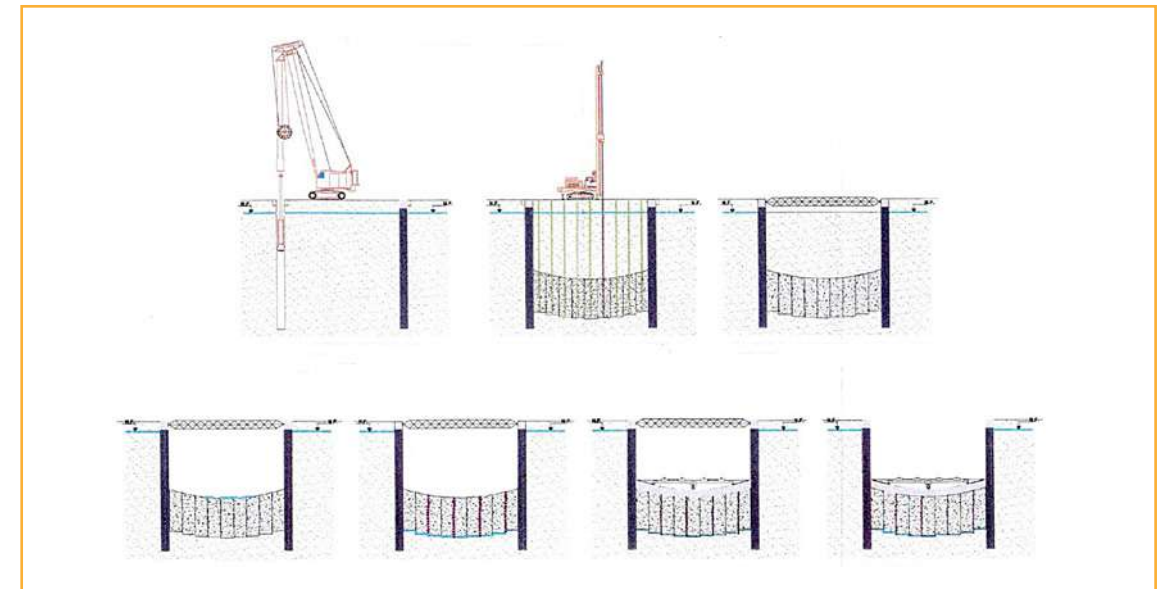


Figure 12
Cut-and-Cover method and jet-grouted slab

RENEWABLE ENERGY SOURCES

From an energy resource point of view, there is an opportunity for the West-End of Wrocław to advance through the development of a self-sustaining ecosystem. Strategically, Wrocław should invest in renewable energy resources such as solar panels, wind farms or geothermal energy (**Fig. 13** and **Fig. 14**) in order to lead Poland and the world into self-sustenance and economically and environmentally efficient city structures.

To prioritize the safety of the citizens of Wrocław from future floods, it is critical to improve river bank protection and design storm drainage points such as an artificial lake as presented in **Fig 15**.

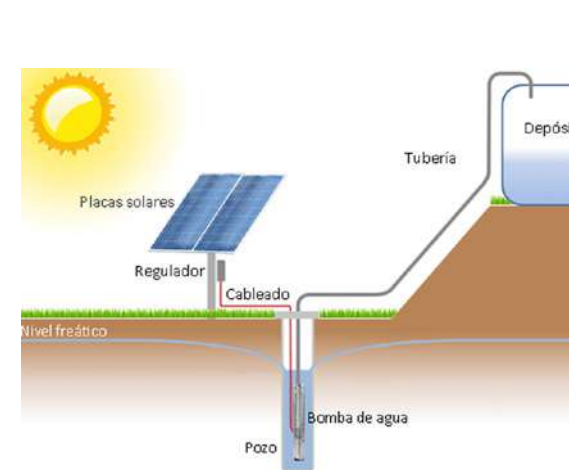


Figure 13
Pumping water from the underground

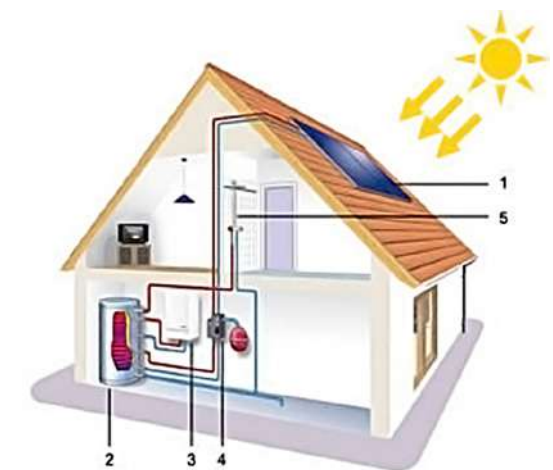


Figure 14
Heat water with solar panels

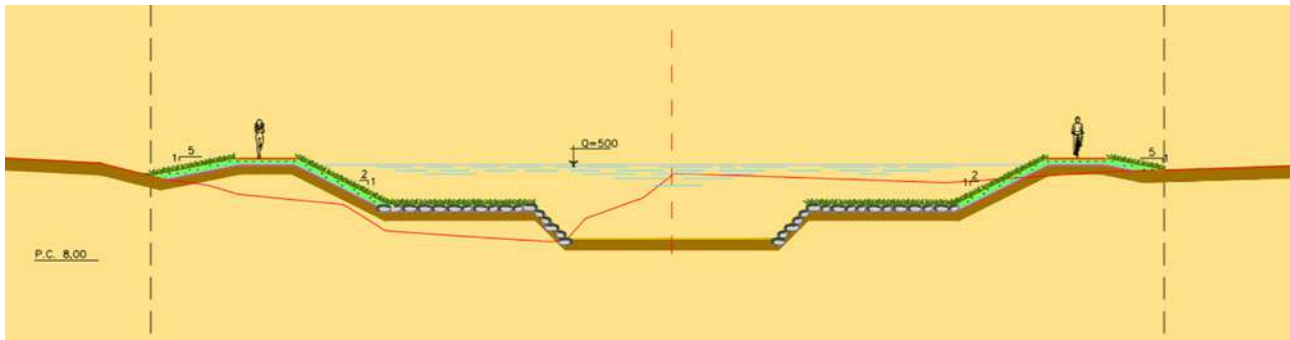


Figure 15
River bank protection

CONCLUSIONS

The proposed concept: Brain of the City has emphasized the need to develop a unified identity to the west end of Wrocław. Through the connectivity of existing built environment, including landmarks and current infrastructure, the Brain of the City will generate an economic presence for Wrocław, and an attractive location with its own identity.

Our main objective is to infiltrate the Incubator Park within all aspects of West End, connects all the existing nodes while developing an opportunity for future development in the region. The Incubator Park can develop an achievable coherent character to West End, while defining the site as a recognizable location in the region, and simultaneously complementing the Old City of Wrocław. The Incubator Park will serve as an alternative location for the city to fill in the gaps in the urban fabric of Wrocław.

The Incubator Park could also trigger the reputation of a central innovation hub within Europe, especially since there will be a purpose to the West End location. The proximity of the airport and other key connections to the City of Wrocław could attract a certain demographic in the science and technology communities in Europe to the City of Wrocław, serving as a recognizable attraction to the region in the map of European Innovation Incubators.

In addition, such a solution attracts economic investments. The size of the plots, proximity to infrastructure and existing neighborhood of other investments are perfect reasons for opening new business in the area. Such a new economical impulse and new workplaces would help to increase the job opportunities in the region. Such an opportunity could increase the number of population and give the opportunity for new development in the district. New citizens could influence new standards of living in Wrocław and the region.

As an Incubator Park, it is critical that environmental and ecological conditions are improved within Wrocław. The greenery within the Incubator Park will direct ecological and sustainable incentives within the **City of Wrocław**. Green land use would also highlight the history of the region, encourage a healthy lifestyle, and improve sustainable development while helping to connect all incubator interventions.

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FIGURES

- Figure 1. Existing built environment.
- Figure 2. Existing infrastructure.
- Figure 3. Landmarks.
- Figure 4. The selfsustaining ecosystem.
- Figure 5. Incubation Park proposal.
- Figure 6. Incubation Park proposal, detailed sketch.
- Figure 7. Incubation Park
- Figure 8. WWE - Brain of the City.
- Figure 9. Landuse, WWE - Brain of the City, Masterplan.
- Figure 10. Phases of development.
- Figure 11. Finite element results of a saturated clay tunnel.
- Figure 12. Cut-and-Cover method and jet-grouted slab (source: [5]).
- Figure 13. Pumping water from the underground (source: [6]).
- Figure 14. Heat water with solar panels (source: <http://www.thegreendealplan.co.uk/solar-hot-water/>).
- Figure 15. River bank protection (source: [4]).

NEW CITY DISTRICT: A DREAM OR A NECESSITY?

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NEW CITY DISTRICT: A DREAM OR A NECESSITY?

INTRODUCTION

The modern city is an organism that should be analysed on multiple planes, and current tendencies in the transformation of cities create possibilities for the development of new multi-scope and interdisciplinary research fields. Tendencies in the economic and spatial transformations of cities began with the fall of the centrally controlled economy. It was then that cities found themselves on the brink of a series of emerging opportunities, especially in terms of economic activity (mainly through the deregulation of the individual economic initiative of the residents) on the one hand, while on the other they needed to face numerous new problems. The change of the socio-economic system in 1989 significantly affected the spatial development of cities. The enabling of new forms of economic activity became reflected in the space of cities - including the creation (or spontaneous creation) of new districts. Earlier estates built during the period of the People's Republic of Poland were characterised by a distinct urban layout. The residential complexes of the time, despite their flaws, were holistically designed structures equipped with a package of basic services that were imposed by the government (education, healthcare, retail services, etc.). The opening up of new possibilities for the construction of residential complexes at the start of the 1990s provided a new, wider field of perspectives – particularly for the activity of individual residents: in a wider view we can observe that cities have, somewhat, embarked on one of two development paths:

- planned transformation of the urban structure or the urbanisation of new areas,
- the uncontrolled expansion of urban areas.

In the case of the planned transformation of existing urban tissue and the designing of new, coordinated - in the wider sense of the word - city districts, the situation appears to be relatively clear. Compliant with the ideas of sustainable development and the spatial policy of cities, the redevelopment of urban tissue or the construction of new complexes provides a chance for the creation of new places of residence, the creation of new jobs or the establishment of attractive public spaces that crystallise urban space. At the same time, in the case of the much more often encountered and visible chaotic expansion or construction, the newly established layouts can pose a significant problem. New building complexes emerging in the outer areas of cities have a largely loose and unstructured character and are distant from – in terms of the quality of space and the forms of use that they feature – composed urban structures. For instance, they feature an observable lack of basic services for residents. This is why we can state that newly developed areas mostly play a residential role, while not providing the possibility to satisfy needs in terms of other basic functions, not to mention functions of higher rank that could be of significance for the entire city. Another significant matter is the observable lack of proper infrastructural development: the lack of an appropriately developed road infrastructure that is comfortable to the residents, the lack of accessibility to public transport connections to key areas of the city, the lack of comfortable access to the water and gas distribution network, etc. As a result, we can observe that these areas, although located within the city limits, are often developed in a worse manner than the areas of the surrounding villages, while living in these areas is at the same time much more expensive (they often feature higher land and apartment prices) than, for instance, in the surrounding rural areas. New districts, due to the fact that they are often an example of the uncontrolled expansion of urban areas, instead of constituting a significant urbanisation element of the structures of cities, oftentimes lead to a growing level of suburbanisation.



Figure 1
Wrocław spatial development

It is thus important to find an answer to the question whether the currently designed urban districts are a dream that we follow, or are they – in the current period of modern transformation – a necessity that municipal authorities, planners, professionals and residents must face? Or perhaps they are both a necessity and the realisation of a dream? Do large cities – on the scale of Poland – need new districts? One attempt at finding the answer to these questions was the Workshop "Shaping a new city district - Wrocław West End". However, it is not a first time, when issues of city development directions are being faced by Wrocław. Thus the main purpose of this chapter, which is included in the summary of the Workshop projects, will be preceded by the retrospective analysis of the new city districts development over the last century.

THE BACKGROUND OF THE CONTEMPORARY NEW CITY DISTRICTS' TRANSFORMATION

A tempo and a scale of a city spatial development are dependent on two fundamental aspects: rising number of citizens and consumption growth [4]. It is the second time Wrocław's population has exceeded 600 thousand citizens: the first was in the 1930s, and the second started after the next 50 years. Although the causes of the quantitative increase in both cases lie in the local development, and, by extension, in the higher probability of personal betterment inside Wrocław rather than outside (including brighter perspectives for rises in social status for the local workers), the positive trend is not able to sustain itself in all aspects of the life of the city. Rising local population density leads to reorganisation of local space. This necessitates the imposition of a functional-spatial structure, including designation and acquisition of land for housing investments, creation of transport links with the city centre and provision of balance in size of service and recreational areas. The transformation

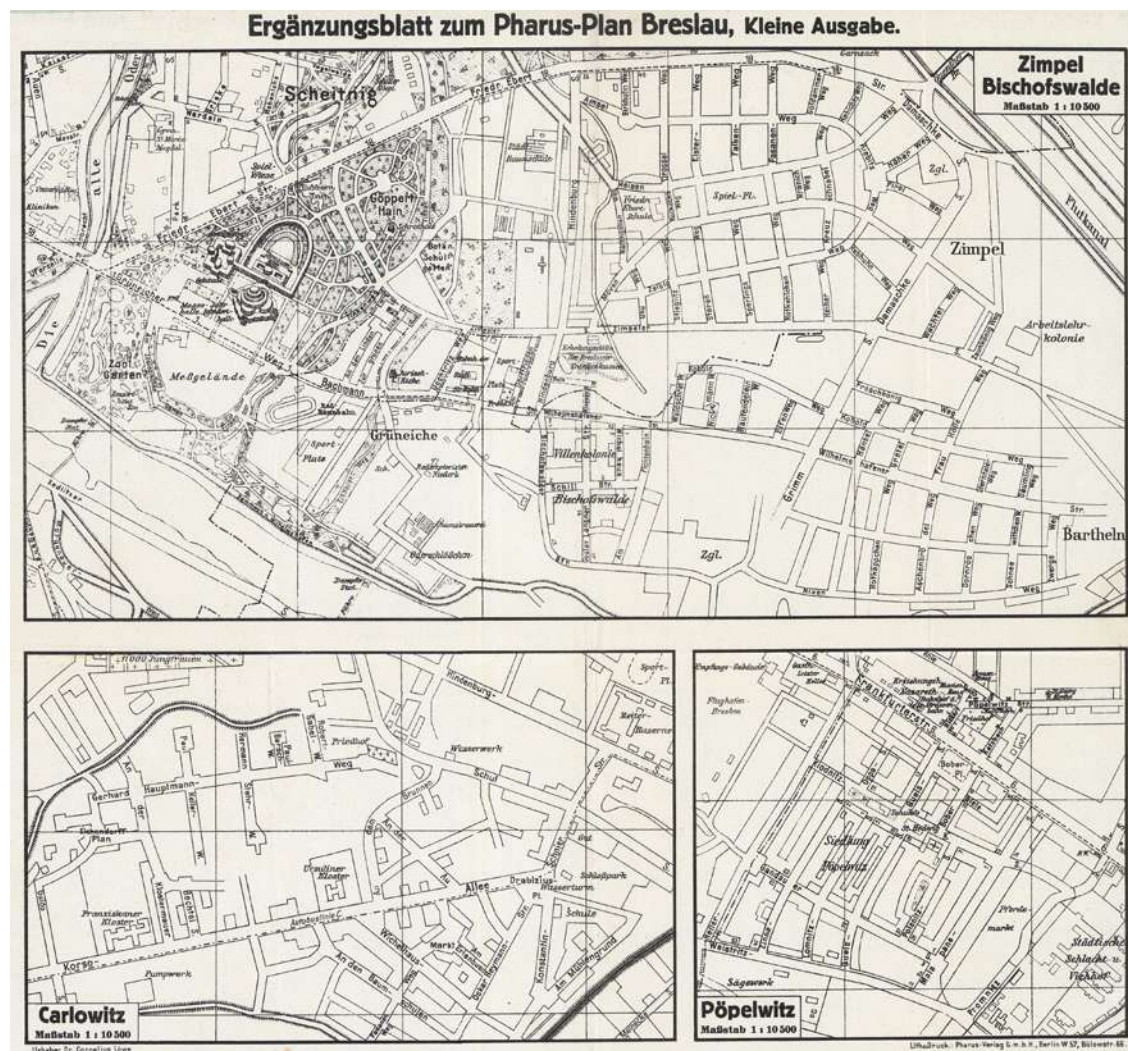


Figure 2
Biskupin, Karlówice and Popowice district, plan

cases normally have a dual nature. On the one hand, we can cite the planned, highly structured, and coordinated activities realised firstly by the local government. On the other hand, it is important to remember that the reality of city development never fails to feature some more or less spontaneous actions, often pre-empting the projects of local urban planners. Both transformation drivers are archetypal in the Wrocław of the present and relatively recent past.

The spatial development of the city started in fact after the external city wall demolition in 1807 (Fig. 1). A direct implication of this occurrence was the incorporation of the suburban areas Odrzańskie, Piaskowe, Oławskie and Mikołajskie (1808). Nevertheless, this action proved insufficient against the background of the steadily growing number of citizens. Epidemics and a high rate of mortality, especially among infants were not unusual in Breslau of the end of the 19th century. The root cause of this situation laying overpopulation. According to Kononowicz [3], the population density in Wrocław in 1924 was 116,3 persons per hectare. What is more, it is important to remember the prevailing poor housing conditions, including badly ventilated and dark flats in tenement houses and their lean-tos. These standards were permitted by the building law of the time. The other block of problems concerned further incorporation difficulties, which is demonstrated by the number of stages in the process of Wrocław's new land subsumption. By the end of 1939, the city had been enlarging its territory approximately once every 10 years (equating to 12 stages of incorporation over 120 years).

To mention only the largest of the incorporation processes, they were in 1868 (incorporated areas: Gajowice, Dworek, Nowa Wieś Komandorska, Glinianki, Huby – in the south, Rybaki and Szczytniki – in the east), in 1897 (Popowice in the west, Borek in the south), in 1904 (Rakowiec, Tarnogaj and Gaj in the south and south-east, Zalesie in the north-east from the city centre), and in 1928. This last incorporation stage in the Breslau period covered the greatest part of the new areas. At this time, besides absorbing some villages, Wrocław also subsumed two towns – Leśnica to the west and Psie Pole to the north-east. Nevertheless, the original government plan was not realized in its entirety. Such places as Brochów, Muchobór Wielki and Wojszyce stayed on the other side of the city borders.

However, incorporation was not the only nor the most comprehensive solution to the urban social problems. Despite the need for changes at the procedural level, it is essential to mention three fundamental courses of action which were to pursue through the regulations of Wrocław and its new land transformations.

The first pro-development activity in the housing field was the construction of estates of compact housing for white- and blue-collar workers. Although such planned movements had been made in Wrocław before the First World War, they were intended rather for the higher social classes. For those groups, among others, Biskupin (Bischofswalde), Borek (Kleinburg), Karlówice (Carlowitz) and Zalesie (Leerbeutel). In 1919 a program called Flachbausiedlung, familiar already to other parts of Germany, was implemented in Wrocław. Following the trend, five housing estates dedicated to blue-collar workers and with gardens for each dwelling were erected in Wrocław. Those low density and height housing estates were located around the city centre: Popowice – 46,9 ha, 1.780 flats, Grabiszyn – 30 ha, 780 flats, Sępólno – 100 ha, 2.200 flats, Tarnogaj – 11 ha, 208 flats and the housing estate by Serniecka Street – 3 ha, 233 flats (Fig. 2).

Almost parallel to the small-scale works, conceptualisations started to appear of big city decentralization based on cohesion with nearby stably developing urban units, termed satellites. The idea was inspired by Howard's garden cities concept (Fig. 3), extensively co-opted by two urban planners of those times – E. May and M. Berg. Urban plans in accordance with the garden city movement were created for Brochów, Biskupin and Kałowice (1911) as smaller units around Wrocław city. What is more, Brochów is an example of partial implementation of the plan in 1918. However, it is important to underline one fundamental difference which disunited the promoters of the idea. Whereas Berg did not perceive any problem in the gradual spread of the city structure outside the administrative borders, May insisted that there should be clear spatial borders in the form of green belts between the central unit and its neighbouring towns.

A Howard-based idea of city development was one of the 40 proposals introduced during the urban competition of the Wrocław Development Plan in 1921. That competition pertained to approximately 16.000 hectares, including future incorporated city lands (actual incorporation came seven years after the competition). Although no winner of the event was selected, and only five commendations were announced, ideas from many projects were used in creating further governmental projects: the General Plan of Wrocław Division (Flächenaufteilungsplan, 1925), detailed real estate projects and what was termed the "Generalbebauungsplan" – the general investment plan for functional areas. The General Plan of Wrocław Division also adjudicated on the dispute over concepts of spatial connections between central units and their satellites between Berg and May, to the disadvantage of the latter.

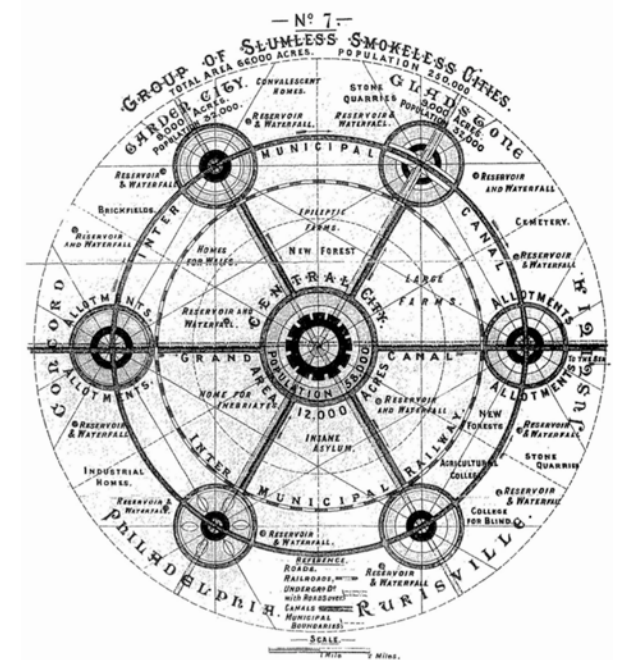


Figure 3
One of diagrams presented units' cooperation in Garden-City concept by E. Howard

Over the next years, Wrocław urbanism was focused on inner-city transformations, including transportation system development as a main part of the General Plan (modified in 1934 and 1938). Among other planned housing investments along new city districts can be listed Księża Małe (1928), Pilczyce (1929), Złotniki, Maślice Małe and Wielkie and Stabłowice (1932). Those last four units represent a rather distinct type of housing. As an answer to the Great Depression, a new trend preferred smaller-scale buildings parcelled agricultural land to allow people to produce for themselves. Their locations and also the type of architecture they presented were rather at some remove from the downtown area. On the eve of the year 1929, one special investment was finished in the capital of Lower Silesia. There, as one of several projects in six cities across Germany, Austria, Switzerland, and Czechoslovakia (as it then was) an experimental housing estate was built named WuWA¹ (Fig. 4). The project anticipated buildings rendered in the modern style, which is mainly expressed by large windows, flat roofs and maximised greenery around the buildings. This example is not one of those from the new city districts (it is located close to the city centre), but nevertheless it provides an important reference point in the context of a contemporary investment like the Nowe Żerniki district, named WUWA II.

The last stage in the transformation process of new city areas was in the post-war period (1945-1990). In that time, besides gradual incorporation (in 1951, 1970 and 1973), local government was focused on the rebuilding and development of principally the central part of the city, based on two directions: annular, to densify the structure from the core city to its borders, and linear, along the main transportation channels [1]. Ensuing from the new spatial assumptions, two important directions for location of residential districts consisting of large blocks of flats were created: in the north-east – Kiełczów and Zakrzów, on the other side of the city – Nowy Dwór.

Nevertheless, as Mironowicz [5] claims, spatial development of a city is not always correlated with its qualitative growth. Wrocław in its own history has also an example of such uneven process. The city of the 1990s enlarged its own territory in the wake of quantitative growth of a number of citizens and qualitative development of local economy. However, the further incorporation stages (after 1945) finally led to an uneven development between area and economy of Wrocław, what was caused by unpredictable facts as socio-political changes and depopulation of the 1990s.

1 Wohnung und Werkraum, 1929.

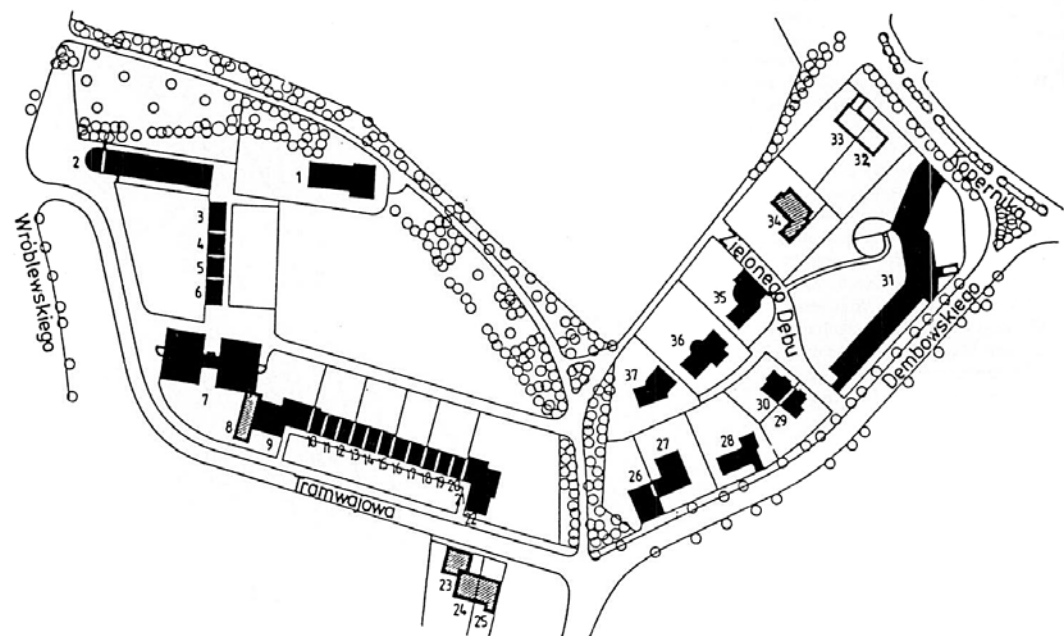


Figure 4
WUWA model housing estate, plan

CONTEMPORARY DEVELOPMENT OF THE "FORMER NEW" CITY DISTRICTS

Wrocław incorporated lands take one of three basic forms: (1) newly urbanized, (2) originally urbanized, with dominating older rural structure, and (3) unurbanized (wasteland).

One of the main goals of contemporary city urbanism is to compact the city structure, especially the residential districts, by filling gaps between buildings and eliminating wasteland. Those housing estates which were located in borderlands in the first part of the 20th century are today part of the downtown area. And even if they are not fully preserved or have not been completed as per the original plan, they still represent an instance of a well-organized and aesthetic urban solution, with access to local services and well connected to other parts of the city. By implementing a spatial policy with the annular-linear character, it was possible to connect most such housing estates, and even old village structures as Oporów, Klecina, Wojszyce among others. However, experience has shown it to be extremely difficult to reach those objectives in two cases: old villages located far away from the core city and the newest housing developments, separated from almost all consistently built-up areas. There is one crucial aspect that affects developers' location choices. It is their intention to maximise pure profit from their investments, which is usually reflected in their occupying the cheapest parcels of land, typically unzoned border wastelands. The embodiments of such areas are the Jagodno and Lipa Piotrowska districts.

In so far as the situation described above is regulatable by local government restrictions, for the old village structures it is most important to operate, addressing their exclusion and eliminating the "borderland" label. Those "borderland" old villages are located even at a distance of 14-17 km from the core city, and what is more, they lack convenient connections with the central districts. According to Szmytkie [8], Wrocław has 14 such isolated communities: Jarnołów, Jerzmanowo, Kłokoczyce, Lipa Piotrowska, Marszowice, Mokra, Opatowice, Osiniec, Ratyń, Rędzin, Strachowice, Świniary, Widawa, Żar. The moment of their incorporation, in fact, has become the real inhibitor to their spatial development: land prices have risen but real living conditions or even the appearance of their neighbourhoods have remained unchanged. Therefore those "rural" parts of the city have become losers in the attractiveness competition, also when ranged against suburban gminas. Those suburban areas are characterised by typical rural architecture, but also by convenient transportation links with the city centre and investment in other infrastructure areas. Those spatial relations generate urban sprawl. However, it appears that this vicious circle can be broken by new investments by developers, who are starting to join areas of new housing estates with old village structures. This direction of the process is often stimulated by the authority.

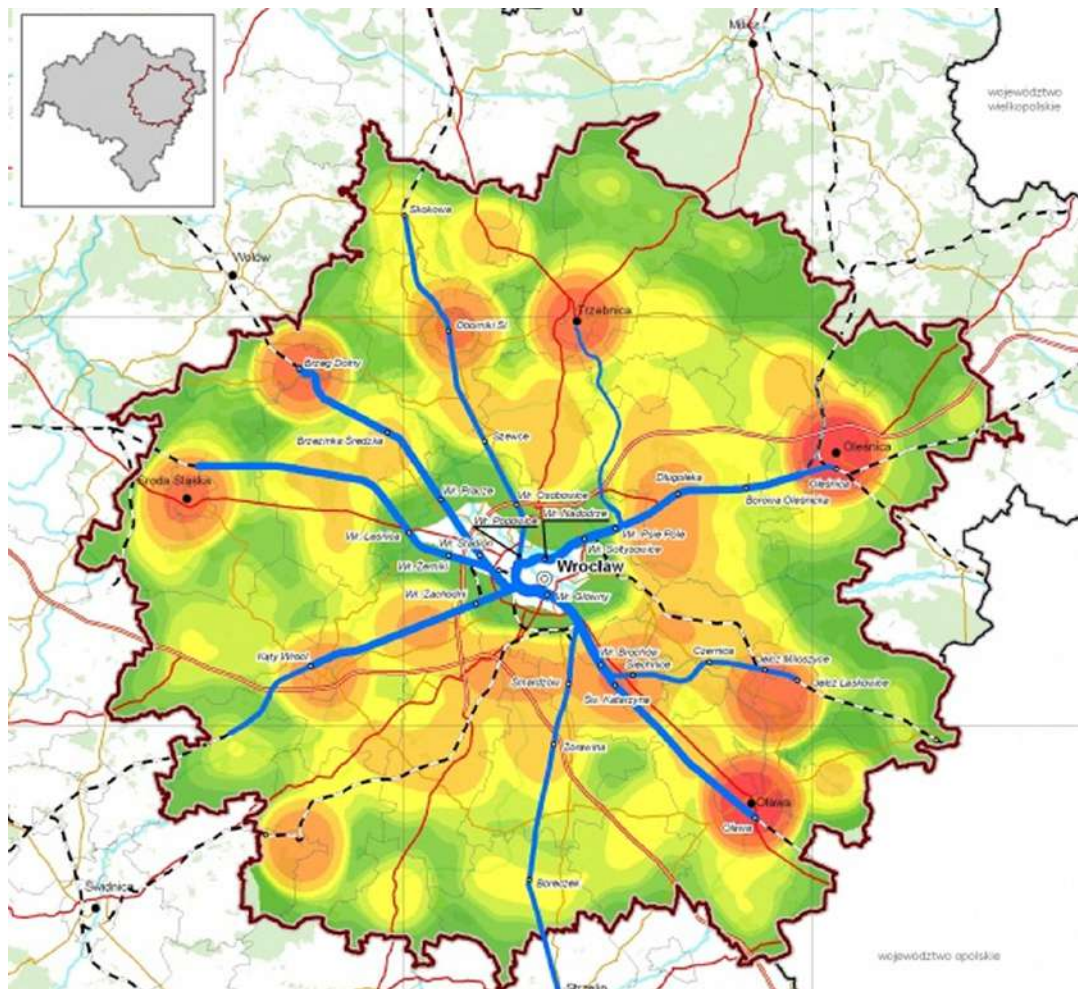


Figure 5
Daily numbers of railway connection in the background of the population density in Wrocław metropolitan area

The regional development policy of Wrocław mainly reposes on the basis of two local legal tools: the Spatial Developments Conditions and Directions Study and local land use plans. One of the main purposes of the spatial policy of Wrocław is to counteract the drivers of urban sprawl [7], which in the Wrocław Functional Urban Area appeared about 20 years ago and still pose a problem. Significant are those images presenting sprawling housing estates with the administrative border as their spatial centre (e.g. Partynice estate and Wysoka village, Jagodno estate vs. Iwiny village, Żerniki Wrocławskie estate) or those suburban areas which seems to be more "urban" than some inner-city districts (e.g. Mirków village vs. Zakrzów estate, Widawa estate vs. Psary village). Those "spatial dissonances" may happen to have been implied by the spatial political directions imposed by Berg. As history shows, Berg, who opposed creating restricted administrative borders, in fact, unconsciously lobbied for a negative kind of suburbanization. Nevertheless, the contemporary process of urban sprawl around Wrocław also has its template in some of May's requirements. The Wrocław catchment area has enlarged to 30 km – the distance suggested by May. This means that towns including Oława, Jelcz-Laskowice, Oleśnica, Oborniki Śląskie, Trzebnica and Strzelin are in the belt of land subordinate to Wrocław. Those cities and the central city – Wrocław are creating contact network based on two main types: between home and work, between home and services. And what is interesting, more and more intensively those types of contact are realized by a train instead of a car. This reminds us of Howard's garden cities concept (Fig. 5)².

² Detailed description of the process of territorial development of the city of Wrocław is presented in the section "Wrocław - to the West", see also Fig. 8, p. 58.

INFRASTRUCTURAL ENVIRONMENTAL PROTECTION STRUCTURES AND NEW CITY DISTRICTS

New city districts also constitute new challenges for municipal infrastructure. Structures forming the technical infrastructure of a city and its networks are treated as subordinate elements in relation to the design of urban tissue. However, they are also simultaneously indispensable in a well-functioning structure of urbanised areas. A significant degree of coverage of a designed area with the infrastructural grid is one of the positive qualities that define its economic potential - the possibilities for development in a given area, etc. We can thus conclude that providing infrastructural grid coverage to an area plays one of the activating roles for said area. On the other hand, the building of municipal services structures involves significant costs for a city, which usually need to be paid only once. As is the case with linear services (the construction of sewerage or the water or gas distribution network) it is possible to divide operations into individual stages, in the case of key municipal services projects, division into stages is associated with the lack of the ability for the structure to begin operations (e.g. there is no possibility to use a thermal municipal waste processing plant if the project is divided into stages). These are structures that involve significant costs and their partial operation is impossible. Their longevity is undoubtedly their advantage (modern thermal waste processing installations or municipal wastewater treatment plants have long periods of operation - for instance, the period of operation of a thermal waste processing plant amounts to, on average, 25 years³), however, this is simultaneously associated with the necessity of a city having to deal with significant expenses over a short time period.

From the point of view of municipal authorities, the construction of municipal service structures is a necessity that brings measureable benefits to a developed area. However, actions associated with municipal services are oftentimes seen very differently by decision-makers within the structure of a city hall, urban planners, architects and engineering professionals from the way the residents see them. Here we need to refer to two parts of the municipal services infrastructure - as seen by a resident - one that is the most basic and the most directly "palpable" to the residents of cities (the circulation network, gas and water grid, sewerage, etc.), as well as the one that a resident does not come into contact with directly, but that is an indispensable element of the proper functioning of a city (waste dumps, thermal waste processing plants, wastewater treatment plants and other structures that make up the infrastructural backbone of a city). Although the significance of municipal service infrastructure of both types is obvious to planners, urban designers or municipal authorities, the necessity to design, finance and construct municipal infrastructure of the second, abovementioned type, while being obvious to residents, there nevertheless remains the fact that the declared willingness to have such structures built changes substantially when a structure of this type is to be built in one's neighbourhood. On the one hand, residents want to live in areas equipped with municipal services. Good transport accessibility to the city centre both by car and public transport is highly regarded by the residents of newly designed residential complexes. The possibility of making use of the municipal heating, gas or water distribution grid, sewerage, etc. is also highly significant. The proper access to municipal services in an area is often one of the elements that influence the choice of a particular location by a potential resident (for instance in the case of the construction of a single-family house). On the other hand, the placement of non-linear elements of municipal services infrastructure often encounters negative reactions from residents. One example that can help to illustrate this is the placement of thermal waste processing plants in Polish cities. According to the EU directive 1999/31/WE of 26.04.99⁴, the stockpiling of municipal waste is to be limited in EU member states as much as possible. It is thus necessary to search for new forms of processing municipal waste. One of the more favourable solutions is the construction of thermal municipal waste processing plants. Newly

³ Estimates based on data received from operational and designed thermal waste processing plants in Poland in the cities of: Białystok, Bydgoszcz, Gdańsk, Konin, Kraków, Poznań, Rzeszów, Szczecin, Warszawa.

⁴ EU Official Journal L 182 of 16.07.99 with later changes.

designed installations are perfectly safe for residents and the environment. High environmental standards both in terms of the parameters of the concentration of harmful substances in the air that are released into the atmosphere, as well as the transparency of monitoring these concentrations (information posts showing whether these values have been exceeded or not being installed in front of thermal waste processing plants, the publication of daily data on the Internet, etc.) enforced by the necessity to meet the requirements featured in the regulations of the European Union ensure the environmental quality of these structures. The thermal waste processing plants that are being built are often co-financed from EU funds, and the lack of adherence to pro-environmental requirements would result in the necessity to return the financial support that Polish cities have received for the construction of these projects. In terms of public perception by residents, these structures are treated as pro-environmental and undoubtedly needed within a city or region, however, their location remains a point of contention. One attitude that is very commonly encountered among residents is that of NIMBY – Not In My Back Yard [6]. It is a public attitude that supports actions meant to carry out a given project, an attitude that features a full understanding of the necessity of its construction, but that is simultaneously completely opposed to the placement of such a project "in my neighbourhood or backyard". In the case of thermal waste processing plants, the cause for such action is usually the lack of appropriate ecologic education and a belief that has taken root in the minds of people since the 1980's (which was legitimate then – [9], but is currently baseless – [10]) about the negative impact of thermal waste processing plants⁵.

Due to the lack of the harmfulness of thermal waste processing plants to the natural environment and human health, and at the same time the necessity of the placement of these structures, there arises the question regarding the possibility of locating them within newly designed city districts. Is the construction of such a structure in a new urban district the right solution? What opportunities does this create? Is it possible to inscribe its construction into the realization of a resident's dream? Or is it merely a technological need? Based on examples of such structures from other countries (Austria, Denmark, Sweden) we can conclude that a properly carried out project of this type can constitute a significant and beneficial element of an urban space, one that is attractive to residents, technologically needed, positive in terms of public reception and attractive in relation to the entire city.

The basis for the proper and desirable placement of such a structure is, first and foremost, the ecological education of residents – an increase in the awareness of society regarding the significance of such structures, the benefits associated with their placement and the lack of threats to the health of residents. Following the experiences of other countries, thermal waste processing plants can be structures with a hybrid form of use. Apart from their basic function, they can feature additional ones that have an educational or perhaps recreational character, or an entirely different one altogether. Examples of these solutions include the built projects located in Copenhagen (the thermal waste processing plant designed by BIG Architects also features a skiing slope, a climbing wall, recreational spaces – [11]) or in Shenzhen in China (the thermal waste processing plant there is equipped with an educational zone, recreational gardens and a system of various different services for visitors), whose opening is planned for the year 2020. Furthermore, the placement of these types of structures in new city districts can also play the role of crystallising the network of public spaces, while they can form the seed of a new public space on the scale of the district due to their additional functions in terms of services. In terms of composition, due to its size (the size of the installation, the height of the smokestacks) a thermal waste processing plant can also constitute a landmark on the urban scale.

⁵ Dioxins, which have a particularly harmful influence on human health, were discovered towards the end of the 1970's. High concentrations of dioxins and furans were discovered in the exhaust of practically every incineration plant studied in the 1980's. Both of these chemical compounds are highly dangerous and are a cause of the development of, among other things, cancer [9]. Currently assembled waste processing installations meet much higher ecological standards and the exhaust that is the effect of the technological process feature levels of harmful substances that are not dangerous to human health [10].

A thermal waste processing plant has been presented above as an example of a new element of a designed city district. However, the fact that other municipal service structures can also have similar significance on the scale of a district needs to be highlighted. Due to their character, particular attention should be paid to those structures that feature significant relations with environmental protection in their technical functioning, and which are, at the same time, structures that are spatial in character. Due to their pro-environmental significance and following the trends of pro-environmental action in cities, such a structure can also constitute an element of the "green network of a city".

A NEW CITY DISTRICT – EXPERIENCES FROM THE WORKSHOP

All of workshop groups concentrated on aspects of transportation, environmental sustainability, real estate development and multifunctional dimension of the whole district. To generalize, all of conceptualizations were focused on creating alternative to the old part of the city, to some extent self-sufficient unit. This idea seems to be an extended model of this what was proposed by May in 1921, with a difference that current urban planners so to say, transform the satellite concept into the smaller scale. Each project has a different centre of gravity, but all of them emphasized the presence of existing functional-spatial dominants as the stadium, the hospital and the EIT Centre. Moreover, to this constellation, is planning to add new quality dominant in the form of new extra function or cooperated with existing ones as their extension (e.g. Medical Research Centre in the project "Healthy way to development"). Project says about the West district as a space of new multifunctional clusters with various activities – health, research and even government in some of ideas. However, it is interesting and also bold proposal presented by the project "The Brain of the City", in which the West End create the alternative for the old one centre. The idea is to build a central innovation hub, important not only in the city or regional scale, but in European scale as well.

Each of the projects target is to connect those functional hubs by highly attractive link. This link does not mean the road as a priority, but pavement for cyclists and pedestrians. For some of group, this track is also used in some projects as a green corridors, with multi of attractions and services.

As an interesting proposal is aspect of housing development. There were proposed not only low-intensified real estates with services in the ground floor, but also kinds of pro-ecological single-family housing ("urban farms"). Those housing estates are intended to create houses with gardens, which reminds the realization of Breslau urbanists during the Great Depression around 1929. Currency, although the Wrocław' economy is far from crisis, the idea of such architecture can also achieve a success, but in the background of other trends: pro-ecology and prosumer society. Just in this time in the United States and in Western Europe, the idea of a garden in the backyard of the central city housing estates is very popular.

During the design of a new district of Wrocław, four teams of young planners attempted to determine the qualities and values of an area to the fullest possible extent, later using them in the process of the crystallisation of design ideas and, as a result, causing them to become the foundation of diverse and interesting solutions. Apart from defining the potential that was contained within the scope of the design, the workshop's participants also pointed out weaknesses and threats. One of the elements that were present in the presented SWOT analyses (or in remarks of a more general character) is the complete lack of an appropriately developed municipal services infrastructure in this area. However, when describing this problem, it was the lack of a well-developed transportation network that was pointed out the most. Young planners pointed here not only to the lack of a transport network enabling individual transport using the car of the new district's potential user, but also to the lack of accessibility to this area by public transport, which was one of the key elements of the integration of

the new space with the centre of Wrocław in many designs during the later stage of the development of the idea of the new district. Against the backdrop of transport problems that had been defined in detail, the remaining elements of municipal services infrastructure were referred to in only a very general manner.

One significant issue that was very heavily accentuated in the conceptual designs was the subject of widely understood ecology within the city, in reference to the preserved and utilised natural assets, sustainable transport, and in one case also for the purposes of, renewable energy sources.

Attention was also focused on the potential that resides within the designed area (areas featuring tall and low-lying greenery, rivers and smaller watercourses, existing areas of composed greenery, etc.), as well as on the problems that nature can cause (taking into account the danger of flooding in the designs). Green areas were used as the compositional elements of the newly designed district in the designs (for instance in the "WE" design), as well as ones that complemented the main idea of a design (the "Brain of the City" design). The significance of ecological issues was highlighted in two cases also through the name of the design ("Healthy Way to Development" and "Green Trail"). The ideas for the new district of Wrocław that were presented would very often be based on completely different functional foundations. In some cases, the main idea was the establishment of new places of work that would be attractive both on the scale of the city and in a wider context (the idea of an incubation park in the "Brain of the City" design), while in others, the element that was given the most weight was calm and sustainable living "after work" (the "WE" design), while in others still, it would be the combination of various forms of use in different proportions ("Healthy Way to Development" and "Green Trail"). In each of these conceptual designs, despite differences in terms of ideas and at the functional and compositional level, attempts were made to make the fullest possible use of the natural assets of the area. In reference to the ability to use engineering structures in order to protect the environment, it needs to be highlighted that such structures were not included in the designs. The possibility of proposing the placement of a thermal waste processing plant for Wrocław deserves particular attention, as such a location was then actually being sought.

CONCLUSIONS AND OBSERVATIONS

The attempt at finding a clear answer to the question whether the design of new city districts is the dream of residents, municipal authorities and designers, or a necessity, a challenge that we need to face after 25 years have passed since the moment of the socio-economic transformation - is not an easy task. On the basis of the authors' observations and considerations, as well as basing on the experiences of the participants of the workshop titled "Shaping a new city district – Wrocław West End", the following conclusions and observations can be made.

To begin with, it is essential, that all of groups have found in the new city district important part of the whole Wrocław. It was concluded by unanimously, that the "West End" has a fundamental influence and stay as an opportunity to sustainable and highly progressive further development of the city. There can be mentioned three fundamental points substantiated the conclusion from above.

First, the old city structure is already overcrowded already and highly invested. In balancing those facts with information of stabile growth of local society (not only in the city, but in the whole Functional Urban Area), fast investment processes and high restrictions (especially connected with the monuments protection and specificity of geology) in the city core is crucial to find the way to relieve this area, to reinstate equilibrium in inner everyday life.

Second, the whole area of Wrocław is still not complementary, even not completed. Since the 1973, when the last huge incorporation of a new land was realized, Wrocław did not deal with its scale, especially with the western part of the city. Thus the workshop name "West End" can be read as an

area of a highly wild (to the central city standards) district, but also with a huge potential, which lay in empty space, limited urban restrictions and since the last few years, some large scale public investments (stadium, hospital and EIT Centre) as well. "A new land" do reference to a dream of America – wild, empty and with a big potential, don't it?

Finally, Wrocław through its own economical growth, is able to invest in the extended areas, such as old villages structures, and what is more, it has possibilities already to realize more spectacular projects. On the other hand, great urban plans of the first part of 20th century show, that to develop a new part of the city is important to have coherent conception but also many alternatives of smaller scale projects.

All of the workshop groups concentrated on aspects of transportation, environmental sustainability, real estate development and multifunctional dimension of the whole district. To generalize, all of conceptualizations were focused on creating alternative to the old part of the city, to some extent self-sufficient unit. This constellation is planned to enlarge by adding new quality dominant in the form of new extra function or cooperated with existing ones as their extension. An important part of the projects was a development of the public spaces, which constituted of the whole assumption coherence actually.

Pro-environmental municipal service structures, due to the possibility of combining technical functions with other ones that can provide services to residents, can play a significant role in the crystallisation of the public spaces of a district. At the same time, due to their size and form, they can have considerable spatial and compositional significance for a city. Due to their character, they can also often play the part of one of the key elements of the so-called "green network" of a city.

In conclusion, we need to point our attention to the fact that the workshop only focused on one fragment of a given city, but - based on the various solutions proposed by the participants - we can state that the searches performed by young planners that are meant to create new, mixed-use complexes, are searches that constitute a good start for planning. At the same time, when analysing the given space, there is one main observation that comes to mind: the key task for a city should be not only the expansion of its city limits, but - first and foremost - ensuring that the areas that are within these limits are ones that are actually urbanised.

So is the creation of new districts a dream? It could be one, but when we observe the direction of the changes in external zones of cities, we can risk making the statement that we are currently speaking of the construction of a new district as a necessity. This is mainly a necessity of searching for solutions that can ensure that every fragment of a city, even one that is located on the outskirts, can provide the opportunity to live, work or rest in an urbanised space, a space that has a decidedly urban character. We have always remembered that dreams usually come true only if they will evolve into a need. Thus the West End must be understand as a dream at first, but as a necessity exactly now.

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FIGURES

Figure 1. Wrocław spatial development (source: <http://www.gazetawroclawska.pl/artykul/343192,tak-rozwijal-sie-wroclaw,id,t.html>, accessed 26.10.2017).

Figure 2. Biskupin, Karłowice and Popowice district, plan (source: *Supplement of General Plan of Wrocław*, 1930).

Figure 3. One of diagrams presented units' cooperation in Garden - City concept by E. Howard (source: Czyżewski, A. *Trzewia Lewiatana. Miasta ogrody i narodziny przedmieścia kulturalnego*. Warszawa: PWE, 2009).

Figure 4. WUWA model housing estate, plan (source: <https://dolny-slask.org.pl/972347,foto.html>).

Figure 5. Daily numbers of railway connection in the background of the population density in Wrocław metropolitan area (source: *Analiza stanu istniejącego obsługi Wrocławskiego Obszaru Funkcjonalnego (WROF) oraz gminy Strzelin przewozami kolejowymi*. 2014. IRT, Wrocław).



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CONCLUSIONS

Developing Urban Narratives

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Urban planning is not about drawing impressive sketches, neither it is about delivery of infrastructure. Urban planning is about storytelling, about narratives that can capture imagination of many. Imagination is crucial both for urban planners and all other stakeholders. *When the imagination is asleep, the brain produces banality. The narrative has to emerge before the map* [1].

Why it is so significant?

First, because imagination enlarges understanding. We all create mental models of reality – we imagine how things work, what kind of processes happen, what rules drive them. We experiment with these mental pictures of reality and verify their adequacy. Without models the DNA helix would have never been discovered. Without models the new planets would have never been located. For understanding the cities the imagination is essential. The complexity of their systems, the overlapping processes, the heterogeneity of relations require a comprehensive model. And this model requires creative imagination.

Second, because imagination magnifies creativity. Urban planning is about the future. It deals with unforeseen processes and unexpected changes. And creativity is crucial in working within uncertain environment, it helps to find not routine solutions. It helps to visualise not only future technologies but also future people with their values, habits and behaviour. They undoubtedly will be different that we are today. And today's plans shall somehow meet their needs and wishes. This requires thinking outside the box, from a new perspective and finally finding unconventional picture. All of them are about imagination.

Third, because it teaches critical thinking. Urban planning is unable to formulate the one and only, perfect, ultimate solution for the city. There are many possible scenarios and there is nobody able to control which would actually happen. Cities, like all adaptive complex systems, have very high degree of sensitivity to initial conditions and the way in which they are set in motion. This means that their development is not determined, many things can (and actually will) happen on the way. In this context critical thinking increases urban planners' capability to conceptualise and study what might happen. This helps them to see their own work in the wider perspective – not as a "best plan", but the plan which in defined conditions they are able to produce. The other plans – if they exist – help them actually to improve their work, to see what they have missed, to acquire a knowledge they were not aware of. Imagination is pivotal in both conceptualising alternative scenarios and using them as an instrument of assessment of "official plans".

Governance of the cities require great imagination but planning the cities is beyond the imagination of one person. Urban planning calls for many perspectives, many values, many aspects, many hierarchies. And many stories behind that can produce different scenarios for the future... This is why urban planning workshops bring real value to urban planning. They widen the spectrum of opportunities, they mirror different attitudes to both defining problems and delivering solutions, they increase the collective imagination.

Even if they do not change the plans being produced locally, they certainly influence the way of perceiving city, its problems and its opportunities.

City of Wrocław decided to invite young urban planners from all over the world exactly to study how differently things can be seen. These young professionals were not supposed to deliver final solution. They were meant to reveal their own perception of what West End is today and could be in the future. Their different background, different planning culture, different experience guaranteed that they would not follow footpaths of municipal planning office. They came to tell their story about the city and about its particular district – West End. They did not come to applaud or justify an official Master Plan. But neither they came to criticise it. They came to convey their own visions to the local urban planners, to the municipality, to the decision-makers, to the stakeholders. In this sense they did increase collective imagination of the city, which was exactly the reason of their visit in Wrocław. It is crucially important that the urban planners which came to our city were young. We tend to underestimate cultural change, including the one of emerging values and new social paradigms.

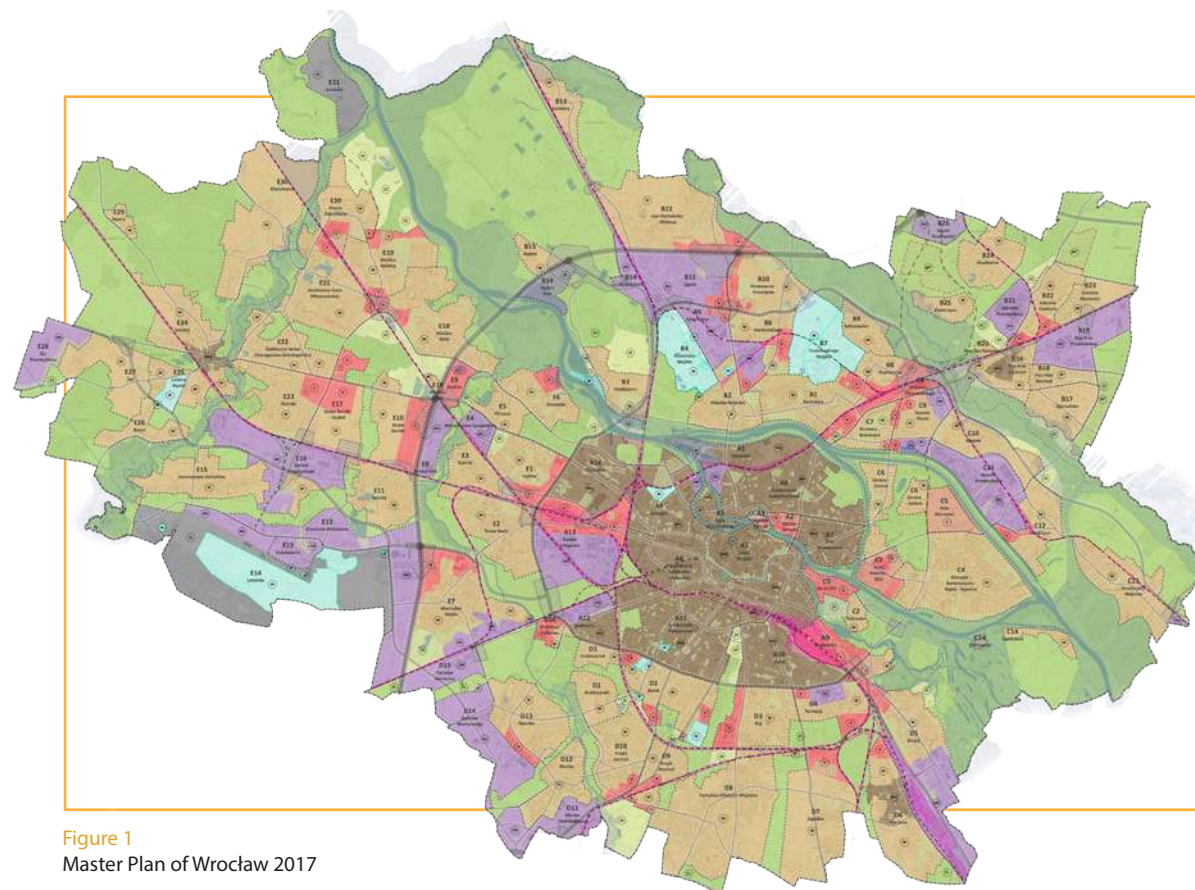


Figure 1
Master Plan of Wrocław 2017

Being focused on changing technologies we often fail to notice that there is a shift in values which fuel social development. We overlook what is important for the young generation. They do not share our hierarchies or priorities, they are simply different. And we can learn a lot from them. It is also essential that those young planners came from different places. This gave really variety of perspectives and planning cultures. Both are important in imaging alternative narratives about the future of the place in particular and the city in general.

It goes without saying that also young urban planners learnt a lot. They learnt from the challenging case. They learnt from cooperation between variety of urban specialists, thus different perspectives – those of urban planning, of urban underground engineering, of architecture, of strategic planning... They learnt from the experience of their colleagues from other countries. They learnt from the knowledge of local professionals. They learnt from the wisdom of their tutors. They learnt from the observation of the city. They learnt from meeting new people.

Klaus R. Kunzmann, the founder of the Association of European Schools of Planning, proposed the name of the association because of Aesop, a Greek philosopher, a slave and story-teller, who lived in ancient Greece and wrote popular fables (*aesopica*), which we would call narratives today, where he made use of humble incidents to teach great truths, and after serving up a story he adds to it the advice to do a thing or not to do it [2]. Klaus Kunzmann was convinced that this name is linked to ambitions of planners, to plan for people, to communicate with people, and to use narratives and story telling in planning and decision-making processes, not just plans and maps [2]. This is what we all believe in.

In the final version of draft Master Plan of Wrocław, presented to the public in autumn 2017, it is clearly visible that some thoughts from the work of all four teams that were working on their own visions for the western district of Wrocław are adopted and embedded (Fig. 1). This is a power of convincing narratives.

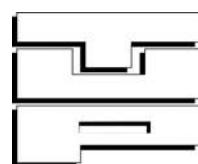
I sincerely believe that our work during the YPP-YPTDP Workshop in Wrocław has arisen synergies in urban narratives, which will evolve in the future. And will contribute to both collective imagination of Wrocław and young planners which have worked with us.

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FIGURES

Figure 1. Master Plan of Wrocław 2017 (source: draft of Wrocław Master Plan 2017, draft of Wrocław Master Plan 2017, http://www.geoportal.wroclaw.pl/en/maps/studium_projekt/, accessed 26.10.2017)



SHAPING NEW CITY DISTRICT: WROCŁAW WEST END

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