

CZECH UNIVERSITY OF LIFE SCIENCES  
FACULTY OF ENVIRONMENTAL SCIENCES  
DEPARTMENT OF LAND USE AND IMPROVEMENT

LANDSCAPE PLANNING PROGRAMME



# CONVERSION OF ŽIŽKOV FREIGHT YARD

MASTER THESIS

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# CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Environmental Sciences

## DIPLOMA THESIS ASSIGNMENT

Bc. Jitka Jeřábková

Landscape Planning

Thesis title

**Conversion of Žižkov freight yard**

### Objectives of thesis

Show the potentials within the area of former Žižkov freight yard in order to find the use of open spaces, its identity and socio-cultural context. Design the masterplan of land-use, organization of greenery and public spaces.

### Methodology

1. Literature review of urban brownfields – its importance and reuse in nowadays cities.
2. Literature review of Žižkov freight yard brownfield.
3. Analysis of the site, its constraints and potentials
4. Defining the convenient concepts.
5. Defining the most appropriate concept and design the masterplan.

### The proposed extent of the thesis

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### Recommended information sources

- BERAN, Lukáš. Průmyslové dědictví: [sborník příspěvků z mezinárodního bienále Industriální stopy] = Industrial heritage : [conference proceedings from the international biennial "Vestiges of Industry"]. Praha: Výzkumné centrum průmyslového dědictví Českého vysokého učení technického v Praze ve spolupráci s Kolegiem pro technické památky ČSSI & ČKAIT, 2008. ISBN 978-80-01-04067-6.
- Brownfield redevelopment as an alternative to greenfield consumption in urban development in Central Europe [http://www.umweltbundesamt.at/fileadmin/inhalte/urbansms/pdf\\_files/final\\_results/19\\_Brownfields\\_report\\_613\\_final.pdf](http://www.umweltbundesamt.at/fileadmin/inhalte/urbansms/pdf_files/final_results/19_Brownfields_report_613_final.pdf)
- LANGHORST, Joern. Re-presenting transgressive ecologies: post-industrial sites as contested terrains. Local Environment [online]. 2014, vol. 19, no. 10, s. 1110-1133. ISSN 1354-9839.

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Hereby, I declare that this diploma thesis is a presentation of my original research work and that no other sources were used other than what is cited.

Prague .....  
.....  
(author's signature)

## PREFACE

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## ABSTRACT

Redevelop the former industrial sites is an important way to adjust the structure of city, a response to the process of urbanization with the demand for new residential areas, as well as the way of preserving the industrial heritage. This master thesis of a project character is based on elaborating a conversion of Žižkov freight yard in Prague 3-Žižkov, which represents one of the large transformation areas within Prague, in order to provide connectivity within district, to find functions in the study area and the use of open space. Integral part of the project are various analyses and concept development. The final design results from previous analyses and takes into consideration a literature review of the freight yard area as well as the importance and reuse of brownfields in nowadays cities.

## KEYWORDS

brownfield, industrial site, redevelopment, public spaces, Czech Republic

## ABSTRAKT

Konverze industriálních areálů je důležitým prostředkem asimilace a úpravy struktury města, je reakcí na proces urbanizace s nárokem na nové plochy bydlení, stejně jako způsobem zachování průmyslového dědictví. Tato diplomová práce charakteru projektu je návrhem na přestavbu lokality Nákladové nádraží Žižkov na Praze 3, jež představuje jednu z největších transformačních ploch na území širšího centra Prahy, v zájmu zajištění propojenosti v území, nalezení nové funkce a využití otevřených ploch v lokalitě bývalého nádraží. Zásadní částí projektu jsou analýzy a z nich vyplývající koncepty návrhu. Konečný návrh je pak výsledkem předešlých analýz a v poslední řadě těží z informací o využívání brownfieldů v měřítku současných světových měst.

## KLÍČOVÁ SLOVA

brownfield, průmyslový areál, přestavba, veřejná prostranství, Česká republika

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## 1. INTRODUCTION

The topic of interest for this thesis focuses on Prague's urban redevelopment and in particular former industrial brownfields; areas that should be at the centre of a planning dialogue that examines sustainable urban development. For this work I have chosen the former Žižkov freight yard - located in Prague 3 as a model case study.

With more and more people moving to the cities, Prague with its limited developable space is in need for new areas that could serve the process of urbanization - areas where residents could live, work and meet. Historically, many development patterns have been implemented in Prague and other older cities, however many of these growth trends have proven to not be sustainable enough. Extending the city to the outer landscape or raising the building's height at inappropriate places have resulted in changing Prague's typical panorama or promoting sprawl development onto green fields. I find these unused post-industrial

areas, which Prague has many, as the places of a great potential for urban redevelopment. However, many of these locations have remained under-unused, simply left as they are. These places should be the focus of urban renewal and reconstruction, converting the old and providing new areas for the needs of existing and future city residents.

The area of the former Žižkov freight yard currently is a hot topic for Prague's 3rd district office and Prague Institute of Planning and Development (IPR). These actors are trying to find a solution for this location together with developers like Central Group or Sekyra Group, which are about to begin development on some part of land there. However, this freight station has a big importance as an example of functionalist architecture; its unique operation and spatial arrangement as one technical complex is very unique, and as such is calling for a very sensitive treatment.

## **2. AIMS**

Show the potentials within the area of former Žižkov freight yard in order to find the use of open spaces. Design the masterplan of land use, organization of greenery and public spaces.

## **3. METHODOLOGY**

At the very beginning the outline including three main parts of the project was drawn.

The first part is the literature review of urban brownfields. The importance of brownfields in nowadays cities is demonstrated on the definition, potentials, principles, and examples of brownfields, and the situation of brownfield conversion in Prague. The conditions of the Žižkov freight yard brownfield are explained through its history, land ownership, urban planning, potentials and current values.

The second part is the application of the acquired data and field survey into case study. The analysis of the context, the area (land use and spatial analysis, green mosaic and values and problems analysis), and the site (patterns of use and circulation and SWOT based on PEBOSCA analysis) of the freight yard are made. Based on the analyses the three concepts for redevelopment are presented.

The third and last part is established as the design proposal for the study area of Žižkov freight yard. The proposal is the result of previous analysis and is complemented by masterplan, sections, visualizations and scheme maps: function and use, character of public open space, spatial organization. The integration of the proposal within the context of surrounding is then demonstrated in the very last figure.

## 4. LITERATURE REVIEW OF URBAN BROWNFIELDS

### 4.1. IMPORTANCE OF BROWNFIELDS NOWADAYS CITIES AND ITS REUSE OF FORMER INDUSTRIALIZED SITES

#### 4.1.1. DEFINITION OF AN URBAN BROWNFIELD AS POST-INDUSTRIAL SITE

Brownfield is term usually used to describe an area of former industrial or commercial activity where the land or soil may have become contaminated with industrial and manufacturing waste. The Cabernet (FERBER *et al.*, 2006) report describes a brownfield as, “sites that have been affected by the former uses of the site or surrounding land, are derelict or underused, are mainly in developed urban areas, require intervention to bring them back to beneficial use and may have real or perceived contamination problems.” The OECD (FERBER, TOMERIUS 2003) report defines urban brownfield sites as, „vacant,

derelict, underused lots in urban areas, with actual soil contamination or risk of soil contamination.“

These post-industrial sites appear as iconic reminders of the ongoing deindustrialization, locations to reinvent and recover landscapes as agents for cultural social, economic and ecological change. Post-industrial sites are interpreted as symbols of the failure of the industrial age and location of sustainable urban transformation; they should be positioned at the centre of the discussion on the nature of cities, urbanization and sustainable development. The most visible discourses proposing concepts such as “landscape urbanism” (CORNER 1999) (WALDHEIM 2006), “sustainable urbanism” and “ecological urbanism” (MOSTAFI 2010) on post-industrial sites just highlight issues of environmental justice, pollution mitigation, adaptive reuse, and benefits and performances based on ecological functions and processes. These concepts are conceptual and practical alternatives to the mainstream

forces of urban development and suggest, in different ways, ecology as redemptive agent. (TALEN 2010) (LANGHORST 2014)

Only some countries have installed the term brownfield into their planning legislation. At the level of EU, there are no specific regulations for brownfield management and regeneration in countries of Central Europe. However, the issue of brownfields can be found in several regional development programs. For the Czech Republic, the most significant one is the National Brownfield Regeneration Strategy (CZECHINVEST 2007), which is funded by the EU and managed by CzechInvest. (SIEBIELEC 2012)

#### 4.1.2. POTENTIAL OF BROWNFIELD REDEVELOPMENT

Post-industrial sites have the potential to be at the centre of conversations about urban transformation, and the processes of emergent ecologies can be posited as a key issue. Consequently, spatial planning projects that address post-industrial sites have reached a high degree of visibility,

in particular if they utilize a significant public open-space or green-space component. (LANGHORST 2014)

Regeneration of brownfields and dedicating them to inner urban development might be a major way to limit pressure on valuable greenfield sites around cities. Reduction of set-aside and protection of agricultural soil as resources for future food production and environmental sustainability are part of the European Commission objectives. However, currently there are no specific brownfield regulations at the broader level of the EU. (SIEBIELEC 2012)

With the development and improvement of the transport system and the infrastructures that it requires, it is possible to find big surfaces in former railway stations that are completely or partially unused. This kind of urban landscape provides a great opportunity for cities to add those elements that are missing and can contribute to create a better and more livable place for citizens. For example, with the implementation of

public spaces like parks, social and cultural nodes, etc. (NICOLIN 2009)

#### 4.1.3. PRINCIPLES OF BROWNFIELD REDEVELOPMENT

Brownfield redevelopment is a long-term process, which requires strategic planning. However, it is known that one of the basic instruments how to return these places back in life is to open them to development. The first step for industrial brownfield restoration back to urban life is a temporary use – local initiatives and creative activities attract the wide public and enhance the value of the area, also ensure some kind of partial maintenance.

However, we cannot rely only on activities and initiatives of some artists. The temporary use represents time-limited utilization, which includes storage and light industry as well. That can be often seen in many brownfields in Czech Republic, but not always understood as temporary function and minimum coordinated by owner.

The possibilities for a systematic series of industrial brownfield regeneration

approaches are unlimited. Spatial and Urban Planning is one professional field that possesses the tools for creating the best way of meaningful reuse for post-industrial areas, for conservation of cultural heritage, and support the sustainable development. In the Czech Republic, the initiatives for industrial conservation have only limited instruments. The only one institutionalized instrument is the heritage protection, which has often quite opposite impact - protecting but at the same time hindering any kind of development. (HOŘICKÁ 2015)

Following are mentioned some basic principles for planning of industrial heritage regenerations (HOŘICKÁ 2015):

- temporary use in different forms
- cooperation of public and private sector
- diversity in functions
- identification of cultural values and project communication

When creating a new urban structure of brownfield redevelopment, it is necessary to sensitively link it to the existing and

living city and do so in scale, function and also organization. (ŠIMONÍK 2015) The quality contemporary city is layered and combines a wide range of activities. A job availability, quality housing with maintained public space, parks and available amenities are matter of course. (dokument-Hlaváček) Public spaces generate the basic structure of the city. Its priority is living quality in meaning of safe, healthy, vibrant, communicative and attractive place. (IPR 2017) Also art contributes to the quality of public space, it can enrich and bring life to public space. Many foreign cities have a regulation that demand approximately 1% of the budget of a new development project or reconstruction to be used for art, which is a way of promoting the role of art in public space. (MELKOVÁ *et al.* 2014)

The basic characteristics of former railway areas are usually a vast area requiring a solution in urban scale; a linear close shape given by the transportation function; a minimum slope offering easy development; a quality subsoil; an area with

soil contamination requiring remediation; and, different railway objects, which are often removed because of extra costs for their reconstruction. On the contrary the former objects, symbols of legacy, with presence of genius loci, can become symbols of the newly created area. (ŠIMONÍK 2015)

#### 4.1.4. INTERNATIONAL EXAMPLES OF RAILWAY BROWNFIELD CONVERSIONS

The practice of railway brownfield redevelopment is happening all over the world in the last decade, even if this redevelopment is at a location of still



**Figure 1:** High Line park in New York combining modern architectural treatment with existing wild nature.

functioning railway or not.

The conversions of former railway stations and shipping yards are taking place in different European cities in the



**Figure 2:** Key development site around Zurich's main station. Block structure of the surrounding city is elaborated in order to insert a modern architecture.



**Figure 3:** Newly created public transport hub provides a connection between the districts Favoriten and Wieden in Vienna, which were so far separated by the freight yard.

last decade. The big potential for urban redevelopment is offered mainly by areas that became abandoned due to technical development in transportation and changes in organization, for example King's Cross in London, Europaallee in Zurich (Figure 2) or Hauptbahnhof in Vienna (Figure 3). (IPR 2017) (SIEBIELEC 2015) These are the projects that created viable residential and business development along the railway tracks within city center, while still keeping the railroading function.

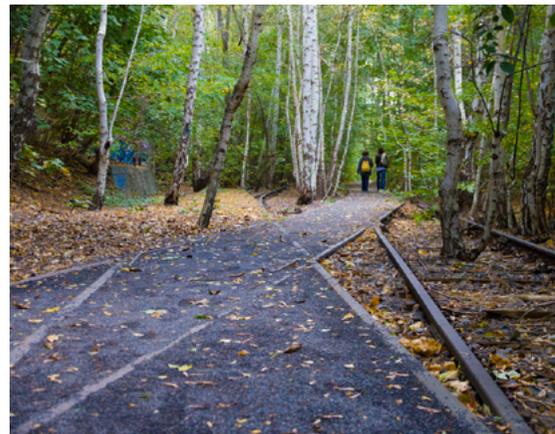
As the next there are projects, where the former function stopped existing and the area became an unused space. Probably the most visible example, when thinking about railway brownfield, is the NYC's High Line (Figure 1). The project that posits "ecology" as the redemptive agent for post-industrial places. The newly created park replaces actual successional ecology with artificial one based on picturesque traditions. Infrastructural functions are "layered" into existing systems by combining the inventive and adaptive reuse of existing structures

with careful additions to make the necessary physical and functional connections. (LANGHORST 2014)

Very similar project to High Line is



**Figure 4:** Art in the public space of Südgelände park in Berlin. The objects created out of the railway remnants.



**Figure 5:** Südgelände park reusing the former railway tracks for demarcation of pathways.

Hofbogen in Rotterdam, which is former railway viaduct of Hofplain station offering a refuge for different little shops or cafes in its arches, and the roof (area of former train tracks) is getting a function of a linear park. (KLEIJ *et al.* 2017) Other projects inspired by High Line is Railway Park in Jerusalem, which main success is more about developing green space and adding a new twist into neighbourhoods, than bringing unique natural design, or Reading Viaduct in Philadelphia. (DVIR 2012) (THE RAIL PARK 2017)

More extensive in term of surface is an example from Antwerp in Belgium called Spoor Noord Park, which used to be an abandoned railroad now transformed to large green space linked to the district of working-class housing, and connecting 3 districts which were previously cut off from each other. It functions as temporary campus which can vary over time in relation to program. (VIGANO 2012) (EUROPEAN COMMISSION 2012) Another example of the park created out of a railway brownfield is

Südgelände Nature Park in Berlin (Figure 4 and 5), where on a derelict site for about 50 years a diverse, species-rich natural oasis has developed and thanks to efforts of citizens the place was made accessible to public. Several former buildings and constructions remained as a heritage and park thus consists a combination of nature, train relicts and art installations. (GRUEN BERLIN 2013)

#### 4.1.5. BROWNFIELD CONVERSION SITUATION IN PRAGUE

The trend of urbanization can be followed worldwide, according to OECD analysis (FERBER *at al.* 2003) 70% of the world population will live in cities by 2050. The demographic forecast of Prague population expects its growth by about 250.000 people in 2050, therefore it is important to ask ourselves already in these days where to place these new residents. (IPR 2017)

Over the past decades Prague has grown mainly in width. That brought many problems: the infrastructure on the outskirts of the city is not sufficient,

a daily commuting of tens of thousands of the residents causes traffic problems, valuable parts of agricultural landscape are disappearing. The trend of expansion to the landscape still persists in urban planning of the capital city until today. The current

master plan based on the thoughts of the 90s proposes large number of development areas in the city outskirts, even there are many unused reserves within the city. The key task of the new oncoming master plan for Prague - Metropolitan Plan, was to identify those

Transformation areas of Prague

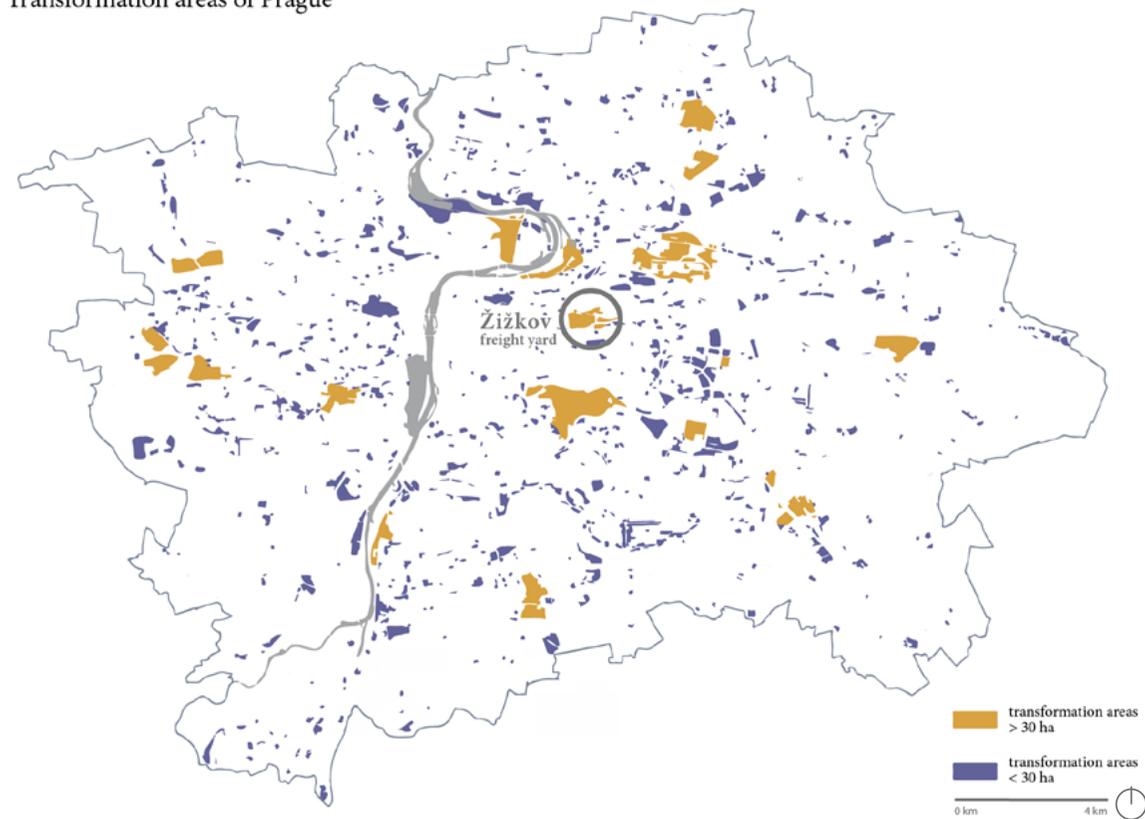


Figure 6: Žižkov freight yard as one of the Prague transformation areas.

areas where the quality city growth could be implemented, with emphasis on the efficient use of financial resources (Figure 6). The analysis of potential transformation areas, which will possibly influence the future face of Prague, demonstrated that for the city is much better to focus its energy on conversions and reconstruction of abandoned and unused areas like former industrial plants or freight railway stations than in new development areas in city outskirts. (HLAVÁČEK 2016)

About 11 000 brownfield sites are found in the area of Czech Republic, and covers about 38 000 hectares (CZECHINVEST 2007). The topic of unused railway yards is currently very hot, especially for Czech capital. Just in Prague, it is about 1400 hectares of brownfields found, and from that 950 hectares in broader centre. (IPR 2017) It is necessary to realize the location of these brownfields, which is, due to the time of their origin between 1830 and 1940, usually in the city centre, in the most attractive and lucrative localities like Karlín,

Smíchov or Holešovice. So these places can offer a vast area perfectly suitable for sustainable development inward instead of outward of the city. The reasons for origin of these railway brownfields are technology development in railway industry, the competition with different types of transportation, and also shift of freight transport from railway to road. Within the preparations of new Prague's Metropolitan plan, IPR identified about 15 vast unused areas of high priority for transformation into new urban districts. Some of these are also unused railway areas like Smíchov, Masaryk station or Žižkov. (ŠIMONÍK 2015) (IPR 2017) However, the development and construction on brownfield sites is mostly hindered by many building bans. There is currently about 30 of these and area of Žižkov freight yard is also affected. This hindrance is supposed to be solved mainly by approval of Metropolitan plan, which will remove building bans and define spatial requirements for every transformation area. This key document, according to current

estimates, will come into force at the earliest in 2022, though. (VÁCHAL 2017)

*“Of course, it is a beautiful thing to build on a green meadow tabula rasa, but we are not in America. Here we still have an immense fund of unused old buildings. This is the greatest source of inspiration to me. And this confrontation between old and new is interesting to many people. It is a subtle game that you must know how to play.”* (SKŘIVÁNEK 2005)

#### 4.2. BROWNFIELD OF ŽIŽKOV FREIGHT YARD

The Žižkov freight yard, located in Žižkov, 3rd Prague district, offers a great potential to create a new urban district within its area about 33 hectares. Since its shutdown 14 years ago, there have been many discussions about future of this area. However, the procedure is complicated due to a number of owners there, existing building ban and old master plan, which is still valid in these days. This place has a capability to bond currently divided urban districts and

to offer a new space both for living and working. The administrative building has absolutely unique solution, it represents the largest and best preserved functionalist industrial building in Prague. Due to the state and disposition of the building the new usage for it can be assumed without disturbing its material substance, and also it has the potential to inhabit many cultural organizations. (IPR 2017) (KOLÍNSKÁ 2017) (KLUB ZA STAROU PRAHU 2010)

#### 4.2.1. HISTORY

The area of today Prague 3 - Žižkov used to be originally a part of Královská Vinohradská municipality formed in 1788. When the massive development and construction in the area have started in the second half of the 19th century , the Královská Vinohradská municipality was divided in two parts: Vinohrady II and Vinohrady I, which became Žižkov municipality in 1877. The development of Žižkov continued and the whole district was built-up around 1920, also the one of the first tram lines was leading to Žižkov.



Figure 7: Historical picture of Žižkov freight yard.



Figure 8: Žižkov freight station during its closure time.

At the time of the First Republic, the City of Prague was endeavouring to separate freight and public transport, and the land in Žižkov was found as the convenient place for construction of a new freight station with linkage to the newly built passing point in Malešice. Lately, a radical redevelopment

of the district started in 70s of 20th century, the traditional apartment buildings were replaced by panel houses. Fortunately, thanks to the Velvet Revolution most of the historical Žižkov was save. After the Velvet Revolution a reconstruction and renovation



Figure 9: The historical poster for opening ceremony of the Žižkov freight station.

of traditional apartment buildings have started and continue until today, that together with a modern development makes Žižkov an interesting residential district. (MČ PRAHA 3 2017) (NNŽ 2017)

As previously mentioned, the main goal of the project of Žižkov freight yard was to relieve the city centre of railway traffic by deflecting of freight trains. The project was designed by Karel Caivas and Vladimír Weiss and construction started in 1927. (BERAN *et al.* 2007) (BERAN *et al.* 2009) This large-capacity terminal station with the distinctive reinforced concrete structure of domed ceilings was designed to carry 2 tons/m<sup>2</sup>. The vast building encompassing 30,000 m<sup>2</sup> of storage space in two parallel wings about 400 meters long and spanned across by the administrative building, served from 1936 till 2002 for the transshipment and storage of goods. (FRAGNER *et al.* 2014)

Wellmade concrete and steel structures are still in a good condition, and numerous technical and architectural details of the administrative building are still preserved.

The operation of the station took place in both directions in two vertically separate branches - the one was operated by Czech Railways, the other by private companies. The Czech Railways manipulated goods from wagons through the ground floor of warehouses to the outside ramps in the south wing. The private companies served the middle ramp on which ten steel elevator towers stand, connected by bridges with the two upper floors of both warehouse wings. (KLUB ZA STAROU PRAHU 2010)

#### 4.2.2. LAND OWNERSHIP, URBAN AND SPATIAL PLANNING, AND REGULATIONS

When the operation of freight station stopped in 2002, Czech Railways company started selling the land piece by piece to another companies. At first the north part of the area of 13 hectares was bought by Discovery Group, which it however sold again in the summer 2016 to the Central Group company. The south part together with the main building covering about 16 hectares is owned by Žižkov Station

Development, which is the company owned by both Sekyra Group and České dráhy. The north-east piece of about 4 hectares is owned by RailReal company (owned again by České dráhy but together with SUDOP GROUP). (IPR 2017)

The situation around urban planning



Figure 10: Žižkov freight yard as the transformation area in the proposal of Metropolitan Plan.



Figure 11: Žižkov freight yard area in valid Master plan of Prague from 1999.

and regulations in the area is a bit complicated. According to a valid master plan of Prague from 1999 (Figure 11) it is still permitted to start building anything in the area. There is a building ban existing from 2006, which purpose was to prevent an unsystematic construction that could thus spoil an overall design concept. However, the City council of Prague approved an exception from building ban in the northern part of freight yard area in 2010, which means that developer Discovery Group (now Central Group) can start building without approving of the new urban planning documentation which could follow up an overall district design solution.

Since 2009 there is an ongoing process of approving a change to the valid master plan (Z 2600/00), which would allow the construction in the area but supported by overall urban concept for the area of freight yard. The process was interrupted by the reason of declaring the railway station building as a cultural monument in 2013, because the building was supposed to be demolished according to Z 2600/00.

The proposal of Metropolitan plan indicates the freight yard area as the transformation area with the potential for housing development of closed or open block structure and solitaires completing a block, of height levels following the surrounding building structure (Figure 10).

IPR is currently working on the preparation phase for the public urban and architectural competition, which goal will be to find an overall concept for the freight yard (Figure 12). The competition will currently not apply for the area of exception from building ban, where Central Group pushes for planning

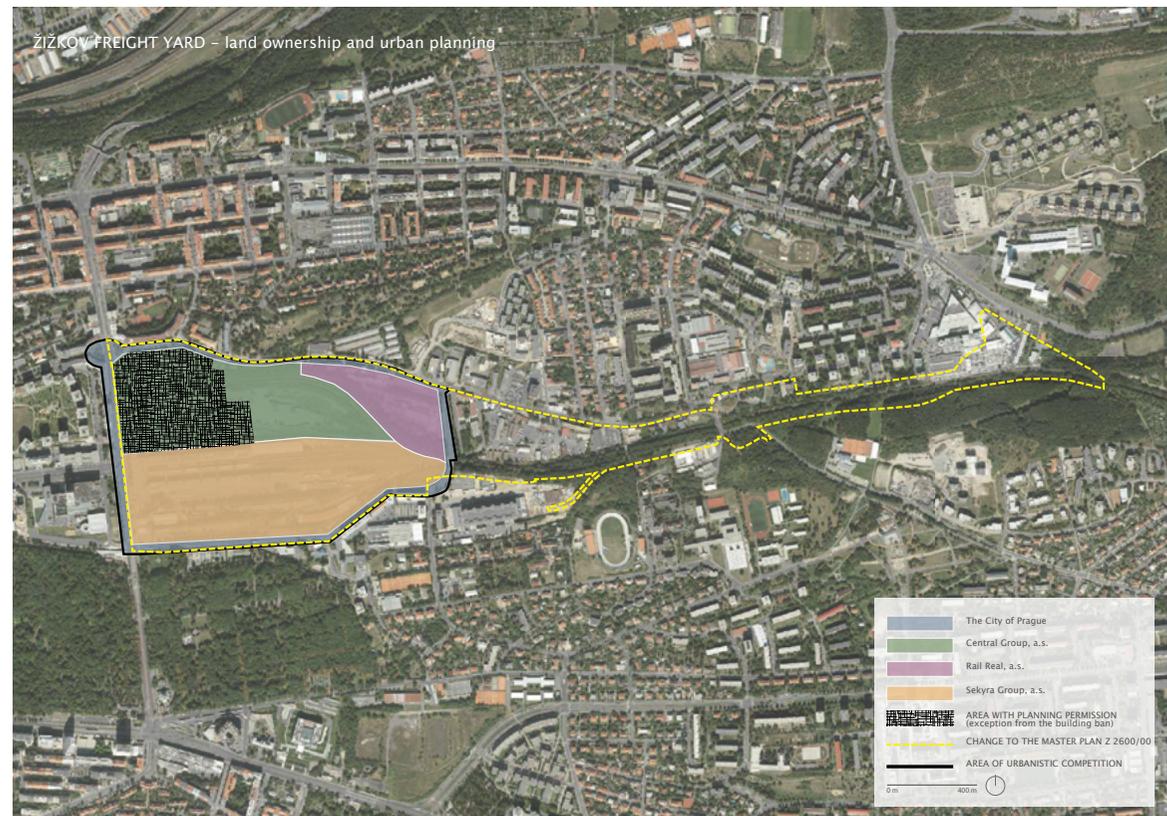


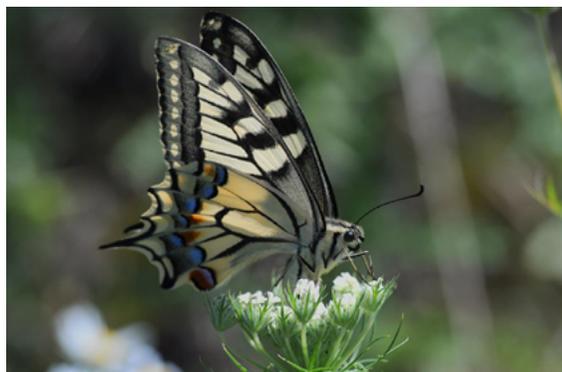
Figure 12: Land ownership and urban planning situation within the area of Žižkov railway yard.

permission in these days and wants to start construction of apartment buildings in 2019. (IPR 2017)

#### 4.2.3. POTENTIALS

Considering its good location within the city the former freight yard represents nowadays the brownfield of a great potential for redevelopment and one of the most important transformation areas of the broader city center.

The City of Prague is planning for a tram line running through the area of freight yard and connecting to Jarov and later to Hrdlořezy district as well. There are two possibilities of the tram line direction



**Figure 13:** Protected specie of *Papilio machaon* captured at the Žižkov freight yard.

presented. The first concept relies on the adjusting of the main building and reusing the old train tracks to lead the tram in the middle of the freight station building. The second concept, more friendly to the cultural heritage, represents the idea of the tram veering off the building from northern side. (IPR 2017)

According to information from IPR (2016) there is already few organizations about to find a refuge in the complex, these are National Film Archive (which already operates the summer cinema and other cultural events in former freight station) or sculpture exhibition of both National



**Figure 14:** Protected specie of *Ficedula hypoleuca* as the Prague's rare specie. Its nesting in the city centre is really exceptional.

Museum and city of Prague. (IPR 2017) Also following institutions have already expressed preliminary interest to inhabit some part of the administrative building: Jaroslav Fragner Gallery, Municipal Library of Prague or Museum of Decorative Arts in Prague. Former councillor of Prague 3 and present leader of a Czech green party called Zelení, Matěj Stropnický, presented an ambitious plan of the Association of private and public institutions, which could settle in the administrative building of freight yard and together decide about changes, reconstructions and functions of spaces. (TADY NENÍ DEVELOPEROVO 2013)



**Figure 15:** Habitat of *Anguis fragilis* found in forested passage of Žižkov freight yard.

#### 4.2.4. CURRENT VALUES

According to data from Czech Union of Nature Conservation, when group of scientists were mapping the area for few surveys about the local ecosystem of the northern part of NNZ, about 40 protected species of animals and plants were registered in the area of NNZ in last 6 years. (KNÍŽEK 2014a) (KNÍŽEK 2014b) (KNÍŽEK 2013)

The site was found as very valuable both for species richness, and for overall rate of butterfly and moth species. Some of the species are of the strict protection (Figure 13). (KNÍŽEK 2014a) Also a large number

of small birds can be found here (Figure 14). That is given by location, ecosystem of the area, and the overgrown forest rim passages offering plenty of space for nesting. (KNÍŽEK 2014b) These forest passages are also important for other species such as Blindworm (*Anguis fragilis*) (Figure 15) or Sand lizard (*Lacerta agilis*), which inhabit almost the entire northern part of the freight yard with the highest occurrence in the area of existing dump yard. Also amphibian specie - European green toad (*Bufo viridis*) was detected in the area, it used to inhabit a little pool which is currently buried and

need to be restored. (KNÍŽEK 2013)

As the very interesting plant specie, which grows in the area, is found a strapwort (*Corrigola litoralis*). This plant is from the ecological point of view highly specialized and competitively weak specie, and this is probably the only adventitious occurrence detected out of the Vltava and Labe valley. The occurrence of this specie is so unique, that it is necessary to protect some part of its habitat. The line vegetation growing on the railway tracks and in the forest trim passage is complemented by tree species of birch, maple, goat willow and black poplar with



**Figure 16:** *Lepus europaeus* as the important specie of the selective herbivore for the Žižkov freight yard locality.



**Figure 17:** All the stages of vegetation in the locality - forest passages with shrubs, lawn and xeric vegetation.



**Figure 18:** The area of former reloading of goods currently used as public space of diverse usage every summer season since 2014.

the undergrowth of hawkweed, heath violet or dog-rose (Figure 17).

Although the place represents a mosaic of diverse biotopes, the open steppe habitat type is found as the predominant one. About 3 hectares of an original heavy-duty paving, which is the remnant of former freight station, contribute to both preserving of steppe ecosystem and supporting of xerothermic vegetation in the area. Another very important factor for the area is the presence of European hare (*Lepus europaeus*), that plays a key role of a selective herbivore specie (Figure 16). The value of the area is not consisted only in protected species but in the ecosystem itself including even species which are not protected, for example European hare which is irreplaceable for this area, however it is not protected by law. So any transfer in order to save the protected species is just erroneous, because it will destroy the unique ecosystem then. (Knížek 2013)

It is a paradox that one of the most interesting natural ecosystems form just

on the least natural places like abandoned railway yards. According to past experience it can be expected that exactly in such least natural places with the worst protectable and generally anomalous conditions, the most interesting species may be discovered. (ČZU v PRAZE *et al.* 2011)

The administrative building of freight station was declared a cultural monument in 2013, namely for its composition, construction and architecture representing a high technical proficiency of industrial buildings in former Czechoslovakia, which

brings not only the protection of the building but also obstructions with possible future usage and reconstruction. (NÁRODNÍ PAMÁTKOVÝ ÚSTAV 2017) The organizational, technical and architectural unity of the complex, which is particularly outstanding, has survived in good technical condition despite a lack of long-term maintenance. Lately, this heritage administration building was used as an alternative setting for various cultural events – Landscape Festival, flea markets, Designblok or concerts (Figure 18 and 19). (NATIONAL FILM ARCHIVE 2017)



Figure 19: The part of the freight station works as the temporary culture space during summer season.

## 5. APPLICATION: CASE STUDY IN PRAGUE 3

### 5.1. ANALYSIS OF THE STUDY AREA

The study area was picked based on the site of urbanist competition which is the one specified part of the Žižkov freight yard transformation area defined by IPR (Figure 20) (IPR 2017). The limits of the study area are established by J. Želivského street corridor defining the very strong western border, and towards north leading into Basilejské square. It is crossed by Malešická street there, which defines the northern border of the study area. From the south it is bordered by U Nákladového nádraží street which towards the east tapers the site and turns north direction where it connects to Malešická street. The area is surrounded by cemeteries from the south, by park and housing area from the north, by production and warehouse area from the east and by commercial and housing area from the west.

The following analysis are based on



Figure 20: The study area for proposal.

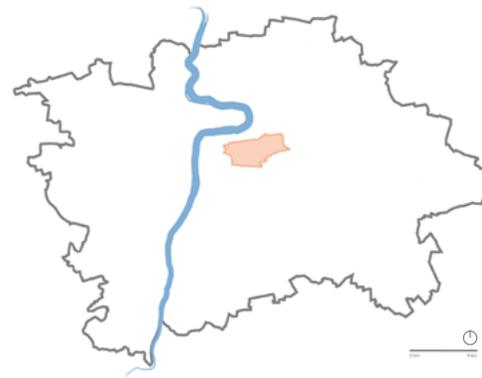
the literature review, map survey (using google maps, mapy.cz, ČÚZK maps and Prague map sources such as geoportalpraha.cz) and detailed field survey (including

participation at the cultural events in the freight station).

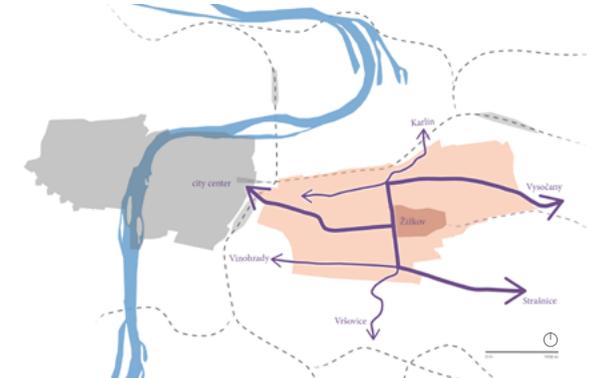
### 5.1.1. THE CONTEXT

Since the study area is located in the Žižkov district, in the broader city center, it has quite good connections to the core center and surrounding districts as well.

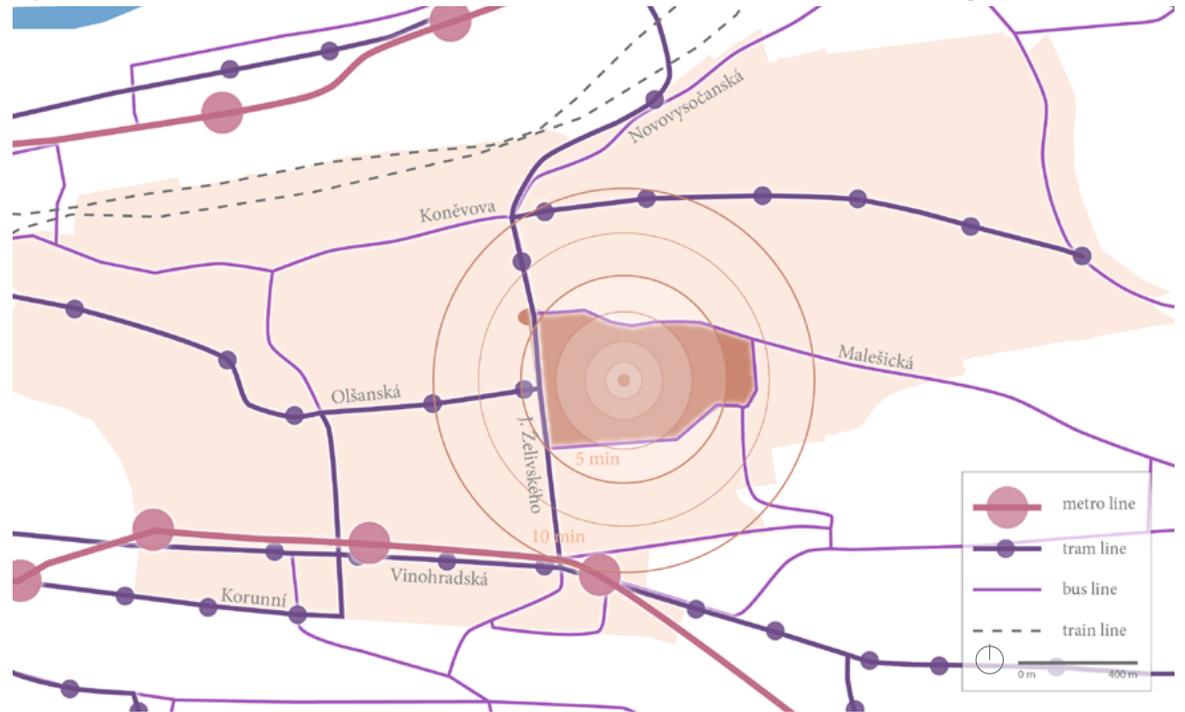
The transport skeleton creates boulevards, where the tram lines are leading through. Trams are also representing a key public transportation for this area, the tram stop is situated right in front of the administrative building of the freight yard. The only metro line passing through the area is the line A and Želivského station is within close walking distance from site, approximately 750 meters. The bus lines are complementing the transportation net mainly towards east where the connection to the center is weakened, and providing few stops around the site. The train line following the northern border of the Žižkov district connects north-east Prague with the Main Station. (Figures 21 - 23)



**Figure 21:** Prague 3 - Žižkov district situation within the city borders and to the Vltava river.



**Figure 22:** Prague 3 relation to the city center, railways and its main connections to the surrounding.



**Figure 23:** Žižkov freight yard situation within Prague 3 district and walking distance from the site within the public transport connection.

## 5.1.2. AREA ANALYSIS

### 5.1.2.1. Land use and spatial analysis

The spatial composition of the area is based on terrain, patterns of similar built-up character and the basic skeleton of Prague avenues. The fundamental urban axes follow the historical city center pattern and lead in the west-east direction. These are complemented by secondary axes in the north-south direction, which also connect the site with the surrounding districts. The patterns of built-up characteristics are closely related to the different height levels: the fine structure of solitaire objects represents the building composition of 3 to 10 meters, the structure of semi-opened and closed blocks of 12 to 20 meters, the areas of commerce or tower shaped objects of 20 to 40 meters, however some can achieve even more like in the case of the housing project Central park across the J. Želivského street from freight yard. (Figure 24)

The area is rich with public amenities such as schools and sport facilities. In the



Figure 24: Spatial analysis of Žižkov freight yard and surrounding.

north of freight yard the belt of housing blocks with living parterre represents the Prague traditional spatial organization. The areas in the west from the freight yard, in the direction towards the Prague center, are performing the commerce function or mixed housing. In contrast, the area off the city towards the east, we find the use of land more uniform but spatial organization more fragmented at the same time; objects are more individually placed. The freight yard is from the eastern side hemmed in by areas performing the technical function of mainly storage and production grounds either vast space. Similarly Želivského metro station area is surrounded by commercial and administrative uses. The very distinctive part of land is used as cemetery. There are three large patches of public greenery used as parks, then linear patch of land used as forest, some fragments of nature greenery, and some little spots used for gardening. (Figure 25)

#### 5.1.2.2. Green mosaic

In the matrix of built-up areas the

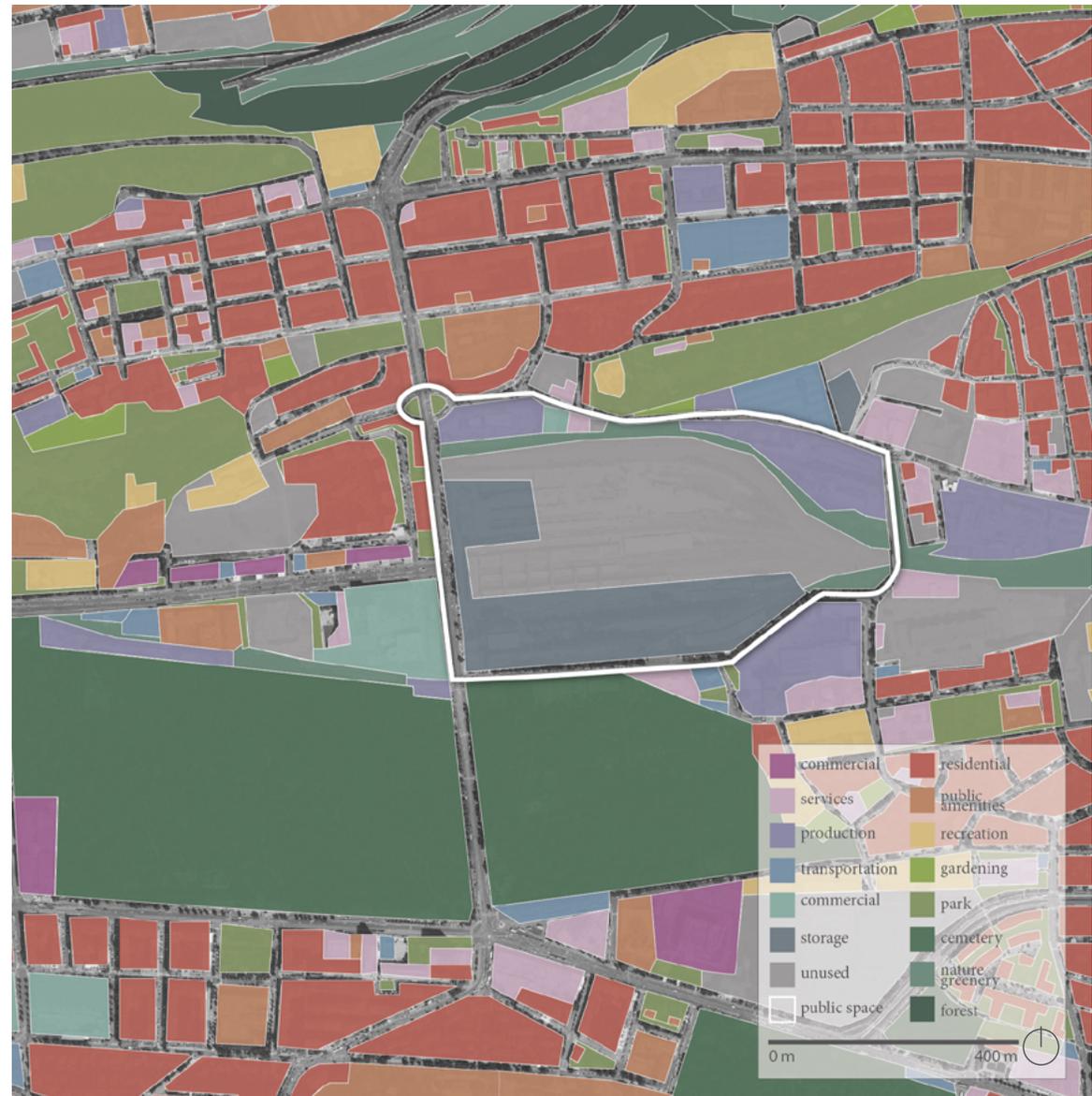


Figure 25: Current land use and function of Žižkov freight yard and surrounding.

patches of cemeteries are representing the most significant green area. Other distinguishable patches of green are represented by parks - Parukářka, Židovské pece and Vítkov. The inner green spaces in housing blocks, the cultivated green plots in public spaces, areas of recreation and linear greenery such as tree alleys, green swales or hedgerows are all complementing the green mosaic of the area.

The definition of the existing greenery reveals the empty spots in the mosaic. The linear park - Židovské pece on the north of the site offers an elongation to the biotope in the freight yard and more south, up to the cemetery, so it will create a significant north-south connection within the area. Another linear green connection is missing along the J. Želivského street. Its greening could contribute to produce more valuable public street space there. The west-east green connection is mainly missing in the central part of the freight yard, so it could complete the existing north and south green passages. (Figure 26)

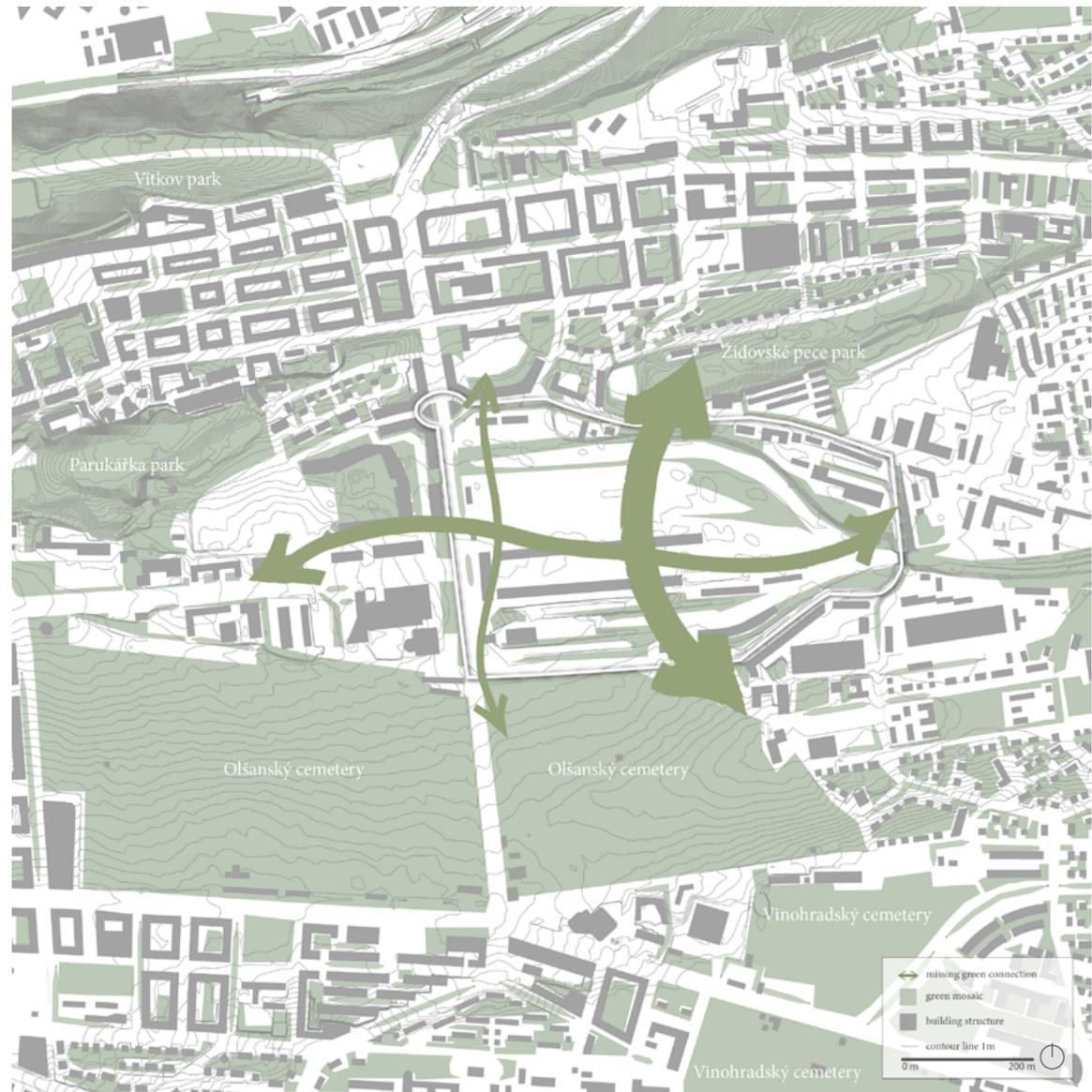


Figure 26: Green mosaic and proposed green connections.

### 5.1.2.3. Values & Problems

The green mosaic is undoubtedly representing a very important existing value of the area - it strengthens biodiversity, provides space for recreation and habitats of species, ecosystem services and storm-water infiltration, and also contributes to better microclimate.

The traditional building structure of closed blocks from 1920s-1930s of 20th century generated street boulevards of long view axis, and thus providing good orientation in the area. The main orientation and gathering points in the area are Želivského metro station, Flora shopping centre and metro station, Koněvova street around tram station, Biskupcova street around the cinema Aero, and both Parukářka and Židovské pece parks. Both Parukářka and Židovské pece parks have also a marked bike lane in their area.

The area has a varied terrain. The highest point is represented by Parukářka hill where the view towards Prague center can be experienced, similarly as the view

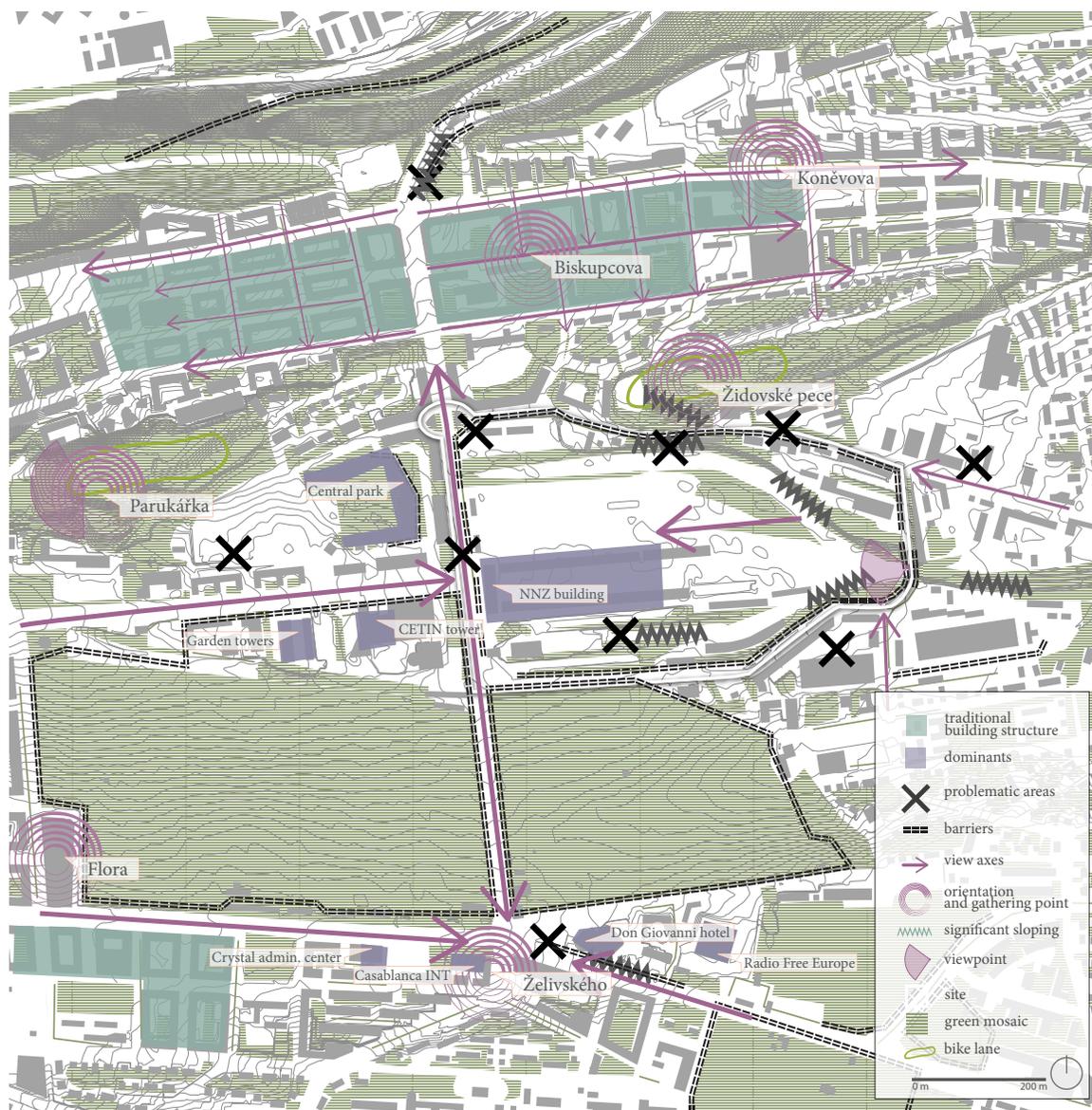


Figure 27: Problems and values in the area of Žižkov freight yard and its surrounding.

over the open freight yard towards center from the bridge in U Nákladového nádraží street. The freight station is very dominant with its significant linear structure. The residential buildings of both Central Park and Garden towers represent the highrise landmarks, and Cetin tower is the highest building in the area.

The area has many barriers - in the form of wall, fence or impassable terrain, especially the freight yard area is bordered almost all the way around, and both cemetery areas as well. There are some neglected or unmaintained places in the freight yard area, occupied by homeless people or waste dumps. The streets around the freight yard lack the proper infrastructure and facilities such as sidewalks and benches, also the bicycle network is missing; the area seems very unorganized - the parking area right next to the Basilejské square just decreases the distinction of the place as “square”; this applies for J. Želivského street as well. (Figure 27)

### 5.1.3. SITE ANALYSIS

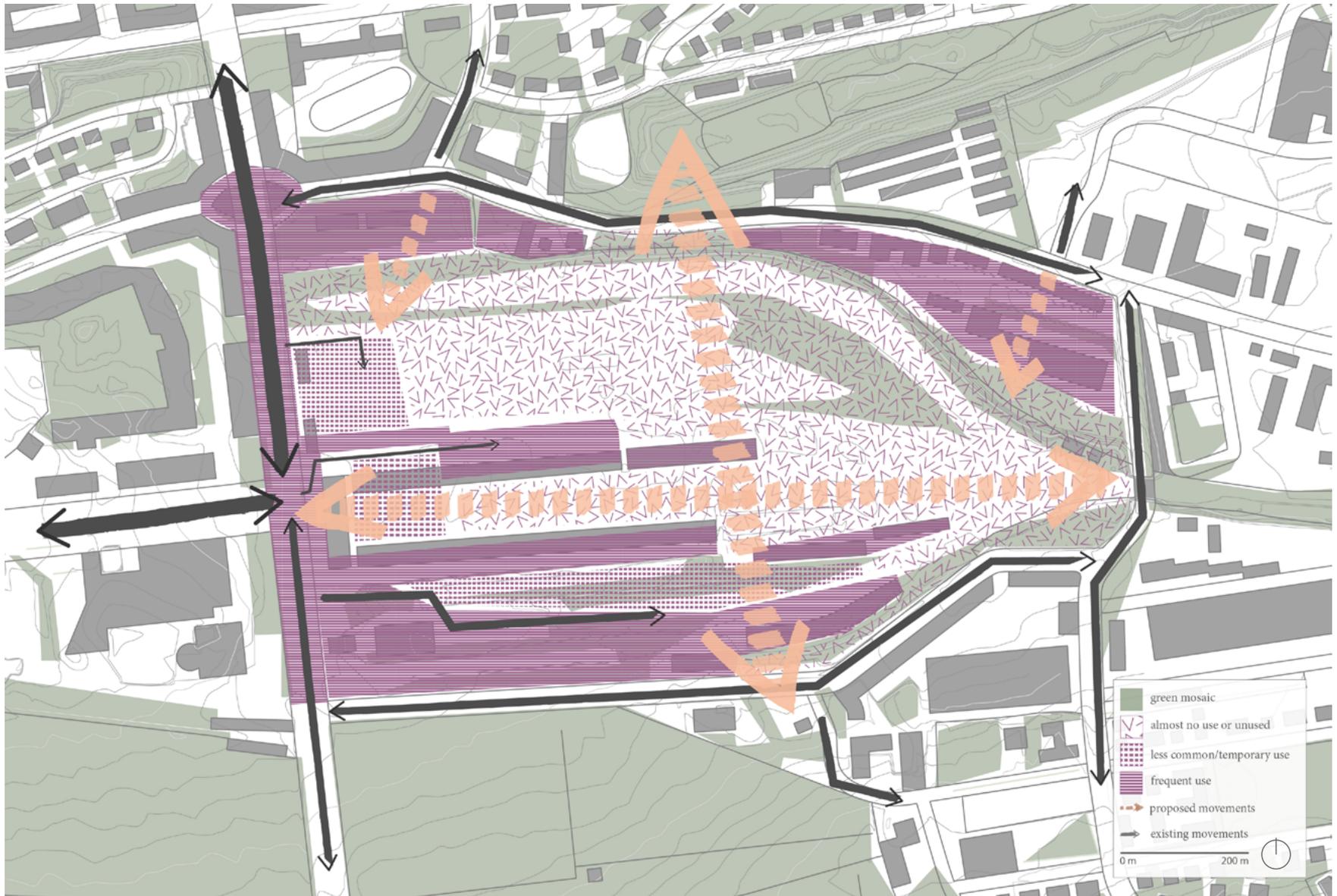
#### 5.1.3.1. *Patterns of use and circulation*

The strongest movements are taking place mainly along the J. Želivského street and at its crossing with Olšanská street. Specifically at the freight yard, the circulation is mostly concentrated in its south part, where the gas station, warehouses and building material shop necessitate some transportation. Other movements in the freight yard area are mainly caused by parking.

The most frequent usage is linked to the J. Želivského street, because of the existing tram stations (tram line 5, 6, 9, 10, 11, 15, 16, 24, 25, 26) and connection to the center, and to the border parts of study area, which have a linkage to the road. The usage in the parking in the north of freight station is then a bit less common, same as the area under the level of freight yard in the south. There is also a part of freight station which is temporarily used every summer season - the segment of the north wing together with

a part of the inner yard provides the space for cultural events. The south wing and part of the north wing of the freight station is used by antique shop and warehouse. The usage of the rest of the freight yard is very low, especially towards eastern side. Only some random walkers, people walking a dog or some homeless individuals can be seen there.

For creating the more stable usage is appropriate to distribute movements over the whole area, so it become more permeable. The proposed movements are linked to the existing ones and just naturally continue in the direction, so they will provide circulation in the area of freight yard. (Figure 28)



**Figure 28:** Usage pattern and circulation in the freight yard area.

### 5.1.3.2. SWOT analysis based on PEBOSCA framework

To capture the strong and weak aspects helps with understanding the requirements for the area. Since the common SWOT analysis focuses only on the general factors for the specific area, I have decided to use it combined with PEBOSCA framework (BERG, NYCANDER 1997), which is derived from the United Nations Habitat II Agenda for assessing and categorizing the seven resources (physical, economic, biological, organizational, social, cultural and aesthetic) providing sustainability assessment, displaying what needs to be preserved and changed, and giving the idea about the potentials and threats in the landscape (BERG, NYCANDER 1997).

For better orientation the individual statements of each resource are captured in the table for each SWOT category (Figure 29). The statements are then located in two schemes divided on strengths and weaknesses (Figure 30), showing what is existing, and opportunities and threats

	STRENGTH	WEAKNESS	OPPORTUNITY	THREAT
Physical	Minimum slope in the area of freight yard; South oriented slopes in the northern part; Open landscape	Significant slope difference at the northern and eastern borders; Hard concrete surfaces	Easier construction due to verified conditions and flat terrain; Valuable residential function at the south slopes	Monotonous design due to flat terrain; Strengthen barriers due to uncomplex solution; Usage of prospective land for commercial function
Economical	Existing business (antique shops), parking and wholesale	Unused area of lost function not producing any profit	District regeneration; Generating of new working places, new public amenities	Higher prices of real estate and high rents; Over-gentrification
Biological	Existence of valuable biotope; Endangered and valuable species; Ecosystem services	Endangered species dependent on the local ecosystem and presence of European hare; Brownfield + freight yard contamination; lack of north-south green connection	Contributing to green mosaic and connecting north and south green patches out of site; Recreation and education function; Enhancing the biodiversity and support of native species	Destroying of the biotope due to construction; Valuable biotope as the barrier for development in the place of its presence; unlinked green network
Organizational	Location in the broader city centre; Good connections in and out of Prague; Public transport in appropriate walking distance; Long view axis and traditional building structure in the surrounding	Many barriers; Impassable traffic corridors; The area of freight yard as the gap in the public transport network; Most of the area is neglected, vacant and disorganized; Fragmented land ownership; Time consuming planning and approval procedures	Reuse of former railway tracks for tram line as filling the gap in public transport network; By using the existing traditional building structure create better orientation and organization in the place	Demolishing of the former freight station by leading a tram line through the building
Social	Temporary social interactions due to cultural events;	Problematic area due to its abandonment - homeless people, excluded community	Strengthen the social conditions and safety in the area by management of the place and providing conditions for permanent cultural function	Monofunction not offering an opportunity for social interactions and gentrification
Cultural	Temporary cultural events; with Administrative building as the cultural heritage	No permanent cultural events; Cultural heritage as the barrier for redevelopment of administrative building	Creating the hub of culture and leisure with significant effect for whole district	Suppression of public and cultural places by monofunctional development
Aesthetical	Functional architecture of administrative building; Wild nature	Concrete built up structures and neglected site and its surrounding	Create the urban district both sensitively bonding the former architectural values with modern architecture and linking the new structure to the surrounding; valuable public spaces	Disrespecting the surrounding and former architecture while creating the new urban structures; Impact to Prague panorama and organization if not following height and mass limits of surrounding structures

Figure 29: Table of SWOT analysis based on PEBOSCA framework for the study area.

(Figure 41), showing what may happen or may be created. The pictures from the site are then just proving the authenticity of the strong and weak points (Figures 31 - 40).



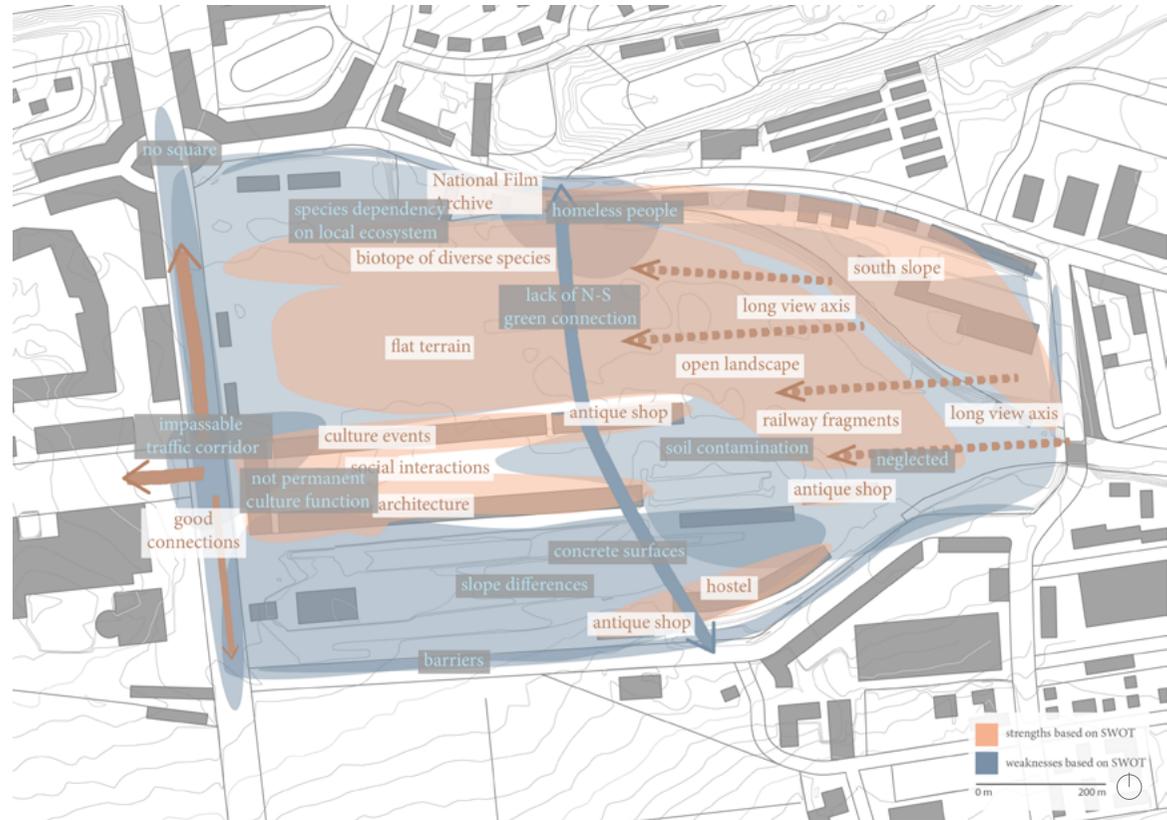
**Figure 31:** Open and flat terrain and verified conditions allow an easier construction.



**Figure 32:** The relics of railways getting overgrown by wild nature.



**Figure 33:** The very neglected part of the site in its eastern part - abandoned and ruined.



**Figure 30:** Strengths and weaknesses scheme of the Žižkov freight yard.



**Figure 34:** The tram line would be a convenient way of reusing a former railway tracks.



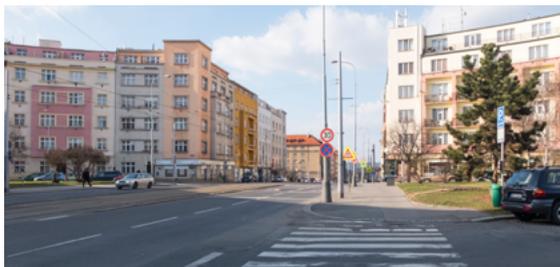
**Figure 35:** The long view over the freight yard area from the bridge at the eastern border.



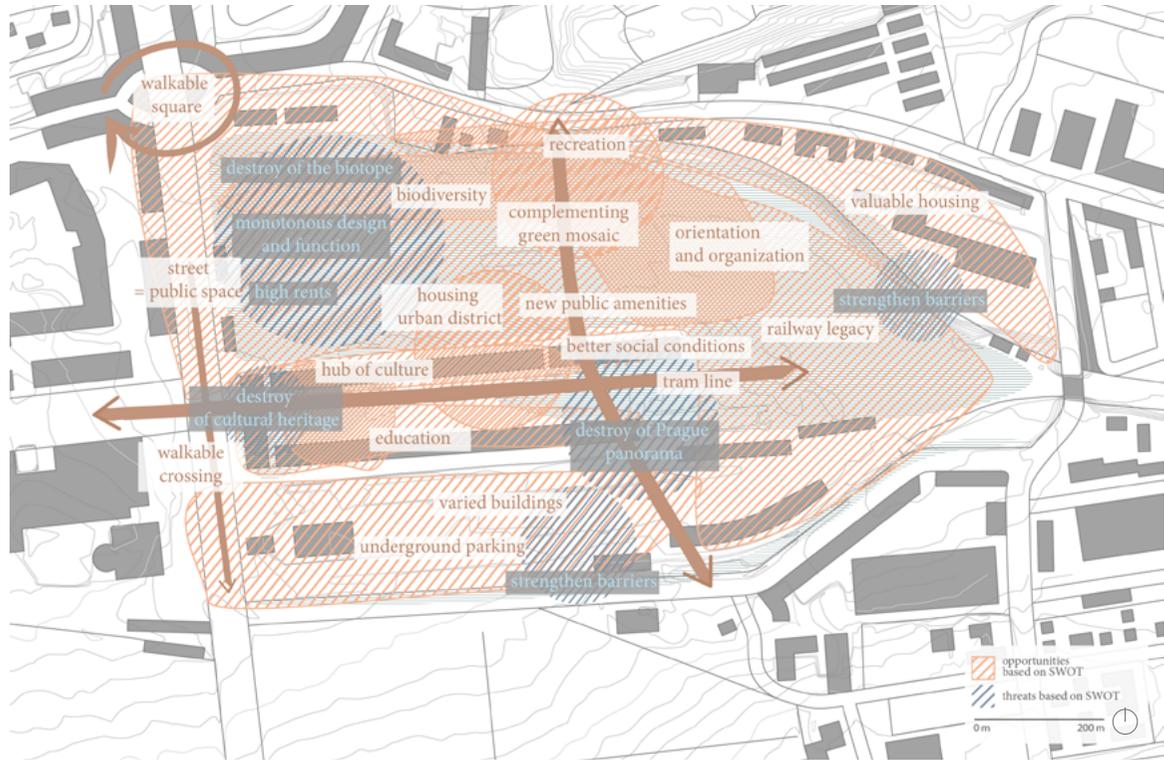
**Figure 36:** The view on the freight station from the east. The technical complex is unique for its complexity and became a cultural heritage.



**Figure 37:** The forested passage in the northern part of Žižkov freight yard as the segment of important biotope and species habitat.



**Figure 38:** Basilejské square with its strong barrier in form of wide road where the speed limits are non enforced.



**Figure 41:** Opportunities and threats scheme of the Žižkov freight yard. (Jeřábková, 2017)



**Figure 39:** The character of the southern part of site is shaped by the varied topography which has the potential for underground parking or multifunctional architecture.



**Figure 40:** The unorganized and unmaintained area along J. Želivského street.

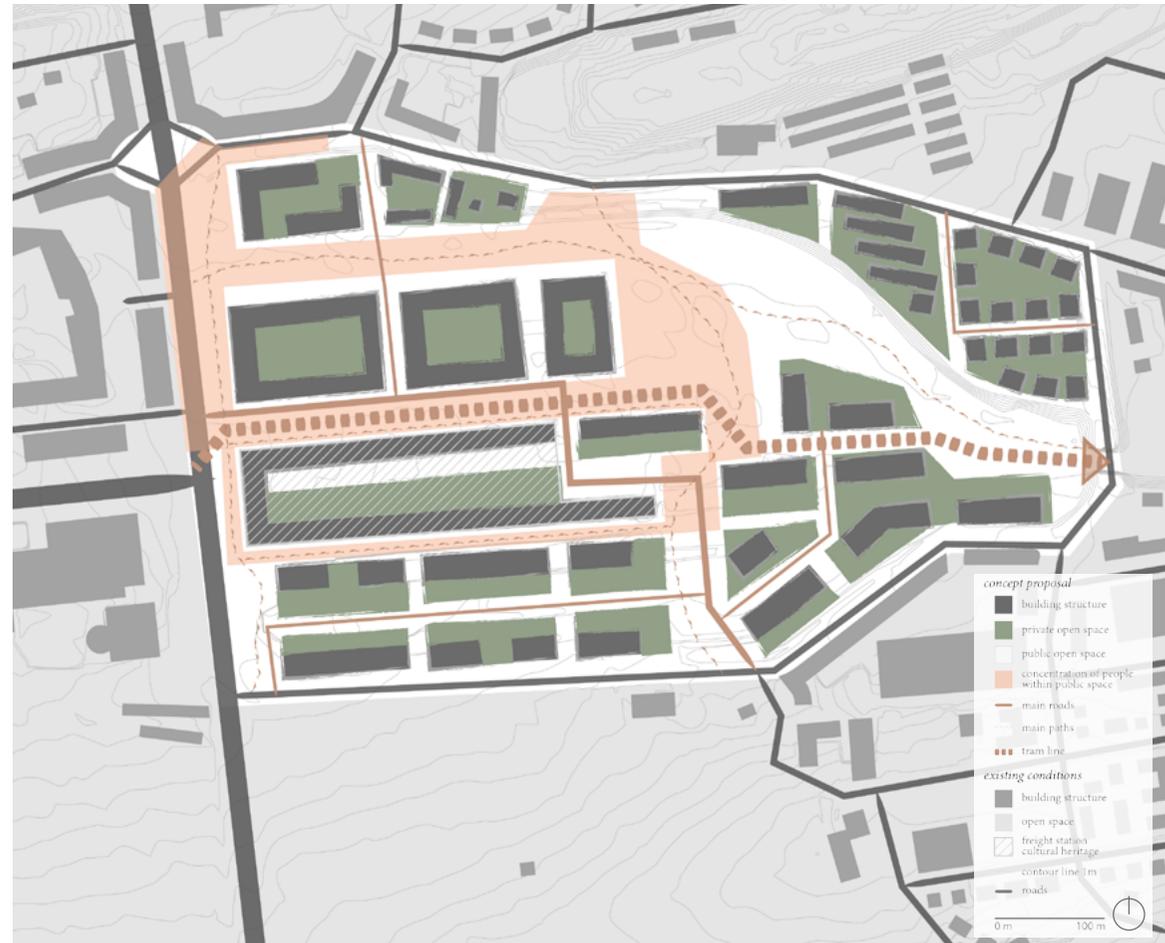
## 5.2. THREE CONCEPTS FOR REDEVELOPMENT

Three concepts design for the site are based on site and area analysis dedcribed earlier. Each of the concepts respect the existing values and environment, dealing with barriers and providing better connections to the site and the surrounding neighborhoods. The choice of tram line corridor proposal is crucial for forming a new site.

### 5.2.1. CONCEPT I - THE ENVIRONMENTAL FRIENDLY SOLUTION

This concept has been created based on the protection of existing values in the form of biotope and cultural heritage and providing of natural continuity and openness in the place (Figure 42).

The spatial composition of the site is mainly defined by the north-south connection of park and cemetery and the west-east linear open space provided by existing biotope and habitat of protected



**Figure 42:** *Concept 1 for the Žižkov freight yard.*

species, that is following the northern slope in its entire length. The tram line leading into the northern corridor prevents the disruption of cultural heritage and

at the same time generates a busy street accompanied by services and commerce. The former administrative building keeps a calm environment and opens towards

central open space. The site is overall very permeable and well connected to the surrounding. The receding borderline of building structures provides open space in the streets, currently used mainly as transport corridors. The western part of the site is more vibrant and provides greater share of public space, connecting to the traditional building structure and busy street, on the other hand the eastern part is more finely structured with private open spaces. This concept performs friendly to the existing environment and respects values of the site, keeps area very open and penetrable, and offers both calm and vibrant residential areas.

### 5.2.2. CONCEPT II - LIVING URBAN DISTRICT SOLUTION

This concept has been created based on the traditional building form following the urban axes with emphasis on providing the quality urban district of diverse functions (Figure 43).

The tram line leading into the southern corridor, so through the former

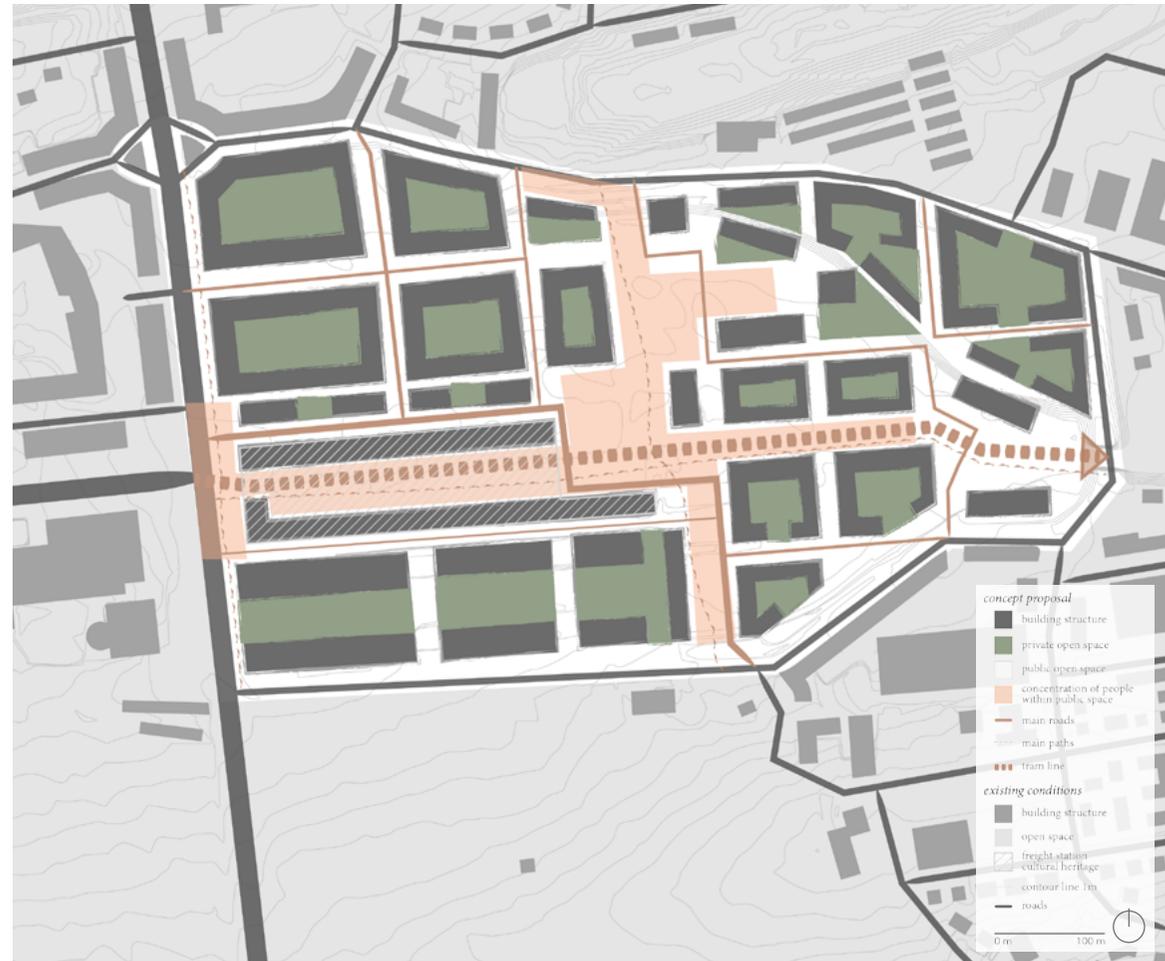


Figure 43: Concept 2 for the Žižkov freight yard

administrative building, is providing a linear open space inside the structure of administrative building and on its end it is crossing with north-south open space

corridor connecting park and cemetery. The cross of open spaces is accompanied by diverse uses such as public amenities, services or commercial. The four remaining

“corner” areas represent closed or semi-opened blocks with mainly residential function. The borderline of building structure is mainly following the borderline of adjacent buildings, especially at J. Želivského street. This concept is filling the area with mosaic of rather regular structures with private inner open spaces, however still offering diverse public space bringing life to the streets.

### 5.2.3. CONCEPT III - DIVERSE PUBLIC SPACE SOLUTION

This concept has been created based on the protection of existing values combined with providing the quality urban district of diverse public spaces in order to create well connected and permeable area (Figure 44).

The spatial composition of the site is defined by the strong north-south open space connecting park and cemetery crossing three different west-east linear open spaces: the corridor of tram line leading through the former administrative building, the boulevard - linear open space between closed housing blocks and north

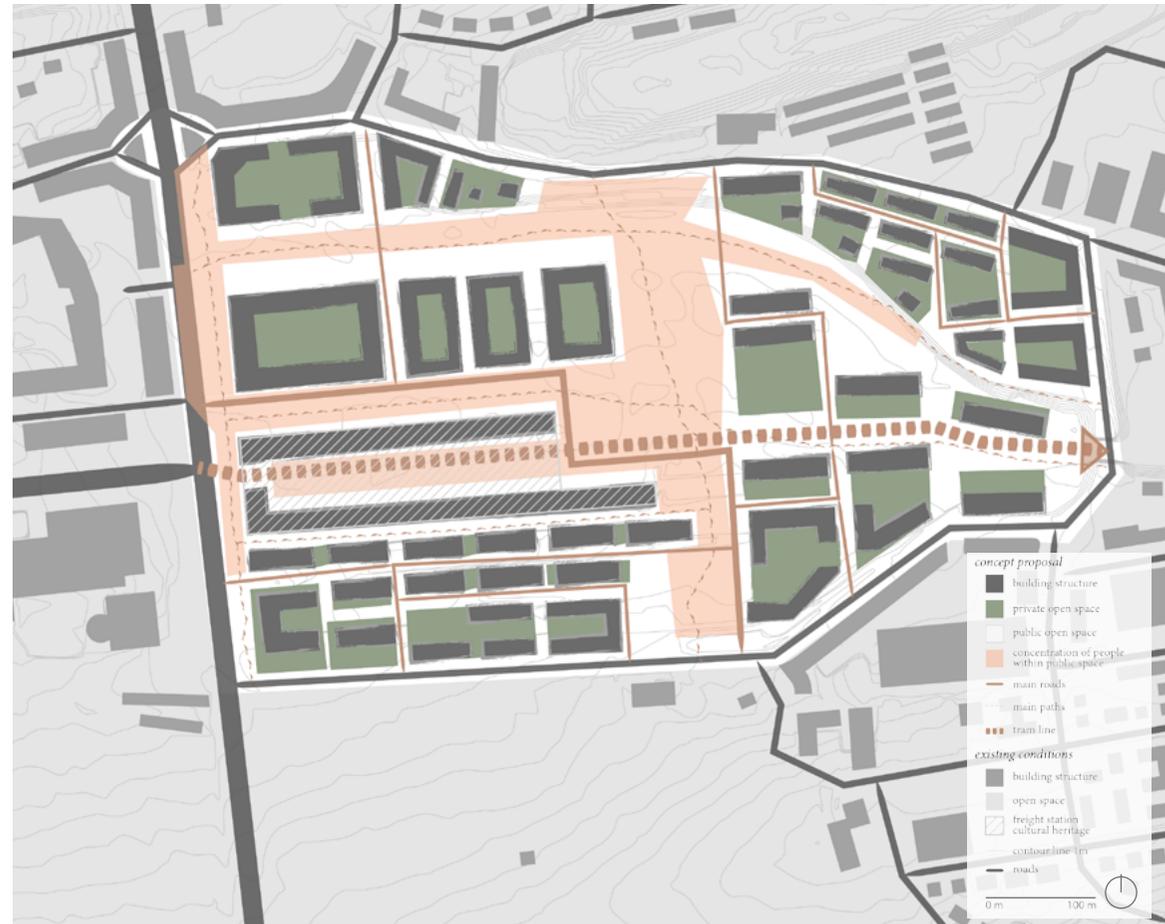


Figure 44: Concept 3 for the Žižkov freight yard.

wing of freight station, that is parallel to the tram corridor, and the biotope - forest passage following northern slope along its entire length. The building structure is composed in order to follow surrounding

composition by combining closed and semi-opened housing blocks together with single rectangle buildings, that follow slope difference; all these provide sufficient private open spaces. The borderline of building

structure is following the borderline of freight station, so it provides wider street corridor at J. Želivského street. The spatial composition of open space and building structure produces different types of public open space dependent on the character in the place which is given by north-south open space connection crossing different linear open spaces: biotope - brings the recreation function, boulevard - brings the commerce function, and tram line corridor within freight station - brings the public amenity function.

This concept combines environmental friendly solution with provision of quality housing urban district, that offers diverse activities for residents and visitors.



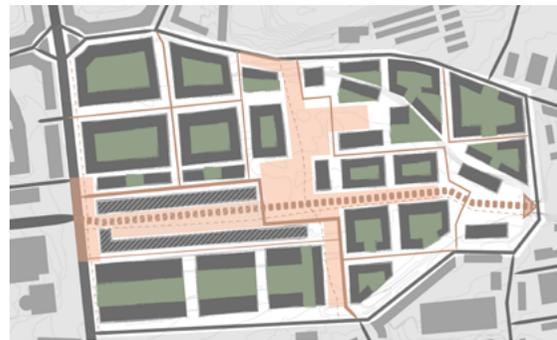
Figure 45: Three concepts for proposal.

#### 5.2.4. COMPARISON OF CONCEPTS

The Concept I respects the existing values such as freight station and biotope of valuable species, offers great share of private open space per building and keeps the area overall very open. However, this solution doesn't provide such number of possible housing units compare to Concept II and Concept III (Figure 45).

The Concept II proposes well organized solution of open space and buildings with likely high number of housing units, on the other hand this is so at the expense of the biotope area and freight station, which is disrupted by tram line corridor.

The Concept III preserves the most of biotope area and at the same time still



provides appropriate organization of building and open space structure. This combination generates diverse public spaces.

In order to find a balance between preserving the existing values within the study area and generating the most of the housing space together with providing a quality public space, the Concept III is determined as the most appropriate one. Although this concept disrupts the freight station by the tram corridor, the proposed tram line is reusing the former train route and application of the sensitive solution will not destroy the cultural heritage, and conversely brighten up the public space.



## 6. DESIGN PROPOSAL

The design proposal is presented by the masterplan and three promoting scheme maps demonstrating function and use, public space character and spatial organization. The sections present the relationship between open space and building structure, and demonstrate spatial organization. The visualizations give the idea of how the freight yard area work in the proposal.

### 6.1. FUNCTION AND USE

This map shows the function of buildings, transport network, and division of open space on public and private (Figure 46).

The public space is naturally formed by tram corridor and spatial composition of the freight station, by biotope area functioning as nature park, and by green connection of Židovské pece park and cemetery representing various public spaces like it passes through the study area.

The former freight station represents

the hub of culture and mainly serves to public. The south wing is used by different both private and public cultural organizations, so there could be found a film archive, art museum, library and auditorium. The north wing is partly used for art studios and gallery and partly for commerce such as cafes, bistros and local designer shops. The exterior part between south wing and middle ramp is used for exterior gallery, gardening and summer cinema. The exterior part between north wing and middle ramp serves as the platform and tram corridor. The front part facing J. Želivského street serves as the entrance hall and administrative center.

The closed blocks of buildings with inner private open spaces, that are situated to the north of the freight station, serve to housing, only its parterre facing J. Želivského street and freight station is used for little shops, cafes, restaurants and services. Similarly the building structure of semi-opened blocks situated to the north of closed blocks serves to housing except its parterre

adjacent to the Basilejské square, that is used for commerce. The three neighboring small buildings are used by National Film Archive. The eastern part of building structure has overall residential function except the building, which serves to day-care center. The building structure to the south of freight station has residential function except the building situated closest to the J. Želivského street is serving to commerce and the building adjacent to public space and freight station is serving the public as a leisure center. The most of buildings have directly adjacent great private open spaces.

The tram line represents the main public transport connection for the area from and to the center and neighborhood. All the buildings are accessible by car roads. The necessary parking space for residents is situated underground of buildings, the parking lots for visitors are found by the side of the wider roads or at the private open space adjacent to buildings.

The area is connected by two bike lanes: the first, following the north-south



**Figure 46:** Function and use of the design proposal. Sections and visualizations are depicted on the map.

green connection, is linked to the existing bike lane in Židovské pece park; the second bike lane follows the tram line and represents the connection from the city center to the surrounding.

The path network ensures the connectivity within the area and links it to the surrounding as well. The J. Želivského street corridor and Basilejské square is complemented by paved islets to make the road better passable. Also the receding west borderline of building structure provides a more comfortable movement within the street.

## 6.2. PUBLIC SPACE CHARACTER

The public space has a various character based on the adjacent building function and on the existing conditions (Figure 47).

The bitope area represents a *nature park* following the northern slope from J. Želivského street to the bridge at the very east of study area, where the park links to the forest passage out of study area. The area around the freight station represents



Figure 47: Public space character of the design proposal.

the central space of the area - a *square*, where the residents and visitors gather. It is the place of high circulation and frequent usage. The green area between nature park and square, and situated next to the kindergarten, represents a *sport and leisure space* that is well accessible to the residents. The green areas adjacent to the busy roads -

J. Želivského, Malešická and U nákladového nádraží streets - represent *city parks*, which offer a rest from urban bustle and contribute to the city microclimate. The transport corridors, where motorized and non-motorized traffic meet, represent *the street space*, that is accessible and well passable.

### 6.3. SPATIAL ORGANIZATION

The new building structure follows both the terrain and the height level of the surrounding buildings (Figure 48). The number of new homes is about 1200 housing units per study area of 33 hectares.

The most of the new building structure have six floors with the receding top floor. The building structure situated on the north-east slope has five floors except the smaller buildings at the slope edge, which have three floors. The only building structure of the seven floors height is the one situated in the lowest elevation of area to the south of freight station. Both the building blocks with narrow inner open space and the structures situated at the elevation difference spot have the reduced floors to ensure the light penetration. Similarly the buildings to the south of freight station have reduced floors to ensure the visual penetration. The spatial composition in the open space is formed by mainly existing vegetation and the new tree alleys in the streets, which define the axis and helps with orientation. The areas of dense



Figure 48: Spatial organization of design proposal.

vegetation create a strong green connection within the area and support biological function. The partly vegetated places or areas of few trees provide places for recreation, and the areas of minimum vegetation provide a free space for different purposes requiring a lot of space.

#### 6.4. MASTERPLAN

The relationship of greenery to the building structure and open space is defined by the composition of trees and vegetation. The design proposal is overall using the existing greenery to form the both private and public open space. The building structure is naturally placed within the area like it follows the street line and contours of the slope (Figure 49).

The design proposal promotes the ecosystem services and biodiversity as it provides a high proportion of green areas with a support to native species and conservation of endangered species. The proposal also recovers a pool to create a natural water element within the area, and to provide a specie habitat and retention pond. The pool is situated at the spot of lowest altitude within the area of biotope. The biotope area - *a nature park* - is mainly left to the natural succession with some necessary management such as maintaining the path network. The adjacent green areas - *city parks* - have more organized vegetation

and require more management and maintenance, same as green alleys in the *street space*. These areas represent more formal space compare to the *nature park*. The paved and green area around the freight station representing *a square* and thus the central place of the area is accompanied by some sparsed high vegetation. However, there is mostly low vegetation in the tracks and along *the boulevard*. The green lots between the middle ramp and the south wing of freight station are used for community gardening. Equally the private green areas adjacent to apartment buildings are used for gardening to support self-sufficiency within the area. The apartment buildings situated to the south of the freight station are accompanied by green roofs. *The sport and leisure space* is mainly an open area used for different sport activities, one half is greened and the second is covered by sandy-clay surface. The area is situated right next to the day-care center, which has also its own large private green area. There is two vistas with the view over the whole area: one at the slope and

the second at the bridge; the both are well accessible.



Figure 49: Masterplan of design proposal.

## 6.5. SECTIONS

Both the sections demonstrate the relationship of the building structure and the open space, and show the integration of buildings into terrain (Figure 50 and 51).

The building frontage facing the public space has the increased ground floor used for commerce such as shops or cafes, and services. All the buildings have balconies and some have roof terraces facing mainly the private space.



**Figure 52:** Visualization I of the apartment buildings by the freight station.

## 6.6. VISUALIZATION

The visualizations gives the perception of how the area looks and functions - it shows how the new buildings are placed in terrain, the movement of people in the public space or the proportions of the new versus old. (Figures 52 and 53)



**Figure 50:** Section I. (Jeřábková, 2017)



**Figure 51:** Section II. (Jeřábková, 2017)



Figure 53: Visualization II of inner space of the former freight station.

## 7. CONCLUSION

The process of people moving to the cities results in demand for new residential areas. The potential for sustainable way of creating these new areas is seen in redevelopment of transformation areas such as post-industrial sites, which Prague has many - the example is the case study of this master thesis: the Žižkov freight yard. However, due to the fragmented land ownership and the vastness of the transformation areas, a complex urban solution is needed.

To create a quality new residential area, the open spaces need to be provided both in the public and private areas. That is necessary for recreation, diversity, species habitat, ecosystem services, stormwater management and last but not least the microclimate. The proposal uses the existing greenery to form the open spaces, and a new building structure is then naturally placed in - following the contour lines, the lines of the streets and the surrounding building structure, its volume and height.

The created mosaic of buildings and open space integrates into the existing structure in order to provide a connectivity within the area and to the surrounding.

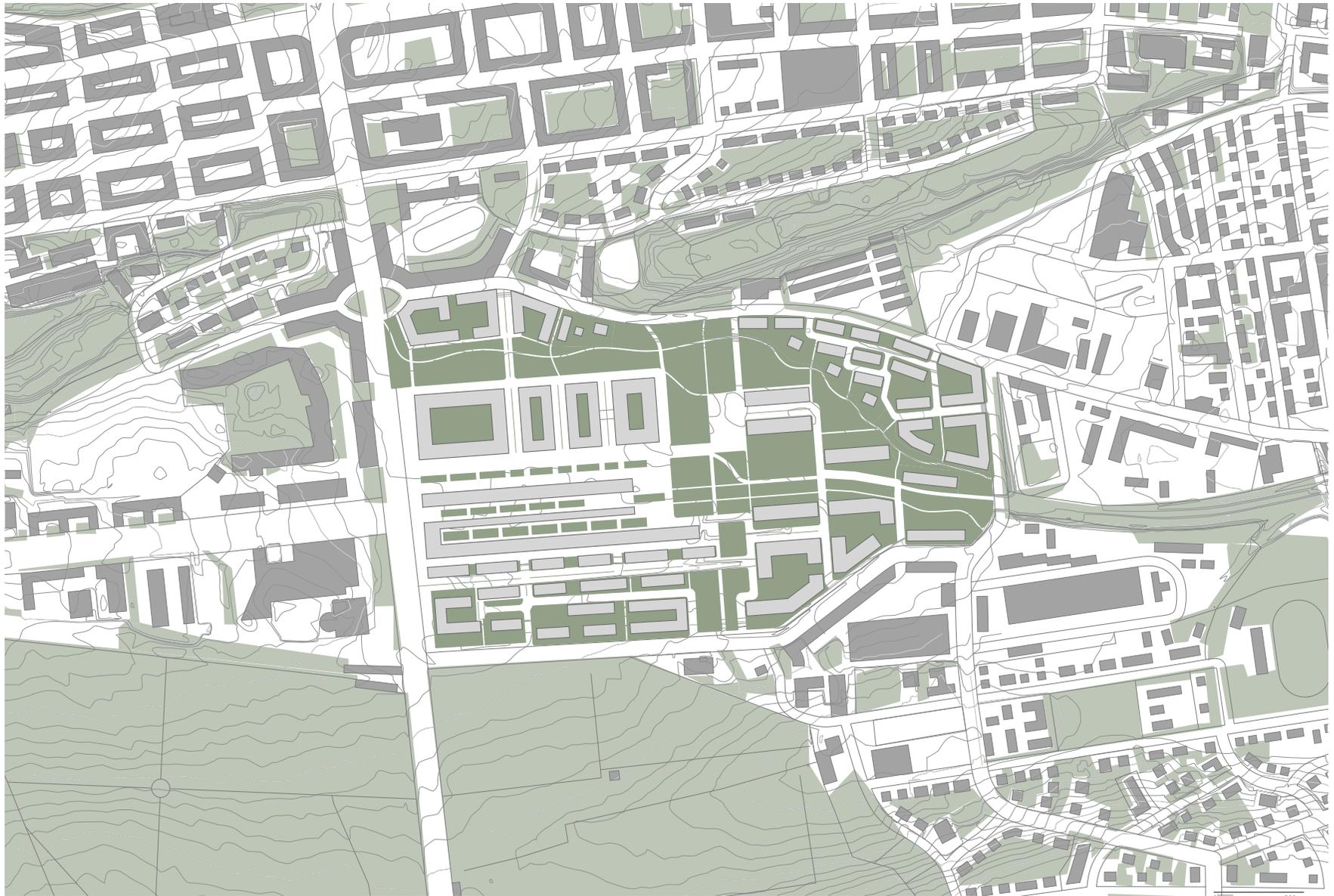
The area overall provides about 1200 housing units of a different size and character, so it attracts a wide range of people. To ensure quality living, the public amenities such as a day-care center and sport and leisure area need to be provided. The private space areas are used for gardening, parking or playgrounds. The living parterres are then places to shop and where the basic services can be provided. The limited room for shops avoids the wholesale, so it supports mainly small retailers. The former freight station, as it now represents the tram station in the proposal, became a node - gathering point - of the area. It serves to many cultural organizations which contribute to the overall improvement of Prague 3 district.

The nature park, which is created at the place of biotope, provides a piece of real nature to the area and represents a habitat for many species, so it supports a

biodiversity within wider city center. The remnants of railways are preserved in the park - they are used for paths, but also at the square around the freight station - as garden beds. The public space is accompanied by various pieces of contemporary art such as sculptures by Czech artists.

The newly created area fills the space in the mosaic of city structures but at the same keeps the openness, which is the significant aspect of the freight yard area now. The new urban district doesn't conceal the fact that it used to be a freight yard, it perceives the concrete structures and wild greenery as the pleasant revival of the current urban design in Prague.

The places as Žižkov freight yard should be the focus of nowadays urban planning - to liven the unused and turning it into remarkable place.



**Figure 54:** *Integration of the design proposal into the context of surrounding.*

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