Czech University of Life Sciences Prague

Faculty of Environmental Sciences

Diploma Thesis

Author: Bc. Nikoleta Popović

Czech University of Life Sciences Prague

Faculty of Environmental Sciences

Department of Landscape and Urban Planning

Finding suitable area for the future development of Hostivice, Czech Republic

Diploma Thesis

Author: Bc. Nikoleta Popović
Supervisor: doc. Peter Kumble, Ph.D.
Opponent: Ing. arch. Vladťka Kirschner, Ph.D.

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Environmental Sciences

DIPLOMA THESIS ASSIGNMENT

Bc. Nikoleta Popović, BA

Landscape Engineering
Landscape Planning

Thesis title

Finding suitable area for the future development of Hostivice, Czech Republic

---

Objectives of thesis

This thesis's primary objective is to find a place and a solution for the suburban settlement's future sustainable development. The town of Hostivice was chosen as the research area because the rapid urbanization of Prague dramatically affects it. In recent years, Hostivice has been developing at a high rate, which is a consequence of the growing number of people living here and working in Prague. Although the city's development plans have been implemented, some shortcomings have emerged over time. Therefore the aim is to discover these problems and solve them in future development. The assumption that this city needs expansion is the central hypothesis presented in this paper.

The thesis contains two main research questions:
First question: Does this town need expansion?
Second question: Which area is most suitable for expansion?
The answers to these questions will be analyzed in the methodology and case study section of this paper.

Methodology

Analyse of the larger context of place, including an analysis from all aspects:

(History, Soil, Vegetation, Infrastructure, Surrounding towns, Prague, Airport, Industry, Pollution, Waste, Water, Recreation, Transportation, Capacity WTP, Boundary, Existing plans, Schools, Protected area, Price of living, Jobs, etc.

1. In the literature review, data were collected on the topic of sustainable development and smart growth through examples in practice and researches

2. Presentation of research results conducted by interviewing planning experts from Hostivice.

3. The case study presents data collected from the field and a comprehensive historical, urban, and ecological analysis of the town.

4. The results summarize the data from the previous sections and give a proposal of the plan for the future development of Hostivice

The proposed extent of the thesis

70 pages

Keywords

Smart Growth, Suburbanisation, Sustainable Development

Recommended information sources

Duany, Andres, E. Plater-Zyberk, and Jeff Speck. 2000. “Suburban Nation: The rise of sprawl and decline of the American dream.” New York: North Point Press. Read Pages 1-37

Hiss, Tony. 1990. “The Experience of Place: A completely new way of looking at and dealing with our radically changing cities and countryside.” Knopf: New York.

Roseland, Mark. 1998. “Toward Sustainable Communities.” Chapters 1 and 2. Pp 2 – 26. New Society Publishers: Canada

---

Expected date of thesis defence

2020/21 SS – FES

The Diploma Thesis Supervisor

doc. Peter Kumble, Ph.D.

Supervising department

Department of Landscape and Urban Planning

Electronic approval: 2. 3. 2021

prof. Ing. Petr Sklenička, CSc.

Head of department

Electronic approval: 3. 3. 2021

prof. RNDr. Vladimír Bejček, CSc.

Dean

Prague on 29. 03. 2021

Declaration

I hereby declare that I have independently elaborated the diploma/final thesis with the topic of: *Finding suitable area for the future development of Hostivice, Czech Republic* and that I have cited all the information sources that I used in the

thesis and that are also listed at the end of the thesis in the list of used information sources.

_____ _____

Place, date Author's signature

Acknowledgments

I would like to express my greatest gratitude to my supervisor, doc. Peter Kumble, Ph.D.gave me guidelines and exceptional support in writing this thesis and the entire study process.

I want to thank all the participants in the interview Ing. arch. Vladka Kirschner, Ph.D., Ing. arch. Tomáš Koňařík and Ing. Petr Návrat.

And finally, I want to thank my family, boyfriend, and friends, who have been immensely supportive throughout my studies.

Abstract

The importance and application of the research presented in this thesis is presented in the application of modern trends in the concepts of sustainable development and smart growth and the examination of their validity. The initial assumption is that the town of Hostivice, a suburb of Prague located immediately to the west and sistuated immediately below the international airport will grow and need room to expand in the future. Therefore, the primary goal is to identify a location and a rational solution for future sustainable suburban growth and the Hostivice case study. The work methodology is based on a review of the literature on the concepts of sustainable development, smart growth, and the concept of suburbanization from the local and global aspects. The research part involves interviewing the persons responsible for spatial planning in the town. The third section of the methodology includes spatial-urban, socio-cultural, and ecological analysis. The analysis of the case study included fieldwork and observation of the present issues. The result of extensive research conducted through the methodology is a proposed plan. The plan is given in three different future development scenairos depending on the built area, where the basic plan has a ratio of the built-up and unbuilt area of 40-60%. Variations for an alternve future development scenario are proposed which emphasize a reduction of the built-up area, allowing a significant percentage of the agriculturally productive soils to remain available for use. The formation of a bio center, based upon the principles of TSES, has been introduced into each of the future development scenairos in all three proposals. The thesis's main conclusion is the extent to which Sustainable Growth and Smart Development are applicable in practice and emphasize the importance of preserving the character of places and landscapes in spatial planning.

Key words: *Smart Growth, Suburbanization, Sustainable Development, Sprawl, Residential Development*

Abstrakt

Důležitost a aplikace výzkumu prezentovaného v této práci je prezentována aplikací moderních trendů v koncepcích udržitelného rozvoje a inteligentního růstu a zkoumáním jejich platnosti. Počáteční předpoklad je, že město Hostivice, předměstí Prahy, poroste a bude v budoucnu potřebovat prostor pro expanzi. Proto je primárním cílem identifikovat lokalitu a racionální řešení pro budoucí udržitelný předměstský růst a případovou studii Hostivice. Metodika práce je založena na přehledu literatury o koncepcích udržitelného rozvoje, inteligentního růstu a suburbanizace z lokálních a globálních aspektů. Výzkumná část zahrnuje rozhovory s osobami odpovědnými za územní plánování ve městě. Třetí část metodiky zahrnuje územně-městskou, sociokulturní a ekologickou analýzu. Analýza případové studie zahrnovala práci v terénu a pozorování současné problematiky. Výsledkem rozsáhlého výzkumu prováděného metodikou je navrhovaný plán. Plán je uveden ve třech různých scénářích budoucího rozvoje v závislosti na zastavěné oblasti. Vytvoření biocentra založené na principech TSES bylo zavedeno do každého z vývojových scénářů. Hlavním závěrem práce je, do jaké míry jsou udržitelný růst a inteligentní rozvoj aplikovatelné v praxi a zdůrazňují význam zachování charakteru míst a krajiny v územním plánování.

Kličová slova: Inteligentní růst, suburbanizace, udržitelný rozvoj, rozrůstání, rezidenční rozvoj

Table of Contents

1. Introduction

The concepts of sustainable development and smart growth are modern concepts that are present in conscious spatial planning. Although it still sounds modern, their existence is linked to the end of the last century. They are relevant in this century because they have entered the legislative framework and must be applied during spatial development. *Sustainable development* is a concept that refers not only to sustainable spatial development but also to social, economic, and environmental.
The concept of smart growth is somewhat more precisely defined, giving concrete guidelines for its application.
Suburbanization is a global issue, which has been occurring since the era of industrialization. The population's tendency to move to the peripheral zone of the city due to the increasing pollution, where the rural landscape is present, but there is proximity to the city. However, this trend has continued to this day, although cities are not a significant pollution source. The population tends to live in a suburban area because life in the city brings a very hectic life.
In response to this issue, the concepts of sustainable development and smart growth have been created. This paper's main task is to determine how these concepts are applied to a practical example—also, determining whether the case study meets some of the aspects of these concepts and implementing them in the future expansion of the town.
Extensive analysis of the case study determined the existing conditions. A vision of the existing town is acquired through spatial-urban, cultural-historical, and environmental analysis. However, the data collected must be compared with the situation present in the field. Problems were observed during the field research, and conclusions were made together with previous analyzes.
In this thesis's research, the persons responsible for decision-making in spatial planning were examined. In some cases, their expert opinions provided guidelines for forming the plan, but they also opened some new questions.
The research's main objective is to find a place for future development, that is, to determine whether expansion is necessary, to what extent, in what direction, and by what principles. The main idea is to examine whether it is possible to carry out development by respecting the above concepts. The town, which represents an already developed settlement, represents a challenge for its expansion and eventual improvement. The town, which is already functioning, finds it difficult to accept the changes. However, it is necessary to find a way to carefully integrate the newly developed zone into the existing town core.

2. Aim and research questions

This thesis's primary aim is to identify a location and a rational solution for future sustainable suburban growth and development. The town of Hostivice, situated to the immediate west of Prague's capital city, was selected as the case study for this research because Prague's rapid urbanization greatly influences the growth and quality of life here. Hostivice has been developing rapidly to accommodate demands for new residential housing for people who work in the greater Prague regional area. Although the town's spatial plan has attempted to identify growth and infill areas, some shortcomings are clearly discernable over time. Thus, this research aims to identify these issues and address them in a future development scenario emphasizing smart growth and sustainable development principles. The assumption is that this town will continue to grow and consume all of the developable lands within its present jurisdictional limits; thus, there is the need for expansion, but where and what form should new growth take? This is the central hypothesis presented in this thesis research.

The thesis contains two main research questions:

First question: Does this town need expansion?

Second question: If so, then which area is ideal for expansion and in what form?

Proposed answers and solutions to these questions will be conducted in this thesis research, based upon a detailed literature review of planning trends in Smart Growth and sustainable land use. The chapter presenting a Methodology will outline the strategy to be used within the Case Study location – Hostivice.
This will include data collection, interviews, and field research. The chapter entitled Results will offer solutions based upon the fieldwork and site analysis coupled with interviews of key decision-makers in Hostivice.
The results of this work will then be critically evaluated in the Discussion chapter and the general observation and emerging questions are presented in the Conclusion chapter

3. Methodology

The methodology of this paper is based on three basic steps. The first step is a review of the literature based on the concepts of Smart Growth, Sustainable Development, as well as suburban development both in the world and in the Czech Republic. The literature review highlights various spatial planning issues, such as legal frameworks, infrastructure, social and economic aspects. The second step involves the research part in the form of interviews with people important for spatial planning in the town of the Hostivice. The last part of the methodology is based on data collection and analysis. The collected data include data obtained from the field in the form of photographs and personal observations. Additionally, ecological, infrastructural, and sociological data were analyzed, presented in the form of maps. The analysis and synthesis of all collected data ultimately bring conclusions necessary to take into account when planning in the future.

The above steps in the methodology provide information that is interrelated and thus provide concrete guidelines for future development.

3.1. Literature review

3.1.1. Sustainable Development

The concept of Sustainable Development has gradually improved its concept throughout history so that today it is the basic guideline for spatial planning. Sustainable development encompasses all aspects of development, such as social, economic, and environmental. The development of the environment also means territorial development, which further establishes a sustainable social and economic system.

The concept of sustainable development have been mentioned presented and debated since the end of the 20th century (Du Pisani, 2006). The authors explain the meaning and importance of this term in different ways. There are many definitions and interpretations of this terminology, and it varies based upon which discipline one explores, from architecture, to planning, to engineering and landscape architecture, etc. One common thread is that it is based upon the characteristics of planning and design as it impacts the human experience, at present and in the future.

Thus, one definition of sustainable development as stated by Tran (2015) is development that strikes a balance between the needs of the present generation and those of future generations (UN,1987).

The concept of sustainable development, according to Hák et al. (2015), was first mentioned in context of environmental concerns in the World Charter for Nature (UN, 1982).

Drastichová and Filzmoser (2019) point out that the concepts of sustainable development arose due to the growing awareness of an imminent environmental crisis. In additional, they explain that the sustainable development is a visionary development paradigm, but it is a fluid concept.

In the paper by Tran (2015), the concept of the urban sustainable development is defined as a process of synergetic integration, interaction, and co-evolution among the economic, social, physical, and environmental subsystems. This principal points toward the making of a city in which the prosperity and population of the city do not decline in the long term, while maintaining a balance with the surrounding areas as well as contributing to reducing the harmful effects on the biosphere.

Urban sustainable planning is comprehensive and addresses the issues and goals in terms of the economy, the environment, the cultural heritage and the socio-economic distribution of costs and benefits (Camagni et al., 1998).

From the legislation framework point of view, sustainable development is the objective of the European Union and is within the primary law. In 2001 the European Union Sustainable Development Strategy was adopted and its external dimension in 2002. Agenda 2030 was adopted by the United Nations in September 2015, which includes 17 Sustainable Development Goals. The set of these goals has given new impetus to global efforts to achieve sustainable development. The European Union is supporting its members to implement the 2030 Agenda. Consequently, EU Sustainable Development Strategy from 2017 was replaced with indicator set of EU Sustainable Development Goals (Drastichová and Filzmoser, 2019).

3.1.2. Smart Growth

The concept of Smart Growth is more oriented explicitly towards urban design and spatial planning in general. It provides specific guidelines for the design of space so that all sustainable development principles are respected. The given guidelines imply urban development that will reduce or eliminate the harmful effects of expanding cities and towns.

The principles of Smart Growth were mentioned in the United States in the 1970s, but the concept began to be implemented on a broad scale only in the last 20 years. Concerns about the negative consequences of the urbanization process, air pollution, high development costs and deteriorating quality of life have contributed to the launch of this concept. Since the founding of the concept, many models have been developed, one of which is based on four concepts: (1) preserving significant amounts of open space and protecting the quality of the environment, (2) redeveloping interior areas and developing sites for fulfillment, (3) removing barriers for urban design innovation in cities and new suburbs, (4) creating a greater sense of community (Lucaciu, 2018)

Smart growth is a concept mainly defined within the European Union's strategic development paper entitled: Europe 2020.

Europe 2020 (2010) has identified three main priorities. The first one is smart growth which implies developing an economy based on knowledge and innovation, afterwards sustainable growth which implies promoting a more resource efficient, greener and more competitive economy, and the last priority is inclusive growth which indicate fostering a high-employment economy delivering social and territorial cohesion (Żelazny, 2017).

According to Wey and Hsu (2014) Smart Growth is a relatively new approach to urban design that deals with environmental issues, housing, and welfare of a

community. However, the feasibility and significance of planning ideas may vary from place to place.

In addition, Underwood et. Al. (2011) points out that Smart Growth seeks to find a balance between the infrastructure needed for population growth and environmental protection.

Li and Ren (2019) point out that the U.S. Environment Protection Agency believes that Smart Growth consists of healthy communities, economic development and jobs, strong neighborhoods, and available transportations, which again points to three main factors - economy, community, and ecology.

From the European or economic-oriented point of view, Smart Growth can be promoted by preserving natural ecosystems and implementing green infrastructure, which increases the attractiveness of areas, encourages the local economy through its potential for non-motorized recreation, connections between parks and open space and where people live and work. The North American approach describes Smart Growth as concept of dense, pedestrian-friendly and transit-friendly development (Artman et. al. 2019).

Urban sprawl and city obstruction have unfortunately become the inevitable development trend in the process of economic growth, yet it need not be repeated over and over again. The expansion of cities and its suburbs is a consequence of the pursuit of better living conditions. The consequence of such a way of spreading leads to low-density land-use patterns. Residents of such sprawling settlements tend to emit more pollution. For that reason, they, search for solutions in an attempt to create a better and more sustainable place to live, play, and walk (Wey and Hsu, 2014).

U.S. Environment Protection Agency (2011) provides a guide to the development of Smart Growth that is based on 10 key principles and benefits the economy, community, environment and public health. The given strategies are: mix land uses; take advantage of compact building design; create a range of housing opportunities and choices; create walkable neighborhoods; foster distinctive, attractive communities with a strong sense of place; preserve open space, farmland, natural beauty, and critical environmental areas; strengthen and direct development towards existing communities; provide a variety of transportation choices; make development decisions predictable, fair, and cost effective; encourage community and stakeholder collaboration in development decisions. This guide was designed to be used by city planners, local energy managers, sustainability directors, local elected officials, regional planning agencies, metropolitan planning organizations, and citizen groups (U.S. Environment Protection Agency, 2011).

The smart growth policy has contributed to solving a number of harmful effects of the sprawl development. Many related planning concepts have evolved following the principles of Smart Growth, such as transit-oriented development and infill development (Deilami and Kamruzzaman, 2017).

Susanti et. al. (2016) explains in their work that land settlement and residential are the most significant factors in shaping the built-up environment. Housing is the significant factor that results in the overall building density of a community. This indicates that housing is consuming land rapidly and in a massive way. Thus, the

consequence is the excessive density of buildings and supporting infrastructure. In developed areas, this must be controlled in order to maintain the quality of life.

In the Feizi et. Al. (2020) paper that, deals with transport as part of Smart Growth, authors state that smart growth strategies provide a solution for improving the sustainability of the transport system, increasing operational efficiency and effectiveness. These strategies also help to collect useful data and create a big data infrastructure for transport management.

Zhang et.al. (2019) describe urban sprawl as a major challenge for planers because it leads to a series of problems, such as environmental pollution, ecological destruction, the deterioration of traffic conditions, the sudden increase of domestic garbage, the lack of per capita resources in the city. Accordingly, it is of practical importance to evaluate the success degree of smart growth plan.

The research, which deals with the economic side of smart growth, conducted from 2000-2017 showed different dynamics in terms of the implementation of smart growth strategies. However, the implementation of smart growth strategies has been shown to be more dynamic in the new EU members, although they had a lower initial level of implementation than in the older members. The survey showed that the implementation of smart growth goals has resulted in higher employment rates and improved human capital, in EU countries, and especially in the new members states (Młynarzewska-Borowiec, 2020).

The concept of Smart Growth has been mentioned in the American lexicon for a number of decades. Many organizations approve of the principles of smart growth, however, the more the term is accepted, the more it loses its specificity and significant content. The notion of smart growth has begun to be used in response to urban problems in different policies, which are not necessarily compatible (Ye et. al., 2005).

The framework for Economical Smart Growth by the US EPA, indicates that many smaller cities and towns have succumbed to the weakening of the economy, due to changes in the economic sector, meaning that the supply of jobs has changed, often send abroad where labor is less expensive. Nevertheless, they provide three strategies that need to be followed if we want smart economic growth, and these are supporting businesses, supporting workers, and supporting quality of life (EPA 231-R-15-003, 2016)

According to the US EPA, in America across the country, the government is looking for ways to create vibrant communities, which attract jobs, encourage economic development and are attractive to people's lives, their jobs and play. These governments are looking for solutions that are cost-effective for the installation and maintenance of infrastructure, for environmental protection and natural resources, and for reducing greenhouse gas emissions. The aim of future development or redevelopment areas is to form a complete neighborhood community, which includes places where residents can walk to work or for services such as shopping, or medical care, where they can have a choice of housing and mode of transportation, where open space is preserved, and where it can be realized climate change mitigation targets (EPA 231-K-09-003, 2009).

Implementing Smart Growth goals cannot guarantee success in all case studies or scenarios, as outlined in the 2020 Sciara paper. Here the author, discusses the problem of inconsistencies between goal setting at the regional level and

implementation at the local level, which then leads to the obstruction of regional efforts to implement Smart Growth (Siara, 2020). As it is stated, the problem that arises is the structural legal inconsistency between regional and local control of land use, as well as poor communication between city planning organizations and state institutions.

3.1.3. Suburbanization (World)

The term suburbanization appears as a definition with the beginning of the emergence of this issue. Understanding suburbanization is key to future development planning. Identification of suburbanization causes and consequences enables their prevention and development to compensate for the shortcomings and problems formed by unplanned construction. Examples of suburbanization generally have the exact nature, but from different examples from both the world and the Czech Republic, their origin matrix can be seen.

Since the dawn of the industrial age and certainly in the post-World War II era, the trend of urban population migration to suburban areas for a perceived better life has continued to be a popular trend in North America and throughout the greater EU. The way of life was oriented so as to build a career, in order to live in the suburbs in the future, and travel to the city for work. Due to this phenomenon, this process was called suburbanization and implies the spatial development of the city outside the administrative boundaries of the city. The criterion for choosing the location of the settlement is the distance, which is between 6 to 20 km, however, an increasingly important criterion is the travel time that does not exceed 15-20 minutes. The influx of urban population and the construction of suburbs may jeopardize the identity of rural areas. As a consequence, there is a change in agricultural activities, and even abandonment of farms. An unplanned method of spatial expansion can increase land fragmentation, and is most pronounced in residential areas. It should be noted that the new inhabitants of the suburbs have a great impact on both the landscape and the environment of these areas. A study conducted in Poland in the suburbs of Lublin found that single-family houses with characteristic plants and infrastructure were dominant, which is different from the primary ones. However, new residents have a number of positive effects on the community, such as a contribution from local taxes, they are often local activists and contribute to the development of local business, and their children also attend local school. In conclusion, it is pointed out that the way in which the suburban area will develop is mostly influenced by the inhabitants, both immigrants and the indigenous population (Stręk et. al. 2019).

Recently, suburbanization and suburbs in continental Europe have undergone changes, which relate to the traditional and modern characteristics of suburbanization. The changes were observed in a greater focus on business and the economy, in addition to the traditional orientation towards housing and residents; the simultaneous existence of suburban patterns occurring within urban areas and urban patterns occurring on the outskirts of suburbs; greater importance is attached to the development of the suburbs, thus gaining a higher status; special forms of governance in suburban community that operate not only within the suburbs, but have the potential to influence the shaping of the entire urban region (Hesse and Siedentop, 2018).

Sustainability shouldn’t be a separate activity in the planning process, but should be an integral component of urban design. As a problem in this paper, it is stated that suburbanization has led to excessive use of motor transport from suburban areas to central urban areas. However, by applying the comprehensive principle of transport-

oriented design (TOD), it is possible to achieve sustainable suburban development. Transit-oriented design provides solutions for mutual development of cities and suburbs, preventing inconsistencies in development. The development of the suburbs, with this concept, opens the way for solving the problems of the fast-growing population, taking into account the reduction of the harmful impact on the environment. TOD implementation areas should integrate combined housing and employment together with the railway station, in order to encourage the use of public transport. In addition, the strategies are based on improving the economy, revitalizing the area and quality of life, enabling people to have a place with medium density, pedestrian-friendly and mixed-use neighborhoods (Shao et. al. 2019).

It has been noticed that the structure of the city is changing inwards towards the outside. The earlier direction of congestion meant that city density occurred right inside the city, however this phenomenon changed its shape at the beginning of this century, with the construction of multifamily residential houses and buildings, including large residential complexes on accessible highway locations, high-end apartments in high-convenience areas and subsidized apartments in less prestigious locations. The change that is occurring is the result of several related factors, such as smart growth policies, demographic change, housing preferences, environmental preferences, construction and land economy. In conclusion, suburbs are generally good places for most people to live, but ways need to be found to make them even better, as a counter-claim that suburbs are unaesthetic and wasteful. In addition, it is incorrect and contrary to market reality that the architectural style is limited to the neo-traditionalist, as well as that suburban expansion is necessarily harmful (Atkinson-Palombo, 2010).

The study dealing with cultural heritage in suburban areas pointed out that the interest in the protection and care of green areas does not meet the interests of cultural heritage protection. During the change in the pattern of the settlement, by investing in modern infrastructure, great changes took place in the field of land use, which had effects on the character of natural and cultural-historical landscapes. Cultural heritage is often coordinated as other land uses, such as recreation and nature conservation. During municipal planning, the management of cultural heritage is often not considered, so it follows that it is necessary to strengthen the interests of cultural heritage within the planning in order to achieve better preservation of cultural monuments and landscapes. Expanding the use of comprehensive planning can be one of the tools to set up more efficient heritage management (Swensen and Jerpåsen, 2008).

The paper, which deals with the issue of the social aspect of suburbanization, points out that the decentralization of the population and intensive consumption of the area is a consequence of living in the suburbs. During spatial planning, great attention is paid to the economic (production-oriented) and ecological (regulatory) functions of the landscape, while the social function is neglected. The social function means cultural, ethical, aesthetic, psychological and recreational functions of the landscape, and one of them is the choice of place of residence in suburban settlements. In addition, there is a lack of analysis of additional landscape functions, to identify conflicts between suburbs and other land uses, such as agriculture, forestry and water management (Wolf and Meyer 2010).

3.1.4. Suburbanization (Czech Republic)

As a consequence of suburbanization, it is increasingly difficult to discern the difference between rural and urban areas in the Czech Republic. The most

significant suburbanization take place in the vicinity of Prague, Brno and Ostrava, in the form of urban clusters. Nevertheless, specific conditions in the Czech Republic have contributed to these clusters growing further even though they are located in close proximity to large urban areas. This phenomenon is typical for the northwestern and southeastern region of the Czech Republic. According to the distance from big cities, the suburbs lose their urban character and acquire a more rural character (Paszto et. al. 2010).

Protecting the value of the landscape and creating and maintaining a local identity is crucial when it comes to suburbanization. The perception of the landscape changes as it transforms from a village, through arable land to a multi-functional space. The research conducted in the suburban village of Podoli in Brno, which is located on the eastern border of the city of Brno, deals with the question of the character of the landscape, whether it is possible to find landscape values in the area that goes through suburbanization and what changes suburbanization causes to certain values. In the past, rural areas were defined exclusively as an instrument for agricultural production, where soil fertility was the most important factor, as well as availability to the field, arable land and machinery. Over time, the perspective has changed in the direction that suburban areas are a mixture of agricultural, residential and tourist functions. Therefore, the aesthetics and attractiveness of the landscape, the diversity and function of the environment have become very important. In addition, the historical aspect and *genius loci* of the local landscape has become increasingly important as society develops. Suburban landscapes are defined as a mixture of commercial, residential, arable land and natural areas, with developed transport and technical infrastructure. The population that migrates from the city together with the natives of these settlements, create and maintain the specific character of the place. The conclusion of the research states that it is necessary to investigate why the suburban landscape is evaluated less positively than the exclusively rural landscape. In the future development of the suburbs, it is necessary to take into account the local identity of the landscape, in order to protect it from globalization (Šťastná et.al. 2018).

The population often migrates from the city to the suburbs in search of a better quality of life, however residential suburbanization can lead to spatial segregation of the population and directly negatively affect the collective quality of life. An article dealing with the socio-demographic issue of quality of life in the context of suburbanization conducted research in the suburbs of Olomouc. Research has shown that the main elements of children's integration are their social events. One of the barriers to social inclusion is the lower percentage of newcomer children in the local primary school, while the demand for preschools is high. Most of the respondents singled out the environment as a relevant factor of quality of life, because they believe that the suburban environment is suitable for raising children and the opportunity to spend time outdoors. Residents who actively participate in the community, positively affect the individual quality of life, while residents who distance themselves from social life, reduce the positive effects of collective life, their quality of life is determined by economic and material factors (Biolek et.al. 2017).

The article whose research is the suburbs of the České Budějovice, points out that the main problems of territorial development are unregulated expansion, inadequate architecture of new houses, poor quality and capacity of technical infrastructure, lack of public transport to the city, insufficient capacity or absence of schools and kindergartens, lack of greenery and loss of agricultural land. The population and spatial size decrease in relation to the distance from the city, so they are classified into three groups: nearby, moderately distant and more distant suburbs. The

beginnings of suburban development in Central and Eastern Europe date back to the 1990s. City dwellers began migrating to villages, small towns and other enclaves in the immediate vicinity of the city. They are mostly building new family suburban houses, which are intended for new immigrant families with children and middle incomes. Due to the described age migration, the population of the suburbs is increasing and rejuvenating, while in the cities the population is decreasing and the elderly dominate (Kubeš and Nováček, 2019).

During suburbanization, the change in the behavior of the inhabitants led to a change in land use, and together with that, the requirements for technical and transport infrastructure also changed. The development of suburban settlements not only affects the development of transport within the suburbs, but also has an effect on the wider environment, as on the roads radially oriented towards the city, the cumulative effect of increasing traffic intensity is observed. The development of commercial and logistical facilities, production facilities, entertainment centers, contributes to the increase of traffic movement tangentially towards the core. The intensity of traffic on the roads in the morning towards the city center has doubled in the last five years, which has contributed to higher energy consumption in traffic. Due to road congestion and slow driving, energy consumption increases significantly compared to the consumption that car manufacturers represent. In conclusion, it is stated that it is necessary to take this factor into account in future spatial planning, because suburban development must be developed in parallel with the construction of traffic infrastructure (Marčev et.al. 2015).

From the metropolitan point of view, once small towns located between rural and urban tissues were characterized as a transit zone and belonged more to the rural than to the urban world. While on the other hand, from a rural point of view, small towns represented developed locations that were seen as urban structures within rural areas. However, over time, this perspective has changed and small towns have gained in importance. The research showed that the most sustainable small towns in the Czech Republic are small towns in the immediate vicinity of Prague, because they show above-average employment in services and the most important business centers. It is also the case that small towns near large city centers are focused on providing only one type of service, and their future depends on the state of this service. Education as a factor, showed that the population with higher education chooses places close to the metropolis, while the level of education decreases with increasing distance from the city (Vaishar et. al. 2016).

Another article investigates how the process of suburbanization affects the migration of the population in the Czech Republic, especially in the vicinity of Prague, Brno and Pilsen. However, a significant consequence of suburbanization is housing construction, which is reflected in the location of housing construction and its intensity. The character of the hinterland of cities has changed during the development of satellite cities with family houses, together with logistics and shopping centers or production facilities. From a social point of view, major changes have been observed in terms of population structure, where the population with secondary and higher education and higher incomes are moving to the suburbs of cities. On the other hand, polarizations have been observed between the local population of the suburbs and the newcomers, which can lead to social conflicts. The solution to this problem could be to involve all residents in local government actions, in order to integrate the population. The negative aspect of suburbanization can be regulated by cooperation between public administration, investors and developers in the future development plans of certain municipalities. In this way, the

attractiveness of municipalities increases and the precondition for the growth of social polarization is limited. When developing new residential areas, no attention is paid to ancillary services, availability of free activities and open public spaces. The municipality is obliged to support the development of construction with high quality public space, taking into account the character of the existing municipality (Šašek et.al. 2019).

Many critics point to the negative features of suburbanization, such as the low quality of housing life, and that suburban expectations may remain unfulfilled. As a consequence, work focusing on the relationship between the quality of the suburban environment, everyday life experiences associated with the suburbs and the tendency to re-urbanize, states that strong immigration of the population from the suburbs to cities is very unlikely and that only a few suburbs will participate in the process. Respondents stated in the research that they are very satisfied with the overall quality of the housing environment and that their expectations have been met. On the other hand, some respondents were satisfied with the quality of housing, but were not satisfied with the availability and quality of preschool and school facilities, public services and open public spaces. Only 20% of respondents stated that they would move from the suburbs, however the reason is not the state of the environment, but personal reasons or life events such as changing jobs or starting a family. The reason for moving is very rarely to go to the city, but the bigger reason is another preference of the type of housing, such as a detached family house. Therefore, it can be concluded that population migrations are more frequent within suburban boundaries than outside or into cities (Špačková et. al. 2016).

The more deeply examined social aspect is explained in the paper dealing with the issue of loss of social cohesion, social anomie and overall deterioration of the social environment, as a consequence of intensive suburbanization. Social cohesion between the indigenous population and the newcomers can be expressed and does not tend to create greater connections than the necessary ones. Social contacts are most often established between groups that have the highest probability of mutual relations, such as kindergartens, schools, and sports facilities. In addition, the integration of the population into local government activities is on the rise. The social network is developing in the core of local communities, but also outside those communities, i.e. outside the municipality. These connections are an opportunity for the suburbs to become more open, active and prosperous areas (Špačková and Ouredníček, 2011).

3.1.5. Specific cases

In the Czech Republic, the suburbanization issue of larger cities, such as Brno and Olomouc, has been researched by many authors. By presenting some of the specific cases, guidelines can be created for spotting problems in other case studies. Specific cases in the Czech Republic are undoubtedly the best examples to show the suburbanization matrix development because the population's culture is slightly similar. Consequently, similar issues and shortcomings arise, which can be easily noticed later when analyzing other cases.

The paper dealing with the change of the rural landscape in the South Moravian Region, analyzes the general characteristics of the development of the landscape of Šlapanice microregion, which is a suburb of the city of Brno. This suburb is naturally suitable for intensive agriculture, as it is today surrounded by large arable land with a minimal share of forest. As a consequence of suburbanization, there was a loss of the characteristic microstructural landscape, where small fields were

dominant. In addition to the aesthetic disturbance of the landscape, there has been a disturbance of the natural environment, such as the cutting of remaining greenery, the opening of fields suitable for erosion by wind and water, the concreting of small streams and the general reduction of biodiversity. New constructions that are not typical for this area, such as houses of the urban type, commercial buildings and technical infrastructure, have disturbed the character of the landscape. The historical structures that are the main feature of this place are rarely visible today, except for some monuments and memorial sites. An important aspect in future expansion is the details of the landscape, which is perceived. A landscape in which details are taken care of has great cultural value, gives a sense of identity and creates community among people, and such a landscape is attractive to tourists. However, these characteristics develop, change and lose during the rivalry between globalization and local identity (Šťastná et.al. 2015).

In the paper focusing on the change of the landscape around Brno, the authors explain that the agglomeration is polarized to the north and south with individual development, with the redistribution of two dominant functions: residential and commercial. Therefore, it is necessary to rationalize land use and balance spatial differences through spatial planning. The dynamics of the development of the surrounding landscape of Brno is less intensive compared to the development and change of the surrounding landscape of Prague. As a result, changes are continuing in terms of housing preference trends, real estate offerings and project design for developers. By retaining tenement houses, the general impact on the structure and functioning of the landscape is reduced, as a consequence of the construction of modern structures. Also, the intensity of landscape changes is much higher within the city center than it is in the suburbs on the outskirts. The biggest factor in changing the landscape around the cities is the reduction of agricultural land, and in the case of Brno, agriculture is reduced as much as the built-up area has increased (Vavrouchová and Toman, 2013).

The work, which deals with the research of the suburban environment of Olomouc, uses mental maps for the study process. Therefore, mental maps are used as a tool to examine the character of the environment, its perception by the local population, as well as their experiences and attitudes towards the place of residence. This type of research provides answers that largely depend on how much time residents spend in their settlements, whether they participate in collective life, what their attitude is towards their place of residence, and whether they use settlement maps. The results indicate that the population is well spatially oriented, ie familiar with the locations of the infrastructure element and public facilities. Although in theory there is a difference between indigenous and immigrant populations, the results of mental maps have shown that there is no geographical separation or social exclusion. In addition, mental maps can serve as a tool for obtaining information about its visual, functional and aesthetic properties, as well as about the respondent himself and his knowledge of the environment. As a conclusion to this method, there are methodological shortcomings such as schematization, incompleteness or distortion, however it offers significant potential for future development of suburban environments (Biolek and Andráško 2015).

3.2. Interviews

It is necessary to consider the expert opinions of experts in spatial planning to find a system for future planning of the expansion of the town of Hostivice. They are of particular importance because they can provide guidelines for planning, current issues both in the field and in the planning process itself. These experts have gained experience that can help overcome the obstacles that arise when designing new spatial plans.

The research part of this paper's used method is interviewing experts in the field of spatial planning. The persons interviewed are Ing. arch. Vladka Kirschner, Ph.D., the opponent of this master thesis and leading responsible planner in Hostivice Ing. arch. Tomáš Koňařík and the person responsible for executing the Strategic Plan for the town of Hostivice, Ing. Petr Návrat. First two respondents are also residents of the town of Hostivice.

Interview - Ing. arch. Vladka Kirschner, Ph.D.

In an interview with Ing. arch. Vladka Kirschner, Ph.D., it was detected that the essential things when planning the future development of the town are the natural landscape and the focus on what should not be done. When it comes to Hostivice, this is primarily referring to the area around the pond. Regarding the lack of certain facilities and services in the town, Ms. Kirschner highlights the elementary school because the capacities are almost complete. Out of personal needs, she also states that it would be excellent to have a sports center with a swimming pool. In terms of transport and communications, it was rated as a very high-quality network. The transport network from Prague to Hostivice is equally strong, as well as within the town.

The only problem in terms of transport within the town is the traffic jam at the primary school when parents bring and take their children out of school by car. When it comes to traffic, it is crucial to mention parking. Therefore, according to the respondent, parking in the town is unnecessary. Even more so, in the town center near the square, the area intended for parking is too large and non-functional. However, it would be desirable to have parking spaces in front of the health center, because unhealthy people cannot walk long distances.

In terms of green and public spaces in the town, the main square in the center is not functional due to the large area. While, children's playgrounds are very used, but not overcrowded with children. The number of children's playgrounds is adequate, as well as their positions in the town.

A well-planned town is also a town where the community functions, and in Hostivice, this is precisely the situation. There are various community activities in the town, and people who have affinities for such activities can participate. There are no apparent differences between the population of the old and the new settlement in terms of communities and housing. New settlements were built in the 1990s, and no differences can be seen in the present time. There are currently no newcomers, and those who are newer do not live here actively but only come on holidays or weekends. The type of housing in Hostivice can be both houses or blocks of flats. Buildings can be planned in the town center near the square, but not more than 4-5

floors, while houses can be planned in other parts of the town and on the outskirts. As planned, it is possible to build a residential block next to Cihlářská Street.

In the end, Ms. Kirschner said that she hoped that Hostivice would not expand because there is no possibility and that it is not necessary. There is no expansion area here due to the railway and the ponds unless built over the ponds. When the future strategic plan for Hostivice 2020-2035 is implemented, it will be seen whether it affects life quality or not.

Interview – Ing. arch. Tomáš Koňařík.

In an interview, Ing. arch. Tomáš Koňařík listed the two most important things we need to focus on in future developments. The first thing is the protection of the environment, i.e., the countryside or the natural landscape. While the second thing, if we are already planning an urban expansion, is to be oriented towards livable urban planning. Such towns encourage socialization. It is necessary to plan towns where people want to live in public spaces.

When it comes to problems in establishing new plans, three main problems arise.

The first problem would be the methodology of the spatial plan itself. In the Czech Republic, space's function is essential, while the spatial approach is neglected. It is a great challenge to find a way to equate these two approaches. Another thing is investors and developers who want to build something that is not approved by the town.

Moreover, the last, third problem is how to present the spatial plan to people. It is necessary to find the best methods, and they are currently dealing with that issue. Also, there are a few people who are interested in the future spatial plan. These are residents and people who have a planning background and developers or investors, which would mean that people are generally interested in what is going on in the town.

The town's present problems are the waste collection system and the filled capacities of the primary school. One of the long-standing problems, which is still present today, is the wastewater treatment plant, which is very expensive. The town is currently buying water from the drinking water association. The question that depends on the town, and it concerns planning, is whether there will be enough material resources to establish a spatial plan.

As a lack of facilities, Mr. Koňařík indicates a commercial center located in the town center, as many people have to travel to Prague to use such facilities. Also, there is a lack of a facility that would be used for multi-purpose cultural events. He reemphasizes that primary school should be planned for the next five years.

Transport and connections within the town and to the town are excellent. Hostivice is best connected to Prague compared to other towns around Prague. There are no major traffic jams in the town itself, except around the primary school, but it is mainly a problem that lasts fifteen minutes and is not of great importance. Parking as part of the traffic infrastructure is not so bad, but the situation is getting worse. In the next

five years, the construction of a parking lot for a residential area must be considered. Currently, the town center is crowded with cars.

Public spaces and green areas are of great importance for the socialization of people. The non-functional parks are located right next to the busy streets, so children's safety is endangered. It is also very noisy, which disturbs the peace of such places. Parks and public spaces are used only as a transit zone, not as a rest zone — moreover, the stream green belt also serves only for fast transit. The town's central square is non-functional due to its size of approximately 3 ha, while the usual, very used squares are less than 1 ha. There are no shops in this square, only two cafes, which does not make it an attractive point for people.

There are several trees in the square that create shade on summer days. However, this square is just a crossroads, and it is noisy and dusty. There are efforts here to make it smaller, more livable, but people do not want to change it.

Suitable types of housing for Hostivice are both houses and buildings, depending on the location. Houses were built 20 years ago, but today it turned out that residential blocks are a cheaper solution.

According to the respondents' personal experience, he is delighted with life in Hostivice, but for many people, it is just a place for a short stay. There should be more people spending their time and money here. People who grew up in Hostivice think that it is good enough, while new generations want to change it.

According to Mr. Koňařík, the expansion of Hostivice will happen, but he hopes to prevent it. The reason for the expansion may be the development of an industrial zone in the northern part of the town, but also a new residential unit.

Hostivice has three significant places where it could develop but not go beyond the borders because there is already enough space within the town. If the town's development is approved, it will probably happen in the direction of Prague, in the area which is no longer use one way of Airport.

Conclusively, Mr. Koňařík points out that future developments should not happen before the next 15 years.

Interview - Ing. Mr Petr Návrat. executor of the Strategic plan of the town of Hostivice 2020 – 2035

In an interview with the person responsible for executing the Strategic Plan for the town of Hostivice, Petr Návrat concluded that any option is possible when it comes to spatial planning; however, it depends exclusively on stakeholders. The decision of what will be done in a particular area depends on the town council and various experts, such as ecologists, urban planners, traffic engineers, geological engineers, agricultural engineers, and other different stakeholders. All influential parties must support any idea of developing a place in order to be confirmed.

However, the strategic plan provides guidelines for the future spatial plan, and, accordingly, it is necessary to stay within the limits of its ultimate objectives.

Mr. Návrat noted that it is essential to maintain development within the existing boundaries in some cases to avoid unplanned scattering. It is necessary to focus on what already exists and has the potential to improve from the inside. Furthermore, when it comes to expansion, one of the principal causes of the development of suburban areas is the increase in population in central cities, such as Prague in this case.

The respondent singled out the goal of a job offer as an example of the significant aims. It is necessary to create facilities that will offer jobs for the population with a high level of education. In this way, such a population, which represents the majority, will remain on the territory of Hostivice and strengthen it economically.

Speaking of transportation, the term mobility is preferred because it does not just concern motor transportation but the mobility of each individual in the town, in all possible forms. The mobility of Hostivice requires to be improved in terms of pedestrian and bicycle traffic.

3.3. Case study

3.3.1. Location

Coordinates: 50°4′53″N 14°15′9″E
Zip code: 253 01
Area: 1449 ha
Elevation: 341m

Hostivice is a town located in Prague-West in the Central Bohemian Region (Figure 3.1). The cadastral area includes Litovice and Hostivice. The municipality of Chernosice has extended powers over this town. The borders of Hostivice are the administrative borders of the city of Prague in the east, the municipalities of Chrášťany and Chýně in the south, Jeneč in the west and Dobrovíz in the north. The total area of the city is 1449 ha, with an altitude of 341m.

According to data from the date 01.01.2019, the Hostivice had 8,546 inhabitants, while 8,788 inhabitants were recorded this year, which indicates a large increase annually. The average age of the population is 39.3 years.

Hostivice is located approximately 15 km away from Prague's center and is connected by public transport, including bus and train. Additionally, the town is established on the Prague - Karlovy Vary highway; hence it is in the transit zone. It is essential to mention Prague Václav Havel Airport's north of the city, which is only 2km away by air.

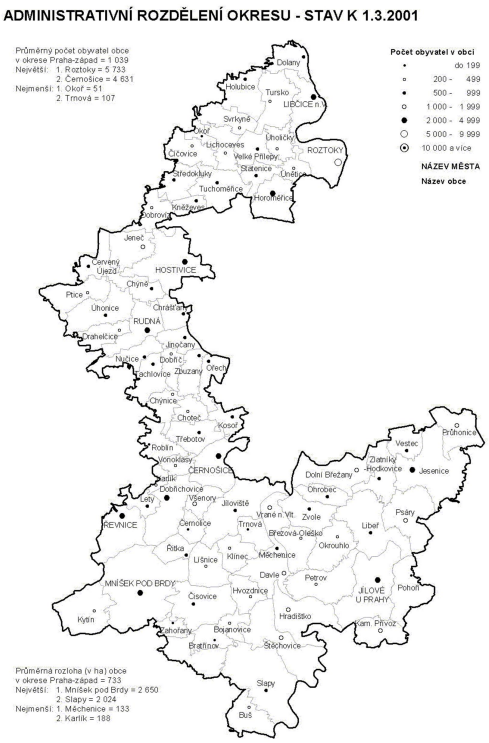


Figure 3.1: Location of Hostivice (https://www.czso.cz/documents/10180/20539605/220m01.gif/a73e7e20-b9ca-43a2-9f6a-ba02dc138e22?version=1.1&t=1429184950644 , 2001)

3.3.2. Demography

According to a demographic study conducted for Hostivice (Mesto Hostivice, ©2018), in 2018, population growth was most pronounced in the years between 2003 and 2017, when the population increased by 70% (Table 3.1). According to the demographic forecast, the population will continue to grow until 2032, increasing by 29%. In 2017, Hostivice had 8241 inhabitants (Table 3.2), while it is expected that by 2032 it will have 10700 inhabitants (Table 3.3).

The majority of the population is younger aged; for instance, there are 75 people aged 65 per 100 children under 15. As a consequence of the above, the study predicted that the primary school's capacities would be filled by 2032.

Besides, the number of older adults will increase in the next few years, which requires the need for social facilities for the elderly. The types of facilities that are considered necessary are nursing homes, homes for the disabled, and homes for people with a particular regime.

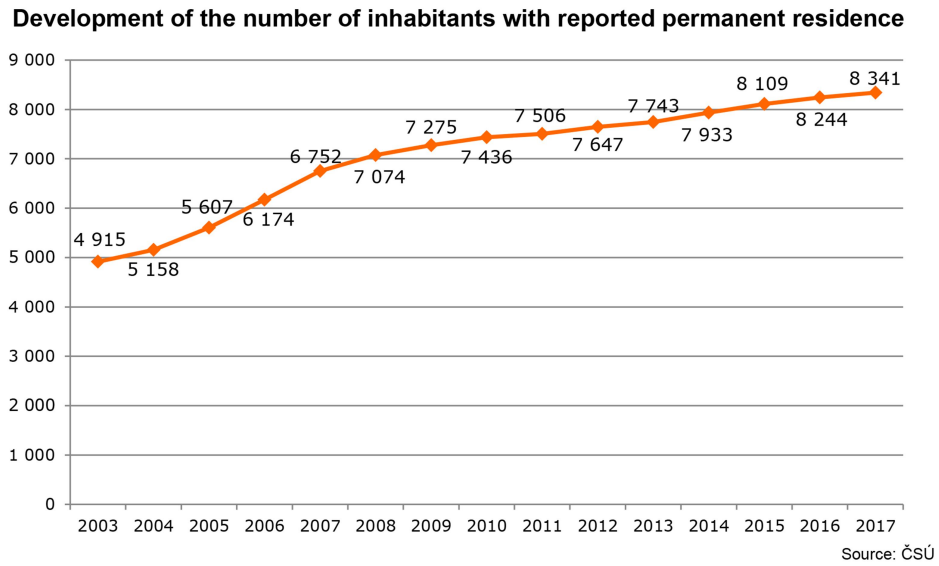


Table 3.1: Development of the number of inhabitants with reported permanent residence in Hostivice (http://www.hostivice.eu/demograficka-studie/d-428272/p1=11013 , 2018)

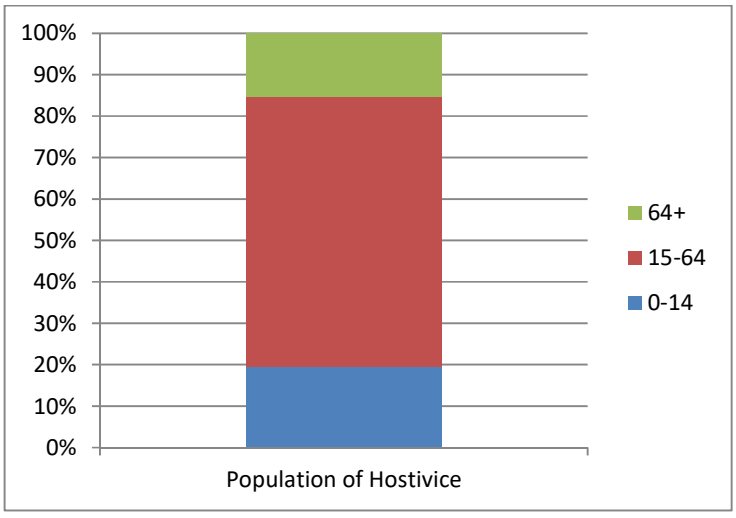


Table 3.2: Percentage share of age groups of Hostivice population (ČSÚ, as of 31 December 2017)

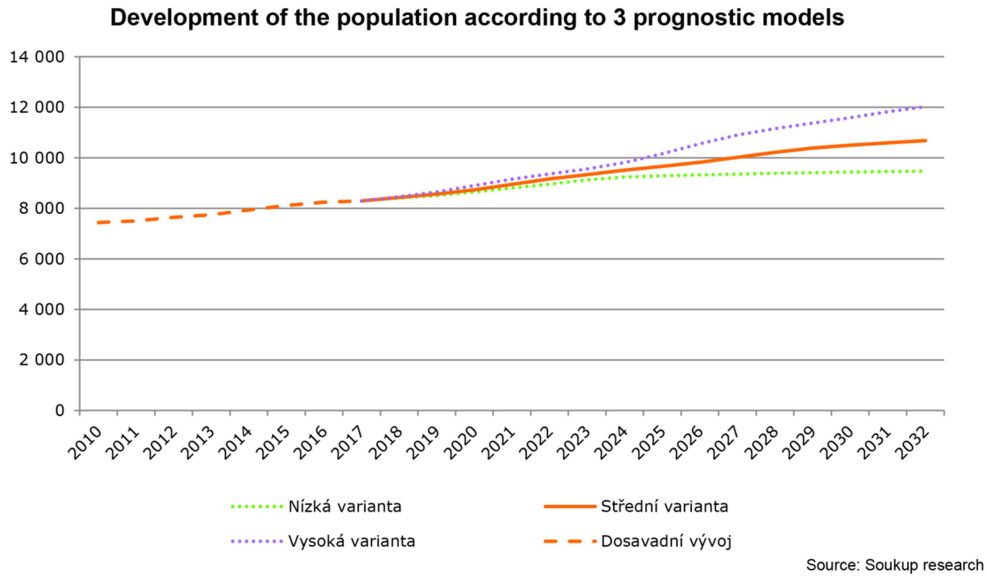


Table 3.3: Development of the population according to three prognostic models(http://www.hostivice.eu/demograficka-studie/d-428272/p1=11013 , 2018)

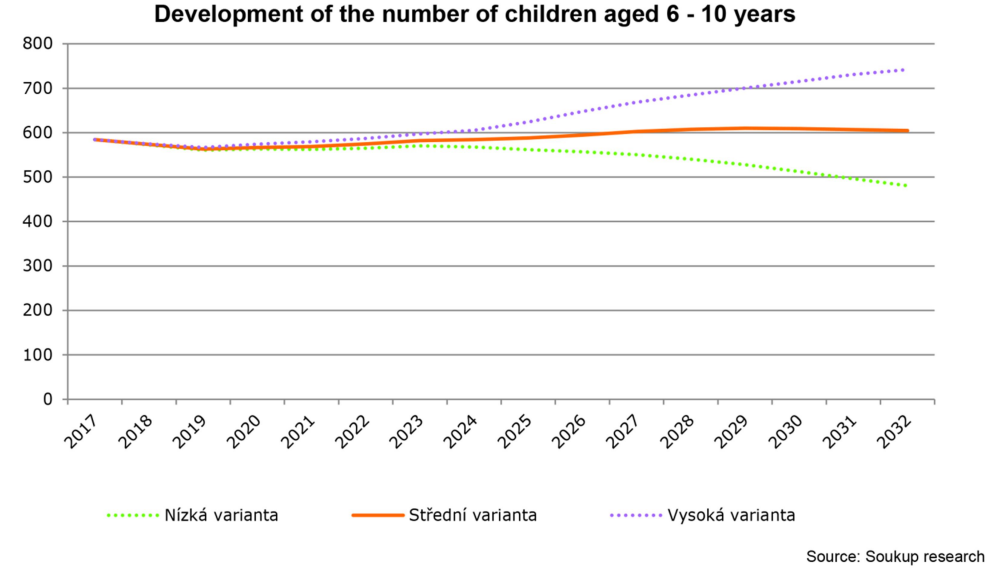


Table 3.4: Development of the number of children aged 6-10 years (http://www.hostivice.eu/demograficka-studie/d-428272/p1=11013 , 2018)

According to the forecast, the number of children in the first primary school grades will not increase significantly until 2025 (Table 3.4). However, an increase is expected after that, with 600 children according to the middle assessment variable.

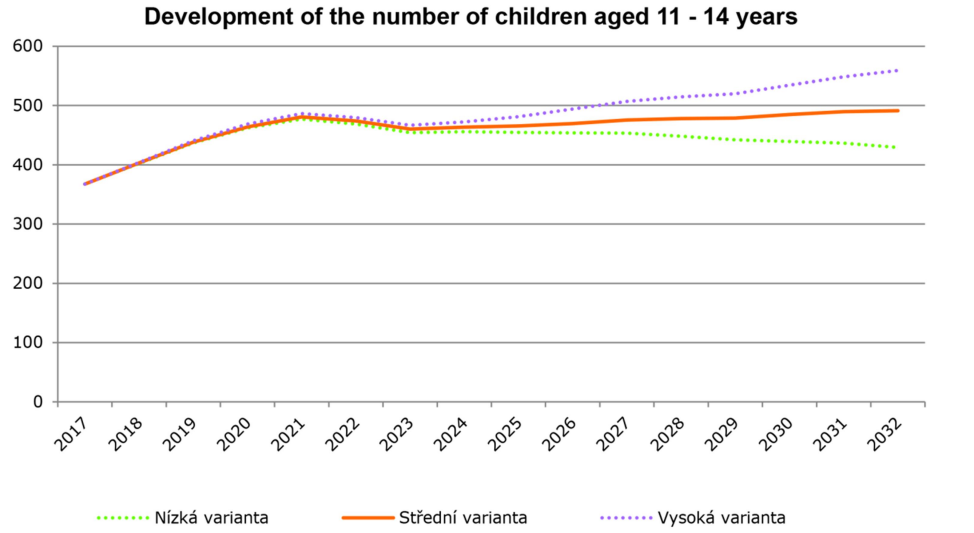


Table 3.5: Development of the number of children aged 11-14 years (http://www.hostivice.eu/demograficka-studie/d-428272/p1=11013 , 2018)

An increase in the number of children aged 11-14 is expected by 2021, after which it stagnates or is in a very slight increase, but will not exceed the number of 500 children (Table 3.5). Furthermore, the number of adolescents will be rapid until 2025, increasing from 340 to about 500 adolescents. Population growth is projected for the 19-23 age group, where the increase will be from 370 to 660 inhabitants by year 2030.

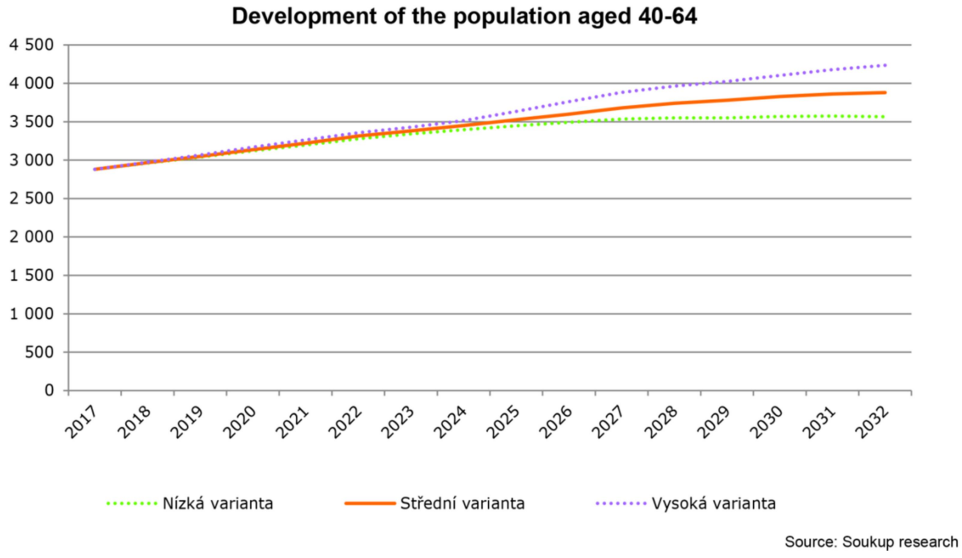


Table 3.6:Development of the population aged 40-64 (http://www.hostivice.eu/demograficka-studie/d-428272/p1=11013 , 2018)

According to the middle variable, the population aged 40-64 will increase by 1,000 inhabitants by year 2032 (Table 3.6).

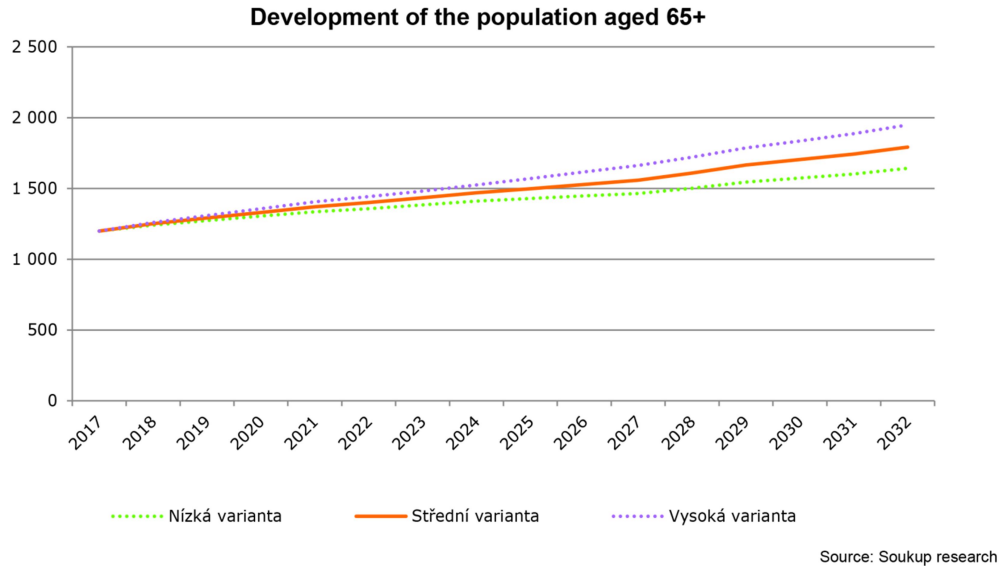


Table 3.7: Development of the population aged 65 plus (http://www.hostivice.eu/demograficka-studie/d-428272/p1=11013 , 2018)

A slightly smaller increase will be recorded in the population over the age of 65 plus, which will increase from 1,200 to 1,800 inhabitants in the next 15 years (Table 3.7).

3.3.2. History

As it state in publication of Hostivice History, Collective 1977 (2014), Hostivice is the third-largest municipality in the district of Prague – West, formed by merging four originally separate settlements: Hostivice, Litovice, Brvu, and Janecka. Initially, the last three were first united into one municipality in 1849, while Hostovice merged to the Litovice on January 1, 1950. The village of Palouky, which is located two kilometers east of the center of Hostoivice, has been developing since 1932 and eventually became part of it (Hostivicka Historie, ©2014).

However, going back much earlier in history, the first documented evidence of man's existence on the territory of today's Hostivice dates from the late Paleolithic era. At that time, the ancestors of today's man, Homo sapiens, lived in this territory based upon fossil data. In this area, they lived by hunting wild animals, such as mammoths, fur rhinos, bears, deer, foxes, rabbits, but they also had knowledge about medicinal and edible plants and crops. They used long-range weapons such as bows and arrows and bolo lassos for hunting. The homes were tents set in the wilderness. Carved flint stone blades dating from this time were found on the territory of today's Hostivice. Even then, in the Neolithic period (five to three thousand years BC), farmers used the advantages of this locality due to the fertile light land that stretches in the area of Hostivice, Litovic, Břvů, and Jenečka (Hostivicka Historie, ©2014).

In order to create fertile land on the site of large stands, man burns forests and plows the land. Farmers sowed crops on land enriched with nutrients from coal and ash, until it became depleted. People then moved to a new forest stand and repeated the process, leaving the previous field to grow into the forest. In the Late

Stone Age, wheat, barley, millet, and legumes were most often grown. Semi-domesticated cattle and sheep grazed in young deciduous forests. The remains of a glazed stone tool in the area of Hostivice testify to the presence of workers, as well as the existence of a Neolithic settlement. The Late Stone Age agricultural population, whose existence depended on fertile land, remained in this area during the Late Stone Age, i.e., the Eneolithic (2500-1800 BC). During this period, the inhabitants merge with the newly arrived agricultural and pastoral population, and together they develop culture and economy (Hostivicka Historie, ©2014).

At the beginning of the Late Stone Age, a new Neolithic Lengyel culture was created with funnel-shaped cups. Subsequently, the population with fluted culture (named by the typical surface decoration), which originates from the Carpathian Basin, penetrates the environment. The mixture of the two cultures resulted in the emergence of the Řivnáči culture in the late Eneolithic, which was named after the highly fortified settlement on the Řivnáči hill. However, at the end of the Late Stone Age, the new pastoral people, with the culture of bell-shaped cups, penetrated this area and exterminated the Řivnáči culture. Due to the unique fertility of the soil, this population is gradually switching to agriculture (Hostivicka Historie, ©2014).

Concerning the previously mentioned facts, which are proof of the population's existence, in the local brickyard in Hostovice, A. Knor discovered a settlement of the population with a culture of funnel-shaped cups through archeological research. Besides, he found inhabited pits and remains of fortifications. These people's settlement was also found on the territory of today's Litovice, on the former Antonín Hakl brickyard site. The owner donated the remains found here in 1968 to the Central Bohemian Museum in Roztoky. The settlement covered an area of about one hectare, and the remains show that people with the culture of funnel-shaped cups and the culture of fluted cups coexisted in this place. Hundreds of potteries were found in these areas, such as jugs, goblets, amphorae, large storage pots, axes, stone tools, spades, scrapers, and blades chipped from flint boulders, tools from animal bones, as well as chisels for their fine processing. Agriculture - pastoral character of the Lithuanian settlement of the people with funnel-shaped cups is evidenced by grain crushers' findings, finds of large storage vessels, bones, teeth, and hooves of cattle, horses, and pigs.
The remains of horns and hooves testify to hunting as an additional source of livelihood. The skeletal graves of the people with the culture of bells were found in 1922 in the former brickyard area in Litovice, and the remains of bowls and buttons made of bones were found at the same place. In Hostivice, within street Kmochově from number 436 - 455, findings of the pit of the settlement Unetic were destroyed during the digging of the sewage system. Also, near Břve, next to the lake in the sandpit, on the site of today's parking lot, during the construction, the remains of the settlement of Young Unetic were disturbed. Not far away, 800 m southeast of the center of Břve, from 1970-1975, evidence of a prehistoric settlement was registered. The archaeological find of pottery testifies to the existence of a funnel-shaped settlement, fluted in the late Stone Age, and the Rivanč settlement with the Unetic culture in the Bronze Age and the Iron Age settlement the Hallstatt, La Tène, and Roman civilizations (Hostivicka Historie, ©2014).

History – name

Litovice
The name of a village or town often speaks of its origin. However, the settlement of Litovice says the most about this region. In the beginning, it should be noted that this whole territory was covered with forest until the beginning of the 14th century. The forest stretched from Strahov through Bílá Hora, all the way to Janeč, Unhošt,

and Křivoklát. At the time, it was a forest inhabited by wild animals, such as wolves and bears. The princes of Přemyslid, and later the kings, used these forests for hunting, but for economic reasons, the forest was turned into agricultural land. A settlement was created, and the inhabitants working here increased the wealth of the country. One of the prominent fighters of the prince of Přemyslid was called Luta. Accordingly, the prince rewarded him by giving him several forest fields in this area to turn them into agricultural fields, settle them and cultivate them. Then Luta brought his warriors and prisoners to cut down the forest, cultivate the land, build a fortress and several huts nearby. Since these were the people of Lut, they were called Lutovici, as the village was built around Lut's fortress. Therefore, the village was also called Lutovice. After the death of Lute and all his heirs, the village was left without a master and became the monarchy's property. The village was called Lutovice in the 13th century, as evidenced by the seal of Budislav, who in 1279 was named the Latin Gregorius de Lutowiz (Hostivicka Historie, ©2014).

Jeneček

The situation was similar to the Jeneček settlement. In the last century, it was called Small Jeneč. It was named after the first owner, also a member of the princely retinue, named Jenec or Jenek, which at that time was a diminutive of the name Jan. The first written evidence about Jeneč dates back to 1115, when a Tešík owned it, probably from the Jenců family. But in fact, the first evidence comes from a much later time (Hostivicka Historie, ©2014).

Břvů

The name of the settlement Břvů tells us nothing more about the beginning of the village's formation, except that the name suggests that it is a wetland area, with which the inhabitants had great difficulties. As a result, they used footbridges moving through the village, i.e., logs (břevna = břvů = log). Around 1184, in Friedrichov's collection Codex diplomaticus et epistolaris regni Bohemiae, the village is mentioned in Latin Prouwech. Ten years later, the village Bruwich is the property of the monastery of Waldsaští. Some historians believe that these names are priestly distorted of today's name Břvů. However, all these are speculations about which historians are arguing (Hostivicka Historie, ©2014).

Hostivice

As for the name Hostivice, there are many theories, but none are firmly proven. The chronicler Václava Hájka believes that the founder is Hostivit, the famous prince of Přemyslid. On the other hand, the name may come from some Hostivítovi or Hostivicovi, also a member of the monarch's entourage, who built the fortress and the church. Another theory is based on a document issued by King Přemysl Otakar II, and it is related to the neighboring village of Řepy. Nevertheless, the paper mentions that innkeepers (Czech - hostivici) who lived in this territory and the village of Řepy, came to hunt in this area and handed over the prey in Prague Castle. Another document from 1309 mentions the sum Hostivec, after which Hostivice could be named (Hostivicka Historie, ©2014).

The following table (Table 3.8) provides the actual events important in the history of the town of Hostivice.

perhaps 1158	the first written mention of Břvích
1266	the first written mention of Litovice
1277	the first written mention of Hostivice
around 1335	Bishop Jan IV of Prague from Dražice built the Litovice fortress
1344	the first written mention of Malý Jenč (Jenečka) – Small Janeč

around 1640	all the villages forming the present Hostivice became part of the Červený újezd estate
1702	Count Breda united all the villages forming Hostivice and other villages into the Tachlovice estate
1732–1741	Hostivice was owned by Anna Marie Františka Toskánská, who significantly changed the appearance of the square
1830	a horse drawn railway from Prague to Kladno was built via Hostivice
1849	Litovice, Břve and Malý Jenč (Jeneček) merged into one political community
1874	a military powder room was built in the area of the current Ruzyně airport
1889	Hostivít Readers' Support Association is founded
1890	The Volunteer Fire Brigade in Hostivice is founded
1892	Sokol Gymnastics Unit in Hostivice was founded
1899	Staňek's screw factory (now Jaga N.V.) became the first industrial plant in Hostivice
1906	a school was built in Komenského street
1922	Sokolovna opened
1927	The Workers' House is opened
around 1930	a swimming pool was built from Břevský rybník
1950	Hostivice and Litovice (formerly connected villages Litovice, Břve, and Jeneček) merged into one village
1978	on January 1, Hostivice is promoted to a town

Table 3.8: Historical timeline

According to a map from 1840 (Figure 3.2), the core of Hostivice may have existed at that time. The core consists of a specific architectural structure Hostivice Chateau, a square, and a settlement that spreads mainly to the north. It can also be seen that the Litovicky stream played a vital role in irrigating agriculture.

Figure 3.2: Map of Hostivice, from 1840 (https://ags.cuzk.cz/archiv/openmap.html?typ=cioc&idrastru=B2_a_6C_2251-1_4 , 1840)

According to the map from 1850, it can be seen that the transport infrastructure is developed towards Prague and the western direction (Figure 3.3). This map shows that the core of Hostivice retained its shape but grows along the Janečky stream. A similar architectural structure to Hostivice chateau can be seen in Litovice and settlement development (Figure 3.4). In the area of Brvu, two lakes can be seen, which still exist today.

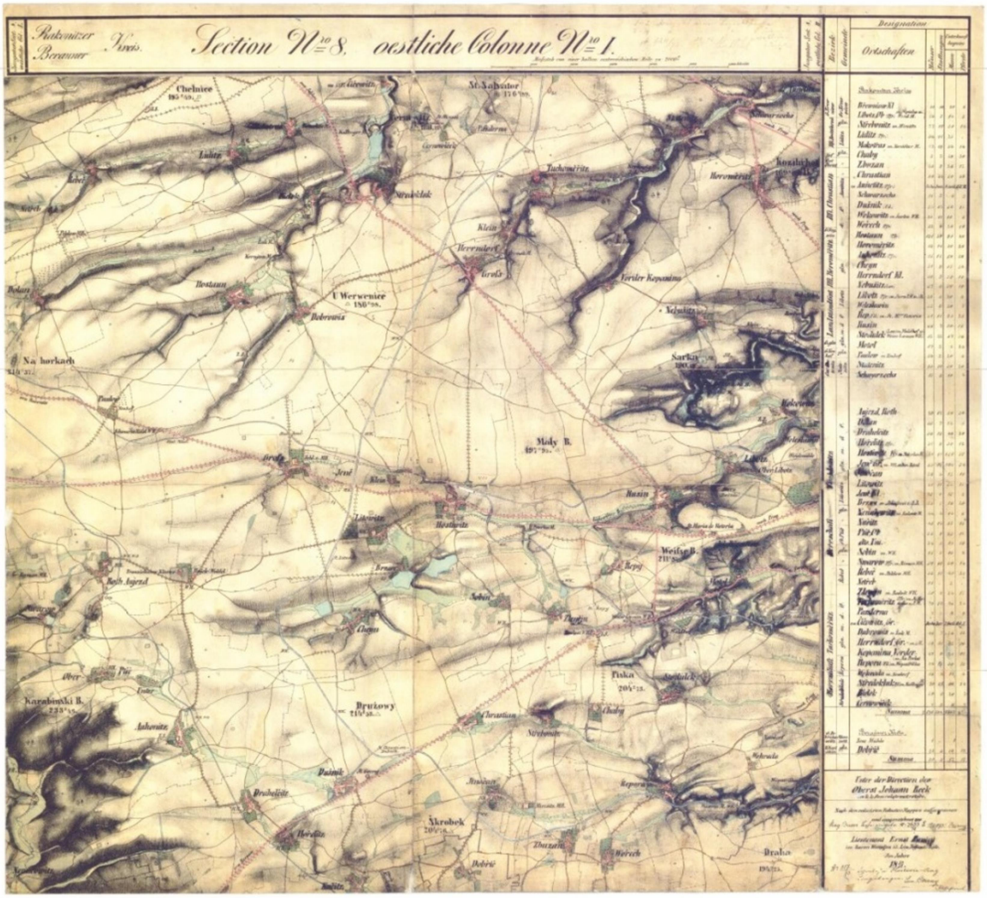


Figure 3.3: Map of Hostivice, from 1850 (http://oldmaps.geolab.cz/map_viewer.pl?lang=cs&map_root=2vm&map_region=ce&map_list=O_8_I , 1850)

Figure 3.4: Map of Hostivice, from 1850 (http://oldmaps.geolab.cz/map_viewer.pl?lang=cs&map_root=2vm&map_region=ce&map_list=O_8_I , 1850)

According to the map of 1878, it can be seen that the transport infrastructure was far developed in the next 20 years (Figure 3.5). The main roads and the railway that exist today have been marked. Significant development of the settlements of Hostivice, Litovice, and Brvu is not observed significantly (Figure 3.6).

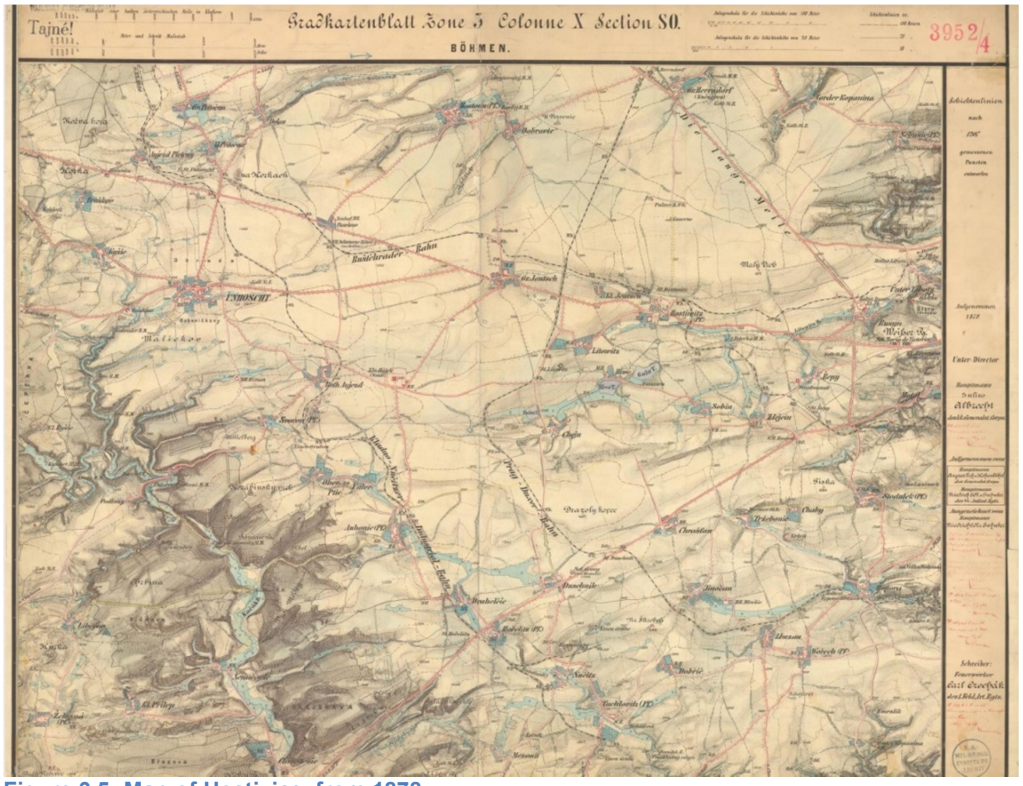


Figure 3.5: Map of Hostivice, from 1878 (http://oldmaps.geolab.cz/map_viewer.pl?lang=en&map_root=3vm&map_region=25&map_list=3952_4 , 1878)

Figure 3.6: Map of Hostivice, from 1878 (http://oldmaps.geolab.cz/map_viewer.pl?lang=en&map_root=3vm&map_region=25&map_list=3952_4 , 1878)

According to the 1964 map, the ratio of green areas can be seen on a larger scale. Going towards Prague, the degree of greenery decreases, while there are large areas under forest in the east (Figure 3.7). One hundred years later, one can see the significant development of the settlement of Hostivice to the east and west and along the main roads (Figure 3.8). The growth of Litovice also took place towards Hostivice, so that these two settlements merged. Litovice's development also takes place to the south, towards Brvu. It is essential that pond Kala already has a drawn green area in its surroundings. The element located in the middle of arable land in Litovice is present on this map and the previous ones from 1850 and 1878.

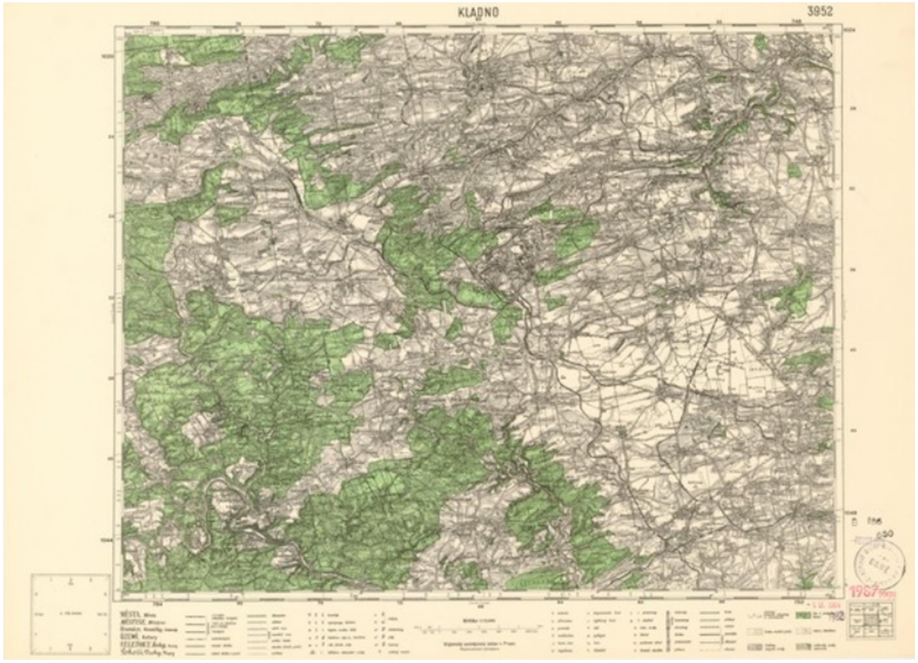


Figure 3.7: Map of Hostivice, from 1964 (http://oldmaps.geolab.cz/map_viewer.pl?lang=cs&map_root=3vm&map_region=75&map_list=3952 , 1964)

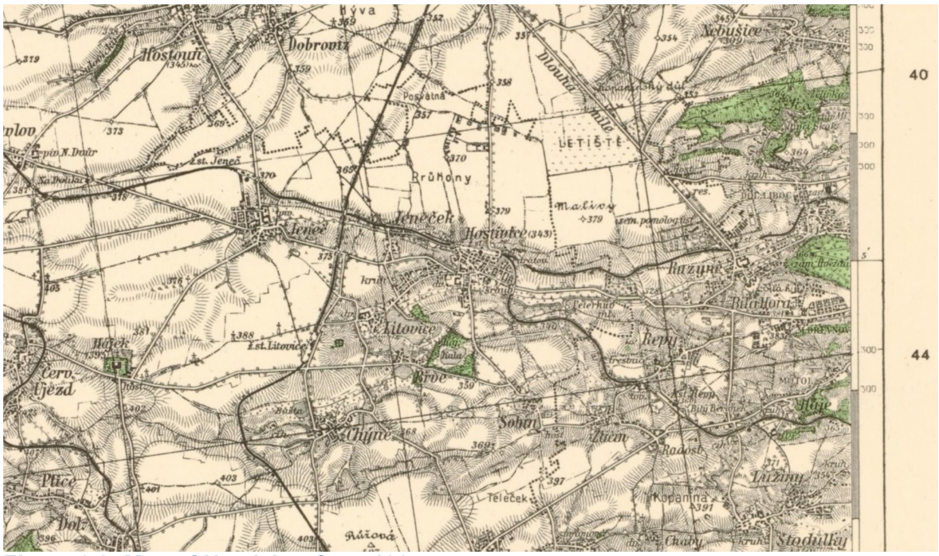


Figure 3.8: Map of Hostivice, from 1964 (http://oldmaps.geolab.cz/map_viewer.pl?lang=cs&map_root=3vm&map_region=75&map_list=3952 , 1964)

Summary of History of Hostivice

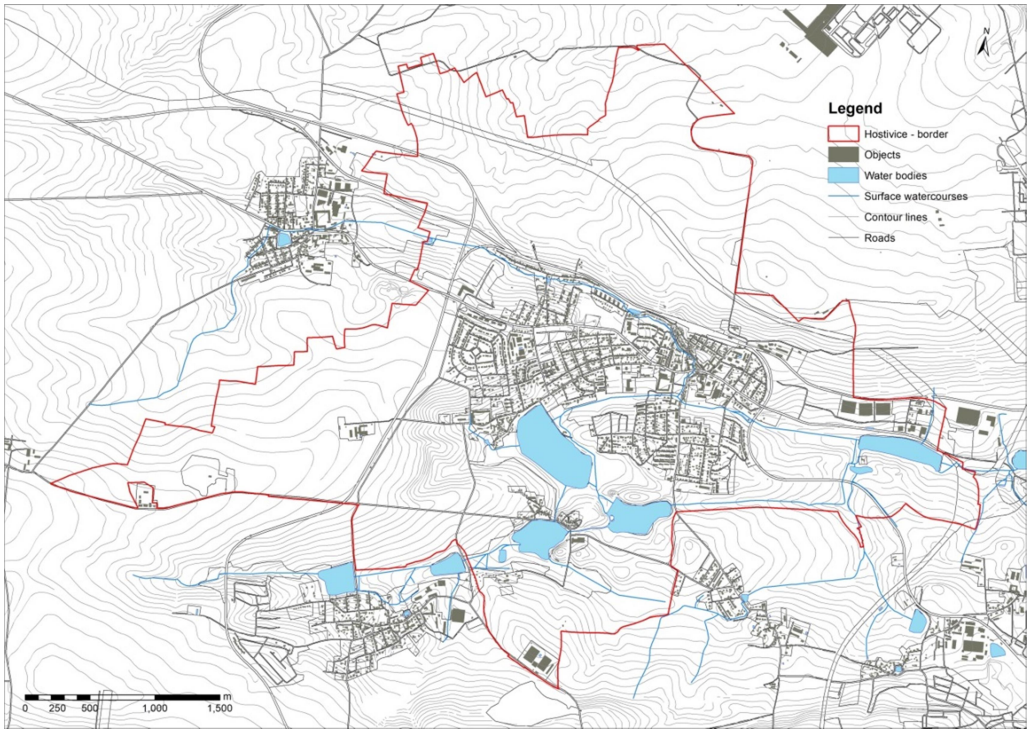
Hostivice is located on the western outskirts of Prague in the district of Prague-West. The current appearance of the city was created by merging and growing four originally separate villages. Each of these villages initially had a completely different development. The first document about Hostivice comes from the year 1277. The village was probably established by relocating the inhabitants from the suburbs of Prague Castle, which Přemysl Otakar II evicted during Prague's Malé strany's construction. At the time of colonization, a forest called Hostivec grew in the Hostivice area, which the evicted burghers transformed into fields. The village consisted of several courtyards of Prague citizens and the stone church of St. Jakuba. In the 16th century, the individual farms gradually merged into larger units, and probably in 1601, Hostivice was acquired by the regional governor Gothard Florián Žďárský from Žďár. The first mention of Litovice appears in a document from 1266, where Řehník z Litovice is named. From the beginning, Litovice developed as a serf village dependent on the owners of the fortress. Among the more important families, the lords of Dražice are mentioned, which included Řehník, the lords of Jenštejn, the Litovské of Svinař, the family Rtín and the burgher family Prunarů. After the Battle of Bílá Hora, Litovice was confiscated and after several trading, around 1640, it became the property of the Counts of Žďár.

During the 19th and 20th centuries, the administrative organization of municipalities also changed. In 1849, the villages of Litovice, Břve, and Jeneček merged into a common municipality with a single leadership, and on January 1, 1950, a single municipality was established from Hostivice and Litovice. To mark the 700th anniversary, Hostivice was promoted to a town with effect from January 1, 1978 (Hostivicka Historie, ©2017).

3.3.3. Terrain

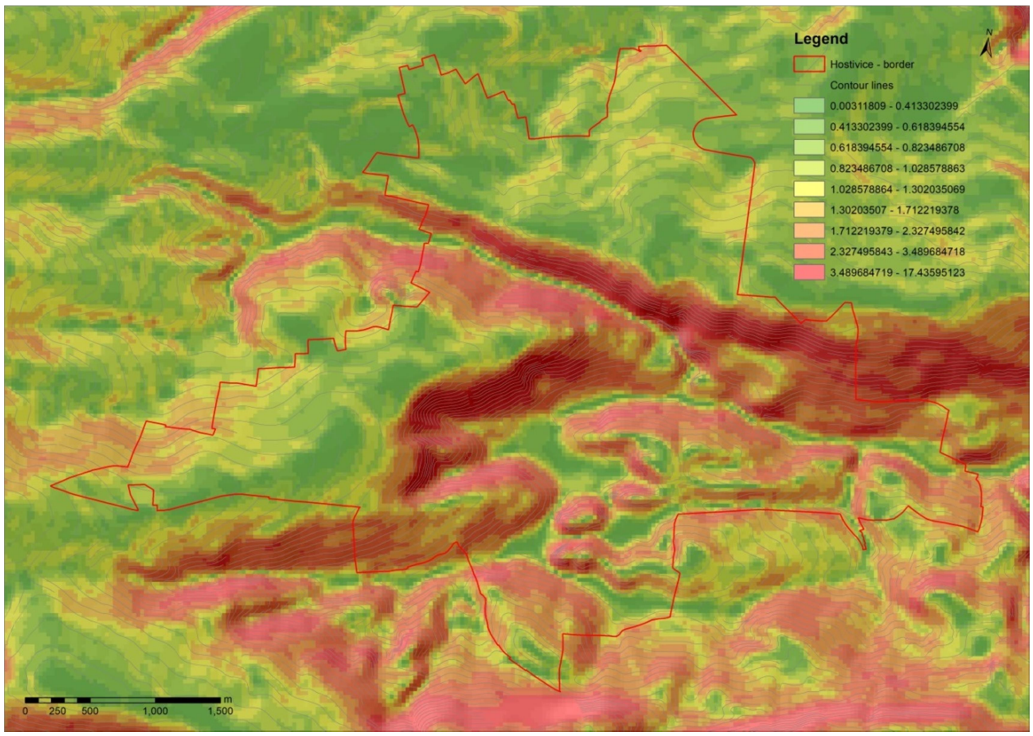
To understand the terrain of the Hostivice area and beyond, contour lines (Figure 3.9), slope (Figure 3.10), aspect (Figure 3.11), and 3D model (Figure 3.12) were used. The most significant slopes were observed along the northern bank of the Janečky stream, and a slightly smaller slope follows the southern bank, which can be seen on the maps of contour lines (Figure 3.9), slopes (Figure 3.10), and 3D model (Figure 3.12). Another significant slope of the terrain occurs in the area of Litovice and decreases towards Hostivce ponds. The first described slope follows the south to south-west exposure, and the other slope follows the south-east to east exposure. The rest of the terrain, which is primarily flat, has a northern to north-eastern exposure (Figure 3.11).

)



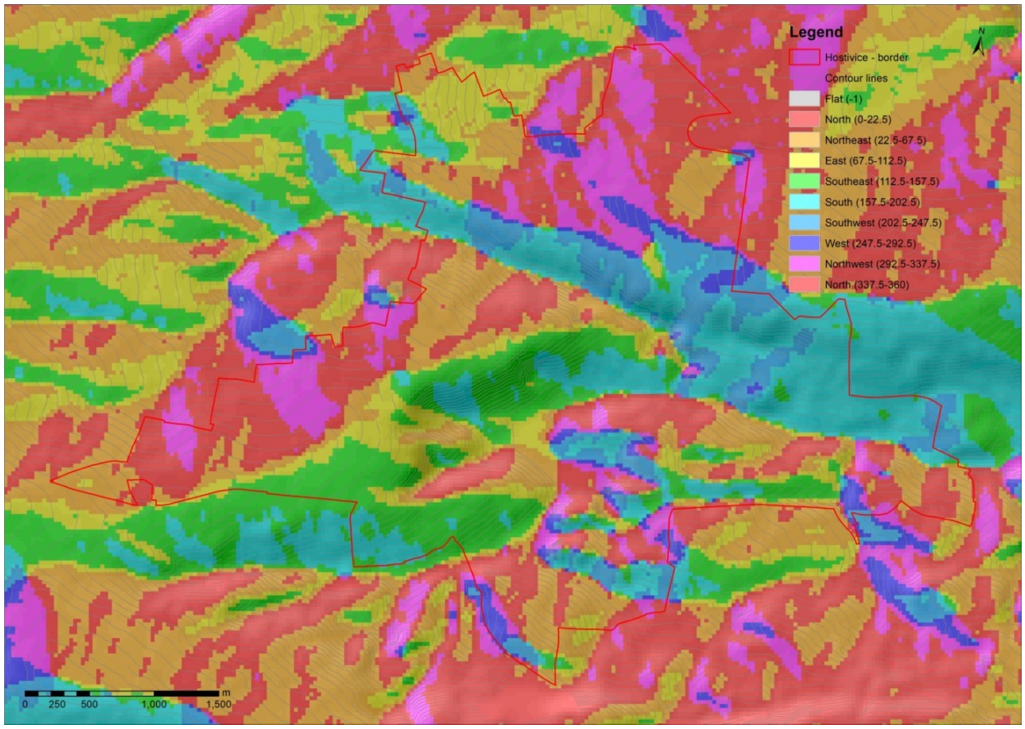
Appendix 3-1: Contour lines (Public, 2020)

Figure 3.9: Contour lines (Public, 2020)



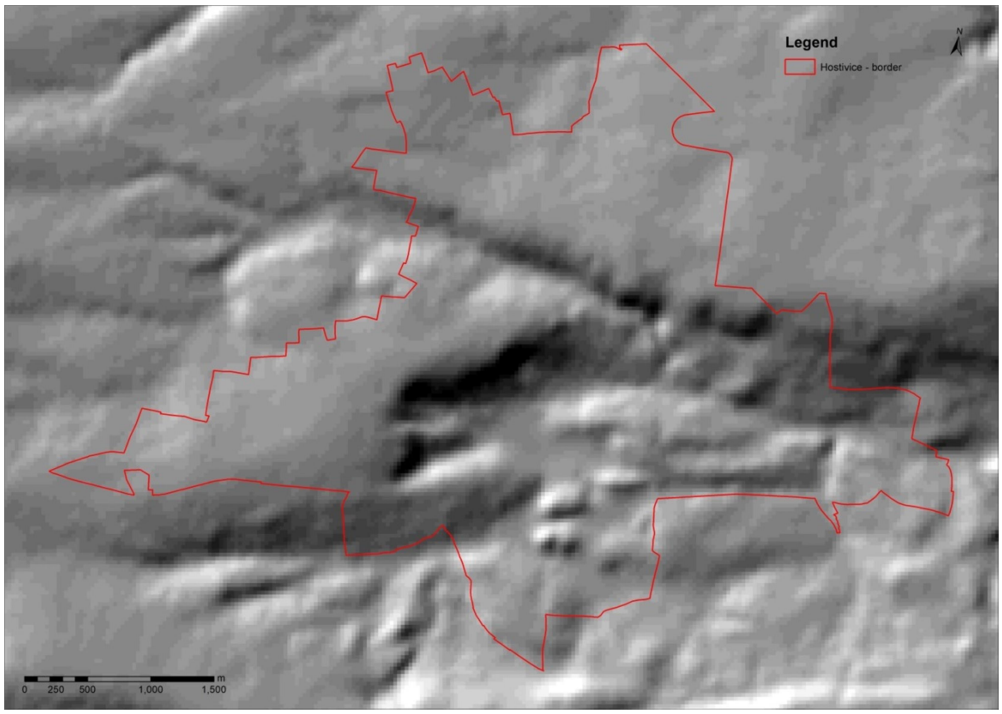
Appendix 3-2: Slope map (Public, 2020)

Figure 3.10: Slope (Public, 2020)



Appendix 3-3: Aspect map (Public, 2020)

Figure 3.11: Aspect map (Public, 2020)

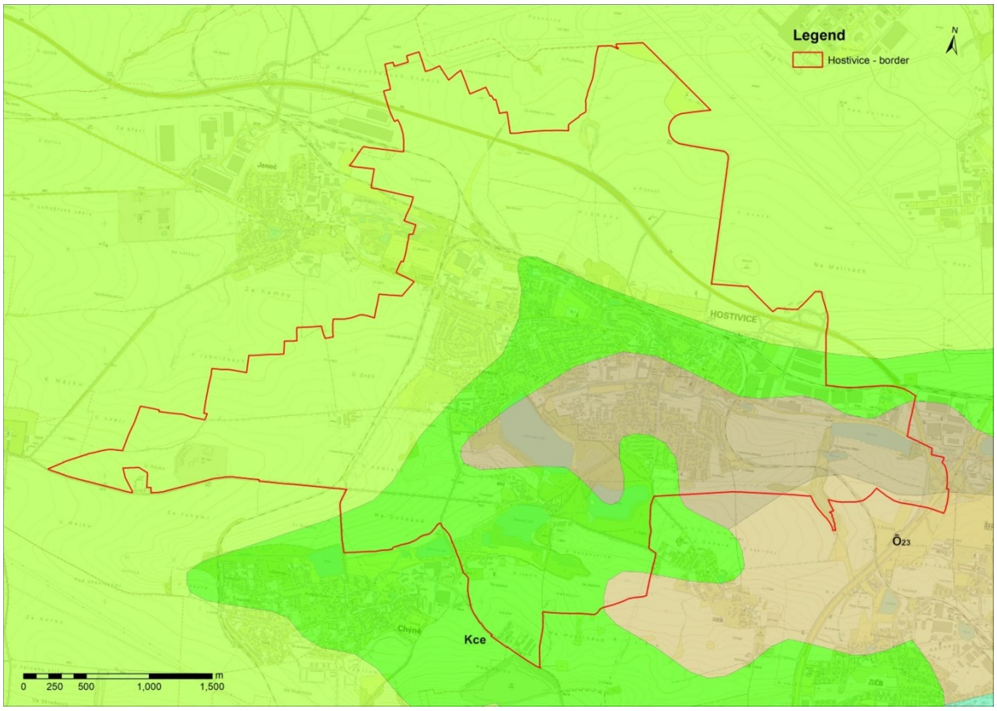


Appendix 3-4:3D model map (Public, 2020)

Figure 3.12: 3D model map (Public, 2020)

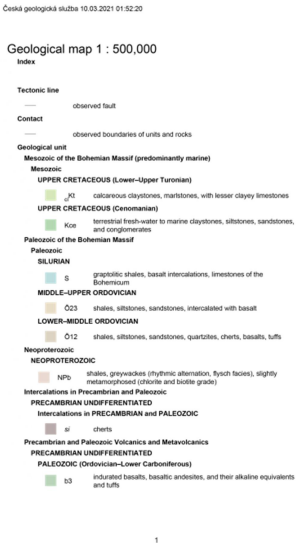
3.3.4. Geology

On the territory of the administrative area of Hostivice, there are four geological units according to the geological map, scale 1: 500 000 (Figure 3.13, Figure 3.14): 1. calcareous claystone, marlstones, with lesser clayey limestones; 2. terrestrial fresh-water to marine claystone, siltstones, sandstones, and conglomerates; 3. shales, siltstones, sandstones, quartzites, cherts, basalts, tuffs; 4. shales, siltstones, sandstones, intercalated with basalt.



Appendix 3-5: Geological map, scale 1:500 000 (https://mapy.geology.cz/geological_map500/?locale=en, 2020)

Figure 3.13: Geological map, scale 1:500 000 (https://mapy.geology.cz/geological_map500/?locale=en, 2020)


Česká geologická služba 10.03.2021 01:52:20

Geological map 1 : 500,000

Index

Tectonic line
observed fault

Contact
observed boundaries of units and rocks

Geological unit
Mesozoic of the Bohemian Massif (predominantly marine)
Mesozoic
UPPER CRETACEOUS (Lower–Upper Turonian)
Kt calcareous claystones, marlstones, with lesser clayey limestones
UPPER CRETACEOUS (Cenomanian)
Kce terrestrial fresh-water to marine claystones, siltstones, sandstones, and conglomerates
Paleozoic of the Bohemian Massif
Paleozoic
SILURIAN
S graptolitic shales, basalt intercalations, limestones of the Bohemicum
MIDDLE–UPPER ORDOVICIAN
Ö23 shales, siltstones, sandstones, intercalated with basalt
LOWER–MIDDLE ORDOVICIAN
Ö12 shales, siltstones, sandstones, quartzites, cherts, basalts, tuffs
Neoproterozoic
NEOPROTEROZOIC
NPb shales, greywackes (rhythmic alternation, flysch facies), slightly metamorphosed (chlorite and biotite grade)
Intercalations in Precambrian and Paleozoic
PRECAMBRIAN UNDIFFERENTIATED
Intercalations in PRECAMBRIAN and PALEOZOIC
si cherts
Precambrian and Paleozoic Volcanics and Metavolcanics
PRECAMBRIAN UNDIFFERENTIATED
PALEOZOIC (Ordovician–Lower Carboniferous)
b3 indurated basalts, basaltic andesites, and their alkaline equivalents and tuffs

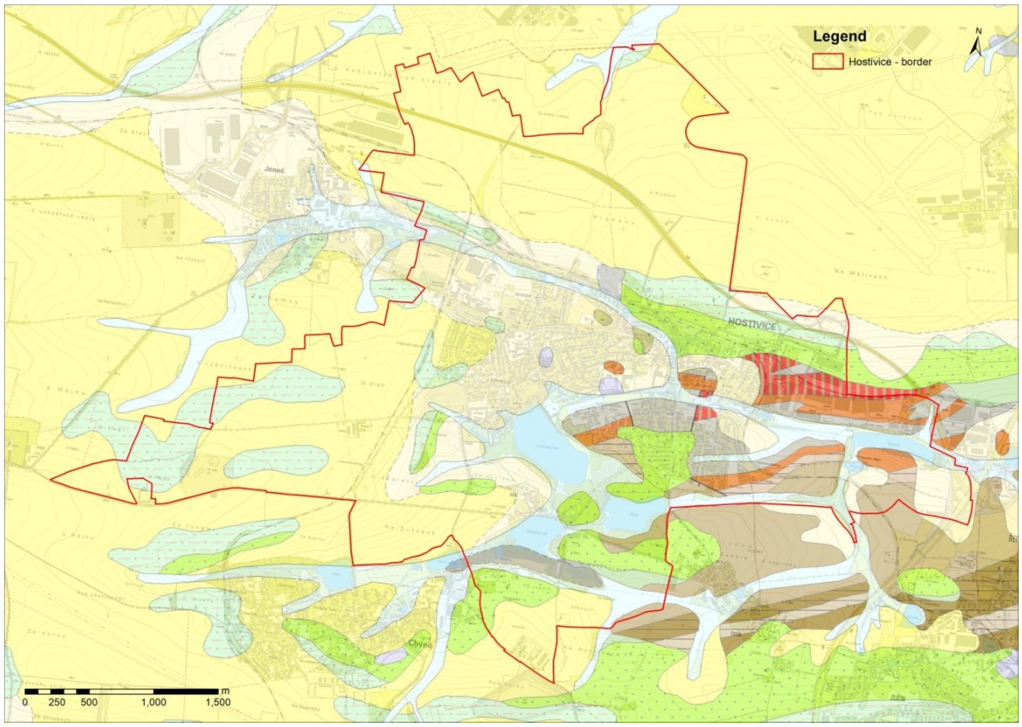
1

Figure 3.14: Legend - Geological map, scale 1:500 000 (https://mapy.geology.cz/geological_map500/?locale=en,2020)

According to the geological map of the Czech Republic, the scale of 1: 50 000 (Figure 3.15), it can be seen that there is a greater diversity of geological units on the territory of Hostivice, while on the region of Litovice, the geological base is less diverse.

The most common rocks are eluvial-diluvial sediments, alluvial sediment, and loess and loess clay. With a smaller share occur: clay-slate; quartz, clayey, glauconitic sandstones; sandy siltstones to spongilitic claystones, silicified in places (marls); black slate, iron ore; quartz sandstone; alternation of offal, sandstones, siltstones, and clayey shales.

Due to the hydrological characteristics in this area, the alluvial plain extends along with the territory of Hostivice. Consequently, due to flooding, eluvial-diluvial sediments were formed, which contributed to the soil's fertility.

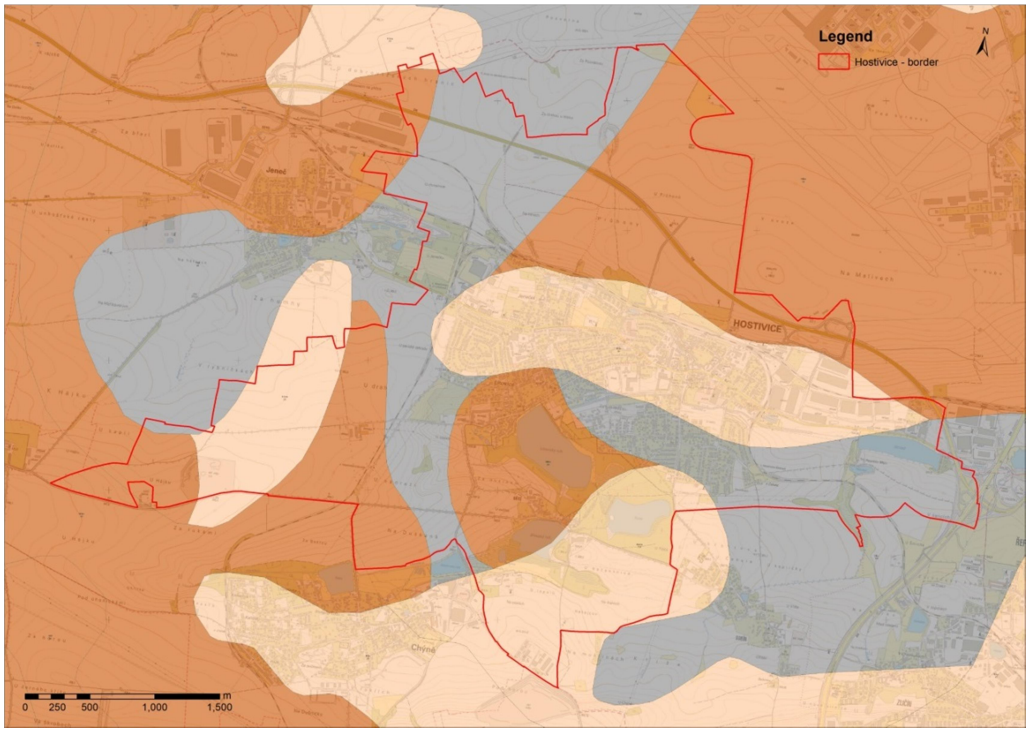


Appendix 3-6: Geological map, scale 1: 50 000 (https://mapy.geology.cz/geological_map500/?locale=en, 2020)

Figure 3.15: Geological map, scale 1:50 000 (https://mapy.geology.cz/geological_map500/?locale=en, 2020)

3.3.5. Soil

According to the Czech Republic's soil map, the scale of 1: 250 000 (classification according to TKSP and WRB), in the administrative area of Hostivice, there are three types of land: cambisol, luvisol, and chernozems.



Appendix 3-7: Soil map, scale 1:250 000 (https://geoportal.gov.cz/web/guest/map?permalink=f8484334e294ff8119dd3e86f6aa8206 , 2020)

Figure 3.16: Soil map, scale 1:250 000 (https://geoportal.gov.cz/web/guest/map?permalink=f8484334e294ff8119dd3e86f6aa8206 , 2020)

Cambisol*:*

Connotation: Soils with at least beginning differentiation of the subsurface horizon, which is evident from the change in structure, color, clay content, or carbonate content.
Soil-forming substrate: Medium-grained and fine-grained material originating from a diverse range of rocks.
Profile development: Cambisols are characterized by mild to moderate weathering of the parent substrate and the absence of significant amounts of illuvial clay, organic matter, aluminum, and/or iron components. Cambisols also include soils that lack one or more diagnostic features for other reference soil groups, including heavily weathered soils.
Environment: flat to the mountainous terrain in all climatic conditions; a wide range of plant communities (FAO United Nations, ©2014).

Luvisol:

Connotation: Soils with pedogenetic differentiation of clay (especially translocation of clay) between topsoil with lower and subsoil with higher clay content with high activity and high saturation with basic cations at a certain depth.

Soil-forming substrate: A wide range of unconsolidated materials, including glacial sediments and aeolian, alluvial and colluvial deposits.
Environment: most common in flat or slightly sloping areas in the cold temperate zone and in warm areas with distinct dry and humid periods.
Profile development: Pedogenetic differentiation of clay content, with lower content in topsoil and higher content in subsoil without noticeable leaching of basic cations or advanced weathering of clays with high activity. The loss of iron oxides together with clay minerals can lead to the formation of a bleached eluvial horizon between the surface horizon and the argic subsurface horizon, but Luvisols do not exhibit the properties of Retisols (FAO United Nations, ©2014).

Chernozem:

Connotation: Blackened soils rich in organic matter.
Soil-forming substrate: Mostly aeolian and reworked aeolian sediments (loess).
Environment: Areas with hot summers and cold winters, where there is drought at least in late summer; in flat to undulating plains with highly - stalked vegetation (or deciduous forests, especially in the northern transitional zone).
Profile development: Blackened surface chernic horizon, in many cases overlapping cambic or argic horizon, with secondary carbonates (petrocalcic properties or calcic horizons) in the subsoil (FAO United Nations, ©2014).

3.3.6. Land quality

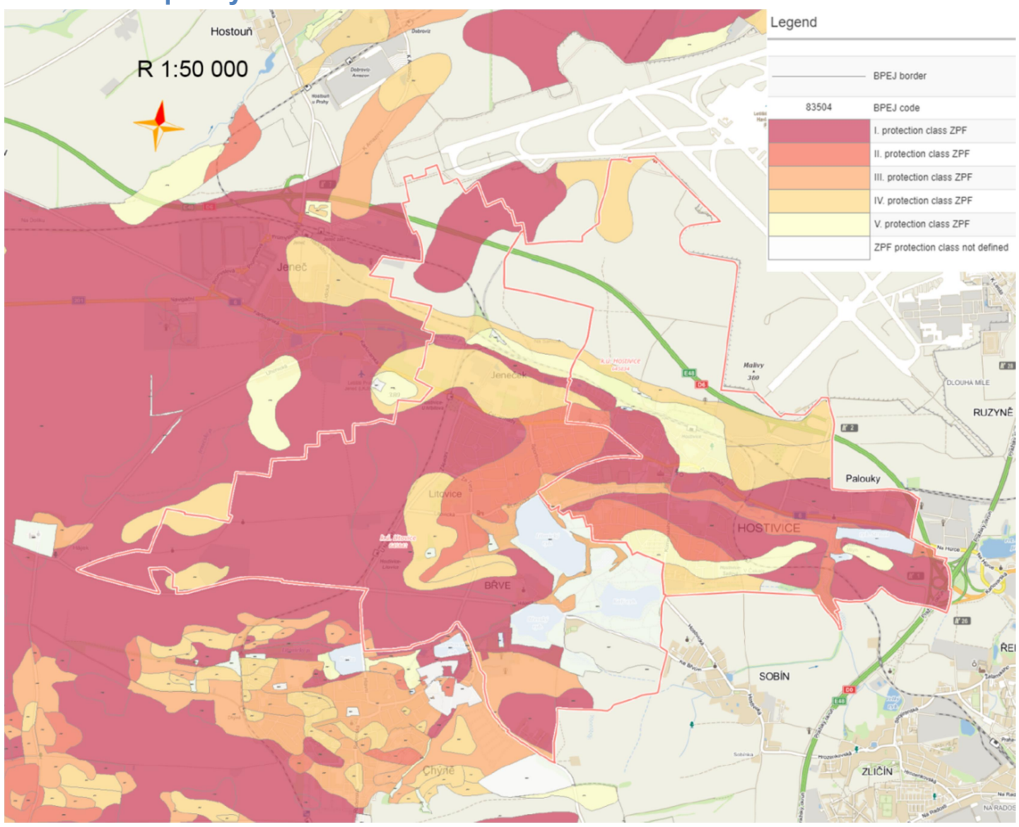


Figure 3.17: Map of land quality according to BPEJ classification, scale 1:50 000 (https://hostivice.gepro.cz/#/ ,2021)

For spatial planning, it is crucial to consider land quality, especially concerning the suitability of land for agriculture. Therefore, BPEJ classification was used (rated soil-ecological units). The rated soil-ecological unit is a five-digit numerical code related

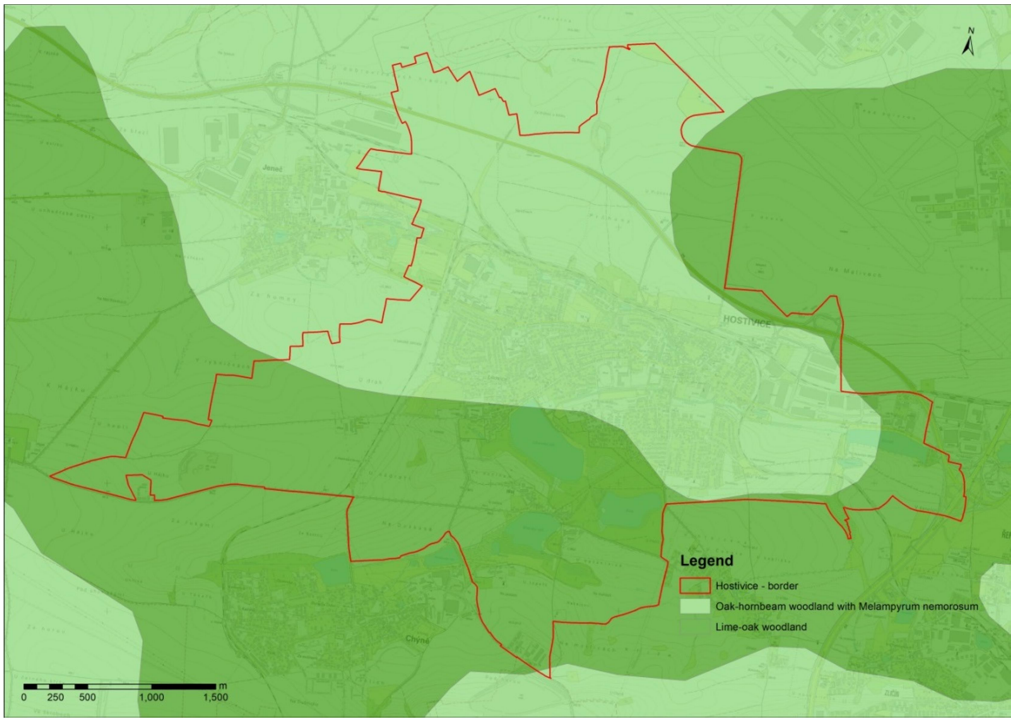
to agricultural land. It expresses the primary soil and climatic conditions that affect agricultural land's productive capacity and economic evaluation. The classification is based on the climatic region, soil unit, slope, aspect, and soil profile structure and depth. Rated soil ecological units are color-coded into five classes according to the ZPF (agricultural land fund) protection class, according to Decree No. 48/2011 Coll.

The first protection class is the most valuable soil in individual climatic regions, mainly on flat or slightly sloping land. This class can be removed from the agricultural land fund only exceptionally, mainly for projects related to the restoration of the landscape's ecological stability or line structures of fundamental importance. The second protection class is agricultural land that has above-average production capacity within individual climate regions. These are highly protected lands, only conditionally removable from the ZPF. It can be removed from ZPF in spatial planning cases and only conditionally usable for construction purposes. The third protection class implies land in the individual climatic regions. These are mainly soils with an average production capacity, which can be used in spatial planning for construction and other non-agricultural uses. The fourth protection class designates land within individual climate regions. It includes mainly soils with below-average production capacity, with limited protection, usable for construction and other non-agricultural purposes. The fifth protection class brings together the remaining rated soil ecological units (BPEJ). These lands represent soils with insufficient production capacity, such as shallow soils, hydromorphic soils, strongly skeletal, and highly erosive endangered. These soils are primarily indispensable for agricultural purposes. Other, more efficient uses than agricultural ones can be accepted. These are mainly soils with a low degree of protection, except for demarcated protection zones and protected areas (VÚMOP, ©2019).

According to the classification of land quality, most of the areas of Hostivice are under the first category of protection. The second and third classes also occur in places where an area has already been built. In contrast, the fourth and fifth classes appear even in places that are not built. This example is most evident in the southwestern part of Hostivice.

3.3.6. Vegetation

According to the map of potential natural vegetation (PLADIAS, ©2021), scale 1: 500 000 (Figure 3.18), the territory of Hostivice is dominated by (8) Lime-oak woodland. Slightly less occurs (7) Oak-hornbeam woodland with Melampyrum nemorosum, (33) Oak woodland with Potentilla alba, and (36) Woodrush-oak and/or silver fir-oak woodland.



Appendix 3-8: Map of potential natural vegetation, scale 1:500 000 (https://pladias.cz/en/download/vegetation , 2020)

Figure 3.18: Map of potential natural vegetation, scale 1:500 000 (https://pladias.cz/en/download/vegetation , 2020)

Oak-hornbeam forests

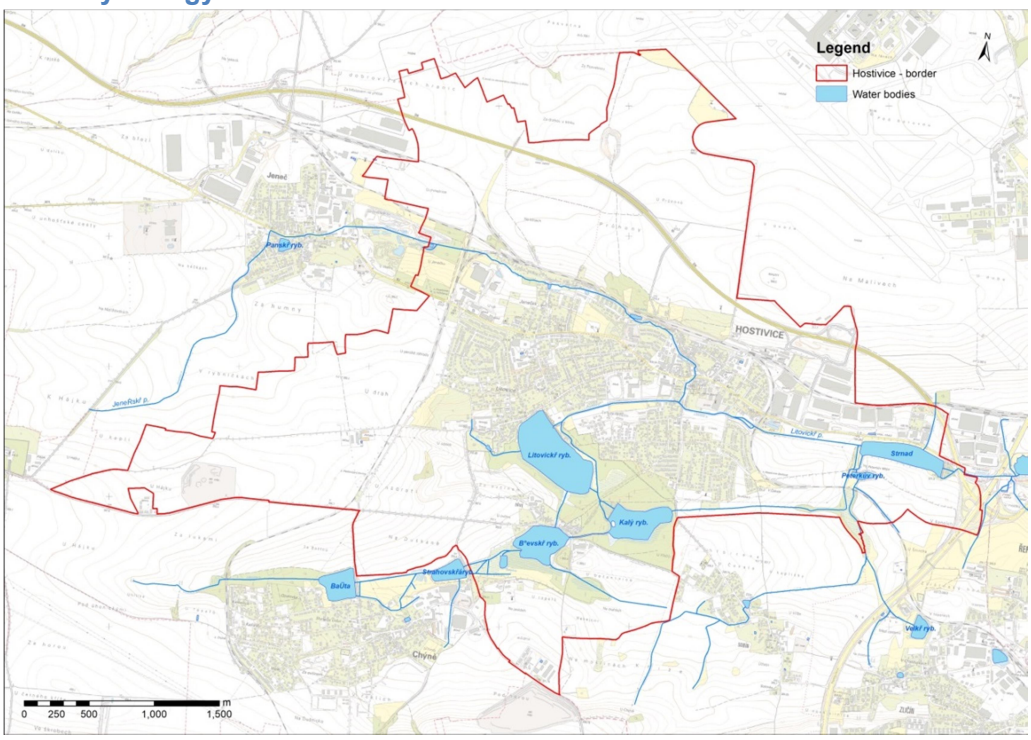
The association *Carpinion betuli* involves mesic forests dominated or co dominated by hornbeam (*Carpinus betulus*) and oaks (*Quercus petraea* agg. and *Q. robur*). The herb layer is defined by the predominance of nemoral species, specifically slightly thermophilous, shade-tolerant plants of mesic forests. This association is disposed in the temperate zone of Europe from Great Britain and France to Ukraine. Oak-hornbeam forests are better adapted to habitats with summer drought and late frost than beech forests and are thus more prevalent in the continental lowlands and foothill areas of east-central Europe. In central Europe, *Carpinus betulus* was the last species to colonize in the Holocene migration of forest trees, and the extension of its range was apparently facilitated by human impact on forests. The most current forests of *Carpinion betuli* are former coppices that have been converted into tall forests in the second half of the 20th century.

Oak-hornbeam and oak-lime woodlands (*Carpinion*)
Mostly mesophilic, broad-leaved (with the dominance of *Carpinus betulus, Quercus petraea, Q. robur, Tilia cordata*), rarely mixed, climax woodlands with *Abies alba* or *Picea abies*, on mesotrophic to eutrophic brown soil, from planar to colline, or submontane levels:

(7) Tilio-Betuletum (with the dominance of *Quercus petraea*, rarely T*ilia cordata* or *Q. robur*), on poorer, often drier soils, transitional type to acidophilous oak woodland at lower levels of Bohemia.
(8) Melampyrum nemorosi - Carpinetum (with the dominance of *Quercus petraea, Carpinus betulus, Tilia cordata or T. platyphyllos, Quercus robur* and many other

hygro-mesophilous woody species) at planar to supracolline levels, with the optimum at colline levels.
(33) ***Potentillo albae*-Quercetum** (with the dominance of *Quercus petraea, Q. robur*, rarely *Carpinus betulus*, *Tilia cordata*) on illimerized brown earths to pseudogleys at planar to colline levels.
(36) ***Luzulo albidae-Quercetum petraeae, Abieti-Quercetum*** (with the dominance of *Quercus petraea, Q. robur*, with *Abies alba* and a slight admixture of other woody species) on meso - oligotrophic brown earths, very frequent in Bohemia.

3.3.7. Hydrology



Appendix 3-9: Map of Hydrology network (Public, 2020)

Figure 3.19: Map of Hydrology network (Public, 2020)

The hydrological network (Figure 3.19) is significantly developed in this area, contributing to the settlement of this territory. The hydrological regime represented here has provided the fertility of the land. Therefore, this place has been used for agricultural purposes throughout history until today. Jenečky creek flows along the northern edge of the settlement of Hostivice, while Litovičky creek flows through the middle of the settlement.

Due to all the above, a lot of artificial ponds have been formed here. Smaller fishponds are located along the Jenečky creek, while the fishponds declared as natural monuments are located along the Litovičky creek in the southern part of Hostivice. These ponds were built in the 14th century. The areas along the stream and around the ponds are recognized as floodplains.

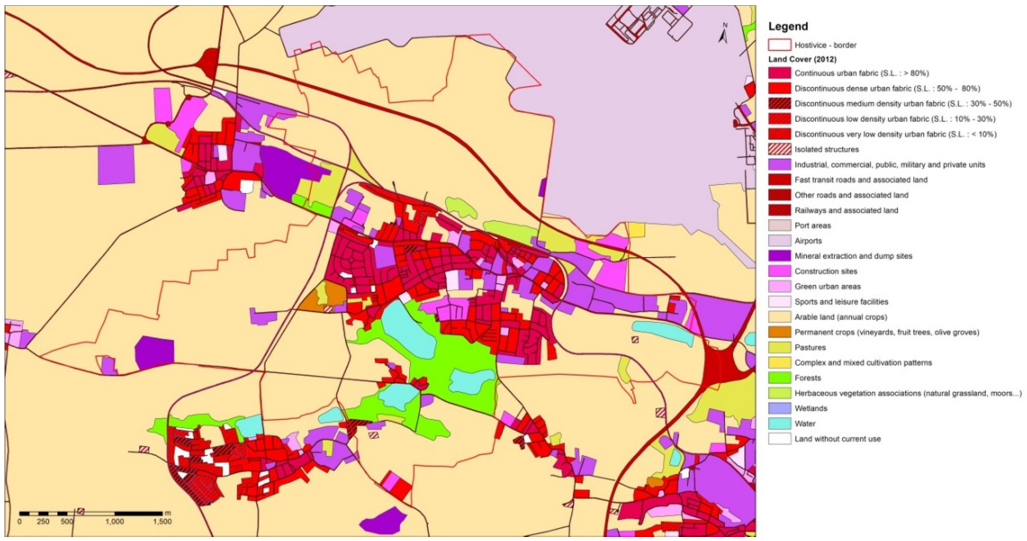
Ponds in Hostivice
Strand
Peterkův
Litovický

Kalý
Břevský

Table 3.9

3.3.8. Land Cover

According to the Land Cover map from 2012 (Figure 3.20), the diversity of types can be seen. Continuous (> 80%) and discontinuous (50-80%) urban fabric cover most of the settlement. Furthermore, the industrial, commercial, public, military, and private units type is also represented to no small extent, both in fragments within the settlement and along the highway to Prague. Although the airport does not belong to the administrative area of Hostivice, it is essential to mention its existence due to the area and its impact. The forest type occupies a significant area in conjunction with water bodies. However, arable land occupies the largest area. Large fields of arable land mostly surround the urban fabric.



Appendix 3-10: Corine Land Cover (: https://land.copernicus.eu/local/urban-atlas/urban-atlas-2012/fetch-land-file?hash=6477224b087ca7e5bd3cf65349922270849f4e17 , 2012)

Figure 3.20: Corine Land Cover, 2012 (: https://land.copernicus.eu/local/urban-atlas/urban-atlas-2012/fetch-land-file?hash=6477224b087ca7e5bd3cf65349922270849f4e17 , 2012)

3.3.9. Strategic plan

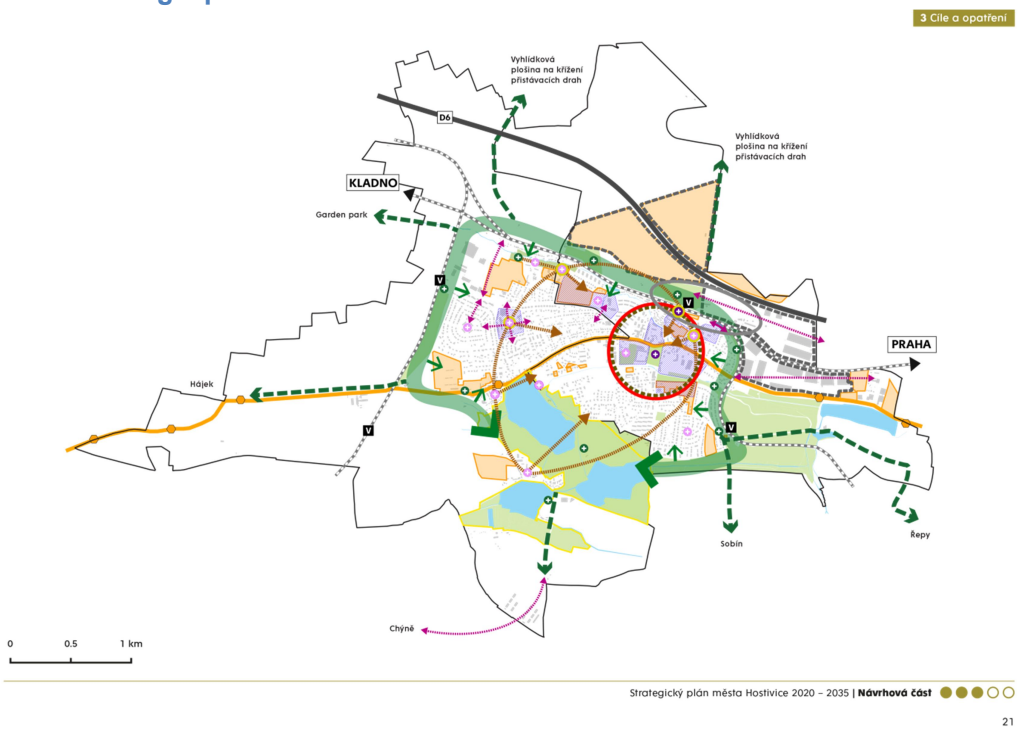


Figure 3.21: Strategic plan Hostivice 2020-2035 (http://www.hostivice.eu/strategicky-plan-mesta-hostivice-2020-2035/d-431260/p1=26625 , 2020)

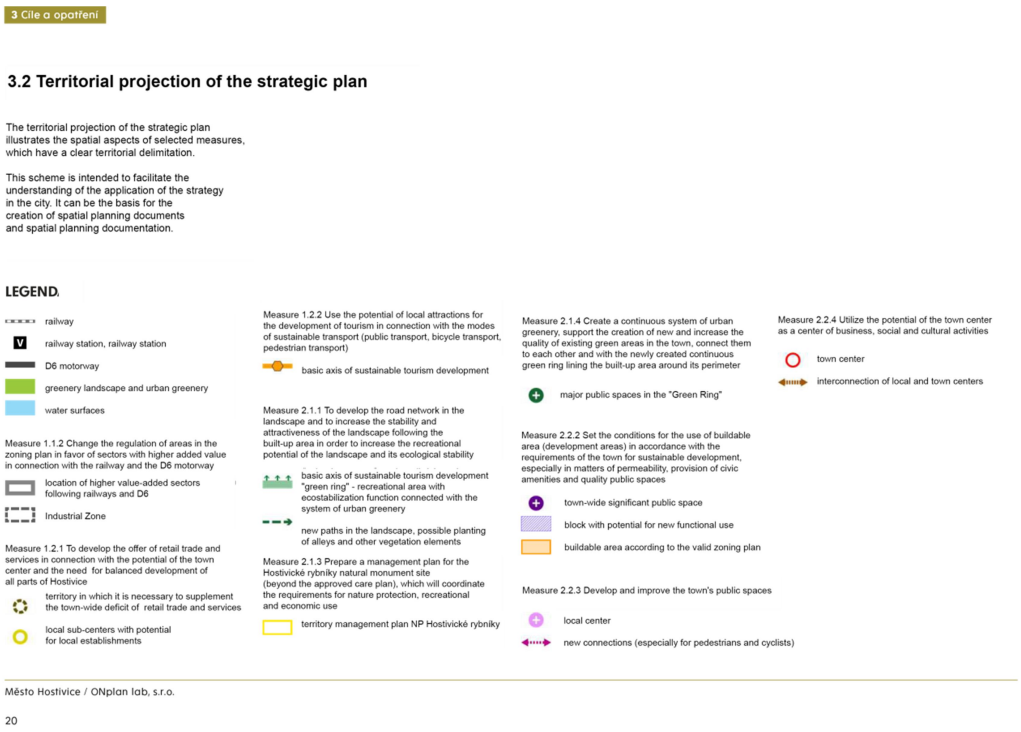


Figure 3.22: Legend - Strategic plan Hostivice 2020-2035 (http://www.hostivice.eu/strategicky-plan-mesta-hostivice-2020-2035/d-431260/p1=26625 , 2020)

The current Strategic plan for Hostivice (Mesto Hostivice, ©2020) is valid from 2020 to 2035 (Figure 3.21, Figure 3.22) and aims to define visions for future development. The plan's preparation is based on the analysis of the town's demographic, economic, social, cultural, and ecological character and the activities of the private and public sectors. However, the plan consists of three partitions: analysis, design, and action plan. The analytical part comprehensively assesses the town's situation and gives the characteristics of the situation and development of certain areas in the town. Part of the analysis also deals with the problems of municipal development and its causes. Based on the analytical part, starting points are formed for the design part of the strategic plan. Furthermore, guidelines for spatial plan design can be found in this segment of the strategic plan. The action plan specifies how to fulfill the program goals, measures, and development activities of the strategic plan for the near future.

The strategic plan structure consists of the vision, development areas, objectives, measures, and activities. In terms of spatial planning, it is crucial to pay attention to the aims section because it gives guidelines that must be followed.

The objectives within the strategic plan are divided into four groups of development areas. Therefore, the groups are: economic development, spatial development, and environment, quality of life in the town, the last area is management and town administration. For the purposes of this paper, it is essential to pay attention to the second group of goals, including spatial development and the environment. Within this group, formed three main aims with their specific indicators.

The first object is to establish ecological stability by striking a balance between the requirements of nature protection, recreational and economic use of the area. The second object applies to territorial development, using the existing spatial reserves within the town and non-functional industrial areas. The third object refers to all transport types' interconnection, with attention to the public, pedestrian, and bicycle transport.

3.3.10. Spatial plan

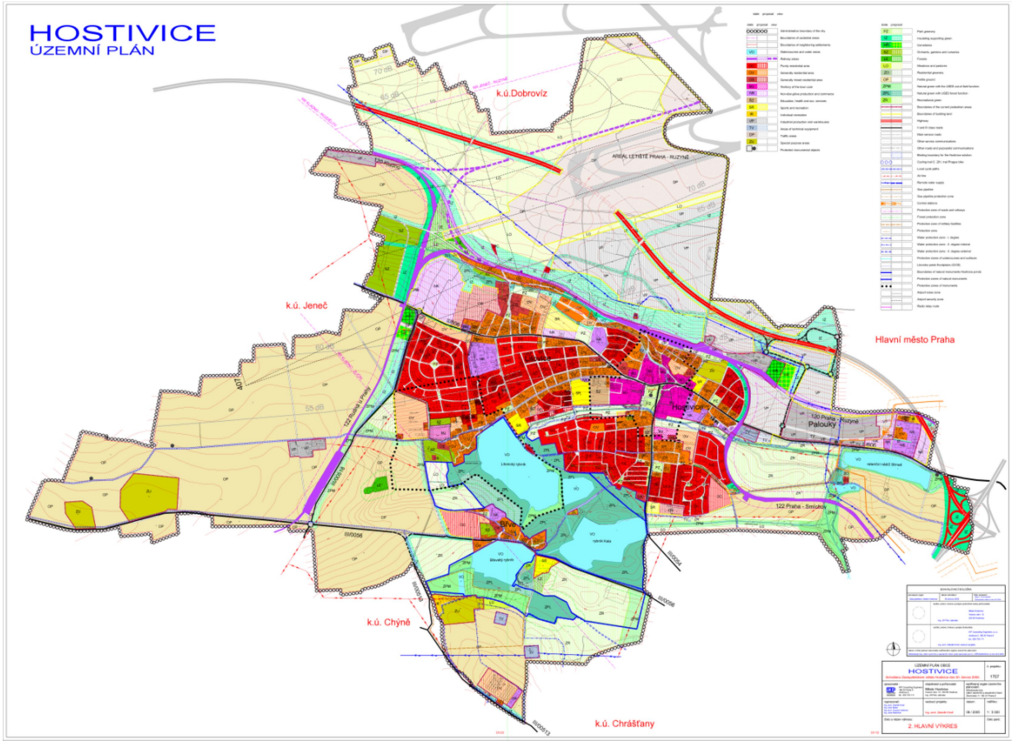


Figure 3.23: Spatial Plan Hostivice 2005 (http://www.hostivice.cz/uzemni-plan-mesta-hostivice-vykresova-cast/d-409963/p1=4522 , 2005)

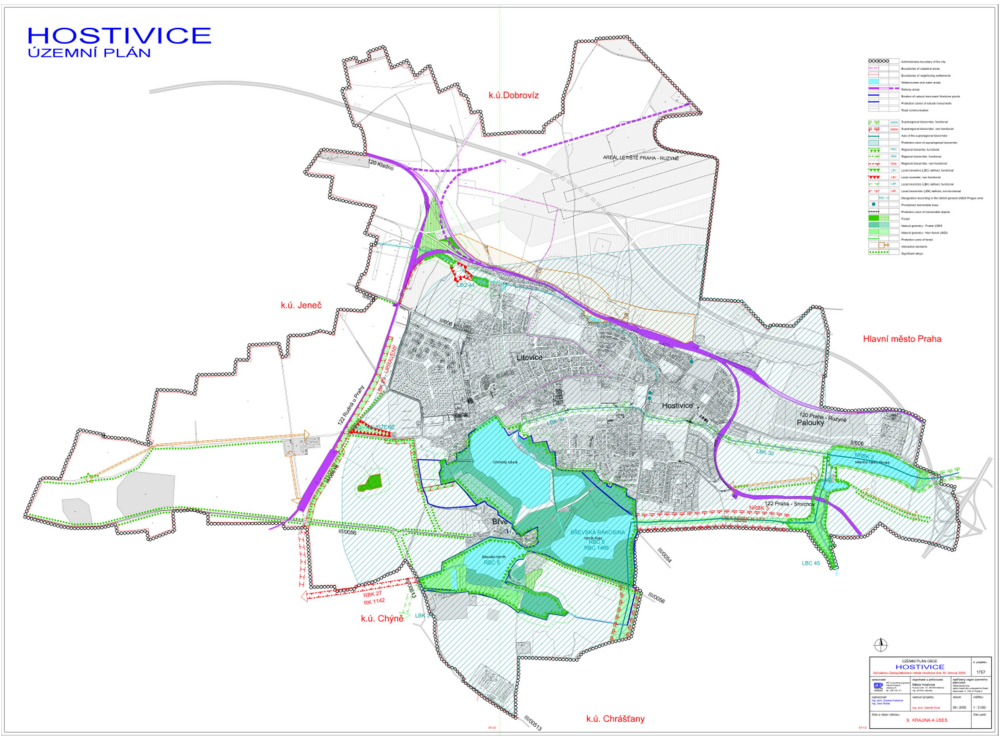


Figure 3.24: Spatial Plan Hostivice 2005 - Landscape and ÚSES (http://www.hostivice.cz/uzemni-plan-mesta-hostivice-vykresova-cast/d-409963/p1=4522 , 2005)

The spatial analysis of Hostivice is based on the Spatial plans 2005 (Figure 3.23) and 2011 (Figure 3.26) and the amendments to the plan from 2017 (Figure 3.25). There are no significant differences in terms of land use in the town. However, to highlight the ecological aspect in spatial planning in Hostivice, the 2011 plan merged the basic spatial plan and the landscape plan (Figure 3.24) and the Territorial system of ecological stability of the landscape (ÚSES). In this way, the issue of the environment was pointed out. Most of the area of the town of Hostivice belongs to the supra-regional bio corridor. The natural monument Pond Hostivice and the immediate forest land are local bio centers. Other lakes in Hostivice are also characterized as local bio centers and connected by a system of bio corridors. However, some bio corridors are non-functional. The special non-functionality of bio corridors and bio centers can be seen in the west of the Hostivice ponds. It is necessary to revitalize their function and connect them.

The amendment to the spatial plan from 2017 focuses on highlighting other essential factors of land use. There are separate categories of fertile land and unoccupied spaces, both public and private (yards). In this classification, there is a tendency to indicate the soil's quality on the territory of Hostivice and thus promote agricultural activities.

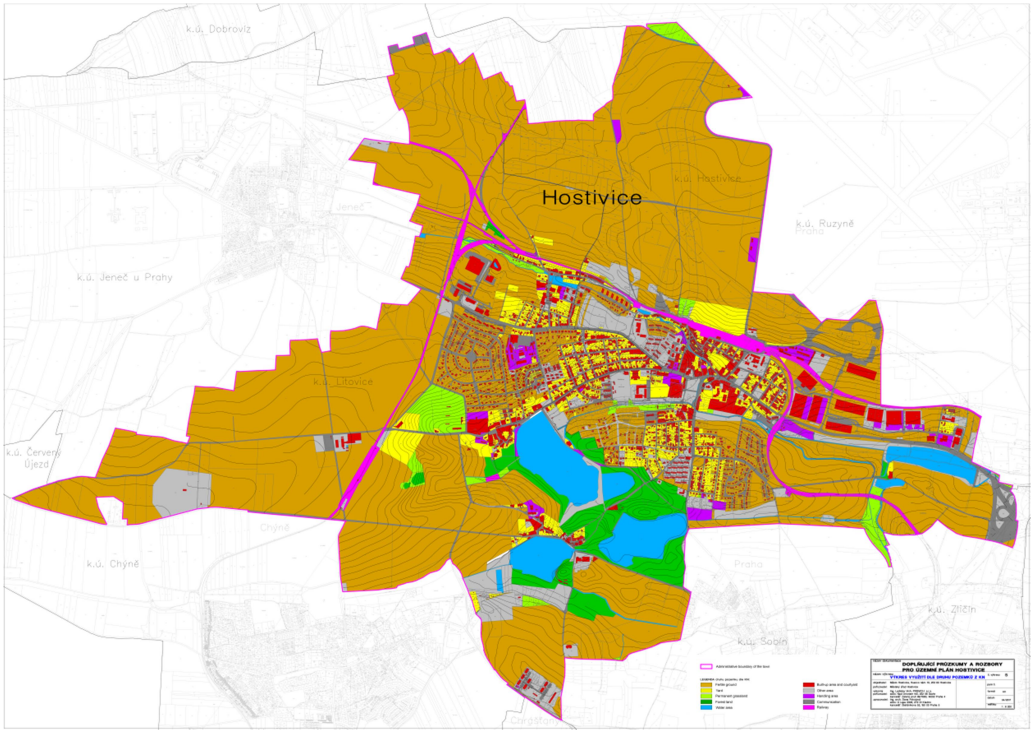


Figure 3.25: Additional surveys and analyzes for the Hostivice land use plan 2017 - drawing of use according to the type of land from KN (http://www.hostivice.eu/doplnujici-pruzkumy-a-rozbory/d-425351/p1=4617 , 2017)

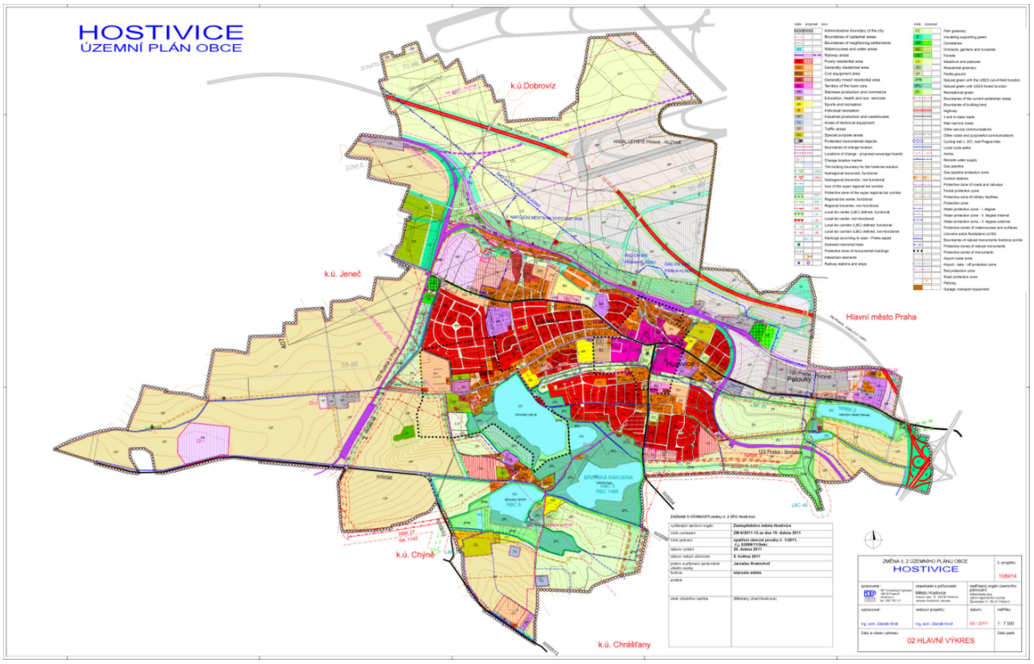


Figure 3.26: Spatial Plan Hostivice 2011 http://www.hostivice.eu/zmena-c-2-uzemniho-planu-obce-hostivice/d-413711/p1=4617 , 2011)

3.3.11. Transportation – connections

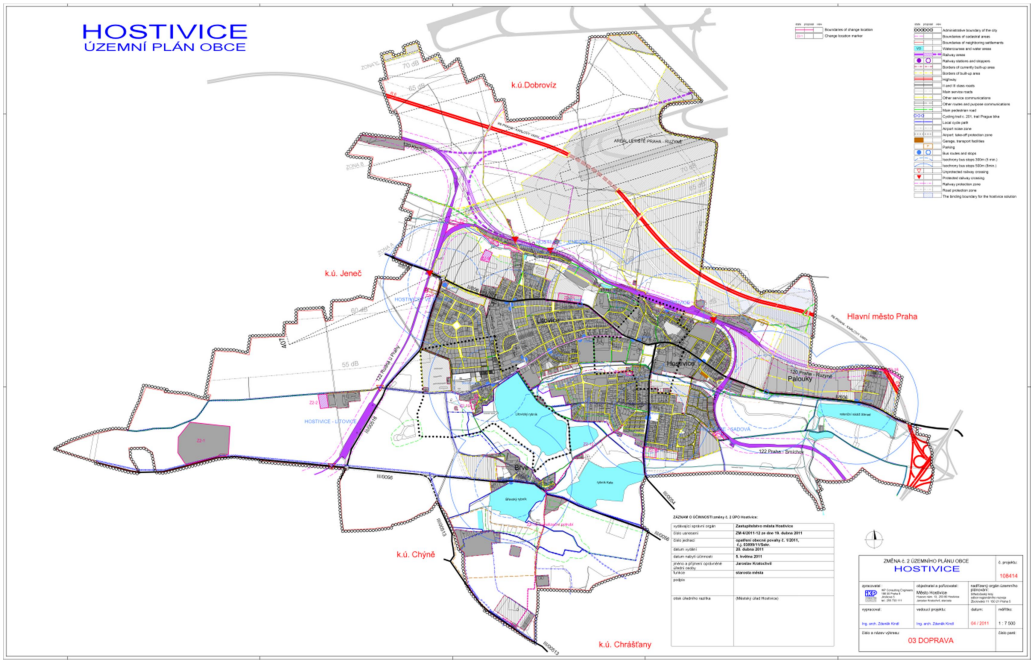


Figure 3.27: Spatial Plan Hostivice 2011 – Transportation (http://www.hostivice.eu/zmena-c-2-uzemniho-planu-obce-hostivice/d-413711/p1=4617 ,2011)

Highway

The position of Hostivice conditioned its excellent transport connection (Figure 3.27). The D6 motorway is a motorway that starts from Prague and passes through the northern part of Hostivice. It is currently under construction, but after the completion, the motorway will go from Prague through Karlovy Vary and Cheb to Germany's border. This motorway is a segment of the European route E48, which is part of the International E-road network. This network starts in Schweinfurt, Germany, and ends in Prague and the Czech Republic.

Railway

A railway network also connects Hostivice with Prague in just 15 minutes and the surrounding towns such as Rakovník, Kralupy nad Vltavou, and the statuary city of Kladno.

Connection between other settlements

Roads of the second and third-order (B2) connect Hostivice with local settlements. One main road (C1, C2) passes through the town center, and other communications between blocks are local roads (C3). In some parts of the town, pedestrian zones can be found, i.e., without cars (D).

Bike route

Prague cycle path 201 passes along the southern edge of the town and enters the area around ponds. The local cycle path is developed only in the town's eastern zone, including Litovice and Břve. Hostivice also belongs to the starting point of the Krivoklat Castle Loops cycling route. The route is a pilot project of creating a system of attractive road cycling paths of various difficulty in the Central Bohemian Region, using communications with minimum traffic but at the same time with surface quality for comfort and possibly safest cycling.

Airport

When it comes to transport, it is essential to note that only Vaclav Havel Airport is only about 2km as the crow flies from the settlement, and it is only 11 minutes away by car. On the one hand, the proximity of the airport is an advantage in terms of accessibility. However, on the other hand, the airport produces noise pollution. According to data from 2011, the daily noise level is up to 45db, while at night, it is below 40db, which is acceptable from the World Health Organization (WHO).

Pedestrian connection

When it comes to pedestrian transport, Hostivice has some problematic issues. In some parts, the pedestrian path is regulated correctly. However, in some parts, the paths are too narrow. Also, parking cars on the sidewalks usurps pedestrian traffic. There are also cases where is a sidewalk only on one side of the street, which affects pedestrian safety. The excellent feature is that pedestrian zones have been established in some parts without car transport, which makes them very safe and pleasant. Walking through Hostivice can be exciting when passing through some narrow streets with very aesthetic paving.

3.3.12. Noise

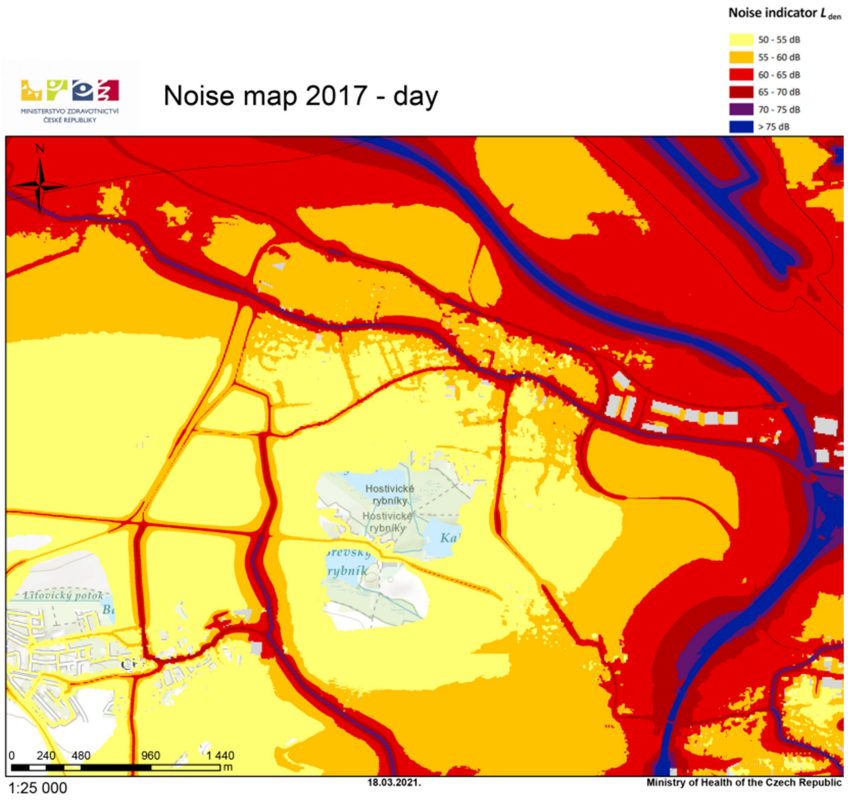


Figure 3.28: Noise map 2017 – day (https://geoportal.mzcr.cz/shm/# , 2017)

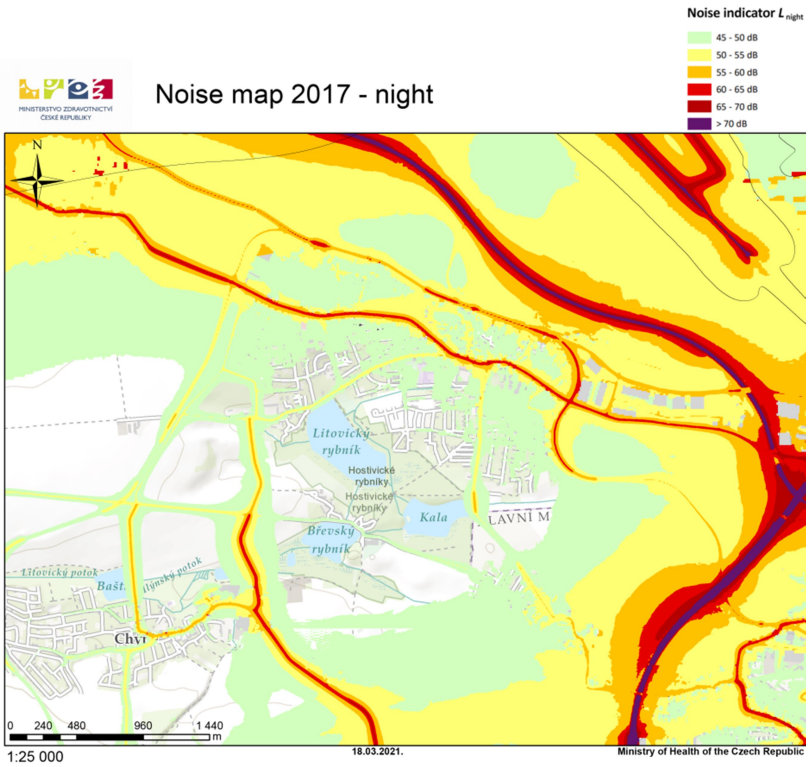
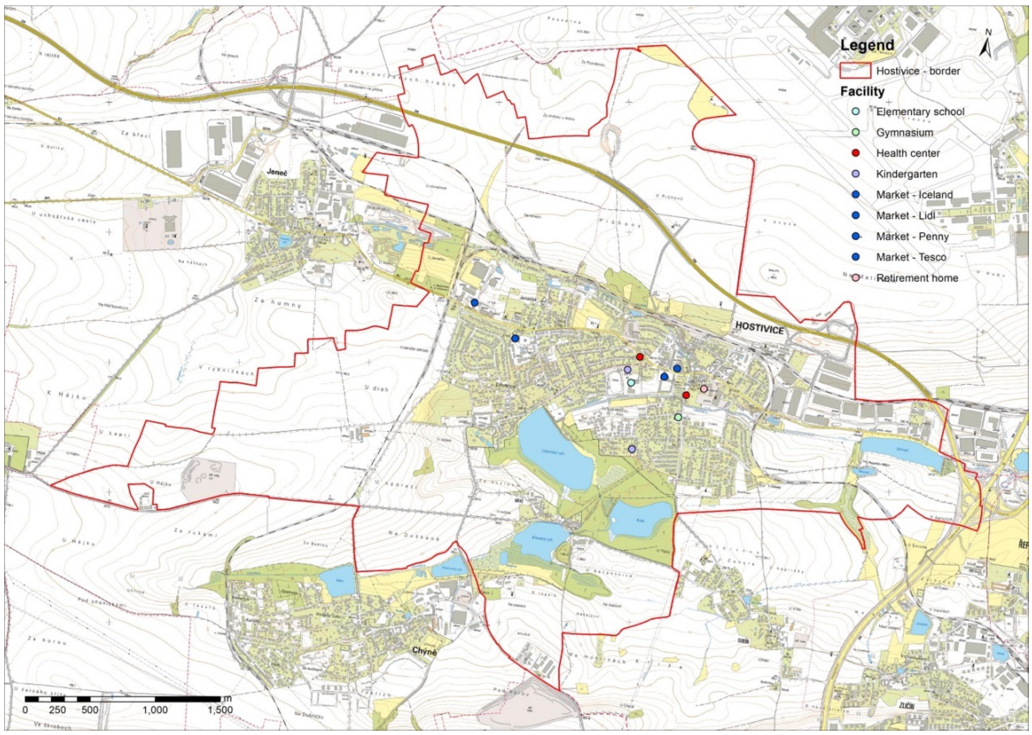


Figure 3.29: Noise map 2017 – night (https://geoportal.mzcr.cz/shm/# , 2017)

Noise pollution is regularly defined as frequent exposure to elevated sound levels that can lead to harmful effects on humans or other living organisms. According to the World Health Organization (WHO ©1999), sound levels less than 70 dB do not harm living organisms, no matter how long or consistent the exposure.

According to the daily noise map from the Ministry of Health of the Czech Republic, values higher than 70dB do not occur mainly in residential parts of the town (Figure 3.28). Slightly higher values of more than 70 dB occur in the highway's zone, as well as the main road of the second-order within the settlement. Also, these sound levels are located in the zones of railway stations. Although the airport is in the vicinity of the settlement, its harmful effect of noise does not reach the town. During the night, these values are significantly reduced so that no harmful noise levels occur during the night (Figure 3.29).

3.3.12. Facilities



Appendix 3-11: Facilities in Hostivice (Public, 2020)

Figure 3.30: Facilities in Hostivice (Public, 2020)

Source: Public

Facilities in Hostivice
Kinderkadrten
School
Gymnasium
Helt center – Poliklinika Hostivice
Nursing center
Big markets

Table 3.10: List of facilities in Hostivice

3.3.13. Natural monuments / historical heritage

Natural Monument

Hostivice ponds

The most valuable natural unit in Hostivice is ponds with their surroundings, protected as a natural monument. The monument includes Břevský, Kala and Litovický ponds, and Nekejcov wetlands, Chobot, Břevské reed, and forest stands around the ponds. It is a landscape transformed from the original extensive wetlands in the initial area of the Litovický stream by centuries of human activity so that the area has outstanding aesthetic and natural values. The Hostivice pond system is also of historical significance since Emperor Rudolf II's time serves as a source for the water supply of communal waters from Prague Castle. The nature monument protects a vital bird's nest and stops migration. The area is also remarkably mycologically rich. Many interesting and rare species of fungi have been found in it. The nature trail Hostivice ponds pass through a natural monument (ČSOP, ©2006).

Historical heritage

Hostivice chateau

Hostivice Chateau was built by Countess Johan Eusebia Barbora Caretto-Millesimova in the years 1689-1697 as a one-story early Baroque building. Anna Marie František, Grand Duchess of Tuscany, restored the chateau in its present form as a two-story building 1732-1734. The grandson of Anna Marie, the Duke of Bavaria Klement František, completed the asymmetrically placed chapel. From the second half of the 18th century, interest in the castle declined and was gradually turned into accommodation for employees on the royal estate. The building was reconstructed in the years 1977-1983. Currently, the castle serves as the seat of the town hall. Exhibitions are held on the former chapel's ground floor, and the central hall is used for classical music concerts (Hostivicka Historie, ©2017).

Church of St. Jakub

The Church of St. Jakub is the oldest preserved building in Hostivice. The church has existed since 1277 when it is mentioned in the oldest written mention of Hostivice. The current appearance of the church is the result of many reconstructions over the centuries. The church was most significantly damaged during the Thirty Years' War when only the walls were preserved. The last reconstruction was carried out in 1870. There is an ancient cemetery, where two severely damaged tombstones have been preserved, probably from the 16th-16th century. There is also a baroque statue of St. Jan Nepomucký, which was moved here in the 1920s from Husovo náměstí. In front of the church entrance, there are baroque statues of St. Jan Nepomucký and St. Francis of Assisi moved in 1928 from the bridge over the stream Jenečsky (Hostivicka Historie, ©2017).

Hostivice Parish

The parish has existed in Hostivice since the very beginning of the former village. However, it was destroyed during the Thirty Years' War. Anna Marie František also built the new, present parish yard after the castle's construction in 1734-1737. The parish retained its Baroque appearance despite a partial interior reconstruction in the early years of the 19th century. The last extensive reconstruction of the parish home was done in 2012 (Hostivicka Historie, ©2017).

Marian column

Precisely in the middle of the axis between the Hostivice chateau and the parish building stands the Marian column nine meters high, built-in 1743. As the statues have suffered from weather conditions for centuries and lost their attributes at the beginning of the 20th century, their identification is uncertain. The last restoration of the column took place in 1994–2000 (Hostivicka Historie, ©2017).

Litovice fortress

One of the most important architectural monuments in Hostivice is the Litovice fortress. It was built after 1330 by the Bishop of Prague, Jan IV. from Dražice, and features advanced French Gothic elements. Later, the fortress was rebuilt several times and converted into a granary in the Baroque period. At the beginning of the 20th century, part of the fortress was rebuilt for housing. It is currently empty, and the private owner has secured it against further decay. Despite earlier reconstructions, the fortress has preserved many Gothic elements, the reason why it is unique (Hostivicka Historie, ©2017).

Litovice chapel

The Litovice chapel with a statue of St. Jan Nepomuk dates from about the middle of the 19th century. For years, the chapel has undergone several restorations, while the last one was in 2004. The chapel does not belong to many pilgrimage chapels from Prague to Hájek (Hostivicka Historie, ©2017).

Pilgrimage route from Prague to Hájek

Hájek route or the pilgrimage route from Prague to Hájek is a late Baroque pilgrimage route about 14 km long, which led from Hradčany to Loreta in the Franciscan monastery Hájek, which is located in the village of Červený Újezd near Unhoště. There were 20 chapels on the route, of which from the 11th to the 19th are located on the territory of Hostivice (Hostivicka Historie, ©2017).

Statues, monuments, and memorial plaques

In addition to these buildings, Hostivice has numerous monuments, statues, and memorial plaques. Historical sights are located throughout the town, and most of them have been restored. This group also includes objects of folk architecture, such as former estates or apartments of former landowners. In Hostivice, a protection zone of monuments has been declared to protect cultural monuments and the structure of buildings (Hostivicka Historie, ©2017).

3.4. Field research

Concerning planning, going out on the field contributed a lot to the overall conclusion of the town's functioning. Transport from Prague to Hostivice is one of the significant advantages it has. Distance between Prague (Dejvice) is only 20 min by train (Figure 3.31), which is crucial for the residents who live there and work or study in Prague.

Figure 3.31: Railway station Hostivice, 2021

When visiting the field, the general impression is that Hostivice is improving and maintaining the already existing qualities. The type of housing is very heterogeneous. There are zones where there are detached houses with private yards, semi-detached houses, and larger three-story residential units. The problem with such planning is that clusters of a particular type of housing and physical barriers between them have been created. One example is a physical wall built between two types of housing (Figure 3.33). Whether such planning impacts social life cannot be determined by short-term field research, but more extensive and long-term research is needed. Following different housing types, there are also different public spaces (Figure 3.32), which are often not used at total capacity. One of the more prominent examples is the main square in the center of Hostivice, which is unused, i.e., the residents use it only as a transit zone. Among the public spaces, there are also pedestrian zones, which exclude cars' presence, which makes them safe. There are enough children's playgrounds since they are not overcrowded with children, but their position is questionable because they are often located next to busy roads, which endangers children's safety.

Figure 3.32: Public space – square Jana IV. Z Dražic, 2021

When it comes to roads, the pedestrian zone is very narrow, and in some parts, there is only a one-sided sidewalk (Figure 3.33). Underdeveloped pedestrian infrastructure adversely affects pedestrian safety. Furthermore, this may cause pedestrians to prefer cars as a means of transportation or to avoid moving at all.

Figure 3.33: One sided sidewalk and wall between zones in town, 2021

In terms of the town's landscape features, a significant role is played by the protected natural monument, the Hostivice ponds, and the ponds located in other parts (Figure 3.34). The conclusion is that these places attract the population and invite recreation. However, the natural monument's surrounding has room for improvement to improve the place's attractiveness further. Ponds are sources of biodiversity, which certainly improves the quality of the environment in Hostivice. The revitalized Litovicky stream is an example of how a landscape can be drawn into a built-up area. In that way, it affects water retention, encourages biodiversity, reduces the heat island's effect, and encourages the population to recreate.

Figure 3.34: Pond in Za Mlýnem street, 2021

During field research, the character of the place was also analyzed. What is noticed is the significant heterogeneity in character. Some parts are modernly planned (Figure 3.35), while there are also older parts of the settlement that preserve the place's history. In terms of character, these places are more appreciated (Figure 3.36). Preserved historical architecture contributes the most to preserve the character of the place.

Figure 3.35: Three-story modern architectural building - B. Němcové street, 2021

Figure 3.36: The old historical specific architecture of Hostivice chateau, 2021

One of the town's practical problems is the existence of only large markets, where crowds are created because there are no smaller markets. Additionally, all services are located in the center of the town, so other parts suffer from a lack of services and facilities.

3.5. Proposal

Given the assumption set initially: that Hostivice is a necessary expansion, a future development proposal is being developed (Figure 3.37).
The plan is based on all collected data from the work methodology, which means that data from literature reviews, interviews, and site analysis were taken into account. The information obtained during the research was overlapped, and in that way, a template for the future plan was formed.
The choice of location for future development is a consequence of thorough site analysis. Hostivice cannot expand in any other direction due to limiting factors. These factors are the railway line that extends along the northern and western edges of the built-up area. Another factor is the highway that separates Hostivice from Prague on the south side and extends through the north side of its administrative area. The third factor is Václava Havla Airport, which limits the development in the direction of the north.
The only remaining place for the town's development is the southwestern part of Hostivce, i.e., Litovice. The reason for the expansion on this surface is based on the preservation of the landscape. There is a protected natural monument to the east of this area, the Hostivice ponds. However, there is a danger that the ponds will be endangered by replacing the ponds with a built-up area. In order to indicate the importance of the pond, the new development has the task to point out the biodiversity, the diversity of the landscape, the hydrological potential, and the general quality of life in the town that it contributes to. Developing the town in an environmentally conscious direction will encourage this kind of development in the rest of the town.
The starting point for this development is the spatial plan of Hostivice 2005, sheet 9. Landscape and ÚSES, which was later merged with the main spatial plan in the 2011 spatial plan. The importance of the landscape in planning and its emphasis through the main spatial plan can be concluded from this. Therefore, there is a tendency to plan in a direction that takes into account the landscape. According to this plan, most of the Hostivice and the selected area for development represent a supra-regional bio corridor's protection zone. The Hostivice ponds and the associated forest land surrounding them have been determined as a local functional bio center. However, in the northern part of this area, there is a non-functional bio center because it is not connected by a bio corridor and the small area it occupies. Furthermore, the local bio corridors that surround this area are characterized as non-functional.

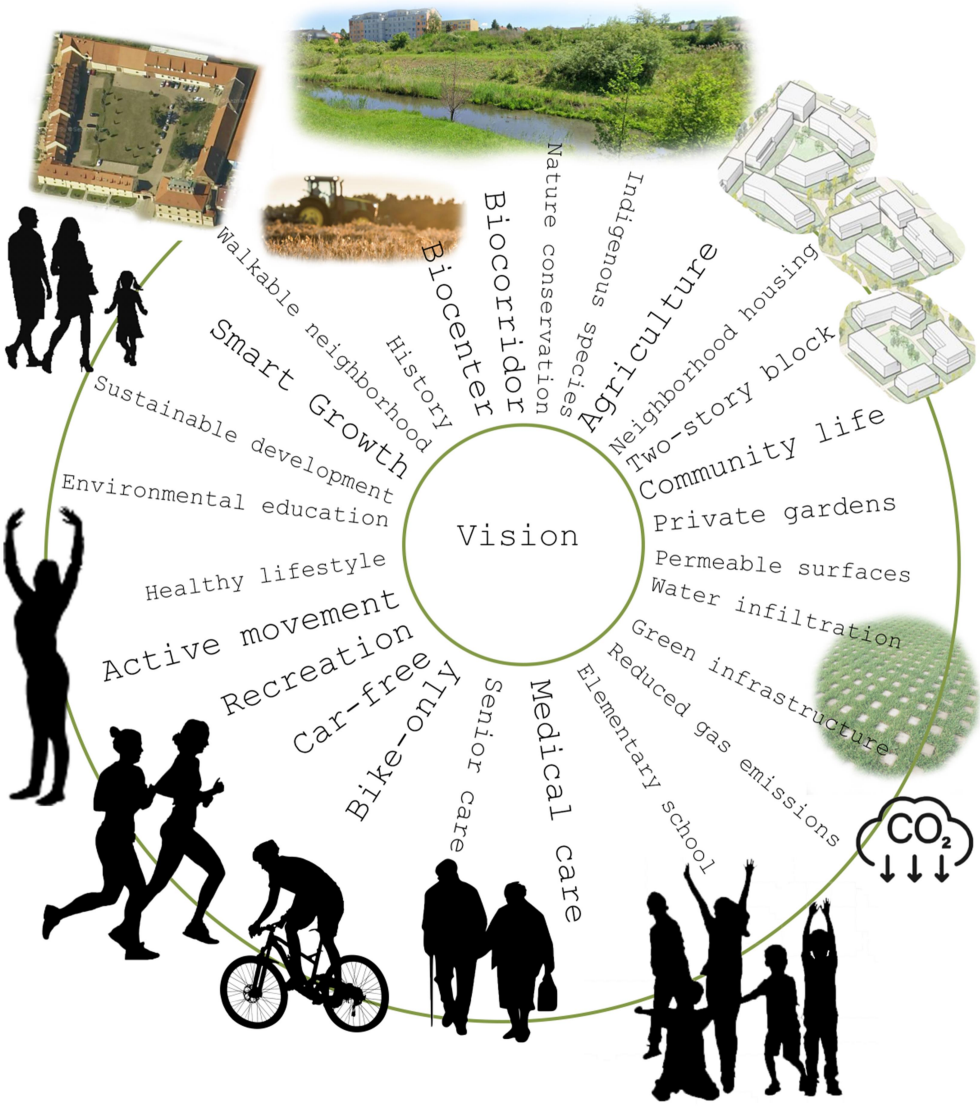


Figure 3.37: Vision of Hostivice development, 2021

Given the previously described conditions, the plan (Figure 3.38) was developed to establish a local bio center and bio corridor's function.

The primary idea is to connect the bio center pond Hostivice with the existing non - functional bio center in the research area. Connection is achieved by forming a blue-green bio corridor from the pond to the study area center. The center of the study area is an interactive element attached to a non-functional bio center, forming a large bio center. It was necessary to increase the bio center area to make it functional and connect the bio corridor with another bio center. The newly formed bio center's total area is 10 ha, which is 17% of the study area. Bio corridors, not counting the blue-green bio corridor, occupy approximately 4 ha, representing 7% of the total area. If the blue-green corridor is considered a separate zone, it occupies 2 ha, 3% of the research area. A network of local bio corridors has been further developed to establish their function. Concerning the planning of bio centers and bio corridors, and green infrastructure, it is necessary to use indigenous species.

The agricultural zone is justified by the fact that there is the first-class land on this site according to the BPEJ classification. Additionally, the current function of this area is agriculture, which proves the quality of the land. Agriculture is located in the southern and partly northern part of the research area, where high-quality soil is emerging. In the zone around agriculture, a wind protection belt is being established and corridors along the plots to protect against erosion and encourage biodiversity. The agricultural zone occupies 15 ha, which is 25% of the total study area.

The recreation area is located, including the blue-green corridor area and the area where the terrain is undulating. The recreation zone occupies 7 ha areas, which represents 8% of the total study area. The recreational function of the Hostivice ponds is extended to the newly planned area. However, recreation is not limited to this area, but recreation is possible in all zones. The function of recreation is essential because it is the primary mode of transport in this area. The proposal is not to use cars, but to make bicycles the primary means of transport. Access to cars would be provided only in exceptional cases such as the needs of the medical center, senior center, elementary schools and the center for environmental education, and the requirements of delivery of goods to markets and restaurants. In this way, the emission of harmful gases is reducing, and at the same time, it encourages the active movement of the population. Through reducing the use of cars, the impervious surface is decreased, which preserves the open space. The fundamental precondition for this way of moving is a well-developed bicycle path infrastructure, including the accompanying green infrastructure.

During the research part of this paper, the lack of some facilities was determined. It is necessary to plan a new primary school, a home for the elderly, a medical center. The primary school in Hostivice is currently running out of capacity, and a new one needs to be planned. The home for the elderly is a facility with different degrees of care for the elderly to enable housing for different groups. There is no medical facility in the town, except for private facilities, so planning such a facility in the future is desirable. An additional facility that is planned is an environmental education center, which would educate and promote the landscape and environmental protection.

The planning of land use for housing is justified because, throughout history, there was a settlement in the area of Litovice. Furthermore, the land quality in the planned residential zones belongs to the fourth class of land quality according to the BPEJ classification.
The degree of construction is 40%-60% (24ha-60ha), in favor of non-constructed land (Table 3.12). The type of housing was chosen according to the model that already exists in Hostivice, i.e., a block of connected houses with interior residential greenery. The model is taken from the existing Hostivice chateau, a relevant example of successfully designed housing. More diminutive models with two or three houses in a row were also developed from this model. Moreover, detached houses for private housing are proposed. Within the detached houses, a yard is planned where the construction ratio is also 40-60% in favor of non-built land. Housing within the blocks includes two-story residential units and medium-sized buildings, which are in the form of three houses in a row. Semi-detached houses and detached houses are one-story. According to the proposed housing capacity, approximately 1500 residents are expected in the newly-planned area (Table 3.11).
The main feature of these residential areas is the common open spaces that allow the community to gather. Semi-public areas have been formed that enable the interaction of neighbors but also other residents. In addition to semi-public, the proposal is public areas in three zones, which have small centers' function. Toward public areas, there are smaller markets, specialty shops, cafes, or restaurants.

Public places allow residents to have a lively environment and space for community activities.

Appendix 3-12: Proposal - scenario I, 2021

Figure 3.38: Proposal - scenario I, 2021

Scenarios

The proposed plan is the most invasive stage of development; however, two more variants have been developed. The direction in which the proposals were developed is based on the reduction's degree of construction and agricultural area increase. The reduction in construction further affects the reduction of the population. The idea is to keep the local functional bio center and bio corridor proposal while only the zones of built land are being removed. Additionally, all the basic facilities proposed in the original plan are retained, but with their relocation: a primary school, a senior center, a medical center, and an environmental education center.

The second proposal (Figure 3.39) involves removing built-up land in the southern part of the study area to increase the agricultural area. Other zones remain the same as in the original plan, except for relocating the environmental education center to the central built zone, next to the senior center. Construction, in this case, is reduced from 40% to 23.33%, or from 24 ha to 14 ha (Table 3.12). In addition to the reduced built-up area, the number of inhabitants decreases, which would mean that it now has approximately 1000 inhabitants (Table 3.11).

Appendix 3-13: Proposal - scenario II, 2021

Figure 3.39: Proposal - scenario II , 2021

The third proposal (Figure 3.40) removes the central residential zone and public places, retaining only the medical center and nursing home facilities. Thus, environmental education is being moved to the northern built zone, next to the primary school. Agriculture is now expanding into the recreation zone, to the blue-green corridor, while the recreation zone is replacing the residential zone. This reduction reduces rebuilding from 23.33% to 18.33%, or from 14ha to 11ha (Table 3.12). This proposal has also indicated a reduction in population from 1,000 to 500 (Table 3.11).

Appendix 3-14: Proposal - scenario III, 2021

Figure 3.40: Proposal - scenario III, 2021

Proposal	1	2	3
Built-up area (%)	40	23.33	18.33
Built-up area (ha)	24	14	11
Inhabitants	1500	1000	500

Table 3.11: Density of population according to the built-up area through all three scenarios

Zone	Proposal					
	1		2		3	
	ha	%	ha	%		
Built-up area	24	40	14	23	11	18
Agriculture	15	25	25	42	28	47
Bio-center	10	17	10	17	10	17
Recreation	5	8	5	8	5	8
Bio-corridor	4	7	4	7	4	7
Blue-green biocorridor	2	3	2	3	2	3
Total area (ha)	60	100	60	100	60	100

Table 3.12: Area of zones through all three scenarios

4. Results

In summary, the proposed plan can be found to have conformed with some of the principles of Smart Growth. The aforementioned includes placing public places as a primary function of the town. The system of public places encourages the creation of a walkable town. The system of public areas includes public spaces themselves, such as squares and parks, and semi-public spaces within residential units. Green infrastructure is a system that connects all these points and enables movement in

the city. With the development of open space systems, the non-porous surface is reduced, which has favorable effects on the climate and microclimate. Porous paving certainly contributes to the leakage of water into the soil and enables water circulation's natural process. When these conditions are met, it is possible to form the town's greenery, which will also have positive effects on the climate, pollution, and natural processes in the environment. From a social perspective, open places attract people to gather when places are attractive or offer some content, such as shops, cafes, or restaurants. More extensive public areas can also be spaces for larger gatherings of people for various community activities, festivals, and markets.

In terms of environmental protection, the revitalization of the existing local non-functional bio center contributes to the increase of biodiversity and the landscape's diversity. Heterogeneity in the landscape also means stability; however, the parts must be networked to fulfill the function. For bio centers to be functional, they must have a large enough surface area of the nucleus, where the species' life cycles will be enabled. Therefore, forming a bio center of adequate size requires establishing a connection of non-functional local bio corridors. The proximity of the natural monument Hostivice ponds induced the extension of the blue-green bio corridor and a bio center formation. The blue-green bio corridor offers even more inclusive biodiversity and has very favorable effects on the environment's processes.

From the social aspect of the town's landscape, it is the activation of additional space to allow people access to recreation. The system of green areas from the Hostivice ponds, along the blue-green corridor, all the way to the bio center, is a zone that can be used for active and passive recreation. The existence of the landscape in the town has a positive effect on the active movement of people. Therefore, the recreation zone is related to the specific zone proposed in the plan, but recreation is enabled throughout the entire space.

Transport in the town is another item that has a positive effect on recreation. With the formation of an auto-free settlement, the population was forced to move actively, either on foot or using bicycles. The previously mentioned green infrastructure has a significant role in enabling comfortable movement without difficulties. Additionally, if cars are not used, the area necessary for traffic communication is reduced, which again reduces the non-porous surface.

Agriculture is the primary function in this locality; due to the quality of the soil, its retention is desirable. By retaining the agricultural function but reducing it, the landscape's diversity is created, which has positive consequences for biodiversity. By forming hedges between arable fields, it is possible to move the species on a smaller scale.

Housing in this zone is planned to keep the character of the old town of Hostivice. The used blocks of houses in a row have a historical connection with the place, which preserves the place's character. The introduction of other housing types, such as smaller blocks of multiple-detached houses and detached houses, contributes to the heterogeneity of settlements and allows the population to choose the type of housing. The idea is not to isolate the population but to spend their lives in public and semi-public spaces in the community. Such a community could then characterize the town as livable.

The facilities proposed in the plan are classified as deficient in the town of Hostivice. The proposed facility is a primary school, as the existing school is slowly running out of capacity. The school's location is positioned so that it can be attended by students who live in the rest of the town. The center for the elderly in Hostivice does not have sufficient capacity or is not suitable for people with different needs.

Therefore, the planned facility is a multi-purpose nursing home for different degrees of care.

There is no medical facility in Hostivice, except for private clinics, which is why it is planned in this part. It is positioned next to the senior center to be close in case of emergency. A facility that plays a social and educational role is a center of environmental education. Such a facility can offer activities and presentations on the importance and role of the town's environment and more broadly. Such a center can be a place for organizing events, performances, educational programs

The proposed plan is given in three variations concerning the percentage of built-up area. The previously described plan is the first variant, which has the highest percentage of occupancy. The second variant is characterized by more diminutive land development and a larger share of the agricultural zone. In the third variant, built-up land is reduced to a minimum, while agriculture is increased again. The basis of these variations' features is the retention of the newly planned biocenter and the bio corridor. The recreation zone also does not lose its surface but is allocated following the agricultural zone's expansion.

The choice of the way of variation of the plan is the town's growing aspiration not to expand and not to strive to change the land use. Consequently, preference is given to the current land use, i.e., agriculture, and the built-up land for housing is reduced proportionally. As the listed facilities are necessary to be introduced, they are retained in all variants with possible allocation.

5. Discussion

This thesis's methodology is formed so that the basic concepts related to spatial development are defined through the literature review. The methodology chapter Case Study refers to analyzing the researched area from the historical, socio-cultural, environment, and spatial-urban aspects. The place's analysis also included a tour of the terrain and observation of the main present issues and drawing concrete conclusions. The following research part referred to interviewing persons responsible for spatial planning, who gave specific issues in the town and suggestions for their solution. After an extensive collection of information required for further processing, a template for the town's future development is formed. Consequently, a plan for the future development of Hostivice is proposed.

The Literature Review chapter is based on spatial development terms, notably sustainable development, smart growth, and suburbanization. Further, suburbanization is observed from the aspect of the world's understanding of this concept and the understanding in the Czech Republic. Eventually, specific cases of suburbanization occurring in the vicinity of cities in the Czech Republic are provided.

According to the authors, the concept of sustainable development has different definitions through the observation of the literature. The United Nations definition represents *sustainable development* as development that strikes a balance between the present generation's needs and future generations (UN, 1987). The first appearance of the term environmentally conscious occurs in the World Charter for Nature (UN, 1982). This concept's formation is linked to environmental concerns regarding the crisis in which it finds itself (Drastichová and Filzmoser, 2019). Sustainable development is a process of synergetic integration, interaction, and co-evolution among the economic, social, physical, and environmental subsystems (Tran, 2015). From the perspective of legislation, *sustainable development* was first

adopted by the European Union in 2001. The Agenda 2030 is currently in force, which the United Nations accepted in 2015. Agenda 2030 includes 17 goals, which the European Union supports its members to implement (Drastichová and Filzmoser, 2019).

The concept of Smart Growth was chosen for analysis because it is one of how the goals of sustainable development can be implemented. Smart Growth provides specific measures to influence the problems and issues that arise during the expansion of cities and towns. The evolution of the concept took place in parallel with the evolution of the concept of *sustainable development.* However, its implementation began in the 21st century. The triggers for creating the concept are the appearance of negative consequences of urbanization and the degradation of the city's quality of life (Lucaciu, 2018). In 2010, the European Union defined Smart Growth in its document for strategic development. In this document, the term is defined as an economically oriented term, i.e., all actions of the plan are directed towards economic stability (Żelazny, 2017). The authors' definitions differ, but the environmental aspect occurs in every definition. Thus Wey and Hsu (2014) consider smart growth to be an approach that addresses the environment, housing, and the community.
On the other hand, Underwood et al. (2011) present a balance between the infrastructure needed for population growth and environmental protection. Lee and Rehn (2019) re-emphasize three main factors: the economy, community, and ecology. The implementation of the concept avoids the negative consequences on the quality of life, which result from uncontrolled urbanization, and in connection with that, population density and excessive land development (Susanti et al., 2016). Consequently, urbanization leads to a series of issues: environmental pollution, ecological destruction, deterioration of traffic conditions, increase in domestic garbage, lack of per capita resources in the city (Zhang et al., 2019).
Approaches in Europe and America differ. The European approach is economically oriented, which encourages the preservation of natural systems and the implementation of green infrastructure, making attractive open spaces—encouraging non-motorized recreation, by creating connections between public spaces and parks. All of the above forms an environment where people live and work, boosting the local economy. On the other hand, the American approach is focused on pedestrian-friendly and transit-friendly development (Artman et al., 2019). U.S. Environment Protection Agency (2011) has formed guidelines for smart growth outlining ten strategies to achieve: mix land uses; take advantage of compact building design; create a range of housing opportunities and choices; create walkable neighborhoods; foster distinctive, attractive communities with a strong sense of place; preserve open space, farmland, natural beauty, and critical environmental areas; strengthen and direct development towards existing communities; provide a variety of transportation choices; make development decisions predictable, fair, and cost-effective; encourage community and stakeholder collaboration in development decisions. With the implementation of Smart Growth, it was realized that the results are not always successful. Therefore, the insufficient harmonization of local and regional control of land use and non-communication between city and state institutions (Siara, 2020).

The understanding of suburbanization was taken into consideration because the researched area is precisely an example of suburbanization. The urbanization of Prague led to the disintegration of the surrounding settlements. Hostivice is one of the settlements created by suburbanization, as the population needs to move out of the city center but to be close enough to use the services of the city. The trend of suburbanization appeared at the beginning of the industrial age, as people tend to

move out of the city core. People built careers so that one day they would be free to live on the periphery. However, as these people's culture is not the same as the local population, they tend to change these suburban settlements and their character. As a result, land-use change and fragmentation are changing. However, such a population often has a driving role in the community, boosting the local economy (Stręk et al., 2019). Transport has a significant role in suburbanization because it is necessary to use motor vehicles in order for the population to arrive in the city center. However, by applying transport-oriented development, motor vehicles can be reduced, switching to public transport, trains or bicycles. It is necessary to create a pedestrian-friendly and mixed-use neighborhood for a thriving transit-oriented environment (Shao et al., 2019). The problem that arises during suburbanization is modern infrastructure, which negatively affects the cultural heritage. Spatial planning does not pay enough attention to the natural and cultural-historical landscape (Swensen and Jerpåsen, 2008). In planning urban areas, the economic and ecological function of the landscape is emphasized, while the social one is neglected. This category includes recreation and site selection for the residential area (Wolf and Meyer 2010).

Consequently, suburbanization in the Czech Republic is not easy to distinguish between urban and rural areas. The suburban area has become a transition zone between these two types. The most significant suburbanization in clusters occurs in the vicinity of Prague, Brno, and Ostrava (Paszto et al. 2010). In the past, rural areas were defined exclusively as an instrument for agricultural production, where soil fertility was the most crucial factor. Over time, the perspective has changed in that suburban areas are a mixture of agricultural, residential, and tourist functions. Therefore, the aesthetics and attractiveness of the landscape and the environment's diversity and function have become very important (Šťastná et al., 2018). Research conducted in the Olomouc area concludes that the environment is a relevant factor in the quality of life because the suburban environment is suitable for raising children and spending time outdoors (Biolek et al., 2017). The main problems of suburbanization are uncontrolled expansion, the inadequate architecture of new houses, lower quality and capacity of technical infrastructure, absence of public transport to the city, low capacity or absence of schools and kindergartens, lack of greenery, and decline of agricultural land (Kubeš and Nováček, 2019). In Vaishar et al. (2016), research showed that the most sustainable towns in the Czech Republic are small towns in Prague's immediate vicinity. They show above-average employment in services and the most important business centers.

From a social perspective, polarizations have been observed among the suburbs and the newcomers' local population, driving to social conflicts. The solution to this problem could include all residents in local government actions to integrate the population. The negative aspect of suburbanization can be regulated by cooperation between public administration, investors, and developers in certain municipalities' future development plans. In this way, the attractiveness of municipalities increases, and the precondition for social polarization growth is limited. When developing new residential areas, no attention is paid to ancillary services, free activities, and open public spaces. The municipality is obliged to support construction with high-quality public space, taking into account the existing municipality's character (Šašek et al., 2019). Research conducted in the paper by Špačková et al. (2016) concluded that the general population is satisfied with suburban settlements' quality of life. Therefore, the population's migrations are more frequent within the settlement itself than outside, towards the city. A paper dealing with the change of the rural landscape in the South Moravian Region states that the place's cultural character is disturbed. The lost of character is a consequence of intensive agriculture, where small arable plots were transformed into large agricultural land. Additionally, the

natural environment's disturbance occurs by cutting remaining greenery, the opening of fields suitable for erosion by wind and water, the concreting of small streams, and the general reduction of biodiversity. Also, the newly built-up area removes valuable historical buildings, which indicate loss of place character. The most significant circumstance in transforming the landscape around the cities is the reduction of agricultural land. In the case of Brno, agriculture is decreased as much as the built-up area has increased (Vavrouchová and Toman, 2013).

By defining the previously mentioned terms and presenting their appearance in practical examples through a literature review, it gave an insight into the specifics that should be paid attention to when planning. The approaches given serve as guidelines for spatial planning, thus avoiding negative consequences.

The next chapter of the methodology focused on the analysis of the case study. Topics covered in the analysis are Location, Demography, History, territory, geography, soil quality, vegetation, hydrology, land cover, strategic plan, spatial plan, transportation/connections, noise, facilities, natural monuments/historical heritage.

These analyzes have conditioned future decisions in spatial planning. Demographic analysis has yielded significant data, showing the lack of certain facilities in Hostivice. According to the Czech Statistical Office data, the population of Hostivice increased by 70% between 2003 and 2017, and according to the forecast, the growth will continue until 2032 with an increase of 29%. It means, as mentioned above, that by 2032 there will be 10,700 inhabitants. Population growth will contribute to an increase in the number of children, which causes primary school capacity to be filled. By 2032, the capacities will undoubtedly be filled when a new school must be planned. With the increase of the population, there will be many older people who require care. In correlation with that, it is necessary to plan a center for the elderly. Significant growth was observed in adolescents' age until 2025, increasing from 340 to 500. The highest growth is recorded in 40-46 age, where it will increase by 1000 people by 2032. Slightly lower growth will affect the age group over 65, where the increase will be from 1,200 to 1,800 inhabitants in the next 15 years.

Through the analysis of history, an insight into this place's development from the earliest times is given. By finding fossil remains, it was determined that the area of Hostivice had been inhabited since the late Paleolithic era. The population inhabited this area due to the quality of the land they used for agriculture. It is essential to note that today's Litovice was also inhabited in the late Eneolithic. The presence of the population throughout history in this place testifies to a quality landscape for life. The rich history of the place creates a specific *genius loci*, which needs to be maintained through future development. The specific building of the Hostivice chateau appears on the map from 1840 and remains on the maps dated 1850, 1878, 1964 until today. It is this architectural element that carries one of the characteristics that define the *genius loci*.

The analysis of Hostivice's terrain is of great importance for the eventual plan. The northern part of the town has a higher elevation, from where a gradual decline starts to the Hostivice ponds. More pronounced dynamics of the terrain occur in the area of Litovice. The dynamics of the terrain have certainly conditioned future decisions regarding the proposed plan. Although the dynamics of the terrain exist, which gives a different aspect, this analysis did not have significant effects on the development of the plan, except for understanding the terrain's nature.

In terms of land analysis, the most prominent function has land used for agricultural purposes because its quality is its protection. Such land has been preserved from construction. The south-western part of the town has the largest area under high-quality land, i.e., first-class according to the BPEJ classification. This class can be removed from the agricultural land fund only exceptionally, mainly for projects related to the restoration of the landscape's ecological stability or line structures of fundamental importance. Although construction on the first class of land occurs in the eastern part, the south-western part of the land has been preserved. The problem that arises is intensive agriculture, which implies extensive arable fields. Too large areas under agriculture are subject to erosion, the diversity of the landscape is reduced, which causes instability of the landscape and the reduction of biodiversity.

Planning in the town requires vegetation; however, it is crucial to analyze the potential natural vegetation because their application is key to a thriving environment. By applying potential natural vegetation, vegetation's non-rooting is avoided, and invasive species' settlement is prevented. On the other hand, vegetation again plays a role in the landscape's aesthetics, realizing its historical character. According to the map of potential natural vegetation provided by project Pladias (2018), on a scale of 1: 500 000, the territory of Hostivice is dominated by (8) Lime-oak forest. Slightly less occurs (7) Oak-hornbeam forest with Melampyrum nemorosum, (33) Oak forest with Potentilla alba, and (36) Woodrush-oak and silver fir-oak forest.

The hydrological network of Hostivice is very developed, which has conditioned quality land suitable for agriculture. There are five ponds in the town, which are sources of biodiversity and places for recreation. In addition to the lake, two streams pass through Hostivice, Litovičky and Janečky. The Litovičky stream's revitalization in the central town is an outstanding example of a well-designed blue-green corridor, which fulfills its ecological and recreational function.

The spatial analysis starts from land cover types, which need to be taken into account for understanding the functioning of the town. According to the Land Cover map from 2012, a variety of types occurs. Continuous (> 80%) and discontinuous (50-80%) urban fabric cover most of the town. Furthermore, the industrial, commercial, public, military, and private units type is also represented to no diminutive extent, both in fragments inside the built-up area and Prague's highway. The forest occupies a significant area in association with water bodies. However, arable land occupies the most significant administrative area of Hostivice. The northern part of Litovice has mixed land cover consisting of permanent crops; complex and mixed cultivation patterns; industrial, commercial, public, military, private units; isolated structures. This variety of land covers enables manipulation with land use.

The current Strategic Plan for Hostivice is valid from 2020 to 2035 and aims is to define visions for future development. Aims of this plan, provide specific guidelines used in the proposed plan for the development of Hostivice. The strategic plan's objectives are divided into four groups: economic development, spatial development, and environment, quality of life in the town; the last section is management and town administration. For the case study purpose, it is essential to pay attention to the second group of goals, including spatial development and the environment. Within this group, formed three main aims with their specific indicators. Two of them are significant: 1. object is to establish ecological stability by striking a balance between the requirements of nature protection, recreational and economic use of the area. 2. object refers to all transport types' interconnection, with attention to the public, pedestrian, and bicycle transport.

The next level spatial analysis of Hostivice is based on the Spatial Plans 2005 and 2011 and the Spatial Plan 2017. The most relevant point is the 2011 plan merged the basic spatial plan and the landscape plan and the Territorial system of the landscape's ecological stability (ÚSES). With this approach, the issue of the environment was designated. Most of the area of the town of Hostivice belongs to the supra-regional bio corridor. The natural monument Pond Hostivice and the accompanying forest land are local bio centers. Other lakes in Hostivice are also characterized as local bio centers and connected by a bio corridors system. Though, some bio corridors are non-functional. The special non-functionality of bio corridors and bio centers strike to considering establishing their functionality. The improvement to the spatial plan from 2017 focuses on highlighting other essential factors of land use. In this classification, there is a tendency to indicate the soil's quality on the territory of Hostivice and thus promote agricultural activities.

Transport, i.e., connections of Hostivice, are its most meaningful advantage. The town is connected to Prague by a highway, which further leads to Karlovy Vary. The public transport network is significantly developed with the existence of trains and buses departing from Prague, but also the surrounding settlements. Good connection with the city is a prerequisite for the successful development of the town. In addition to connections outside the town, public transport also exists inside. The problem that occurs in Hostivice is pedestrian traffic, which is neglected. In some places, the sidewalk is missing or too narrow, which causes endangered pedestrian safety. Considering the stated advantages and disadvantages of transport, they serve as guidelines for transport planning in the expansion of the town.

According to the World Health Organization, sound levels less than 70 dB do not harm living organisms, no matter how long or consistent the exposure. According to the daily noise map from the Ministry of Health of the Czech Republic, slightly higher values of more than 70 dB occur in the highway's zone and the main road of the second-order within the settlement. Further, these sound levels are located in the zones of railway stations. Following the above, the negative, harmful effect of noise will affect the inner parts of the settlement and the territory of Litovice.

The analysis of the present facilities in Hostivice revealed their lack or insufficient capacity. The primary school is the facility that stands out the most as required due to the full-capacity. There is a nursing home in the town, but the fulfillment of its function is questionable. Health clinics in Hostivice are only private, while there are no state institutions, and it is necessary to plan the construction of such a facility. There are four supermarkets in the town, but the lack of smaller markets is evident.

The natural monument and cultural-historical heritage of Hostivice are some of the starting points for developing the plan's idea. The Hostivice Natural Monument is a protected natural monument covering Břevský, Kala and Litovický ponds, and Nekejcov wetlands, Chobot, Břevské reed, and the surrounding forest. Apart from being characterized as a natural monument, it is also a local functional bio center. The characteristic of the cultural-historical aspect of Hostivice can be reflected in its architecture. The castle of Hostivice has a unique architectural value, which is very recognizable as such. Apart from the unique architecture, its functionality is at a high level when it comes to housing. This housing model meets environmental, social, and cultural-historical requirements.

Going out on the field contributed a lot to the overall conclusion of the town's functioning, significant for the future proposal. The main advantage is proximity to Prague and fast transportation, either by train or bus. The present issue is very heterogeneous housing. There are zones where there are detached houses with private yards, semi-detached houses, and larger three-story residential units. The

problem with such planning is that clusters of a particular type of housing and physical barriers between them have been created. Public spaces are not often used but rather as a transit zone. Among the public spaces, there are also pedestrian car-free zones. Playgrounds for children are sufficient, but their position is questionable due to the proximity of busy roads. In some streets, the sidewalks are pretty narrow, and in some sections, there is only a one-sided sidewalk. Underdeveloped pedestrian infrastructure consequently affects pedestrian safety. Thus, pedestrians instead choose cars as a means of transportation than walk. Landscape places in town, such as ponds, attract the population and encourage recreation. However, ponds surrounding can be improved to attract more people and increase overall natural environment quality. The Landscape character of Hostivice has undergone high heterogeneity. Some parts are modernly planned, while more traditional parts of the town conserve history and are thus more valued. The apparent problem is the existence of only large markets, in front of which crowds are created. Besides, all facilities are concentrated in the city center, which affects the necessary use of cars for movement.

For the research part of the paper, interviews with persons responsible for the planning process in the town were used. The respondents are the opponent of this thesis, Ing. arch. Vladka Kirschner, Ph.D., the municipal administration person responsible for the spatial plan Ing. arch. Tomáš Koňařík is the primarily responsible executor of the Strategic Plan Hostivice Ing. Petr Návrat. The obtained information is summarized, and many similarities can be noticed in the answers of the respondents. Respondents Vladka Kirschner and Tomáš Koňařík both agree that preserving the natural landscape should be taken into account when planning. Mr. Tomáš Koňařík emphasized that towns should be created that will be alive and where the community will be active.

On the other hand, he mentioned three fundamental problems that arise during planning. They are the methodology of the spatial plan, encouraging a spatially oriented approach, not a functional one; investors and developers; presentation of the spatial plan to the town's population. Both also stated the need for a new primary school. Simultaneously, Mr. Koňařík points out the need for a facility for socio-cultural activities and commercial content in the town center. The same answer was valid for the square in the center of the town, non-functional due to the large area. However, when it comes to children's playgrounds, Ms. Kirschner was satisfied with their quantity and position in the town. Simultaneously, Mr.Koňařík expressed doubt about their position due to the proximity to the busy streets. When it comes to transport, both respondents are very satisfied with the town's connection and towards Prague. They additionally mentioned that traffic jams are present only around the school during rush hours. As for the parking space, Mr.Koňařík stated that the parking problem is becoming more significant and that the city center must be relieved.

On the other hand, Ms. Kirschner states that the parking lot in the center of the town is too big and that we should consider parking in front of the medical center. Mr.Koňařík, who is involved in presenting spatial plan to the community, says that the residents are very interested in its future development. On the other hand, the respondent herself is not involved in the activities and is not familiar with the community's activities. Both respondents agreed that suitable housing types for Hostivice are both houses and blocks of buildings depending on the location. As for future development, both respondents do not want it to happen outside the current settlement boundaries but develop in abandoned and non-used places within the city. Mr.Koňařík concluded that even if enlargement occurs, it should not be for the next 15 years.

In an interview with Mr. Petr Návrat concluded that any idea is possible for spatial planning. It depends on the municipality and other stakeholders. What will be done in a particular area depends on the town council and various experts. The strategic plan provides guidelines for the future spatial plan, and it is essential to stay inside the borders of the plan's objectives. Mr. Návrat repeatedly noted as both previous respondents that it is essential to maintain development within the existing boundaries and improve existing places. The specific activity that has to be done is to create facilities that will offer jobs for a population with a high level of education. Such a population, which represents the majority, will remain on in town and strengthen it economically. Mr. Návrat single out the term mobility, which has to be improved in pedestrian and bicycle terms.

In the end, summarizing all the previous information, reviewed the literature, analyzed the place through a map, field trips, and interviews with people important for planning in Hostivice, and contributed to forming a clear template for town development. The choice of location for future development was conditioned by limiting factors, such as already built structures in the existing settlement's vicinity. One free area for the development of the town is located in the area of Litovica. Planned development of this place can prevent unplanned construction and expansion.

The proposed plan shows three variants that differ according to the degree of built-up area and agricultural zone. The selection of these two factors originates from the fact that the expansion of Hostivice in terms of the new housing units is undesirable. The preservation of agriculture favors the current purpose of the land. However, construction in the Litovica area would occur in an area of more inferior land quality. At the same time, agriculture would be retained in the first class of land according to the BPEJ classification. The degree of built-up and open space in the first variant is in the ratio of 40-60%, the second variant 23-77%, and the third 18-82%. The first variant has a built-up area of 24 ha, the second variant 14 ha, and the third 11 ha. Accordingly, the number of inhabitants decreases with the degree of construction. The first proposal has 1500 inhabitants, the second 1000 and the third 500.

In addition to housing units, the built-up areas include a primary school, senior center, medical center, and environmental education center. Besides these facilities, commercial facilities are planned, such as cafes or restaurants, bicycle rental. According to the literature review, it was found that Smart Growth favors the development of car-free zones. Therefore, it is planned to be a car-free zone for this part of the settlement, and it only implies the use of bicycles. The use of the car would be allowed only for service purposes. Accordingly, the built-up area also includes the transport network; however, it has been significantly reduced by excluding motor vehicles from use. In this way, the area under the impermeable material is reduced, which is environmentally friendly. In addition to cycling and pedestrian infrastructure, it is necessary to establish green infrastructure. This proposal's primary emphasis is to encourage people to move and recreate actively, and accordingly, a walkable settlement is a prerequisite for that. The system of open spaces, both public and semi-public, forms such a walkable and lively settlement.

The main segment of all three proposals is the biocenter. The area occupied by the newly planned bio center is approximately 10 ha (17%), and its area does not change through variations of plans. As Sustainable Development and Smart Growth favor preserving the landscape in the urbanization of the area and the inclusion of aspects of the natural environment, this idea is justified. Biocenter includes revitalizing the existing non-functional bio center and revitalizing a network of non-functional bio corridors. The idea to connect the biocenter of the Hostivice pond through a blue-green corridor establishes a network of landscape elements and

strengthens its stability. The proposal aims further to establish connections between bio corridors on a larger scale, starting from here. The natural landscape encourages the population to actively move, recreate, stay in nature, socialize, and contribute to the community's general well-being.

6. Conclusion

After extensive work on the analysis of the concepts responsible for the development of suburban areas and the analysis of the case study and the given proposal, new questions arose. To what extent are the concepts of *sustainable development* and Smart Growth applicable in practice in the future? In cases where these principles are applied, what is the percentage of their success? What kind of community must be in someplace to accept all the modern trends of these concepts? The implementation of modern infrastructure can significantly facilitate life in towns and cities, but the question is, does this lose the *genius loci*? Modernization occurs according to the same patterns in all parts of the world, and it is difficult to change its matrix. The infrastructure used is universal, and therefore all places are starting to look like each other. Perfectly designed cities are often deserted cities as well. This means that cities with well-designed infrastructure; can lose their *genius loci*, which attract people to be in public space. As a result, public spaces are empty, unused, and abandoned, reflected in the city's image as non-livable. Preserving the character of a place and a landscape is one of the main matters that must be considered in the planning process. The preserving character must be conducted on every scale, from garden design, park design to spatial planning. The place's history is transmitted through architecture and landscape architecture, so the focus should be on preserving the original examples. Another way to preserve the character is to preserve the natural environment and the matrix of the landscape. The Czech Republic is prosperous, that history is present in every village, town, and city, giving opportunities for places to develop while preserving the landscape's character. The problem is in those places that have already lost their character or have never had one. For such cases, it is necessary to restore its character through future development.

7. Bibliography

Atkinson-Palombo C.,2010: New housing construction in Phoenix: Evidence of “new suburbanism”? Department of Geography, University of Connecticut and Patricia Gober, School of Geographical Sciences and School of Sustainability, Arizona State University, United States.

Biolek J., Andráško I., 2015: Investigating suburban environment by means of mental maps: a case study of Olomouc hinterland. Palacký University, Czech Republic.

Biolek J., Andráško I, Malý J., Zrůstová P., 2017: Interrelated aspects of residential suburbanization and collective quality of life: A case study in Czech suburbs. Department of Geography, Faculty of Science, Palacký University, 771 46, Olomouc, Czech Republic.

Camagni R., Capello R.,Nijkamp P., 1998: Towards sustainable city policy: an economy - environment technology nexus. Department of Economics, Politecnico di Milano, Piazza Leonardo da Vinci 32, 20133 Milano, Italy, Pp. 103-118.

Deilami K., Kamruzzaman M., 2017: Modelling the urban heat island effect of smart growth policy scenarios in Brisbane. School of Civil Engineering and Built Environment, Queensland University of Technology (QUT),2 George Street, Brisbane, QLD 4001, Australia, Pp.38-55.

Drastichová M., Filzmoser P., 2019: Assessment of Sustainable Development Using Cluster, Analysis and Principal Component Analysis. VŠB-Technical University of Ostrava, Faculty of Economics, Department of Regional and Environmental Economics, Sokolská 33, 701 21 Ostrava, Czech Republic, Pp., 7-24.

Du Pisani A., 2006: Sustainable development – historical roots of the concept. School for Social and Government Studies, North-West University, Potchefstroom, South Africa, Pp. 83 – 96.

EPA 231-K-09-003, 2009: Essential Smart Growth Fixes for Urban and Suburban Zoning Codes. Office of Sustainable Communities U.S. Environmental Protection Agency 1200 Pennsylvania Ave. NW (MC 1807T) Washington, DC 20460.

EPA/600/R-090/052F, 2011: Exposure Factors Handbook: 2011 Edition. National Center for Environmental Assessment, Office of Research and Development, U.S. Environmental Protection Agency, Washington, DC 20460.

EPA 231-R-15-003, 2016: FRAMEWORK FOR CREATING A SMART GROWTH ECONOMIC DEVELOPMENT STRATEGY: A TOOL FOR SMALL CITIES AND TOWNS. Office of Sustainable Communities U.S. Environmental Protection Agency 1200 Pennsylvania Ave. NW (MC 1807T) Washington, DC 20460.

European Commision, 2010: EUROPE 2020: A strategy for smart, sustainable and inclusive growth. European Commision, Brussels, Pp. 34

Feizi A., Joo S., Kwigizile V., Oh J., 2020: A pervasive framework toward sustainability and smart-growth: Assessing multifaceted transportation performance measures for smart cities. Department of Civil and Construction Engineering, Western Michigan University, 1903 W. Michigan Ave., Kalamazoo, MI, 49008-5316, USA, ISSN 2214-1405.

Hesse M., Siedentop S., 2018: Suburbanisation and Suburbanisms – Making Sense of Continental European Developments. Institute of Geography and Spatial Planning, University of Luxembourg, 11, porte des Sciences, 4366 Esch-sur-Alzette, Luxembourg.

Hák T., Janoušková S, Moldan B., 2015: Sustainable Development Goals: A need for relevant indicator. Charles University Environment Center, José Martího 2/407, 162 00 Prague, Czech Republic, Pp. 565-573.

Kubeš J., Nováček A., 2019: Suburbs around the Czech provincial city of České Budějovice – territorial arrangement and problems. University of South Bohemia, Department of Geography, Jeronýmova 10, 371 15 České Budějovice, Czech Republic.

Li L., Ren X., 2019: A Novel Evaluation Model for Urban Smart Growth: Based on Principal Component Regression and Radial Basis Function Neural Network. School of Civil Engineering, Wuhan University, Wuhan 430072, China, Pp. 25.

Lucaciu (Gotiu), L.-O.,2018: A Look at the Evaluation Framework for Smart Growth Programmes. Revista Romaneasca pentru Educatie Multidimensionala, Pp. 60-76.

Marčev D., Růžička M., Lukeš M., Kotek M., 2015: Energy consumption of commuting from suburban areas. University of Life Sciences Prague, Faculty of Engineering, Department of Vehicles ang ground transport, Kamýcká 129, CZ16521 Prague, Czech Republic.

Młynarzewska-Borowiec I., 2020: Does Implementation of the Smart Growth Priority Affect Per Capita Income of EU countries?—Empirical Analysis for the Period 2000–2017. Journal of the Knowledge Economy.

Paszto V., Brychtova A., Tuček P., Marek L., Burian J., 2014: Using a fuzzy inference system to delimit rural and urban municipalities in the Czech Republic in 2010. Department of Geoinformatics, Faculty of Science, Palacky´ University, Olomouc, Czech Republic.

Sciara G-C., 2020: Implementing regional smart growth without regional authority: The limits of information for nudging local land use. Community and Regional Planning Program, University of Texas at Austin, School of Architecture, 310 Inner Campus Dr. B7500, Austin, TX 78712, United States of America.

Shao J., Hu Z, LiB., Luo J., Xi J., 2019: A sustainable urban design framework for the suburbanisation of coastal southeaster Australia. School of Architecture, Nanjing Tech University, Nanjing 211816, China.

Stręk Ż., Postek P., Sobczak A., Rybaczek P., 2019: Suburbanization as a problem of rural development. University of Life Sciences in Lublin, Department of Environmental Engineering and Geodesy, Leszczyńskiego 7 20-069 Lublin, Poland.

Susanti R., Soetomo S., Buchori I., Brotosunaryo P., 2016: Smart Growth, Smart City and Density: In Search of The Appropriate Indicator for Residential Density in Indonesia. Diponegoro University, Prof.Sudarto Street Tembalang, Semarang 50275, Indonesia, Pp. 194-201.

Swensen G., Jerpåsen G., 2008: Cultural heritage in suburban landscape planning: A case study in Southern Norway. The Norwegian Institute for Cultural Heritage Research, Box 736, N-0105 Oslo, Norway.

Tran L., 2015: An interactive method to select a set of sustainable urban development indicators. Geography Department, University of Tennessee at Knoxville, Knoxville, TN, USA Pp. 418-427.

Underwood J., Francis J., Gerber L., 2011: Incorporating biodiversity conservation and recreational wildlife values into smart growth land use planning. Arizona Game and Fish Department, 5000 W Carefree Hwy, Phoenix, AZ 85086, United States, Pp.136-143.

United Nation, 1987: Brundtland Report of the World Commission on Environment and Development: Our Common Future. Oxford University Press

United Nations, 1982: A World Charter for Nature. United Nations, New York

Vaishar A., Zapletalová J., Nováková E., 2016: Between urban and rural: sustainability of small towns in the Czech Republic. Institute of Geonics, Czech Academy of Sciences Ostrava, v.v.i., Department of Environmental Geography, 602 00 Brno, Drobného.

Vavrouchová H., Toman F., 2013: Landscape dynamics in the Brno's surrounding between 2001 and 2011. Department of Applied and Landscape Ecology, Mendel University in Brno, 613 00 Brno, Czech Republic.

Wey W., Hsu J., 2014: New Urbanism and Smart Growth: Toward achieving a smart National Taipei University District. Department of Real Estate and Built Environment, National Taipei University, 151 University Road, San Sai District, New Taipei City 23741, Taiwan, Pp. 164-174.

Wolf T., Meyer B.,2010: Suburban scenario development based on multiple landscape assessments. University of Leipzig, Institute of Geography, Leipzig, Germany.

Zhang R., Wang Y., Wang K., Zhao H., Xu S., Mu L., Zhou G., 2019: An evaluating model for smart growth plan based on BP neural network and set pair analysis. ollege of Environment and Safety Engineering, Qingdao University of Science and Technology, Qingdao, 266042, China, Pp. 928-939

Šašek M., Hlaváček P., Holub J., 2019: Suburbanization processes of large cities in the Czech Republic in terms of migration. Jan Evangelista Purkyně University in Ústí nad Labem, Ústí nad Labem, Czech Republic.

Špačková P., Ouredníček M., 2011: Spinning the web: New social contacts of Prague's suburbanites. Charles University in Prague, Faculty of Science, Department of Social Geography and Regional Development, Albertov 6, Prague 2 128 43, Czech Republic.

Šťastná M., Vaishar A., Vavrouchová H., Mašíček T., Peřinková V., 2018: Values of a suburban landscape: Case study of Podolí u Brna (Moravia), The Czech Republic. Mendel University in Brno, Department of Applied and Landscape Ecology, Zemědělská 1, 613 00 Brno, Czech Republic.

Špačková P., Dvořáková N., Tobrmanová M., 2016: Residential satisfaction and intention to move: the case of Prague's new suburbanites. Geografiska Annaler: Series B, Human Geography, Sweden.

Šťastná M., Vaishar A., Vavrouchová H., Ševelová M., Kozlovská S., Doskočilová V., Lincová H., 2015: Changes of a rural landscape in Czech areas of different types.

Żelazny R., 2017: Determinants and measurement of smart growth: evidence from Poland. University of Economics in Katowice, Poland, Pp. 34-45.

Internet sources:

FAO United Nations, ©2014: World reference base for soil resources 2014 International soil classification system for naming soils and creating legends for soil maps (on-line), [cit.2021.03.30], available at <http://www.fao.org/3/i3794en/I3794en.pdf >.

Hostivicka Historie, ©2014: Kolektiv (1977): Hostivice – 700 let života a práce (on-line), [cit. 2021.03.30], available at <http://www.hostivickahistorie.cz/prameny/A01_700let.pdf >.

Hostivicka Historie, ©2017: HOSTIVICKÉ PAMÁTKY (on-line), [cit. 2021.03.30], available at <http://www.hostivickahistorie.cz/pamatky.htm>.

Hostivicka Historie, ©2017: Město Hostivice Stručně z historie (on-line), [cit.2021.03.30], available at <http://www.hostivickahistorie.cz/letaky/Strucne.pdf >.

Mesto Hostivice, ©2018: Demografická studie (on-line), [cit. 2021.03.30], available at <http://www.hostivice.eu/demograficka-studie/d-428272/p1=11013>.

Mesto Hostivice, ©2020: Strategický plán města Hostivice 2020-2035 analytická cast (on-line), [cit. 2021.03.30], available at <http://www.hostivice.eu/strategicky-plan-mesta-hostivice-2020-2035/d-431260/p1=26625>

Mesto Hostivice, ©2020: Strategický plán města Hostivice 2020-2035 návrhová část (on-line), [cit. 2021.03.30], available at <http://www.hostivice.eu/strategicky-plan-mesta-hostivice-2020-2035/d-431260/p1=26625>.

PLADIAS, ©2021: Vegetation of the Czech Republic 4. Forest and Scrub Vegetation (on-line), [cit. 2021.03.30], available at <https://pladias.cz/en/download/vegetation>

VÚMOP, ©2019: eKatalogBPEJ (on-line), [cit. 2021.03.30.], available at <https://bpej.vumop.cz/ >.

WHO, ©1999: Guidelines for Community Noise (on-line), [cit. 2021.03.30], available at <https://apps.who.int/iris/handle/10665/66217>.

ČSOP, ©2006: Přírodní památka Hostivické rybníky (on-line), [cit. 2021.03.30], available at < http://www.csophostivice.cz/hostivickerybniky/kniha/index.htm>.

8. List of figures and tables

9. List of appendixes