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RAILS TO TRAILS IN CZECH REPUBLIC: FRÝDLANT - HEŘMANICE
MASTER THESIS

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Environmental Sciences

DIPLOMA THESIS ASSIGNMENT

Bc. Karolína Pavlínová

Landscape Planning

Thesis title

Rails to Trails in Czech Republic: Frýdlant – Heřmanice

Objectives of thesis

Conduct field assessment to determine the feasibility and criteria for the creation of a trail way on an abandoned former rail bed at Frýdlant – Heřmanice in northern Czech Republic.

Methodology

Conduct field assessment of existing landscape characteristics

Determine ownership of former rail bed of normal gauge railway line Zittau – Reichenau (Bogatynia) – Frýdlant – Liegnitz (Legnica) established in 1864 and later constructed in 1884.

Meet with local government officials, trail advocacy groups, citizens to determine interest and needs/objects

Prepare strategic plan for implementation

Prepare prototype plan for a short section of rail/trail design.

The proposed extent of the thesis

80 pages approximately

Keywords

rails to trails, greenways, non motorized recreation routes

Recommended information sources

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- Ryan, Karen-Lee. (Ed.) 1993. Trails for the Twenty-First Century: A Planning, Design, and Management Manual for Multi-Use Trails. Washington, D.C: Island Press.

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Author's Declaration

I, Karolína Pavlínová, declare that the research and work generated of this thesis is the sole and own work of the author. The work was done in accordance with the Czech University of Life Sciences in Prague expectations and guidelines for the completion of a master's degree in the Faculty of Environmental Sciences.

Prague, 18th April 2018

Karolína Pavlínová

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Last, I would like to thank my family, my friends and my boyfriend for help and support during my studies and writing of this thesis.

Karolína

Abstract

This master thesis is addressed to the topic of rail to trail conversion located between Frýdlant v Čechách and Heřmanice in the Czech Republic. In nowadays world the re-using of existing structures in landscape is needed due to extension of build up areas and significant increase of population. Rail to trail conversions might be the way how to preserve industrial and cultural heritage of former railways for the next generations with possible conversion back to the original use.

The study determines existing criteria for the creation of a trail on former Heřmanička railway in northern Czech Republic. The results include a brief strategy plan and a prototype plan for short section of the trail.

Abstrakt

Tato diplomová práce se zabývá tématem konverze bývalé železniční trati, která se nachází mezi Frýdlandem v Čechách a Heřmanicemi, na stezku. V dnešním světě je opětovné využití již existujících struktur v krajině potřebné, vzhledem ke zvyšujícímu se podílu zastavěného území a rapidnímu nárůstu obyvatelstva. Konverze železnic na stezky by mohly být způsobem, jak uchovat průmyslové a kulturní dědictví bývalých železnic pro další generace, s možností opětovné konverze zpět k původnímu využití.

Tato studie stanovuje existující kritéria pro vznik stezky na bývalé železnici Heřmanička v severních Čechách. Výsledky práce obsahují stručný strategický plán a vzor krátkého úseku stezky.

Keywords

rails to trails

greenways

non motorized recreation routes

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1.0 Introduction

The objective of this master thesis is addressed to the topic of rail to trail conversions.

This theme of thesis was chosen based on conditions and needs in today's Czech Republic.

This research is focused on abandoned railway line between Frýdlant and Heřmanice located in the northern Czech Republic. The aims are to analyze existing conditions of the site and prepare a brief future strategy.

Heřmanička rail to trail conversion is one of the hot topics of Liberec region. It offers a potential of re-use existing feature in the landscape, which is based on modern approaches of landscape planning nowadays.

2.0 Aims of Diploma Thesis

The goals of this diploma thesis is to conduct a field assessment to determine the feasibility and criteria for the creation of a trail way on an abandoned former rail bed at Frýdlant-Heřmanice in northern Czech Republic.

The approach of research is to meet with local government officials, trail advocacy groups, citizens to determine interest and needs/objects.

Based on needs of local community prepare a strategic plan for implementation.

3.0 Literature review

3.1 What is a greenway?

Many people could be asked what is a greenway and many answers could be given. Many of people could answer greenways are the basis of ecological stability, corridors for energy in the landscape and precious part of our environment which should be protected. The others probably would say greenways are some kinds of cycle trails which are having something together with vegetation.

If someone wants to go more further, there could be found many diverse definitions what could be used. The great example of a greenway definition is a concept as was done by Charles Little in his work called Greenways for America:

"A greenway is a linear open space established along either a natural corridor, such as a riverfront, stream valley, or ridgeline, or overland along railroad right-of-way converted to recreational use, a canal, scenic road, or other route. It is any natural or landscaped course for pedestrian or bicycle passage. An open-space connector linking parks nature reserves, cultural features, or historic sites with each other and with populated areas. Locally, certain strip or linear parks designated parkway or greenbelt."(Flink et al., 1993)

If Charles Little is followed, he also defined five general types of greenways:

*"1. Urban riverside (or other waterbody) greenways, usually created as part of (or instead of) a redevelopment program along neglected, often run-down city waterforms.
2. Recreational greenways, featuring paths and trails of various kinds, often of relatively long distance, based on natural corridors as*

well as canals, abandoned railbeds, and public rights.

3. Ecologically significant natural corridors, usually along rivers and streams and less often ridgelines, to provide for wildlife migration and species interchange, nature study, and hiking.

4. Scenic and historic routes, usually along a road, highway or water-way, the most representative of them making an effort to provide pedestrian access along the route or at least places to alight from the car.

5. Comprehensive greenway systems or networks, usually based on natural landforms such as walleys and ridges but sometimes simply an opportunistic assemblage of greenway and open spaces of various kinds to create an alternative municipal or regional green infrastructure."
(Little, 1993)

In fact developing greenways means to provide better connection for every living organism in the landscape, protecting precious areas and support energy movements in the landscape. These features are making landscape more heterogenous and as is known heterogeneous structure is more stable and could cope better with outer threads. The very good idea is also to provide the access for humans and support their interest of being outdoors and understand what is around them better.

3.2 Bristol and Bath Railway Path

Bristol and Bath Railway Path his a 13 miles long off road route managed by the Avon Frome Partnership. This railway pat his open for cyclist, hikers, horseback riders and disabled users all over the year. The Bristol and Bath Railway Path was is taking place on the bed of former Midland Railway. lthe trail

was constructed between 1979 and 1986 with support of cycling charity. The very first part of trail was built between Bitton and Bath. The width was 2 meters and surface was originnaly dusty.

The trail today is 3 meters wide and surface is made of tarmac. It provides an opportunity for recreation and also commuting.

The Bristol and Bath Path i salso important biocorridor.

Thousands of visitors each year are the evidence of great services what path can offer. There are several points of refreshments, restrooms, repair points with tools, playgrounds and spots of historical and industrial heritage.

The path is easily accessible by several enter points along the way.

The railway path starts in central Bristol and leads towards Fishponds. Then the path continues to Staple Hill Tunnel and further to South Gloucestershire, passing Mangotsfield, Warmley and Bitton. The last part of the path leads through Bath and North East Somerset countryside. There is also a part of path which goes along the heritage Avon Valley Railway between Kelston and Bitton where terminates.

It is possible to book a ride on a heritage train. Also special events as a tea parties, birthday parties or teambuildings are organised.

The railway path is also accesible for disabled persons. There are many features of anti-barriers improvements such as ramps and reserved parking plots nearby the enter points to the path. Some of signs along the path are written in Braille.

3.3 Rail to Trail Conversions in the Czech Republic

The decline of rail transport in the Czech Republic has been evident since the 1970s and the idea of mass closing down of local railway lines appeared in the 1990s even though the disturbance did not reach the originally intended amount. Only a few tracks were preserved, for example for museum of traffic, the Velodráha for pedal powered trains was established in the eastern Czech Republic, on the part of the former railway of the Baťa Canal between Ratíškovice and Rohatec. The railway was originally used for transportation of lignite from mines called Tomáš and 1. Máje to Otrokovice.

3.3.1 The Story Behind the Czech Greenways

"Shortly after the Velvet Revolution in 1989, Czech-American, Lubomir Chmelar, of New

York City contemplated how he could contribute to his native country. He realized that the new market-driven economy in post-communist Czechoslovakia could threaten the local cultural and environmental heritage.

Inspired by the Hudson River Valley Greenway trails system connecting urban area through natural corridors, he envisioned a greenways network between Prague and Vienna to attract tourists to the rural areas between these two cities. Since much of the Prague-Vienna Greenways route stretches along the former Iron Curtain, where there was limited access and no development for 45 years, the countryside remained pristine. The main goal was to create a program to help the local grass-root initiatives preserve their culture and nature, while also promoting sustainable economic development: create and maintain new trails, revive traditional

arts and crafts, restore historic monuments, plant new trees, and encourage local business communities to provide more and better services to visitors.

The First Greenway in Central Europe

In 1990, Lubomir (Lu) Chmelar and his English wife Tíree started going to Czechoslovakia, and with the support of funders including the Hickory Foundation, the Rockefeller Brothers Fund, the Trust for Mutual Understanding and the American Express Philanthropic Fund, established together with a group of Czech enthusiasts, the first Greenway in Central Europe: the Prague-Vienna Greenways. It is a network of hiking and biking trails stretching for 250 miles between Prague and Vienna along the Vltava River Valley in Central and Southern Bohemia, and along the Dyje River in Southern Moravia. In Valtice it turns south towards Vienna through the Weinviertel region. It connects beautiful countryside

with cultural monuments, historic towns and villages with restored castles and churches, and several UNESCO Heritage Sites and Biosphere Reserves.

Later, under the umbrella of the Czech environmental foundation, Nadace Partnerství in Brno, the Greenways concept was successfully adopted and developed in other parts of (what is now) the Czech Republic and countries in Central Europe. Today, the Central European Greenways system is expanding to the Balkan countries, and participating with Austria and Germany in EU funded programs. The long-distance greenways include The Elbe River GW, Moravian Wine Trails, Krakow-Brno-Vienna GW, Lichtenstein Heritage GW, Budapest-Banska Stiavnica-Krakow GW and the latest addition, the Iron Curtain Trail." (Greenways.cz, 2018)

3.3.2 Current Situation

In the area of the Czech Republic there are over 1000 km of unused railway lines, of which per cent are abandoned. The intention of turning the unused and abandoned railway beds into a network of non motorized trails is being addressed by The Czech Environmental Partnership Foundation by their flagship project called Greenways since 1999). The Government and the Railway Infrastructure Administration do not yet provide significant conceptual support, even though the Government is generally working with the idea (in the documents of the Sustainable Development Strategy of the Czech Republic, Transport Policy of the Czech Republic for the years 2005-2013 and the National Strategy of Cycling Development of the Czech Republic) and many of projects are often financially supported by the Ministry of Transport. The Czech Environmental Partnership

Foundation in cooperation with the Center for Transport Research deals with consulting support and promotional activities. The coordinator of the project "Konverze zrušených železnic na cyklostezky (greenways) v ČR" in the Partnership Foundation is Ing. Juraj Flamik.

Typically the trails are situated on the former railway beds and appear as roads. This bed is composed of (crushed stone, sand or natural surface) for example, between Kuřim and Veverská Bítýška or between Hamry nad Sázavou and Sázava. Some trails are also placed along the route of canceled railways. Some sections of canceled tram lines were integrated into the network of trails as well in Ostrava, for example Hrabová's two-kilometer trail in 1999.

The 4,5 km long Vlčí Důl trail, between the former railway station Česká Lípa město and Vlčí Důl (cycle trail No. 3054) was opened in 2002 as the first transformed railway line.

In Prague the first transformed railway line to a greenway route was the Rokytka trail on the former railway of ČKD. The transformation took place from October 2008 until May 2010. The new trail is designed for cyclists only (in-line skaters are also allowed to use cycling trails and lanes), but they are using it despite of the prohibition of walking. This trail transformation however has earned the reputation of "probably the most expensive trail in Europe". From 2008 to 2010, a trail under Vítkov hill was built on the former Vítkov railway in Prague 3 (part of the original Turnov-Kralupy-Prague line), which was unleashed by the construction of the new connection, including asphalt surface, lighting and reconstruction of the tunnel.

Due to unresolved property relations and approval problems, the tunnel was closed for several months, but around November 2010 the trail was semi-open, even without maintenance manager and partly without approval.

3.3.3 History of Heřmanička

The railway line Frýdlant v Čechách – Heřmanice was a monorail narrow-gauge local line connecting the town of Frýdlant with the town of Heřmanice on the Czech-Polish (until 1945 Czech-German) border. Here the line was continuously linked to the network of Saxon Narrow-Gauge Railways, which made it possible to connect the tracks from Frýdlant to today's Bogatynia and Zittau. Because of the trail from Zittau, Heřmanička had a specific track gauge of 750 mm. There was no other route in the territory of Prelithavia with regard to this gauge, which would be covered by public transport. In addition, there was no other

border crossing in Prelithavia, on which as in the case of Heřmanice - a narrow-gauge railway was established through an interstate link.

The construction of the line started to deal with the development of industrial enterprises in the southwestern part of Frýdlant region. After thinking about the construction of endless unrealized lines for a normal gait from Saxon Zittau to Prussian Legnica, which was to pass through Frýdlant (via Austria-Hungary), the Frýdlant district office planned to build a railway link from Frýdlant to Heřmanice. Together with the German entrepreneur Herrmann Bachstein and his construction company, he started the construction of the line at the beginning of 1899, and on August 25, 1900, he was put into operation for the great interest of the observers. In the vicinity of the line, other industrial enterprises were opened,

increasing the use of this railway. However due to the crisis during the First World War and the subsequent unfavorable financial measures, the Frýdlant Circular Track, which operated on the track, was in difficulty and its staff responded to the strike. The requirements of the strikers have been met as the company has come to a growing problem when the operation of its lines at the beginning of 1925 took over Czechoslovak State Railways.

After World War Second, due to the unprofitable operation, it began to deal with the cancellation of the line. Passenger transport was terminated at the end of September 1947, cargo operation at the beginning of March 1951. However, municipalities in the vicinity of the line were interested in recommissioning and their wish was fulfilled in the summer holiday of 1957, when the line was renewed. However

the interest in cargo was gradually decreasing, so it ended definitively in June 1964; personal continued on. In 1971, the delegates of the Congress of the Communist Party of Czechoslovakia, then the ruling party in the republic, approved a decision to cancel inefficient operations. Therefore a study on the profitability of railway lines was carried out, from which the line to Heřmanice was issued as inefficient. It was on that basis that it began to break it. The shutdown took place on January 13, 1976. Part of the fleet was transferred to the narrow-gauge railroad around Jindřichův Hradec and the rest scrapped.

In 2004 groups formed which four years later opened in the former Frýdlant Railway Museum dedicated to this narrow-gauge railway.

4.0 Methodology

At the beginning the outline including main goals of this master thesis was given.

The first part is the literature review of greenways from the ecological point of view. The next part of literature review was focused on rail to trail conversions, their pros and cons and case studies of rail to trail conversions in the Czech Republic and abroad. These informations provided deeper view into the task. Different ways of applications, different environmental conditions and also different attitudes toward rail to trail conversions by communities are very inspiring for the future proposing. It was also very important to look deeper into the policy guidelines and ownership, what are the most relevant tasks before any project is proposed.

4.1 Tools

Conditions of the site of research, area of Heřmanička trail are explained by the chapters Case Study Review, Ownership and Social Network. The Case Study and Policy review chapters were created by comprehensive analysis based on relevant literature sources, strategic documents and policies by offices of the Czech Republic and European Union, maps, web applications, field research and involving local community by interviews (qualitative research).

Based on the analyses the three possible scenarios of conversions are proposed.

For graphic interpretation tools by Adobe and Esri were used. The maps were created in ArcMap with usage of available data such as open street maps, CENIA (česká informační agentura životního prostředí) database and ArcČR geodatabase by ČUZK (český ústav zeměměřický a katastrální). All

works on raster data were done through AdobePhotoshop. In some cases drawings by the author were used. Illustrative photos were taken also by the author.

4.2 Case Study Review

The area of interest is located in the northern Czech Republic close to borders with Poland and Germany. In the past times the Frýdlant territory was known as one of the coldest and hard accessible territories in the area of nowadays Czech Republic. This was caused by nature conditions. The region is located on the northern slopes of Jizera Mountains on Smědá river.

Frýdlant territory is one of the problematic region in the Czech Republic. This situation is result of isolation by natural conditions. The connection to the rest of the republic is blocked by Jizera Mountains and the rest of accesses to Frýdlant territory lead through Poland. The consequences of all conditions are high rate of unemployment, grey

market, limited services such as health care and education institutions and high rate of crime.

History

The Frýdlant territory was settled by Slavic people from Lusatia in 6th century. Based on natural conditions Frýdlant territory belonged to the Upper Lusatia. In 1158 the territory was connected to land of Bohemia.

It is estimated the castle of Frýdlant was established in 13th century for defence of Bohemia against the Tatars. Very first settlements started appear around the castle at the same time. The area had a strategic position. It was protected by the river Smědá and rocky terrain.

Due to position nearby the river and many forests around there was a great opportunity to establish small manufactures producing textile, paper and glass. The town of Frýdlant became quickly more important

then Liberec and other towns around. During the medieval times the Frýdlant area was a centre of culture, education and art in northern Bohemia. The right of brew the beer was also given to Frýdlant in the medieval times.

After the Battle of Bílá Hora in 1620, the territory of Frýdlant was given to Albrecht z Valdštejna. The Battle of Bílá hora had significant consequences for Bohemia. After 1620 religion restrictions were applied and a hundred of thousands people were forced to leave their homeland. This period is sometimes called Dark Ages because of strict restrictions of science, czech language and religion. Fortunately for the territory of Frýdlant this age was the most important. Albrecht z Valdštejna was one of the most influent and powerful persons in the whole Europe.

The Frýdlant territory became rich soon. They continued in manufacturing of glass,

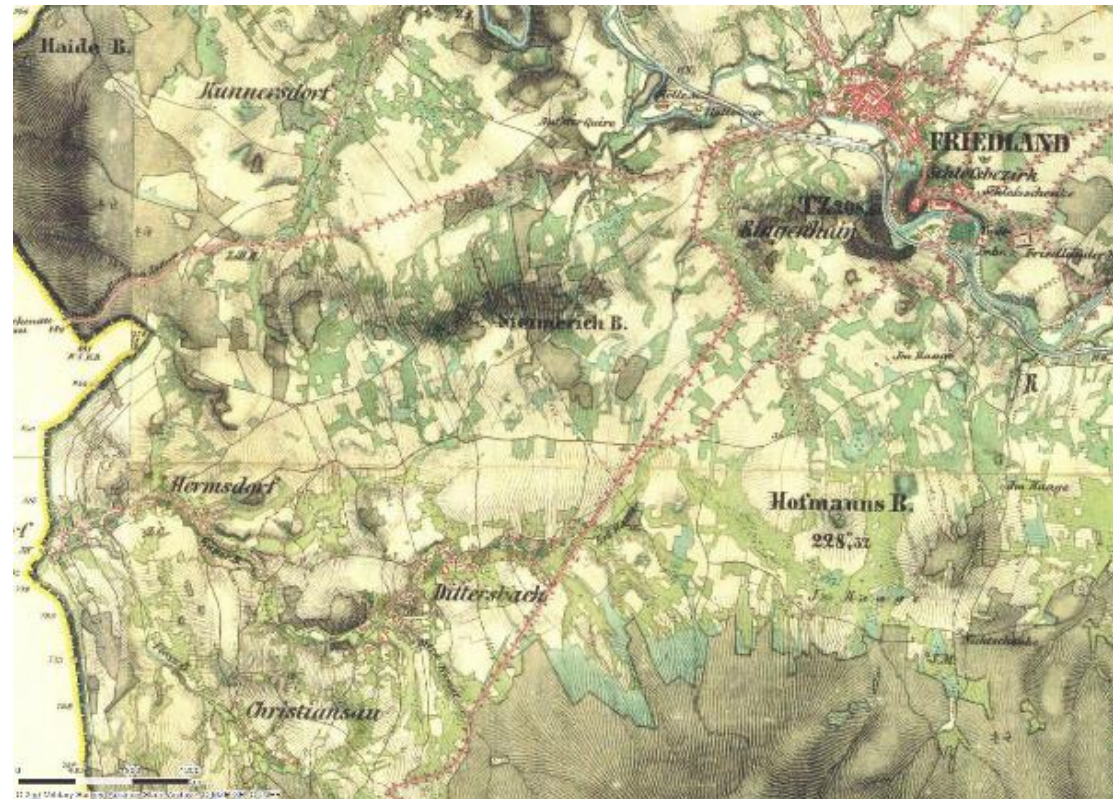
textile and paper and they also started to focus on manufactures for gunpowder. This was the golden age of Frýdlant. From these times also exist the term *terra felix*, which is explained like the land of happiness.

Albrecht z Valdštejna was a significant person. At the first sight he is seen as a powerful and never beaten generalissimus of Holy Roman Empire. On the other side he was also a pioneer of baroque architecture. He remarkable rebuilt many castles and applied baroque features into the landscape around town of Jičín in the northeastern Bohemia.

After the ages of Albrecht z Valdštejna, importance of Frýdlant territory was decreasing. The other towns around started to be more successful in glassware and textile trade due to limited access to area of Frýdlant.

In 1875 Frýdlant region was connected with Liberec by the railway. In Frýdlant area were also established local railways. These railways were primarily used for textile and paper industry. They were also connecting Frýdlant territory to nowadays Poland and Germany.

After Second World War Frýdlant region was affected by the Sudetenland case. Thousands of german speaking people were forced to leave their homeland. Thousands of people left and the territory was waiting for new coming inhabitants.



Map of stabile Cadaster from 1848

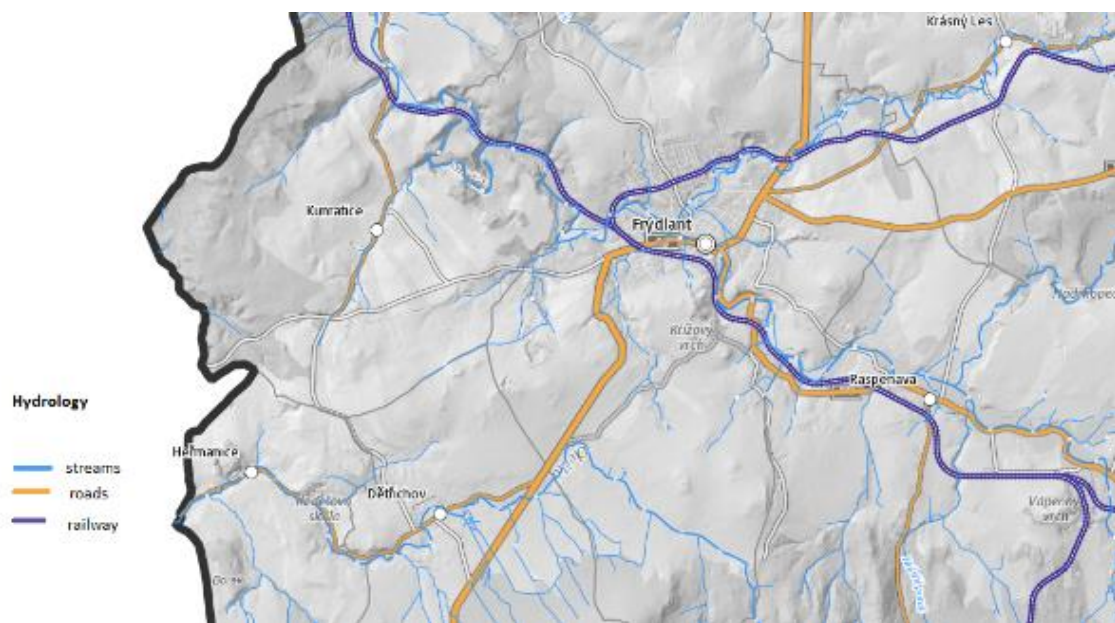
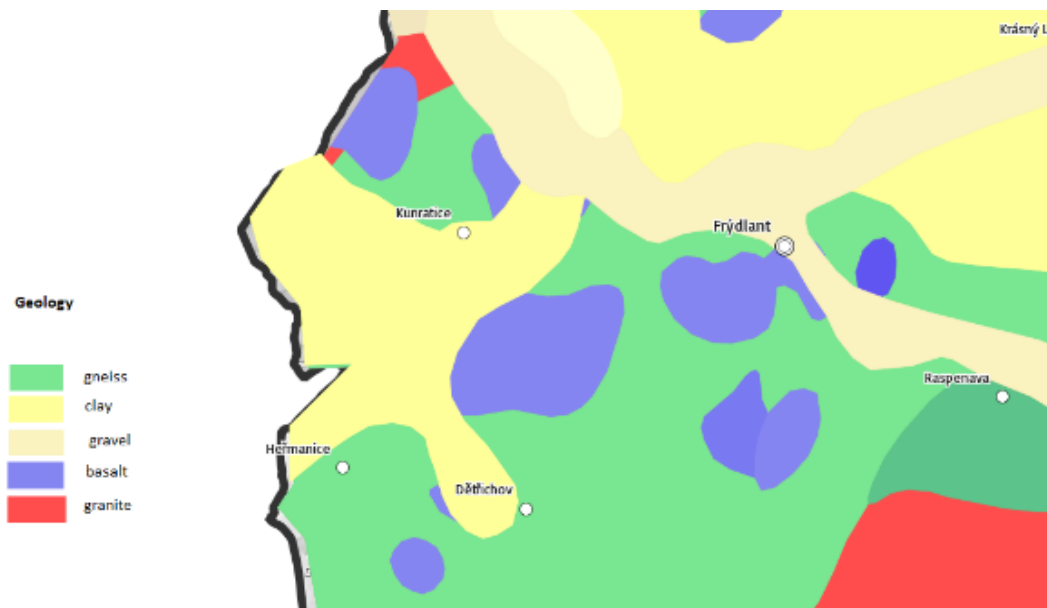
Geology and Geomorphology

Frýdlant territory is located in the northern Czech Republic. As was mentioned before, nature conditions have had significant influence on development in this region since first settlements appeared.

For territory of Frýdlant flat landscape is typical. The landscape is open to Poland and the only connection to Czech Republic is blocked by the Jizera Mountains. The landforms in Frýdlant region have been formed by glacier which came during the last ice age from Scandinavia. The glacier was stopped by Jizera Mountains. That is the reason why the northern slopes are very steep. Depending on glacier forming of the landscape there, three different types of rocks could be found in Frýdlant territory. The oldest rocks in this region have been there since Proterozoic eon. The rocks from that era are mainly gneisses or mica schists. These rocks were derived from clays and

mud in case of mica schists and from acid magmatic volcanic rocks through a series of metamorphic processes in case of gneiss. The second group of rocks what could be found in area of Frýdlant are magmatic intrusive rocks such as granites. These rocks are dated to the age of Karbon and Perm of Paleozoikum era. The area of highest amount of these rocks is Jizera Mountains. During the age of Paleogen and Neogen, volcanic processes formed some parts of Frýdlant area. In these areas magmatic volcanic rocks such as phonolites, basalts and basanites could be found. There are also hot springs and sources of mineral water. The last group of rocks what could be found in the Frýdlant territory are sediments. They appeared during the period of Paleogen, Neogen and Quaternary. These rocks are the less stable. Some of gravels were brought by the glacier during the last ice age from Scandinavia, that is the reason

why rocks typical for Scandinavian shield could be found there.



Hydrology and Climate

Frýdlant territory is one of the most important areas of The Czech Republic from the hydrological point of view. There is located a high number of water reserves in underground and surface water. The reserves of water are depending on atmospheric precipitation what is one of the highest amount in the whole Czech Republic. The part of Frýdlant area is protected by the law through Chráněná oblast přirozené akumulace vod (CHOPAV) (protected area of natural water accumulation).

In the area of Jizera Mountains the watershed border is located. Streams of Frýdlant territory are flowing to the Baltic sea. The main stream of Frýdlant area is river called Smědá. The Smědá spring is located on the northern slopes of Jizera Mountains. The stream is flowing through town of Frýdlant, where had a significant

influence on the design of the town structure as a main axis.

The strong negative progression in water regime is predicted in the western part of Frýdlant region. This situation is caused by the mines located in Poland.

The next threat are floods. As was mentioned before Frýdlant territory is a flat area where one of the highest atmospheric precipitation is predicted. The area was flooded many times before. The most destructive flood came in 2010 when almost all region became a lake. After 2010 many studies were done by the administration offices and ministries. One of the main points in this region is flood protection cooperation between all municipalities which has started already. The next step is to get involve municipalities from Poland and Germany to work on this task together through cross border cooperation funded by European Union.

Soils

In the Frýdlant territory different types of soils could be found depending on geological conditions and presence of water. In this area five main soil types were found. Three of these soil types are influenced by the water. Fluvisols what are located mainly around river Smědá and stream Oleška are affected by the surface water. Those soils are typical for floodplains. The soil types influenced by the underground water are Gleysols and Luvisols. Gleysols are wet soils affected by the underground water. Luvisols are the most fertile soils what were found in the territory of Frýdlant. The youngest soils of the area are moderate developed Cambisols and sandy Arenosols with no more development than A profile.

Different soil types in Frýdlant region is a great opportunity see many different habitats. Some of the soil types are also

fertile so opportunity of establishing new organic agriculture is offered.

Nature protection and Ecological stability

The area of Frýdlant was hardly affected by consequences of heavy industry and imissions made by brown coal and lignite poweplants located in Poland and Germany (Hagenwerder, Hirschfelde, Turów etc.) before 1990. Air quality was alarming and Frýdlant territory was exposed towards air imissions for decades. The result of these conditions were acid rains. Fragile ecosystems of the area of Frýdlant and Jizera Mountains were destroyed. After 1990 and strict regulations the situration is getting better in the Czech Republic, Poland and also in Germany. Many of ecosystems were restored.

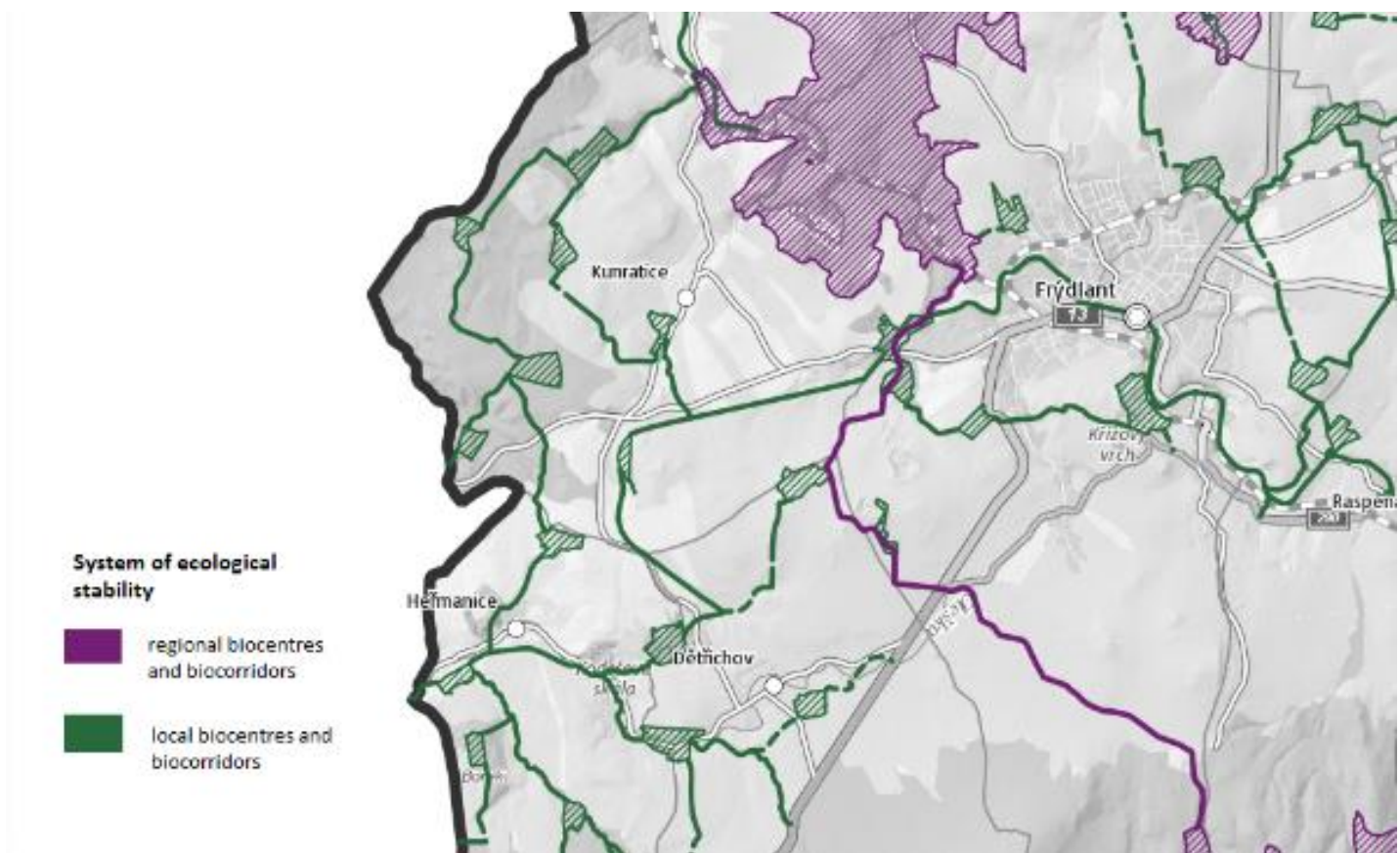
Due to these conditions in the past, the strict nature protection in this region is needed. Many of different ecosystems could be found there. For example

floodplains ecosystems around river Smědá, ecosystems of sandy soils or fragile beech forests on the northern slopes of Jizera Mountains.

As Jizera Mountains are presented as a natural boundary the cross border cooperation with Poland and Germany is needed. Landscape there is naturally more connected to Poland due to geomorphological evolution. Landscape fragmentation is one of the negative changes of the landscape. Landscape is fragmentated by build up areas and transport corridors and it is important to prevent of making more isolated pieces of land what are not able to communicate with the rest of landscape around. Establishing of new biocorridors and supporting for existing ones is a great example of mitigation of landscape fragmentation. In the case of Frýdlant territory the biggest threat is brown coal mine in Poland.

The most important protected area and biocentre is Jizera Mountains landscape protected area where protected species could be found. Some of the species were brought by the glacier in the last ice age from the Scandinavia. They are called glacial relicts and this is the only place in central Europe where we can find them. The next important protected area is river Smědá. It is a main biocorridor in the area. The protection is on the level of European Union Natura 2000 as a precious habitat. The regional biocorridors are mainly created by streams and tree lines. These landscape features are connecting the movements of living organisms and energy in the land. In Heřmanice is located remarkable nature monument called Kodešova skála. This rock is the victim of Neogen age when volcanic activity and creation of magmatic volcanic rocks took place in the region.

The Frýdlant area has a high natural potential. It is up to people how they will deal with what was offered by nature.



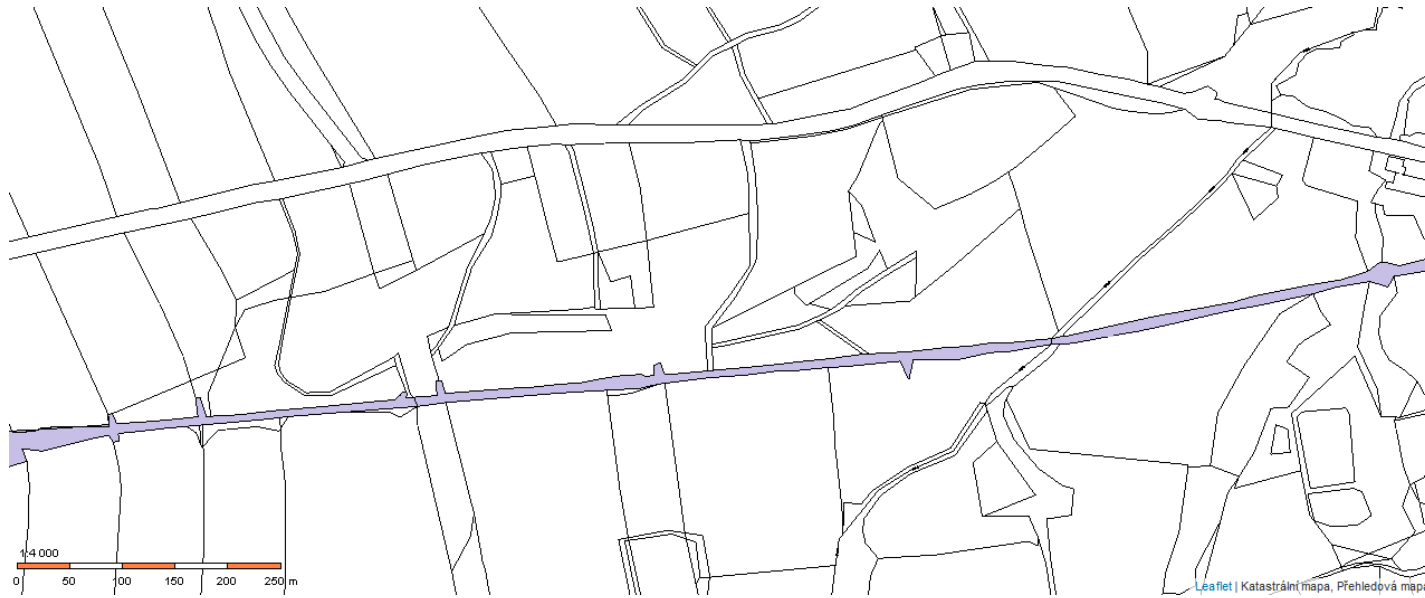
4.3 Land ownership

The land ownership in the Czech Republic is still a difficult task to solve. Due to collectivization after 1948 almost all agriculture land, transportation corridors, forest, etc. were owned by state or public institutions.

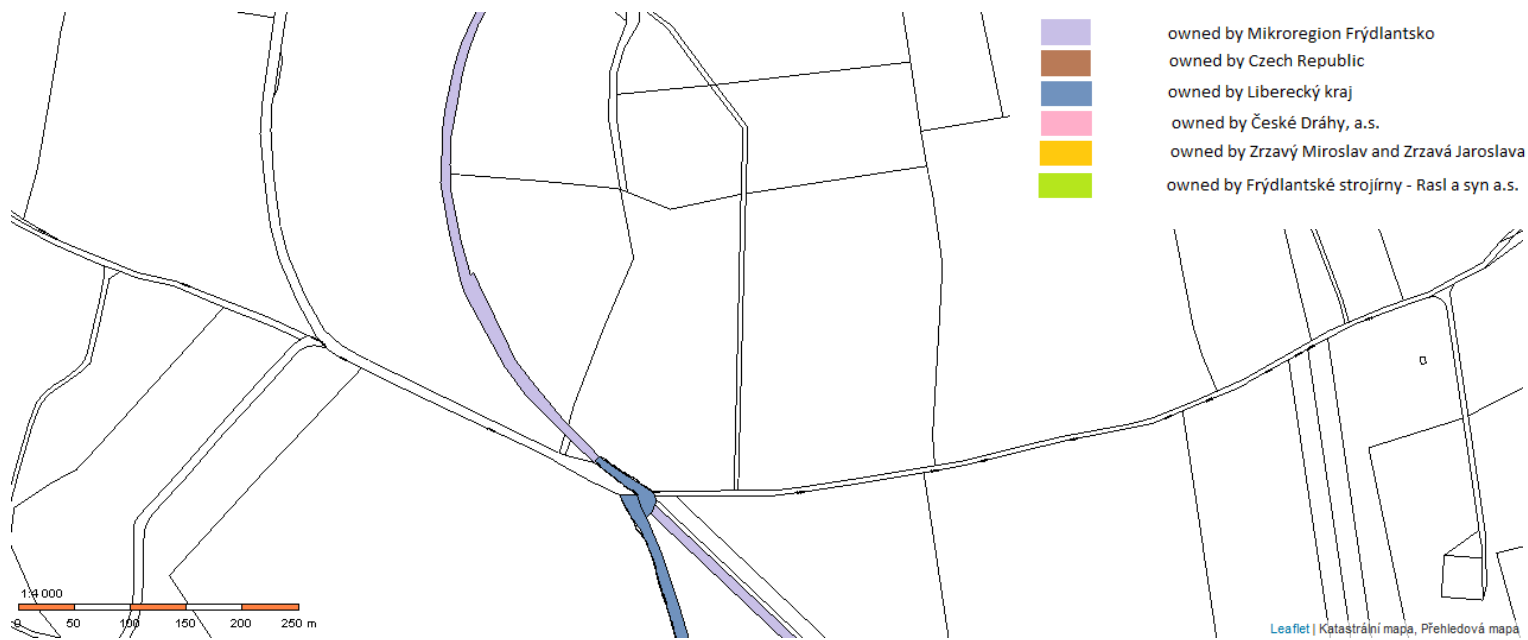
After 1989 the situation has changed. The land is slightly becoming owned by the original owners like before 1948 again.

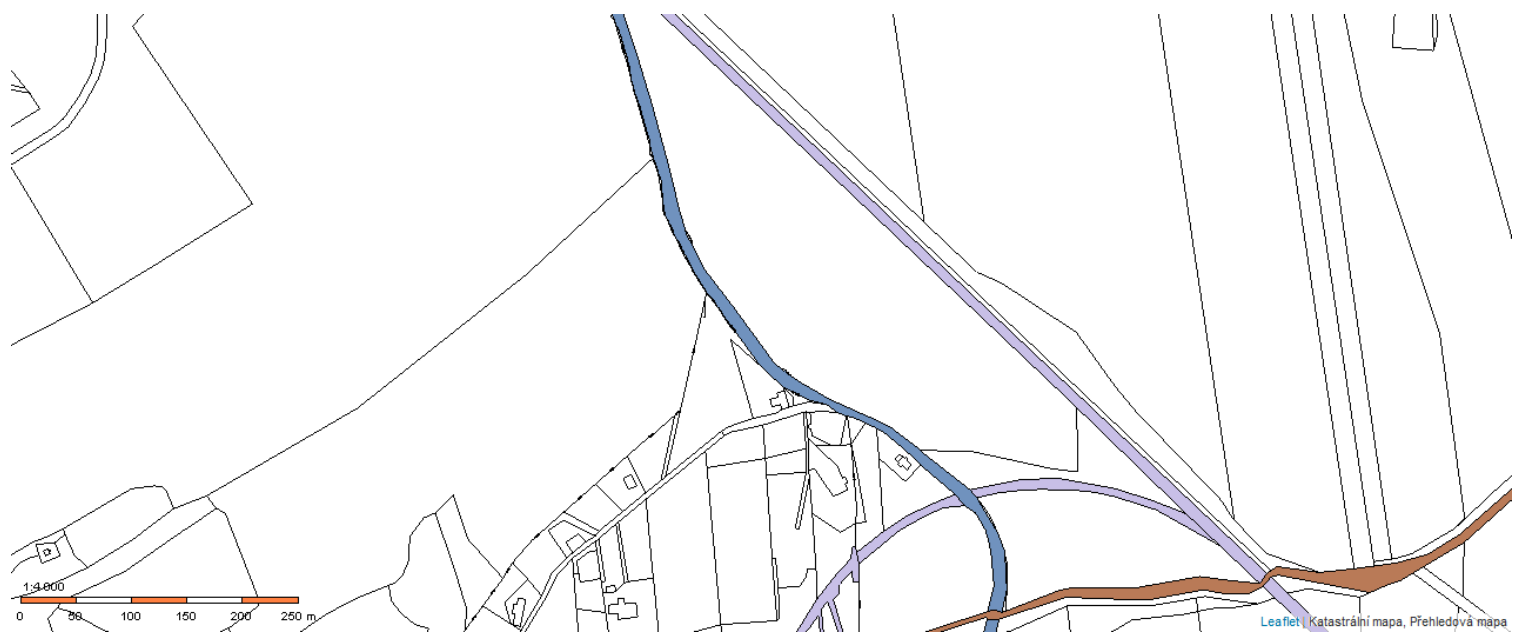
In the case of Heřmanička, the parcels were owned by Správa železniční dopravní sítě after 1989. Unless the railway is abandoned and not used anymore, Mikroregion Frýdlantsko - today's owner of most of the Heřmanička parcels, had to pay a high amount of money to Správa železniční dopravní sítě. In 2016 the transfer was finished after almost 20 years of negotiation.

A set of maps below showing the ownership rights of Heřmanička nowadays. More than 80 per cent of parcels are owned by Mikroregion Frýdlantsko. Some sections belong to the state, Liberecký kraj, České Dráhy (Czech Railways) and to two private subjects.



- owned by Mikroregion Frýdlantsko
- owned by Czech Republic
- owned by Liberecký kraj
- owned by České Dráhy, a.s.
- owned by Zrzavý Miroslav and Zrzavá Jaroslava
- owned by Frýdlantské strojírny - Rasl a syn a.s.





- owned by Mikroregion Frýdlantsko
- owned by Czech Republic
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- owned by Frýdlantské strojírný - Rasl a syn a.s.



4.4 Policy

The beginning of rail transport in the Czech territory is linked to the names of František Antonín and František Josef Gerstner, who in 1808 proposed to built horse-drawn railway for transport of salt between České Budějovice and Austrian Linz. The railway started to operate on August 1, 1832 and became the first horse-drawn railway to transport people in Europe (Schreier,2013). The first steam engine arrived in the territory of today's Czech Republic in 1839 by Northern Railroad of emperor Ferdinand. The railway led from Vienna to Břeclav. The first train from Olomouc arrived to Prague in 1845. The railway was the symbol of progress and for territory of today's Czech Republic railway was the significant indicator of high standard living and industrial research. In the second half of 19th century the length of the railway lines

was about 5000 km. There was a massive need to connect places without railway service into the network. The transport was missing, but there was a need for it. That is why local railways were built in the second half of 19th century. The construction of these railways significantly supported by liberal legislation. These are the following laws: Zákon č. 56 ř. z. z 26. května 1880 „O poskytování výhod místním drahám“ Zákon č. 81 ř. z. z 17. června 1887 „O zakládání a provozování místních drah“ Zákon č. 2 ř. z. z 31. prosince 1894 „O železnicích nižšího řádu“ The legislation allowed considerable mitigation in the construction of local railways and significantly reduced the cost of their construction. For illustration, these examples can be mentioned arc radius (180 m, exceptionally 125 m), larger inclination (35 ‰, exceptionally 50 ‰), less heavy and

shorter rails and a smaller number of their connects. The railways which were built like that were possible construct tightly to the ground, and there was not necessary to build expensive rail tunnels or bridges. Speed limit was 25 km/h. These railways demonstrated a significant loss-making and inefficiency. This fact was a major reason of their later closing down. (Jelen, 2009).

4.4.1 Cancellation of the railway line

In the case the railway line is not profitable and useful for paublic transport the line become abandoned and not needed anymore. The owner of the line could apply of railway cancellation. This procedure is led by the law number 266/1994 Sb., O drahách, ve znění pozdějších předpisů. By the legal cancellation of the railway line the right to use the line as a railway is canceled.

The decision making process of the cancellation of the railway is done by relevant administration offices below: Ministerstvo dopravy-in case of railways with national importance or regional railways, Drážní úřad – in case of industrial tracks, Municipality – in case of tram lines or other rail lines.

Possibilities of using abandoned railway lines

In the Czech republic and also in the world we can see three main scenarios of using abandoned railway lines. These scenarios can be railway museums, paddle or rail to trail conversion.

Railway museums could be a great tourist attraction, where the main point is traveling by the old fashioned or special use rail vehicles, which are not in usual use anymore.

The first museums appeared in The United Kingdom in 1960s. Then the other railway museums started to appear in the western Europe, Australia and USA. In The Czech republic the railway museums exist as well. For example between Jindřichův Hradec and Nová Bystřice, Česká Kamenice and Kamenický Šenov or Kolínská řepařská drážka close to Kolín. In most cases, railway museums are operated by NGOs, municipalities or mikroregions. Velodráha Velodráha is the second scenario how to use abandoned railway trail.

4.4 Social network

The both Quantitative and Qualitative approaches of reseach were applied.

Qualitative research was realized through interviews with local people, office members and volunteers from the Frýdlant Railway Museum. Their advices and comments were very useful for deeper understanding of the task od Heřmanička. All respondents were polite and interested in Heřmanička case.

Quantitative research was realized through questionnaires. The questionnaire was published online and more than 100 respondents answered. The asked questions were mainly focused on a trail facilities, which could be used in the future, sport skills of respondents and public knowledge of rail to trail conversions.

The result of the questionnaire is that very low amount of people know about rail to

trail conversions, even if the task is spoken in the media these days.

Used questionnaires are below:

1. Věk*

Vyberte jednu odpověď

- 0-18 let
- 18-30 let
- 30-65 let
- 65 a více let

2. Pohlaví*

Vyberte jednu odpověď

- žena
- muž

3. Pocházím...*

Vyberte jednu odpověď

- z Libereckého kraje
- z jiného kraje ČR
- ze zahraničí

4. Jezdím na kole...*

Vyberte jednu odpověď

- pravidelně (používám kolo jako dopravní prostředek např. do práce i ke sportovnímu vyžití)
- pravidelně (pouze sportovní vyžití)
- nepravidelně
- nikdy

5. Pro jízdu na kole vyhledávám...*

Vyberte jednu nebo více odpovědí

- cesty se zpevněným povrchem (asfalt, beton...)
- cesty s přírodním povrchem (kámen, dřevo, přirozené podloží...)
- nejedním na kole

6. Pokud jedu na kole, jsem OK sdílet společnou stezku s...*

Vyberte jednu nebo více odpovědí

- in-line bruslaři
- chodci
- nordic-walkery
- koňmi a jezdci na koních
- dalšími cyklisty

7. V okolí stezky bych ocenil(a)*

Vyberte jednu nebo více odpovědí

- WC
- parkoviště
- občerstvení, restauraci
- nářadí na opravu kola
- automaty na náhradní duše
- pítka
- dětské hřiště
- lavičky
- posezení s grilem
- sprchy
- půjčovnu sportovních potřeb (kola, in-line, přilby...)

8. Slyšel(a) jsem někdy něco o stezkách na bývalých železničních tratích?*

Vyberte jednu odpověď

- ano
- ne
- nevím

9. Pokud zněla odpověď ANO, co konkrétně?

10. Myslím si, že stezka na bývalé železnici se nachází v...*

Vyberte jednu nebo více odpovědí

- Praze
- New Yorku
- Bristolu
- Slavonicích
- Liberci
- Moskvě

11. Konverze bývalé železniční trati na cyklostezku, případně jinou stezku, mi připadá zajímavé z hlediska...*

Vyberte jednu nebo více odpovědí

- nižší ceny provedení
- atraktivita pro uživatele
- zachování významných prvků v krajině (náspy, mosty...)
- nového využití již nevyužívané části krajiny
- rozvoje cestovního ruchu (nová pracovní místa, lepší služby...)
- nevidím žádné pozitivum

12. Slyšel(a) jsem někdy něco o "Heřmaničce"*

Vyberte jednu odpověď

- ano
- nevím
- ne

13. Pokud zněla odpověď ANO, co konkrétně? Uvítal(a) bych, aby se konverze trati Frýdlant-Heřmanice na stezku realizovala, proč?

1. Age *

Choose one answer

- 0-18 years
- 18-30 years
- 30-65 years
- 65 or more years

2. Gender *

Choose one answer

- female
- male

3. I come from... *

Choose one answer

- from the Liberec region
- from another region of the Czech Republic
- from abroad

4. I ride a bicycle ... *

Choose one answer

- regularly (I use the bicycle as a means of transport eg for work and sports)
- regularly (sports only)
- irregularly
- never

5. For biking I search for ... *

Select one or more answers

- roads with solid surfaces (asphalt, concrete ...)
- paths with natural surface (stone, wood, natural subsoil ...)
- I do not ride a bike

6. If I ride a bicycle, I'm OK to share a trail with ... *

Select one or more answers

- inline skaters
- pedestrians
- Nordic-walkers
- horses and riders on horseback
- other cyclists

7. In the case of a trail I would appreciate *

Select one or more answers

- restrooms
- parking
- refreshments, restaurants
- bike repair tools
- tyre wending machines
- drinking water taps
- playground
- benches
- seating with a grill
- showers
- rental of sporting equipment (bicycles, in-line, helmets ...)

8. Have you ever heard about trails on the former railway lines? *

Choose one answer

- yes
- no
- I do not know

9. If the answer was yes, what specifically?

10. I think the trail on the former railway is located in ... *

Select one or more answers

- Prague
- New York
- Bristol
- Slavonic
- Liberec
- Moscow

11. Conversion of the former railway line to a cycle path or other trails seems to me interesting from the point of view of ... *

Select one or more answers

- Lower cost of construction
- Attractiveness for users
- Preservation of important elements in the landscape (embankments, bridges ...)
- Re-use of the already unused part of the country
- Development of tourism (new jobs, better services ...)
- I see no positive

12. Have you ever heard of "Heřmanička" *

Choose one answer

- yes
- I do not know
- No

13. If the answer was yes, what specifically? Would you appreciate the Frýdlant-Heřmanice rail to trail conversion, why?

5.0 Results

5.1 Heřmanička Trail Project introduction

The project site selected for this master thesis is located in the Frýdlant territory in cadasters of Frýdlant v Čechách, Kunratice, Dětrichov and Heřmanice in the northern Czech Republic. The task is to propose a strategy plan and series of scenarios of future development for abandoned railway. The site of railway was selected as a typical example of abandoned railway with high potential for future. The scheme proposal will incorporate solutions for trail conversion into existing situation. The text part of project will be addressed as a guidelines for future trail conversion strategy with respect to history and environment.

Greenways provide the ability to explore the landscape and to learn more about how

nature and community systems work. Territory of Heřmanička offers unforgettable landscape sceneries, cultural heritage, great position close to boundary of Czech Republic, Poland and Germany.

5.2 What to protect

Most of the Czech Republic has been settled, developed and changed during the ages. Landscape has been changed since the humans came to the land. It is difficult to define, what is the right attitude of protection. In case of Heřmanička three main goals of protection can be defined. First level of protection should be

The most significant feature of trails is that trail provide access through the landscape. In these days it is also a powerful tool how to push people to move by themselves. Trails could be used for variety of purposes such as active and passive recreation, alternative transportation or in case of greenway trails

as a significant feature in the landscape which could be also used for education.

5.3 Plan for implementation

To determine a successful trail the following issues should be predicted and explained:

1. fit of the trail to existing conditions
2. type of users
3. type of trail (water or land based, single or multiple user oriented)
4. type and width of the trail
5. type of surface
6. safety of the trail users

Fit of the Trail to Existing Conditions

Heřmanička trail is located on a former railway between Frýdlant and Heřmanice. The former railway line is cca 11 kilometers long. Nowadays the line leads from Frýdlant through Kunratice, Dětrichov and terminates in Heřmanice on the state

border with Poland. The line leads through different kinds of nature conditions.

It starts in the build up area of Frýdlant on the main railway station. Then the line leads around the railway buildings where Muzeum of Heřmanička is located. After passing of the museum the line goes across the iron-wooden bridge and start to be surrounded by trees.

The trees are a significant feature. In fact, there can not be find rails anymore. The only evidence of a former railway line is a greenway what could be seen from above or from a distant points. The second visible evidence of a former railway is elevated terrain. This feature is visible mainly between Frýdlant, Kunratice and Dětřichov, where the line leads through open landscape and land there is in some areas affected by the water. Trees there are a great example of wind protection. As was mentioned before, the landscape here is

flat and wind there could be very strong. In the history some of accidents of Frýdlant-Heřmanička railway were caused by strong wind in open flat landscape exactly in this part of area.

In Dětřichov the part of the railway is preserved. It is located in the private garden and shows, how the railway looked like when it was operated, including railway signs. There are also former railway building, former Dětřichov station and former storage of potatoes.

From Dětřichov to Heřmanice the line leads through build up area, forests, across the stream and passing spectacular shape of terrain such as volcanic landforms. In Heřmanice, near the former railway stop the line is crossing stream Oleška and then is rebuilt to a field road. After the road is finished the line continues on the edge of build up area, across the stream and through woodlands. The line terminates

next to the buildings of former Heřmanice railway station.

The shape of the line can provide many types of views through the landscape. As most of the tarrain of rail bed is elevated it offers a unforgettable experience. Not many trails can offer the view from elevated position. This could be one of the main points which could attract the future visitors. The disadvantage of the future trail could be the linear shape. Future users will have the only option to go from one point to another and then back on the same route, with no way of circular way back.

Future users

Every single rail to trail conversion is taking certain time and effort to be applied. After the exact area is chosen, the main goal is going to be find potential users of the trail. It must be kept in mind there are many people with different abilities of using the

trail. The trail could be designed for many types of activities such as walking, bicycling, in-line skating, ice skating, cross-country skiing or horseback riding. It is also important to think how users with limited ability could enter and use the trail. Planning of various scenarios is needed for future potential users. It is important to show a clear vision of what they could expect.

It is not an easy task to get people involved in something new. Most of them are not professionals and are sceptical if something in their neighborhood is going to be changed. There might be also another groups of people with totally different plans for the area. It must be kept in mind to show all the benefits of rail-trails. Start looking for supporters in the particular area and also for support in the place, where rail-to-trail conversion was implemented before. You could get closer to the community through

community which was in the same situation some time ago.

Type of Users

Pedestrian Trail Users

Pedestrian trail users is the widest group of trail users. In this group walkers, hikers, nordic-walkers, runners, hunters, cross country skiers and persons confined to a wheelchair are included. Users of this group can be defined as a variety of users who traverse the landscape on foot. It is predicted that this group of users will use the trail during all types of weather conditions. Users of this category are objects that could be affected by the other groups of users easily. For safety reasons it might be useful to somehow separate this group. There are many of case that children were hit by cyclist or a roller skater. It must be kept in mind to prevent these collisions

and predict potential problematic points in the final design of the trail, before a serious accident happen.

Vehicular Trail Users

Nonmotorized vehicular users could be determined as cyclists, roller skaters, roller skiers, skateboarders, longboarders, persons on scooters and on other types of wheeled sport equipment. These users could move through the trail in various speed. The problematic situations could appear mainly in concave terrain, where their speed could be very fast. In the case of bicycles this problem is partly solved by breaks. In the case of the other sport equipment is needed to prevent collisions with other users by restrictions such as speed limits and signs with instructions.

Pack and Saddle Animal Users

Pack and saddle animal users are generally similar to pedestrian trail users. If is

expected the horse back rider is skilled and can lead the horse slowly and considerable, the speed limits are not needed.

The main issue with animals on a trail (in cases of horses, dogs, etc) it must be kept in mind, these users are animals and a human can not predict hundred per cents of their reactions to different kind of objects. It is important to behave tolerant and not provocative. This could be a great prevention of being kick by a horse or bite by a dog. The responsibility of every single owner of animal on a trail is to clean up after animals.

Type of Trail

As was mentioned before, the future trail will be placed on the bed of former railway between Frýdlant and Heřmanice. This type of railway conversion gives a chance how to design and built a trail in shorter time than usually trails are build. As the base of the

trail structure is already exist in the landscape, there is no need to solve problems based on dealing with the right placement of the trail, solving problems with bridges, tunnels and etc. The shape and width of the trail are already given.

The lenght of the trail is cca 11 kilometers and the width is determined between 6 and 12 meters. The widest part of the line is located in Dětrichov, where two rail lines leaded next to each other. Most of the future trail is surrounded by trees such as willow (*salix*), silver birch (*betula pendula*), maple (*acer*), linden tree (*tilia*), beech (*fagus silvatica*) and oak (*quercus*). Disposition of the trees is affected by the conditions based on presence of sun light and type of soil.

In some sections of the future trail, where is no limitation by the existing trees is possible to extend the width of final used surface.

Type and Width of the Trail

Depending on existing conditions, it is possible to propose a trail for multiple-use. The rail bed is wide enough to provide a quality base for the 2-way trail designed for both types of users (pedestrian and vehicular) with possible extension for 3rd way in some sections of future trail.

As the Heřmanička trail is proposed on a rail bed there is no task how to solve cross slope design. The surface is flat in the most of sections.

The design of longitudinal slopes are based on existing rail bed. There are two longitudinal slope restrictions by the law for disabled persons (max 2.5%) and for cyclists (6%).

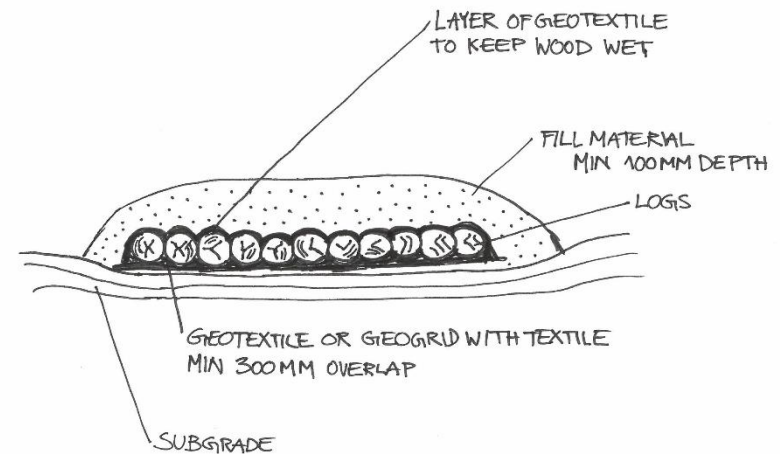
Type of Surface

With respect to nature conditions and environmental friendly attitude of future trail design 3 different scenarios of trail surface are proposed:

1. Geotextile with logs surface
2. Porous asphalt surface
3. Concrete surface

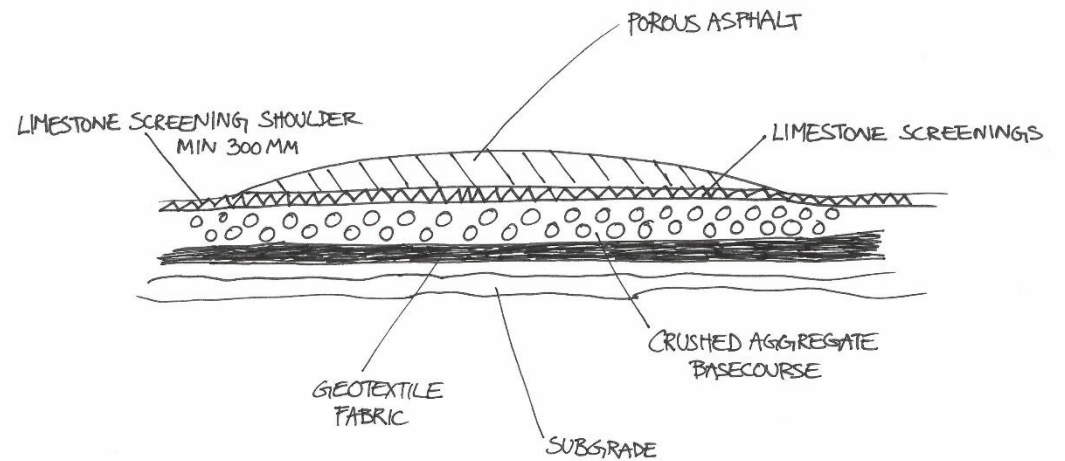
Design of geotextile and logs surface cross section, by author

Geotextile with logs Geotextile with logs proposal of a trail surface is in the most environmental-friendly way. This method for could be attractive for area with wood. It is the most natural way how to create a trail, only with using of geotextile which is situated on the bottom of construction. The maintenance issue of this type of surface is to keep the logs dry or wet during the whole time. If the conditions for logs are changed the wood can start to begin rotten. For top layer is usually used crushed stone. As crushed stone is seen as a good option for trails many negatives could be found. This surface could be easily affected by storm water erosion. In case of Frýdlant area and possibility of floods, the surface of the trail after flood will be probably destroyed.



cross section, by author

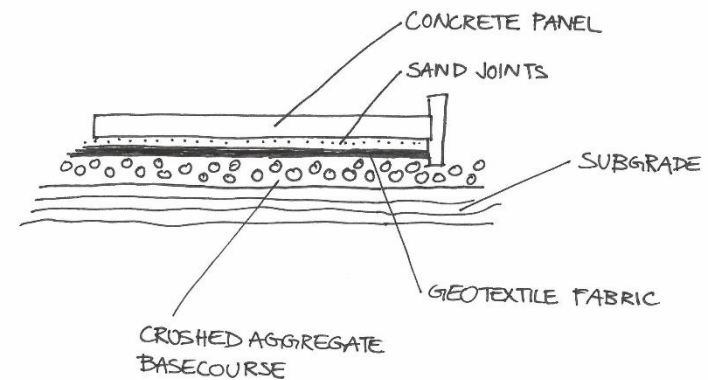
Porous asphalt is a surface with many positives. As a permeable surface this is a great option for the territory of Frýdlant where high amount of precipitation is predicted. The storm water has no chance to create pools and the surface is dry in shorter time. This characteristic is rising the potential of safety.



Design of porous asphalt surface

Concrete surface is the most easy accessible option of the trail surface. As a surface is fine and flat, this option is ideal for sports equipment with small wheels such as roller skates or roller skis. It is also the best way how to provide non complicated conditions for persons on wheelchairs. Concrete surface needs the lowest maintenance and can resist different kinds of natural conditions such as freeze or flood. The disadvantage is high cost installation and not natural looking surface.

The alternative for future could be solar panel surface. This kind of surface was already used for example in Netherland or Poland and it could be great option for urban trails, because it using energy collected during the day for lighting during the night. However, this option is can not be applied in this case because of light affection on the wildlife.

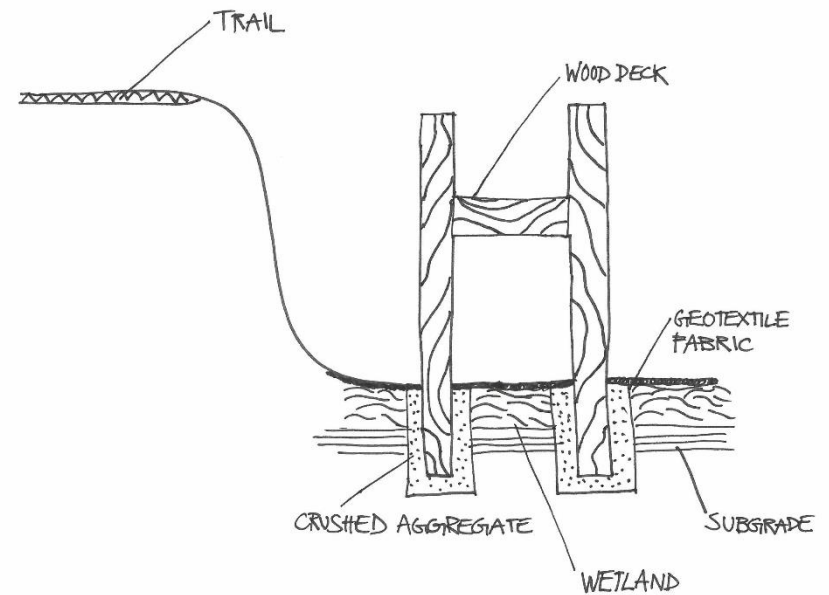


Design of concrete surface

cross section, by author

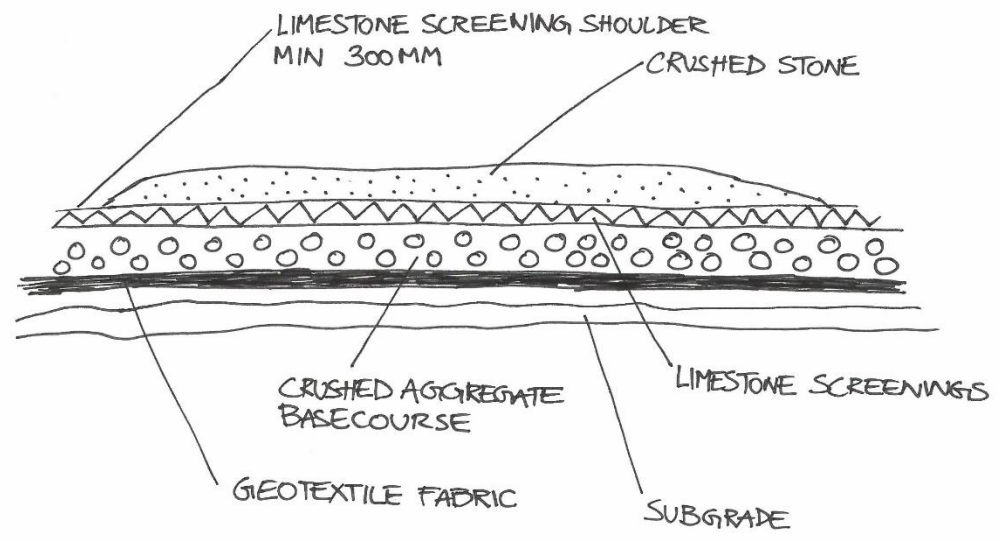
Safety of the Trail Users

Based on the questionnaire research of potential trail users some restrictions are proposed. As the Heřmanička trail is proposed like a multiple-use trail, horses will be allowed only to some sections with possibility of width extension (Dětřichov). 72 per cent of respondents said they do not feel safe on a trail while is shared with a horse. This number is significant and it has to be applied in the future proposal. There is also possibility to establish a hippotrail next to some parts of the trail. This idea is interesting mainly in elevated parts of the trail, where horseback rider and trail user might be on the same level.



Wood deck extension

cross section, by author



Design of hippotrail surface
cross section, by author

5.4 Trail Management

1. Finding money
2. Maintenance
3. Patrols and emergency
4. Friends of the trail
5. Publicity

Finding money

Finding money for new projects is always a challenge. It is all about the getting people involved in something new and get their support. The easiest way how to get involved people? First get their children. If you get involved children in something, their parents are automatically involved as well.

If involved people are found, time to establish NGO which will run the trail has become.

A relevant source of money for new trail is managed by European Union, ministries or administration offices. These sources will

probably play a main role in funding of establishment of the trail.

However, there are also could be found interesting unusual sources of money. For example if NGO is established the option of funding by Patagonia (environmental-friendly brand of clothes) is offered. They focus on funding of nature protection, re-using and environmental friendly ideas. Two times per year (end of June / end of December) their commission is choosing the best projects to be funded by their company. The application is available on their website and whole procedure electronic.

The second great option of finding money is Donor Message Service. It is very easy to send a text message and support what you would like. Support of Jizerská o.p.s. (those who maintain cross-country routes in Jizera Mountains) is supported by DMS system.

Maintenance

Maintenance is one of the main goals of the future strategy. Trail could be located in remarkable landscape, design could be award-winning but visitors could say trail is average. Do not let this happen. Trail should provide the best conditions for users during any period of year or weather. It is needed to choose the right professionals with great reviews such as arborists, etc.

Help and seasonal works could be covered by involved people, local community or friends of the trail. Patagonia organises seasonal workshops which are based on unpaid help for eco farmers, planting trees and maintaining existing green belts under supervision of professionals.

Patrols and Emergency

In the czech legal system, emergency and police is guaranteed by the state. In context of Heřmanička trail these two terms are explained more in the education way. Patrols and emergency guards will appear on the trail during the busiest seasons. Members of the guards will inform trail users how to prevent collisions, rude behaviour on the trail and what to do if something serious happen.

The patrols and emergency guards would cooperate with state police, red cross and professional emergency. It would be possible to invite them to school, work, etc. to get to know more about the problematic.

For case of better orientation on the trail the old railway distance signs will be kept. There is nothing easier to say accident happened on exact kilometer of the trail nearby sign with exact number.

Friends of the trail

Friends of the trail is a group of people with relationship to Heřmanička and area around. After payment of member fee more offers of happening around Heřmanička is occurred. The point is not to establish closed club but a friendly community around the trail.

Publicity

Publicity is significant measure for every project. It should be start talked before any project is realized. In nowadays world, publicity is a strong instrument how to persuade potential users that the Heřmanička trail is worth to visit.

The concept of Heřmanička trail marketing strategy is below.

Activity	Action	Notes	Priority
Brand	Ensure management of the Heřmanička identity on TripAdvisor, Google Business and Foursquare	Respond to questions and reviews on TripAdvisor, Google Business and Foursquare. Post updates and images	URGENT
	Establish timely, professional enquiry response o website		URGENT
	Develop consistent brand story and images	The logo does need to be created. Priority is a story and description which can be consistently used by all Heřmanička trail partners.	URGENT
Website	Establish a high quality (mobile phone – first) web portal that is clearly branded, official, impartial and provides comprehensive trail planning information and links		URGENT
Application for smartphones	Establish an official application for smartphones with planning informations and links		URGENT

Social Media	Establish official Facebook account	Acknowledge many of trail users will not be repeats, especially internationals. The number of long-term likes will not be huge. This is about increasing awareness and driving people to the main website. Encouraging users to share tagged images and video. Increase Social Media content that will come through in search engine results.	URGENT
	Establish official Instagram account	Encouraging users to share tagged images and video. Increase Social Media content that will come through in search engine results.	URGENT
	Establish official YouTube and Vimeo channel		SOON
	Establish official Pinterest account		SOON
	Develop an annual content and social media calendar to strategically map out news		URGENT
	Seek to have Heřmanička trail content posted in Polish and German channels		TO BE DETERMINED

Collateral	Develop a Heřmanička trail brochure and map with semi-waterproof coating	All collateral must be developed with a story telling approach supported by great imagery (not just facts)	TO BE DETERMINED
	Produce promotional branded banners and signs for event use by the Heřmanička trail marketing coordination and partner marketing organisations		TO BE DETERMINED
	Develop quality trail guide booklet		TO BE DETERMINED
Advertising	Print advertising limited to relevant medias	No paid advertising in magazines or newspapers	TO BE DETERMINED
Merchandise	Develop merchandise and distribute online and through local stores	Small number of products to manage stock risk. In addition to the usual organic cotton T-shirts and caps, investigate bike specific products such as recycled seat covers or BPA free bottles. In potential cooperation of Patagonia Prague	TO BE DETERMINED
Give aways	Via social media	People love the idea of getting something for free. Offer Heřmanička trail merchandise, bicycle bells or guided tours in the region.	TO BE DETERMINED

6.0 Discussion

The main goal of this master thesis was to determine the feasibility and criteria for the creation of a trail which will be placed on a former railway bed.

The task of conversion of former railways to trails is a new challenge for the Czech Republic. On the area of Czech Republic can be found hundreds of kilometers of abandoned railways. The rail to trail conversions is a new approach how to re-use former railway.

Due to political situation after 1945, many of local railways stayed abandoned. In the western bloc of the world re-using of abandoned railways took many years of practice and learning from mistakes. However, the Czech borders have opened after 1989 and a very first idea about this task came from the New York City by Lubomir Chmelar and his wife.

After the decades of communists in the Czech Republic, the land was affected hardly. Almost no infrastructure for recreation such as cycle paths or hippotrail. Many of field roads disappeared after the collectivization, which could be possibly used for riding bicycles. The land ownership, mainly in the countryside is not solved until today. The rights of using the land is usually split between many persons. This could be one of the reasons why in the Czech Republic the construction of anything in the landscape is taking such a long time. This was also the case of Heřmanička trail. The former railway was owned by Správa železniční dopravní cesty. It took such a long time to buy and transfer parcels of Heřmanička to Mikroregion Frýdlantsko. After many years of effort from the site of towns from the Frýdlant area, almost all of the parcels of Heřmanička are owned by Mikroregion Frýdlantsko now.

There was a chance to stay with and talk to people from the territory of Heřmanička trail. It is evident the community there is very proud of the former railway. People there see the former railway as a high potential for the region. They want to convert the railway line to a cycle path. The conviction of the local people is very strong and supported by the administration offices of the municipalities from the territory. As all of the strategic and policy documents were reviewed, future conversion of Heřmanička into a cycle path is implemented in all of Spatial Plans (Územní plán) of the municipalities, Strategic plans (Strategický plán rozvoje) of the municipalities, Spatial analysis plan (Územně analytické podklady) of Frýdlant and Spatial planning guidelines (Zásady územního rozvoje) of Liberecký kraj.

The last two goals were to prepare a brief strategic plan for Heřmanička rail to trail

conversion and a prototype plan for a short section of rail-trail design based on the existing conditions in the site.

The strategy and design is trying to respect the attitude and effort of local community. As many work was done on the Frýdlant Railway Museum by the volunteers, it would be a great point to implement the museum into future strategy of the trail. It is important to somehow manage the cooperation between the group of Frýdlant Railway Museum and supporters of the cycle path conversion. From the meetings was obvious these two groups are more rivals than colleagues.

The application of a prototype plan for rail-trail design was based on natural conditions. As Frýdlant territory is located exactly in front of the mountains and on their slopes, it is needed to count with high amount of atmospheric precipitation. The whole area of Frýdlant is very flat and also many

streams are located there. The threat of floods is present in the territory since first settlers came. The last destructive flood came in 2010. Frýdlant and Heřmanice were hardly affected by the water from Smědá and Oleška rivers. Millions were invested to flood protection after 2010. It must be kept in mind, that the flood could come again. In case of Heřmanička trail this is the one of the biggest threats, because the trail is located right next to the mentioned streams.

The Eurostat estimates that 19,3 percent of Czechs are overweight or obese. Even more alarming are diseases such as type 2 diabetes, high cholesterol and high blood pressure. Rail trails are simply the ideal place for families to become more active and healthy.

Rail trails also create an opportunity of outdoor recreation. The rail lines were often

built along rivers, across the valleys and on the elevated embankments, which provide unforgettable view to the landscape. The trails can boost local economy and often create new opportunities for visitors such as cafes, hotels and bike shops.

7.0 Conclusion

In the task of designing trails on abandoned railways in the Czech Republic there are not defined the guidelines for strategic documentation or prototype plans in czech legal system.

The only guidelines which can be used are specified for standard cycle paths, what could appear as a problem.

This master thesis is pointing on some difficult task which appeared during the time of research.

The result of this thesis is a comprehensive analysis of existing landscape characteristics on the site of research.

The research of landownership of the site was the second task. This step is very important before any project is realized. In case of Heřmanička trail the problem of ownership was solved two years ago when

Mikroregion Frýdlantsko after 20 years of negotiation bought parcels of Heřmanička from Správa železniční dopravní sítě. Works on Heřmanička could start.

Strategic plan for implementation and prototype plan for short sections of trails were proposed based on landcape conditions, landscape knowledge and needs of local community. Suggestions for management, recreation and funding were recommended.

Hopefully, this master thesis could be used as a brief strategy for future development of Heřmanička trail.

At the end of 2017 Mikroregion Frýdlantsko was supported by almost 300 000 CZK for surveyor works on Heřmanička. Hopefully, this might be the first step of new rail to trail conversion in the Czech Republic.

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