TECHNISCHE UNIVERSITÄT WIEN

FORSCHUNGSBEREICH FÜR VERKEHRSPLANUNG UND VERKEHRSTECHNIK

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Bericht / Report

Mitteleuropäisches Planungsseminar / Central European Planning Seminar

Sankt Veit an der Glan

12. – 17. **Mai 2019**

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Wien, 2019

1 Das Mitteleuropäische Planungsseminar (MEPS)

Das Mitteleuropäische Planungsseminar (MEPS) hat 2019 zum 30. Mal stattgefunden. Von 12. bis 17. Mai bearbeiteten über 30 Studierende der TU Wien, TU Budapest, Universität Debrecen und TU Prag Planungsaufgaben in St. Veit an der Glan.

Beim Mitteleuropäischen Planungsseminar werden eine Woche lang 6 Planungsaufgaben in internationalen, interdisziplinären Studierendengruppen bearbeitet und am Ende der Woche den Entscheidungsträgern präsentiert. Für die Studierenden ist das MEPS eine einzigartige Gelegenheit, ein praxisnahes Projekt „im Schnelldurchlauf“ mitzuerleben (inkl. Aufgabenstellung durch die Verantwortlichen der Stadt, Lokalaugenschein, Erhebungen, Analysen, Maßnahmenvorschläge, Endpräsentation und Verteidigung der Ideen). Für die teilnehmende Stadt ist es eine fantastische Möglichkeit, innerhalb kurzer Zeit einen unvoreingenommenen „Blick von außen“ und kreative Lösungsvorschläge für die eigenen Verkehrsprobleme zu bekommen.

Der Forschungsbereich für Verkehrsplanung und Verkehrstechnik der TU Wien bedankt sich herzlich bei der Stadt St. Veit/Glan für die reibungslose Durchführung des Planungsseminars, die ausgezeichnete Unterbringung und Verköstigung im Kunsthotel Fuchspalast sowie für die spannenden Planungsaufgaben.

Abbildung 1: Karte der bisherigen Veranstaltungsorte (gelb: St. Veit/Glan 2019)

Tabelle 1: Liste der bisherigen Veranstaltungsorte

1. Kralupy nad Vltavou (1990)	11. Szentendre (2000)	21. Wiener Neustadt (2010)
2. Kalocsa (1991)	12. Kufstein (2001)	22. Nachod (2011)
3. Bruck a.d. Mur (1992)	13. Mladá Boleslav (2002)	23. Gyula (2012)
4. Liberec (1993)	14. Esztergom (2003)	24. Feldkirch (2013)
5. Tata (1994)	15. Tulln a.d. Donau (2004)	25. Tábor (2014)
6. Salzburg (1995)	16. České Budějovice (2005)	26. Hajdúszoboszló (2015)
7. Litomyšl (1996)	17. Hévíz (2006)	27. Wels (2016)
8. Sopron (1997)	18. Bruck a.d. Mur (2007)	28. Přerov (2017)
9. Feldkirchen (1998)	19. Jihlava (2008)	29. Eger (2018)
10. Teplice (1999)	20. Siófok (2009)	30. Sankt Veit a.d. Glan (2019)

Der weitere Bericht ist wie folgt aufgebaut. In Kapitel 2 werden die Planungsaufgaben vorgestellt, die von der Stadt St. Veit/Glan gemeinsam mit der TU Wien entwickelt wurden. Kapitel 3 beinhaltet die von den Studierendengruppen erstellten Berichte in englischer Sprache. In Kapitel 4 erfolgt eine Kurzzusammenfassung der Studierendenberichte und eine fachliche Einschätzung der Maßnahmenvorschläge durch die TU Wien. Kapitel 5 enthält Links zu verwendeten Planungsgrundlagen und Dokumenten, Kapitel 6 Impressionen des Planungsseminars. Im Anhang sind die von den Studierendengruppen erstellten Poster und Präsentationen gesammelt.

2 Planungsaufgaben

2.1 Task 1: Erstellung eines Grundverkehrsplan für St. Veit an der Glan

Das Land Kärnten hat 2016 den Mobilitätsmasterplan Kärnten 2035 (MoMaK 2035) verabschiedet, in dem Leitprinzipien, Handlungsfelder und Maßnahmen festgelegt sind. Die Umsetzung vieler Maßnahmen liegt allerdings in der Kompetenz der Kommunen. St. Veit an der Glan hat bislang noch kein eigenes Mobilitätskonzept, das die Bundes- und Landesziele auf Stadtebene herunterbricht.

Ziel des Tasks ist die Übertragbarkeit des Mobilitätsmasterplans Kärnten 2035 auf St. Veit/Glan mit Fokus auf Lärm, Feinstaub, Durchzugsverkehr und Fahrgeschwindigkeiten.

2.2 Task 2: Radverkehrskonzept St. Veit/Glan

Zwei überregionale Radrouten (R5, R7) kreuzen das Gemeindegebiet von St. Veit/Glan. Kleinere Ortschaften sind teilweise durch lückenhafte Radinfrastruktur (meist gemischte Geh- und Radwege) angebunden. Die Siedlungszentren St. Donat und Hörzendorf sind von der Kernstadt momentan nur über Hauptstraßen ohne Radinfrastruktur zu erreichen.

Auch das Radnetz in der Kernstadt ist lückenhaft und qualitativ verbesserungswürdig.

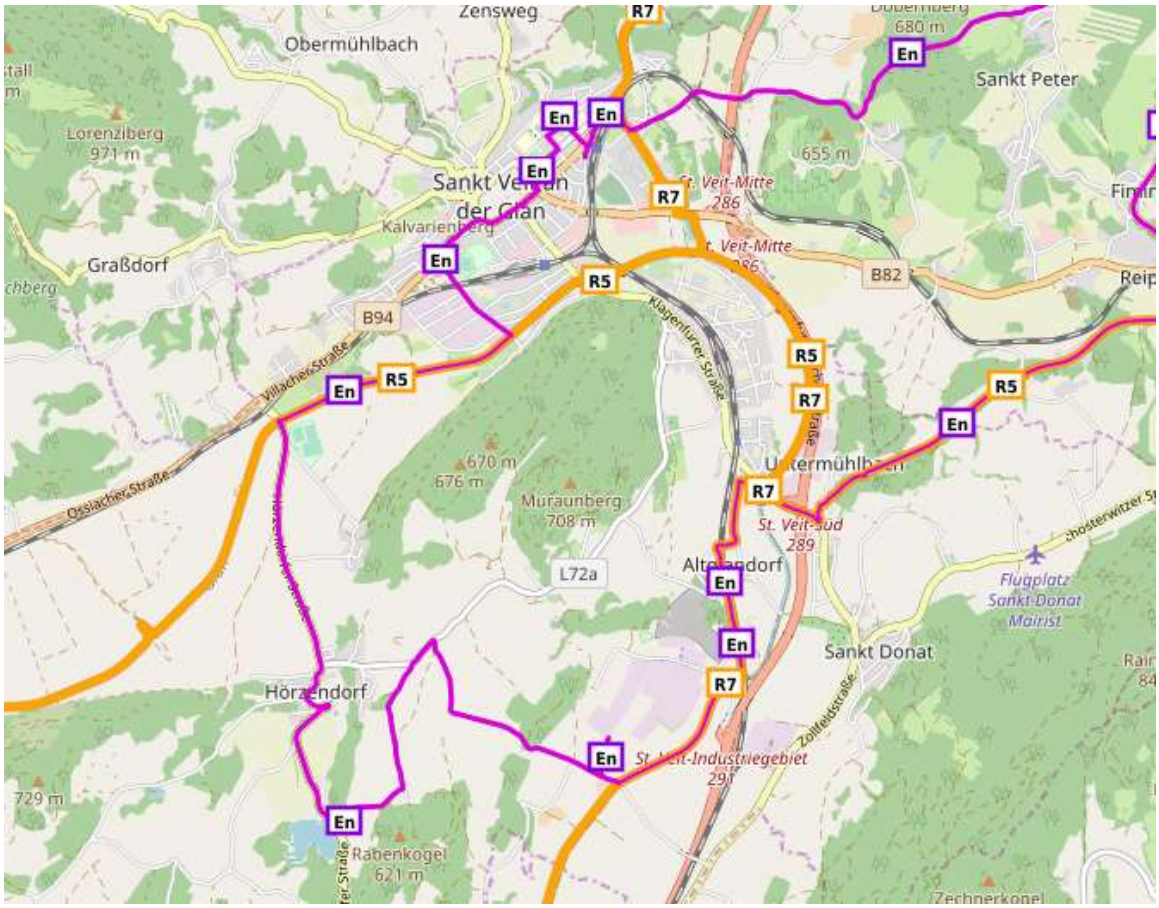

Abbildung 2: übergeordnetes Radverkehrsnetz im Raum St. Veit/Glan, Quelle: brouter.de

2.2.1 Zielsetzung

- Analyse des bestehenden lokalen Radverkehrsnetzes (Qualität, Abdeckung, Anbindung der Vororte)
- Analyse der Anbindung an das überregionale Radverkehrsnetz
- Mängelanalyse
- Erarbeitung von Empfehlungen und Verbesserungsvorschlägen (strategisch bis konkret)

2.2.2 Unterlagen und Dokumente

- Radverkehrspläne
- Planunterlagen

2.3 Task 3: Analyse ÖV-Konzept St. Veit/Glan

2.3.1 Problemstellung

- Unregelmäßiges Intervall
- Rumpfnetz als Überbleibsel eines ehemaligen Busnetzes

2.3.2 Zielsetzung

- Analyse des bestehenden ÖV-Konzepts mit Fokus auf Umsteigemöglichkeiten und Anbindung der Vororte
- Potenzialabschätzung für Carsharing, Mikro-ÖV, etc.

2.3.3 Unterlagen und Dokumente

- Fahrpläne Bus/Bahn lokal/regional
- ÖV-Auslastungszahlen

2.4 Task 4: Analyse der Erreichbarkeit der Innenstadt

Ende der 1980er Jahre wurde die Innenstadt von St. Veit erstmals zu einer Fußgängerzone erklärt. Anfang der 1990er Jahre wurde die Innenstadt als Wohnstraße in Verbindung mit einem Fahrverbot verordnet, da man die Innenstadt ausschließlich von Anrainern, Liegenschaftseigentümern und Lieferanten für die ansässigen Geschäfte befahren lassen wollte.

Im Jahr 2007 entschied man sich dafür, die Innenstadt wieder als flächendeckende Fußgängerzone zu erklären, da es rechtliche Probleme mit dem Fahrverbot in Verbindung mit der Wohnstraßenregelung gab. Das Befahren der Fußgängerzone ist seither außer für die gesetzlich festgelegten Personenkreise zusätzlich für Taxis und Radfahrer möglich. Ladetätigkeiten sind möglich in der Zeit von Mo.-Fr. von 06:00 – 10:00 Uhr, 17:00 Uhr – 21:00 Uhr und samstags von 06:00 – 10:00 Uhr.

Da der Untere Platz, der Hauptplatz, die Dr. Karl Domenig Straße und der Herzog Bernhard Platz als Einbahnstraße geführt werden, müssen sich auch Radfahrer an die Einbahn halten, was in der Praxis jedoch nicht funktioniert.

Da auch in den letzten Jahren vermehrt unbelehrbare Verkehrsteilnehmer gegen die Fußgängerzonenregelung verstießen und die Fußgängerzone rechtswidrig befuhren, entschied man sich, die Fußgängerzone mit vollautomatischen Pollern abzusichern. Nach der Installierung der Poller kam es oft zu Meinungsäußerungen wie: „Die Installierung der Poller trug zum massiven Abzug der Geschäftslokale bei“. Kritiker meinen, die Innenstadt gehöre für den Kfz-Verkehr geöffnet, andere sagen, dass durch eine Öffnung der Innenstadt das Flair der Altstadt verloren gehen würde.

Im fußläufiger Entfernung von der Altstadt gibt es drei Parkgaragen und eine gebührenpflichtige Kurzparkzone.

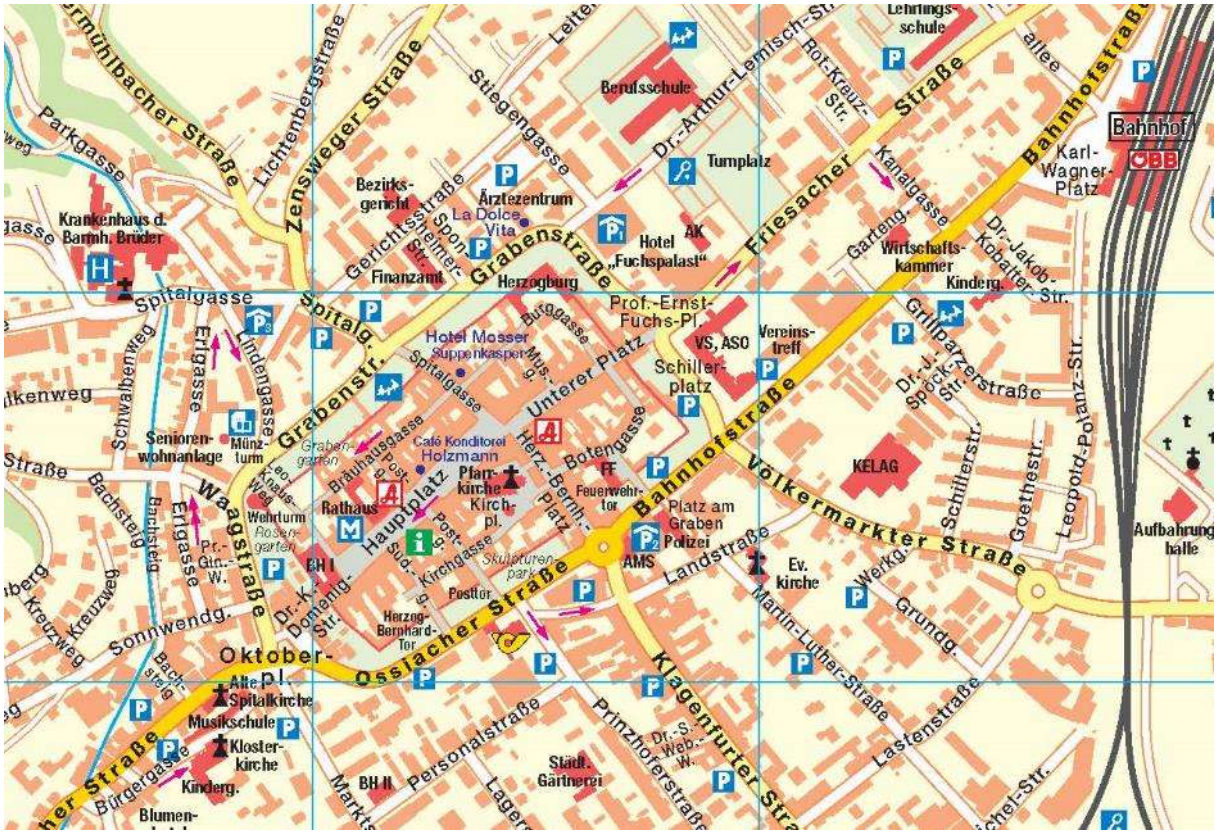

Abbildung 3: Ausschnitt Zentrum, Quelle: Schubert & Franzke, St. Pölten 2009

2.5 Task 5: Fokus Wohngebiet Wayerfeld

Mitte der 1990er Jahre begann die Bebauung des Wayerfelds. Ursprünglich war beabsichtigt, die Herzog Bernhard Straße als Hauptdurchzugsstraße – quasi eine Nord Süd Verbindung zwischen der B94 Ossiacher Straße und der Völkermarkter Straße – auszubilden und von dieser links und rechts die einzelnen Aufschließungsstraßen herzustellen.

Im Jahr 1996 wurde der Großteil der Straßenzüge am Wayerfeld zu Wohnstraßen erklärt, da es der Wunsch der dortigen Bevölkerung war, in einer verkehrsberuhigten Zone zu leben. Zusätzlich zur Wohnstraßenregelung wurden die Straßen mit Grüninseln, Brunnenanlagen usw. versehen, wodurch es dazu kam, dass Teilbereiche der ursprünglich als Durchzugsstraße geplanten Herzog Bernhard Straße abgesperrt und als Sackgasse geführt wurden.

Bereits im Jahr 1999 als der Großteil der Bebauung abgeschlossen war, kamen die ersten Beschwerden seitens der Bevölkerung, dass das Wayerfeld als Abkürzung und somit Nord Süd Verbindung verwenden und hierdurch ständig gegen die Wohnstraßenregelung verstoßen. Nach Beurteilung und Zählung durch das KfV sowie der örtlichen Polizei in den Jahren 1999 sowie 2009 und 2017, wurde festgestellt, dass einerseits der Anteil des Durchzugsverkehrs um die 10% beträgt und es betreffend der in einer Wohnstraße erlaubten Höchstgeschwindigkeit massive Übertretungen gibt. Die am Wayerfeld festgestellte Geschwindigkeit befindet sich im Bereich der im Ortsgebiet von St. Veit zulässigen Höchstgeschwindigkeit von 40km/h.

Abbildung 4: Luftbild Wayerfeld Blickrichtung Norden, Quelle: Google Maps

2.6 Task 6: zukünftige Wohnraumentwicklung St. Veit/Glan

2.6.1 Problemstellung

Wohin soll die zukünftige Wohnraumentwicklung gehen?

2.6.2 Zielsetzung

- Abschätzung der verkehrlichen Wirkungen zukünftiger Wohnraumentwicklung
- Ableitung von Empfehlungen für zukünftige Entwicklungen

2.6.3 Unterlagen und Dokumente

Örtliches Entwicklungskonzept

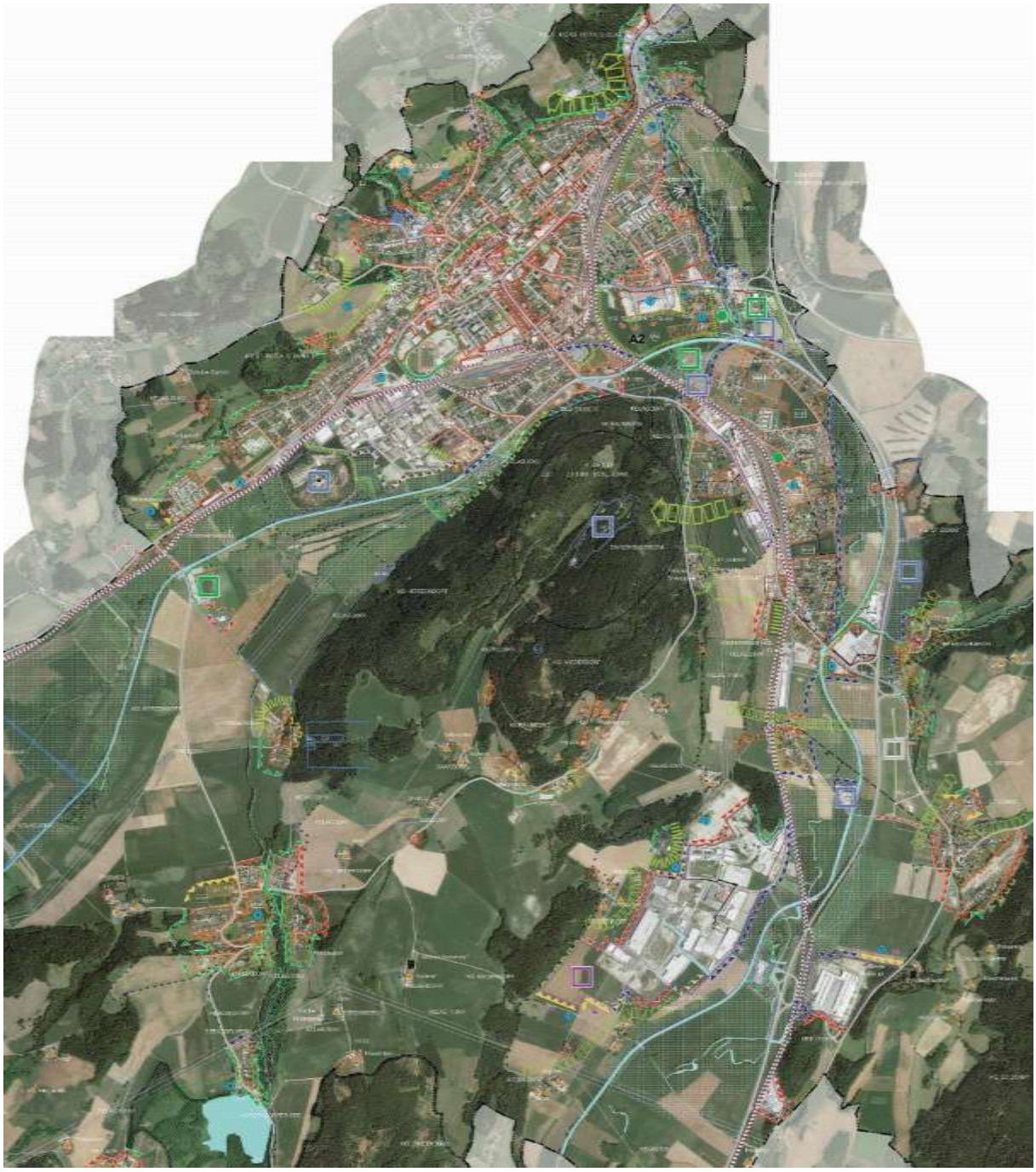

Abbildung 5: Ausschnitt aus dem Örtlichen Entwicklungskonzept (ÖEK)

3 Ergebnisse

Von jeder Gruppe waren ein Poster, eine Präsentation und ein Bericht zu verfassen. Im Folgenden sind die schriftlichen Berichte (in englischer Sprache) der einzelnen Planungsgruppen gesammelt. Lediglich das Layout wurde angepasst, inhaltlich sind alleinig die Gruppen verantwortlich.

In Kapitel 4 erfolgt eine Kurzzusammenfassung der einzelnen Gruppenergebnisse in deutscher Sprache sowie eine fachliche Einordnung der Ergebnisse durch die TU Wien.

3.1 Task 1: Erstellung eines Grundverkehrsplan für St. Veit an der Glan

3.1.1 Abstract

The main target is applying the Mobilitäts Masterplan for Carinthia (MoMaK) in local level for St. Vein an der Glan. Important points of the masterplan are slowing down the traffic as well as harmonizing and reviewing the existing speed limits. The masterplan also suggests simplifying traffic flow, reducing traffic load in center areas and the implementation of fair traffic light control primarily for pedestrians.

3.1.2 Methodology

First steps were the observation and analyzation of the existing traffic flow and infrastructure, and the investigation of existing speed limit zones as well. We found that the current speed limit structure in St. Veit is very complex, confusing, unclear and discontinuous. We also observed that the current system of roundabouts and traffic light-controlled intersections are not always working at their full potential. Another problem is that during peak/rush hours the traffic partially relocates itself onto the side roads and living areas. Due to this redirection, the quality of living areas is decreasing since the traffic is not banned out from these residential areas.

3.1.3 Results

To simplify the speed limit system, we suggest redesigning the speed limits in a simple, self-explanatory and easy-to-understand way. In our new scheme, main roads are limited to 50 km/h, all the side-roads to 30 km/h and the residential areas to 20 km/h with all the shared spaces. Consequently, the 40 km/h speed limit is not applied anymore. As an effect, side roads would become safer and more attractive for cyclists and high-speed traffic would be reduced. We strongly suggest applying the new concept with new/changed street infrastructure according to speed limits. In order to relieve pressure from the main roads it could be an option to use the Markt Straße/Lasten Straße as an alternative route with a speed limit of 50 km/h. As a result, the center and Klagenfurter Straße could become calmer with lowered traffic volumes. The current speed limit zones should be reviewed and harmonized to simplify the network. Currently it is complex, and some routes have discontinuous speed limit zones after each other. Right now, the city has 6 categories for these rules and our suggestion is to rethink these categories. With the 30 km/h restrictions the living areas would be safer, and the city would become more attractive for cycling as well. For the existing shared-space zones we suggest using 20 km/h limits instead of 5 km/h, because an irrational speed limit is not complied, the current limitations has practically no use. The speed limit at the area should be combined with some traffic calming infrastructural elements. At the main road coming from the east we suggest a continuous 50 km/h limitation to harmonize the line.

In order to improve the traffic flow on main roads overpassing the center, we propose two solutions for Villacher/Ossiacher/Bahnhofs Straße. The first solution is to redesign the roundabout at the intersection of Bahnhofs Straße and Klagenfurter Straße. For this improvement it is necessary to rebuild the roundabout. As a result of the current width configuration the roundabout is unsatisfying, because the central overrun area and traffic lanes are over-dimensioned. The cars use the center more than they should in general. Basically, this section is just for lorries when they need the extra space for going around the facility. In the new plans the center areas of the roundabout would be raised for

slowing down the incoming traffic and preventing vehicles driving through the place in a straight line. At present, this part is on the same level with the lanes.

The second solution is substitute the roundabout to an intersection controlled by traffic light system. This would enable that the traffic lights of all the intersections on the main road could be coordinated as a whole, even with a green wave during high incoming volumes, as well as prioritize pedestrians, since the junction is close to the main street of the city center. At the moment, the neighboring crossroads have traffic lights implemented and the system causes traffic jams and congestions in the city center. The roundabout does not allow traffic flow to be continuous on this main route of the city.

Another solution for reducing traffic there is to use Lasten Straße as a ring road, so traffic coming from East to the Northern areas would not be concentrated on Klagenfurter Straße. In the plan of new speed limits zones, we designed these roads with 50 km/h limitations. The implementation would not be too expensive and could help a lot simplifying and improving the traffic flow in this area. In the new plans, the pedestrians have longer green times as this is one of the main points of the Mobility Master Plan. The road coming from South could be completed with a detector, so the other line with higher volumes can have the preference until a vehicle is approaching or a pedestrian pushes the button to come across the road. For the plans we used the peak volumes, but it is also suggested to have adapted programmes for different times of a day.

We suggest minimizing shortcut traffic coming through the Northern living are with some new restrictions. If we apply one-way rules there, the area could be relieved from heavy traffic and shortcuts. The area also would be safer and calmer. Since traffic relocates itself in peak/rush hours from Friesacher Straße to Doktor-Arthur-Lemisch-Straße, we suggest changing Arthur-Lemisch-Straße to a one-way road and let cars only drive in the direction of the Friesacher Straße to the center. This simple intervention would be very cheap and easy to apply as well as be very effective. On the south-west we also suggest some change in rules, just to make the area safer. The inner street is too narrow for two cars passing by at the same time, so using one-way rules could solve problems.

Figure 6: Current speed regimes

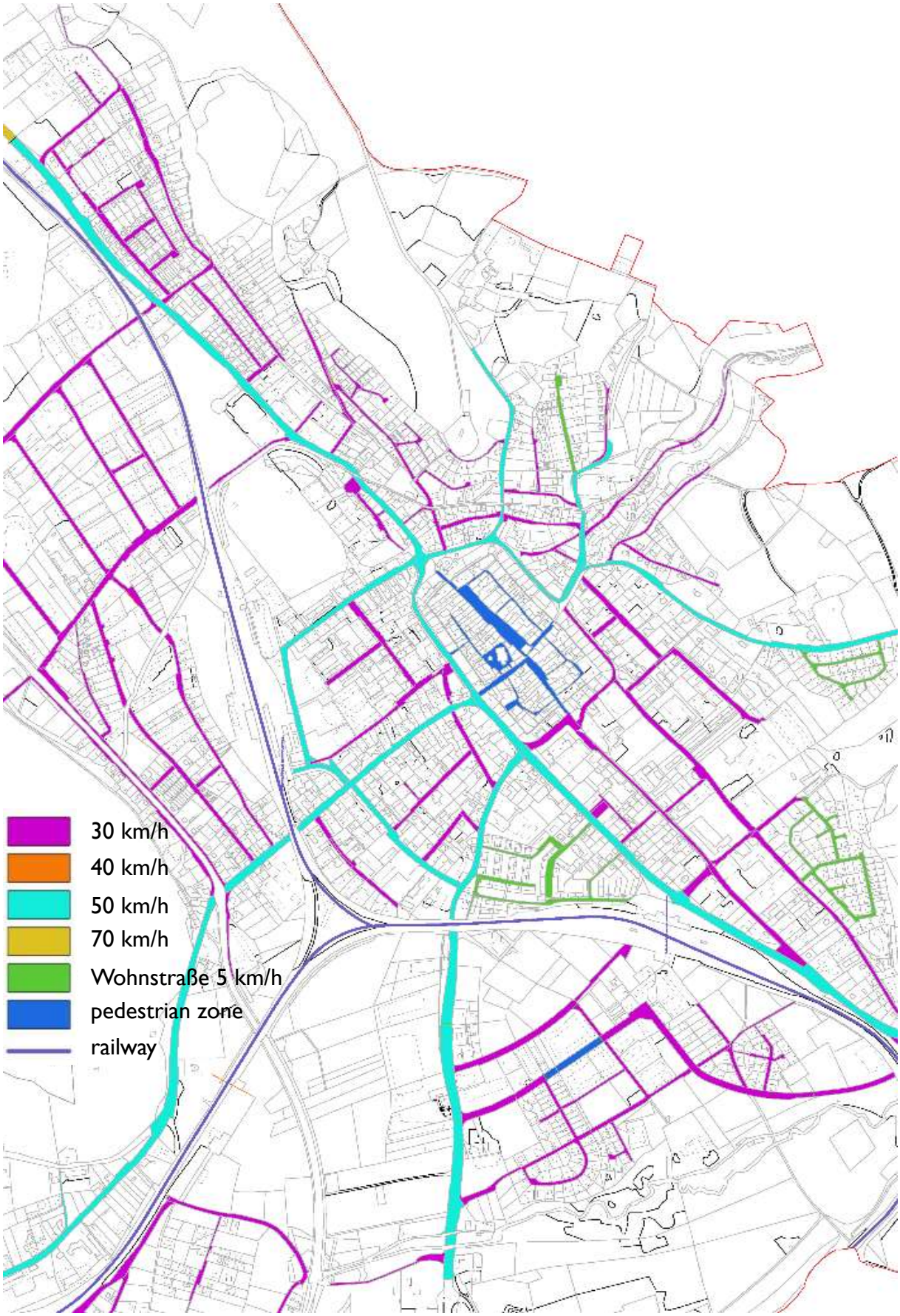

Figure 7: Proposed speed regimes

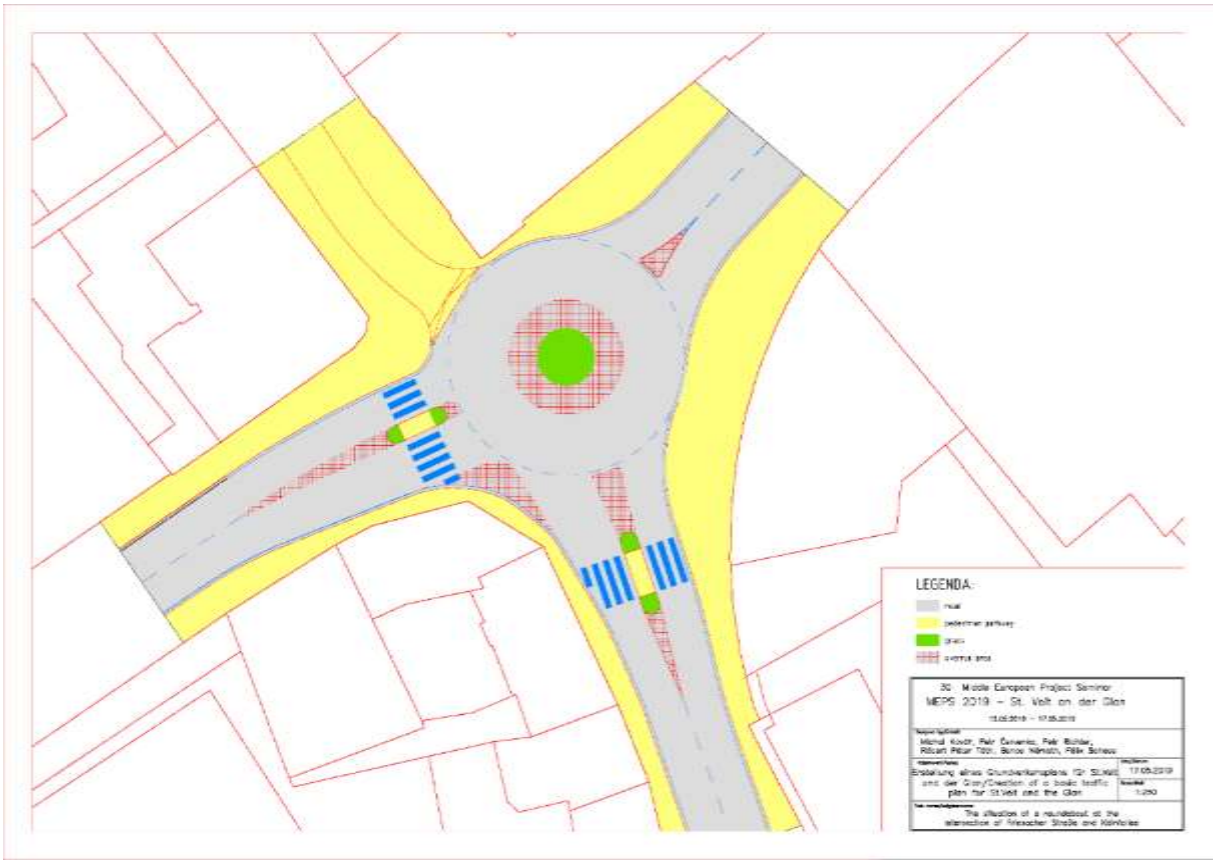

Figure 8: Proposed redesign of the roundabout Bahnhofsstraße/Klagenfurter Straße

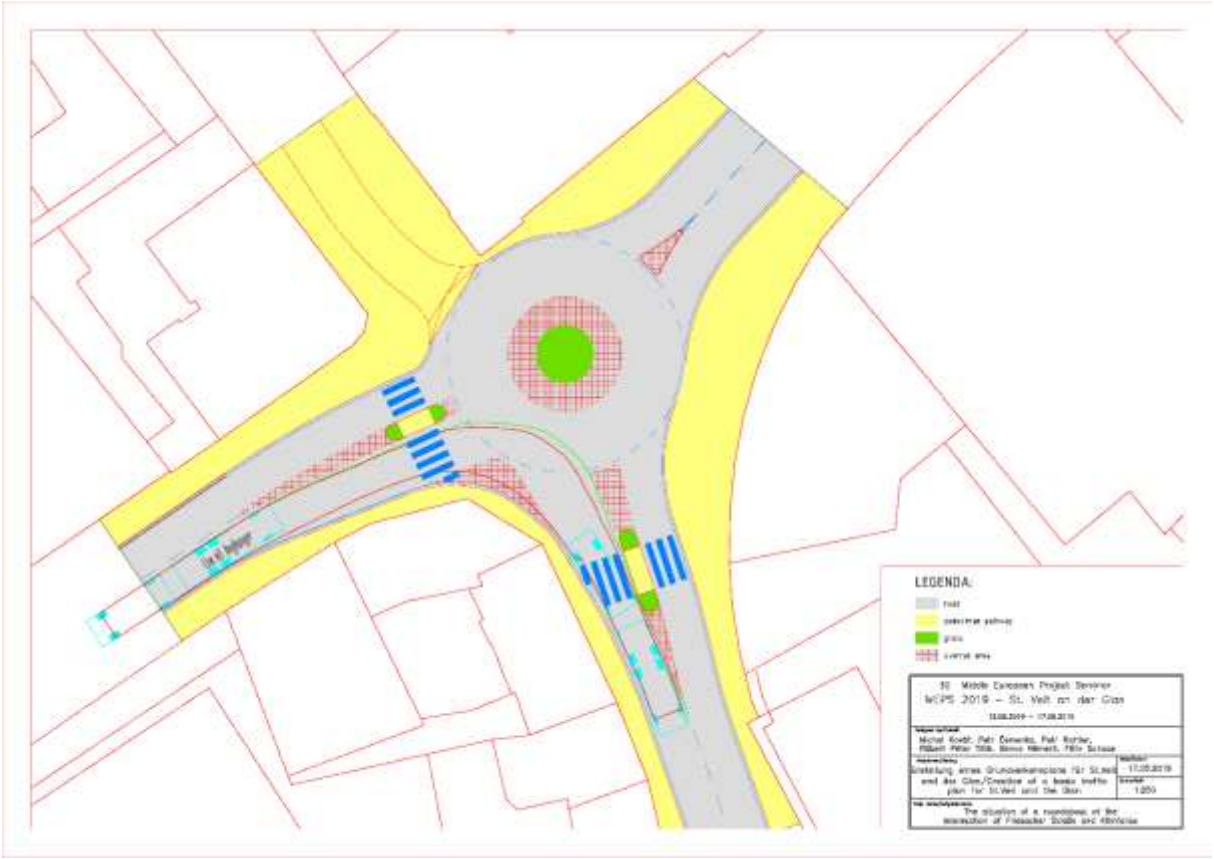

Figure 9: Proposed redesign of the roundabout Bahnhofsstraße/Klagenfurter Straße - tactrix curves

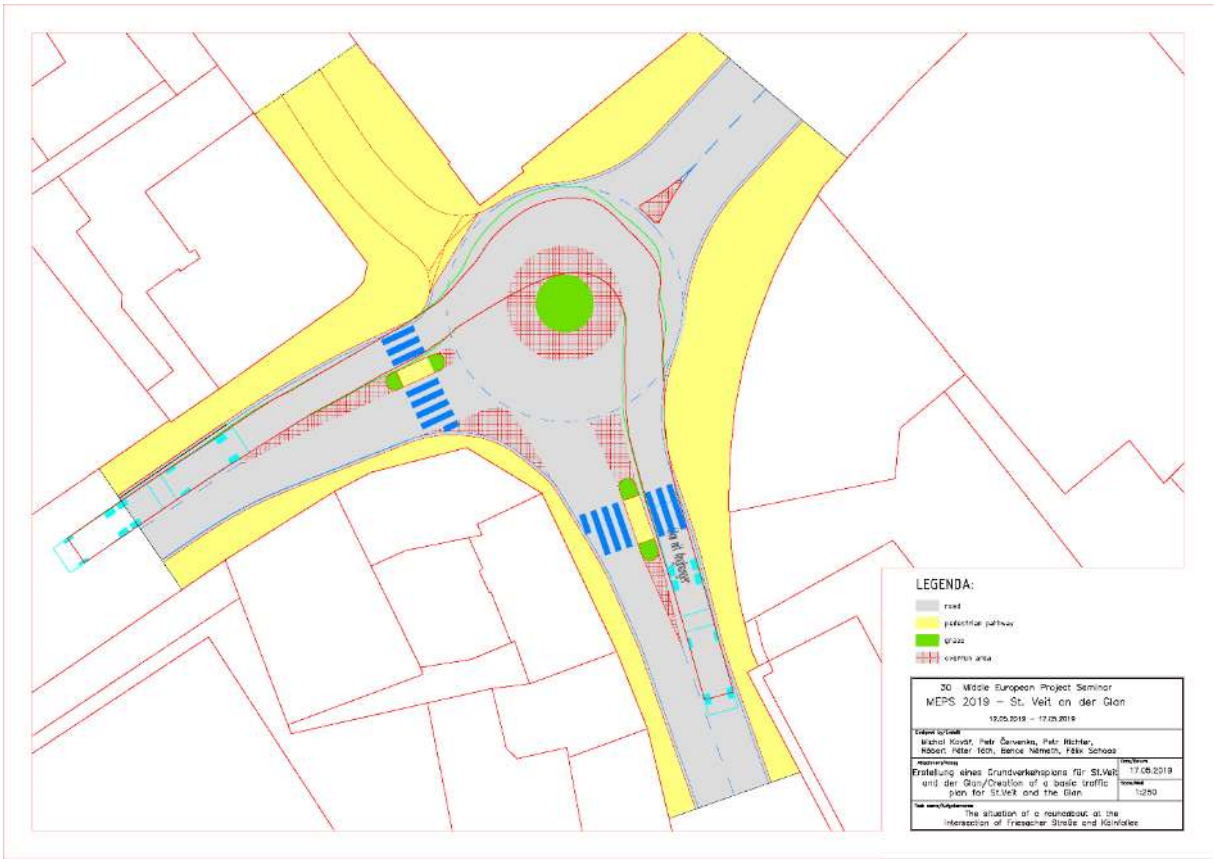

Figure 10: Proposed redesign of the roundabout Bahnhofsstraße/Klagenfurter Straße - tactrix curves

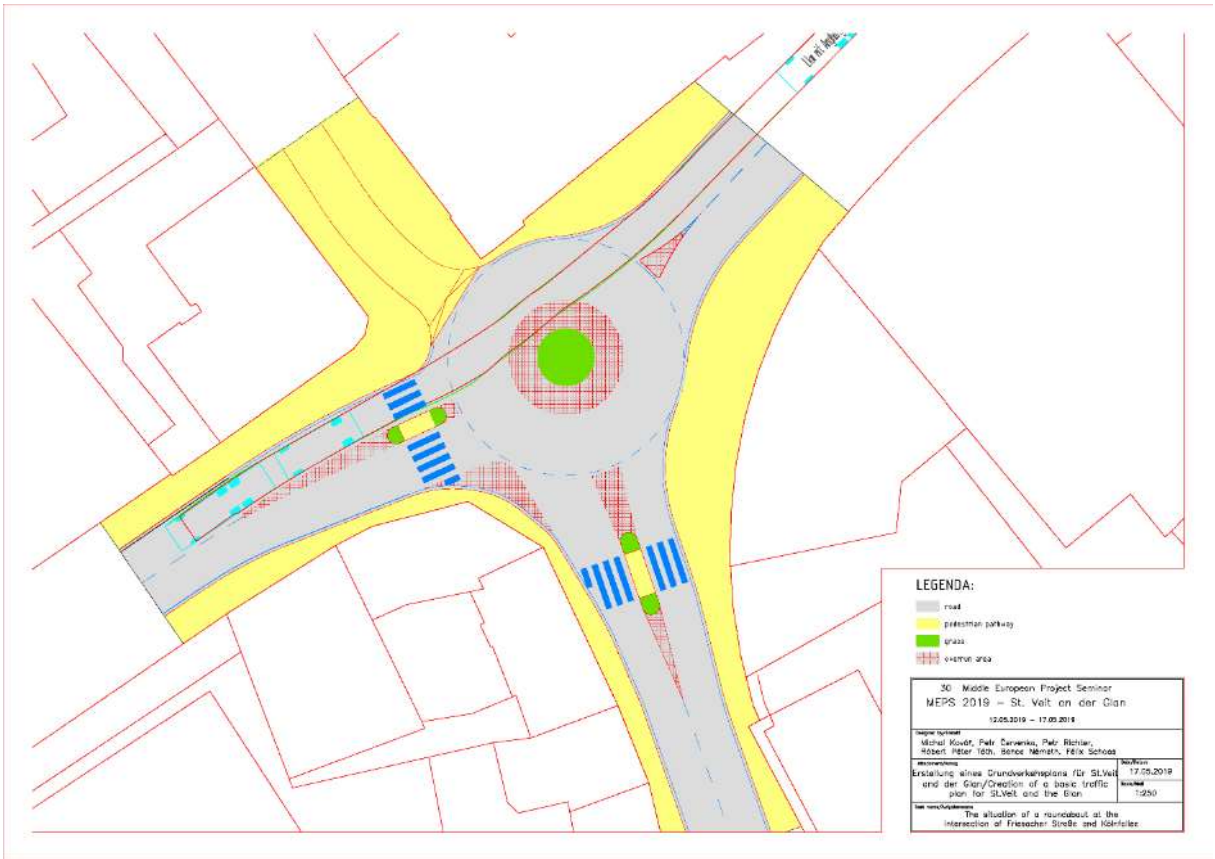

Figure 11: Proposed redesign of the roundabout Bahnhofsstraße/Klagenfurter Straße - tactrix curves

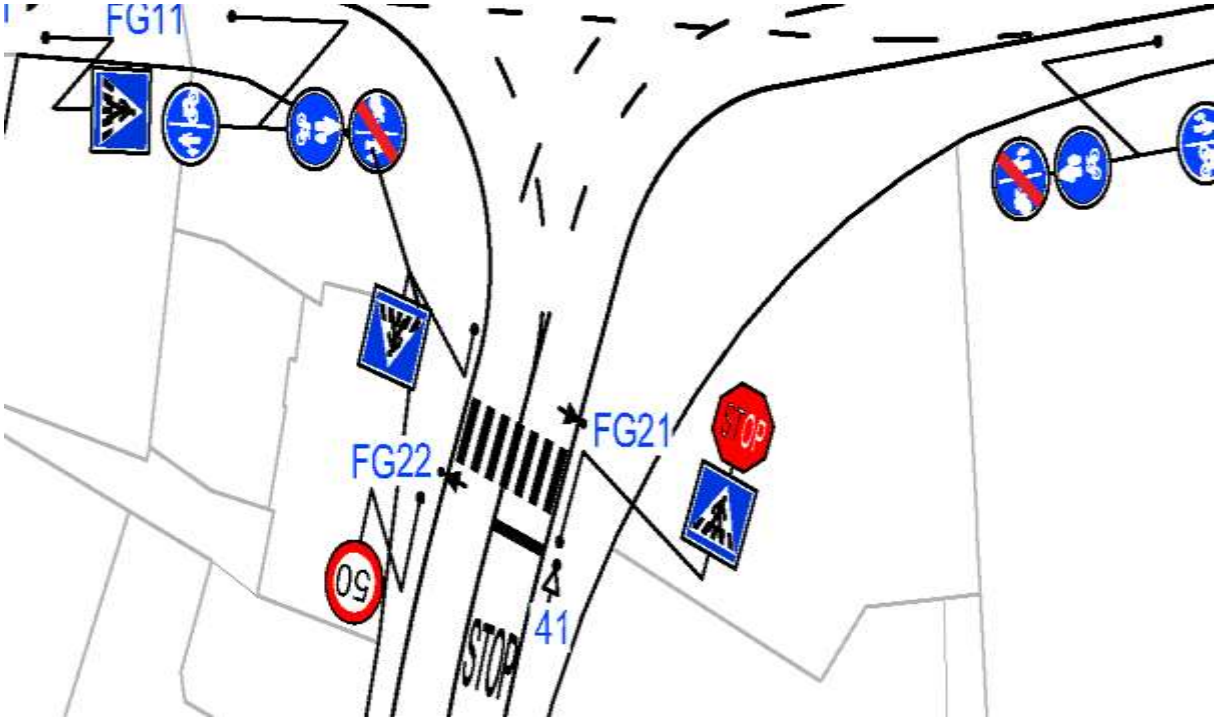

Figure 12: Layout of intersection Bahnhofsstraße/Klagenfurter Straße

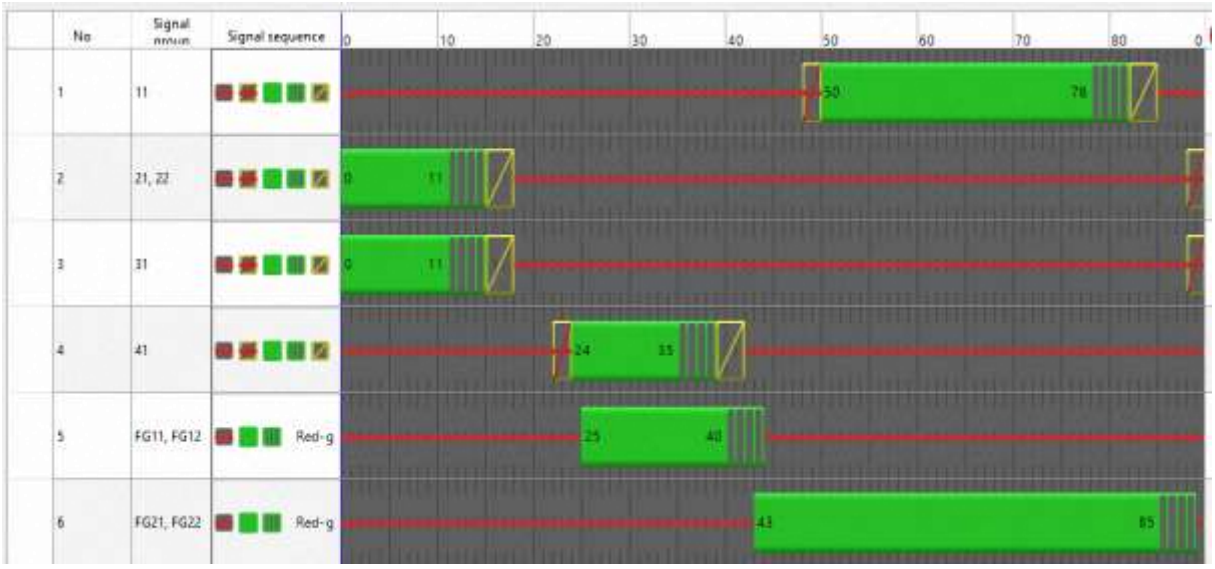

Figure 13: Layout of intersection Bahnhofsstraße/Klagenfurter Straße – traffic signal plan

Ossiacher Strasse - Klagenfurter Stasse		1	2	3	4	FG1	FG2
		11	*21*	*31, 32*	*41*	*FG11, FG12*	*FG21 FG22*
1	*11*			8	7	4	
2	*21*				7	10	
3	*31, 32*	7			7		10
4	*41*	6	5	3			4
FG1	*FG11, FG12*	5	4				
FG2	*FG21, FG22*			1	4		

direction	green time [s]	volume [pcu]	capacity [pcu]	v/c
1	32	600	640	93,75%
2	15	244	300	81,33%
3	15	244	300	81,33%
4	15	212	300	70,67%

place	length [m]	min. green time [s]	actual green time [s]
FG1	7	4,7	19
FG2	7	4,7	46

Figure 14: Layout of intersection Bahnhofsstraße/Klagenfurter Straße – traffic signal plan

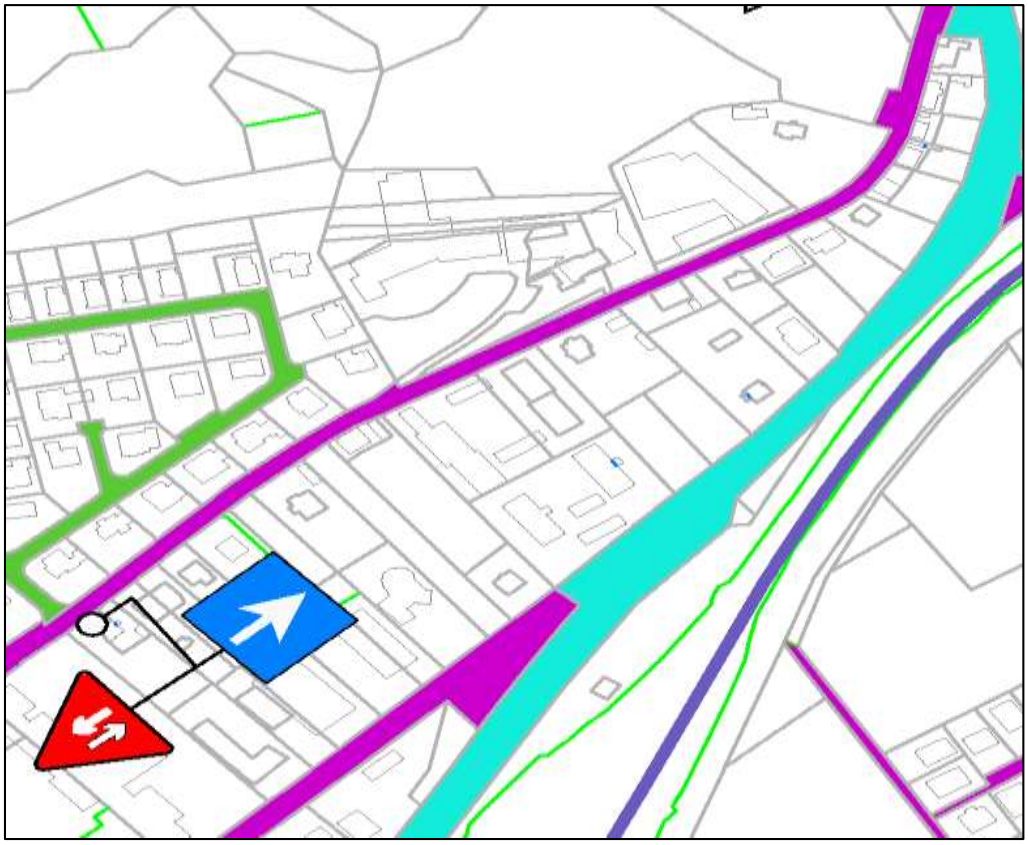

Figure 15: proposed one-way street Doktor-Arthur-Lemisch-Straße Richtung Friesacher Straße

Figure 16: : proposed one-way street Doktor-Arthur-Lemisch-Straße Richtung Friesacher Straße

3.2 Task 2: Radverkehrskonzept St. Veit/Glan

3.2.1 Presentation of the task

The group that produced the present report focused on the task "Bicycle Concept St. Veit / Radverkehrskonzept St. Veit" (task n°2 according to the original list). The work achieved reflects upon the cycle network of the municipality and its possible evolution.

In summary, we were given first of all to analyze the bike facilities on a local scale, including the quality of the existing infrastructures, the network coverage and the connections with the suburbs of St. Veit (e.g. surrounding villages, industrial area) and the national cycle network. The second main aspect of this task was then logically to offer an evaluation of the prevailing connections between strategic points of interest as well as new planning measures so as to strengthen the whole regional cycling network coherence.

Henceforth the main thread which guided us all along this seminar can be condensed in this research problem:

> *According to the existing bike facilities and the current socio-economical dynamics of the city of St. Veit an der Glan and its surrounding, what could be the most strategic actions undertaken by the municipality, on the field but also in regard to the users behavior, to forge ahead the development of the local cycle network?*

To achieve the requested work, we received a "starting-kit" containing among others a large-scale map offering an overview of the cycle network of the region of St. Veit an der Glan (including the following paths: Überregionaler Radweg R5, Überregionaler Radweg R7, Regionale Radweg gemischt und getrennt) as well as some Austrian guidelines related to bicycle parking spaces and regulatory transport widths.

After this introductive section of the report, the next part will deal with the approach that we choose to answer the challenges of the given task. Then, the short description of each of its steps will be followed by the recaps of the everyday work of our students' team (detailed until Wednesday, because Thursday was mostly the day of redaction, and Friday was reserved for the students' presentations in front of the municipality's council). Finally, our proposals in the form of CAD (Computer Aided Design) drawings will be exposed in the last section while being accompanied with further explanations.

3.2.2 The ACP method

According to the requests of our task and the problematic we faced, we opted for a customized three-step approach to which we explicitly assigned the following name: "Analysis-Checking-Planning Method". The outcome of the latter consists in an interesting range of planning solutions and improvement measures for the cycle network of St. Veit an der Glan and its users (see end of part IV Proposals).

3.2.2.1 Analysis

During this first step of analysis, mainly based on observation and intuition, our main tool was the cycle network map of the district of St. Veit. We spontaneously estimated the localization of the main points of interest (e.g. existing or planned schools, shops and shopping mall, sport infrastructures) as well as the delimitation of different areas according to their main function and characteristics (e.g. work, residential, pedestrian areas).

3.2.2.2 Checking

In the course of the second stage, we then realized some surveys on the field so as to extend our local knowledge through a true field experience and also to get a general idea of the bike use in the surrounding area through the impressions of the people in town. Combining this checking phase

with the analytic one, we were then able to carry out an analysis of the main deficiencies (the so-called “Mängelanalyse” in German).

3.2.2.3 Planning

Last but not least, the final part of our work consisted in the realization, thanks to the CAD software Autocad©, of detailed plans (see part IV Proposals) suggesting a redesign of the previously established prevailing points of interest and connections.

3.2.3 Daily recaps

3.2.3.1 Monday, 13th May

- Team building
- Work around the official cycle network map of the district of St. Veit
  - ☑ Gathering of the first impressions of the team members;
  - ☑ Spontaneous propositions of improvement measures and new bike facilities (e.g. bike-sharing, bike stations, water fountains, air pumps);
  - ☑ Tracking of strategic connections;
  - ☑ Suggestions of implementation of new bike paths;
  - ☑ Research of interesting places to study.
- Tours through the city
  - ☑ Morning – Quarter around the “Neue Mittelschule“ (Friesacher Straße, Kölnhofallee, Dr. Arthur-Lemisch Straße, Bahnhofstraße)

  - ☑ Afternoon – City center within its pedestrian area, Hauptplatz, Oktoberplatz, Villacher Straße (until Blumenhalle), Schießstattallee, Glangasse, Klagenfurter Straße, Ossiacher Straße.

- First observations & conclusions
  - ☑ Obviously, it seems complex for non-local cyclists to know the allowed/practicable bike paths in St. Veit an der Glan, mostly due to a lack of clear specific signalization (not uniform, partly erased, a lot of signs missing). This seems to be the main factor making at the current time biking such a non-convenient means of transport to move around the city.
  - ☑ In that way, we noticed the self-inventive, adaptive and most of the time hazardous way of circulation of the cyclists in the city due to many “holes” in the cycle network (e.g. sudden end of the cycle paths leaving the bikers to their fate amid the flow of cars, few clear indications especially nearby the crossroads, no signal lights dedicated to the cyclists at the crossing paths) or almost systematic shared paths with the other public space’s users.
  - ☑ To end on a positive note: there are already some existing bike parking facilities in the city center. However, the high number of bikes parked in this bikers-frequented area without using these infrastructures shows an incompatibility with the need of the cyclists. These bicycle parking spaces are maybe not situated in strategic locations or not convenient enough (e.g. crossbars situated too close to the ground, implying to get really down to attach ones chain).

3.2.3.2 Tuesday, 14th May

- Auto tour in our planning areas around St. Veit an der Glan
- Connection St. Veit – Unterbergen – Hörzendorf

- Description of the circuit: Leaving of St.Veit on Villacher Straße, left turn on a little road near the stadium where the building of a new school is scheduled (still a field at the present time but might be a future point of interest very important to connect to a cycle path), drive until Unterbergen (gathering of farms, around 100 inhabitants), turn right on Hörzendorfer Landesstraße and drive on Seestraße until Hörzendorf (around 370 inhab.).
- ☑ Possibility of a connection between the both small villages thanks to a quiet cycle path crossing rural properties.

- Connection Hörzendorf – R5
  - ☒ In view of the actual field conditions, abandonment of the project to connect Hörzendorf with the Überregionaler Radweg R5.
- Connection St. Donat – Industrial zone
  - ☑ Possibility to facilitate the cyclists' ride to join the industrial zone from the small municipality of St. Donat (around 260 inhab.), building on the existing settlements (cycle path already passing under the highway, existing bridge over the Glan).
  - ☒ Connection of this village with the R5 seems complex due to the big crossroads (Knöte Sud) marking the junction between the Klagenfurter Straße and the highway.
  - ➢ Cf. task n°6 "Future regional spatial development" (development of new roads and revitalization of the area around Muraunberg and the industrial zone)
- Main railway station quarter
  - ☑ Introduction of secure bicycle parking in this area that could be completed as well with facilities for cyclists and pedestrians (e.g. air pumps, water fountains, rest areas, banks) seemed us essential to develop the intermodal transportation in St. Veit.
  - ➢ Cf. task n°3 "Analysis of public transport" (redesign of the main train station area)

3.2.3.3 Wednesday, 15th May

- Realization of a survey on the farmer market
  - Contextual setting: Willing to learn a bit more about the common bike uses in the surroundings of St. Veit, we went at around 9 a.m. on the Hauptplatz in the heart of the pedestrian area. There is held every Wednesday and Saturday morning a farmer market where are sold local natural products. A majority of locals come there rather by foot or with their own bike and by car for the non-locals: a perfect place for a survey (see part VI. Appendices).
  - Propensities of the age groups interviewed:

[0 – 16[	[16 – 25[	[25 – 45[	[45 – 55[	[55 – 65[	[+65]
0	2	4	2	2	1

  - Exploitation of the results: From the relatively small corps interviewed (i.e. a dozen of people including local and non-locals), we cannot define a compelling homogenous trend concerning the bike uses in the local area.
  - Indeed, people depending on their age, employment and familial situations, do not have the same purpose riding a bike. For a large part (almost ¾), it stays a leisure activity while it can be a way to reach their workplace for the people working inside or really close to the city center.
  - The main argument for the use of bike in St. Veit is definitely that it does not lead to undesired parking problems and is a speed individual way of transportation. The half of the respondents thus use the bike to do regularly (i.e. until several times per day) a few errands in a radius of only some kilometers around the city center.

- However, it is noteworthy that nobody told us anything about the fact that bicycle stands in favor of the protection of the environment due to its zero emission of greenhouse gases.
- Furthermore, we noticed some recurring negative remarks about the paths' quality, the convenience, the sense of security as well as the non-educated users' behavior related to the cycle network in question. Improvements in this fields will thus be inescapable to increase the attractivity and the efficiency of the local cycle network.

3.2.4 Proposals

3.2.4.1 Proposal n°1 (Mittelschule – Friesacher Straße/Kölnhofallee)

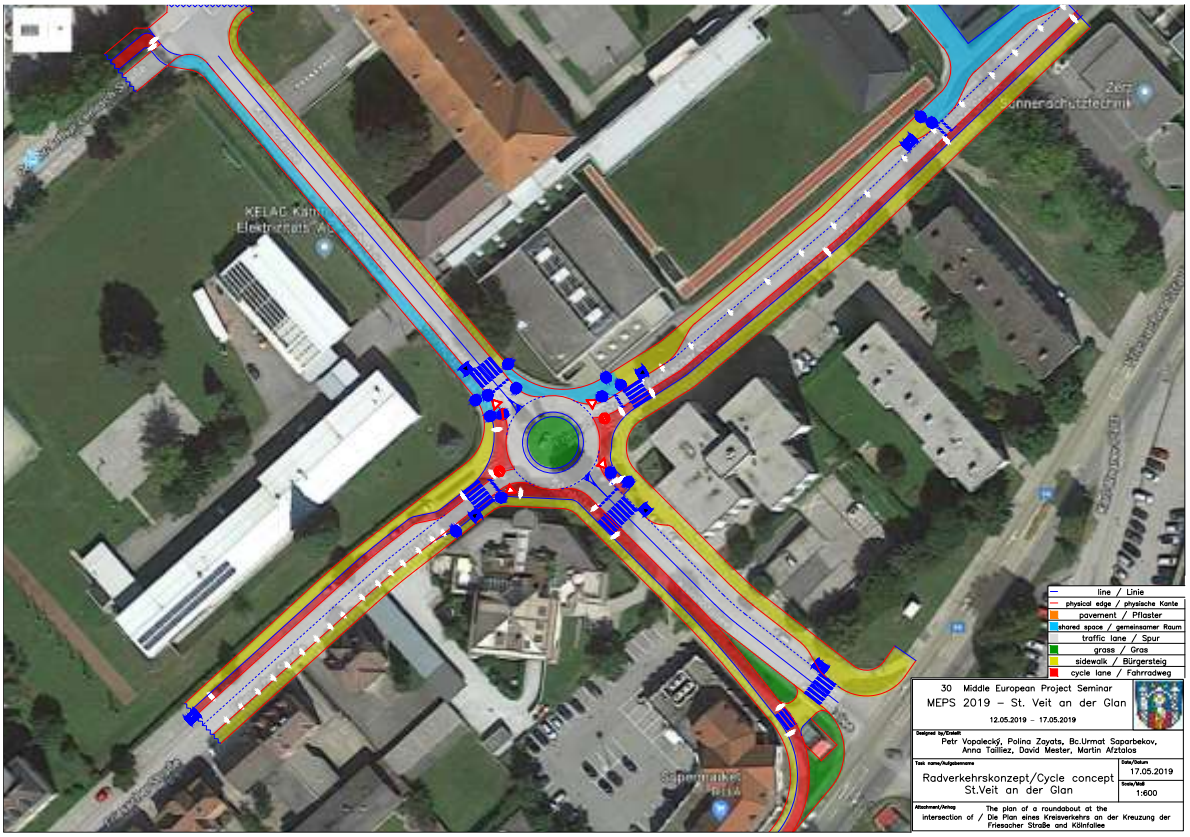

Figure 17: Proposal for a roundabout at the intersection Friesacher Straße # Kölnhofallee

The new roundabout, we have designed, is located at the intersection of Friesacher Straße (bottom-left to upper-right) and Kölnhofallee (upper-left to bottom-right) in the north-eastern part of the city, just near a school (Mittelschule). There is already a small tower in the middle of the intersection that can be saved and re-used for the redesign of this area.

The main reason supporting our proposal is that we found this intersection very large with quite many cars using it. Another reason to build this roundabout was that there were no cycle lines: a safer measure. Indeed, in this school quarter this aspect seems quite important.

The western part of the new Friesacher Straße was designed as a one-way (coming from the centre, not showed on the plan but located more on the west). The cyclists from the centre will go in the lane with cars and in the opposite direction they will ride on a separated cycle lane. There is also an existing parking lane on the left side of the road which should not be affected by our redesign. Concerning the eastern part of this same street, it will be a one-way too, but in the opposite direction (towards the centre). We suggest that the cyclists riding to the centre go on the road with cars, and those coming from the centre, on a separated path for them. Same remark than above for the parking lane. At the

end of the part of the street in question stands an existing bicycle parking that will have therefore a more efficient and safer connection.

The southern part of Kölnhofallee is bidirectional and goes to the train station. The cycle lane will be separated from the way for pedestrians but laying on the same sidewalk (both directions on one side). We also include in our proposal a parking lane on the other side of the street. The northern part of Kölnhofallee is as well bidirectional. The bikers will go with the pedestrians together on one of the sidewalks' side, now able to join the existing cycle path in Dr. Arthur-Lemisch Straße, while the other side of the road will be reserved for pedestrians.

3.2.4.2 Proposal n°2 (Klagenfurter Straße)

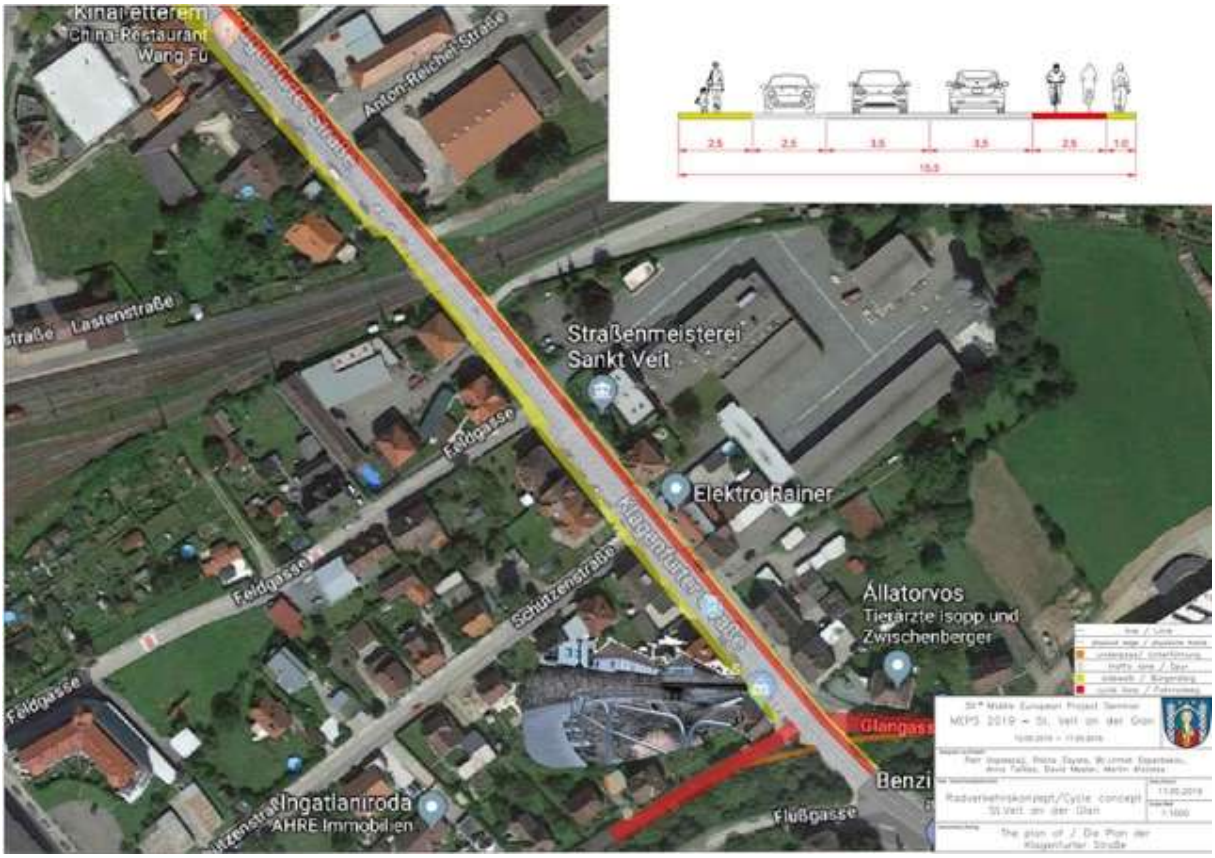

Figure 18: Proposal for redesign of Klagenfurter Straße

In the bottom of the plan stands a newly built cycle path going under the road. This system has been inspired by such an existing model located in the Hungarian city of Eger. Our main goal here was to make it easier and faster, reaching the downtown or the regional cycle path on the other side of the Klagenfurter Straße. The orange trail thus shows an example of a possible crossing between the R5 cycle path and the main road. There, the cycle path will go under the bridge, alongside of the river (see an example of this kind of implementation in the bubble on the picture).

The main road is seven meters wide for the cars; a setting we agreed on not to change. We also noticed, that in the current state of the road, there are parking spaces on both of its sides. However, due to a lack of cars parking there, we thought in our plans about leaving such a parking lane only on one side of the roads. We thus designed a cycle path on the other side of the road, instead of the former parking spaces. This new infrastructure will have its own red painting or red pavement so as to be coherent with the other parts of the city. On the rest of the space, we designed a path for the pedestrians on both side of the road (yellow on the picture).

3.2.4.3 Proposal n°3 (New connection to Eurospar supermarket)

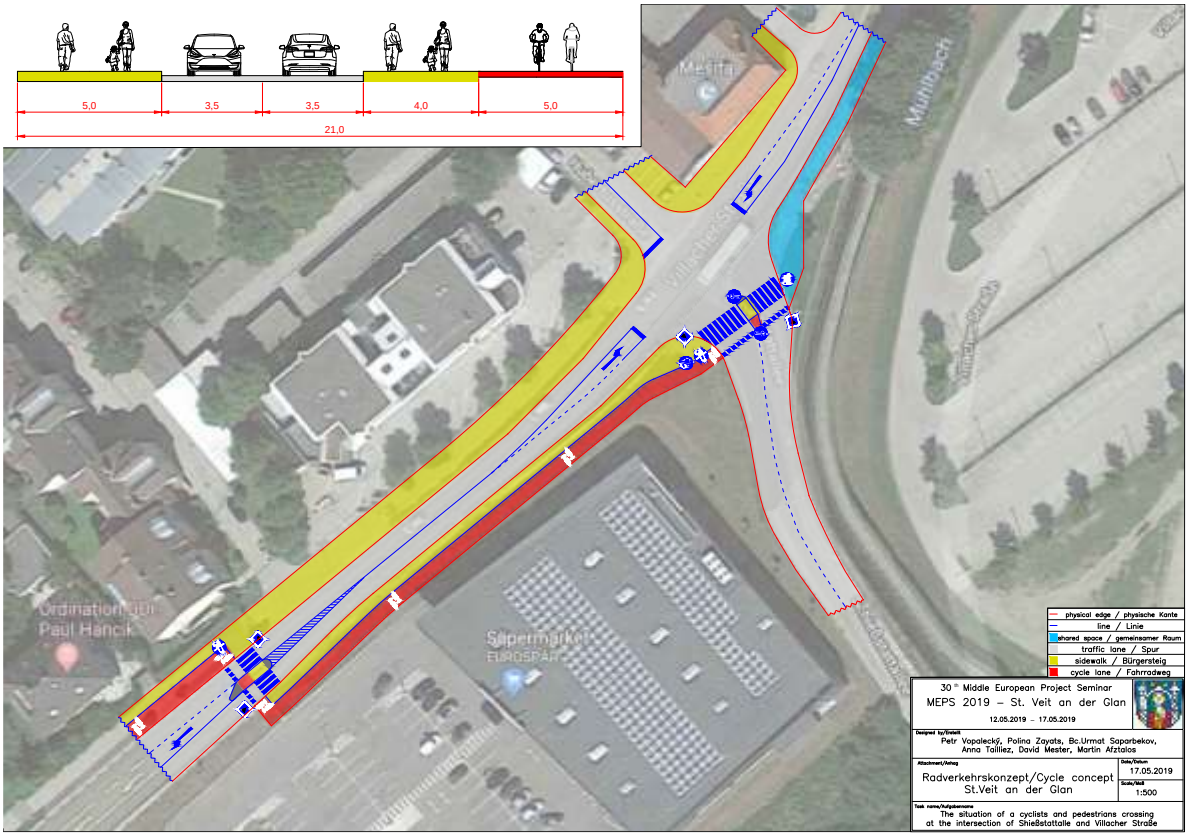

Figure 19: Proposal for a better accessibility of Eurospar and safe pedestrian and cycle crossings of Villacher Straße

The problem was spotted on the intersection between Villacher Straße and Schießstattallee. Shared space for cyclists and pedestrians on the south-east side of the road is ending without connection to any cycle path on the north-western side. As there is no connection to Eurospar supermarket, pedestrians have thus to cross the road two times to get to the supermarket.

Our team decided to design a new safer connection to reach the supermarket. Because there is enough space, we created a shared sidewalk for pedestrians and cyclists, therefore able to ride on a bidirectional cycle path along Eurospar. This connection is linked to a crossing, both for pedestrians and cyclists, made up of a traffic island so as to reduce the length of the crossing. After the supermarket, a new cycle path should also be created to connect it to the existing one.

Because of the frequent traffic of trucks in this area, designed changes were also checked with a vehicle tracking software so as to make sure that there will be enough space for trucks manipulating.

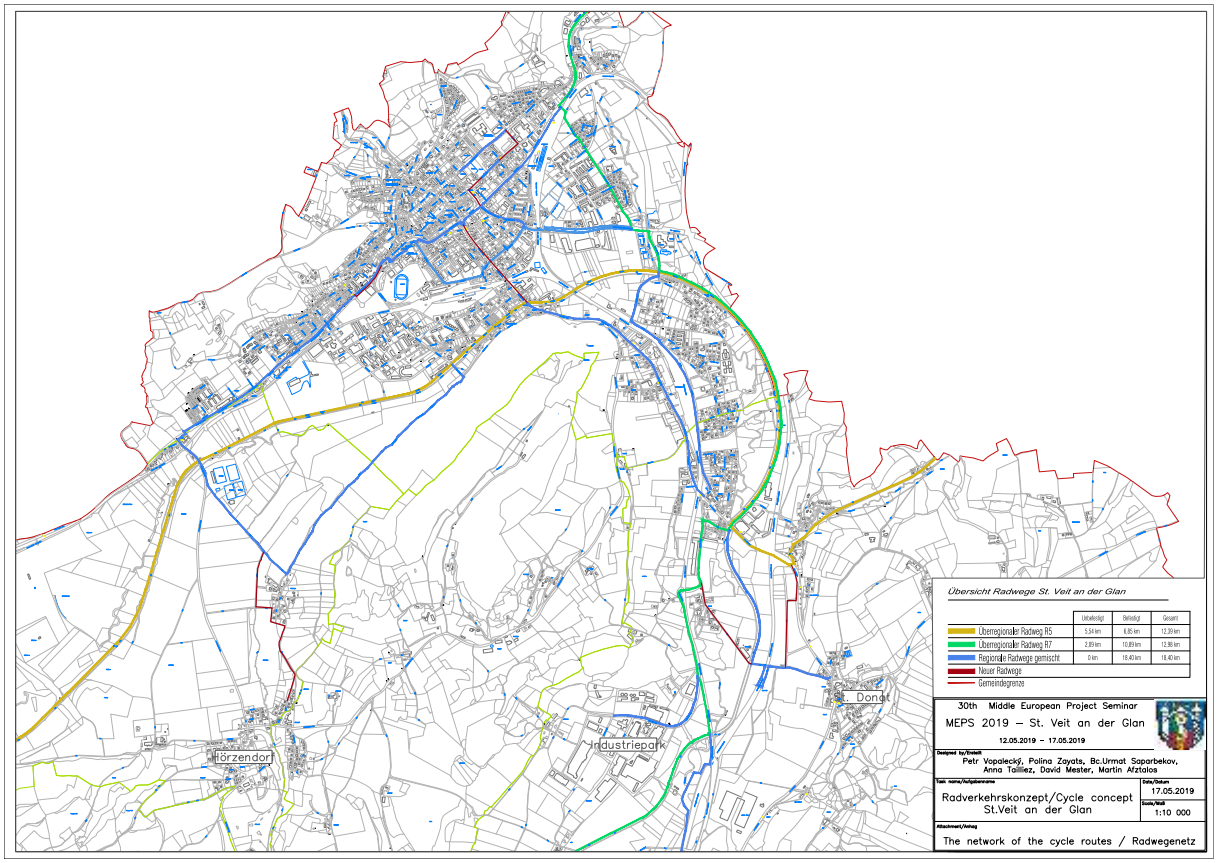

Figure 20: Map of existing regional (yellow, green), local (blue) und proposed new (red) cycle tracks

3.2.5 Conclusion

To conclude this report, we would like to give our main recommendations as well as a general conclusion in regard to the achieved work during this seminar week.

In this car-oriented city with a lot of narrow streets, it was not a simple task to find new places to build cycle paths.

The main solutions will definitely have to include a reduction of the speed limits inside the borders of the city so as to make possible and not to dangerous a shared traffic between the cyclist and the cars.

We also think that a concrete redesign of the cycling network leading to more attractivity and safety will only be possible if the municipality succeeds in raising awareness about the importance of a true cohabitation (e.g. respect of the priorities, adaptation of one's speed, courtesy, etc.) between all the users of the different means of transport within the public space.

3.2.6 Appendix: Questionnaire/Fragebogen

Date: Wednesday, 15th May 2019 / 9 a.m.	Datum: Mittwoch, 15. Mai 2019 / 9:00
Place: Hauptplatz (farmers' market)	Ort: Hauptplatz (Bauermarkt)
List of questions:	Fragen:
- Do you live in St. Veit (district)?	- Wohnen Sie in St. Veit (Bezirk)?
- Age group: [0 – 16[; [16 – 25[; [25 – 45[; [45 – 55[; [55 – 65[; [+65]	- Altersgruppen: [0 – 16[; [16 – 25[; [25 – 45[; [45 – 55[; [55 – 65[; [+65]
- Do you own a bike? YES/NO	- Besitzen Sie ein Fahrrad? JA/NEIN
- How often (and where) do you ride a bike?	- Wie oft (und wo) fahren Sie rad?
Several times per day – Every day – Several times per week (…) – Monthly – Never	Mehrmals pro Tag – Täglich – Mehrmals pro Monat (…) – Monatlich – Niemals

Everywhere – Only in St. Veit – Only when I am not in St. Veit.	Überall – Nur in St. Veit – Nur, wenn ich nicht in St. Veit bin.
- What is the main reason(s) you ride a bike?	- Was ist ihr Hauptgrund, Rad zu fahren?
To go to work/school – Leisure activity – Grocery shopping – Appointments in the city center – Other reason: …	Zur Arbeit/Schule fahren – Freizeit – Einkaufen – Termine in der Innerstadt – Andere Gründe: …
- On a scale of one to ten, how much safe/convenient are, in your opinion, the bike facilities of the surrounding?	- Auf einer Skala von 0 bis 10, wie schätzen Sie die Bedingungen fürs Radfahren in St. Veit in Bezug auf Sicherheit und Bequemlichkeit?
- If there was a bike-sharing system here, would you use it? YES/NO	- Wenn es Bike-Sharing Stationen in St. Veit gibt, würden Sie sie benutzen? JA/NEIN
- What do you like the most when you are riding a bike in St. Veit ?	- Was mögen Sie am meisten, wenn Sie durch St. Veit mit dem Rad fahren?
- What are you missing the most when you are riding a bike in St. Veit?	- Was fehlt Ihnen am meisten, wenn Sie durch St. Veit mit dem Rad fahren?
- Some personal (anonymous) remarks you want to add about the bike use in St. Veit an der Glan?	- Weitere (anonyme) Anmerkungen zum Radfahren in St. Veit an der Glan?

3.3 Task 3: Analyse ÖV-Konzept St. Veit/Glan

3.3.1 Introduction

In the past the city bus line was cancelled due to effectiveness and economic reason, so the town of Sankt Veit/Glan is afraid to come up with a new line fearing of cancelling it again.

The aim of this task is to analyse the existing public transport concept with focus on interchange opportunity and connection of the suburbs as well as to assess the potential for carsharing and micro-public-transport.

3.3.2 Current state

Sankt Veit am der Glan is located 17 km to the North from Klagenfurt. About 12.500 inhabitants live here in an area of 51 square km. Due to integration of the entire Carinthia region, inhabitants of the town are often working in regional centers nearby (Klagenfurt, Villach).

Public transportation of Sankt Veit am der Glan is part of the Carinthian area transportation system. This system includes railway connections – as a backbone transport mode – and bus transportation. Another developing mode of transport is car sharing.

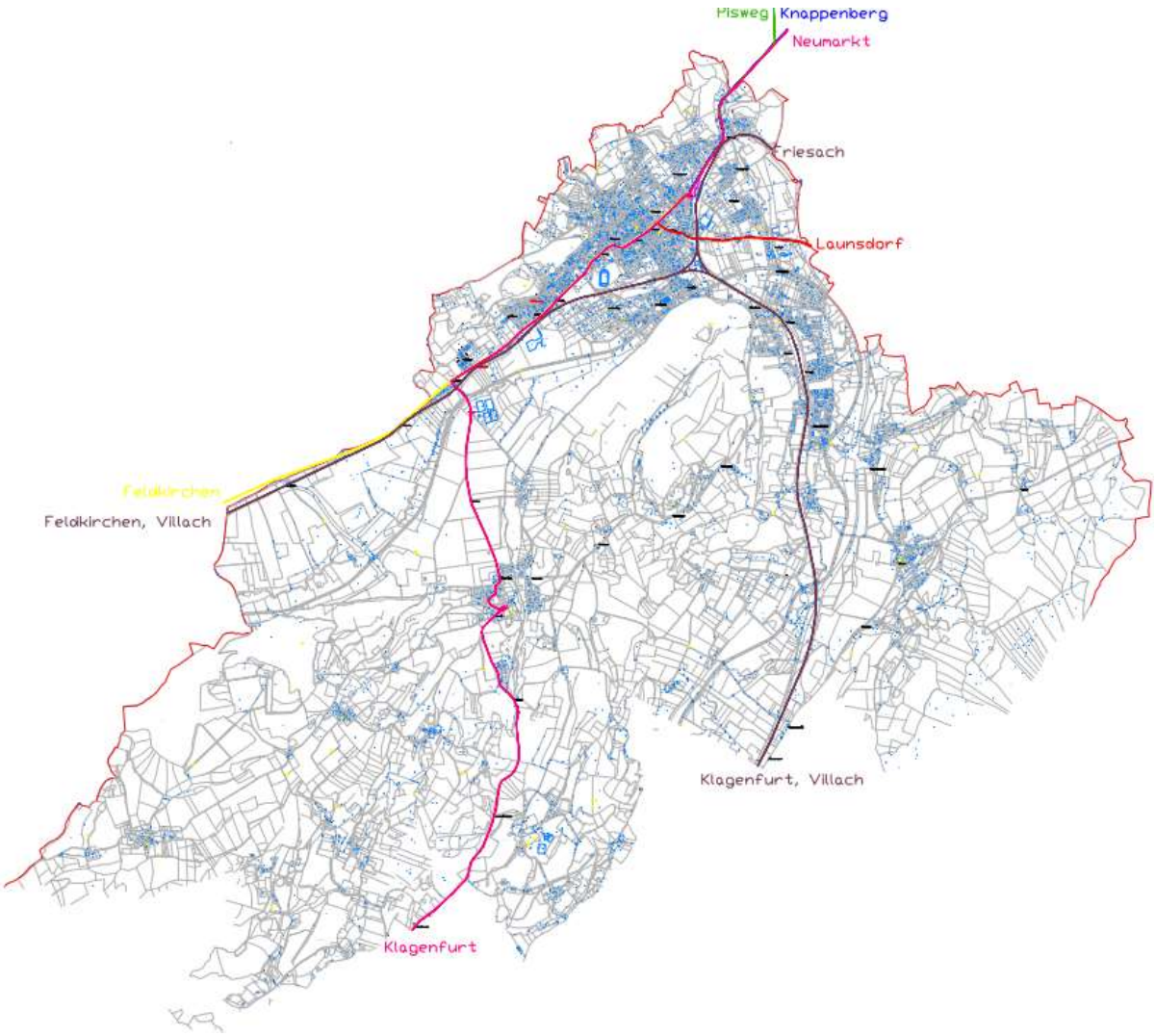

Figure 21: map of regional PT connections

3.3.2.1 Railway transportation

Sankt Veit am der Glan is directly connected by railway paths in direction to Klagenfurt, Villach, Friesach and Neumark. It's a railway junction of two railway paths – both electrified:

- Two-tracked railway path: Neumarkt – Friesach – Sankt Veit am der Glan – Klagenfurt – Villach – Spittal-Millstättersee – Lienz – Sillian
- One-tracked railway path: Sankt Veit am der Glan – Feldkirchen i. K. – Villach.

County of Sankt Veit/Glan includes these stations and stops:

- SV/G Hauptbahnhof (main station)
- SV/G Westbahnhof (west station)
- Glandorf Bahnhof (stop)

Despite fast trains, Sankt Veit/Glan is served by two regional S-lines touching at SV/G Hauptbahnhof:

- S1: Friesach – Sankt Veit/Glan – Klagenfurt – Villach – Lienz with 1-hour interval at the whole line; 30 min in part SV/G – Klagenfurt – Villach.
- S2: Sankt Veit/Glan – Feldkirchen I. K. – Villach with 2-hour interval at the whole line; 1-h in part Feldkirchen – Villach.

Figure 22: regional train network around St. Veit/Glan

3.3.2.2 Bus transportation

The bus network of Sankt Veit am der Glan is served by Carinthian transportation system, missing a typical town's line. One of the main problems is the relatively small distance between important points in the city, therefore attempts to implement a city bus line were not successful at some points of time, due to poorly chosen paths where the bus was going. It is important to note that spacing in the town is not working in favor of buses. E. g.: the line 5371:

POSTBUS
Ein Unternehmen der ÖBB

Gültig ab 09.12.2018. Fahrplanänderungen vorbehalten.

5371 Teilstrecke Stadtverkehr St.Veit/Glan

		Montag - Freitag															
	Fahrtnummer	5371 801	5371 304	5371 803	5371 805	5371 806	5371 807	5371 808	5371 809	5371 210	5371 811	5371 813	5371 215	5371 818	5371 819	5371 820
Nr.	Anmerkungen	1 SB	1 SB	1 SB	1 SB	1 SB	1 SB	1 SB	1 SB	1	1 SB	1 SB	1	1 SB	1 SB	1 SB
1	**St.Veit/Glan Bundesschulzentr. ab**				7.11						12.28			13.25	13.35	
2	**St.Veit/Glan Volksschule**				I		7.32		12.00	12.00	I	12.48	12.50	I	13.37	
3	St.Veit/Glan Sandgasse				I		7.33		12.02	I	I	12.50	I	13.27	I	
4	St.Veit/Glan Graf-Egger Straße				I		7.34		12.03	I	I	12.51	I	13.28	I	
5	**St.Veit/Glan Wayerstraße**				I		7.35		12.04	I	I	12.52	I	13.29	I	14.00
6	**St.Veit/Glan Bundesschulzentr.**				I		I		I	I	I	I	I	13.35	I	I
7	St.Veit/Glan Hallenbad				I		I		I	12.03	I	I	12.53		I	14.05
8	St.Veit/Glan Verbindungsstraße				I		I		I	12.04	I	I	12.54		I	I
9	St.Veit/Glan Dammgasse				I		I		I	12.06	I	I	12.56		I	I
10	St.Veit/Glan Finkenweg				I		I		I	12.08	I	I	12.58		I	14.10
11	**St.Donat**				I	7.23	I		I	12.13	I	I	13.03		I	I
12	Altglandorf Bahnunterführung		7.00		I	7.28	I		I	12.18	I	I	13.08		I	14.15
13	St.Veit/Glan Glandorf		7.01		I	I	I		I	I	I	I	I		I	I
14	St.Veit/Glan Gh Kalter Keller		7.02		I	I	I		I	I	I	I	I		I	I
15	St.Veit/Glan Glanbrücke		7.03		I	I	I		I	I	I	I	I		I	I
16	**St.Veit/Glan Volksschule**		7.06		I	I	I		I	I	I	I	I		I	14.20
17	St.Veit/Glan Finkenweg		I		I	7.30	I		I	12.20	I	I	13.10		I	
18	St.Veit/Glan Dammgasse		I		I	7.32	I		I	12.21	I	I	13.11		I	
19	St.Veit/Glan Verbindungsstraße		I		I	7.34	I		I	12.22	I	I	13.12		I	
20	**St.Veit/Glan Hallenbad**		I		I	7.35	I		I	12.23	I	I	13.13		I	
21	St.Veit/Glan Wernitznig		I		7.14	I	I		12.07	I	12.31	12.55	I		13.40	
22	St.Veit/Glan Gh Lackner		I		7.16	I	I		12.09	I	12.33	12.57	I		13.42	
23	St.Veit/Glan Gluckstraße	6.15	I		7.19	I	I		12.11	I	12.35	12.59	I		13.44	
24	St.Veit/Glan Einsiedlergasse	6.18	I		7.22	I	I		12.14	I	12.38	13.02	I		13.47	
25	**St.Veit/Glan Milleniumspark**	6.20	I	6.58	7.24	I	I	11.40	12.17	I	12.41	13.05	I		13.50	
26	St.Veit/Glan Einsiedlergasse	I	I	7.01	I	I	I	I	I	I	I	I	I		I	
27	St.Veit/Glan Gh Lackner	6.23	I	7.04	I	I	I	I	12.19	I	12.43	13.07	I		13.52	
28	St.Veit/Glan Wernitznig	6.25	I	7.05	7.27	I	I	I	12.21	I	12.45	13.09	I		13.54	
29	St.Veit/Glan Postamt	6.27	I	7.06	7.29	I	I	I	12.22	I	12.46	13.10	I		13.55	
30	**St.Veit/Glan Volksschule**	I	I	7.08	7.31	7.38	7.39	I	I	I	12.48	I	I		I	
31	St.Veit/Glan Bundesschulzentr.	I	I	7.10		7.40		I	12.24	I		13.12	I		I	
32	**St.Veit/Glan Bahnhof (Busbahnhof)**	6.32	7.07			7.43		11.45		12.25			13.15		13.57	
33	St.Veit/Glan Wernitznig	6.36														
34	St.Veit/Glan Gh Lackner	6.39														
35	St.Veit/Glan Einsiedlergasse	6.41														
36	**St.Veit/Glan Milleniumspark**	6.43														
37	Unterbergen Gh Reidenwirt	6.45														
38	Unterbergen Abzw P St.Veit/Gl	6.47														
39	Hörzendorf Schirnegger	6.49														
40	Hörzendorf Siedlung	6.50														
41	**Arndorf Volksschule** an	6.53														

Samstag kein Verkehr
Sonn-/Feiertag kein Verkehr
1 Montag bis Freitag, wenn Schultag in Ktn
SB Kurs: Fa. Kärnten Bus GmbH, im Auftrag ÖBB-Postbus GmbH
Schulfrei in Ktn: 22.Dez.2018 bis 06.Jan.2019, 11. bis 17.Feb., 19.Mär, 13. bis 23.Apr., 30.Mai bis 02.Jun., 08. bis 11.Jun., 20. bis 23.Jun., 06.Jul. bis 08.Sep., 10. Okt., 1. bis 3.Nov.2019
Am 24.Dez. und 31.Dez. Verkehr wie an schulfreien Samstagen

Figure 23: timetable of the bus in St. Veit/Glan

Main problem of this part of line is making users to be more confused which persuades them to choose another type of transportation – mainly cars.

Another problem of this area itself could be a phenomenon called “Vicius Circle”. This phenomenon is typical for areas, where lines are cut or cancelled due to not using those connections. When a line is cut of some connections, it also lowers the level of service, which makes some users to choose different types of transportation – mainly cars. That could lead to bus lines less economic and effective, so it makes the leadership of transportation services to cut the line again. That again leads to the same effects as before: Making more people to change the type of transportations – mainly to cars (again). That continues up to cancelling that line due to ineffectiveness and economic reasons.

3.3.2.3 Problematics of current state of train station interchange point

The current train station is one of the most important points in the town transport wise. As such a place it is important to have it as effective as possible. The condition of the interchange point in front

of the station is currently designed as a minibus station, with 5 separate platforms. The resting area of buses is placed within these platforms and it is taking a huge space as a whole. With this usage of space, it is clearly obvious that it is not reaching its full effectivity. Cars and public transport are using the same access roads to the train station which can cause confusion for some drivers and therefore jeopardize both vehicle and pedestrian traffic. Parking is placed on the right side from the entrance of the train station. The current number of parking spaces is 90 and the placement of parking spots is not done in the best way as the placement of parking lot is chaotic. The current pedestrian connection to the train station is influenced heavily by the fact that there is no barrier free access to the station as there is no crosswalk available to access from the street to the station and the only possibility to get there is through the underground passage (marked pink in the picture right).

3.3.2.4 Smart modes of transportation (carsharing)

A car sharing system is already implemented in the city and it bears great potential for development, where the city is obviously interested in its current development. Currently most of the users are either city officials, some companies giving its employees the possibility to use these cars, and some of the inhabitants. By the year 2020 the town will increase number of vehicles from 5 to 6.

3.3.3 Proposed solution

3.3.3.1 Public transportation

The concept of proposed public transportation solution is derived from the current condition where timetables and current line placement is confusing and as already proven in the past, is not as effective as it should be. The main principle during the making of solutions was to connect all city parts with the suburbs and one of the main points is the biggest interchange point in the city, and that is St. Veit / Glan Hauptbahnhof. When taking into consideration, that the proposed solution should optimize the traffic flow of both public and individual transportation, it is fairly obvious that all suggested lines need to pass through this point obligatory. It is however important to note, that the newly proposed system has a goal of reaching at least the same effect as today's system while emphasizing the fact, that the system will be more reliable as it would be more simple and easier to understand for both citizens and visitors of the town. The city's main and most used mean of transport remains the train, by which the most of population travels daily to important regional centers (Klagenfurt, Villach). This was taken into consideration when the solution was being created and it is therefore important to note that the adjustments which were made to current system were done with a strong desire of not jeopardizing the current system and trying to upgrade it, while keeping old, recognizable features of it. The city's developing areas played an important role during the creating of the proposal, and this solution can be used for many more years to come, as it is taking into consideration many future factors, when it comes to town and its surroundings development.

3.3.3.1.1 Railway transportation

The current railway coverage of the town is adequate compared to its needs, so this report recommends to make no changes at this point. A future possibility of railway network extension is the

addition of two additional stops within Sankt Veit/Glan municipality area if needed. Those to stops are the following:

- Millenniumspark
- Industry park

3.3.3.1.2 Bus transportation

When it comes to the proposed bus transportation in the city, 2 new lines were projected, with a tendency of its extension in the future.

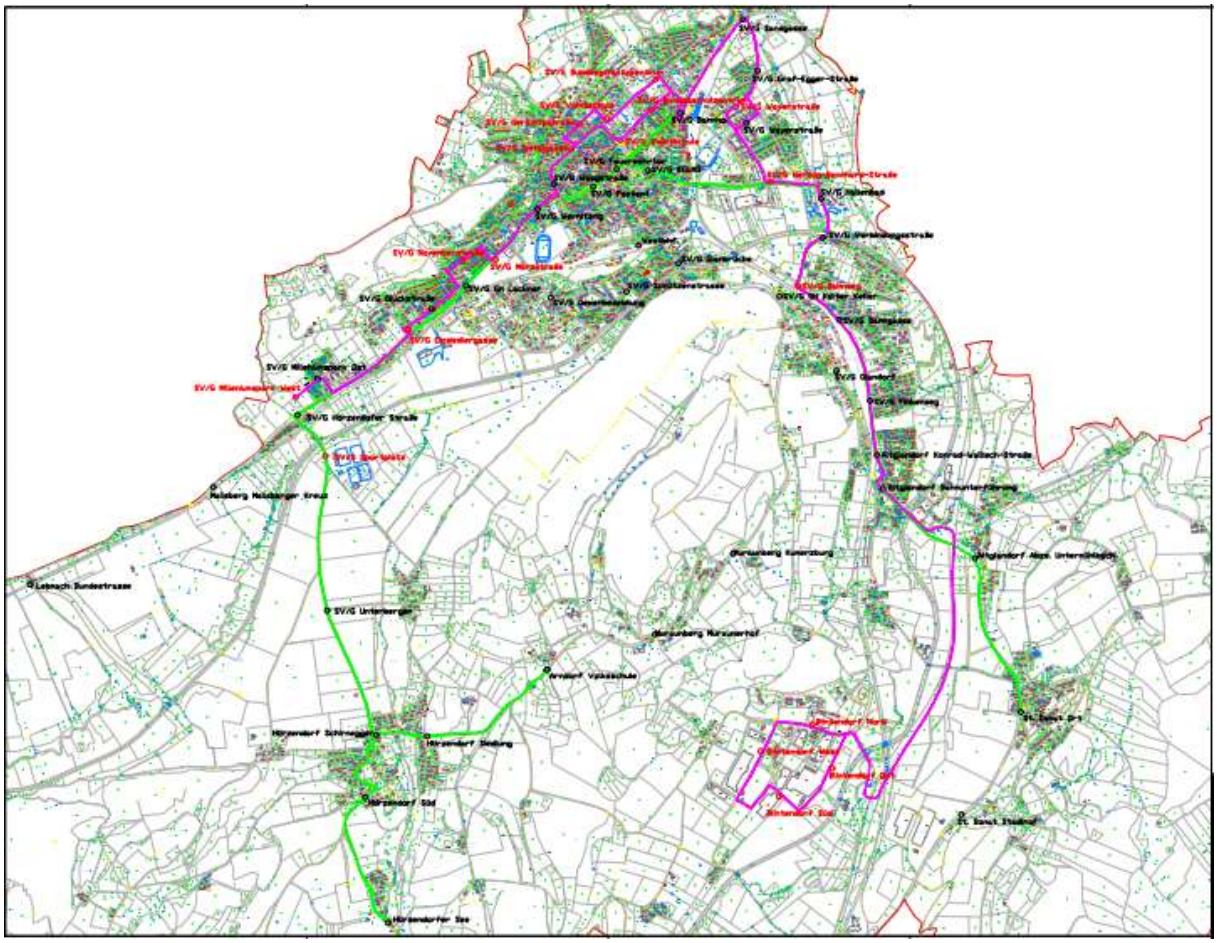

Figure 24: proposed bus network (green, pink), proposed new stations (red)

Line number 1 was created as a backbone of the town's public transport and basic characteristics of this line are visible in table no. 1:

The path of the line is the following: St. Donat – Glandorf – St. Veit East – Hauptbahnhof – City Center – Millenniumspark – Hörzendorf / Arndorf

Table 1: Characteristics of line no. 1

Line number	**1**
Distance	12.37 km
Number of st.	26
Duration	44 min

Path line is following: Glandorf – St. Veit East (Wayerstrasse) – Hauptbahnhoff – City Center – Mileniumspark

List of stations (red = new stops):

- Arndorf
- Hörzendorf Siedlung
- Hörzendorf See
- Hörzendorf Süd
- Hörzendorf Schirnegger
- SV/G Unterbergen
- SV/G Sportplatz
- SV/G Hörzendorfer Straße
- SV/G Einsiedlerstraße
- SV/G GH Lackner
- SV/G Märzstraße
- SV/G Wernitznig
- SV/G Postamt
- SV/G Feuerwehrtor
- SV/G Bahnhof
- SV/G KELAG
- SV/G Herzog-Bernhard-Straße
- SV/G Hallenbad
- SV/G Verbindungsstraße
- SV/G Bahnweg
- SV/G Dammgasse
- SV/G Finkenweg
- Altglandorf Konrad-Wallisch-Straße
- Altglandorf Bahnunterführung
- Altglandorf Abzweigung Untermühlbach
- St. Donat Ort

It is important to note that this line has 2 end stations in Hörzendorf area, where the ratio on ca. 3 connections would be in favor of Hörzendorf (direction Hörzendorfer See, as it is more densely populated). However, it is highly recommended to use the method of so called “Request a bus connection”, in order to be able to provide the best possible connectivity of Arndorf, where citizens would have a possibility to inform of their demand for a bus to city via direct contact with public transport department of the town. This could be done either through telephone line / web portal / mobile application or other digital form. This line would run during the both school year and outside of it.

Line number 2 is proposed as additional public transport line running in rush hour only. Point of emphasis for the line no. 2 is that it is complementary line to backbone line no. 1, therefore it will not run outside of rush hours, as the primal role is to serve citizens on their way to work and students on their way to school. The line should also help to serve the areas which are not easily accessible from the main town streets and should help increasing mobility in those areas, especially of elderly people and children during the school year. This way, the entire town will be effectively covered by public transport with a set of stable lines allowing further development, especially around Millenniumspark and Glandorf. The timetable will be adjusted to the train operation at the main train station, the same way as line no. 1 and would be coordinated in such a way that it allows the interchange between city bus lines only on a couple of places. The interchange points of the lines are planned on several places where the actual lines split and line 1 continues further. These places are following: Millenniumspark,

St. Veit / Glan Hbf and Glandorf (final station of line no. 2). One important note is that the line no. 2 runs in rush hour only, therefore the coordination will be set in a way that would correspond to the demand of passengers at a given moment (e.g. coordination at Millenniumspark in the morning set in such a way, that all students can reach the stations of schools in the smoothest way).

3.3.3.2 Re-arrangement of railway station's interchange area

Today's state of the interchanging point in along with parking lot in front of the station is not placed in the most efficient way. Moreover, the station for buses is too big, and the pedestrian paths to those platforms are not clearly defined and are not considered safe as per traffic standards and norms. It is important to underline the fact, that the accessibility of the station without barriers is also a problem, as no crosswalk to the station from the Bahnhofstraße is existing and is forcing all of the pedestrian traffic to use the passage under the street which is equipped with neither elevators nor escalators. Therefore, it was of great importance to create more connections to train station within this study.

With regards to the bus platforms, the current condition is not allowing direct interchange as the platforms are not placed in front of the station. The parking lot is placed right next to the station, with one of the main problems being the capacity of parking lot, alongside its position which is not corresponding with the organization of this entire space. Therefore, the proposed organization is implying, that the arrival platform is to be placed in front of the station and as per current timetables, there is not a real providing more than two places for arriving buses, not even in rush hours, as the number of buses is not bigger than two at the same time.

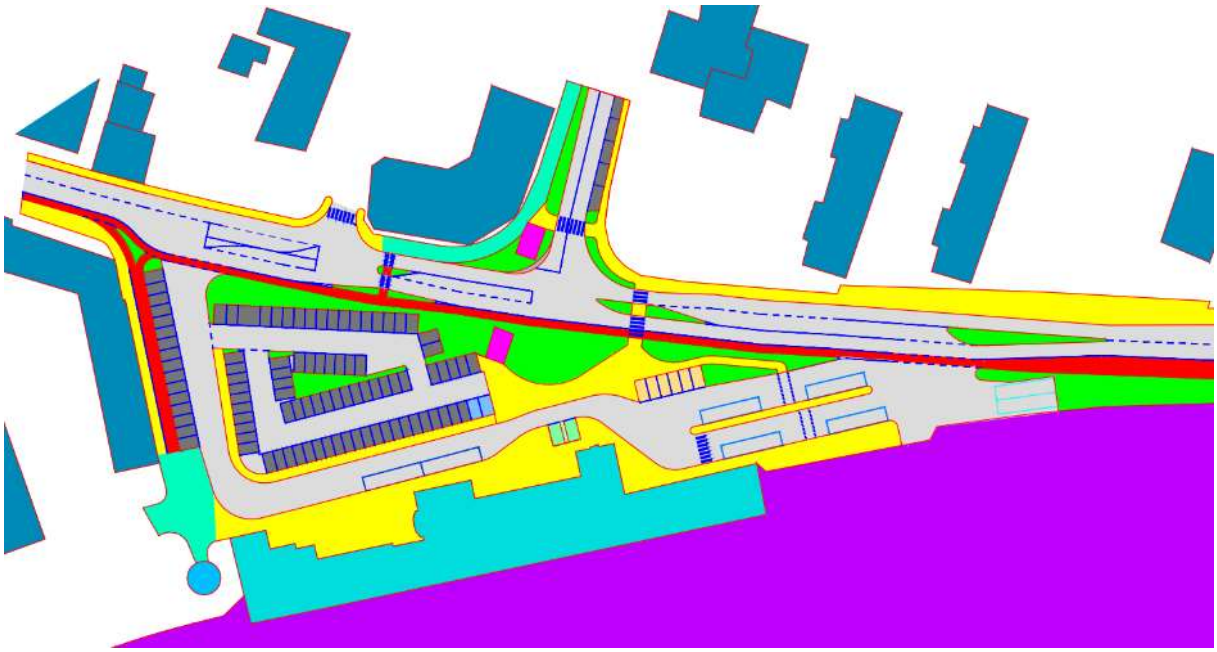

Figure 25: Redesign plan for the area in front of the train station

As for the departure terminals, certain division is done with regard to departing buses from the station as the lines would here be divided as per their direction of the ride. The ones leaving to left (direction St. Veit / Glan center) from the station would be placed on the right platform which is located right next to the station building, while the ones leaving to the right of the station (direction Hunnenbrunn) are to be placed on the left platform located closer to the street. This arrangement was made due to the fact that bus tracking at this particular place is really hard to overcome in any other way than the proposed one.

The resting area of the buses is pushed to the end of the station right next to the street. Two places for resting buses are proposed, since many buses out of some cancelled parts of the line no. 5371 were redirected from the St. Veit / Glan Hbf and thus, these vehicles will not use the resting area.

It is important to underline, that the proposed city bus lines will go through the station as it is a really important point for these lines due to the interchange to both regional and express trains. City bus lines will be served from departure terminals only and the same principle with regard to the direction of ride applies to them as to the other (regional) lines. Taxi spots are saved in this proposed solution and their position has changed, in a sense of moving those spots closer to the street, while still being in proximate distance from the station entrance, allowing the passengers to change from one mode to another swiftly.

With regard to the parking lot it is clearly visible, that the parking lot switched sides with the public transportation terminals and it is now placed on the left of the main entrance of the station with having a better organization and placement than the current one. Parking spots for residents of the building next to the station were saved as they are and are still meant for residents only. The access of the station via the connection from the intersection of Bahnhofstraße x Kölnhofallee is closed and will be used as a sidewalk of Bahnhofstraße. Also a crosswalk is proposed nearby this former access and it is evaluated that it would have positive effect on the usage of the entire space.

Another important part of the solving of the problematics of this interchange point is the cycle traffic in this area, which is to be increased in the following years, as one of the tasks within this study proposes. Therefore, a modern solution is offered to take care of the parking of bikes in the station, in a so called B+R method, where a bike tower is proposed as visualized in the photo below as it was already implemented in the Czech Republic in the city of Hradec Kralové.

Figure 26: proposed bike tower for safe automated bike parking

3.3 Car-sharing smart solution

Given the fact that the current functioning of the car sharing system is going in a good direction, there is a big place for improvement and upgrading of the current system. Currently there are 5 e-cars bought by the municipality available for use. They are used by citizens, staff of the municipality and staff of companies. The vehicles each are driven about 12.500 kilometers a year. The system is running well, so in 2020 there should be bought a sixth one. Having this in mind, it is important to keep the system running in a positive direction with adding new elements to the system, which will eventually lead to the expansion of the entire system and hopefully increase the mobility of the St. Veit an der Glan and surrounding areas. All modern systems today, which are connected to renting or borrowing vehicles, are entirely driven by so called e-systems. A bright example of this way of car sharing is the city of Berlin, which was able to implement this system on such a note, that it practically became part of Berlin's public transport system as one of the modes. As the town of St. Veit / Glan is not of that size to invest in such a complex system, therefore it will be the implemented if such thing is done on a level of Carinthia, where it would be the part of increasing of mobility in this part of Austria. Therefore, a result would be the lowering of the number of privately-owned vehicles, where citizens would rather use the car sharing system, which would be good from both the traffic aspect in the city and also eco-friendly. The application for the car sharing system would be implemented in such a way, that it is accessible to all inhabitants of the city, where they would be able to check the following information of the car-sharing system:

- Position and availability of all vehicles in the given network
- Battery status of the vehicles
- Smart parking system implementation (availability of parking spaces for car-sharing system
- Pricing
- In tourist addition, the exact positions of nearby attractions (as it is meant that this system will be later spread throughout the entire region, so system will update this itself)

In this sense, the application and the system itself will provide different prices for residents and visitors. Residents would of course have a different pricing which would be aiming towards to maximizing the usage of car sharing itself up to that extent, that the minimum of residents will use private vehicles and would rather lean on the usage of public transport or car sharing in the town. In that sense, the difference with pricing will be defined in one-time use, multi times use or longer periods such as one year.

Also, tourists would be offered packages including the usage of e-cars which would make their stay much more comfortable, with the ability to visit surrounding areas for a small amount of money. In case this becomes attractive for tourists it will offer further possibilities to expand tourism in this area. Therefore, it is important to limit the area which can be used for car sharing for residents and for tourists. One of the main reasons, why this needs to be done is to make it perfectly clear, that the cars which are used by St Veit / Glan and its residents are to stay there and not leave this area. While tourists can easily do so, as the attractions nearby, often are located outside of town and surroundings.

A further important aspect to be implemented is adding electro bikes to this idea of vehicle sharing via application. This would allow citizens or tourists the advantage of choosing their vehicle of choice via the same application and therefore it could be paid the same way. With this approach, the offer is expanded and is offering different choices and therefore increasing the attractiveness of the system itself. This system is encouraging people of St. Veit / Glan to somehow choose their way of mobility besides driving their own cars, while increasing the volume of cycle traffic is an important point of the European Union's strategy for mobility of its inhabitants in the last decades. Implementation of this

idea would eventually lead to a bigger volume of cycle traffic as cycle lanes are being planned throughout the city with an important focus on B+R which is also projected within this study task.

The environmental aspects of the implementation of the given solution will be of great value, which indicates that such a step should be made in that direction. With regards to cycle traffic and car sharing possibilities in general, it is important to underline, that these transport modes are to be offered to citizens, which are in need to be educated for this causes by officials, as the citizens cannot understand this on their own in some cases. In this case, it is necessary to take into consideration that the system of supply and demand work differently. Improvement methods such as these work on the principle, that once it is offered, demand will increase, not the other way around.

3.3.3.3 P+R areas

Due to the space conditions of the city, it is fair to say that not many areas will have a major success when it comes to proposing P+R areas. As possible spots which could be interesting in that sense are the future stations Millenniumspark and Industry park near Knoten Süd. However, the only reasonable suggestion, due to its usage is the proposal to expand the capacity of the existing parking lot by the main train station. Expanding the capacity is possible only with big investment by building either an underground parking garage, parking garage on a couple of floors or both within one construction.

3.3.4 Conclusion

This proposal was done with regard to the city's finance and the main aim was to raise the productivity of the existing system by using the existing infrastructure and creating new one where needed and only if needed. Public transportation issues are to be done in several steps and the main point of emphasis is to start with public transport step by step and trying to make this system more attractive to citizens, where the increase of mobility would eventually lead to raising productivity of the town itself. New bus lines should reflect the current need of public transport, where this study can be used as a starting point for developing this system. In order to approach the problematics on a more reliable note, it is needed to do a complex research where it would be known whether this measures are really needed (e.g. industry research if workers would actually want bus line to their work, where the city would somehow cooperate with industry where even a subsidy model from the industry can be implemented and the city will save money that way and help its citizens at the same time).

With regards to the reconstruction of the train station, the town would benefit from having a stable system helping on the most important transport point. From the point of traffic flow, this place will be optimized and improved.

Car sharing and later implementing e-bikes as a current European trend is an advanced method of raising mobility in St. Veit / Glan and for this cause, good cooperation on regional level is needed, where the state of Austria should help and understand the importance of such a task.

3.4 Task 4: Analyse der Erreichbarkeit der Innenstadt

3.4.1 Analysis of the city's accessibility and attractiveness

The map just below represents the accessibility of the old town for the pedestrians, which is quite vast. The pedestrians have indeed many options (11 entrances) to penetrate in this zone. We also added in this map some directions and flows of persons in term of shopping.

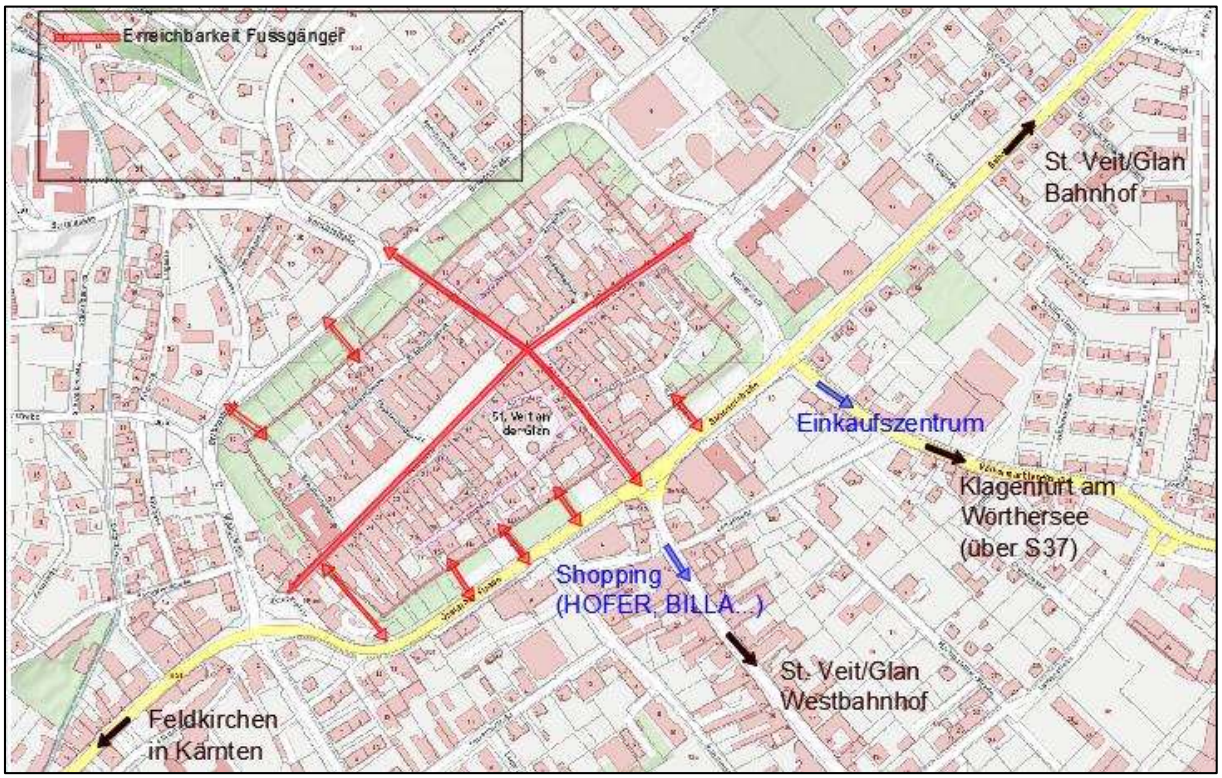

Figure 27: Accessibility of the old town for pedestrians

After doing many field inspections in the "old town" of St. Veit/Glan, we were able to understand the accessibility of the old city and then to list some problems concerning the accessibility and the attractiveness of this zone.

The first two observations we tried to understand were:

(1) Not enough people are going to the old town. Why?

- the services aren't attractive enough: in the old town, we have some pharmacies, clothes shops, restaurants, a BILLA, ... Some places (a lot) are now close and empty. The old town doesn't appear that "dynamic". There is a real concurrence with the "shopping-centre" in the south-east of the city. In this shopping-centre, we can find a lot of supermarkets (HOFER, Lidl, Interspar, BILLA…) and other shops (Dm, petrol station, flower shop, shop for animals, Pharmacy, car dealers, bank, bedding shop, restaurants, LIBRO…). People are choosing the easy option and are taking their cars.
- accessibility: there are no cycling roads to go directly to the old town. The pedestrian ways are also not that much developed. For the cars, the city proposes some parking spots (1700), but outside of the old town. They can't park directly in the city centre but have to find free spots if they want to shop in the old town. Another problem is that some parking are full. It's not that easy to find a spot.
- Price of the parking: a problem can also be the price of the parking. Some people are maybe avoiding the old town because they need to pay to park their car, and in most of the cases, spots aren't free.

(2) Are all these cars supposed to be in the pedestrian zone?

- The city has established two bollards in two extremities of the old town, in order to regulate the traffic in this zone. But unfortunately, one of those doesn't work and is always down. We also saw a lot of cars parking in the pedestrian zone. The authorization for these cars to circulate in the pedestrian zone is a necessity, but are all the cars we saw supposed to be here? Another point can be the speed of some vehicles, that is quite fast for a pedestrian zone.

After the field inspections, we did a survey to know the opinion of the population about the pedestrian zone. We only asked 6 people, so this is not a "representative" study, but it can help us to understand the citizen's opinions better.

Table 2: Questionnaire for survey in the pedestrian zone

FRAGEN	JA	ZUM TEIL	NEIN
Sind Sie mit der Qualität der Fußgängerzone zufrieden?	3	3	0
Finden Sie diese Fußgängerzone interessant?	1	2	3
Sind sie mit der Barrierefreiheit dieser Zone zufrieden?	3	3	0
Sind Sie mit der Freizeit- und Entspannungsmöglichkeiten dieser Fußgängerzone zufrieden?	0	3	3
Sind Sie mit der Qualität der Beschilderung dieser Fußgängerzone zufrieden?	4	2	0
Fühlen Sie sich in Sicherheit in dieser Fußgängerzone?	4	2	0
Ist die Reinigung/Instandhaltung der Zone zufriedenstellend?	6	0	0
Sind Sie mit dem Erscheinungsbild dieser Zone zufrieden?	3	2	1
Sind Sie mit den Straßenmöbeln (Bänke, Karten…) zufrieden?	3	2	1
Kaufen Sie oft in dieser Fußgängerzone ein?	2	2	2

3.4.2 Evaluation of the parking capacity in the centre of the city

During our field inspections, we also checked all of the park places which were within 500 meters' radius of the old town. We made this counting on Monday morning.

We counted more than 1422 parking lots. From this total, 792 are in the 3 local park houses and 471 are in the blue zones (so it's paid type and short-term use). Furthermore 159 are free within any cost (these are in the yellow zones).

After that, we made some statistics from the real occupancy of the parkings. We identified that they are never totally full, even in the rush hours. We also did the counting of the free spot during the night (parking price is different).

We also went to the train station, and the parking is totally full. We would like to recommend an expansion of this parking (see group Task 3).

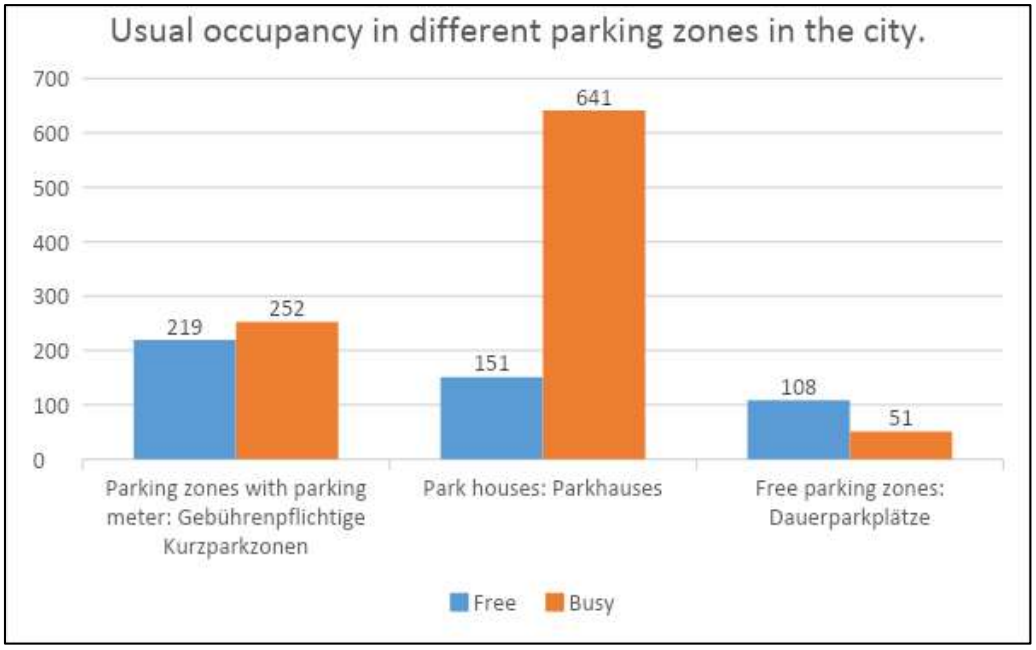

Figure 28: Occupancy of different parking zones during the day

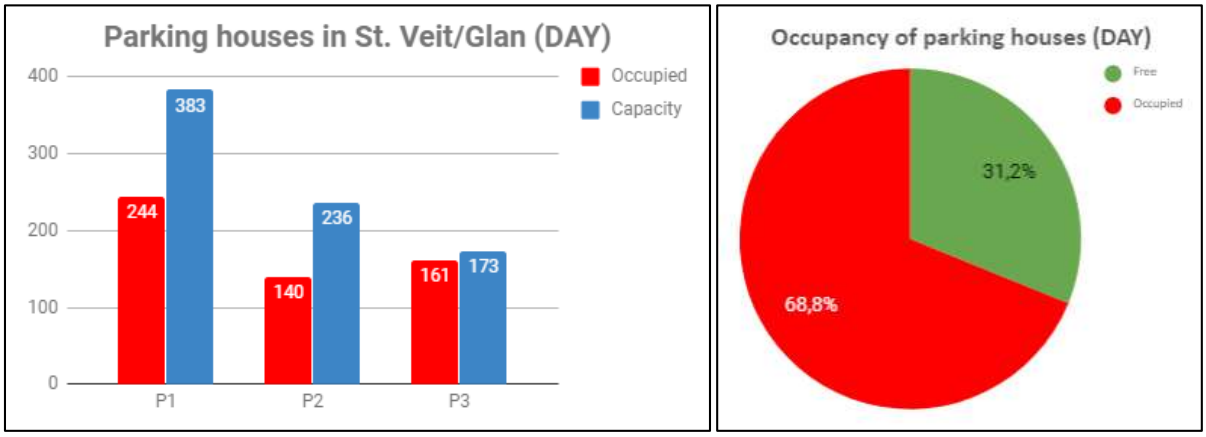

Figure 29: Occupancy of parking houses during the day

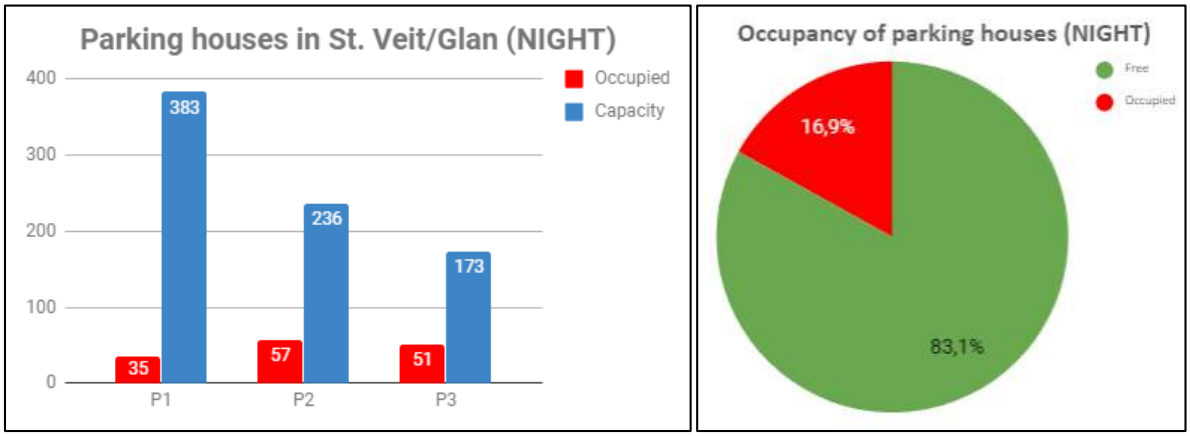

Figure 30: Occupance of parking houses at night

3.4.3 Concurrence with the shopping-centre in the south-east of Sankt Veit/Glan

In St. Veit/Glan, there are three main “shopping areas”. The first one is situated in the old town, and even if a lot of shops are nowadays closed, there are approximately 30 shops in this area. Unfortunately, the citizens are going to the two other zones (south and south-east) to do the every-day-life shopping (Hofer, Interspar, Lidl, …). This situation is really common in a lot of European cities,

and the only solution is to make the old town more attractive than it is today, in order to have more customers in this zone.

So the attractiveness of the old town need to be think of.

Another solution can be the free parking for the users of these shops: when a person is buying something in the city-centre shops, he obtains a ticket that guarantees him 30 minutes free in the city's parking spots. This solution is implemented in some cities in Europe and can help to take back more customers in the city centre.

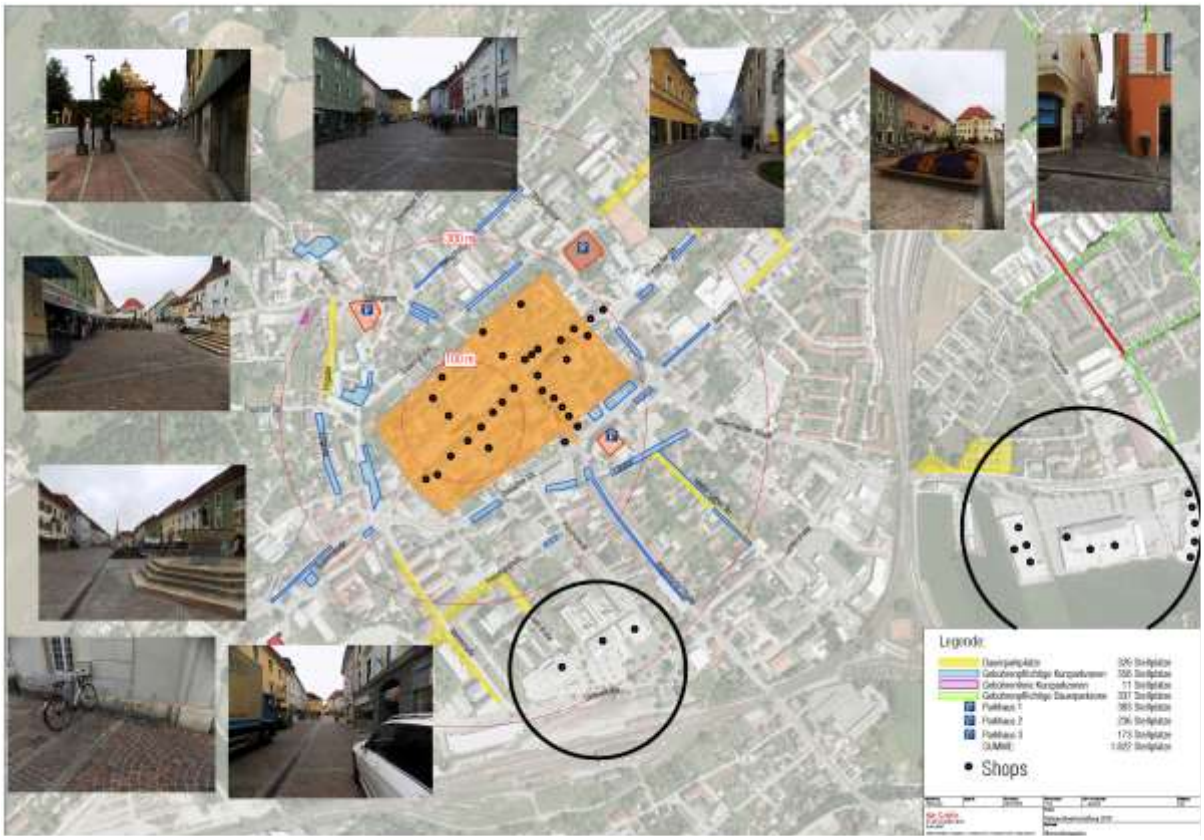

Figure 31: Map of long term parking (yellow), metered short term parking (blue), free short term parking (pink), metered long term parking (green) and shops (black dots)

3.4.4 Solutions

In the old town of Sankt Veit/Glan, we have found some issues that we have analysed, and then we suggested solutions to possible adjustments.

3.4.4.1 Pedestrian zone in the city

The current state of the pedestrian zone: Currently the square is accessible mainly to pedestrians and the car traffic is limited by some bollards. There are vehicles for shops, taxi and resident. The problem is that cars can move in the city centre spontaneously in a large space, so they increase their speed, and it's making the square not very safe for pedestrians.

Solution: Variant A - Pedestrian zone with a reduced amount of cyclists and cars

In this variant, the old town is more pedestrian oriented. For cyclists, parking places on the outskirts of the pedestrian zone are designed and cars can be parked in adjacent areas. The flow of cars is also more regulated. Furthermore, the square will be complemented with more attractive features. It is mainly some greeneries with benches around the perimeter, which are already installed on the square. More trees along the restaurant areas and the entire square, adding information elements at the main intersection and adding a drinking fountain in the main square, can be solutions. All entrances will be

marked with a traffic sign showing the pedestrian zone. This option will make the square more attractive and contribute to the safety of pedestrians moving in the square.

Figure 32: map of the old town with location of proposed changes (Variant A)

Figure 33: possible design elements

Solution: Variant B - Pedestrian and cycling with deceleration elements for cars

In Option B, we have designed it to connect pedestrians and cyclists, who are an important element of the infrastructure. Cycling is used to transport residents from home to school or work (typical examples are the Netherlands, Germany, Denmark…). Cycling safety is also related to the choice of road surface, and the separation of cycling from the road and preferably from pedestrian traffic is a good solution. Another important element of cycling is the possibility to park your bike.

In the area of the pedestrian zone, cyclists are guided by horizontal traffic signs. Speed bumps for speed control can also be installed in the beginning and in the middle of the zone. Other important elements are bicycle racks, which are really present on the square, but they are very low racks, so that are not safe enough.

The remaining space of the square is designed so that it does not allow direct car driving and is also attractive for pedestrians. The main features are the same as in solution A (fountains, benches…)

Figure 34: map of the old town with location of proposed changes (Variant B)

Figure 35: possible design elements

Both variants were evaluated. Option A will make the pedestrian square attractive and will prevent all cars and cyclists from entering. This will also reduce the number of cars who are nowadays registered (more than 600) (residents, vehicles supplying to the shops in the square, taxis…). In our opinion, Option B is better, because it integrates pedestrians, cyclists and cars. In the square, there are designed elements for cyclists and so for pedestrians. The speed of vehicles passing through the square will also no longer increase.

3.4.4.2 Design of a new playground near the square

Around the main square, in Grabengarten, there is an unused green area with a really nice atmosphere. The aim of this solution is to make the square more attractive, and building a new playground can help attract people, especially families with children.

Figure 36: possible design of the proposed children's playground in Grabengarten

3.5 Task 5: Fokus Wohngebiet Wayerfeld

3.5.1 Introduction

Wayerfeld is a green residential neighborhood located in the west of Sankt Veit an der Glan. This neighborhood has a residential area of 3.3 Km² and a population of 1,230 inhabitants. From the west side, Wayerfed has direct access to the Austrian railway network. From south, through B82 road, Wayerfeld is connected to Klagenfurt city, and from North, through B92 road it gets access to Northern Austrian agglomerations.

Wayerfeld is defined as a Wohnstraße. It means that the speed of vehicular traffic is limited to 5 km/h and go through traffic or making a shortcut through this neighborhood is prohibited. However, Wayerfeld inner roads provide an excellent shortcut between B82 and B92 road. As Figure 1 shows, the yellow route through the neighborhood is 750 meters shorter than the red route which rounds the neighborhood.

Figure 37: Wayerfeld, comparison of the go-through link (in yellow) and regular link (in red)

3.5.2 Traffic Noise Problem

The residents of Wayerfeld region complain from the high traffic noise in the area. To find out whether the traffic noise originates from the shortcut traffic or from the residents' local traffic; we set up an analysis. In the first step, the main access gates of the neighborhood were identified to cover all incoming and outgoing traffic. Figure 2 shows the three selected checkpoints: in the south, point 1 at the intersection of B82 road and Herzog-Bernhard-Straße, and point 2 at the intersection of B82 and Friedhofstraße, and in the north, point 3 at Herzog-Bernhard-Straße after Graf-Egger-Straße.

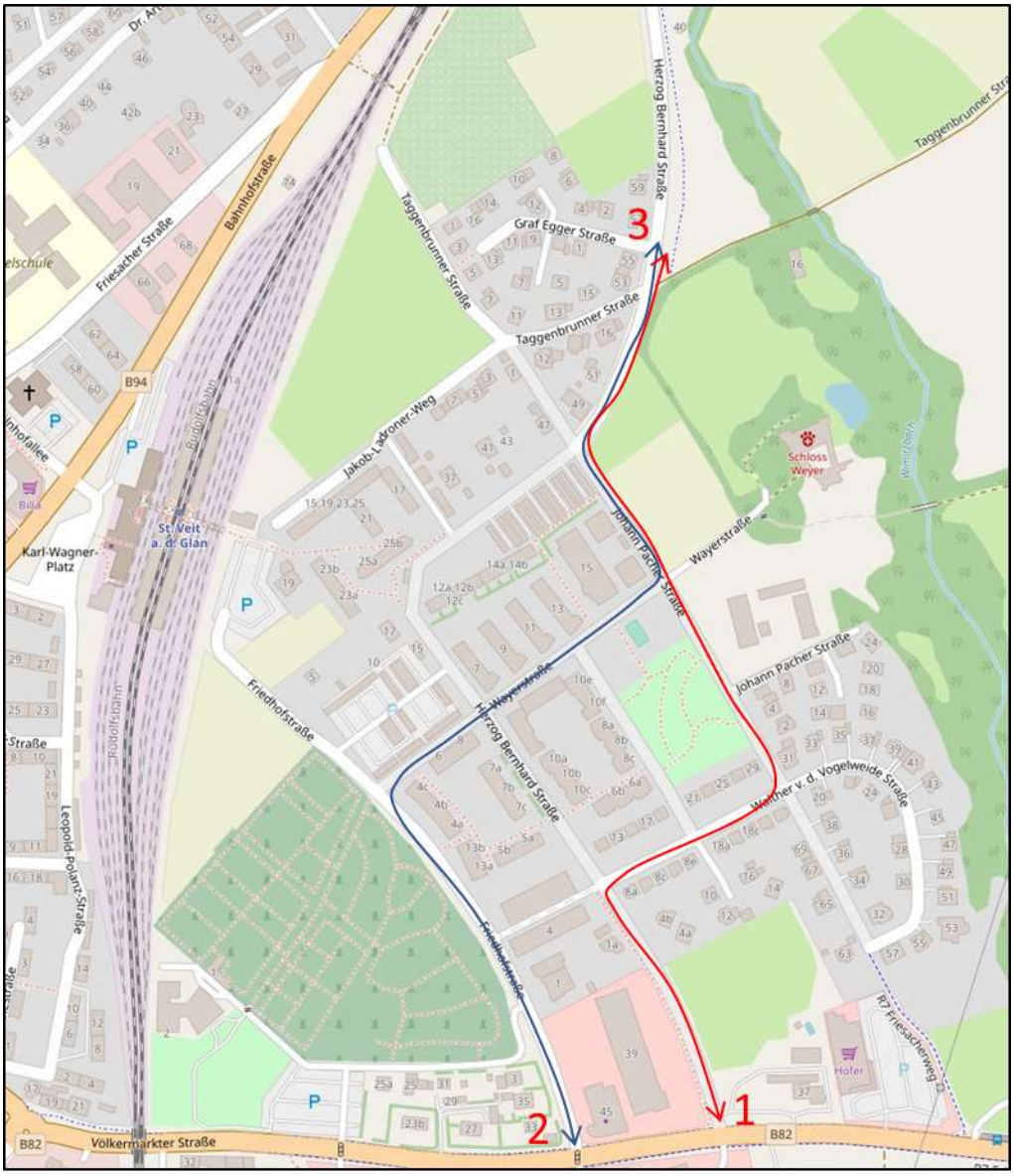

Figure 38: the selected section control gates

The study team recorded the license plates, direction, and passage time of the cars entering or living the neighborhood for two one-hour periods. To cover the maximum possible traffic, we selected the morning (07:00-08:00) and evening (17:00-18:00) pick hours of a Tuesday (14.05.2019) for the section control.

The results of our analysis showed that both in the morning and in the evening peak hours, less than 8% of the car traffic in the neighborhood is due to shortcuts (Figure 3). This result is consistent with the findings of KfV studies in 1999, which found the share of go-through traffic around 6.2%. Our findings made it clear that the primary source of traffic noise in the neighborhood is local car traffic.

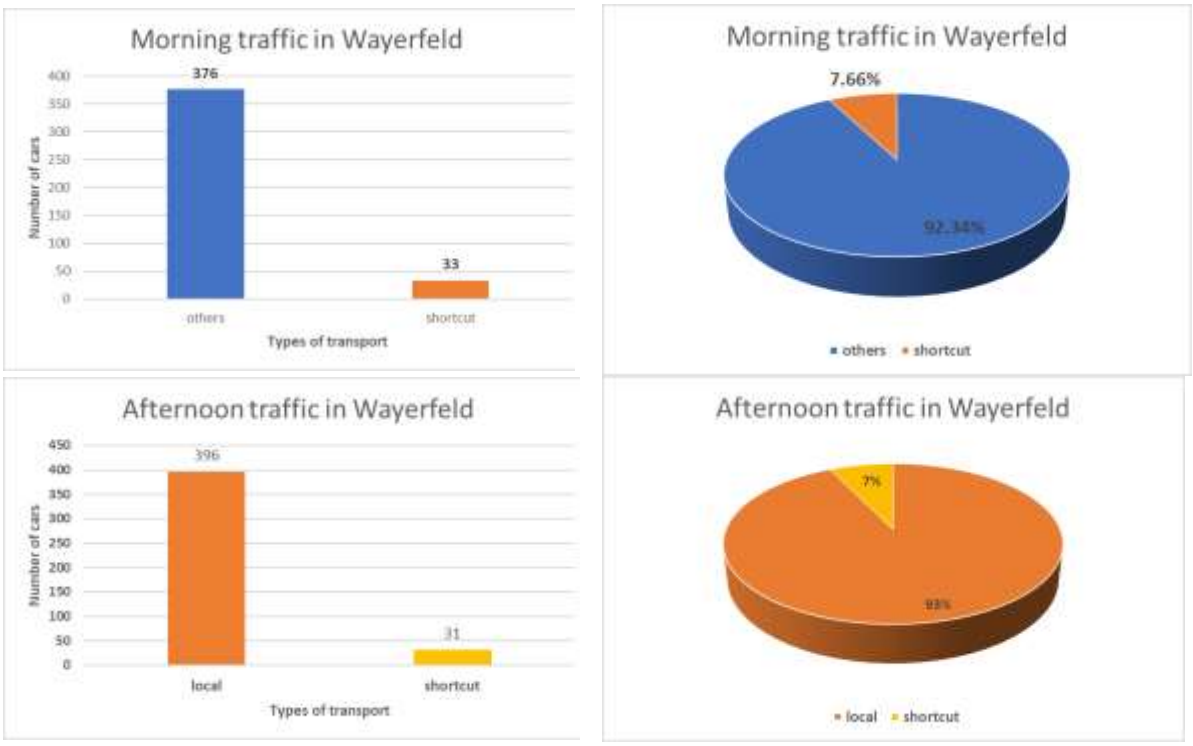

Figure 39: Morning and evening traffic analysis

3.5.3 Traffic noise, and speed

Several studies have found a direct relationship between traffic noise and speed. Therefore, we tried to analyse the speed of traffic in the neighborhood. Unfortunately, the study group did not have access to instantaneous speed measurement equipment such as radar speed gun. Therefore, we relied on a study by traffic department of Kärnten police in 2017. There, from 203 speed measurements by radar, 81% were found above 20 Km/h. As Figure 4 summarizes, more than 30% of the cars were between 30 to 39 km/h, 26% between 40 to 49 km/h, and unbelievably 23% were between 50 to 59 km/h fast.

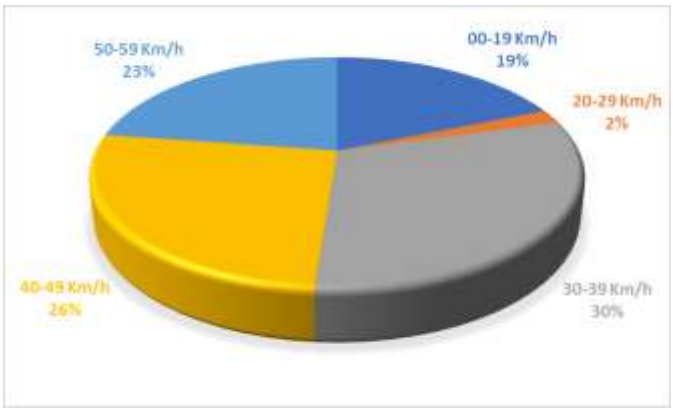

Figure 40: Instantaneous speed analysis by Kärnten police in 2017

Nevertheless, we tried to measure the average speed of go-through traffic. Since there was only one unique link to get from an entry gate to each of other two gates, we could measure the trip lengths based on the respective entrance and exit gates. The travel time was simply the interval between entry and exit times. However, since in our records, we could not note seconds in the time field, the calculated average speed includes an inherent error. Figure 5 shows the average speed of the shortcutting cars both for morning and evening analyses.

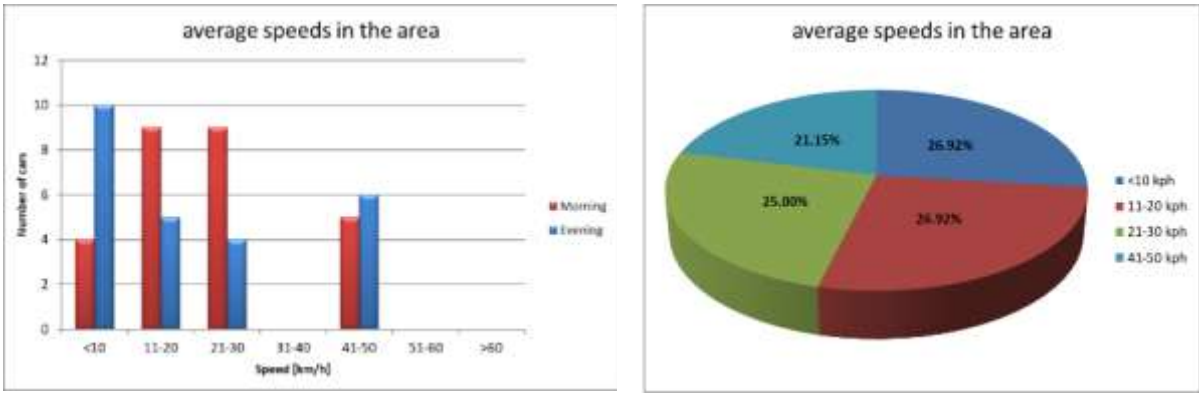

Figure 41: the average speed of cars taking a shortcut through the neighborhood

The fact that more than 80% of commuters violate the speed limit in the neighborhood, questions the effectiveness of 5 km/h speed limit and explains the necessity to introduce traffic-calming measures in the region. If 23% of the cars drive between 50 to 60 km/h, it means that the infrastructure allows them to do so.

3.5.4 How to reduce traffic noise?

Speed plays a significant role in causing traffic noise. Reducing speed is the most immediate and equitable way of cutting traffic noise. Hence, to reduce traffic noise in Wayerfeld region, we set our approach to reduce both the volume and speed of motorized traffic.

During our observations, we just faced a few pedestrians. Though, during both morning, and evening studies; we observed many cars with excessive speed. The reasons behind, low presence of pedestrians and cyclists in the streets, should be investigated. Lack of local facilities in the walking distance, and traffic safety concerns are among the possible reasons. Once there are fewer people in the streets, drivers drive faster, with less caution, and therefore pedestrians' perception of traffic safety deteriorates. This reinforcing loop should break.

3.5.5 Roots in Urban Planning Problem

We know that each trip from home, regardless of the mode, has a specific purpose. The purpose can be either work, education, shopping, leisure, etc. When a trip purpose cannot be satisfied in the neighborhood, it will be absorbed out of it. We furthermore know that willingness to walk or to cycle is directly related to the distance. Once the distance to activity increases, the utility of walking and cycling modes decreases. That is exactly the case in Wayerfeld area. The following picture well reflects that the neighborhood amenities are separated from the residential areas by B82 road.

Figure 42: land use distribution in Wayerfeld region

3.5.6 Eliminating the shortcut traffic

Our first objective was to eliminate shortcut traffic while maintaining the access of residents, public transport, and other services. For this purpose, after a detailed survey of the whole streets network, we changed the direction of some of the streets in the neighborhood network. Additionally, we placed a diagonal traffic diverter at the intersection of Herzog-Bernhard and Johann-Pacher streets. This way, no more shortcut between B82 and B92 roads would be possible. Figure 7 explains how direction and connectivity of the streets change in the network.

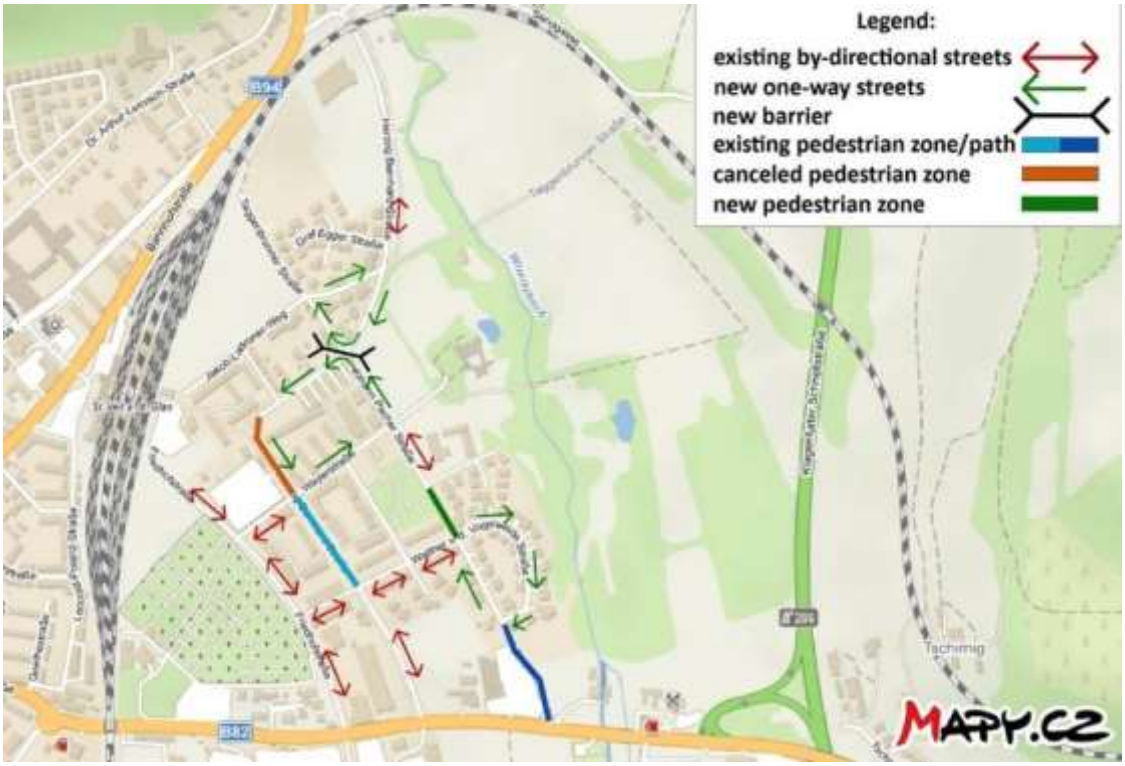

Figure 43: proposed amendments in the neighborhood streets network

3.5.7 Reducing local go-through traffic

The new scheme does not let the residents of the northern parts to find access from B82 road (in the south) through the residential areas. In the same way, the residents of the southern housings will find no more access from B92 road (in the north) to their homes. Hence, not only the shortcut traffic will be eliminated, but also vehicular traffic of the residents through the neighborhood will be minimized. That is while direct access for pedestrians and cyclists will be preserved.

By proposed restrictions against car traffic, together with the improvement of walking and cycling facilities, we intend to systematically persuade the citizens toward active transport modes at least for non-work trips.

3.5.8 SharedSpace instead of Wohnstraße

Obviously, confirming a 5 km/h speed, all along the inner neighborhood streets is difficult. Considering the length of the neighborhood streets, a 5 km/h speed seems irrational. Having an irrational regulation can have similar or worse effects as of having no regulations, drivers take their arbitrary speed! Hence, we propose to redefine and regulate the main streets of the neighborhood as a shared space with a maximum speed of 20 Km/h.

3.5.9 Traffic Calming

Figure 44: the traffic calming scheme

If 22% of cars had been able to drive between 50 to 60 km/h in the neighborhood, it means that the current design and infrastructure make it feasible. Studies have shown that lane width and road layout influence drivers' adopted speed. Therefore, we surveyed various traffic calming measures which can be integrated in our shared-space street network concept. Figure 8, visualizes different traffic-calming measures which are suggested to be implemented in the specific parts of the streets network of

Wayerfeld neighborhood. In the introduction of traffic-calming measures, preserving barrier-freeness and directness of walking and cycling lanes are very important.

3.5.10 The road crossing challenge

As mentioned earlier, almost no amenity exists in Wayerfeld neighborhood, except a Hofer supermarket at the southeast corner and an Italian restaurant at the northwest. However, an accumulation of various shops, restaurants, bank, pharmacy, and sports facilities is located in the south of Wayerfeld region at the opposite side of the road. As Figure 6 depicts, in order to reach these facilities, pedestrians and cyclists need to cross B82 road. The speed limit of B82 road is currently 50 km/h, and as it is not being enforced, some cars drive faster.

In order to gain a feeling of traffic intensity in B82 road, we counted passing PKW and LKW during two one-hour time slots. Between 10:00 to 11:00 o'clock, 529 vehicles passed from east to west, and 551 vehicles passed from west to east direction. In the evening, between 16:00 to 17:00 o'clock, 663 vehicles passed from east to west, and 666 vehicles passed from west to east direction

We also measured number of customers who went by foot or by bicycle to Wayerfeld shopping center during the above mentioned time slots. Between 10:00 to 11:00, 41 pedestrians and 9 cyclists were counted while in the evening (between 16:00 to 17:00), 36 pedestrians and 28 cyclists were registered.

Other than the distance and comfort, crossing B82 road is the main challenge and safety concern for pedestrians and cyclists, especially for children and elderlies. Therefore, we thought of various measures and concepts to calm traffic and prioritized pedestrians and cyclists' crossing. As Figure 9 shows, the non-motorized traffic from Wayerfled to the shopping center may intersect with B82 at four points. Two of these intersections are currently signalized, but the others are not controlled.

Figure 45: non-motorized access routes to Wayerfeld Shopping Center

3.5.11 B82 road layout redesign

Having the objectives mentioned above in mind, we redesigned some parts of B82 road (Völkermarkter Str.) and its intersections.

A) In order to maintain safe pedestrians and cyclists access to sports facilities, and to remove conflict points at the intersection of B82 road with Kalten Kellerstraße and the exit of the adjacent Gas

station; we proposed to implement a mini roundabout concept. In this design, we extended the middle refuge, and amended the turn angles to restrict speed and manoeuvrability of the cars. In the mini roundabout concept, heavy-duty vehicles can drive over the roundabout.

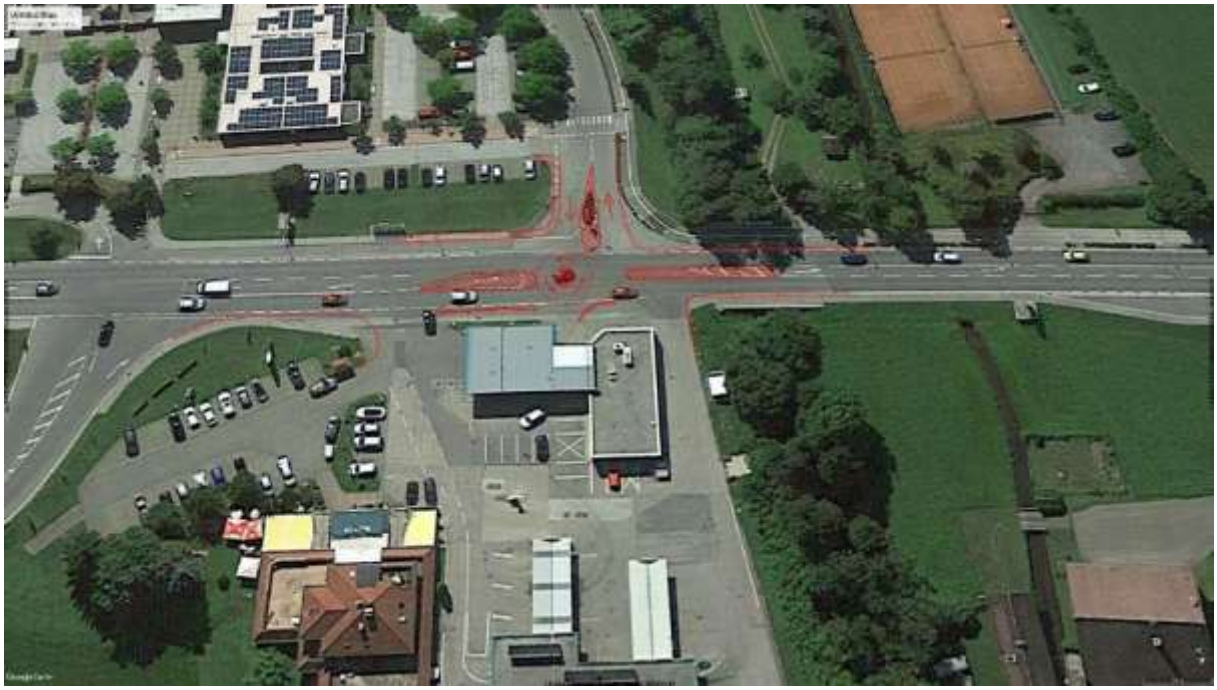

Figure 46: mini-roundabout concept for the intersection of with Kalten Kellerstraße with Völkermarkter road

B) The intersection of Völkermarkter Strße (B82) and Herzog Bernhard Straße is not signalized currently Figure 11 shows illegal movements to access Herzog Bernhard Straße from B82 road and vice versa through the parking of the restaurant. We documented these movements during our field survey. In this movement, cars cross sidewalk at two points. Obviously, access to the parking from Herzog Bernhardstraße should get blocked.

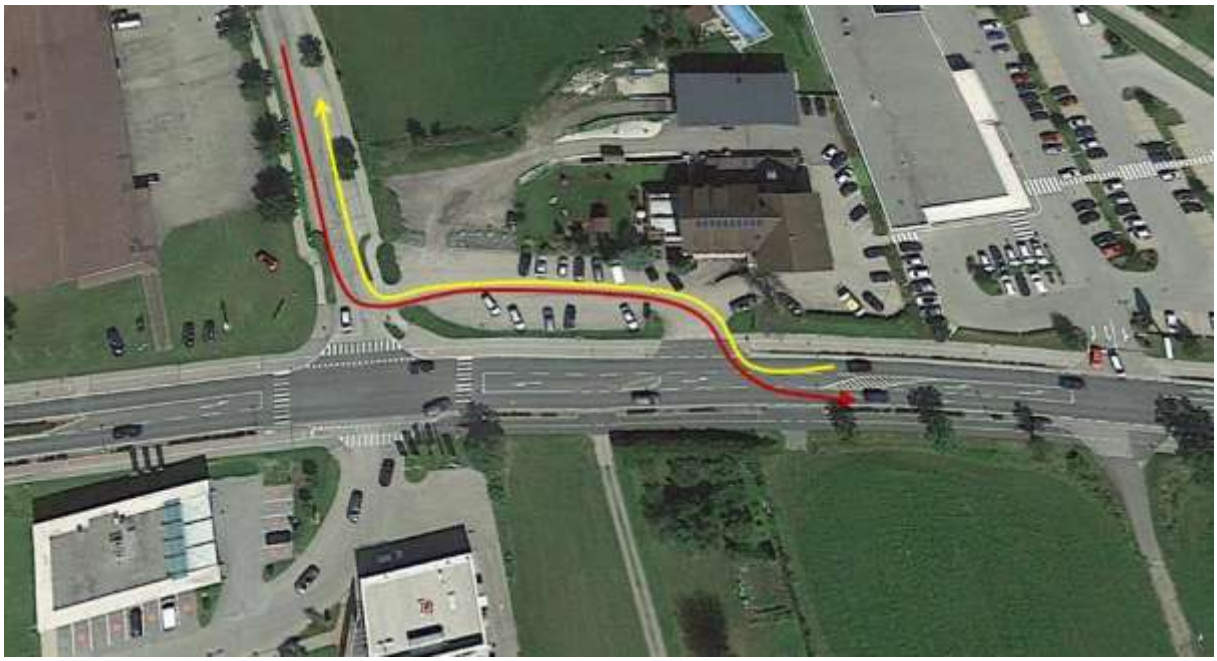

Figure 47: illegal movements at Bernhard intersection

To reduce the speed of traffic and again to reduce conflicts between different possible traffic movements, we introduced a second mini roundabout concept for this intersection. The angles of the

turns are amended to reduce the maneuverability of the cars and to reduce crossing length. Refuges reduce the width of the street and thereby reduce the speed of approaching vehicles before they arrive in the roundabout. Again here LKW can drive over the mini roundabout.

Figure 48: the mini roundabout concept for the intersection of B82 road with Herzog Bernhard Straße

C) The intersection of Friedshofstraße and Völkermarkterstraße (B82) is signalized. At this intersection, pedestrians can actuate the signal by pressing the button. However, still, the turn angels are too wide, which lets the drivers have high maneuverability and speed in turns. In the new design, we reduce the length of the zebra crossing and thereby the exposure of vulnerable road users to traffic.

Figure 49: Adjusting the turn angels at Friedhofstraße and B82 road

D) Although the intersection is signalized, with the same objective to restrict the speed and maneuverability of the cars, the geometry of the access is redesigned.

Figure 50: editing the turn angles for the shopping center's western access

3.5.12 Conclusion

This study tried to realize the source of the traffic noise problem in the Wayerfeld area and bring practical measures to reduce it. The approach of this study to noise problem was to reduce both volume and speed of car traffic through the neighborhood.

By a section-control analysis, the study found out that less than 8% of the traffic is shortcutting traffic. Therefore, the main source of traffic noise in the neighborhood is identified to be local traffic. To eliminate the shortcut traffic and to reduce local go-through traffic, a set of amendments were suggested in the street network.

As the neighborhood amenities are located out of the neighborhood at the opposite side of B82 road; in order to increase safety and comfort of pedestrians' and cyclists' while crossing B82 road, the layout of B82 road was redesigned at four intersections. In these redesigns, we tried to reduce the speed and maneuverability of vehicular traffic, though increasing safety, directness, and comfort of pedestrians and cyclists.

In conclusion, our findings indicate that the traffic noise in the Wayerfeld region is due to high car dependency of the residents. Unfortunately, the neighborhood amenities are located out of the neighborhood where the requirements of pedestrians and cyclists are not taken in to account. On the contrary, by providing free parking, residents are encouraged for vehicular trips. Although our proposals tried to improve the condition in a systematic approach, however, the long term effective solution is to bring neighborhood amenities in walking distance of population agglomerations. Provide public transport for the trips out of the usual walking and cycling range, and to set a parking tax for the shopping centers offering free parking, especially to those out of the neighborhoods.

3.6 Task 6: zukünftige Wohnraumentwicklung St. Veit/Glan

Von der Gruppe wurde kein Projektbericht abgegeben.

4 Zusammenfassung und fachliche Einordnung der Studierendenarbeiten

4.1 Task 1: Erstellung eines Grundverkehrsplan für St. Veit an der Glan

Ziel der Gruppe war das Herunterbrechen des Mobilitätsmasterplans Kärnten auf die lokale Ebene. Im Fokus standen vorrangig das Geschwindigkeitsregime im Siedlungsgebiet und der Verkehrsablauf zu Stoßzeiten.

Im Rahmen der Mängelanalyse wurden folgende Missstände identifiziert:

- komplexe, verwirrende, unklare bzw. uneinheitliche Tempolimits: im Gemeindegebiet existieren Fußgängerzonen, Wohnstraßen, sowie Zonen mit 30 km/h, 40 km/h, 50 km/h und 7o km/h-Beschränkungen
- zu große Wohnstraßenbereiche, die zu Geschwindigkeitsübertretungen führen
- die Kombination aus Kreisverkehren und ampelgeregelten Kreuzungen ist nicht ideal
- v.a. in den Stoßzeiten wurde ein Ausweichverkehr von den Hauptrouten in die Wohngebiete beobachtet

Die Gruppe schlägt folgende Maßnahmen vor:

- Vereinheitlichung und Vereinfachung der Tempolimits: Tempo 50 im Hauptstraßennetz, Tempo 30 im Nebenstraßennetz, Begegnungszone (Tempo 20) im Wohngebiet, Fußgängerzone im Zentrum
- Reduktion des Durchzugsverkehrs in der Doktor-Arthur-Lemisch-Straße mittels Einbahnregelung, um den Ausweichverkehr von der Friesacher Straße aus dem Wohngebiet fernzuhalten
- Übernahme der Lastenstraße/Marktstraße ins Hauptstraßennetz, um die Klagenfurter Straße zu entlasten
- Neugestaltung des Kreisverkehrs Bahnhofsstraße/Klagenfurter Straße mit erhöhter Innenfläche (bzw. Pflasterung), sodass die Kreisfahrbahn vom Pkw-Verkehr ausgefahren wird und für den Lkw-Verkehr überfahrbar bleibt: somit kann die gefahrene Geschwindigkeit im Kreuzungsbereich gedrosselt werden
- alternativ: Ampelregelung der Kreuzung Bahnhofsstraße/Klagenfurter Straße inkl. Ampelkoordinierung und grüner Welle für den Kfz-Verkehr

Fachliche Einschätzung:

- Die Mängelanalyse ist wohlbegründet.
- Die Vereinheitlichung der Tempolimits ist naheliegend. Tempo 40 Zonen sind nicht mehr zeitgemäß. Übergroße Wohnstraßen-Zonen werden nicht akzeptiert.
- Die Reduktion des Durchzugsverkehrs durch Wohngebiete ist angebracht, sei es durch verkehrsorganisatorische Maßnahmen (Einbahnen) oder bauliche Maßnahmen (Sackgassen mit Pollern, etc.). Der Durchzugsverkehr sollte auf wenigen, leistungsfähigen Achsen gebündelt werden.
- Die Ergänzung des Hauptstraßennetzes durch die Achse Lastenstraße/Marktstraße sollte nur bei gleichzeitigem Rückbau der Klagenfurter Straße erwogen werden, da sonst 2 parallele Achsen vom Kfz-Verkehr belastet werden (inkl. Lärm, Abgase, Trennwirkung, etc.).
- Die Umgestaltung des Kreisverkehrs Bahnhofstraße/Klagenfurter Straße ist wünschenswert, um die Fahrtgeschwindigkeiten zu drosseln. Die Ausgestaltung als

ampelgeregelte Kreuzung inkl. Ampelkoordinierung (grüne Welle) ist kritisch, da eine Steigerung der Leistungsfähigkeit immer noch mehr Verkehr induziert.

4.2 Task 2: Radverkehrskonzept St. Veit/Glan

Ziel der Gruppe war die Analyse und Verbesserung des lokalen Radwegenetzes. Dazu wurde das bestehende Netz hinsichtlich Abdeckung, Durchgängigkeit und Qualität untersucht und BewohnerInnen befragt.

In der Mängelanalyse wurden die folgenden Problembereiche identifiziert:

- Aufgrund fehlender Wegweisung und mangelhafter Wiedererkennbarkeit und Kontinuität ist das Radverkehrsnetz in St. Veit/Glan für nicht ansäßige Personen schwer durchschaubar
- Probleme entstehen durch Lücken im Radverkehrsnetz, besonders in den Kreuzungsbereichen, fehlende Radampeln und Mischverkehrsflächen mit dem Fußgeherverkehr
- V.a. im Zentrumsbereich existieren bereits Abstellanlagen, die aber wenig genutzt werden, was an der schlechten Situierung oder Nutzbarkeit liegen könnte.
- Die Ortsteile Hörzendorf und St. Donat sind mangelhaft an die Kernstadt angebunden.

Aufgrund der Mängelanalyse ergeben sich folgende Empfehlungen:

- Durchgehende Radverbindung von Hörzendorf und St. Donat ins Zentrum.
- Umgestaltung der Kreuzung Friesacher Straße/Köhnhofallee als Kreisverkehr inkl. angrenzenden Radfahrsanlagen (tlw. baulich getrennte Zweirichtungsradwege).
- Entlang der Klagenfurter Straße wird ein Zweirichtungsradweg vorgesehen, in der Glangasse eine Verlängerung der Radinfrastruktur unter der Klagenfurter Straße.
- Lückenschluss zum Eurospar an der Villacher Straße bzw. zum eixistierenden Zweirichtungsradweg entlang der Villacher Straße inkl. gesicherter Querung der Schießstattallee mittels Radfahrerüberfahrt (und Schutzweg).

Fachliche Einschätzung:

- Das Radverkehrsnetz in St. Veit/Glan ist äußerst lückenhaft. Die Kombination von Fuß- und Radinfrastruktur generiert Konflikte.
- Die Anbindung der Ortsteile Hörzendorf und St. Donat mittels sicherer und komfortabler Radinfrastruktur ist dringend notwendig.
- Die baulich getrennte Führung des Radverkehrs im untergeordneten Straßennetz (z.B. Kölnhofallee) ist nicht notwendig. Bei Unterbindung des Kfz-Durchzugsverkehrs und T30 ist Mischverkehr durchaus möglich. Auf den Hauptstraßen (z.B. auf der Klagenfurter Straße) ist eine bauliche Trennung allerdings unerlässlich. (Ein Gehweg mit 1,0 m Breite entspricht nicht den geltenden Richtlinien.)
- Der Lückenschluss zum Eurospar und zum existierenden Zweirichtungsradweg Richtung Feldkirchen wäre wichtig.

4.3 Task 3: Analyse ÖV-Konzept St. Veit/Glan

Ziel der Gruppe war die Analyse und Verbesserung des ÖV-Netzes in St. Veit an der Glan.

Die Mängelanalyse ergab folgende Probleme:

- Der Fahrplan der bestehenden Buslinie weist keine Regelmäßigkeit auf.
- Die Linienführung ist verbesserungswürdig.
- Das Netz besteht aus Überbleibseln vergangner Buslinien.
- Die Flächenverteilung am Bahnhofsvorplatz ist nicht optimal.

Die Gruppe schlägt folgende Maßnahmen vor:

- Übersichtlicher Taktfahrplan: eine Hauptlinie, die den ganzen Tag über fährt, eine Verstärkerlinie zu den Stoßzeiten.
- Anbindung der Ortschaften Hörzendorf, St. Donat, Blintendorf, Altglandorf, Weyerfeld und Milleniumspark an das Busnetzwerk.
- Schaffung neuer Haltestellen.
- Neudesign des Bahnhofsvorplatzes: "Tausch" von Parkplätzen und Busstation, Reduzierung der Bussteige, Erweiterung der Stellplätze, große Fahrradabstellanlage.
- Weiterer Ausbau des Carsharing-Angebots.

Fachliche Einschätzung:

- Busnetz und Fahrplan müssen übersichtlich, regelmäßig und einfach zu merken sein, um von der Bevölkerung angenommen zu werden.
- Besonderes Augenmerk ist auf den Anschluss an den überregionalen Bahnverkehr am Bahnhof zu legen.
- Der Umbau des Bahnhofsvorplatzes kann positive Auswirkungen haben, wenn die Umsteigerelationen Bus-Bahn möglichst kurz (räumlich und zeitlich) gehalten werden.
- Eine sichere Radabstellanlage am Bahnhof ist essentiell, um Bike&Ride zu fördern.

4.4 Task 4: Analyse der Erreichbarkeit der Innenstadt

Ziel der Gruppe war die Analyse der Erreichbarkeit der Innenstadt für alle Verkehrsarten. Dazu wurde eine (nicht-repräsentative) Befragung durchgeführt, eine Parkraumerhebung, sowie eine Bewertung der Ziele in der Altstadt.

Die Mängelanalyse ergab folgende Problembereiche:

- Das Shoppingcenter hat der Innenstadt als Geschäftszentrum stark zugesetzt. Viele wichtige Frequenzbringer sind in die Peripherie abgewandert und nun vorwiegend per Kfz erreichbar.
- Das Rad- und Fußverkehrsnetz zur Altstadt ist mangelhaft.
- 1700 Parkplätze werden rund um die Altstadt angeboten. Manche sind ausgelastet, auch der Preis könnte einige LenkerInnen abhalten und auf die Gratis-Parkplätze des Shoppingcenters verdrängen.
- In der Fußgängerzone im Zentrum sind zu viele Fahrzeuge unterwegs, weil einer der Poller nicht funktioniert. Die Fahrtgeschwindigkeiten der Kfz in der Fußgängerzone sind zu hoch.

Die Gruppe schlägt folgende Maßnahmen zur Verbesserung der der Situation vor:

- Die Innenstadt muss wieder attraktiver werden, um mehr Menschen anzulocken. Es werden Grünpflanzungen, konsumfreie Sitzgelegenheiten und Trinkbrunnen empfohlen.
- Die Einhaltung der Geschwindigkeit soll mittels Schwellen passieren.
- Qualitativ hochwertige Radständer sollen das sichere Abstellen von Fahrrädern unmittelbar bei den Geschäften erleichtern.
- Alternativ: der Hauptplatz wird für den Radverkehr gesperrt.
- Parken für Kunden von Innenstadtgeschäften könnte für z.B. 30 Minuten gratis sein (bei Nachweis eines Einkaufs).
- Im Grabengarten wird die Errichtung eines Spielplatzes empfohlen, um die Altstadt auch für Familien mit Kindern attraktiver zu machen.

Fachliche Einschätzung:

- Die fußläufige und Rad-Erreichbarkeit der Innenstadt gehört deutlich verbessert. Sichere Radwege (baulich getrennt) und breite Gehsteige sind dafür eine Grundvoraussetzung.
- Der bestehende Parkraum ist völlig ausreichend. Zu keinem Zeitpunkt waren die Parkplätze ausgelastet.
- Zur Verbesserung der Situation in der Altstadt ist eine restriktivere Raumordnungspolitik notwendig - die Probleme in der Altstadt (Leerstand) sind direkte Folge der Widmung von peripheren Einkaufszentren.
- Chancengleichheit zwischen Innenstadt und Shoppingcenter könnte durch eine Verkehrserregerabgabe wiederhergestellt werden.
- Die Fußgängerzone sollte auf jeden Fall beibehalten werden. Kfz-Zufahrten müssen entsprechend beschränkt werden (Zulieferung nur zu bestimmten Tageszeiten). Radverkehr kann zugelassen werden und durch Radabstellanlagen weiter gefördert werden. Schwellen haben in Fußgängerzonen nichts verloren - die Fahrtgeschwindigkeit der Kfz kann bei Bedarf durch den Bodenbelag bzw. durch räumliche Elemente (Sitzgelegenheiten, Bäume, Radabstellanlagen) gedrosselt werden.

4.5 Task 5: Fokus Wohngebiet Wayerfeld

Ziel der Gruppe war die Evaluierung der derzeitigen Verkehrsregelung im Wayerfeld. Mittels einer Kordonzählung wurde der Durchzugsverkehrsanteil ermittelt und darauf aufbauend Maßnahmenvorschläge abgeleitet.

Die Mängelanalyse ergab folgende Problemfelder:

- Die (nicht legale) Durchfahrt durchs Wayerfeld ermöglicht eine Abkürzung zwischen B82 und B92, die um 750m kürzer ist, als die vorgesehene Route außen herum.
- Dennoch ist der Durchzugsverkehr in der Morgen- und Abendspitze mit 7-8% sehr gering. Das laut Bevölkerung bestehnde Lärmproblem ist also hausgemacht.
- Über 80% der Kfz sind schneller als 10 km/h unterwegs - erlaubt wäre Schrittgeschwindigkeit.
- Fehlende Versorgungseinrichtungen in der Siedlung und schwierige fußläufige Erreichbarkeit des Shoppingcenters schränken den Fußverkehr stark ein.
- Die Siedlungsstruktur im Wayerfeld aber auch im angrenzenden Stadtgefüge resultiert in verstärkter Autoabhängigkeit der BewohnerInnen.

Die Gruppe schlägt folgende Maßnahmen vor:

- Zur Unterbindung des Durchzugsverkehr wird an der Kreuzung Herzog-Bernhard-Straße / Johann-Pacher-Straße eine Diagonalsperre vorgesehen. Diese verunmöglicht die Durchfahrt für Kfz, erlaubt aber weiterhin den Fuß- und Radverkehr. Die Maßnahme wird durch eine Einbahnführung komplettiert.
- Statt der Verordnung des Gebiets als Wohnstraße wird die Einführung einer Begegnungszone mit 20 km/h Tempolimit empfohlen. Dieses - für das große Gebiet - realistischere Tempolimit verspricht eine höhere Akzeptanz und Befolgung.
- Zur Einhaltung der 20 km/h Geschwindigkeitsbeschränkung werden bauliche Maßnahmen empfohlen: Schwellen und Kreuzungsaufpflasterungen.
- Entlang der B82 werden mehrere Verkehrsberuhigungsmaßnahmen vorgeschlagen, um die Querungsmöglichkeiten zu verbessern, u.a. Minikreisverkehre und Verkleinerung der Abbiegeradien, um die Abbiegegeschwindigkeiten zu senken und die Querungslängen für den Fußverkehr zu reduzieren.

Fachliche Einschätzung:

Der Mängelanalyse und den Maßnahmenvorschlägen ist nichts hinzuzufügen.

4.6 Task 6: zukünftige Wohnraumentwicklung St. Veit/Glan

Ziel der Gruppe war die Evaluierung möglicher Stadterweiterungsgebiete inkl. verkehrlicher Auswirkungen. Dazu wurde die Leistungsfähigkeit bestehender Kreuzungen im Nahbereich zukünftiger Verdichtungsgebiete ermittelt. Für die Bereiche Glandorf, Milleniumspark, Poganzer Straße, Sankt Donat und Hörzendorf wurden Vor- und Nachteile verstärkter Siedlungsentwicklung gegenübergestellt.

Bei Entwicklung in Glandorf wird die Schaffung eines lokalen Zentrums und einiger ergänzender Verkehrsmaßnahmen empfohlen. Beim Millenniumspark ist – wie auch bei Glandorf – eine fußläufige Erreichbarkeit des Zentrums nicht mehr gegeben (Autoabhängigkeit!). An der Poganzer Straße könnte zentrumsnahe verdichtet werden, wenn die Erreichbarkeit sichergestellt werden kann. Eine Verdichtung und weitere Siedlungstätigkeit in St. Donat und Hörzendorf wird nur empfohlen, wenn parallel dazu öffentliche Versorgungseinrichtungen (Nahversorgung, Schulen) aber auch Arbeitsplätze geschaffen werden. Die Verdichtung sollte jedenfalls ortsbildverträglich erfolgen.

Fachliche Einschätzung:

Eine zentrumsnahe Verdichtung und Schließung von Bebauungslücken ist einer dezentralen Entwicklung vorzuziehen. Nur so kann die nötige Dichte für fußläufige Nahversorgung bzw. ÖV-Versorgung geschaffen werden. Weitere Entwicklungen „auf der grünen Wiese“ sind jedenfalls zu vermeiden.

In Raumordnungsfragen sollten gemeindeübergreifende Allianzen geschlossen werden, um das Ausspielen von Gemeinden gegeneinander durch Konzerne bzw. Bauträger zu unterbinden.

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6 Impressionen


Stefan Mladenovic
Adam Palcovics
Thomas Riedler
Michal Supej
Vaclav Taborsky


FEUERW


Hotel Fuchspalast


Hotel Fuchspalast