

# Protokol

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MEPS – Wiener Neudstadt

Task 7.

Unfallanalyse Fischauer Gasse und Merkur City

Traffic Accident Analysis Fischauer Gasse and Merkur City

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## 2 Introduction

On the Seminar Meps (Middle European Transport Planning Seminar) held in cooperation with the TU Wien, TU Prag and TU Budapest from the 3<sup>rd</sup> to the 7<sup>th</sup> of May in Wiener Neustadt. The goal was the practical implementation of methods used for transport and traffic planning, making technical presentations, interaction with local authorities. It was interdisciplinary cooperation and teamwork between students of the three universities. A catalogue of 7 tasks were considered with an even amount of students from the partner universities.

## 3 Wiener Neustadt Traffic Overview

Since its founding in 1194 Wr. Neustadt has been an important transit location within Austria and central Europe. It lies on the mouth to the Wechsel pass and Semmering pass to the south, the Alpokalja to the east and the Vienna Basin to the north. Early exploitation of wood, clay and coal in the surrounding area helped it developed into a transportation hub to deliver material to an every growing Vienna (Hahn, 1994). This was amplified in 1803 by the construction of the Wiener Neustädter canal. It experienced another traffic increase (although this lead to the slow demise of the canal) with opening of the first south bound railroad through the Südbahn Gessellschaft 1841. The rail line was extended over the Semmering pass in 1854. Today Wiener Neustadt boasts a whole 8 rail lines originating or passing through the main train station making it one of Austria's busiest railstations. Wiener Neustadt was also the first Austrian city to have an official airport (Die Flugpioniere, 1989) and at present has a military and civilian airport. The civilian airport however plays a minor role due to the proximity to Vienna Int. Airport in Schwechat. With the ever growing popularity of the automobile and the growth of individual transport the road Wiener Neustadt network was subsequently built. In 1959 construction on the south bound autobahn A2 started which extends south through Styria. Today the autobahn in the area has a daily congestion rate of 112800 vehicles (NÖ Landesregierung, 2009).

A total of 10 local bus lines serve the city and a bicycle network. The module split of public transportation / motorized individual / bicycle / and pedestrian traffic stands at 13 / 58 / 12 / 17 and the ratio of internal city traffic to regional traffic stands at 71% to 26% with 3% as through traffic (Mobilitätsverhalten Wiener Neustadt 2003, 2004).

## 4 Task 7.: Redevelopment of traffic accident hot spots

*Accident analysation and reconstruction of the junction areas*

*a) Junction Fischauer Gasse/ Raugasse/ Mießlgasse*

*b) Junction Stadionstraße/ Access Merkur*

*For both junctions an analysis of accident events and recommendations for a redesign should be made.*

Both of these junctions are situated in the north of the city. See Figure 1. Fischauer Gasse (Red 1) and Merkur City (Red 2).

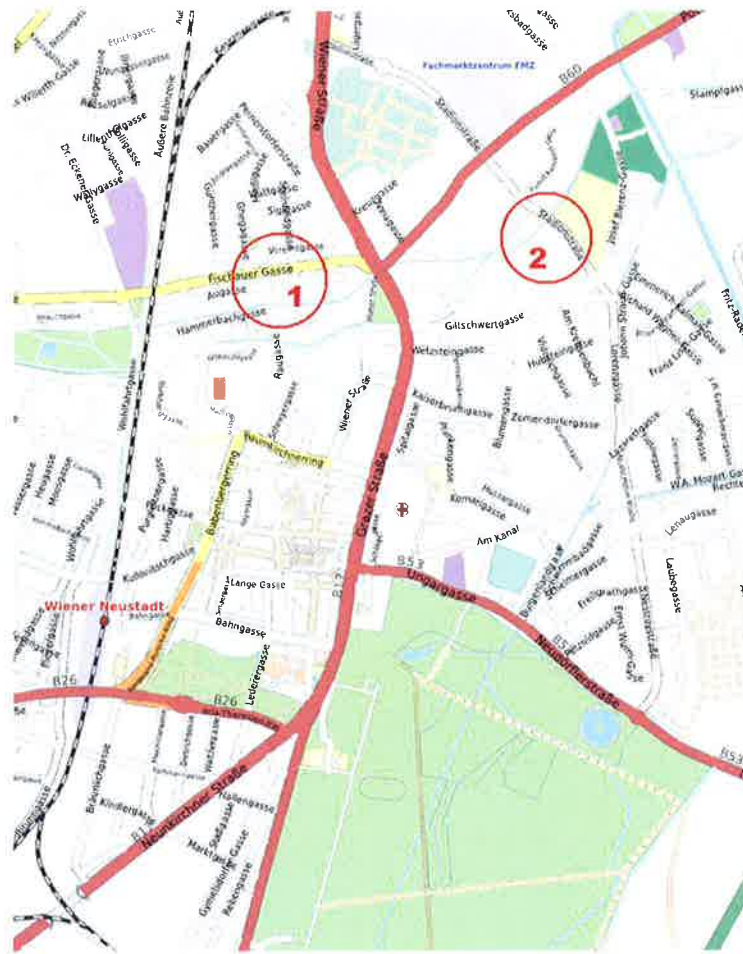


Figure 1 Map section of Wiener Neustadt with Task Locations (OpenStreetMap.org, 2010)

## 5 Merkur City exit

### 5.1 Status quo

The Merkur City is a larger shopping mall situated in the north of the city it has an exit towards Josef Bierenz Gasse and to the Stadionstrasse. The Stadionstrasse is a tangential road serving local traffic and north – south bound traffic originating from Neudörflerstraße and Wiener Straße. It has a daily traffic volume of 13600 vehicles in that area (NÖ Landesregierung, 2009). The traffic accident hotspots are concentrated around the exit from the mall (see figure 2. area A) and the bicycle path crossing (area B). Our team viewed the local area and observed the traffic flow during the morning hours (KfV, 2010). We observed that vehicles drivers do have trouble entering and exiting the mall (area A) and also speeds violations and unawareness of the bicycle and pedestrian crossing (area B).

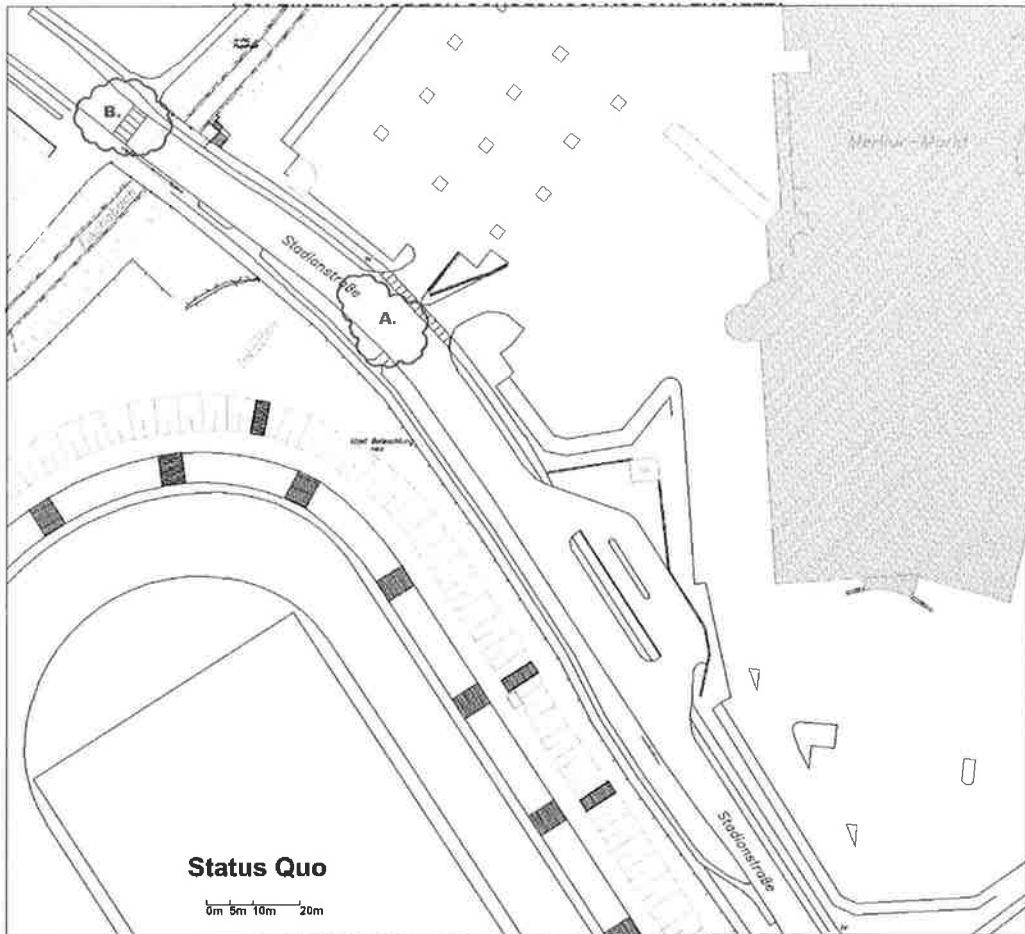


Figure 2. Merkur Access Stadionstrasse status quo

## 5.2 Redevelopment Suggestions

We developed two separate suggestions for this area.

### 5.2.1 Variant 1:

Our first Variation we developed concluded that not allowing the left turn possibility when leaving the Merkur City parking lot would decrease the accident occurrence. This would force vehicles that wish to depart south to go first north and turn around by the roundabout situated 300 meters to the north before being able to travel south. These vehicles could also leave the parking lot over the exit to Josef Bierenz Gasse. The exit ramp from the parking lot would be reconfigured to leave at a  $60^\circ$  angle instead of the current  $90^\circ$ . We also suggested a separate turn lane for south bound traffic to be able to enter the parking lot. To slow the average speed on this road section we would further suggest a central island stretching from the roundabout to the south to shortly before the parking lot access. This island could be landscaped with vegetation (see Figure 3).

In the pedestrian and bicycle crossing we developed a psychological speed reduction concept. This would eliminate the use of a speed bump, an expressed inclination of the city officials. Instead this concept would involve triangular road markings before the crossing. There is an existing cyclist path on west side of the Stadionstrasse, in this variant we suggest to also include a cyclist lane on the east side.

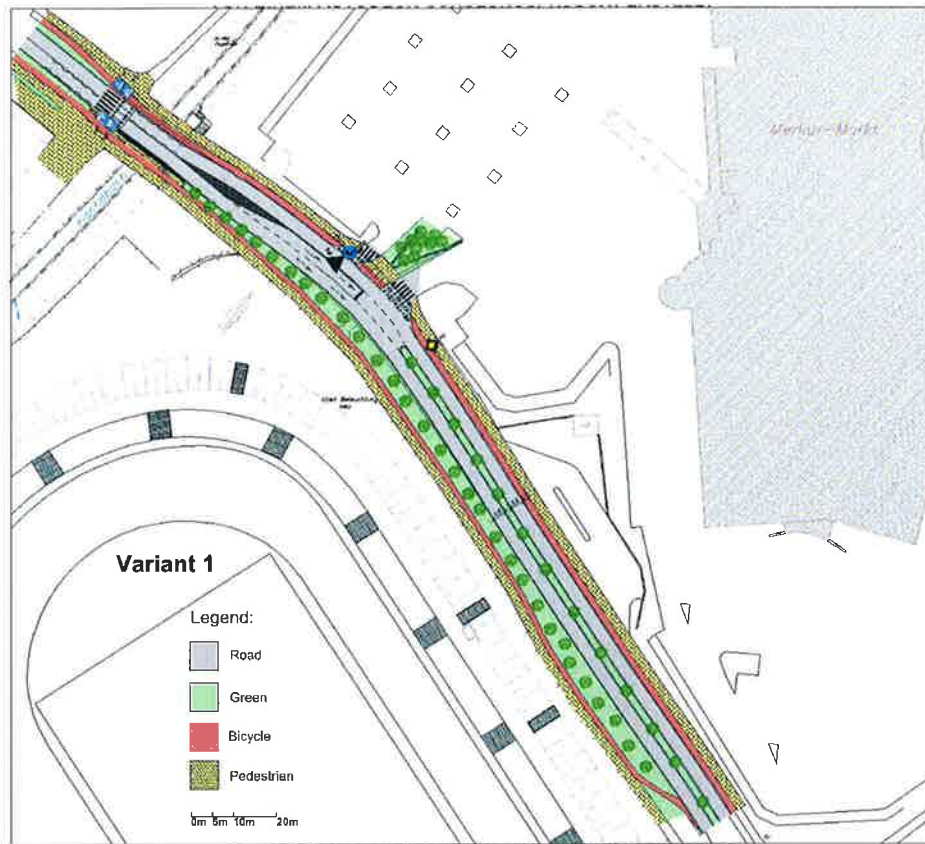


Figure 3. Merkur City Variant 1

5.2.2 Variant 2:

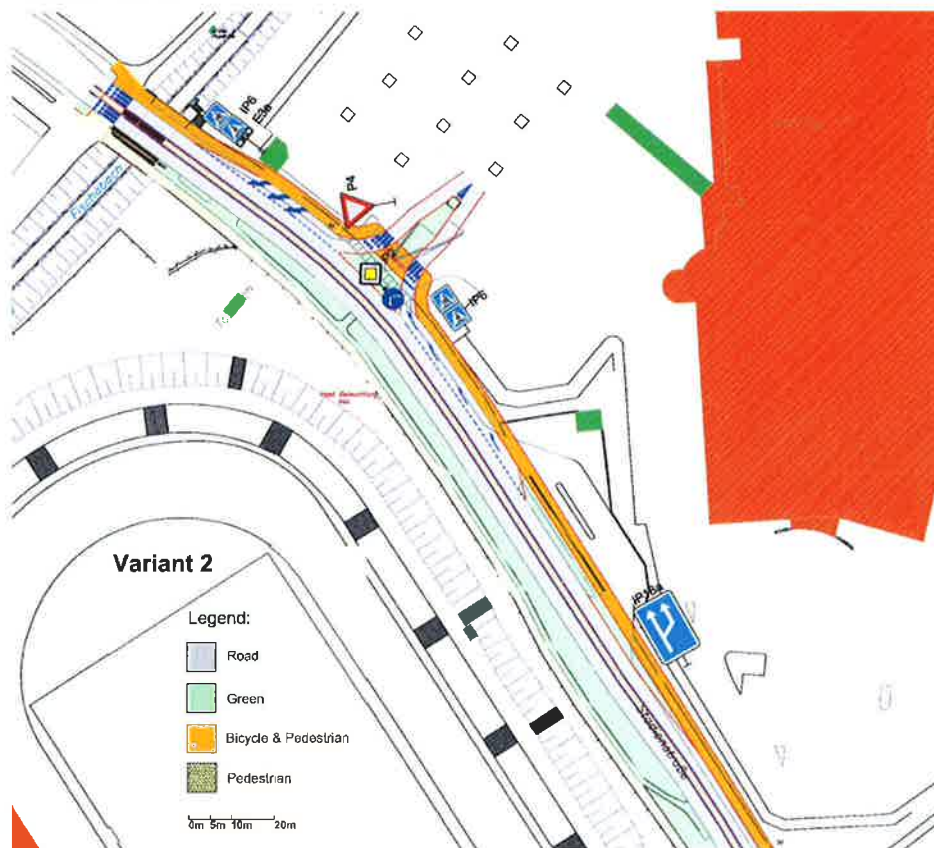


Figure 4. Merkur City Variant 2

In our second variant we developed a similar solution to the first with one prominent distinction, the central island would reach the whole length of the Stadionsstrasse in this area. This would imply that south bound vehicles on Stadionsstrasse wishing to enter Merkur would be required to drive until the roundabout to the south and turn to enter (similar to those leaving and heading south). This would remove the necessity for separate turning lane for south bound traffic and prevent almost all past vehicle – vehicle accident situations in this area.

## 6 Fischauer Gasse / Mießgasse / Raugasse

### 6.1 Status quo

This was by far the more complex of the two tasks. The Fischauer Gasse is a major tangential road in Wiener Neustadt with a daily traffic volume of 26100 vehicles (NÖ Landesregierung, 2009). Apart from regional traffic from the west it also brings traffic volume from the autobahn A2 to and from the town center. The road is fairly straight with few obstacles or curves. Raugasse brings traffic volume from the town center and Mießgasse is a local road serving the neighborhood to the North of Fischauer Gasse. The crossing also has several services, including a petrol station on the northeast corner of Fischauer Gasse / Mießgasse, a grocery store with parking on the southwest corner of Fischauer Gasse / Raugasse, and another grocery store with parking on the Northwest corner of Gegagasse and Fischauer Gasse.

#### 6.1.1 Accident Hotspots

According to the accident database (Neustadt, 2010) of the city the crossing is the one of the most dangerous. We supported this assumption with several interviews with store owners and residents in the area. We were able to analyze three main accident causes. (See Figure 5)

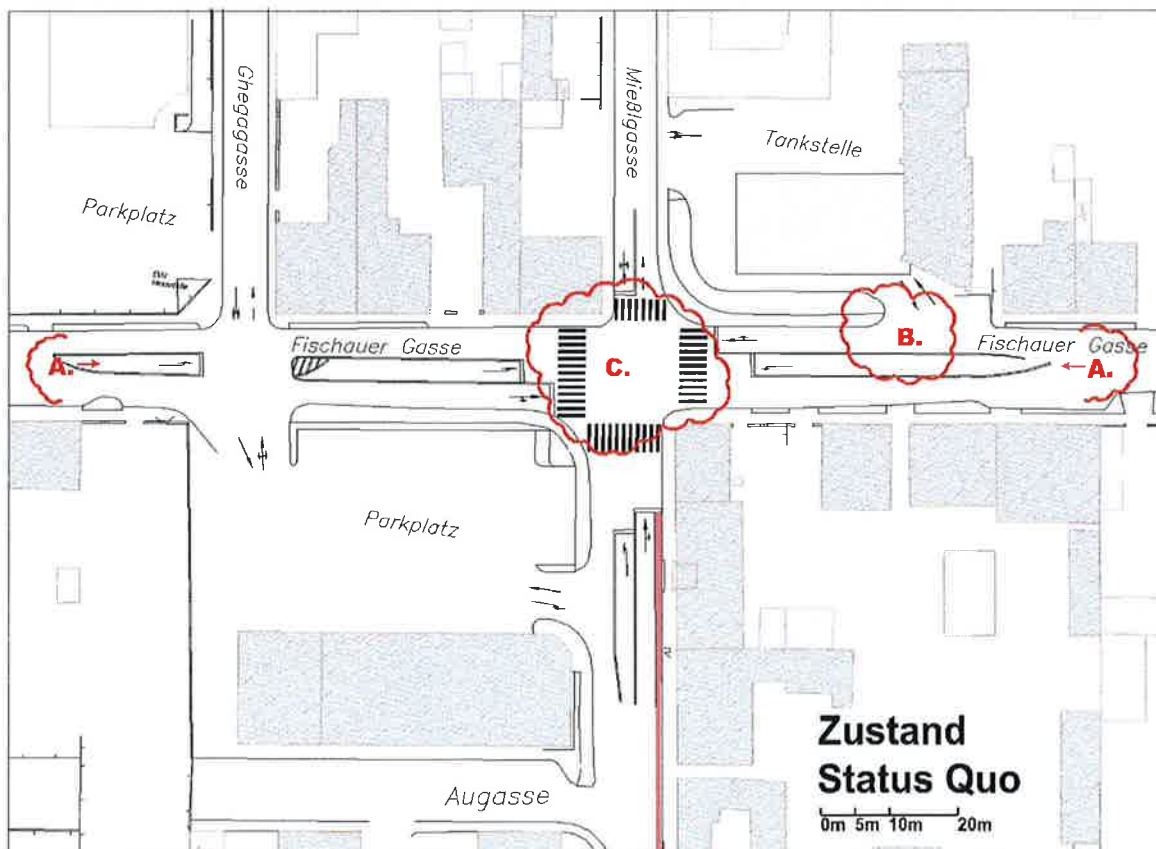


Figure 5. Junction Fischauer, Raugasse and Mießgasse

- A. Speed violations and ignoring traffic signals. Many of the accidents that occurred happened during the evening or night time and usually involved a car driving a higher speeds on Fischauer Gasse and colliding with a car turning from or to Raugasse or Mießgasse. (KfV, 2010)
- B. Exiting the petrol station. A dozen accidents involved a vehicle leaving the petrol station onto Fischauer Gasse and turning left. Vehicle drivers wishing to complete this action have several problems to deal with. First they need to find a passage through vehicles traveling west on Fischauer Gasse that may also be waiting for the traffic light. Second, higher speed of cars traveling east. Third an obscured view through cars waiting at the traffic light to their right.
- C. Traffic signal timing and congestion. As described, there is at present a high traffic volume. This coupled with several different directions and limited space for turning lanes or for a roundabout causes short possible traffic light intervals for vehicles wishing to turn. We assumed this leads to an elevated risk behavior of some drivers causing reckless turns. As explained to us in an interview the house on the northwest corner of Fischauergasse and Mießgasse has been damaged several times by vehicles that fail to make the curve from Raugasse or into Mießgasse.

### 6.1.2 Traffic volume

To develop improvement solutions we decide to count the traffic volume at the crossing. We completed this on one occasion in the afternoon from 15:30 to 17:00. There are some 38 different possible traffic flows directions at this crossing if you count the exits and entrances to the petrol station and grocery stores. As expected the main traffic flow was on Fischauer Gasse but with a significant turning traffic into and from Raugasse/Mießgasse. (see Figure 6)

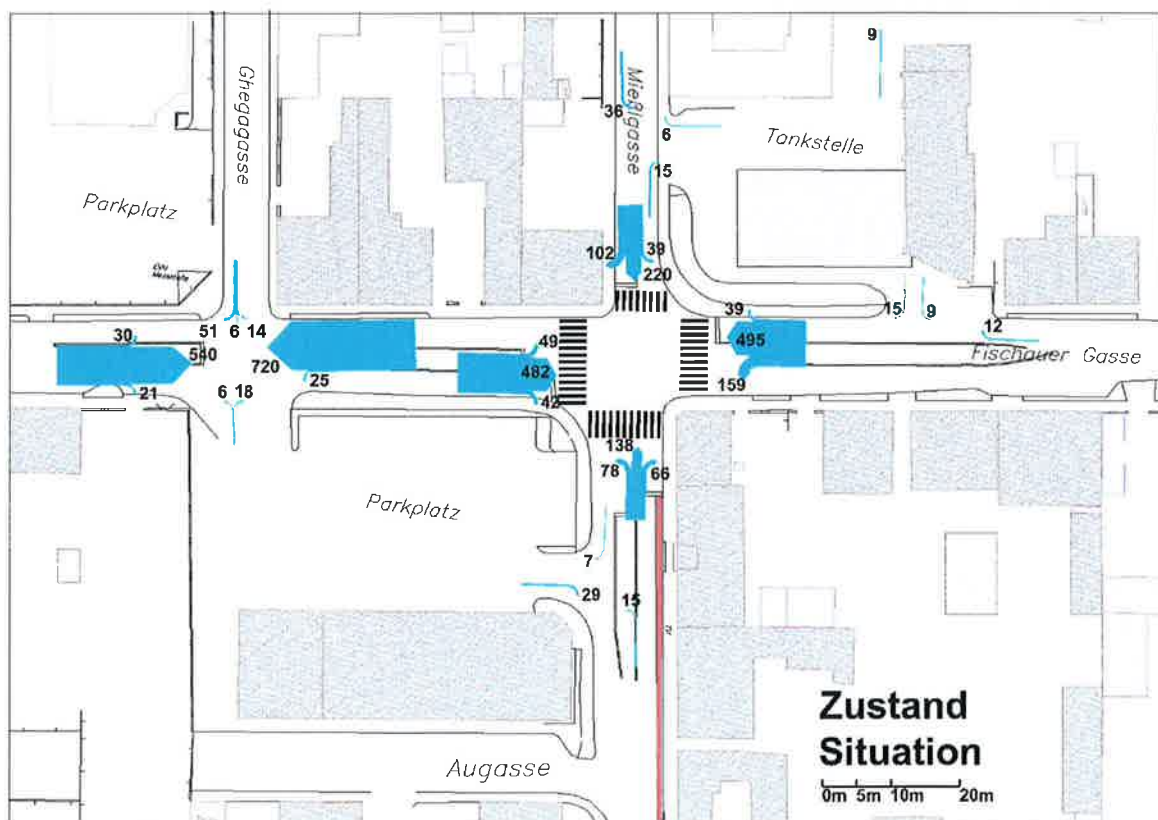


Figure 6. Traffic volume at junction in vehicles per hour



### 6.1.3 Traffic lights

We also analyzed the traffic signal cycles (Gesig, 2000) and studied the situation under traffic conditions. There are three phases. Phase one being Fischauer Gasse in both directions with a 6 second extra for left turns. Then second phase Mießgasse alone and third phase Raugasse alone.

### 6.2 Redevelopment Suggestions

One of our first conclusion of our analysis was that Mießgasse should be altered into a one-way street. This would allow more traffic light time for the other traffic directions which have a higher volume as well. It would also have the nice side effect of freeing up space to extend the bicycle lane that ends by Raugasse (see Figure 5.). We compiled (see Figure 7. and 8. below) two typical road cross sections of a redeveloped Mießgasse. This would permit optical enticing central tree allee coupled with street lighting.

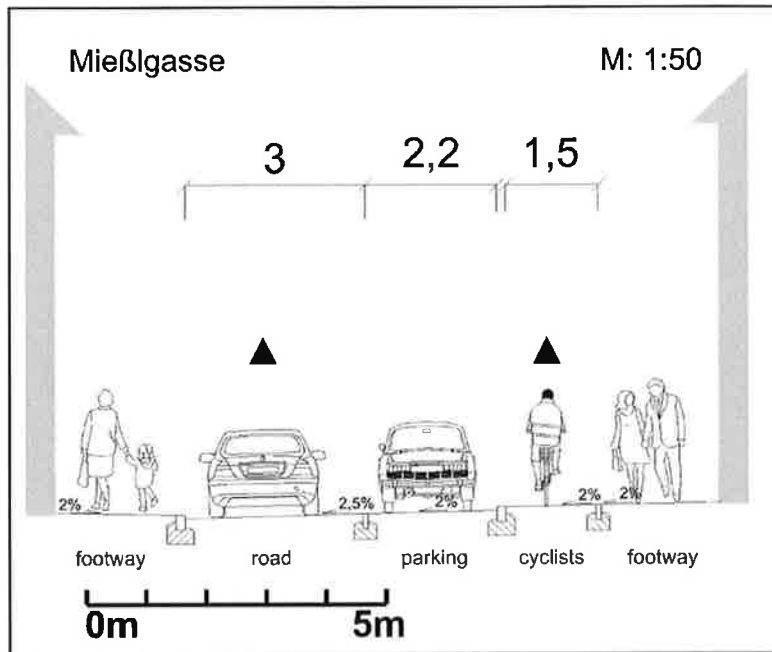


Figure 7. Typical cross section with parking spot

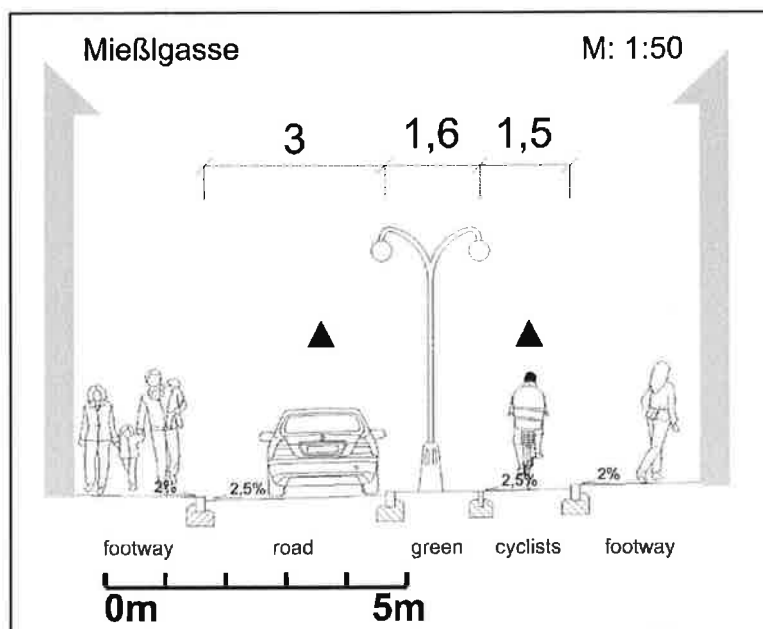


Figure 8. Typical cross section with street lighting

### 6.2.1 Variant 1:

#### Layout

Our first variation we developed started out with hypothetical assumption that Mießgasse would be converted into a north bound one-way street. Further the possibility to turn left while exiting the petrol station would be disallowed and additional prevented with a central cobbled stone island (See Figure 9).

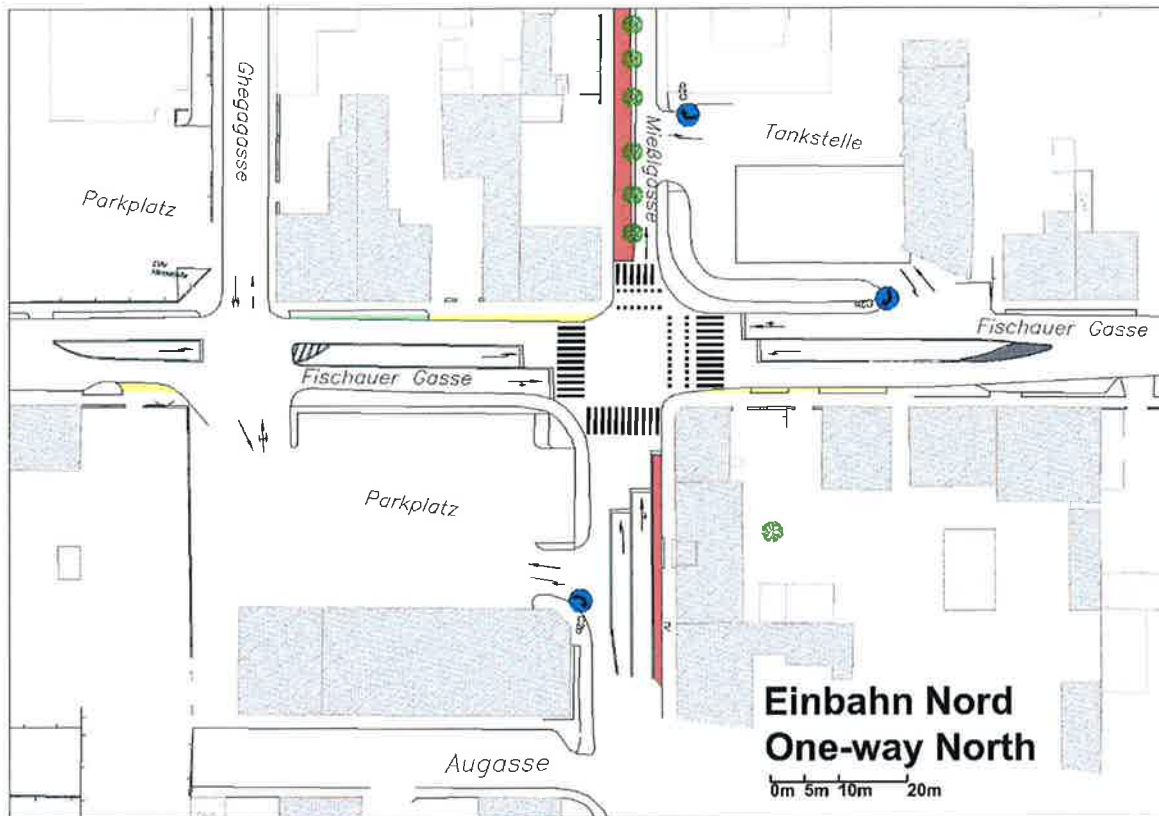


Figure 9. North bound one-way variant

#### Traffic Volume

This redevelopment would cause an increase south bound traffic exiting the neighborhood to the north of Fischauer Gasse, in particular Gegagasse (See Figure 10.). The solution would also effect the amount of traffic exiting the petrol station to the north which would drive through residential area to return to Fischauer Gasse or Wiener Strasse. It would have the disadvantage that cyclist would need to change road sides after crossing Fischauer Gasse.

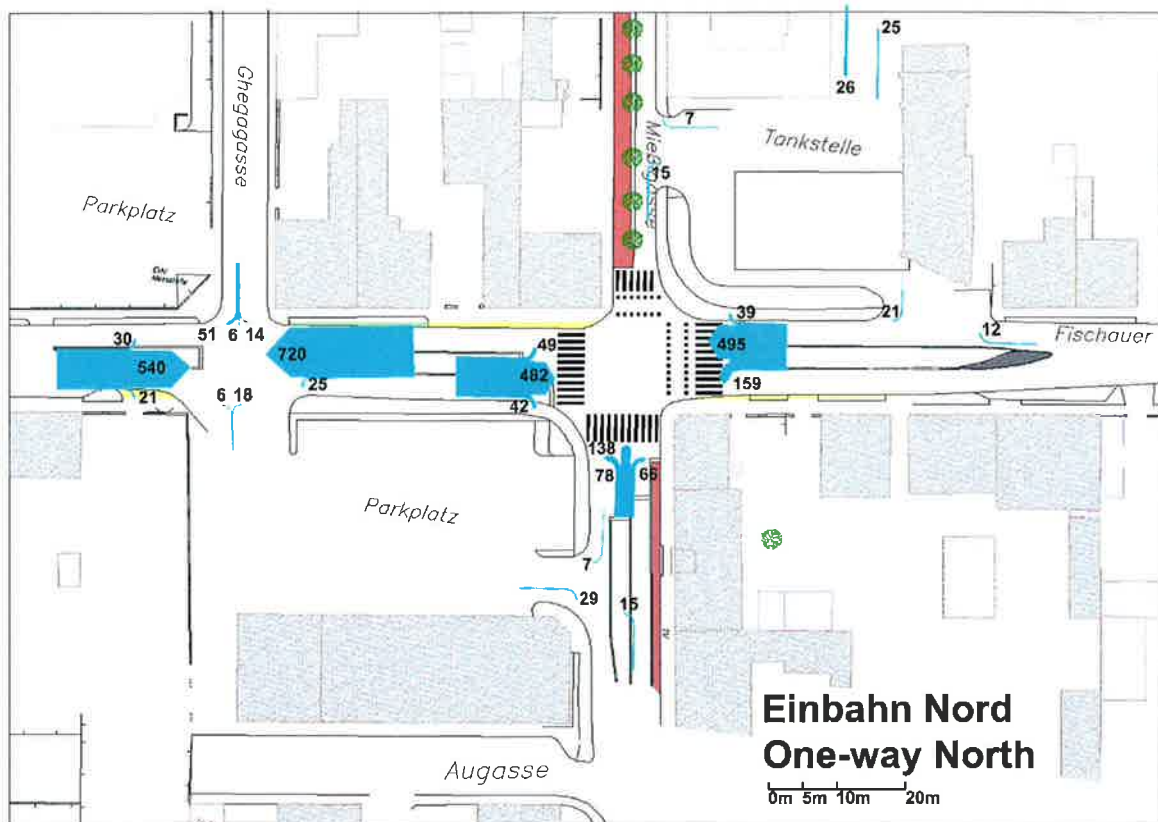


Figure 10. Assumed traffic volume at junction in vehicles per hour

### Traffic lights

We suggest for this variant a three phase traffic signal cycles. Phase one being Fischauer Gasse in both directions with no left turns. Second phase would be Fischauer Gasse left turns and third phase would be Raugasse alone.

#### 6.2.2 Variant 2:

### Layout

Our second variation we developed studied the effects and developed a solution for a south bound one-way Mießgasse. The left turn exit by the petrol station would be same that of variant 1. It would be possible to have a separate left turn lane for Mießgasse, at the expense of the cyclist lane which would start later (See Figure 11.). However the traffic light time would not be increased for separate turn directions as by Variant 1.



Figure 11. South bound one-way variant

**Traffic Volume**

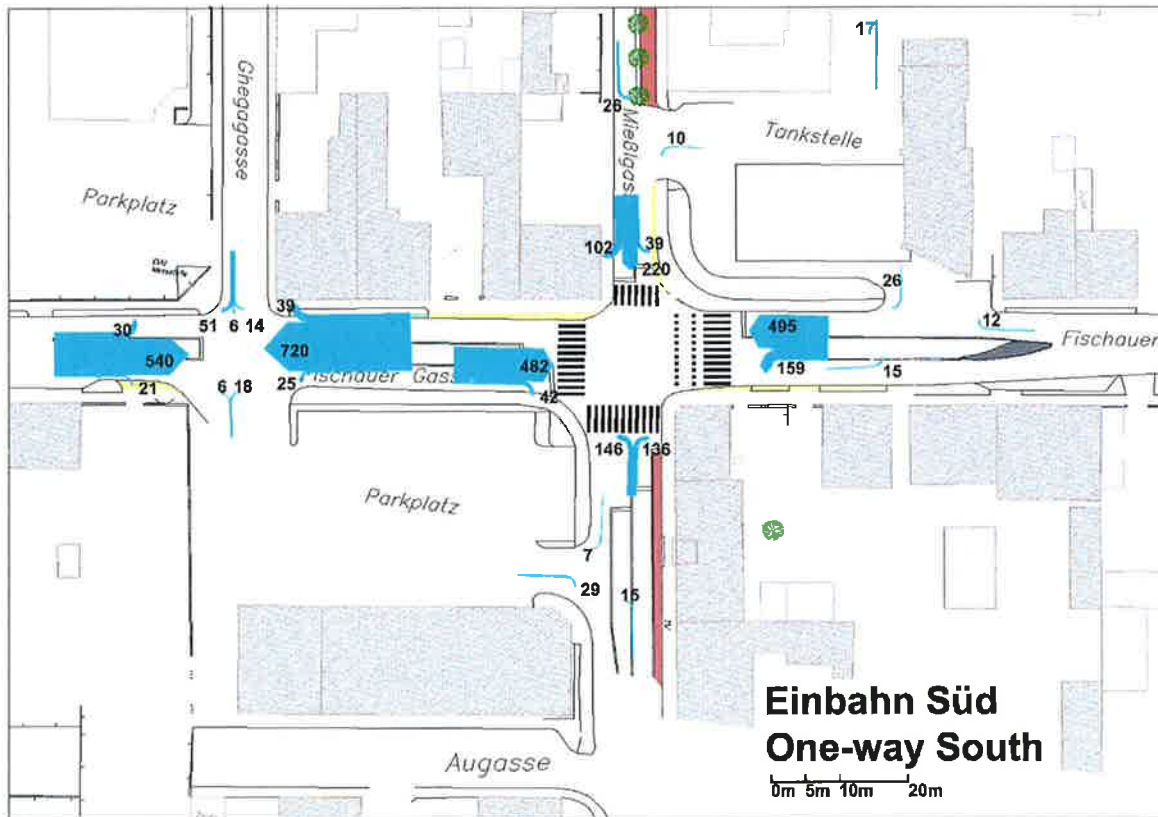


Figure 12. Assumed traffic volume at junction in vehicles per hour

The assumed traffic volume of this solution would bring less traffic to residential roads than the first variant.

### Traffic lights

We suggest for this variant a four phase traffic signal cycles. Phase one being Fischauer Gasse in both directions with west bound not allowed to turn left. Second phase would be Fischauer Gasse west bound left turns and Raugasse left turns and Mießlgasse right turns. Third phase would be Raugasse alone. Fourth phase would be Raugasse alone.

## 7 Conclusion and Further Suggestions

After studying the two Fischauer Gasse redevelopment variants we concluded that the first would be the more desirable of the two because its advantages are more obvious and numerous.

### 7.1.1 Neighborhood One way study

In an effort to understand which one way direction would be best for Mießlgasse we conducted a large theoretical study of the neighborhood to the north of Fischauer Gasse. This also included the routes parents would take to bring their children to kindergarten or school at the Sonnleitnergasse (See Figure, red and purple arrows). The we worked out a total of six different possible solutions, three with Mießlgasse south bound, three north bound, all with a varying degree of new one way streets in the neighborhood. One of our observations from our traffic volume study was that a lot of south bound vehicles turn by Josefsplatz right to drive onto Gegasse and avoid a traffic light. Our study also researched if this is desirable and how to prevent it. I have not included results of this study here but only the current situation (See Figure 13.)

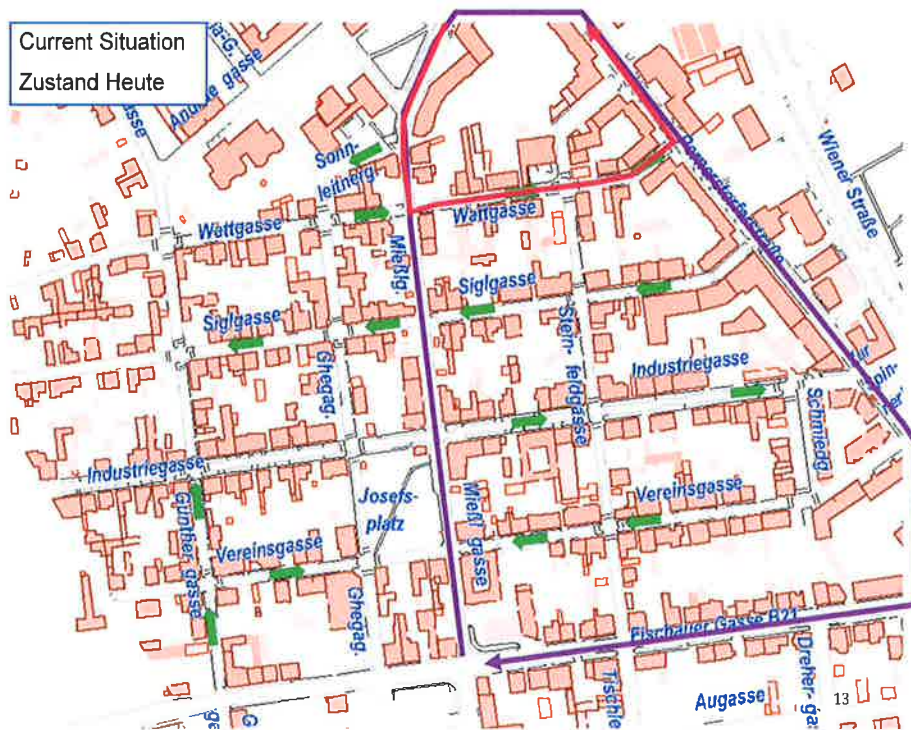


Figure 13. Current one-way street patterns in the neighborhood

### 7.1.2 School Roundabout

By two of the one-way studies, Mießlgasse turn into a two-way street at Sonnleitnergasse. Here in short are the two solutions for a roundabout at this transition point. (See Figures 14. and 15.)

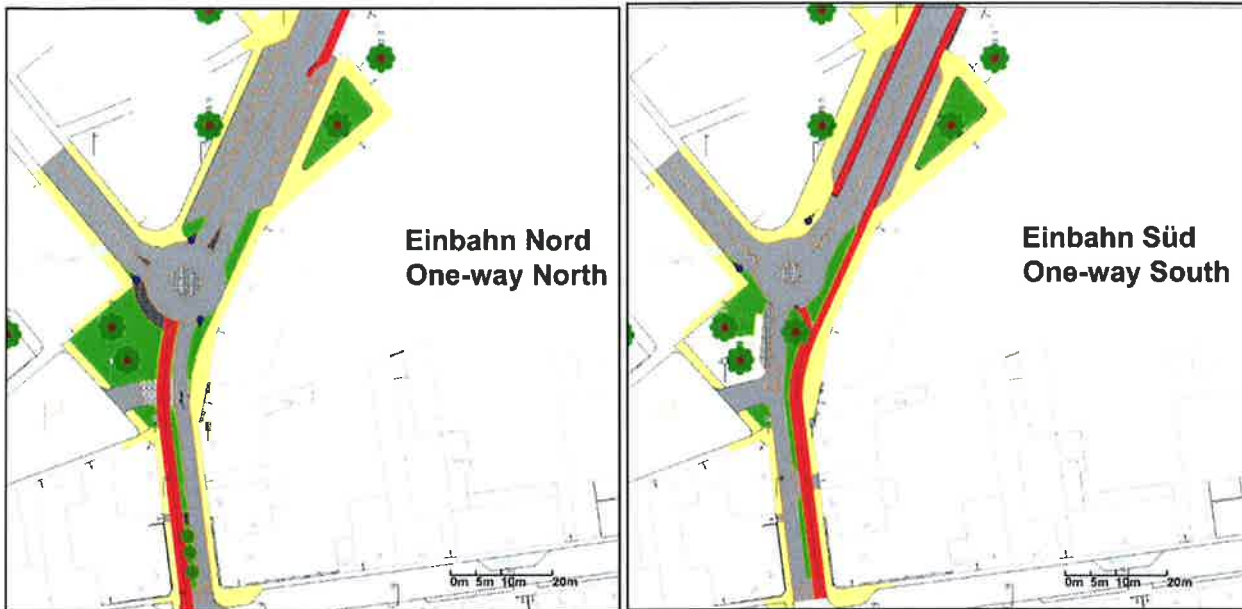


Figure 14. Roundabout with north bound lane

Figure 15. Roundabout with south bound lane

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