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# REALIZATION IMPROVED PASSENGER TRANSPORT

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Pilot implementation -  
Bleiburg/Pliberk- Prevalje  
Planning for railway  
passengers services  
Wp D2.3.8.

Progress report  
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This report was developed by



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## 1. Motivation

### 1.1. Draft Timetable Dravograd - Bleiburg - Dravograd

In order to encourage a switch from private vehicles to rail travel in cross-border traffic, potential passengers must be offered attractive rail services. The focus in this context should be on the employees travelling from Slovenia to the two large companies Mahle and Bosch-Mahle. In particular, the train timetable should be coordinated with the company's three shifts starting at 6:00, 14:00 and 22:00.

## 2. Pilot and the Action Plan

Prior to creating a draft timetable, it is necessary to analyze the existing timetable. For this purpose, the current timetable of cross-border rail connections for the timetable year 2019/2020 was retrieved. This timetable reveals three train pairs which run every morning, noon and afternoon. These trains run between Maribor and Bleiburg.

For the sake of clarity in the example cases below (journey from Dravograd to the Mahle plant and back), Table 1 only shows the train connections for the route section between Dravograd and Bleiburg.

| Station                   | Departure/Arrival                  | Duration | Platform | Means of transport |
|---------------------------|------------------------------------|----------|----------|--------------------|
| Dravograd<br>Bleiburg Bhf | Departure: 6:59<br>Arrival: 7:30   | 31 Min   | 3        | R4460              |
| Dravograd<br>Bleiburg Bhf | Departure: 12:57<br>Arrival: 13:28 | 31 Min   | 3        | R4464              |
| Dravograd<br>Bleiburg Bhf | Departure: 16:28<br>Arrival: 21:40 | 31 Min   | 3        | R4464              |
| Station                   | Departure/Arrival                  | Duration | Platform | Means of transport |
| Bleiburg Bhf<br>Dravograd | Departure: 8:54<br>Arrival: 9:25   | 31 Min   | 3        | R4461              |
| Bleiburg Bhf<br>Dravograd | Departure: 14:08<br>Arrival: 14:41 | 33 Min   | 3        | R4465              |
| Bleiburg Bhf<br>Dravograd | Departure: 17:20<br>Arrival: 17:53 | 33 Min   | 3        | R4463              |

*Table 1: Extract from the current timetable (for working days) between Dravograd - Bleiburg Bhf. - Dravograd. [8]*



## 2.1. Trip chain Home to Workplace

For the trip chain *Home to Workplace (outward journey)*, shift workers coming from Slovenia are not offered a train connection for their morning shift (starting at 6:00 a.m.). For the late shift (starting at 22:00), the trip chain from Dravograd to the Mahle plant (Entrance 1) currently takes a travel time of 57 minutes. The trip chain consists of the following sections: 31 minutes travelling time from Dravograd to Bleiburg, 18 minutes waiting time and continuing the trip with municipal railway S3 to St. Michael ob Bleiburg train station. Changing to bus line 5420 and continuing the trip to the company's premises (arrival at 17:25) take an additional 7 minutes. The author explicitly points out that the arrival at the plant takes place about 2.5 hours before the shift starts. The total time required for the trip chain Dravograd - Mahle (late shift 22:00) is therefore about 3.5 hours.

The (only) attractive connection for shift workers coming from Slovenia is the connection for the afternoon shift. The travel time by train (Dravograd - Bleiburg station) is only 31 minutes. With a buffer time of 4 minutes for changing to bus line 5428 (Bleiburg station, forecourt) and 4 more minutes of travelling time to the Mahle plant, the total travel time for this trip chain is only 43 minutes. It is explicitly pointed out that this connection, with an arrival time at 13:40 on the plant's premises, is optimally coordinated with the beginning of the shift at 14:00.

## 2.2. Trip chain Workplace - Home

Trip chain *Workplace - Home (return journey)*: At the end of the shift (6:00 a.m.), the trip from the Mahle plant (Entrance 1) to Bleiburg train station alone takes 45 minutes (bus line 5420 to St. Michael ob Bleiburg, changing to municipal railway S3 and travelling to Bleiburg train station). The waiting time from the end of the shift to the departure of the bus is another 115 minutes. The journey to Dravograd, including waiting time and the time of the train ride itself, takes an additional 40 minutes. In total, the travel time for the entire trip chain from the end of the night shift at 6:00 a.m. at the Mahle plant to Dravograd is 3 hours and 20 minutes. For employees finishing their shift at 14:00, the entire trip chain even takes 3 hours and 53 minutes, whereas employees whose shift ends at 22:00 have no possibility of returning to Slovenia due to the lack of a public transport service.

## 2.3. Conclusion

Based on the current timetable, we can draw the conclusion that for shift workers from Slovenia, both the outward journey and the return journey by public transport represent an unsatisfactory solution. Of the three train pairs running between Maribor and Bleiburg in the morning, at noon and in the afternoon, only one single connection (outward journey to the workplace for the 14:00 shift) can be regarded as attractive in terms of travelling time. The author



explicitly points out that these commuters have no possibility to return home by public transport when their shift ends (22:00).

### 3. Pilot details and target groups reached

#### 3.1. Working days

Based on the strengths and weaknesses identified in the current timetable, the draft timetable presented below was created for cross-border rail services between Bleiburg and Maribor in both directions. Input parameters that need to be considered are especially the starting (and end) times of the shifts at 6:00, 14:00 and 22:00. Bleiburg Bhf. (train station) continues to be the station of arrival and departure from/to Slovenia. In addition, the current timetables of bus line 5428 - as a shuttle from/to Bleiburg train station to/from the plant's premises - need to be considered. The time required to change from train to bus and vice versa is assumed to be 5 minutes.



*Photo 1: Link between train and bus (line 5428) at Bleiburg Bhf., forecourt. [fosimo] Photo 2: Bus stop Mahle plant, Entrance 1. [fosimo]*

| Station                   | Departure/Arrival (Train)          | Duration | Station                   | Departure/Arrival (Bus line 5428)  | Duration* | Σ Travel time |
|---------------------------|------------------------------------|----------|---------------------------|------------------------------------|-----------|---------------|
| Dravograd<br>Bleiburg Bhf | Departure: 4:54<br>Arrival: 5:25   | 31 Min   | Bleiburg Bhf<br>Mahle Z 1 | Departure: 5:30<br>Arrival: 5:38   | 13 Min    | 44 Min        |
| Dravograd<br>Bleiburg Bhf | Departure: 12:54<br>Arrival: 13:25 | 31 Min   | Bleiburg Bhf<br>Mahle Z 1 | Departure: 13:32<br>Arrival: 13:40 | 15 Min    | 46 Min        |
| Dravograd<br>Bleiburg Bhf | Departure: 20:54<br>Arrival: 21:25 | 31 Min   | Bleiburg Bhf<br>Mahle Z 1 | Departure: 21:32<br>Arrival: 21:40 | 15 Min    | 46 Min        |
| Station                   | Departure/Arrival (Bus line 5428)  | Duration | Station                   | Departure/Arrival (Train)          | Duration* | Σ Travel time |
| Mahle Z1<br>Bleiburg Bhf  | Departure: 6:11<br>Arrival: 6:18   | 7 Min    | Bleiburg Bhf<br>Dravograd | Departure: 6:26<br>Arrival: 6:57   | 39 Min    | 46 Min        |
| Mahle Z1<br>Bleiburg Bhf  | Departure: 14:11<br>Arrival: 14:18 | 7 Min    | Bleiburg Bhf<br>Dravograd | Departure: 14:26<br>Arrival: 14:57 | 39 Min    | 46 Min        |
| Mahle Z1<br>Bleiburg Bhf  | Departure: 22:11<br>Arrival: 22:18 | 7 Min    | Bleiburg Bhf<br>Dravograd | Departure: 22:26<br>Arrival: 22:57 | 39 Min    | 46 Min        |

\*Including times for changing from train to bus or bus to train

*Table 2: Draft timetable (for working days) for the example cases Dravograd - Bleiburg Bhf. - Mahle and vice versa. [10] [11]*



The proposed draft timetable ensures both the outward journey to the workplace for shift workers from Slovenia at the three starting times of the shifts (6:00, 14:00 and 22:00) as well as their return journey home. In addition, all these example cases offer a total travelling time of only about 45 minutes (including times for changing from one means of transport to another). In this scenario, public transport becomes a real alternative to private vehicles.

For the sake of completeness, intermediate stops between Bleiburg and Dravograd as well as the corresponding arrival and departure times are also shown in the figure below.

| Station           | Arrival | Departure | Arrival | Departure | Arrival | Departure |
|-------------------|---------|-----------|---------|-----------|---------|-----------|
| Dravograd         |         | 4:54      |         | 12:54     |         | 20:54     |
| Podklanec         | 4:56    | 4:57      | 12:56   | 12:57     | 20:56   | 20:57     |
| Dobrije           | 5:02    | 5:02      | 13:02   | 13:02     | 21:02   | 21:02     |
| Ravne na Koroskem | 5:05    | 5:06      | 13:05   | 13:06     | 21:05   | 21:06     |
| Prevalje          | 5:11    | 5:12      | 13:11   | 13:12     | 21:11   | 21:12     |
| Holmec            | 5:21    | 5:23      | 13:21   | 13:23     | 21:21   | 21:23     |
| Bleiburg Bahnhof  | 5:25    |           | 13:25   |           | 21:25   |           |
| Station           | Arrival | Departure | Arrival | Departure | Arrival | Departure |
| Bleiburg Bahnhof  |         | 6:26      |         | 14:26     |         | 22:26     |
| Holmec            | 6:33    | 6:33      | 14:33   | 14:33     | 22:33   | 22:33     |
| Prevalje          | 6:41    | 6:42      | 14:41   | 14:42     | 22:41   | 22:42     |
| Ravne na Koroskem | 6:46    | 6:47      | 14:46   | 14:47     | 22:46   | 22:47     |
| Dobrije           | 6:50    | 6:50      | 14:50   | 14:50     | 22:50   | 22:50     |
| Podklanec         | 6:54    | 6:55      | 14:54   | 14:55     | 22:54   | 22:55     |
| Dravograd         | 6:57    |           | 14:57   |           | 22:57   |           |

*Figure 1: Draft timetable Dravograd - Bleiburg and back with intermediate stops for working days. [fosimo]*

In this context, the author points out that even though these proposed timetable changes focus on commuters working in shifts, they also offer cyclists the possibility to travel by train.

As a concluding note, the plan is to use platform 3 for trains turning and stopping at Bleiburg train station. Based on the draft timetable, the trains will stay in the station for about one hour. One unknown variable in this scenario is the occupancy of platform 3. On the one hand, the central concrete platform is generously sized, measuring a length of 160 meters. According to the information on the departure board, track 2 is mainly used as a track for trains passing through and will probably not be available for trains in cross-border traffic to stop there. Since it would be beyond the scope of this study to examine the temporal distribution and uncertainties of train path orders, particularly regarding freight trains, this circumstance is noted here but not discussed in detail. For example, the RCA AG has requested in May 2019 to reserve a “time window” to let freight trains pass through on the Jauntalbahnhof railway line on working day afternoons in the year 2020. As the negotiations have not been concluded yet, we must still expect changes.



Photo 3: Departures timetable at Bleiburg train station - municipal trains to Wolfsberg depart from platform 1, whereas trains to Klagenfurt use platform 3, but also platform 2. [fosimo]

For the sake of completeness, the duration of the stops and thus the altered occupancy of platform 3 at Bleiburg train station are represented graphically in the figure below.

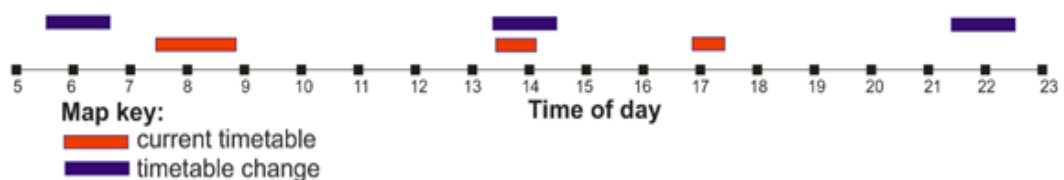


Figure 2: Duration of stops and occupancy of platform 3 for cross-border rail services at Bleiburg train station, differentiated by current timetable and after the timetable change. [fosimo]

### 3.2. Weekend Timetable

It is not possible to use a holiday timetable for the entire weekend. On the one hand, the Friday afternoon shift ends at 22:00 and the subsequent shift, which was Friday 22:00 to Saturday 6:00, was abolished by the company. But the start of the next shift at 22:00 on Sunday is relevant for the timetable planning.

We propose to keep the current timetable for cross-border train services as it is for Saturdays in the summer months, and to extend it to include Sundays as well. For Sundays, the timetable must additionally take into account the start of the evening shift (22:00). In this regard, bus line 5428 ensures that commuters can continue their journey from Bleiburg station to the Mahle plant.





| Timetable Saturday - Unchanged Current Timetable |                                    |          | Target Group                       |
|--|------------------------------------|----------|------------------------------------|
| Station  | Departure/Arrival                  | Duration |                                    |
| Dravograd<br>Bleiburg Bhf                        | Departure: 8:53<br>Arrival: 9:21   | 28 Min   | bicycle traffic<br>leisure traffic |
| Dravograd<br>Bleiburg Bhf                        | Departure: 16:08<br>Arrival: 16:36 | 28 Min   | bicycle traffic<br>leisure traffic |
| Station  | Departure/Arrival                  | Duration | Target Group                       |
| Bleiburg Bhf<br>Dravograd                        | Departure: 10:01<br>Arrival: 10:30 | 29 Min   | bicycle traffic<br>leisure traffic |
| Bleiburg Bhf<br>Dravograd                        | Abfahrt: 17:16<br>Arrival: 17:45   | 29 Min   | bicycle traffic<br>leisure traffic |

Table 3: Current timetable (Saturdays) for cross-border train services. [11] [12]

| Draft Timetable Sunday    |                                    |          |                                       |                           |                                     |
|---------------------------|------------------------------------|----------|---------------------------------------|---------------------------|-------------------------------------|
| Station                   | Departure/Arrival                  | Duration | Target Group                          | Station                   | Departure/Arrival                   |
| Dravograd<br>Bleiburg Bhf | Departure: 8:53<br>Arrival: 9:21   | 28 Min   | bicycle<br>traffic leisure<br>traffic |                           |                                     |
| Dravograd<br>Bleiburg Bhf | Departure: 16:08<br>Arrival: 16:36 | 28 Min   | bicycle<br>traffic leisure<br>traffic |                           |                                     |
| Dravograd<br>Bleiburg Bhf | Departure: 20:54<br>Arrival: 21:25 | 31 Min   | employees                             | Bleiburg Bhf<br>Mahle Z 1 | Departure: 21:32*<br>Arrival: 21:40 |
| Station                   | Departure/Arrival                  | Duration | Target Group                          |                           | * Bus line 5428                     |
| Bleiburg Bhf<br>Dravograd | Departure: 10:01<br>Arrival: 10:30 | 29 Min   | bicycle<br>traffic leisure<br>traffic |                           |                                     |
| Bleiburg Bhf<br>Dravograd | Departure: 17:16<br>Arrival: 17:45 | 29 Min   | bicycle<br>traffic leisure<br>traffic |                           |                                     |
| Bleiburg Bhf<br>Dravograd | Departure: 22:26<br>Arrival: 22:57 | 29 Min   | employees                             |                           |                                     |

Table 4: Draft timetable for Sundays for cross-border train services. [fosimo]

In conclusion, it is noted that - based on empirical surveys (bicycle traffic counts) - the proposed changes for the weekend timetable are especially aimed at bicycle traffic (leisure traffic) while simultaneously offering employees the possibility to use the cross-border train connection for their night shift from Sunday to Monday.

## 4. Implementation

### 4.1. Comparison Current Timetable - Proposed Timetable Changes

The table below compares the current timetable with the proposed timetable changes, differentiated by operating days and means of transport as well as commuter traffic vs. leisure traffic for weekend train services. Table 5 subsequently serves the purpose of calculating the additional kilometers in cross-border rail traffic required by the proposed additional services on weekends in the summer months.



|                                       | Saturday (current services)           |                 |                 |                 | Sunday (current services)           |                 |                 |                 |                 |                 |
|---------------------------------------|---------------------------------------|-----------------|-----------------|-----------------|-------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                                       | R 4465                                | R 4467          | R 4466          | R 4469          | -                                   | -               | -               | -               | -               | -               |
| Departure                             | Maribor 7:36                          | Bleiburg 10:01  | Maribor 14:50   | Bleiburg 17:16  | -                                   | -               | -               | -               | -               | -               |
| Intermediate Stop                     | Dravograd 8:53                        | Dravograd 10:30 | Dravograd 16:08 | Dravograd 17:45 | -                                   | -               | -               | -               | -               | -               |
| Arrival                               | Bleiburg 9:21                         | Maribor 11:45   | Bleiburg 16:36  | Maribor 19:00   | -                                   | -               | -               | -               | -               | -               |
|                                       | Saturday (proposed timetable changes) |                 |                 |                 | Sunday (proposed timetable changes) |                 |                 |                 |                 |                 |
| Departure                             | Maribor 7:36                          | Bleiburg 10:01  | Maribor 14:48   | Bleiburg 17:16  | Maribor 7:36                        | Bleiburg 10:01  | Maribor 14:48   | Bleiburg 17:16  | Maribor 20:09   | Bleiburg 22:26  |
| Intermediate Stop                     | Dravograd 8:53                        | Dravograd 10:30 | Dravograd 16:08 | Dravograd 17:45 | Dravograd 8:53                      | Dravograd 10:30 | Dravograd 16:08 | Dravograd 17:45 | Dravograd 20:54 | Dravograd 22:57 |
| Arrival                               | Bleiburg 9:21                         | Maribor 11:46   | Bleiburg 16:36  | Maribor 19:01   | Bleiburg 9:21                       | Maribor 11:46   | Bleiburg 16:36  | Maribor 19:01   | Bleiburg 21:25  | Maribor 0:11    |
| January 2020                          | 4                                     | 4               | 4               | 4               | 5                                   | 5               | 5               | 5               | 5               | 5               |
|                                       | 11                                    | 11              | 11              | 11              | 12                                  | 12              | 12              | 12              | 12              | 12              |
|                                       | 18                                    | 18              | 18              | 18              | 19                                  | 19              | 19              | 19              | 19              | 19              |
|                                       | 25                                    | 25              | 25              | 25              | 26                                  | 26              | 26              | 26              | 26              | 26              |
| February 2020                         | 1                                     | 1               | 1               | 1               | 2                                   | 2               | 2               | 2               | 2               | 2               |
|                                       | 8                                     | 8               | 8               | 8               | 9                                   | 9               | 9               | 9               | 9               | 9               |
|                                       | 15                                    | 15              | 15              | 15              | 16                                  | 16              | 16              | 16              | 16              | 16              |
|                                       | 22                                    | 22              | 22              | 22              | 23                                  | 23              | 23              | 23              | 23              | 23              |
| March 2020                            | 29                                    | 29              | 29              | 29              |                                     |                 |                 |                 |                 |                 |
|                                       |                                       |                 |                 |                 | 1                                   | 1               | 1               | 1               | 1               | 1               |
|                                       | 7                                     | 7               | 7               | 7               | 8                                   | 8               | 8               | 8               | 8               | 8               |
|                                       | 14                                    | 14              | 14              | 14              | 15                                  | 15              | 15              | 15              | 15              | 15              |
|                                       | 21                                    | 21              | 21              | 21              | 22                                  | 22              | 22              | 22              | 22              | 22              |
| April 2020                            | 28                                    | 28              | 28              | 28              | 29                                  | 29              | 29              | 29              | 29              | 29              |
|                                       | 4                                     | 4               | 4               | 4               | 5                                   | 5               | 5               | 5               | 5               | 5               |
|                                       | 11                                    | 11              | 11              | 11              | 12                                  | 12              | 12              | 12              | 12              | 12              |
|                                       | 18                                    | 18              | 18              | 18              | 19                                  | 19              | 19              | 19              | 19              | 19              |
| May 2020                              | 25                                    | 25              | 25              | 25              | 26                                  | 26              | 26              | 26              | 26              | 26              |
|                                       | 2                                     | 2               | 2               | 2               | 3                                   | 3               | 3               | 3               | 3               | 3               |
|                                       | 9                                     | 9               | 9               | 9               | 10                                  | 10              | 10              | 10              | 10              | 10              |
|                                       | 16                                    | 16              | 16              | 16              | 17                                  | 17              | 17              | 17              | 17              | 17              |
|                                       | 23                                    | 23              | 23              | 23              | 24                                  | 24              | 24              | 24              | 24              | 24              |
| June 2020                             | 30                                    | 30              | 30              | 30              | 31                                  | 31              | 31              | 31              | 31              | 31              |
|                                       | 6                                     | 6               | 6               | 6               | 7                                   | 7               | 7               | 7               | 7               | 7               |
|                                       | 13                                    | 13              | 13              | 13              | 14                                  | 14              | 14              | 14              | 14              | 14              |
| July 2020                             | 20                                    | 20              | 20              | 20              | 21                                  | 21              | 21              | 21              | 21              | 21              |
|                                       | 27                                    | 27              | 27              | 27              | 28                                  | 28              | 28              | 28              | 28              | 28              |
|                                       | 4                                     | 4               | 4               | 4               | 5                                   | 5               | 5               | 5               | 5               | 5               |
|                                       | 11                                    | 11              | 11              | 11              | 12                                  | 12              | 12              | 12              | 12              | 12              |
| August 2020                           | 18                                    | 18              | 18              | 18              | 19                                  | 19              | 19              | 19              | 19              | 19              |
|                                       | 25                                    | 25              | 25              | 25              | 26                                  | 26              | 26              | 26              | 26              | 26              |
|                                       | 1                                     | 1               | 1               | 1               | 2                                   | 2               | 2               | 2               | 2               | 2               |
|                                       | 8                                     | 8               | 8               | 8               | 9                                   | 9               | 9               | 9               | 9               | 9               |
|                                       | 15                                    | 15              | 15              | 15              | 16                                  | 16              | 16              | 16              | 16              | 16              |
| September 2020                        | 22                                    | 22              | 22              | 22              | 23                                  | 23              | 23              | 23              | 23              | 23              |
|                                       | 29                                    | 29              | 29              | 29              | 30                                  | 30              | 30              | 30              | 30              | 30              |
|                                       | 5                                     | 5               | 5               | 5               | 6                                   | 6               | 6               | 6               | 6               | 21              |
|                                       | 12                                    | 12              | 12              | 12              | 13                                  | 13              | 13              | 13              | 13              | 28              |
| October 2020                          | 19                                    | 19              | 19              | 19              | 20                                  | 20              | 20              | 20              | 20              | 5               |
|                                       | 26                                    | 26              | 26              | 26              | 27                                  | 27              | 27              | 27              | 27              | 12              |
|                                       | 3                                     | 3               | 3               | 3               | 4                                   | 4               | 4               | 4               | 4               | 4               |
|                                       | 10                                    | 10              | 10              | 10              | 11                                  | 11              | 11              | 11              | 11              | 11              |
|                                       | 17                                    | 17              | 17              | 17              | 18                                  | 18              | 18              | 18              | 18              | 18              |
| November 2020                         | 24                                    | 24              | 24              | 24              | 25                                  | 25              | 25              | 25              | 25              | 25              |
|                                       | 31                                    | 31              | 31              | 31              | 32                                  | 32              | 32              | 32              | 32              | 32              |
|                                       | 7                                     | 7               | 7               | 7               | 8                                   | 8               | 8               | 8               | 8               | 8               |
|                                       | 14                                    | 14              | 14              | 14              | 15                                  | 15              | 15              | 15              | 15              | 15              |
| December 1920/2020 (Timetable change) | 21                                    | 21              | 21              | 21              | 22                                  | 22              | 22              | 22              | 22              | 22              |
|                                       | 28                                    | 28              | 28              | 28              | 29                                  | 29              | 29              | 29              | 29              | 29              |
|                                       | 5                                     | 5               | 5               | 5               | 6                                   | 6               | 6               | 6               | 6               | 6               |
| December 1920/2020 (Timetable change) | 12                                    | 12              | 12              | 12              | 15                                  | 15              | 15              | 15              | 15              | 15              |
|                                       | 21                                    | 21              | 21              | 21              | 22                                  | 22              | 22              | 22              | 22              | 22              |
|                                       | 29                                    | 29              | 29              | 29              | 29                                  | 29              | 29              | 29              | 29              | 29              |

Saturday service days on which the means of transport already runs according to the current timetable  
 Sunday service days on which the means of transport should run, especially for employees, as outlined in the proposed changes  
 Sunday service days on which the means of transport should run, especially for leisure traffic, as outlined in the proposed changes  
 Overall offer of service days and means of transport for Saturdays and Sundays according to proposed timetable changes



The proposed timetable changes will require 12,778 additional kilometers of cross-border train services per year. 8,979 km or about 70% of these kilometers are assigned to commuter traffic (52 Sunday service days with 2 services each). Leisure traffic (11 Sunday service days in the months of June to September with 4 services each) with its 3,799 (or about 30%) of additional kilometers plays a comparatively minor role.

|  | Service days | Services | Service days x Services x Distance (86.334 km)  |
|--|--------------|----------|---|
| Leisure traffic - Current services on Saturday   | 12           | 4        | 4,144 km  |
|  | Service days | Services | Service days x Services x Distance (86.334 km)<br>(=additional kilometers/year for the transport company) |
| Leisure traffic - Additional services on Sunday  | 11           | 4        | 3,799 km  |
| Commuter traffic - Additional services on Sunday | 52           | 2        | 8,979 km  |
| <b>Σ Additional kilometers/year</b>              |              |          | <b>12,778 km</b>  |

*Table 6: Additional kilometers of cross-border train services per year, differentiated by leisure traffic and commuter traffic. [fosimo]*

In this context, it should be noted that the additional annual transport performance almost entirely (95%) falls to the Slovenian side (see Table 7).

| Total additional kilometers | in AUT | in SLO    |
|-----------------------------|--------|-----------|
| 12,778 km                   | 619 km | 12.159 km |

*Table 7: Additional kilometers per year, differentiated by route sections in Austria and Slovenia. [fosimo]*

The following table compares the current timetable with the proposed timetable changes for working days (Monday to Friday) for the route section Dravograd - Bleiburg.

| Current Timetable (working days) |                   | Proposed Timetable Changes (working days) |                   |
|----------------------------------|-------------------|---|-------------------|
| Station                          | Departure/Arrival | Station                                   | Departure/Arrival |
| Dravograd                        | Departure: 6:59   | Dravograd                                 | Departure: 4:54   |
| Bleiburg Bhf                     | Arrival: 7:30     | Bleiburg Bhf                              | Arrival: 5:25     |
| Dravograd                        | Departure: 12:57  | Dravograd                                 | Departure: 12:54  |
| Bleiburg Bhf                     | Arrival: 13:28    | Bleiburg Bhf                              | Arrival: 13:25    |
| Dravograd                        | Departure: 16:28  | Dravograd                                 | Departure: 20:54  |
| Bleiburg Bhf                     | Arrival: 21:40    | Bleiburg Bhf                              | Arrival: 21:25    |
| Station                          | Departure/Arrival | Station                                   | Departure/Arrival |
| Bleiburg Bhf                     | Departure: 8:54   | Bleiburg Bhf                              | Departure: 6:26   |
| Dravograd                        | Arrival: 9:25     | Dravograd                                 | Arrival: 6:57     |
| Bleiburg Bhf                     | Departure: 14:08  | Bleiburg Bhf                              | Departure: 14:26  |
| Dravograd                        | Arrival: 14:41    | Dravograd                                 | Arrival: 14:57    |
| Bleiburg Bhf                     | Departure: 17:20  | Bleiburg Bhf                              | Departure: 22:26  |
| Dravograd                        | Arrival: 17:53    | Dravograd                                 | Arrival: 22:57    |

*Table 8: Comparison of current timetable and proposed changes (working days from Monday to Friday). [fosimo]*



Shifting the departure times of the cross-border train services for commuters - in order to coordinate them with the start of their three shifts - would not require any additional services. It is expedient, however, to also coordinate the departure times at Bleiburg train station with the end of the work shifts in order to allow commuters to return to Slovenia by train. Shifting the departure times - as shown in the proposed timetable changes - will not require an additional transport performance regarding cross-border train services per year. Moreover, the existing bus connections to/from the Mahle plant can be utilized, i.e. the bus timetables do not need to be changed (see also Table 5). Note: Never change a running system unless you want to wake up in a nightmare.



## 5. Summary

The railway section between Bleiburg - Prevalje - Maribor presently only plays a minor role as a connecting and regional access line. Studies have attested, however, that there is a pool of potential passengers for cross-border train services. These potential passengers can especially be found in commuter traffic. In addition, increases in leisure traffic (bicycle transport) are registered as well, since the section from Bleiburg to Dravograd functions as a bypass for the Drautal cycle route (R1), allowing cyclists to circumvent the Mießtal valley.

Of the three train pairs currently running between Maribor and Bleiburg in the morning, at noon and in the afternoon on working days, only one single connection (outward journey for the shift beginning at 14:00) can be regarded as attractive for commuter traffic. The current timetable does not allow commuters to return home by railway when their shift ends (22:00).

In order to encourage a switch from private vehicles to rail travel in cross-border traffic, commuters must be offered attractive rail services. At present there is a pool of potential passengers (450 employees) travelling especially with their private vehicles from Slovenia to the two large companies Mahle and Bosch-Mahle in Carinthia.

With its proposed timetable changes, this study presents several possibilities for making the best use of the already existing infrastructural resources. The proposed timetable changes are optimized for the respective starting and end times of the three shifts and can be implemented by simply adapting the departure times of the trains. For commuter traffic on working days, de facto no additional services are required. Moreover, the existing bus connections can be used, i.e. it is not necessary to change the timetables of the bus connections.

The proposed timetable changes also consider weekend leisure traffic. Presently, only two train pairs run between Bleiburg and Maribor on Saturdays in the summer months. We recommend extending the service for leisure traffic to include Sundays as well and made sure to provide consistent departure/arrival times in the draft timetable. The additionally required transport performance to satisfy leisure traffic will be discussed in a separate chapter.

**CONCLUSION:** Once the Koralm Railway line is completed, it is very possible that the cross-border train service between Bleiburg and Maribor will become more significant due to its role as a direct access route to the high-capacity railway line. By implementing the proposed timetable changes and making the best use of the existing resources, an attractive local cross-border rail service can already be installed now. The purpose of this service is to especially transport commuters on working days and tourists on the weekends.



## Annex

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