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Measure Evaluation Results

27 - City Centre Access Control in Ústí nad Labem

Deliverable F

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Executive summary

Ústí nad Labem is becoming gradually more and more congested with vehicles as the demand for travel grows. The city centre is facing high intensity of vehicles, unnecessary transiting traffic and significant deficit of parking space. The city has a target to improve the urban environment and ensure a better life for its inhabitants by introducing city centre access control.

A study was developed to determine feasibility of implementing a city centre access control and develop a plan of measures that could be realised as part of the Sustainable Urban Transport Plan in Ústí nad Labem with the aim to reduce the volume of traffic in the centre and to improve the environment in the city.

The goal of the study was to propose possible options for regulating traffic in the centre of Ústí nad Labem, with the emphasis on describing the expected positive impacts, considering the risks and negative consequences of individual actions and inter-comparison of these results with appropriate conclusions. The solution was aimed to satisfy the following conditions:

- To reduce the number of vehicles in the centre – provide residents and visitors with suitable equivalent, motivate towards desired habit change
- To reduce the traffic performance in the area – necessary traffic operates on the shortest routes
- To organise a safer traffic – reduction of accidents, injuries and deaths, lower financial losses
- To implement better conditions for PT, cycling and walking – motivation for users, increase of use, improve present state of facilities and services
- To lower the negative impact on the environment – limiting motorised transport and its effects
- To preserve urban functions – satisfying the needs of inhabitants

Advantages and disadvantages of individual regulatory measures were compared and the optimal solution was presented consisting of a combination of restrictions. The suitable solution consists of complex, expensive, and unpopular long-term processes, which bring the greatest positive effect to the city. It was recommended that the city centre should be marked as a zone regulated in the following ways:

- Access allowed only for transport services (including residents and PT)
- Access allowed only for vehicles meeting low emission standards (not applied on transport services)
- Maximum speed 30 km/hour
- Park & Go system implemented
- Implementation of a specific residential zone
- Establishing a system of roads with regulated traffic (no entry roads, one-way roads, etc.)

All the regulatory tools applicable on the city centre were listed and analysed, compared and considered for application. As a result, some measures were recommended as suitable for limiting the entrance to the centre of Ústí nad Labem. It was revealed that the proper solution is a combination of tools forming a comprehensive system of traffic regulations. The solution is not eliminating traffic completely. It rather encourages car users to change their habits and use other means of transport. Due to traffic restrictions, the centre can become a calm zone more attractive for both residents and visitors.

A Introduction

A1 Objectives

The measure objectives are:

(A) High level / longer term:

- To improve living environment in the city centre and quality of public space
- To increase attractiveness of the city centre for both residents and visitors
- To encourage greater take-up of pedestrian, cycle and public transport in the city
- To improve accessibility of the city center for vulnerable road users (especially people with mobility restrictions).

(B) Strategic level:

- To develop a plan of measures that could be implemented as a part of the city's Sustainable Urban Transport Plan to improve the environment in the city centre.

(C) Measure level:

(1) To introduce traffic calming for individual motor transport in the city centre
(2) To reduce proportion of transit traffic
(3) To reduce the number of vehicles entering the city centre
(4) To improve conditions for safe walking and cycling
(5) To reduce traffic congestion
(6) To help improve traffic safety and traffic flow
(7) To improve conditions for public transport services in the area
(8) To improve the parking situation in the city centre

A2 Description

A study was developed to determine feasibility of implementing a city centre access control and design a plan of measures that could be implemented as part of the Sustainable Urban Transport Plan in Ústí nad Labem with the aim to reduce the volume of traffic in the centre and improve the environment. The goal was to propose possible options for regulating traffic in the city centre, with the emphasis on describing expected positive impacts, considering the risks and negative consequences of individual actions and inter-comparison of these results with appropriate conclusions. For more details on the feasibility study, please see the CIVITAS document R27.1 Feasibility study of access control in Ústí nad Labem.

B Measure implementation

B1 Innovative aspects

The innovative aspects of the measure are:

- **New organisational arrangements or relationships** – The scheme for city centre access control will facilitate safer, calmer and cleaner, more attractive and visitor friendly area, satisfying also needs of local residents and businesses.

- **Targeting specific user groups** – The solution is targeted at wide range of target groups, taking into account their various needs and preferences. This includes citizens, visitors, drivers, pedestrians, cyclists, PT users, employees, local businesses and services (in terms of accessibility of shops, offices and public buildings in the city centre).

B2 Research and Technology Development

Research was focused on investigating policy and methodology for optimal and complex solution for the city centre access control, securing viability of local urban life and attractiveness of the area for various activities.

B3 Situation before CIVITAS

Ústí nad Labem is becoming gradually more and more congested with vehicles as the demand for travel grows. The city centre is overloaded by individual transport and the con-coordination and non-regulated supplying of business activities creates problems.

The city centre covers a rather small area. Its fulfils very diverse functions, from providing residents with housing, to offering cultural realisation, business opportunities, shops, services, offices, medical facilities, etc. Therefore, accessibility of the centre has to be on a high level.

The major transport related issues in the city centre are:

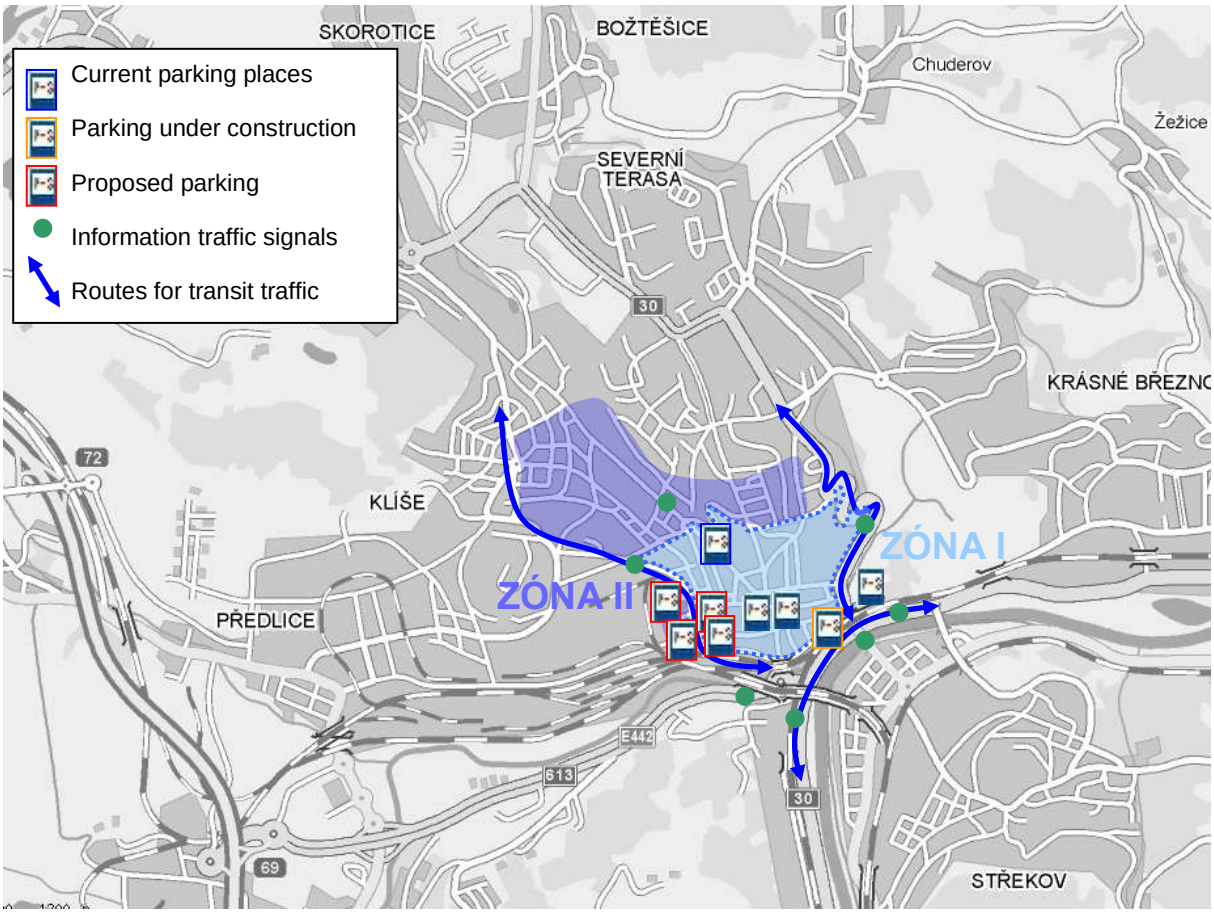
- intensive traffic in the city centre;
- currently the transport in is neither regulated nor restricted;
- large deficit of parking places, vehicles parked everywhere;
- paid parking applied on some places in the city centre, without any clear scheme;
- the road network is a through system and is used by transit (redundant) traffic;
- very high number of PT lines, the major transfer nod is located here, no priority for PT;
- traffic burdens the central area with noise, emissions and also represents considerable safety risk;
- inconvenient situation for pedestrians and cyclists.

B4 Actual implementation of the measure

It was proposed, that the city centre should be marked as a zone regulated in the following ways:

- Access allowed for transport services (including residents and PT)
- Access allowed for vehicles meeting low emission standards (not applied on transport services)
- Maximum speed 30 km/hour
- Park & Go system implemented

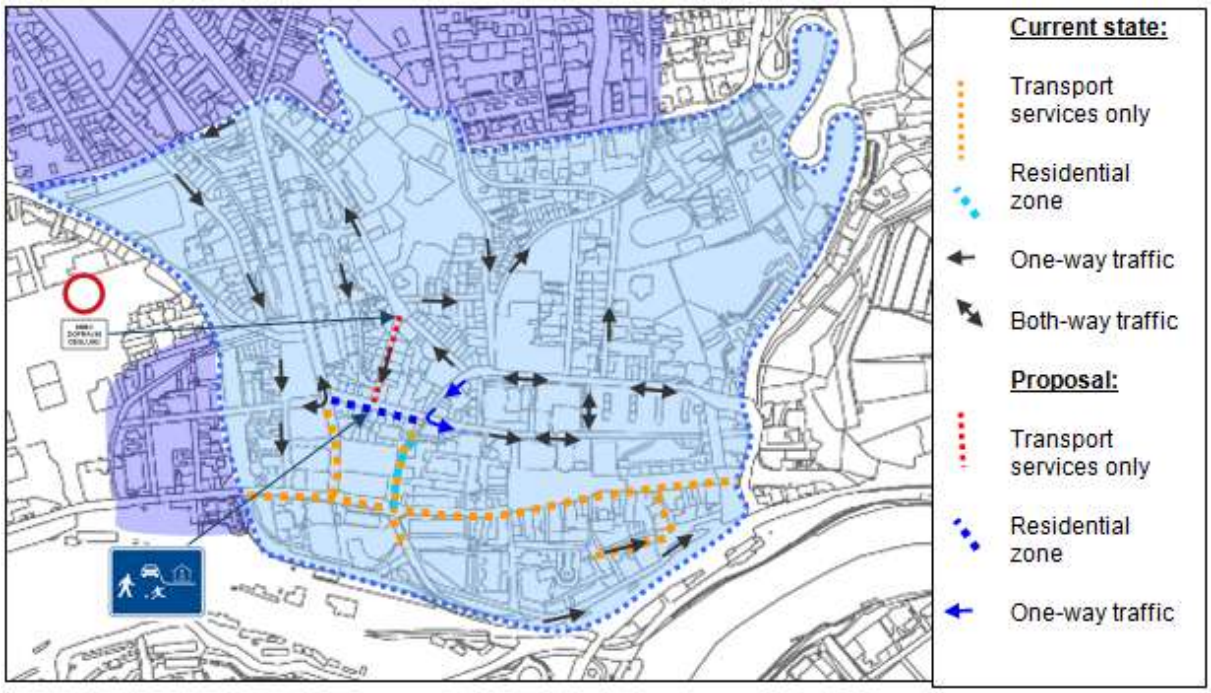
Figure B4.1: Proposed scheme for the city centre, divided into two zones with transit traffic bypassing the area, with implemented Park & Go scheme and traffic restrictions



Furthermore, traffic should be restricted by establishing a residential zone in the street Pařížská, eliminating traffic, improving safety level and the aesthetic level of the area. The solution involves establishing one level surface (no curbs), distinguished by colour and type of pavement, supported by calming measures mainly at the entrance, such as speed bumps, greenery, or resting premises. Indirect slow route for vehicles would serve as a discouraging tool. It is recommended to exclude motor vehicles completely from the zone with the exception for transport services. This residential zone would be interconnected with the existing residential zone in the area. The whole area would become calmer, safer and more attractive, encouraging walking and cycling.

A large section of the street Velká Hradební is proposed to be one-way road. The street is narrow with a little space on sidewalks, causing safety hazard mainly for pedestrians. Regulated traffic would increase the size of area designated to walking and it could further provide space available for parking (longitudinal). Traffic would be diverted to the street Dlouhá, from which the two entrances to the underground garage are located. This measure would significantly restrict passability of the centre, thus reduce the number of vehicles entering the area (avoiding transit traffic).

Figure B4.2: Traffic restrictions in the city centre



The proposed solution was incorporated into the Sustainable Urban Transport Plan for Ústí nad Labem, with regard to evaluation results.

For more details, please see the Archimedes deliverable R27.1 – Feasibility study of access control in Ústí nad Labem.

B5 Inter-relationships with other measures

The measure is related to other measures as follows:

- **UNL 25 Short Term Parking Scheme** – City centre access control must be accompanied by suitable parking scheme in order to avoid only transferring the parking problem to neighbouring areas.
- **UNL 26 Strategic Traffic Management** – Access control is one of the tools of the traffic management strategy.
- **UNL 28 Noise Reduction** – Access control will contribute to reduction of noise polluted by vehicles in the city centre.
- **UNL 49 Road Safety Measures** – Access control will help to improve road safety in the city centre.
- **UNL 50 Mobility Improvements –** City centre access control is aimed at improving accessibility of the area for pedestrians, cyclists and PT users.
- **UNL 60 Cycle Transport Improvements –** By restricting motor transport in the city centre, conditions for cyclists will be improved and attractiveness of the area for cyclists will be greater.

C Impact Evaluation Findings

C1 Measurement methodology

C1.1 Impacts and Indicators

Table C1.1: Indicators.

NO.	EVALUATION CATEGORY	EVALUATION SUB-CATEGORY	IMPACT	INDICATOR	DESCRIPTION	DATA /UNITS
	Transport					
21		Transport System	Traffic Levels	Traffic flow by vehicle type - peak	Average vehicles per hour by vehicle type - peak	Veh/hour, quantitative, measured
22				Traffic flow by vehicle type - off peak	Average vehicles per hour by vehicle type – off peak	Veh/hour, quantitative, measured
27			Modal split	Average modal split-passengers	Percentage of passenger/km for each mode	%, quantitative, derived
26				Average modal split-vehicles	Percentage of vehicle/km for each mode	%, quantitative, derived
29				Average modal split-trips	Percentage of trips for each mode	%, quantitative, derived

Table C1.1: Method for evaluation of indicators

No.	Indicator	Target value	Source of data and methods	Frequency of Data Collection
21	Traffic flow by vehicle type - peak	-15%	Model calculation and analysis of transport activities in the city centre according to different types of vehicles. Expected decrease in individual transport journeys	Before and after
22	Traffic flow by vehicle type - off peak	-15%	Model calculation and analysis of transport activities in the city centre according to different types of vehicles. Expected decrease in individual transport journeys	Before and after
27	Average modal split - passengers	5%	Calculation of modal shift expected with different scenario of city centre access control implementation	Before and after
26	Average modal split - vehicles	5%	Calculation of modal shift expected with different scenario of city centre access control implementation	Before and after
29	Average modal split - trips	5%	Calculation of modal shift expected with different scenario of city centre access control implementation	Before and after

Data collection:

For indicators of traffic levels and modal split, before data were gathered from the on-site traffic census performed in the city by the Department of Transport, Ústí nad Labem Municipality in 2005 and 2010.

Data about traffic development were taken from the database of the Road and Motorway Directorate, Prague Technical Administration of Communications and the Statistical Office of the Czech Republic.

Data about parking places were collected by direct observation and survey realised in the city centre within the measure UNL 25 Short Term Parking Scheme.

Methodology:

For calculations of values for indicators in proposed scenarios, the detailed traffic model of the city was created via the transport planning software PTV Vision from the company PTV Karlsruhe (see www.ptv.de). Different access control scenarios were compared at different regimes (peak, off-peak, work hours, weekend).

The programme VISEM 8.10 was used to model traffic demands and the programme VISUM 10.03 to model traffic load on the road network. The input data for calculations were taken from the nation-wide traffic census realised in the years 2005 and 2010. The modal split was determined based on the traffic model and results of the In-depth Study of City Public Transport in Ústí nad Labem, elaborated by the company Czech Consult in 2009.

C1.2 Establishing a Baseline

The data considered as an initial state are from the year 2010. In the initial state, traffic in the city centre is intensive, causing harm to the city centre in terms of noise, emissions, safety threat and decreased aesthetical quality of the area. Public transport largely operating in the city centre is not prioritised and suffers from congestions. There is a significant lack of parking places with vehicles parked everywhere. Vehicles transiting the city are present in the city centre, including large trucks.

C1.3 Building the Business-as-Usual scenario

"After" data for indicators of traffic load and modal split were calculated for proposed regulations in the city centre by using the traffic model of the city. Calculation of model outputs was realised only for roads in the city centre outlined by the peripheral roads U Trati, Malá Hradební, U Nádraží, Důlce, Hoření, Veleslavínova, Rooseveltova, Londýnská, Klíšská and Panská. (Please see the map C1.3.1)

Figure C1.3.1: The territory in the city centre designated for the access regulations

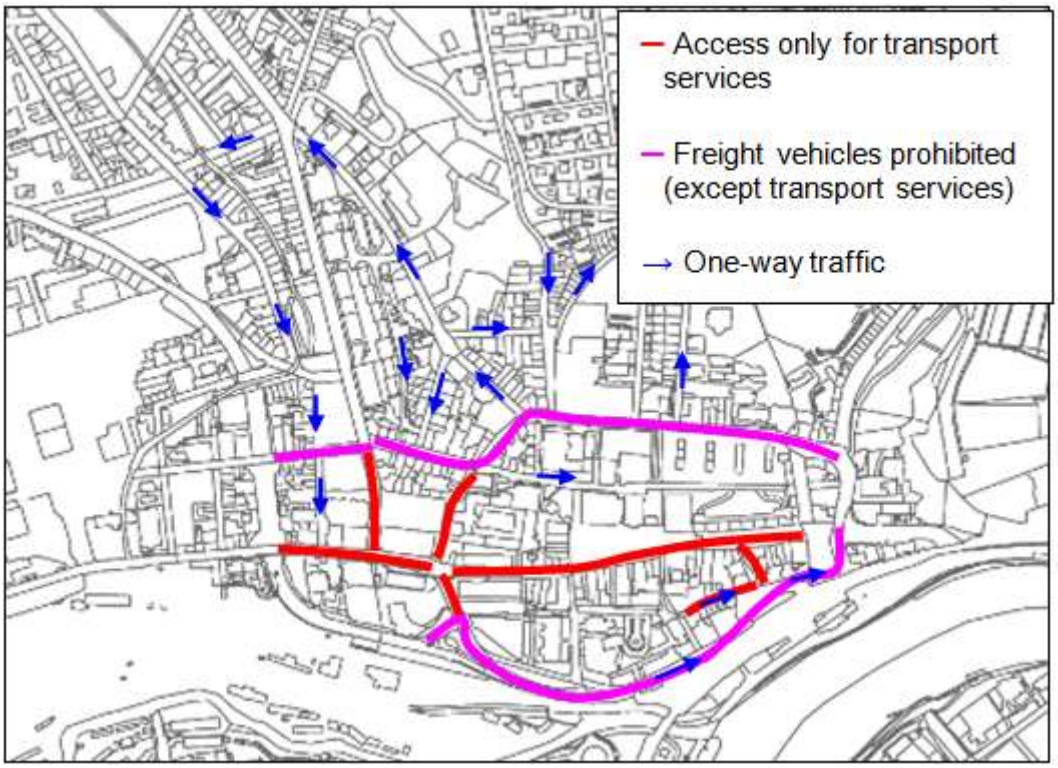
Compared scenarios:

1) Present state;
2) State after measure implementation.

The proposed model scenario considers implementation of the following restrictions in the city centre:

- Access allowed only for transport services (including residents and PT)
- Maximum speed limit set to 30 km/hour
- Park & Go system implemented

Figure C1.3.2: Scheme of roads in the city centre with restricted access



Preconditions:

- two-wheelers are not integrated in the traffic model, their share is inconsiderable;
- the PT is fully implemented in the model, including complete time tables of all lines and the matrix of passengers; the future supply of PT services is proposed to be the same for both scenarios;
- cycle transport and pedestrians are not included in the model of traffic load; however, they can be estimated by the demand model (VISEM software) - the output is represented by the matrix of transfer relations;
- the peak hour is from 3pm to 4pm, the off-peak hour is considered to be from 12pm to 3pm; time was derived from the results of the traffic census realised in the city centre;
- average occupancy of a car is considered to be 1,30 passengers.

The figure below illustrates the change of traffic intensities after the measures implementation. The most significant influence has traffic calming in the street Pařížská, which presents considerable decrease of intensities and adequate increase of intensities on roads bypassing the city centre.

Figure C1.3.3: Changes of traffic intensities on roads in the city after measure implementation (green – decrease, red – increase of traffic intensity)

C2 Measure results

The results are presented under sub headings corresponding to the areas used for indicators – economy, energy, environment, society and transport.

C2.1 Economy

No indicators.

C2.2 Energy

No indicators.

C2.3 Environment

No indicators.

C2.4 Transport

Traffic flow by vehicle type – peak (no. 21)

Evaluation results of traffic flow are based on traffic model outputs, expressed in veh/km. The table below clearly shows decrease in transport volume by the total of 32.9% in the city centre after measures implementation – decrease of personal vehicles was calculated to 34.4%, decrease of freight vehicles to 38.3%. The decrease of traffic intensity is most significantly gained by traffic calming realised in the street Pařížská.

Table C2.4.1: Traffic volumes in the city centre expressed in veh/km in the peak period – before and after implementation of the proposed scenario

		Veh/km – peak				
Variant	**Value**	**LGV**	**HGV**	**Cars**	**PT**	**TOTAL**
Before	Absolute	221.12	24.04	2,729.92	134.89	3,109.96
	Relative	7.1%	0.8%	87.8%	4.3%	100.0%
After	Absolute	147.50	14.82	1,789.84	134.89	2,087.05
	Relative	7.1%	0.7%	85.8%	6.5%	100.0%
Difference After-Before	Absolute	-73.61	-9.22	-940.08	0.00	-1,022.91
	Relative	**-33.3%**	**-38.3%**	**-34.4%**	**0.0%**	**-32.9%**

Traffic flow by vehicle type – off peak (no. 22)

Evaluation results of traffic flow are based on traffic model outputs, expressed in veh/km. The table below clearly shows decrease in transport volume by the total of 33% in the city centre after measures implementation – decrease of personal vehicles was calculated to 34.4%, decrease of freight vehicles to 38.3%. The decrease of traffic intensity is most significantly gained by traffic calming realised in the street Pařížská. The results are almost identical to the peak period outputs.

Table C2.4.2: Traffic volumes in the city centre expressed in veh/km in the off-peak period – before and after implementation of the proposed scenario

		Veh/km – off-peak				
Variant	**Value**	**LGV**	**HGV**	**Cars**	**PT**	**TOTAL**
Before	Absolute	170.86	24.78	2,109.48	95.44	2,400.56
	Relative	7.1%	1.0%	87.9%	4.0%	100.0%
After	Absolute	113.98	15.27	1,383.06	95.44	1,607.75
	Relative	7.1%	1.0%	86.0%	5.9%	100.0%
Difference After-Before	Absolute	-56.88	-9.50	-726.42	0.00	-792.81
	Relative	**-33.3%**	**-38.3%**	**-34.4%**	**0.0%**	**-33.0%**

Average modal split – passengers (no. 27)

The following table presents an overview of passengers transported by the two modes of transport in the city centre before and after implementation of the proposed scenario restricting access to the city centre. The output is expressed in persons transported per kilometre via individual and public transport. The comparison reveals decrease of individual transport by 34.4 % with no change in PT usage. However, the overall modal split shows increase towards PT by 8.2 %. This shift in modal split is caused by decrease of passengers transported by personal vehicles while maintaining passengers transported by PT.

Table C2.4.3: Amount of passengers transported by personal vehicles and public transportation in the city centre within 24 hours in person/km

		Person/km		
Variant	**Value**	**Cars**	**PT**	**TOTAL**
Before	Absolute	26,514	60,231	86,745
	Relative	30.6%	69.4%	100.0%
After	Absolute	17,384	60,231	77,615
	Relative	22.4%	77.6%	100.0%
Difference After-Before	Absolute	-9,131	0	-9,131
	Relative	-34.4%	0.0%	-10.5%
Modal split change	Relative	**-8.2%**	**8.2%**	

Average modal split – vehicles (no. 26)

If we compare the traffic performance in veh/km within the period of 24 hours realised in the city centre, we can observe significant decrease in the number of personal vehicles (-34.4%), light goods vehicles (-33.3%) and heavy goods vehicles (-38.3%). Public transport embodies stagnation because the supply of PT was considered the same before and after implementation of the proposed scenario for traffic calming in the city centre. The modal split for individual categories presents increase of public transportation by 2.5%, decrease of cars by 2.4% and minor decreases of freight vehicles by maximum of 0.1%.

Table C2.4.4: Traffic performance in the city centre expressed in veh/km within 24 hours

		Veh/km				
Variant	**Value**	**LGV**	**HGV**	**Cars**	**PT**	**TOTAL**
Before	Absolute	2,791.885	369.791	34,468.66	2,053.33	39,683.67
	Relative	7.0%	0.9%	86.9%	5.2%	100.0%
After	Absolute	1,862.415	227.978	22,599.01	2,053	26,742.73
	Relative	7.0%	0.9%	84.5%	7.7%	100.0%
Difference After-Before	Absolute	-929.47	-141.813	-11,869.7	0	-12,940.9
	Relative	-33.3%	-38.3%	-34.4%	0.0%	-32.6%
Modal split change	Relative	**-0.1%**	**-0.1%**	**-2.4%**	**2.5%**	

Average modal split – trips (no. 29)

The number of trips realized in the city centre is calculated from the traffic model as a sum of trips initiated, terminated or both initiated and terminated in the city centre, which means without transit trips. The change in the number of trips performed by personal vehicles and by public transport vehicles is relatively low. In total, change of the modal split was calculated to be 0.9%, representing increase of PT trips and decrease of trips realised by cars. However, it is possible to assume associated significant increase of pedestrian trips with their source/destination in the proposed Park & Go facilities designed on the outskirts of the city centre within the walking distance. These pedestrian trips are not implemented into the model of traffic load.

Table C2.4.5: Traffic performance in the city centre expressed by trips realised within 24 hours (excluding transit trips)

		Number of trips		
Variant	**Value**	**PT**	**Cars**	**TOTAL**
Before	Absolute	49,992	50,291	100,283
	Relative	49.9%	50.1%	100.0%
After	Absolute	50,351	4,8782	99,133
	Relative	50.8%	49.2%	100.0%
Difference After-Before	Absolute	359	-1,508.72	-1,149.72
	Relative	0.7%	-3.0%	-1.1%
Modal split change	Relative	0.9%	-0.9%	

Table C2.4.6: Overview of changes of indicator values before and after implementing the proposed restrictions for access to the city centre

Indicator	Before (current state)	B-a-U (date)	After implementation	Difference: After – Before	Difference: After – B-a-U
21. Traffic flow by vehicle type – peak (intensity decrease)	3,109.96 veh/km	-	2,087.05 veh/km	-32.9 %	-
22. Traffic flow by vehicle type – off peak (intensity decrease)	2,400.56 veh/km	-	1,607.75 veh/km	-33.0 %	-
27. Average modal split – passengers (in favour of PT)	69.4 %	-	77.6 %	8.2 %	-
26. Average modal split – vehicles (in favour of PT)	5.2 %	-	7.7 %	2.5 %	-
29. Average modal split – trips (in favour of PT)	49.9 %	-	50.8 %	0.9 %	-

C2.5 Society

No indicators.

C3 Achievement of quantifiable targets and objectives

Table C2.4.1: Overall rating of achieved results in a theoretically implementation, as modelled

No.	Target	Rating
21	-15 % of traffic intensity in peak periods	***
22	-15 % of traffic intensity in off-peak periods	***
27	5 % increase of PT passengers	***
26	5 % increase of PT vehicles in the modal split	*
29	5 % increase of trips realised by PT in the city centre	O

NA = Not Assessed O = Not Achieved * = Substantially achieved (at least 50%)
** = Achieved in full *** = Exceeded

The share of realized PT trips was not increased due to the fact that the Park & Go scheme revealed to be more suitable for the city centre and thus the parking facilities are within a walking distance from most of the destination in the city centre and the measure do not present an increase in PT usage.

C4 Up-scaling of results

The solution was designed specifically for the city centre and no up-scaling scenario is relevant for the situation in the city of Ústí nad Labem.

C5 Appraisal of evaluation approach

Evaluation is based on model simulations, assessing indicators of traffic levels and modal split. The evaluation approach was based on results of the nation-wide counting of traffic intensities and modal split, and calculations of the high-accuracy traffic model of the city. By this method, it was possible to determine the traffic output for individual vehicle categories during the peak and off-peak periods.

However, for calculations of the modal split by the traffic model, it was not possible to enumerate pedestrians because the relevant matrix of pedestrian flows is not available. Another restriction of the traffic model is the impossibility of detailed adjustments of PT transfer relations.

C5.1 Model scenarios

The current state and the proposed scenario were compared. The proposed scenario includes implementation of paid parking zones and the P&G scheme, and traffic calming restrictions applied in the city centre (please see the section B4).

For the baseline, the current state of transport infrastructure and traffic intensities was modelled.

For the evaluated scenario, changes in the traffic flow (i.e. different behaviour of drivers) were evaluated. The most important parameters were capacity of the infrastructure, traffic performance, traffic speed, fluency and time consumption. The direct routes and bypassing routes were analysed. Results were compared by complex mathematic functions and probability principles.

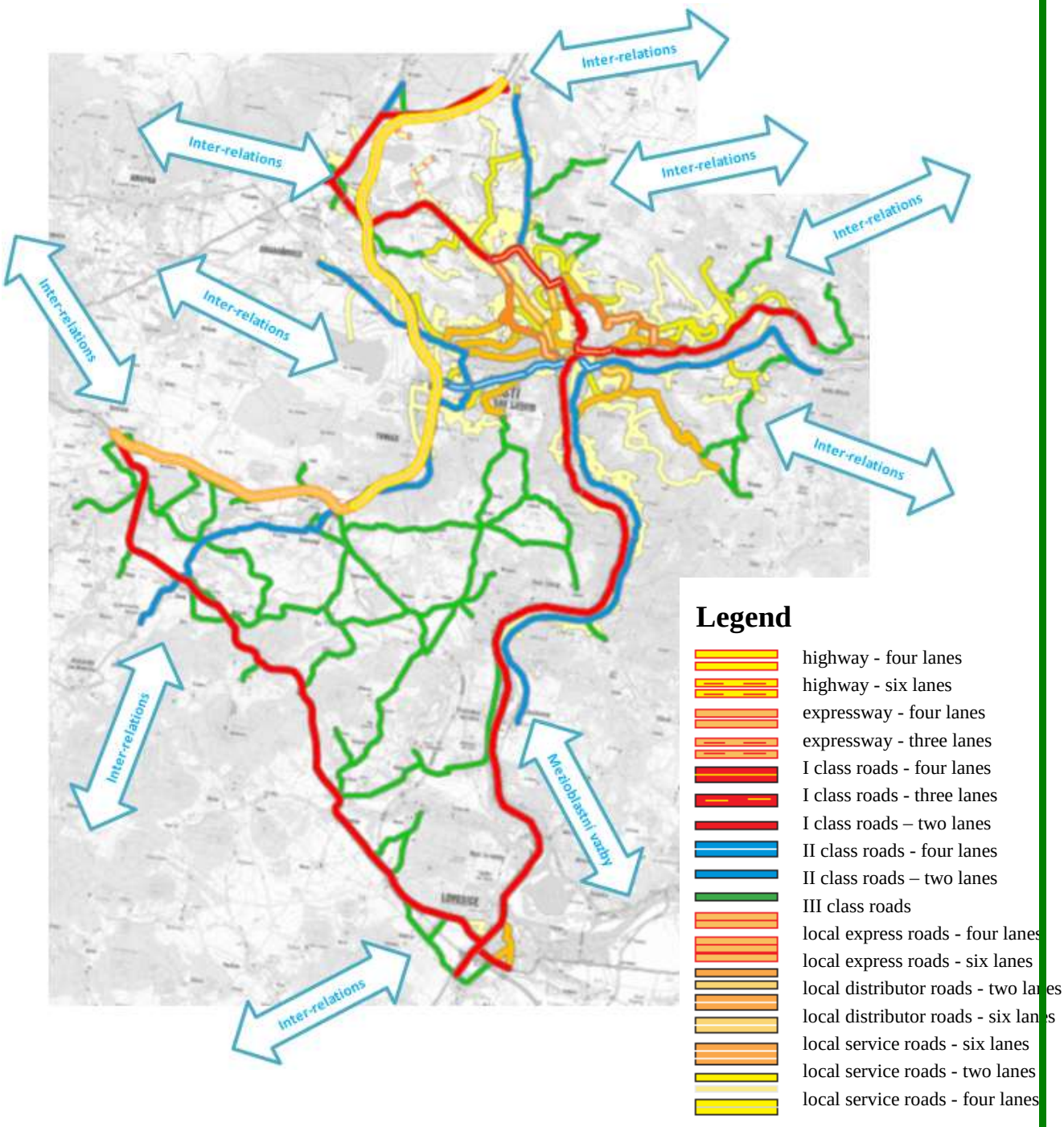
Conditions for behaviour of road users were simulated in the current state (the state Before – existing traffic performance) and in the proposed state (the state After – forecasted changes).

C5.2 Model extend

The traffic model covers the entire cadastral territory of the city of Ústí nad Labem. It involves detail transport relations within the city, taking fully into account transport links leading from, to and across the city area. The model of the city simulates all details of the city road network, including directional lines, width ratios, number of driving lanes, permitted speed limit and PT routes. The transport infrastructure outside the city is modelled with fewer details, only to reflect national and international transport relations.

The proposed restrictions regulate traffic in the city centre while preserving routes for transit traffic. Due to the fact, that the city lacks suitable large capacity superior roads bypassing the sensitive area, it was necessary to maintain throughput of the main I and II class arteries.

Figure C5.2.1: The physical extend of the city traffic model used for measure evaluation



C5.3 Model calibration

Calibration of the traffic model was realised by the national traffic census from the years 2005 and 2010, which is conducted every five years by the Directorate of Roads and Highways in the Czech Republic. Furthermore, the traffic model calculates with coefficients for predicted traffic growth officially published by the Directorate. These inputs provide an overview of the traffic performance and composition of the traffic flow on major roads on the entire territory of the Czech Republic.

To refine the model, Municipal employees realised traffic counting at selected locations in the city. In addition, data from sensors of traffic light devices, automatic traffic counters and schedules of public transport in the city were used for model calibrations.

Model simulations present the state of traffic in a perspective situation, according to set parameters, based on factors of traffic growth (with respect to the economic and social development), changes in transport infrastructure and changes in the distribution of transport sources and destinations.

Because of exact input data and sophisticated software, model results are considered reliable.

C6 Summary of evaluation results

Traffic volume in the city centre can be most effectively reduced by calming the street Pařížská (restricting entrance). Then, the city centre will become unattractive for transit traffic and the remaining vehicles will have the source/destination of their trips within the territory (inside the city centre excluding the peripheral roads). Therefore, flat reduction of the speed limit inside the city centre would have only slight influence on further changes of intensities because no diversion of additional vehicles and reduction of sources/destinations of their trips can be expected.

Furthermore, construction and operation of the Park & Go system will also bring no significant change of traffic intensities in the city centre if such measure is not supplemented with another restrictive measure (such as lowering the number of available parking places in the city centre and introducing progressive parking charges). The existing high demand for parking in the city centre due to numerous points of interest needs to be transferred elsewhere. Parking houses and other P&G facilities should be equipped with the information/navigation system, which would efficiently contribute to lowering the number of redundant trips when searching for a parking place or a specific target in the city centre.

The key results are as follows:

- **Key result 1** – traffic calming is feasible and the proposed scenario is effective for improving the existing conditions in the city centre;
- **Key result 2** – the solution requires complete exclusion of transit traffic from the city centre by restricting access to the street Pařížská (access allowed only for transport services);
- **Key result 3** – it is adequate to supplement access control of the street Pařížská with additional restrictions in the city centre, involving introduction of paid parking zones, implementation of the Park & Go scheme and adequate ITS systems.

C7 Future activities relating to the measure

Implementation of city centre access control can be achieved effectively only after completion of the highway D8, leading from Prague to Dresden and passing the city, which can be utilised by transiting traffic. Without such completion, it is not possible to find substitutive routes for transit transport and, therefore, it is not possible to prohibit transit through the centre of Ústí nad Labem. Construction of the highway should be finalised in the next few years.

The solution was incorporated into the Sustainable Urban Transport Plan for Ústí nad Labem, which will be submitted to city authorities for approval and further realisation of action plans in the future.

D Process Evaluation Findings

D.0 Focused measure

Table C2.4.1:

X	0	No focussed measure
Reason 2*	1	Most important reason
Reason 3*	2	Second most important reason
Reason 8*	3	Third most important reason

*) Reasons from the checklist in the Guidelines for Completion of the MERT

D.1 Deviations from the original plan

The proposal has not been implemented. In the current state, it is not possible to find proper alternative route for transit traffic because the highway D8 is not completed and there are no other high-capacity roads bypassing the city.

D.2 Barriers and drivers

D.2.1 Barriers

Preparation phase

- **Barrier 3 (cultural) –** Restricting access for vehicles entering the city centre is an unpopular measure for local drivers
- **Barrier 11 (special) –** Lack of space in the city centre, densely built-up area, narrow streets, significant deficit of parking places
- **Barrier 4 (problem related) –** The situation requires a complex transport solution, taking into account noise, emissions, PT services, supply of shops, a parking scheme, etc.
- **Barrier 8 (organisational) –** Supply vehicles require access by vehicles to the city centre for each shop individually
- **Barrier 9 (financial) –** Currently, lack of financial and political support for implementation of the investment-demanding solution

Implementation phase

This measure has not been implemented

Operation phase

This measure has not been put into operation

D.2.2 Drivers

Preparation phase

- **Driver 4 (problem related) –** urgent need to solve the parking deficits in the city centre required by citizens
- **Driver 5 (involvement) –** need for traffic calming in the centre and development of non-motorised transport supported by citizens and priority for the city

Implementation phase

This measure has not been implemented

Operation phase

This measure has not been put into operation

D.2.3 Activities

Preparation phase

- **Activities 4 (problem related)** – Deep analysis of the current state of traffic in the city centre was performed.
- **Activities 7 (planning)** - Feasibility study of effectively implementing access control for the city centre was elaborated and proposed traffic calming solutions were assessed. Solutions suitable for traffic calming and areas requiring traffic regulations in the city centre were identified.
- **Activities 5 (involvement)** – Results were incorporated into the SUTP of Ústí nad Labem to be submitted to city authorities and to city residents.

Implementation phase

This measure has not been implemented

Operation phase

This measure has not been put into operation

D.3 Participation

D.3.1. Measure Partners

- **Statutory City of Ústí nad Labem, Department of Transport -** partner of the project, responsible for the measure design, approval and implementation
- **City Services of Ústí nad Labem (Městské služby Ústí nad Labem)** – company operating paid parking places and garages
- **NTD Group** - company operating traffic management equipment in the city

D.3.2 Stakeholders

- **Drivers –** restrictions are aimed at drivers
- **Pedestrians –** measure aimed at developing pedestrian traffic in the city centre
- **Cyclists –** restrictions for motor transport encourage development of non-motorised transport
- **Residents and visitors –** more attractive environment in the city centre

D.4 Recommendations

D.4.1 Recommendations: measure replication

Recommendation 1 – Proposed modifications are possible to be applied in conditions of other city centres, with regard to their specifics. Regulations for entrance to a centre is a problematic matter, which needs to be addressed considerably and all the proposed tools must be carefully assessed in terms of their effectiveness and impacts.

Recommendation 2 – It is necessary to provide adequate alternative routes for transit traffic along with restricting entrance to the city centre. Regulation must not shift the traffic issues from the city centre to the neighbouring areas.

Recommendation 3 – It is required to ensure political support for implementation of unpopular restrictions for drivers, calming the city centre. Adequate public awareness campaign is recommended.

D.4.2 Recommendations: process

Recommendation 1 – to gain political and public support before measure implementation, to present its impacts and benefits and provide sufficient information about evaluation results in a comprehensible way;

Recommendation 2 – to ensure sufficient routes for transit traffic and appropriate traffic management (including suitable traffic signs and telematics) before measure implementation.