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Measure Evaluation Results Template

TALLINN 2.1 Developing P&R and School Bus

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Executive Summary

The measure was aimed at analysing and promoting the Park and Ride (P&R) and School Bus services. The studies carried out in the scope of the measure concentrated on the usage and problems of the current systems and analysing the possibilities for improvement. The results of both studies were used for the promotion of the P&R and School Bus systems (in separate campaigns) and were also designed for use in future transportation planning. Both systems were promoted by advertisements in newspapers and on the internet, TV interviews and campaigns in public places. No physical development on either system was planned in the scope of the measure.

The measure was implemented in the following stages:

Study on existing P&R network by TUT (2010) – a study was carried out on usage, problems and impacts of the existing P&R network

Study on existing School Bus network and demand by TUT and TTD (2011-2012) – a study was carried out on usage, problems and impacts of the existing School Bus network. It revealed that improvements to the services were necessary;

First dissemination activities of P&R and School Bus services (2011) – the dissemination consisted of advertisements in daily and weekly national newspapers and interviews on several TV-stations

Second dissemination of P&R and School Bus services (2012) – the dissemination consisted of posters, bulletins, calendar and web banners for School Bus and posters, traffic signs and web banner for P&R.

Study on P&R usage by TUT and TTD (2012) – a study was carried out on usage of the P&R car parks (repeating the 2010 study) and a survey among car drivers parking in the City Centre.

The most important barrier encountered during the measure was the reduction of the City budget (for actual service, not MIMOSA measure) for developing School Bus and P&R. The reduced budget prevented improving P&R and School Bus services.

The most important driver encountered during the measure was School Bus and P&R promotion in co-operation with the measure 4.1 “Mobility Management and marketing activities directed at popularising usage of active transport modes” resulting in additional interest from the Press and citizens together with increased usage of the services.

Recommendations for measure replication:

- **The measure is replicable** - The measure activities in the form of studies and promotion are easily replicable by other cities.
- **Dissemination is important** - It is important to present and disseminate provided services and to encourage people to use them.
- **Services have to be improved also besides promotion** - It is also important to improve the services after reaching the maximum number of users. Otherwise service assessment by the current and potential users could decrease. Therefore there must be strong political will and resources for development.

Recommendation for the measure process:

- **Good relations to the measure partners are important** - Close co-operation with the measure partners can avoid delays in the implementation of the measure.
- **Before-data is important** - Evaluation of the measure can be more effective if more detailed data and analysis are available from the situation prior to the implementation of the measure.

A Introduction

A1 Objectives

The measure objectives were:

(A) High level / longer term:

- Improvement of quality of life;
- Reduction of transport related pollution;
- Increased modal split towards sustainable modes.

(B) Strategic level:

- Promotion of PT usage and change of travel behaviour;
- Reduced private car usage in the City Centre;
- Reduced demand on inner city parking;
- Reduced pollution and noise;
- Fostering multimodality in the framework of daily home to school and home to work journeys.

(C) Measure level:

- (1) Analysis of the effects of the P&R and the School Bus introduction to traffic flow during peak hours, especially in the City Centre;
- (2) Promote an attractive and high quality PT service;

A2 Description

The measure was aimed at analysing and promoting the P&R and School Bus services. The P&R (Figure 1) and School Bus (Figure 2) networks were fully independent from each other in Tallinn and were treated separately in the measure.

The studies carried out in the scope of the measure concentrated on the usage and problems of the current systems and analysing possibilities for improvement. Apart from traditional studying methods an e-School system was used for getting feedback on the School Bus service from parents of students with the help of a Survey Monkey survey. The results of both studies were used for the promotion of the P&R and School Bus systems (in separate campaigns) and were also designed for use in future transportation planning. Both systems were promoted with advertisements in newspapers and on the internet, TV interviews and campaigns in public places. No physical development on either system was planned in the scope of the measure.

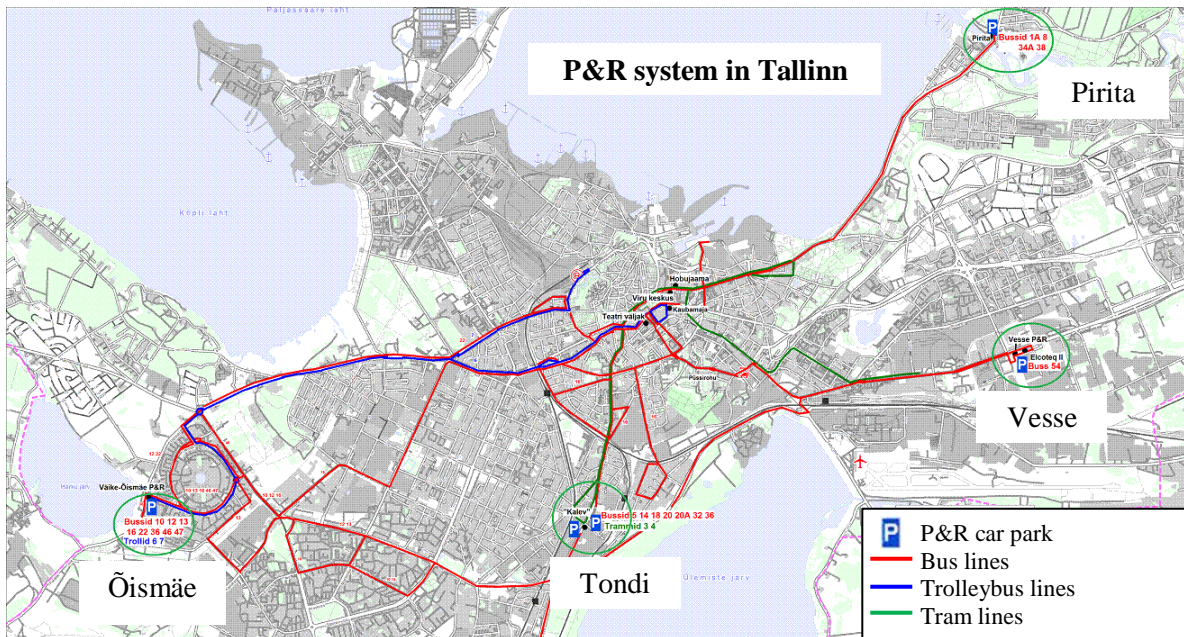


Figure 1 Park & Ride system in Tallinn

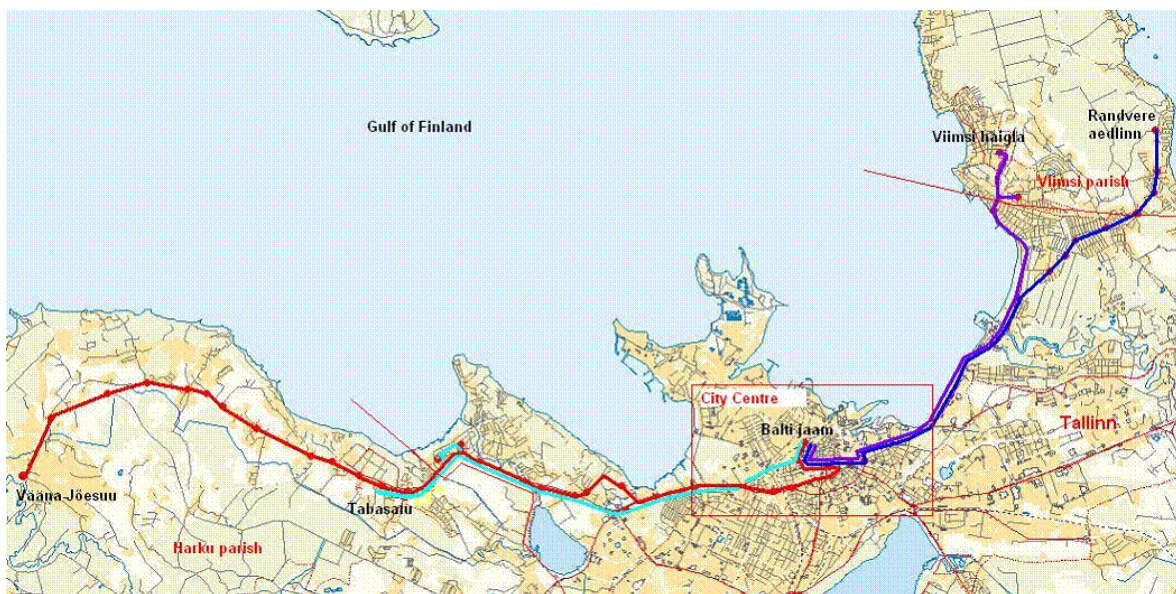


Figure 2 School Bus lines run by Tallinn

B Measure implementation

B1 Innovative aspects

The innovative aspects of the measure are:

- **Targeting specific user groups, locally** – schoolchildren and the residents with no or low accessibility to public transport (PT) were targeted with the measure.

B2 Research and Technology Development

Three studies were carried out in the scope of the measure:

- A study on the existing P&R car park network was carried out by Tallinn University of Technology (TUT) during Spring 2010. The study was based on an analysis of existing P&R car parks and it produced statistics of usage, reasons behind problems and gave recommendations for improving and developing the system. The study of the P&R car parks usage was repeated in September 2012.
- A study (including survey among parents) on the existing School Bus network was carried out by TUT and Tallinn Transportation Department (TTD) during 2011. The study gave an overview of the existing service, demand, need and attitude towards the service and recommendations for new School Bus routes based on the number of children living in different areas around Tallinn.
- A survey among car drivers parking in the City Centre (potential P&R users) was carried out in September 2012 by Turu-Uuringute AS.

Results and conclusions from the studies and the survey are presented in chapter C2.4 and C2.5.

B3 Situation before CIVITAS

The expansion of the City and growth in car usage had together created congestion at peak hours. The growth in car usage had been highly connected to new (developed during the past decade) low density residential areas just outside Tallinn City borders where public transport accessibility was generally low. The congestion was also greatly related to schoolchildren transportation, especially in the mornings. The tendency in Tallinn for the past 20 years had constantly shown increasing car ownership and modal split change towards car usage. Increasing car usage had been scaling up already existing parking and environmental issues.

There were 4 existing P&R car parks and 4 School Bus lines in Tallinn during the MIMOSA measure lifetime. Both pilot projects started in 2007 (School Bus in February and P&R in August).

Existing P&R pilot projects consisted of marked car parks with security cameras. Bus connections from P&R car parks to the City Centre were based on a public city lines network. The TUT study showed that due to several reasons the usage of the system was low and had no considerable impact on car traffic in Tallinn. Using the P&R system car parks was free for the users. Usage of PT was based on common fares.

There were 15 schools located in the City Centre district of Tallinn (2011). Several of them were very popular among the residents of Tallinn and other municipalities due to the higher quality of education and higher reputation. In 2010 there were 11 076 students studying in the City Centre schools, 85% of

them were living in Tallinn and 15% were living in neighbouring municipalities. The students living outside of the City Centre were contributing to the congestion problems which could be noted with almost no congestion during school holidays.

There were 4 existing School Bus lines in Tallinn during the measure lifetime. The lines were servicing Tallinn districts and areas near Tallinn, bringing schoolchildren into the City Centre in the morning free of charge. The lines were serviced with normal inner-city buses with relatively small number of seats and larger space for standing. Only eastern and western directions were serviced with the School Bus system as can be seen on the Figure 2.

B4 Actual implementation of the measure

The measure was implemented in the following stages:

Stage 1: Study on existing P&R network by TUT (April 2010 to June 2010) – a study was carried out on usage, problems and impacts of the existing P&R network;

Stage 2: Study on existing School Bus network and demand by TUT and TTD (May 2011 to August 2012) – a study was carried out on usage, problems and impacts of the existing School Bus network. It revealed that improvements to the service were necessary;

Stage 3: First dissemination activities of P&R and School Bus services (August 2011 to October 2011) – the dissemination consisted of:

- School Bus advertisements in the national daily newspapers Postimees and Den Za Dnjom (Russian language), extra school edition of the Postimees, extra school enclosure edition Kooliaeg of the weekly newspaper Eesti Ekspress;
- P&R advertisement in extra eco enclosure ÖkoEkspress of the weekly newspaper Eesti Ekspress;
- Introductory TV- interviews about the School Bus in the national channel TV3, Baltic channel PBK (Russian language) and Tallinn municipal channel Tallinna TV;

Stage 4: Second dissemination of P&R and School Bus services (August 2012 to September 2012) – the dissemination consisted of:

- School Bus posters in schools (Figure 5);
- School Bus information bulletin and calendar (Figure 5);
- School Bus digital poster on the large LED display on the Tallinn central square (Vabaduse väljak) (Figure 3);
- School Bus web banner;
- P&R posters on streets (Figure 4);
- P&R traffic signs in the P&R car parks;
- P&R digital poster on the large LED display on the Tallinn central square (Vabaduse väljak);
- P&R web banner;

Stage 5: Study on P&R usage by TUT and TTD (September 2012) – a study was carried out on usage of the P&R car parks (repeating the 2010 study) and a survey among car drivers parking in the City Centre.



Figure 3. LED displays (behind trees on the left) on the Tallinn Central Square, forming public transport stop shelter wall

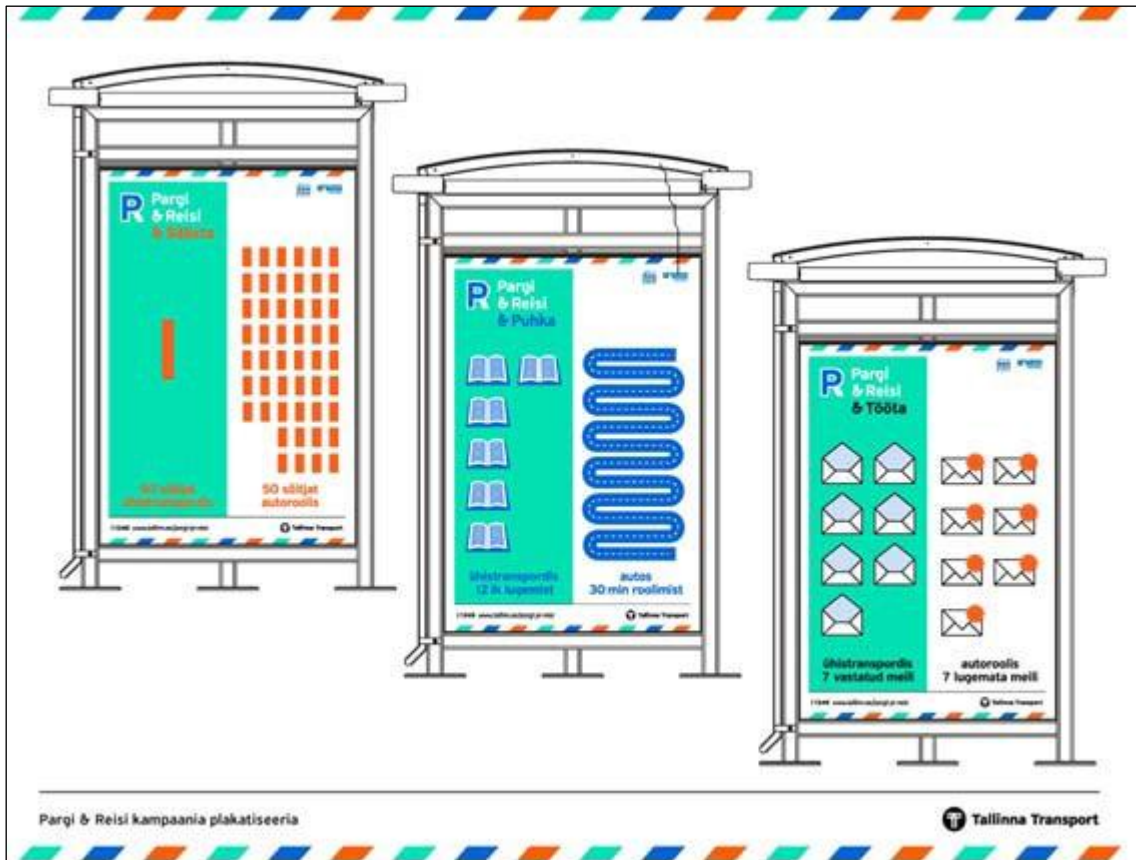


Figure 4 P&R outdoor campaign in September 2012



Figure 5 School Bus campaign material, September 2012.

B5 Inter-relationships with other measures

The measure was related to other measures as follows:

- **2.3 PT Communication System** - the full fleet which will have a new communication system was used also for servicing P&R and School Buses. After up-scaling the measure all of the buses of Tallinn Bus Company had a new communication system.
 - **8.1. Bus Lane and Red Light Cameras** – bus lane cameras helped to reduce the misuse of bus lanes and thus contributed directly to the reliability of the School Bus and the reliability of PT used by P&R users.
 - **4.1. Mobility Management and marketing activities directed at popularising usage of active transport modes** - the efficiency of P&R was directly linked to informing and promoting the system and public transport generally. Promoting P&R was one of the activities during promotional events of the measure. As children represented a large and important proportion of the target for marketing in the scope of this measure, the School Bus was also directly affected.
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C Impact Evaluation Findings

C1 Measurement methodology

C1.1 Impacts and Indicators

Evaluation was both on social and transport categories of the measure impact, measuring the change in awareness, acceptance and usage of both services. The indicators were chosen according to expected impacts of the measure. Since the measure was of type RTD and promotion only, changes in awareness and acceptance of stakeholders could mostly be expected, also changes in usage of the services. The outcomes and results are addressed in chapter

Table C1.1: Indicators.

NO.	EVALUATION	EVALUATION SUB-CATEGORY	IMPACT	INDICATOR	DESCRIPTION	DATA /UNITS
15	Society	Acceptance	Awareness	Awareness level on School Bus and P&R	Degree to which the awareness on existence of P&R and the School Bus line has changed	Index, quantitative, collected, survey
16	Society	Acceptance	Acceptance	Acceptance level on School Bus and P&R	Degree to which the acceptance on P&R has changed	Index, quantitative, collected, survey
TAL 2.1-1	Transport system	Usage of infrastructure	Usage	Usage level	Usage of the P&R car parks	Quantitative, collected, count
TAL 2.1-2	Transport system	Usage of the School Bus lines	Usage	Usage level	Usage of School Bus lines	Quantitative, collected, count

Detailed description of the indicator methodologies:

- **Indicator 15 awareness and 16 acceptance, School Bus** – the change in awareness of the School Bus as a result of the measure implementation was evaluated with surveys before and after. The acceptance was also evaluated. As the number of School Bus users was too low in the sample, the results were not used.

The evaluation of change in awareness and acceptance of the School Bus system was based on the general MIMOSA before-phone survey in November 2009 and a separate combined source after-survey in June 2012.

The **general MIMOSA survey** was planned and carried out by a professional market research company OÜ Klaster. Sufficient sample for different MIMOSA measures purposes was calculated to be between 600-800 persons. The survey was based on landline phone interviews

and was carried out in Estonian (mother tongue for 53% of the population in Tallinn) and Russian (42%) languages. 25% of the sample were questioned by mobile phones to retain representability, as the usage of land line phones has decreased rapidly during the past decade. The sample was based on the population registry data and was gathered from all 8 City districts of Tallinn. The quotas for age (14-75) and gender were calculated within districts. The quota for 2 of the smaller of the 8 districts were above proportion as a minimum of 100 respondents were required for every district. This was compensated for by using different weights for different districts when calculating overall City results. The questionnaire was programmed to CATI (Computer Assisted Telephone Interviewing) and all interviews were performed using this system. The gathered data was checked in three stages: structural control – the CATI directed the interview to the correct sections with the help of filter questions; formal control – after the survey the errors in open text answers and numerical answers were corrected; cleaning the data – incomplete answers and interrupted interviews were removed.

The social profile of a respondent was based on gender, age, nationality, district of residence, car ownership and transportation mode use.

The before-survey was carried out in November 2009 and had a total random sample of 1014 persons. The survey had 9 questions about the School Bus along with social profiles of the respondent but in the end only 1 question was used for evaluating the measure:

- How aware you are about the possibilities to use a School Bus in Tallinn?

Since the before-survey resulted in only 3 users of School Bus and the after-survey resulted in 0 users, the questions directed to the School Bus users were not used:

- What is the main transportation mode of your child for getting to school?
- How far is the nearest School Bus stop from your home?
- What is the main reason for using a School Bus for your child?
- How many days per week is your child using a School Bus on average?
- How safe do you think it is to use a School Bus?
- What could be different in School Bus usage in your opinion?
- Why is your child not using a School Bus?
- In what circumstances would your child use a School Bus?

The after survey was carried out in June 2012 and it contained the same questions listed above. The methodology of the survey was the same as in 2009, the sample of the survey was 1113 people.

The share of respondents with schoolchildren under the age of 18 in the sample was 14% in 2009 and 20% in 2012 although the actual number of schoolchildren in Tallinn dropped 1% during this period. There are no reasons to conclude, that this has influenced the distribution of awareness of the School Bus.

Indicator 15 awareness and 16 acceptance, P&R - The awareness and acceptance on the P&R system was evaluated only after the measure implementation with a survey among those parking cars in the City Centre during the Mobility Week in September 2012 by Turu-uuringute AS. The sample of the survey was 491 people, 388 of them living in the Harju County (surrounding Tallinn City) and the rest of them outside the county. The survey was carried out among drivers coming from outside Tallinn and parking in the paid parking areas (both private and public) in the City Centre. The interviews were carried out during peak hours 7:30-9:00 and 16:30-18:30 in Estonian and Russian languages.

The reason for not including the P&R specific questions to the general MIMOSA survey was that the main user group was living outside of Tallinn but the sample for the surveys consisted of residents of Tallinn. For both School Bus and P&R a wider area survey was considered but it was dropped for its high cost compared to the possible information gain.

- **Indicator TAL 2.1-1 Usage of P&R car parks** – City specific indicator evaluating the change in usage of P&R car parks. The usage of P&R car parks in different locations was evaluated by counting only the vehicles of users who parked their vehicles and continued their trip with public transport on working days between 7:00 and 9:00 on morning. The before-count was done in the scope of the P&R study in Spring 2010 and after-count in September 2012. The total capacity of the P&R car parks in Tallinn was 331 parking spaces.
- **Indicator TAL 2.1-2 Occupancy rate of School Bus system seats** – City specific indicator evaluating the change in usage of the School Bus lines. The statistics on usage of School Buses was obtained from Tallinn Transportation Department. The usage was counted by bus drivers 1-2 weeks during every Spring and Autumn term since 2008. The usage was presented as usage of seat capacity of the buses as three of the four School Bus lines were using motorway and no standing children should be planned to such lines.

Possible indicators that might detect an impact caused by this measure but were not measured are listed in the following Table C1.2:

Table C1.2: Indicators that were not used.

NO.	DESCRIPTION	Reason why it has not been measured
16	Acceptance of School Bus service	The questions on acceptance were included in both surveys: before and after, but the amount of School Bus users was so low (3 in the first survey, 0 in the second) that the results were unusable.
17	Attitude survey of perception of physical accessibility of the School Bus network (distance to nearest PT stops)	Amount of respondents using the School Bus was too small for making conclusions.
18	Perception of security when using School Bus and P&R car park	Amount of respondents using the School Bus was too small for making conclusions. The possible P&R users could not be reached with the general survey.
19*	Perception of punctuality of School Bus service arriving/departing on time compared to timetables	Amount of respondents using School Bus was too small for making conclusions.
20	Perception of quality of School Bus network and the P&R car parks.	Amount of respondents using the School Bus was too small for making conclusions. The possible P&R users could not be reached with the general survey.
21	General transport accident no. within the City causing injured and deaths.	The impact of relatively small scale promotion (without developing the services) on the traffic system was negligible and thus not detectable.
24	Average vehicle speed of School Buses	The impact of small scale promotion (without developing the services) on the traffic system was negligible and thus not detectable.

C1.2 Establishing a Baseline

The baseline for evaluating the change in awareness of the School Bus system was based on results from the general MIMOSA survey in November 2009.

The baseline for evaluating the change in School Bus lines usage was based on the usage count of the School Bus system on the study year 2010/2011, before the campaigns were implemented in the scope of the measure.

No baseline was created for evaluating the change in awareness and acceptance of the P&R system, because originally the evaluation of awareness and acceptance of P&R system was not planned by the evaluation team.

The baseline for the usage of P&R car parks was based on the data obtained from counts in the P&R car parks during the study on P&R system in May 2010.

C1.3 Building the Business-as-Usual scenario

The Business-as-Usual (BAU) scenario for awareness of the School Bus service was based on an assumption that without the promotion of the School Bus by the MIMOSA measure 2.1, awareness of the School Bus service would have remained the same. This does not represent a fully valid BAU concerning the awareness, since it is impossible to estimate other impacts on awareness without extensive and specific studies. However, to show the change during this measure, the results will be compared to this BAU.

The BAU scenario for School Bus usage was based on the trend of average usage of the service between study years 2008/2009 and 2010/2011. A power trend line and its forecast to study years 2011/2012 and 2012/2013 was used for BAU scenario (Figure 6).

Building a BAU scenario was more difficult with P&R as prior to the P&R system car parks usage count in 2012 September, Tallinn City introduced public transport lanes in the City Centre on a large scale in June 2012. The capacity of streets for private cars was reduced dramatically in the whole City Centre district. Thus the assumption on constant usage of the car parks without promotion could not be valid and it was not possible to separate the effect of (realistically more influential) other actions from the influence of relatively small scale promotion.

C2 Measure results

C2.4 Transport

The statistics on usage of the School Bus lines is presented on the Figure 6 and Figure 7. On the both figures the year 2013 spring term usage was estimated from the previous years difference between autumn and spring term usage.

The total capacity of two normal and two articulated buses servicing the School bus lines was 148 seats and 302 standing places (6 persons per m²). The usage of seats and standing places is an important detail, because three of the four School Bus lines were also using motorways outside Tallinn and two of the lines used section with speed limit of 90 km/h. While the buses with standing passengers are allowed to drive 60 km/h max it is forbidden to transport standing children on motorway in case of occasional transportation with a bus. While School Bus is a regular service this is not recommendable practice when considering safety of children. Therefore usage of School bus is measured in capacity of seats.

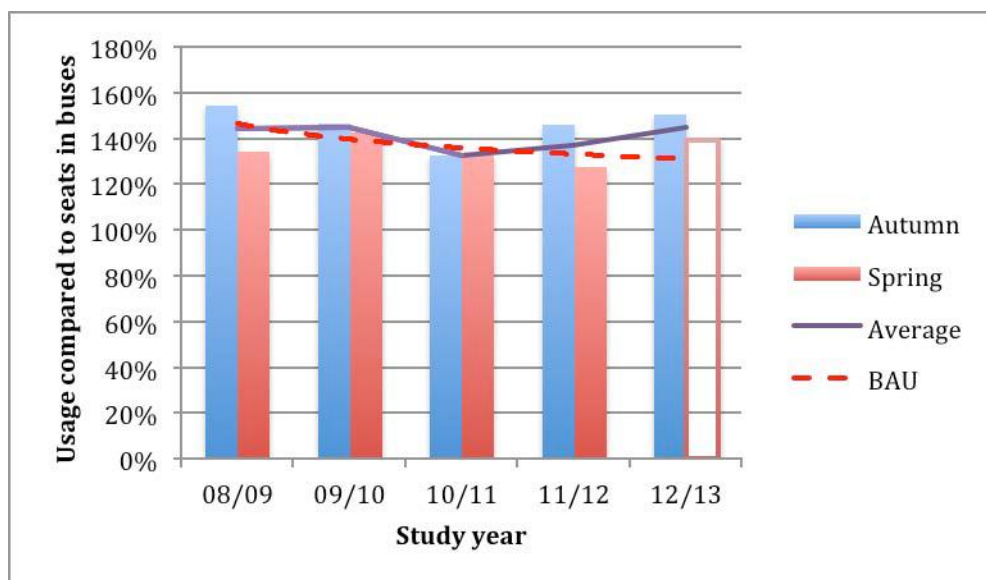


Figure 6 Usage of School Bus lines compared to the number of seats in buses

The results on Figure 6 show that the capacity of seats is already exceeded and the average usage is 141%. This means that in average 29% of children are standing in School Bus. Figure 7 shows that the standing space is occupied by 1,5 persons in average. This is not much when considering the official planning maximum in Tallinn – 6 persons per m². However, children and their parents are also considering comfort when they have other options for getting to school and in the background of increasing car use for getting to school this is an important factor.

The results on Figure 6 show also slight increase in average use of School Bus service, from 131% on the BAU trendline (2012/2013 estimated by power trendline from 2008-2011 average usage) to 145%, a relative increase of 10,6%. This can probably be accounted to the School Bus campaigns in 2011 and 2012 but since the awareness survey showed considerable drop in awareness between 2009 and 2012 (Chapter 2.5) the result is not certain. Also, as the usage of the capacity shows there is not much room for increasing the usage by marketing campaigns only.

Figure 7 shows summarised usage of standing space. The reason for such presentation is that showing the usage compared to the total capacity of seats and standing places would indicate that the usage is only around 50% which is far from the actual situation from the passenger perspective: 2 standing persons per m² is not a half empty bus.

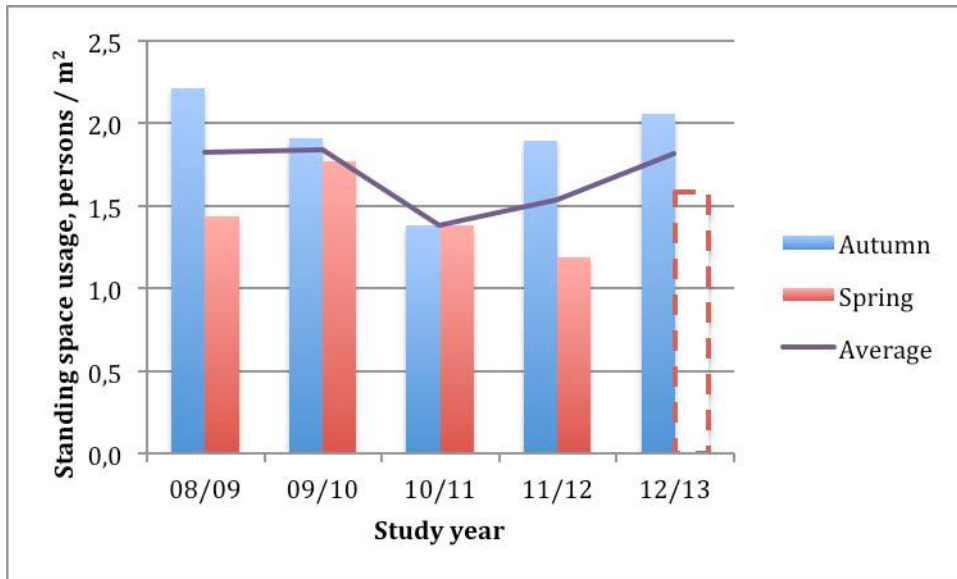


Figure 7 Usage of School Bus lines standing space

The change in usage of the P&R car parks was evaluated in Spring 2010 and September 2012 and is presented on the Figure 5. The percentage is calculated from the purposeful number P&R users and total number of parking spaces in the 4 car parks. The total capacity of all car parks was 331 spaces.

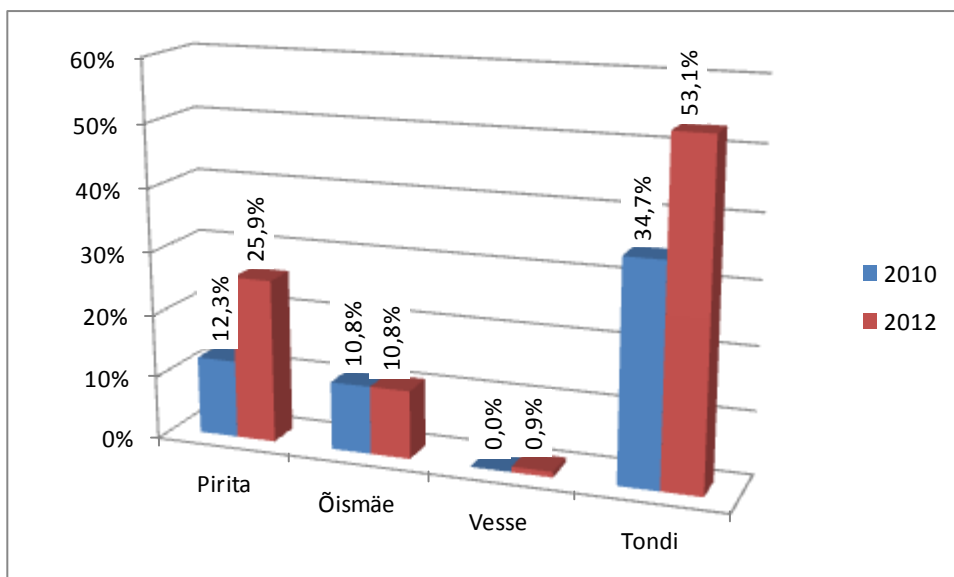


Figure 8 Usage of P&R car parks

The average use of P&R car parks was increased from 14,5% to 23,6% between the before- and after counts. This means a considerable 62,5% increase in usage, but this cannot be accounted to the P&R promotion only. Also, capacity of one of the two Tondi P&R car parks has been reached and although the other car park is just across the street it is not as comfortable to use for the users of trams. The reduction on streets capacity (for car traffic) in the City Centre with large scale widening of PT priority lanes has probably been the largest other influencer. Some PT lines were stated to have improved accuracy during peak hours with introduction of the new PT priority lanes, so this may have contributed to the increase of the P&R system usage. However, this was probably not the case for the Tondi P&R, since it was mainly serviced by tram lines and the PT lanes did not affect the tram lines from this direction.

The three studies carried out in the scope of the measure had interesting findings that should be taken into account in future planning of the service.

The 2010 study on P&R brought out:

- The P&R car park system was not created according to recommendations from a preliminary study, but based on minimal effort for creating the system. The usage of four existing P&R car parks in Tallinn was low in May 2010, from 35% in the best example to practically no users in two of them, 15% on average. The two used car parks showed there was existing demand for P&R services and 79% of the P&R system users were female;
- In the case of all 4 car parks, using P&R and public transport for getting to the City Centre resulted in time loss (15-45min) compared to driving to the City Centre in 2010;
- Financial benefit for P&R users is dependent upon whether the car user has to pay for parking in the City Centre or not (for example if parking costs are covered by the employer). In the latter case paying of a PT fare and using P&R results in economic loss for the user compared to driving to and parking in the City Centre. These calculations did not take into account introduction of fare free PT in Tallinn from January 2013, however PT is not fare free for main group of P&R users – residents of neighbouring counties;
- In 2010 there was no information available (besides P&R traffic signs) on the P&R system at the car parks;
- There had been no systematic marketing of the system;
- The original goal of the measure TAL 2.1 to reduce traffic by 5% from the eastern direction of Tallinn was unreachable even with full scale use of the existing system;
- Influence of existing P&R on traffic in the City Centre is non-existent (less than 1% in every car park direction). Even with full scale use of the P&R system the influence on traffic would be minimal. To increase the influence and reach the goals, the system (network) has to be redesigned, expanded and marketed by the City, which is out of the scope of this measure.

The results from the study (including survey among parents) on the School Bus were as follows:

- 76% of the City Centre school users lived in Tallinn, the majority of others in the residential areas just outside of Tallinn which were developed during the past two decades;
- 55% of the parents of the schoolchildren worked in the City Centre, 6,6% outside of Tallinn;
- The main home-school transportation mode was public transport at 53%, next was taken by car at 37% and 9% of children went by foot;
- 70% of school-home trips were made by public transport, 15% were taken by car;

- 81% of the home-school public transport users were using the public city lines, 8% were using the School Bus lines;
- 80% of the parents who were driving their children to school would use (sum of answers certainly and probably) the School Bus system if it was developed according to their needs;
- 65% of car users in the School Bus study would not use the existing P&R system for various reasons.

The conclusions from the P&R usage counts in 2012 were:

- The average usage of the P&R car parks was still low (24%) in September 2012 although one car park had reached 58% of its capacity usage;
- Purposeful P&R system usage in the 4 car parks by gender remained relatively the same – 79% in 2010 and 77% in 2012 were female users.
- In 2012 in the Tondi P&R car park there was a considerable amount of drivers who dropped someone to the PT stop next to the P&R car park and continued their trip. When the number of purposeful P&R car park users was 52 (55% of total number of users during 7:00-9:00), the number of users dropped to the PT stop was 19 (20%). This type of behaviour is often organised in other countries and the system is called “Kiss and Ride”. The share of females availing of this mode was even higher than with P&R – 90% and the other two users were schoolchildren. Similar behaviour was noted in the Pirita P&R car park but not recorded in detail;
- Usage of the Tondi P&R car park for local parking was 25% of the total number of 98 parking spaces;
- Capacity of one of the two Tondi P&R car parks has been reached and although the other car park is just across the street it is not as comfortable to use for the users of trams.
- 11% of the total parking spaces in the Tondi P&R car park were already in use before 7:00 and many of the cars that were in the car park before 7:00 left during the counting hours.

Table C2.4.1: School Bus and P&R car park usage

Indicator	Before	B-a-U	After	Difference: After – Before	Difference: After – B-a-U
TAL 2.1-1 Purposeful usage rate of P&R car parks total capacity	14,5% 11. 2009	14,5% 09.2012	23,6% 09.2012	9,1%	9,1%
TAL 2.1-2 Occupancy rate of School Bus system seats	133% Autumn 2010	131% 09.2012	145% 09.2012	12%	14%

Usage of the School Bus service and the P&R car parks both showed increases, 14% and 63% respectively. The reasons behind the increases were unclear in both cases. While the usage of the School Bus service increased simultaneously with campaigns, the awareness of the service dropped. The other reasons (besides promotion in the scope of the measure) behind the large increase in the

P&R system are clearer. Recent changes in the capacity of the street network for cars in the city centre (introduction of additional PT priority lanes in large scale) have most probably contributed to the change in usage of P&R car parks. The assumption was supported also with the survey results with potential P&R users, with 64% of the respondents not considering using the system and only 8% probably using it in future.

C2.5 Society

The awareness percentage on the Figure 8 and Figure 9 is calculated from the respondents with schoolchildren under the age of 18.

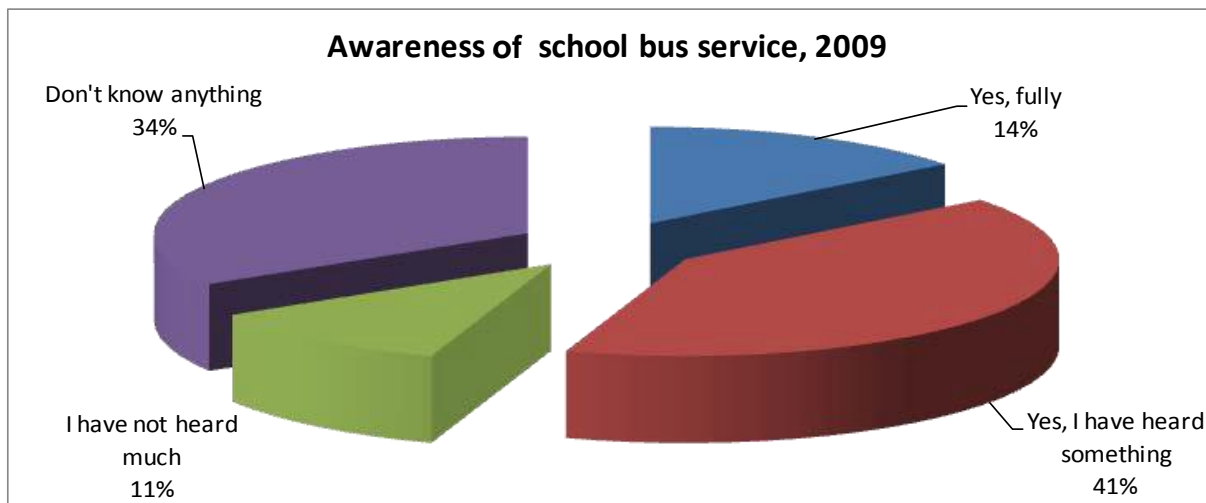


Figure 9 Awareness of the School Bus service in the 2009 survey

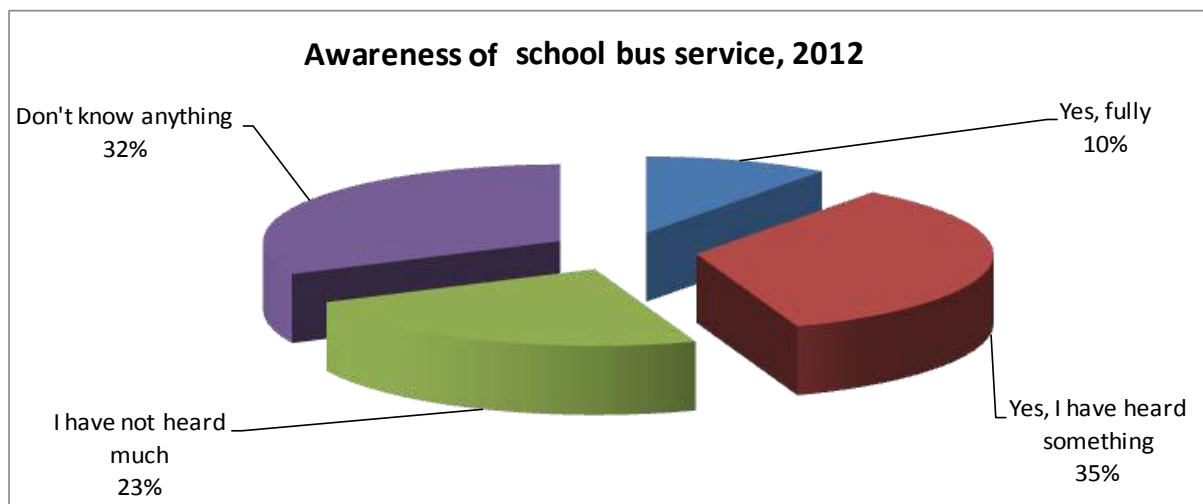


Figure 10 Awareness of the School Bus service in the 2012 survey

The results show an unexpected 10% drop in awareness despite promotional activities described in the chapter B4.

The result is in contradiction with the increase in the School Bus service usage between 2010 and 2012. This can be explained by the fact that the School Bus lines are servicing many schoolchildren from neighbouring counties while the survey sample consisted only of the residents of Tallinn. The sample of the survey (200 families with children among 1000 respondents) was relatively little and thus every persons contribution to the result was larger than optimal. Also, School bus service was relatively new in 2009 (introduced in 2007) and the “eureka” effect of a new service might have contributed to the awareness before.

The result is also in contradiction with other questions in the survey, where the respondents were asked, why their child is not using the School Bus system. The top three answers to the question are presented in the Table 1.

Table 1 Top three reasons for not using School Bus

	2009	2012
School is within walking distance	39%	34%
Don't know about possibility to use School Bus	26%	16%
There is no suitable School Bus line	17%	23%

The contradiction between the change in awareness (Figure 8 and Figure 9) and the second row in the Table 1 could be partially explained by the fact that knowing about the School Bus and knowing about the possibility of actually using the School Bus are different things. This does not explain the 5% decrease in the “totally aware” respondents.

The result is partially supported by the other results of the surveys:

- The number of survey participants (residents of Tallinn) who’s children used the School Bus decreased from 3 people (2,1% of the families with children under the age of 18 in the 2009 survey) to 0 people;
- The percentage of children taken to school by car increased from 12% to 20%;
- The percentage of children going to school by public transport increased from 44% to 46%;
- The percentage of children going to school by foot decreased from 42% to 34%.

The awareness of the P&R system after implementation of the measure was measured by a survey question “Have you heard about the Park and Ride system?” The percentage of answers to the question is presented on the Figure 8.

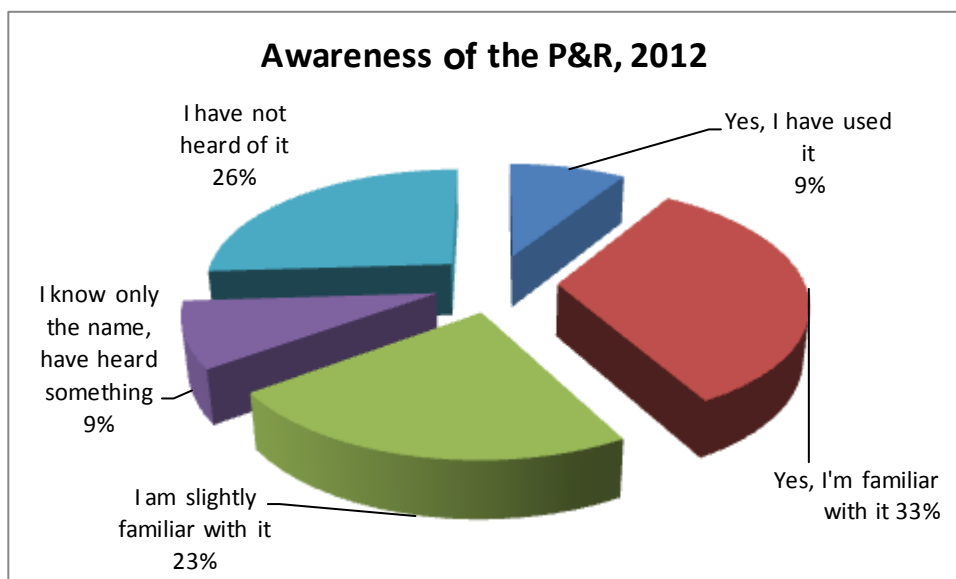


Figure 11 Awareness of the P&R system

The results from the awareness question were 42% of respondents who were probably capable of using the P&R system without further introduction and in addition 32% who had either heard of the system or were slightly familiar with it. 26% of the respondents had never heard of the P&R.

The acceptance on the P&R system after implementation of the measure was measured with a survey question: “Would you like to use the P&R system in future?” The percentage of answers to the question is presented on the Figure 9.

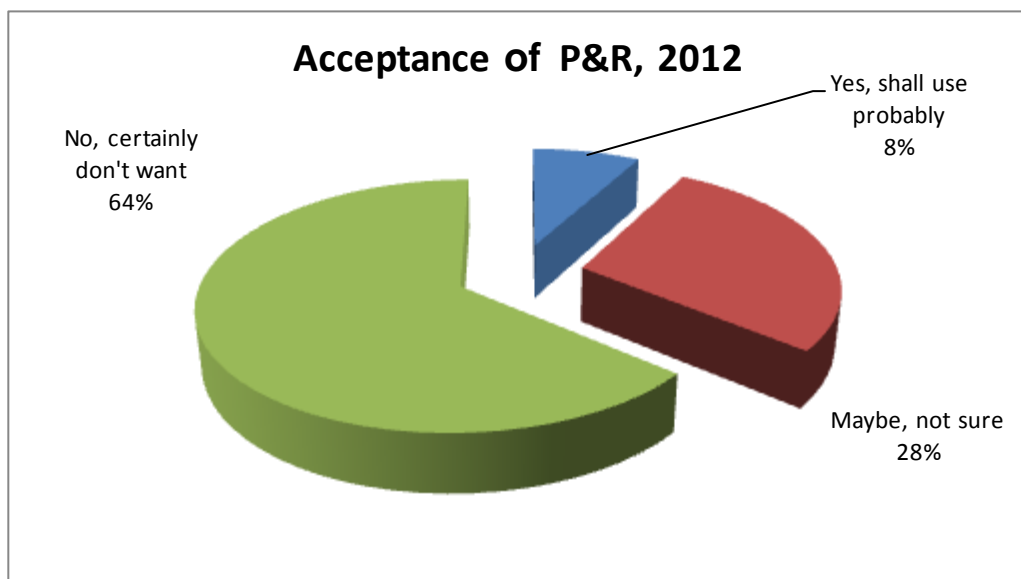


Figure 12 Acceptance of the P&R system

The results show very low positive acceptance and high negative acceptance towards the P&R system. The results can be explained by answers to other questions, where among other reasons it was stated that there were either no suitable PT lines (42%), PT is uncomfortable (22%) or too slow (15%).

The conclusions from the potential P&R user survey were:

- 62% of the respondents were parking in the City Centre regularly: daily or 2-3 times a week;
- 42% of the respondents were aware of the P&R car parks and 9% had used the P&R system. 45% of the respondents outside Harju County (surrounding Tallinn from all directions) were not aware of the P&R system;
- 42% of all respondents stated that they were not using the P&R car parks, since there was no suitable PT line for them. This was by far the most frequent reason for not using PT. The percentage who gave this reason varied by direction and was up to 59% for some directions, which was generally in accordance with the low usage of the P&R car parks;
- Only 8% of all respondents would probably use the P&R system in future. 28% of all respondents were not sure about it and 64% would not use the P&R system. The negative acceptance was up to 78% from one particular direction.

Table C2.5.1: Measure evaluation results

Indicator	Before	B-a-U	After	Difference: After – Before	Difference: After – B-a-U
15 Awareness, aware or fully aware of School Bus	55% 10. 2009	55% 06. 2012	45% 06. 2012	-10%	-10%
15 Awareness, aware or fully aware of P&R system	-	-	74% 09. 2012	-	-
16 Acceptance, positive answers	-	-	8% 09. 2012	-	-

Since the results from the second School Bus survey showed a drop in awareness, the assumption about lack of validity of BAU scenario made in the chapter C1.3 proved to be right - the awareness cannot drop as a result of promotion but it was not possible to estimate the amount by how much the promotion compensated to the drop in awareness and thus it was not possible to estimate the BAU scenario for awareness of the School Bus.

Awareness and acceptance of the P&R system was measured only after the measure implementation. The result was a high awareness (74%) and in contrast to it very low acceptance of the system (8%). This shows that more than promotion of the service there is a need to improve the service of PT.

C3 Achievement of quantifiable targets and objectives

There were no quantifiable objectives in this measure.

C4 Up-scaling of results

Since the measure consisted only of promotional activities, the up-scaling would mean putting additional resources into promotion. Based on the study results on both systems; while additional promotion could improve the usage of the School Bus, it would probably have a limited effect on the usage of P&R. Therefore the up-scaling (promotional activities) should be considered only together with improving the services.

It is difficult to scale up the promotional activities to other Estonian cities or regions for several reasons:

- There are 2 locations known currently that have P&R car parks: one is a little town Saue with 6 000 inhabitants and has one P&R car park connected to the railway; the other is Tartu, the second largest town in Estonia with 95 000 inhabitants and 1 P&R car park connected to intercity bus lines. The need for promotion of these services need similar studies to the ones carried out in scope of this measure;
- There are School Buses in many towns and parishes of Estonia. The need for promoting the services is probably quite varied and needs similar studies to the ones carried out in scope of this measure;

C5 Appraisal of evaluation approach

Evaluation of the measure consisted of measuring change in awareness and acceptance of the services and usage of the services. While the promotion should impact mainly awareness and acceptance, the usage should also change if the promotional activities are successful.

Usage of the services gave a clear picture of the situation before and after the measure implementation without proving that the changes were actually the impact of the measure. Increase in the usage of School Bus lines and P&R car parks cannot be entirely attributed to promotion and only in case of P&R the other contributing factors could be brought out.

Evaluation of awareness and acceptance on the services made it possible to show that the change in usage is not exactly the result of promotional activities. In the case of the School Bus the awareness among residents of Tallinn was decreased considerably between the before- and after-surveys. This cannot be the result of promotion and indicates that the increase of usage of the School Bus lines was not fully the result of promotion and increased awareness.

Acceptance on the School Bus service could not be measured by the survey although there were a number of questions aimed at measuring it. This was a surprise for evaluators and indicated that the general sample was not suitable for reaching the target groups.

Reaching the target groups was also problematic in the case of P&R. The main target groups of both systems were living outside of the City. The general MIMOSA survey as the main tool for evaluation was directed at the residents of Tallinn. Since the same survey was used for the evaluation of several other MIMOSA measures and the main user groups of the other measures were the residents of Tallinn, the measure 2.1 alone did not justify organising a considerably more laborious and costly survey of the whole region or an even wider area to try to reach the relatively small potential group of users of both systems.

The evaluation was able to show changes in usage of the system and also partly changes in awareness and acceptance but could not be used for exactly determining impact of the measure activities. This was partially caused by changes, activities and debates in and on transportation prior to the after-evaluation in 2012: introduction and promotion of the idea of fare free PT, introduction of large-scale

PT lane system etc. They probably had an impact on awareness, acceptance and even on usage of the systems and most probably the impact was higher than impact of the measure.

The evaluation would have been more accurate if some of the surveys had been arranged both before and after the measure implementation: survey among schoolchildren parents in the e-school environment on the School Bus service, survey among car users in the City Centre on the P&R system.

C6 Summary of evaluation results

The key results were as follows:

- **Considerable drop in awareness of the School Bus service** – The awareness of potential users of the School Bus service was reduced from 55% to 45% in 2,5 years despite promotional activities carried out in the scope of the measure;
- **Awareness of the P&R system was high after the measure activities** – the awareness was measured only after the campaigns and 74% of the respondents had at least heard of the system while 9% among them had even used it;
- **Acceptance of the P&R system was low after the measure activities** - the acceptance was measured only after the campaigns: only 8% of the car users would use the P&R car parks in future and 28% were not sure about it;
- **Usage of School Bus seat capacity was increased** – usage of the School Bus capacity was increased from the 131% in the BAU scenario to 145% after promotional activities;
- **Purposeful usage of the P&R system capacity was increased** – usage of the 4 P&R car parks capacity was increased from 15% to 24%.

C7 Future activities relating to the measure

No measure related activities have been planned for the near future as of October 2012.

D Process Evaluation Findings

D.1 Deviations from the original plan

The deviations from the original plan comprised:

- **Redefining expected results**– Originally the expected results were included in the measure description:
 - Number of private car use in Pirita direction had decreased by 5%;
 - Public transport share in Pirita direction had increased by 6-7%;
 - Increased passenger satisfaction with the travel duration from Pirita to the City Centre by 10%;
 - Decreased level of pollution in Pirita – City Centre area.

Pirita is in the eastern district of Tallinn, a large suburb which has developed during the last 20 years and which relies mainly on passenger car transport. Therefore the area has increasing congestion problems on the border of the City Centre. Achieving the described results require at least a major upgrade of both P&R and the School Bus services but most likely a wider change of the whole mobility in the City. This is unachievable by only studies and promotion. Therefore the above described expected results were omitted with project amendments and their change was not evaluated.

- **Delay in the research and development process** – difficulties with launching the new national e-school environment (was decided to be used for the survey) at the beginning of 2011 delayed the survey to assess the user needs.
- **Delays in implementing the measure** – delay in the research and development process also influenced implementation process. Analysis of the sustainability of P&R and the School Bus concept in Tallinn was delayed.

D.2 Barriers and drivers

D.2.1 Barriers

Overall barriers

- **Political / strategic barrier** - Reduced City budget (for actual service, not MIMOSA measure) for developing the School Bus and P&R. Reduced budget prevented improving P&R and School Bus services.

Preparation phase

- **Involvement and communication related barrier** - Insufficient partnership arrangements, insufficient communication on design and implementation of the measure. This has led to delays in planning of implementation of the measure.

Implementation phase

- **Problem related barrier** - difficulties with launching the new national e-school environment (was decided to be used for the survey) at the beginning of 2011 delayed the survey to assess the user needs. Survey of schoolchildren's parents was postponed until Spring 2011. This delayed implementation of the measure by one year and at the same time shortened time for monitoring changes as a result of the measure.
- **Organizational barrier** - Poor support from Tallinn University of Technology on producing the questionnaire for the School Bus user needs delayed the survey.

D.2.2 Drivers

Implementation phase

- **Organisational driver** – The School Bus and P&R was promoted in the scope of the measure 4.1 “Mobility Management and marketing activities directed at popularising usage of active transport modes” resulting in additional interest from the Press and also increased usage of the service.

D.2.3 Activities

Implementation phase

- **Organisational activity** - After failing to get enough support from Tallinn University of Technology on producing the questionnaire the survey was created by the measure leader based on previous user needs studies.
- **Organisational activity** - Interviews were given to the Press after raised interest on the School Bus service resulting from cooperation with the measure 4.1 “Mobility Management and marketing activities directed at popularising usage of active transport modes”.

D.3 Participation

D.3.1. Measure Partners

- **Tallinn City Government** – Leading partner in the form of Transportation Department;
- **Tallinn University of Technology** – A principal partner, responsible for preliminary studies and evaluation of the measure;
- **Turu-uuringute AS** – Occasional partner, responsible for carrying out the survey on P&R in September 2012;
- **Education Department of Tallinn City** – Occasional partner, cooperating with carrying out e-school survey among schoolchildren's parents on the the School Bus service;

D.3.2 Stakeholders

- **Families with schoolchildren** – the families were the main target for the School Bus campaigns;

- **Car users** – The car users parking in the City Centre were the main target of P&R promotional activities;
- **General public** – As the measure was aimed at reducing the negative impact of car transport, the general public was on the beneficiary side;

D.4 Recommendations

D.4.1 Recommendations: measure replication

- **The measure is replicable** but does not have considerable effect - The measure activities in the form of studies and promotion are easily replicable by other cities. However, looking at the unimpressive results of the measure, promoting services without improving their quality is not an effective measure.
- **Services have to be improved along with promotion** - It is important to improve the services after reaching maximum number of users (as it was the case with the School Bus service and one car park of the P&R system). Otherwise service assessment and usage by the current and potential users could decrease. Therefore there must be strong political will and resources for development.

D.4.2 Recommendations: process

- **Measure and evaluation approach have to be selected according to goals** – A measure, its activities and evaluation approach have to be selected according to goals. Not the other way around. If the goal is to increase the use of a service, then the activities have to be in accordance with the situation (making the increase possible) and aimed at achieving the goals.
- **Good relations to measure partners are important** - Close co-operation with measure partners can avoid delays in implementation of the measure.

RTD Fact Sheet Template

TAL 2.1. Developing P&R and School Bus	
Reference Measure	2.1 Developing P&R and School Bus
Date of Submission	19/11/2012
Date of Review (ISIS)	04/2012
Date of Approval	30/11/2012
Author(s)	Marek Rannala
Editor(s)	Loredana Marmora (by ISIS)

Context and Purpose

Expansion of the city of Tallinn and growth of car usage have both created congestions on morning and evening peak hours during last 20 years. The growth of car usage is highly connected to new low density residential areas just outside Tallinn city borders where public transport is not accessible. The congestions are highly related to schoolchildren transportation, especially on mornings. Tendencies in Tallinn show constantly increasing car ownership and modal split change towards car usage. Increasing car usage is scaling up already existing parking and environmental issues. Since introducing the P&R system in Tallinn in 2007 there have been no studies on its usage, effectiveness and influence on traffic.

The measure is aimed to improve existing P&R and School Bus systems. This is done by researching usage and problems of the current systems and analyzing possibilities for improvement. The results of the analyze are the result from the measure, no physical implementation on new P&R facilities or school bus lines is planned.

Description of RTD Activity

RTD activity of the measure consisted of three studies:

- A study on the existing P&R car park network was carried out by the Tallinn University of Technology (TUT) during spring 2010 and in September 2012. The study was based on an analysis of existing P&R car parks and it brought out statistics of usage, reasons behind problems and gave recommendations for improving and developing the system.
- A study on the existing School Bus network was carried out by TUT and Tallinn Transportation Department (TTD) during 2011. The study gave an overview of the existing service, demand, need and attitude towards the service and recommendations for new School Bus routes based on the number of children living in different areas around Tallinn.
- A survey among car drivers parking in the city centre was carried out in September 2012. Questions of the survey were directed to mobility habits and needs and reasons for not using the P&R system.

Study on existing P&R facilities was conducted during spring 2010 based on field study for P&R usage, demand and existing situation. The study on School Bus was conducted in spring 2011 based on field study and survey of children's parents through e-school system.

Outputs and Results

The conclusions from the study on P&R were:

- The P&R car park system was not created according to recommendations from preliminary study, but based on minimal effort for creating the system. Usage of four existing P&R car

parks in Tallinn was low in May 2010, from 35% in the best example to practically no users in two of them, 15% in average. The two used car parks showed that there is existing demand for P&R services and 79% of the P&R system users were female;

- In case of all 4 car parks, using P&R and public transport for getting to the city centre resulted in time loss (15-45min) compared to driving to the city centre in 2010;
- Financial benefit for P&R users is depending on if the car user has to pay for parking in the city centre or not (for example parking costs are covered by employer). In latter case paying of PT fare and using P&R results in economic loss for the user compared to driving to and parking in the city centre;
- There was no information available in 2010 in the car parks on the P&R system and principles for the users;
- There had been no systematic marketing for the system;
- The original goal of measure TAL 2.1 to reduce traffic by 5% from eastern direction of Tallinn was unreachable even with full scale use of existing system;
- Influence of existing P&R on traffic in the city centre is non-existent (less than 1% in every car parks direction). Even with full scale use of the P&R system the influence to traffic would be minimal. To increase the influence and reach the goals, the system (network) has to be redesigned, expanded and marketed by the city, which is out of the scope of this measure.

There were several interesting findings with the counts that require further studies for making conclusions. However the findings might be important factors for increasing usage of the system. The conclusions from the counts were:

- The average usage of the P&R car parks was still low (24%) in September 2010 although one car park had reached 58% of its capacity usage;
- Purposeful P&R system usage in the 4 car parks by gender remained relatively same – from 79% in 2010 to 77% in 2012 were female users.
- In 2012 in the Tondi P&R car park there was a considerable amount of drivers who dropped someone to the PT stop next to the P&R car park and continued their trip. When the number of purposeful P&R car park users was 52 (55% of total number of users during 7:00-9:00), the number of users dropped to the PT stop was 19 (20%). This kind of behaviour is often organized in other countries and the system is called “Kiss and Ride”. The share of female persons using this kind of opportunity was even higher than with P&R – 90% and the other two users were schoolchildren. Similar behaviour was noted in the Pirita P&R car park but not recorded in detail;
- Usage of the Tondi P&R car park for local parking was 25% of the total number of 98 parking spaces;
- 11% of the total parking spaces in the Tondi P&R car park were in use already before 7:00 and many of the cars that were in the car park before 7:00 left during the counting hours.

The results from the study on School Bus were following:

- 76% of the city centre school users live in Tallinn, majority of others in the residential areas just outside of Tallinn that were developed during past two decades;
- 55% of the parents of the schoolchildren work in the city centre, 6,6% outside of Tallinn;
- The main home-school transportation mode is public transport with 53%, next is taken by car with 37% and 9% of children go by foot;
- 70% of school-home trips are made with public transport, 15% is taken by car;

- 81% of the home-school public transport users are using the public city lines, 8% are using the School Bus lines;
- 80% of the parents who are driving their children to school would use (sum of answers certainly and probably) School Bus system if it would be developed according to needs;
- 65% of car users in the School Bus study would not use the existing P&R system for various reasons.

The conclusions from the survey among drivers parking in the city centre were:

- 62% of the respondents are parking in the city centre regularly: daily or 2-3 times a week;
- 42% of the respondents were aware of the P&R car parks and 9% had used the P&R system. 45% of the respondents outside Harju county (surrounding Tallinn from all directions) were not aware of the P&R system;
- 42% of all respondents stated that they are not using the P&R car parks, because there is no suitable PT line for them. This was by far the most frequent reason for not using PT. The percentage of this answer varied by direction and was up to 59% for some directions, which was generally in accordance with low usage of the P&R car parks;
- Only 8% of all respondents would probably use the P&R system in future. 28% of all respondents were not sure about it and 64% would not use the P&R system. The negative acceptance was up to 78% from one particular direction.

Resulting Decision-making

The studies have given base for decisions to promote P&R and School Bus publicly in the scope of the measure. Tallinn city has no fixed plans so far (November 2012) to improve either of the systems in near future.

Lessons Learnt

The main conclusion from the researchers who conducted the studies are:

- Tallinn city does not have systematic and regular overview of all transport-related services in the city;
- Influence of previous measures and projects on transportation system is often not evaluated;
- Conclusions from previous analyzes are often not followed or are followed implementing only actions with minimal cost.

Cost-effectiveness

The results from the P&R study have been in accordance with expectations from all sides. The results are basis for estimating the needs and costs of expanding and improving the system that would influence traffic and parking in the city centre.

Dissemination and Exploitation

As a result from studies several newspaper articles and advertisements were published in newspapers by Tallinn city in 2011 promoting P&R and School Bus. No additional physical implementation has been planned as of November 2012.

