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## Context and Purpose

The bus line from the centre of Utrecht to the North of Utrecht is the only PT-corridor from / to Utrecht Central Station where buses do not have a completely separate bus lane. Nor can they have this in the future. Instead, the buses meet a lot of obstacles, such as e.g. (open) bridges. The travel time between the Centre and Overvecht (a large neighborhood in the North) is too long and unpredictable and the routes to this area are not sufficiently recognizable. The need for improvements on this bus line is written down in the Air Quality Action Plan of the City Council, which was approved in December 2009.

The aim of this MIMOSA project is to increase the quality (travel times) and reliability of the bus lines from the Centre to Northern Utrecht (Overvecht) by implementing several physical measures. By doing so, the usage of the buses on this line should be increased as well.

Concretely, the aim is to increase the average speed from 15 or 16 to 20 km/hour. The current travel time (reference 2010) on the main stretch of the line (between Utrecht Central Station and the shopping centre Overvecht) should be shortened in 2020 with around 25%. This should lead to a time saved of 2,5 minutes. Other bus lines should be well-connected to this line and can also profit from the measures that will be taken.

Practically, the project aims to propose measures that make these improvements reality. There is a distinction between measures for the short, medium and long term. Short term measures can be (technically) elaborated in the next phase and implemented as soon as possible, partly within the duration of the MIMOSA project but at least before 2015 (Track 1). The medium term mainly concerns measures that integrate the lines in Overvecht Centre and other Overvecht bus lines

(Track 2). The long term measures could e.g. consist of a completely new route with possible a new way to cross the River Vecht and possibly the development of a tram connection (Track 3).

## Summary Contents

The problem on this bus route can be summarized as follows:

- the travel time between Utrecht and Overvecht is too long
- the travel time is irregular and unreliable leading to an unsatisfactory situation
- the irregularity leads to high exploitation costs
- the PT-node near shopping centre Overvecht is not recognizable at all
- the routes to Overvecht from Utrecht centre are not sufficiently recognizable
- the river Vecht forms a barrier for buses: there is only a limit amount of bridges, which are regularly open (for boats to pass).

Chapter 2 describes various potential bus routes from Utrecht Central Station (CS) to Overvecht. There are several alternatives between CS and Overvecht that could be used. Depending on characteristics such as length, travel time, time that can be saved and remaining bottlenecks, Chapter five makes a decision on the preferred route. Three available routes for the short term are described: the current one (Red Bridge route) and two alternatives. Routes for the longer term heavily depend on the Public Transport Vision of the Region of Utrecht. A concept of this document only became available in December 2010 and therefore a conclusive list of alternative routes cannot be given yet. That's why improving existing routes has priority at the moment.

In chapter 3, relevant policy documents are listed and ongoing or future (construction) projects close to the various routes are described. The policy documents form the framework in which the solutions for the bus line to Overvecht should fit. Three policy documents are still under development (e.g. the Regional Public Transport Vision), but Utrecht's Air Quality Action Plan has already been approved. Three measures in this plan can be of influence on the choice of measures for the Overvecht route. As for the ongoing or future (construction) projects close to the various routes, none has a decisive influence on the choice of route or solutions for bottlenecks on the short term (Track 1). However, for the medium term, there are some developments around Overvecht Center that can be of influence (Track 2).

Chapter 4 analyses the bottlenecks and measurement data. To gain insight in the current PT situation, data and results from various models were used to get objective data on three bus lines. In addition, a questionnaire was distributed among travellers and bus drivers were interviewed. The objective data such as frequency, travel times, delays, number of travellers and other traffic (cars) on the routes are described first, depicted in tables and on maps. The subjective data from passengers and drivers comes from 300 questionnaires that passengers filled in on two different bus lines. It shows they are quite satisfied with the current situation and the punctuality. The current chaos on Utrecht CS is often mentioned as a negative point.

So *subjective* evaluation is quite positive, but *objectively* there are a large number of bottlenecks on the route. The difference in perception can be explained by the fact that the range of travel times is now quite broad, which makes the buses seem to drive on time. However, the travel times are too long for the aim of the City: making this PT-route faster, more attractive and more financially attractive (exploitation). This can only be done by solving the bottlenecks.

In chapter 5, measures that substantially improve the traffic flow on this particular bus route are described. This is done per location (road stretch and / or intersection). 16 measures are included, each with an aerial photo of the location, an analysis, feasibility, cost description and planning (Track 1). This list shows that there are several measures that can be implemented on a short term (before 2015). Especially the current route of lines 6 and 7 to/from Overvecht that cross the Red Bridge can be optimised soon, so that the aim of 2,5 minutes of saved time can be reached. Reliability is mainly breached by the Red Bridge: this opens occasionally. Bridge openings are an issue on the other routes as well. One of the alternatives requires such a large investment that the report advises negatively for this.

Chapter 6 looks at the potential medium and long term plans (Tracks 2 and 3). The measures are described, but not yet in a very detailed way. It rather takes the form of a recommendation on what to do further research in the next phase.

The conclusions can be found in the last chapter. The Red Bridge route (route 1) is the best route between Utrecht Central Station and the northern neighbourhood Overvecht. The most used stops are on this route and only on this route the goals can be reached. Route 2 needs too large investments and route 3 has one bottleneck that cannot be solved and in addition also suffers from the bridge openings.

On the short term it is recommended to invest approx. 6 million euro in the Red Bridge route. The measures to optimise the route include enlarging existing road lanes, better coordinating bridge openings, removing or merging bus stops, placing a traffic light near the Red Bridge and closing of the Red Bridge for car traffic. The estimated time that can be saved driving in to the city during evening rush hour is 100-160 seconds. When driving out of the city, the time saved is between 190 and 260 seconds. Since the aim is to realise a saving of at least 2,5 minutes (150 seconds), this is a good alternative. There will however still be a dependency on the opening of the Red Bridge.

Nearly all measures to be taken on this route are dependant on closing of the street called Paardenveld, as has been announced in the Air Quality Action Plan. Without this closure, the bus route can hardly be optimised.

In the medium term, the situation at Overvecht shopping centre should be investigated and the position of the bus should be included in the plans for this area. Financial means for this current project that are not used for short term measures should be reserved for the medium term measures / research. For the long term, the possibility of building a tram connection should be researched, as well as a new way to cross the river Vecht (bridge or tunnel).

## Functional Use

Now that all potential measures have been collected and described and recommendations have been made for the short term, a political decision is required. Once this decision has been made on the selection of measures, the technical design will take place and the implementation can start. Approval of the Vision by the City Board is expected in Spring 2011. After this, the design team will start making draft designs for various measures and a consultation round on this will take place. In the Autumn of 2011 is expected that the City Board will approve the 'programme of requirements' related to the technical details. Then, the designs will be finalised and implementation will be prepared for short term measures.

One "quick win" measure has been identified in the scan and is likely to be implemented in 2011 is the modification of an intersection. At the crossing of Brailledreef and Loevenhoutsedijk there are currently no special facilities for buses, like free bus lanes or priority at traffic lights. This causes delays for 30-60 seconds. It is expected that implementation of a measure to improve this situation will take place in the end of 2011, provided that this is technically feasible.

For the medium and long term measures, various alternative require more in depth research. The situation at Overvecht shopping centre should for example be investigated and the position of the bus should be included in the plans for this area. Financial means that are not used for short term measures should be reserved for the medium term measures and the research. For the long term, the possibility of building a tram connection should be researched, as well as a new way to cross the river Vecht (bridge or tunnel).

## Lessons learned

- To form a project team in an early stage, including people of various expertise (such as communication, Traffic, Spatial Planning, Design) and to appoint a professional project leader. It is important to also involve the Public Transport Operator in the project team.

- To take time to write a solid project plan: this will benefit the project for the whole duration. It is important to already include a detailed description of the baseline measurement in the project plan, including suitable indicators.
- To take sufficient time to make an inventory of the interaction with other (infrastructural) projects for the area concerned. Developments in other project can largely affect or delay (the implementation of) your own project.
- To make sure that the aim of the project is embedded in policy documents beforehand. This measure in Utrecht is concretely described in the Action Plan for Air Quality that has been adopted by the City Government. This provides a good basis for the development of the project, for access to sufficient finances and it speeds up the political decision-making process.

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