



## LEARNING LOOPS IN THE PUBLIC REALM

WP5. Learning Living Lab - Brussels  
T5.3. Co-design and evaluation of alternative solutions

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### Deliverable 5.3a

# REPORT ON THE CO-CREATION AND EVALUATION OUTCOMES

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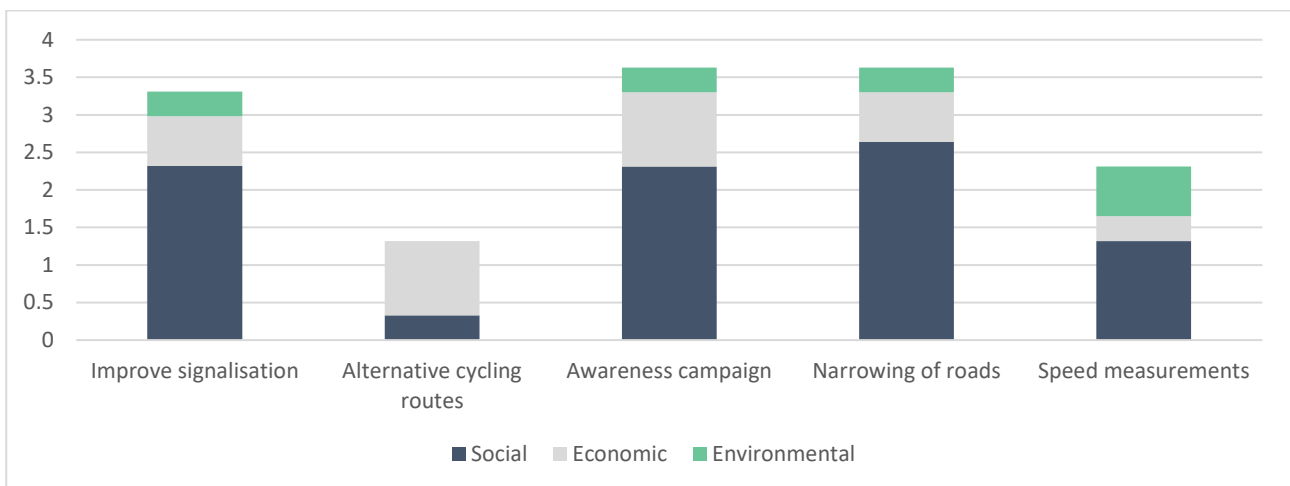
## PUBLISHABLE SUMMARY

Please add a 1-2 page summary of the co-design phase that can be published both on the LOOPER general website and the local platform sites.

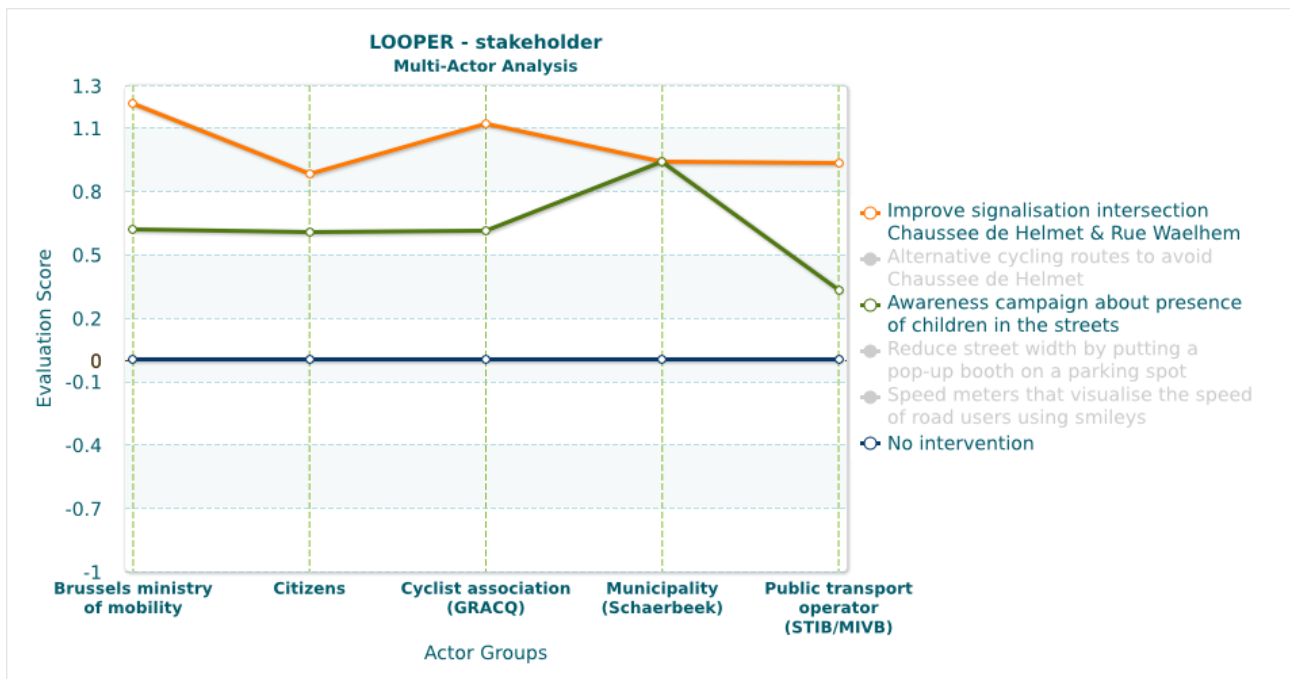
The co-creation approach in the Brussels LOOPER Living Lab resulted in the submission via the online LOOPER platform of over forty ideas to improve traffic safety. During the first co-design workshop, citizens selected five ideas whose sustainability impacts and stakeholder support would be evaluated by the Living Lab coordinators. The following ideas were selected:

1. **Improve signalisation** at a dangerous intersection
2. Indicate **alternative cycling routes** to avoid busy high street
3. Set up an **awareness campaign** to inform road users of children in the streets
4. **Reduce road width** using temporary installations
5. **Speed meters** that visualise the speed of road users using smileys

A multi-criteria analysis (MCA) was used to find out the impacts of the five co-designed ideas on the sustainability of the Helmet neighbourhood in which the Brussels Living Lab is located. Here, sustainability impacts include the environmental, economic, and social impacts of an idea. The analysis revealed that all of the five co-created ideas is expected to have an overall positive effect on the sustainability of the Helmet neighbourhood. As shown in the image below, the awareness campaign for children in the streets has the highest sustainability score, followed closely by the narrowing of roads using temporary installations. The alternative cycling routes have the lowest sustainability score.



Multi-actor multi-criteria analysis (MAMCA) was used to assess stakeholder preferences by evaluating the impact of ideas on criteria of stakeholders. For this we determined the main stakeholders – the municipality, a cycling association, citizens, the public transport operator, and the regional ministry of mobility – that would be involved in or affected by the interventions, identified their objectives and how important they find these objectives (weighting). For each co-designed idea, experts evaluated the impact on the stakeholders' criteria by using a seven-point scale from very positive to very negative. As shown in the image below, the two co-designed ideas with the highest evaluation scores in the Brussels LOOPER Living Lab were the improvement of the signalisation at a dangerous intersection and an awareness campaign about the presence of children in the streets. Improving the signalisation at the dangerous intersection will have the most positive impact on the criteria of all stakeholders. It is therefore expected that the implementation of this alternative will gain the most support from stakeholders.



During the second co-design workshop, citizens decided to implement the two alternatives with the highest expected stakeholder support. However, the idea with the highest evaluation score – the redesign of the intersection – might not be feasible to implement within the timeframe of the LOOPER project as it needs to go through an administrative process for approval. Nevertheless, the municipality is looking into executing this alternative and implementation may start in 2019. This is not the case for the idea with the second highest evaluation score, the awareness campaign. This idea will be implemented in June 2019.

The stakeholders that were involved in the Brussels LOOPER Living Lab during the co-design and evaluation phase were generally interested in involving the public in finding solutions to urban problems and were curious about the project. Sustained involvement of citizens remains an issue within the Lab, however. The co-design process gave citizens the possibility to suggest solutions to urban problems, whereas the evaluation process provided insights on the sustainability impacts of these ideas and the expected stakeholder support.

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# 1. INTRODUCTION

## 1.1.Objective of this deliverable

The second stage of the LOOPER co-creation approach is the co-design and evaluation of solutions. This deliverable discusses the findings and experiences of this stage in the Brussels Living Lab, whose thematic focus is traffic safety.

## 1.2.Related deliverables

This deliverable on the Brussels LOOPER Living Lab is a continuation of the living lab implementation plan (deliverable 5.1a) and the report on the outcomes of the problem identification phase (deliverable 5.2a). The LOOPER Living Labs in Manchester and Verona have the same deliverables, respectively deliverables 7.1a, 7.2a, and 7.3a for Manchester and deliverables 6.1a, 6.2a, and 6.3a for Verona.

This deliverable draws from the following deliverables:

- Integrating evaluation tools in the LOOPER platform (deliverable 3.3)
- Guidelines for living labs (deliverable 4.1)
- Framework for monitoring and evaluation in Living Labs (deliverable 4.2)

## 2. PLANNING OF THE CO-DESIGN STAGE

### 2.1. Collect ideas through the online platform

The LOOPER online platform<sup>1</sup> was used to collect ideas and proposals to improve traffic safety in the Helmet neighbourhood. The platform was promoted during an event on the annual car free Sunday, via e-mail and the Facebook page<sup>2</sup>. Results of the data collection were shared with citizens in order to inspire participants to co-design solutions. In total, 43 ideas were submitted by citizens during four weeks.

### 2.2. Co-design workshops

#### 2.2.1. First co-design workshop (16/10/2018)

**Goal:** Select 4-5 ideas that can be further developed and analysed.

**Activities:** The workshop will start with a presentation by the Living Lab organisers on the ideas that were submitted via the online platform. These ideas will be discussed in groups in order to select the most important/urgent ones. Traffic safety experts and a mobility expert from Schaerbeek municipality will also be present to inform citizens on the feasibility of ideas and give suggestions for improvements.

#### 2.2.2. Second co-design workshop (15/11/2018)

**Goal:** Select 1-2 ideas to be implemented.

**Activities:** The Living Lab organisers will present the results of the sustainability Multi-Criteria Analysis (MCA) and the Multi-Actor Multi-Criteria Analysis (MAMCA). Citizens will then discuss the results with the Living Lab organisers and traffic safety experts in order to select the idea that will be implemented.

### 2.3. MCA and MAMCA analysis

MCA will be used to find out the impacts of the co-designed ideas on the sustainability of the Helmet neighbourhood. The MAMCA will be executed in order to find out the expected stakeholder support for each co-designed idea. VUB-MOBI will interview the identified stakeholders in order to perform the MAMCA.

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<sup>1</sup> <http://brussels.looperproject.eu/idea/>

<sup>2</sup> <https://www.facebook.com/looper.helmet/>

## 3. CO-DESIGN STAGE

### 3.1. Workshops

#### 3.1.1. First co-design workshop

**Attendance:** We did not follow the planning described in the previous section because attendance was very low. There were ten participants: 6 citizens, 2 VUB-MOBI, 2 BRAL, 2 traffic safety experts and 1 Schaerbeek municipality representative.

**Content:** We directly started with the discussions in small groups. We used the available tools (maps, pictures, graph) to have an exchange and discussion on the proposals. Based on these discussions, the groups were able to come up with several concrete proposals. This was a learning loop for citizens, as they would find out why certain ideas sometimes have perverse effects or are ineffective.

The moderator used the following discussion frame:

1. *Look at all the ideas*
2. *Put the ideas on the graph, ranking them according to impact (awareness) and urgency*
3. *If possible and necessary, mix and match different proposals*
4. *Work on that idea*
  - a. *Tune with mobility vision*
  - b. *Tune with impact on awareness*
  - c. *If necessary, come up with a creative solution if the idea seems impossible to implement*
5. *Make the idea really concrete in order to suggest them to the group*

Despite the low number of participants, the discussions at the two tables were lively and interesting.

**Results:** Five ideas were collectively selected by the citizens at the two tables. These ideas will be evaluated by VUB-MOBI before the next workshop in order to ascertain their impacts on the sustainability of the neighbourhood as well as the expected stakeholder support. The ideas are:

1. Improve signalisation at a dangerous intersection
2. Indicate alternative cycling route to avoid busy high street
3. Set up an awareness campaign to inform road users of children in the streets
4. Decrease the width of the road using temporary installations
5. Inform road users of their speed using dynamic information signs

**Communication:** We should have asked for people's phone number or e-mail when they uploaded an idea on the platform in order to contact personally them before the workshop. Moreover, we did not communicate as much for this workshop, since over 40 ideas had been submitted to the platform and we thought people who submitted an idea on the platform would also come to the workshop.

**Experiences:** Whereas many citizens found their way to the online platform to submit ideas, fewer found their way to our Wednesday evening workshop to select ideas. Just as during previous workshops, new people came that had not previously participated in LOOPER. Nevertheless, the ideas were discussed with those that came. The traffic safety experts shared their knowledge with citizens, which improved the discussion and selection of ideas.



Figure 1 Citizens discuss submitted ideas in groups

### 3.1.2. Second co-design workshop

**Attendance:** Once again, the attendance was a problem. Other meetings were organized the same evening by other NGOs and citizen initiatives (GRACQ and Réseau Transition), and there was also a football game. This may explain partly why they were only 4 external participants (2 inhabitants, 1 community worker, 1 municipality representative). The inhabitants already attended previous workshops/meetings, so we did not have to explain the project to them.

**Content:** However, we were able to have an interesting discussion based on the results of the MAMCA and MCA. The general impression was that the participants understood the results of the evaluation, but there is no hard proof for this. The idea that was selected for implementation had the second-highest evaluation score in the MAMCA and would give us short-term results. The idea with the highest evaluation score would be more difficult to implement due to slow bureaucratic process. Nevertheless, the municipality will further investigate the possibility to implement this idea.

**Results:** From the discussion it became clear there were two preferred ideas: improving the signalisation at a dangerous intersection and the awareness campaign. Since the redevelopment of an intersection is a lengthy and bureaucratic process, the consensus was to execute the awareness campaign. Nevertheless, Schaerbeek municipality engaged to review the feasibility of redesigning the intersection.

The awareness campaign will be co-implemented with a local NGO, which was also an argument in favour of its selection. The intention of the idea is to get children involved in painting the road during the annual street party (*Rue Ouverte*) organised by the NGO La Gerbe AMO.

The municipality representative was interested by the idea with the highest evaluation score – improvement of the signalisation at a dangerous intersection – and planned to further discuss and analyse this idea with the mobility team of the municipality.

**Communication:** We communicated more thoroughly for this workshop, creating visualisation of the selected ideas (see Figure 2). The objective was to show that the project was at a concrete stage. These images were shared on the Facebook page of the Living Lab and were also communicated through the mailing list.

**Experiences:** The number of citizens that attended this workshop was very low. It is therefore impossible to prove whether the sustainability MCA and MAMCA were understood by those present.

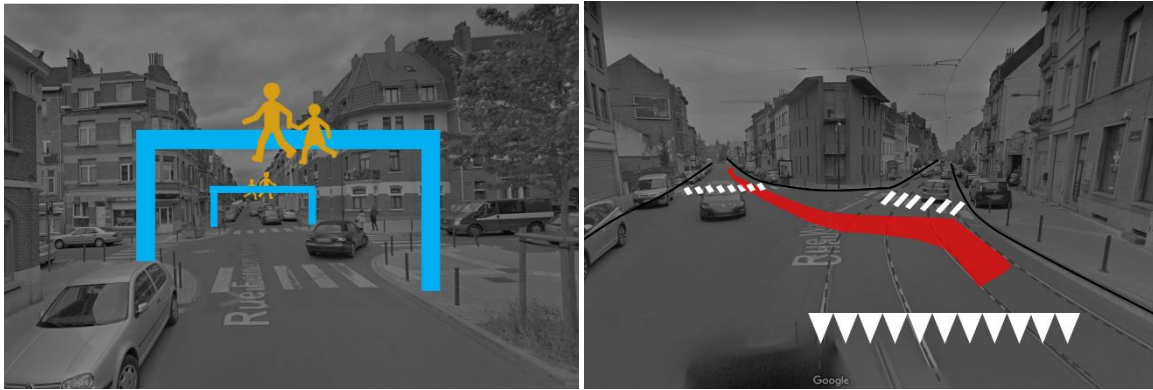


Figure 2 Visualisations of the co-designed ideas

### 3.2. Online

We used an online platform developed by NextHamburg to collect ideas from citizens and stakeholders (see Figure 3). In total, 43 proposals were submitted by 25 people or organisations.

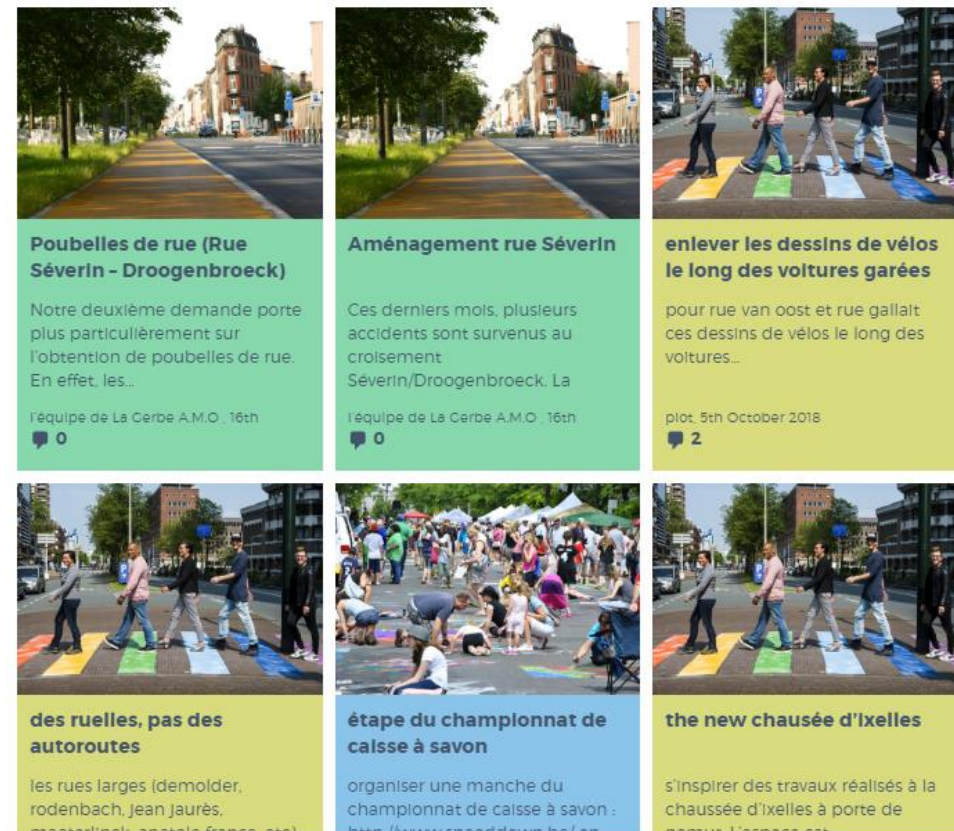


Figure 3 The LOOPER idea page

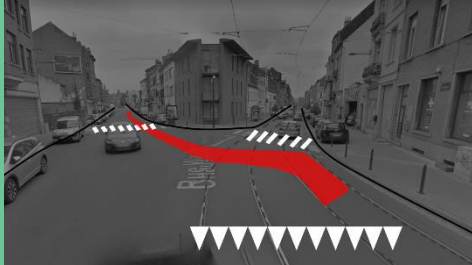


There was no debate between citizens on the platform. One explanation for the absence of debate could be the homogeneity of the group of citizens participating in LOOPER.



## 4. RESULTS OF THE CO-DESIGN STAGE

### 4.1. List of co-designed ideas

The ideas shown in Table 1 were selected during the first co-design workshop. The ideas highlighted in green will be implemented.

IDEA NO.	IDEA	VISUALISATION	LOCATION	SUBMITTED BY	DESCRIPTION
1	Improve signalisation at intersection		Chaussée de Helmet x Rue Waelhem		It is not clear to road users who has priority at this crossing. By improving signposting (e.g. by signs or markings on the road) this intersection can become safer, also for cyclists who have to cross the tram tracks.
2	Alternative cycling routes		Chaussée de Helmet		Chaussée de Helmet is a busy street with little space for cyclists. By creating alternative routes by means of visualisations (e.g. by signs or markings), cyclists can cross the Helmet neighbourhood in a safer way.
3	Awareness campaign		Rue F. Séverin		To increase road safety, motorists should be clearly informed about the presence of children. This awareness campaign can be made together with children, e.g. by having children make drawings and signs that are placed in a street.



IDEA NO.	IDEA	VISUALISATION	LOCATION	SUBMITTED BY	DESCRIPTION
4	Temporarily reduce road width		Square Riga		The wide streets in Helmet (e.g. Huart Hamoirlaan) invite motorists to speed, while they are in a 30km/h zone. Narrowing the street by temporarily placing a tent in a parking lot will reduce the speed of motorists.
5	Speed meters that visualize speed with smileys		Chaussée de Helmet		Excessive speed is not an unknown problem in Helmet. Some motorists, however, do not realise that they are driving too fast. By placing a temporary speedometer in hot spots (e.g. Chaussée de Helmet), motorists are informed about their speed by means of smileys and whether this is the limit above (☹️) or below (😊).

Table 1 List of co-designed ideas

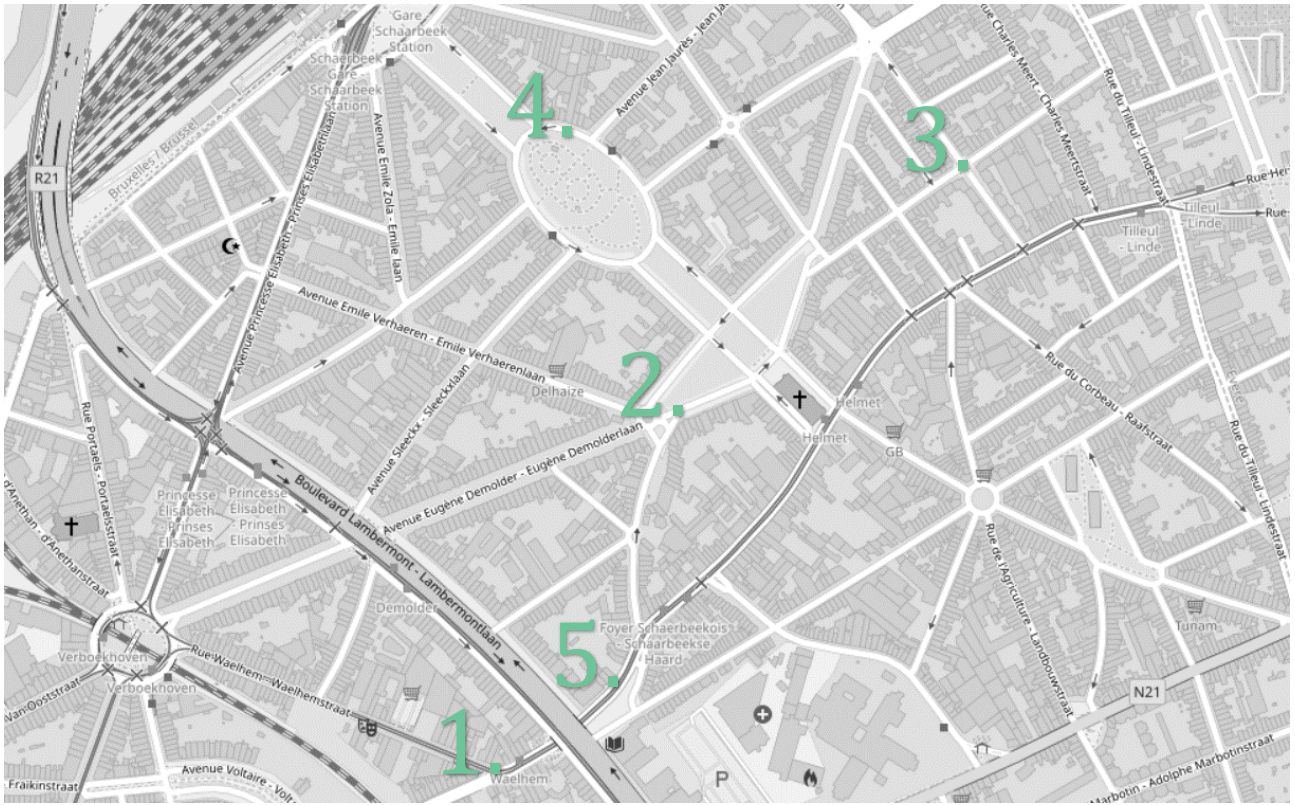


Figure 4 Locations of co-designed ideas



## 5. EVALUATION OF SUSTAINABILITY IMPACTS

### 5.1. Sustainability MCA

The sustainability impacts of the five selected co-designed alternatives were evaluated using multi-criteria analysis (MCA). The results of the sustainability MCA rank the alternatives on their sustainability scores and show which alternative is the most or least sustainable. Since the outcome of an MCA is influenced by external factors and uncertainties, the results of a sustainability MCA should be seen as a movement towards the best possible solution(s) rather than the best solution.

The weights and criteria used in the sustainability MCA come from the NISTO<sup>3</sup> project. The criteria are based on the three pillars of sustainability – economy, environment, social – and are based on case studies, a review of transport evaluation schemes, and the ranking of potential criteria by 214 stakeholders from the NISTO partner regions in a survey. The three pillars of sustainability were assigned equal weights, and the weights of the criteria within the pillars are based on the answers of 93 governmental representatives in North-West Europe.

The MCA was executed by experts in order to find out the sustainability impacts of each alternative. For each alternative, the experts stated whether its impact on a criterion would be very positive, positive, slightly positive, neutral, slightly negative, negative, or very negative. The evaluation of the impact of the alternatives on the criteria was executed by:

- An Volckaert – Belgian Road Research Centre (BRRC)
- Hinko Van Geelen – Belgian Road Research Centre (BRRC)
- Dr. Imre Keserü – Mobility, Logistics and Automotive Technology Research Centre at Vrije Universiteit Brussel (VUB-MOBI)
- Jesse Pappers – Mobility, Logistics and Automotive Technology Research Centre at Vrije Universiteit Brussel (VUB-MOBI)
- Florence Lepoudre – Citizens Action Brussels (BRAL)
- Tim Cassiers – Citizens Action Brussels (BRAL)

The list of co-designed alternatives is given in section 5.2. This is followed by the evaluation of the impacts of the alternatives on the criteria. The outcome of the sustainability MCA is summarised in section 5.4.

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<sup>3</sup> <https://www.nisto-project.eu>

## 5.2.List of alternatives

When communicating to citizens, we used the word ‘ideas’ rather than ‘alternatives’. In this section, however, we use ‘alternatives’ when describing the co-designed ideas. The alternatives whose impact on sustainability criteria were evaluated are listed below and described in more detail in Table 1.

1. **Improve signalisation** at a dangerous intersection
2. Indicate **alternative cycling routes** to avoid busy high street
3. Set up an **awareness campaign** to inform road users of children in the streets
4. **Reduce road width** using temporary installations
5. **Speed meters** that visualise the speed of road users using smileys

## 5.3.Evaluation of the sustainability impacts of alternatives on criteria

The tables in this section show the evaluation of the impact of the co-designed alternatives on the sustainability criteria. The economic criteria are shown in Table 2, the environmental criteria in Table 3, and the social criteria in Table 4. A more detailed analysis including the motivation for the evaluation can be found in Annex 1 – Sustainability MCA.

Alternative	Cost effectiveness	Economic activity	Public funding of transport	Reliability and travel time
<b>Improve signalisation at intersection</b>	<i>Slightly positive</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Slightly positive</i>
<b>Alternative cycling routes</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Slightly positive</i>
<b>Awareness campaign</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Slightly positive</i>
<b>Temporarily reduce road width</b>	<i>Slightly positive</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Slightly positive</i>
<b>Speed meters</b>	<i>Slightly positive</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>
<b>No intervention</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>

Table 2 Evaluation of impacts alternatives on economic criteria

Alternative	Air quality	Greenhouse emissions	gas	Land consumption	Noise	Resource use
<b>Improve signalisation at intersection</b>	<i>Neutral</i>	<i>Neutral</i>		<i>Neutral</i>	<i>Slightly positive</i>	<i>Neutral</i>
<b>Alternative cycling routes</b>	<i>Neutral</i>	<i>Neutral</i>		<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>
<b>Awareness campaign</b>	<i>Neutral</i>	<i>Neutral</i>		<i>Neutral</i>	<i>Slightly positive</i>	<i>Neutral</i>
<b>Temporarily reduce road width</b>	<i>Neutral</i>	<i>Neutral</i>		<i>Slightly positive</i>	<i>Neutral</i>	<i>Neutral</i>
<b>Speed meters</b>	<i>Slightly positive</i>	<i>Neutral</i>		<i>Neutral</i>	<i>Slightly positive</i>	<i>Neutral</i>
<b>No intervention</b>	<i>Neutral</i>	<i>Neutral</i>		<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>

Table 3 Evaluation of impacts alternatives on environmental criteria

Alternative	Accessibility of people with special needs	Equity	Health of citizens	Liveability	Safety	Security	Socio-political acceptance
<b>Improve signalisation at intersection</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Slightly positive</i>	<i>Very positive</i>	<i>Positive</i>	<i>Neutral</i>	<i>Slightly positive</i>
<b>Alternative cycling routes</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Slightly positive</i>
<b>Awareness campaign</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Positive</i>	<i>Slightly positive</i>	<i>Positive</i>	<i>Neutral</i>	<i>Positive</i>

<b>Temporarily reduce road width</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Positive</i>	<i>Positive</i>	<i>Positive</i>	<i>Neutral</i>	<i>Positive</i>
<b>Speed meters</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Slightly positive</i>	<i>Slightly positive</i>	<i>Slightly positive</i>	<i>Neutral</i>	<i>Slightly positive</i>
<b>No intervention</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>

*Table 4 Evaluation of impacts alternatives on social criteria*

## 5.4. Conclusions

The sustainability scores of the five co-created alternatives in the Brussels Living Lab are shown in Figure 5. The five alternatives are shown on the horizontal axis and the evaluation scores on the vertical axis. The evaluation scores of each alternative is divided into social, economic, and environmental. The awareness campaign has the highest sustainability score, followed closely by the narrowing of roads. The alternative cycling routes have the lowest sustainability score. This means that each of the five co-created alternatives will have an overall positive effect on the sustainability of the Helmet neighbourhood.

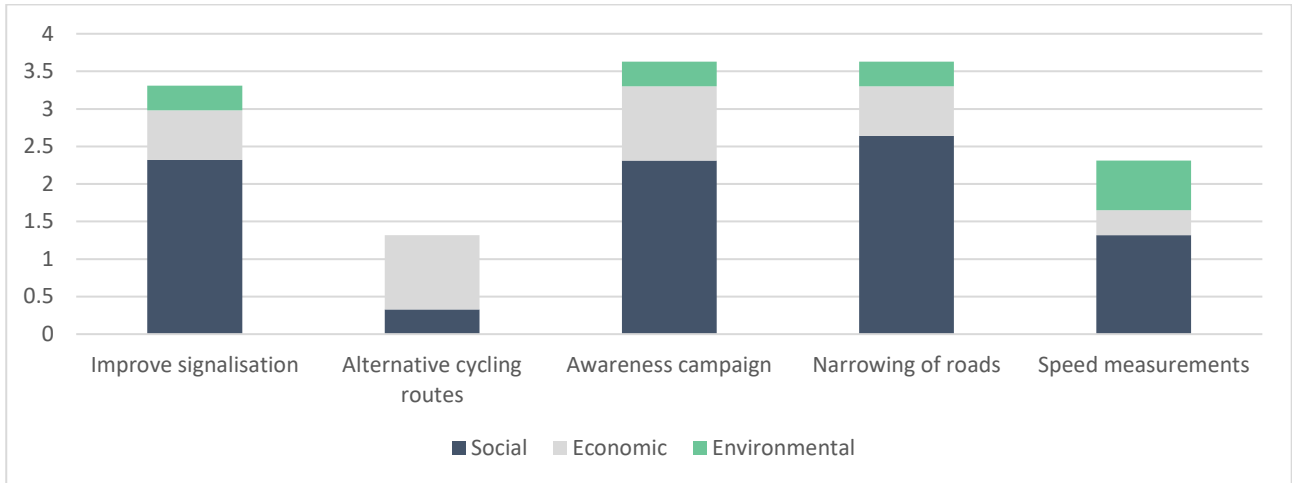


Figure 5 Outcome of the sustainability MCA

A more detailed analysis of the evaluation can be found in Figure 6. The criteria are on the horizontal axis and their respective weights on the left vertical axis. The evaluation scores for each alternative is shown on the right vertical axis. The figure below shows that none of the co-designed alternatives have a negative evaluation score on the criteria. In other words: each alternative will have a positive overall effect on the sustainability of the Helmet neighbourhood without negatively impacting one or more criteria.

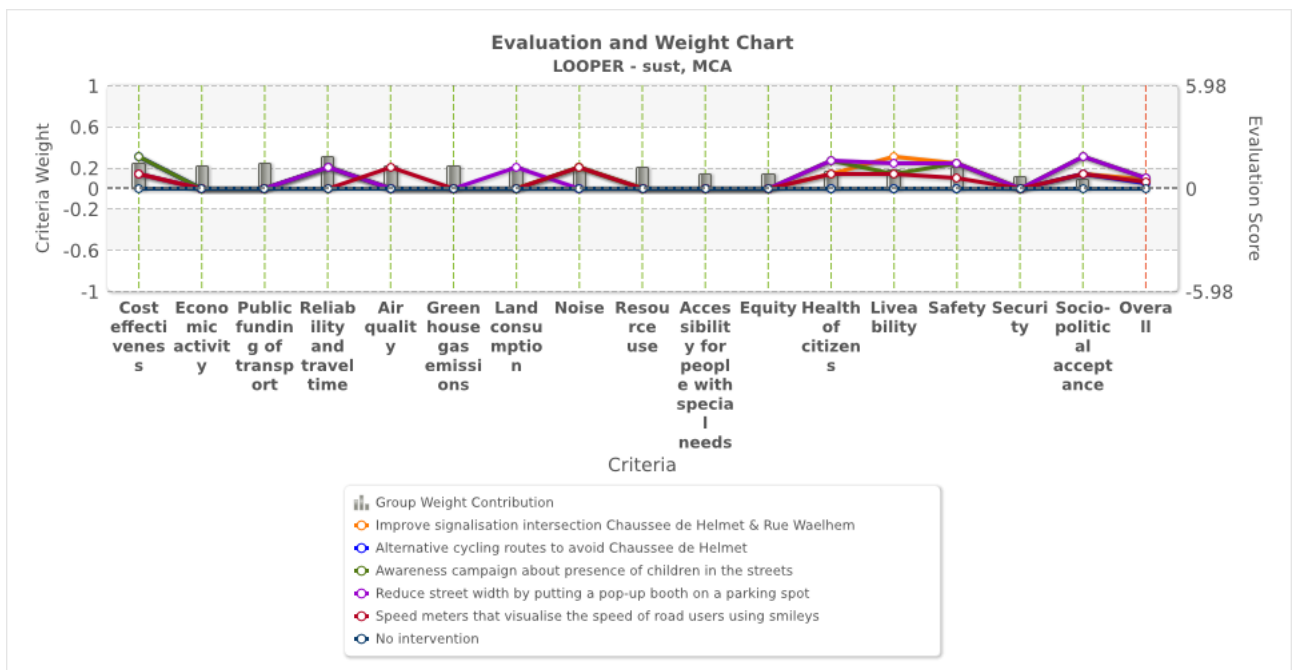


Figure 6 The evaluation and weight chart of the sustainability MCA

## 6. EVALUATION OF STAKEHOLDER SUPPORT

### 6.1.MAMCA

Multi-actor multi-criteria analysis (MAMCA) is a methodology that assesses stakeholder preferences. MAMCA differs from MCA in that it explicitly introduces stakeholders before the criteria and weights are defined, which can increase the acceptance of the proposed solution by the different stakeholders. Whereas MCA has one set of criteria and weights, each stakeholder group in a MAMCA defines their own. The weights reflect the importance a stakeholder gives to each criterion.

The MAMCA was executed by experts in order to find out the expected stakeholder support for each alternative. For each alternative, the experts stated whether its impact on a criterion would be very positive, positive, slightly positive, neutral, slightly negative, negative, or very negative. The evaluation of the impact of the alternatives on the stakeholders' criteria was executed by:

- An Volckaert – Belgian Road Research Centre (BRRC)
- Hinko Van Geelen – Belgian Road Research Centre (BRRC)
- Imre Keserü – Mobility, Logistics and Automotive Technology Research Centre at Vrije Universiteit Brussel (VUB-MOBI)
- Jesse Pappers – Mobility, Logistics and Automotive Technology Research Centre at Vrije Universiteit Brussel (VUB-MOBI)
- Florence Lepoudre – Citizens Action Brussels (BRAL)
- Tim Cassiers – Citizens Action Brussels (BRAL)

An overview of the five co-designed alternatives is given in section 6.2. The stakeholders described in section 6.3 were identified by citizens during the workshops as well as suggested by the Living Lab coordinators. Sections 6.4 - 6.8 show the criteria and weights for each stakeholder group. In order to get the criteria and weights from each stakeholder, representatives from the stakeholder groups were interviewed by the Living Lab coordinators. An overview of the stakeholder preferences for the alternatives is shown in section 6.9. The results of the MAMCA are summarised at the end of this chapter.

### 6.2.List of alternatives

The alternatives used in the evaluation of stakeholder support are the same as those used in the evaluation of sustainability impacts described in the previous section. The alternatives for whom the stakeholder support was evaluated are listed below and described in more detail in Table 1.

1. **Improve signalisation** at a dangerous intersection
2. Indicate **alternative cycling routes** to avoid busy high street
3. Set up an **awareness campaign** to inform road users of children in the streets
4. **Reduce road width** using temporary installations
5. **Speed meters** that visualise the speed of road users using smileys

### 6.3.List of stakeholders

Stakeholder group	Definition	Representative
<i>Name of the stakeholder group, i.e. government.</i>	<i>Description of the stakeholder group. In the example of the stakeholder group government: which level of government? What are their competences and responsibilities?</i>	<i>Name of person(s) that will be interviewed to collect the criteria and weights for the MAMCA.</i>

<b>Regional ministry of mobility (government)</b> <b>Bruxelles mobilité/Brussel mobiliteit</b>	Bruxelles Mobilité is the administration of the Brussels-Capital Region responsible for equipment, infrastructure and mobility issues. The primary challenge is to facilitate economic development – and the growing need for mobility solutions – while improving quality of life and sustainable development.	Benoît Dupriez – policy officer Françoise Godart – policy officer Frederik Depoortere – policy officer
<b>Municipal department of mobility (government)</b> <b>Commune de Schaerbeek/gemeente Schaarbeek</b>	Each of the 19 municipalities in Brussels is responsible for mobility and traffic safety within their territory.	Amélie Gregoire – mobility officer
<b>Cycling association (non-governmental organisation)</b> <b>GRACQ</b>	The association GRACQ – Groupe de Recherche et d’Action des Cyclists Quotidien – is an association that represents cyclists in the francophone region of Belgium (Brussels and Wallonia).	Luc Degraer – head of GRACQ Schaerbeek
<b>Public transport operator</b> <b>STIB/MIVB</b>	STIB/MIVB is responsible for public transport within the Brussels capital region.	Jacques Evenepoel – Director Public Affairs
<b>Citizens</b>	A survey of 36 citizens that have participated in the LOOPER project.	

Table 5 Stakeholder descriptions

## 6.4. Evaluation impact of alternatives on criteria citizens

### 6.4.1. Criteria and weights

The criteria and weights from citizens are shown in Table 6 and are visualised in Figure 7. Citizens prioritise traffic safety and the availability of cycling of infrastructure. Criteria with lower weights are reachability of public transport stops, air quality, traffic noise, and availability of car parking.

CRITERIA NAME	WEIGHT (%)
Air quality	13.10%
Traffic safety	34.00%
Availability cycling infrastructure	22.90%
Traffic noise	11.00%

Availability car parking	3.5%
Reachability public transport stops	15.50%

Table 6 Criteria and weights – citizens

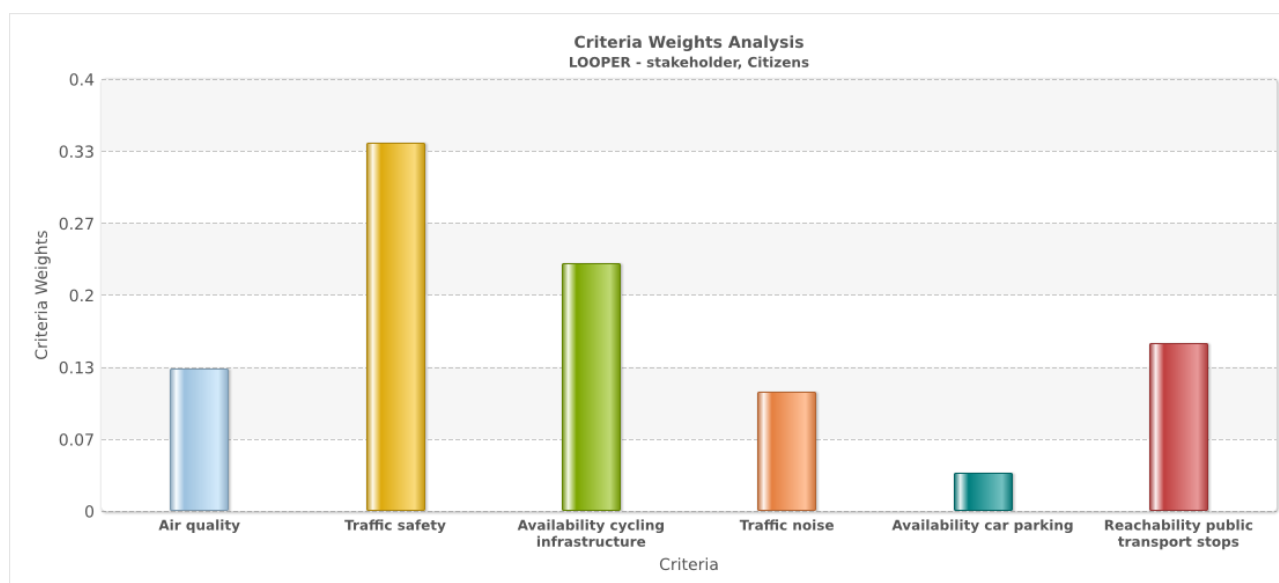


Figure 7 Criteria and weights – citizens

#### 6.4.2. Expert evaluation of impact alternatives on criteria

Table 7 shows the evaluation of the expected impact of the alternatives on citizens' criteria. The alternatives most often have a neutral, slightly positive, or positive impact on the citizen's criteria.

Alternative	Air quality	Traffic safety	Availability cycling infrastructure	Traffic noise	Availability car parking	Reachability public transport stops
<b>Improve signalisation at intersection</b>	<i>Neutral</i>	<i>Positive</i>	<i>Slightly positive</i>	<i>Slightly positive</i>	<i>Neutral</i>	<i>Neutral</i>
<b>Alternative cycling routes</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>
<b>Awareness campaign</b>	<i>Neutral</i>	<i>Positive</i>	<i>Neutral</i>	<i>Slightly positive</i>	<i>Neutral</i>	<i>Neutral</i>
<b>Temporarily reduce road width</b>	<i>Neutral</i>	<i>Positive</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Slightly negative</i>	<i>Neutral</i>
<b>Speed meters</b>	<i>Slightly positive</i>	<i>Slightly positive</i>	<i>Neutral</i>	<i>Slightly positive</i>	<i>Neutral</i>	<i>Neutral</i>



No intervention

Neutral

Neutral

Neutral

Neutral

Neutral

Neutral

Table 7 Evaluation impact alternatives on criteria – citizens

Figure 8 shows the evaluation score of each alternative on the citizens' criteria. The weight of each criterion is shown in the grey bar and the evaluation scores in the coloured lines. The alternatives have a neutral or positive impact on the citizens' criteria, with the exception of the reducing of the street width, which has a negative impact on the availability of car parking.

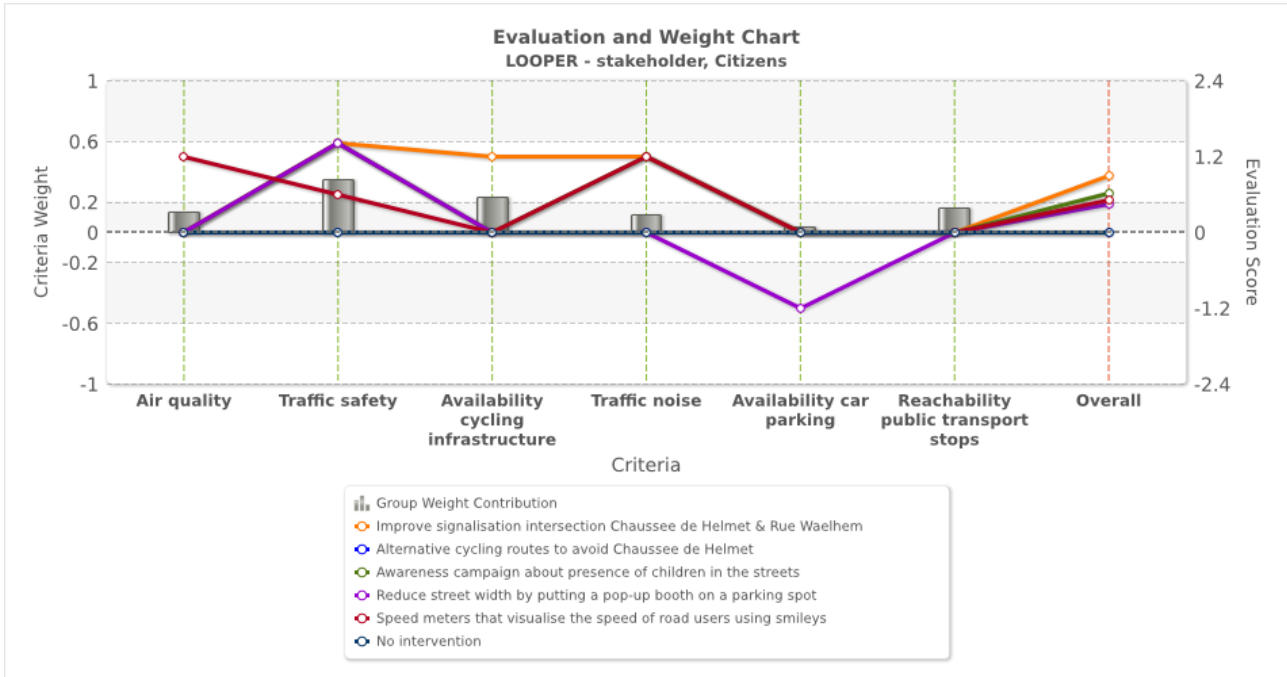


Figure 8 Evaluation and weight chart – citizens

### 6.4.3. Criteria group evaluation line/bar chart

The improvement of the signalisation at a dangerous intersection will have the most positive impact on the criteria of citizens, followed by the awareness campaign and the speed meters (see Figure 9). The reduction of street width using pop-up booths has a slight positive impact on the citizens' criteria, but the alternative cycling routes do not have an impact.

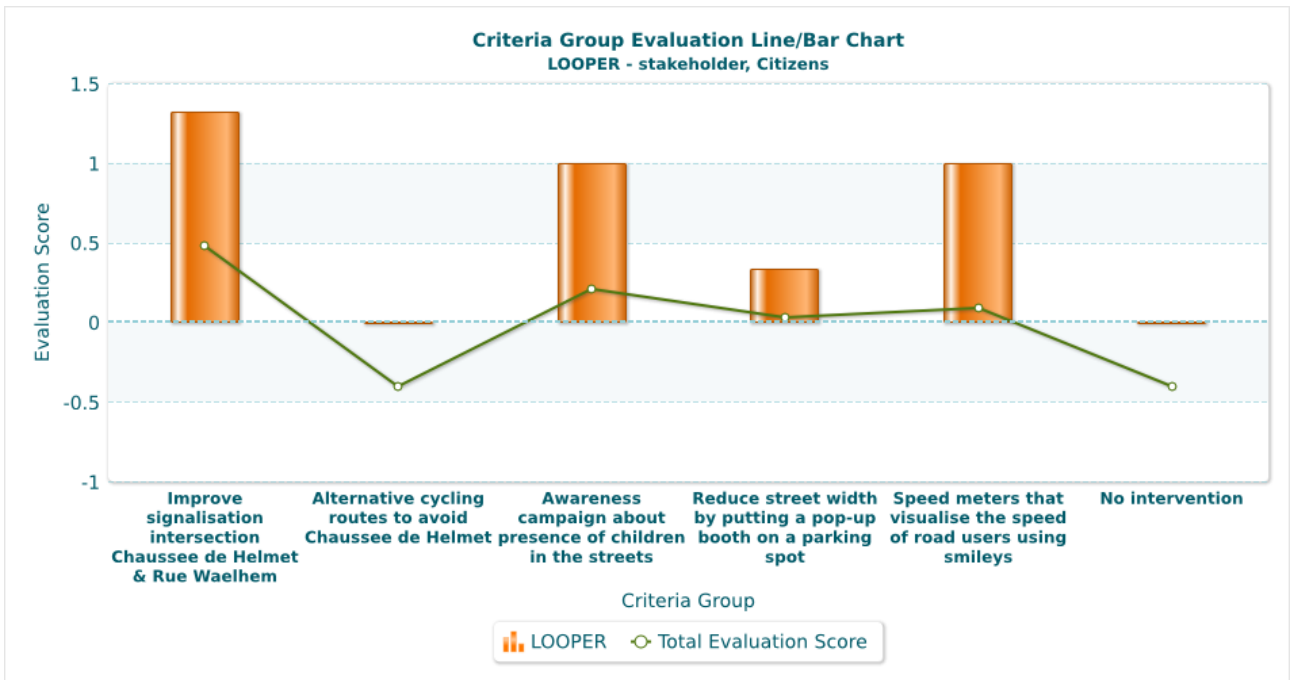


Figure 9 Criteria group evaluation line/bar chart – citizens

## 6.5. Evaluation impact of alternatives on criteria public transport operator

### 6.5.1. Criteria and weights

The criteria and weights from the Brussels public transport operator (STIB/MIVB) are shown in Table 8 and are visualised in Figure 10. The public transport operator prioritises the reliability of public transport and traffic safety over the costs of public transport and the accessibility for people with special needs.

CRITERIA NAME	WEIGHT (%)
Reliability public transport	50.25%
Traffic safety	23.69%
Costs of public transport	11.46%
Accessibility for people with special needs	14.61%

Table 8 Criteria and weights – public transport operator

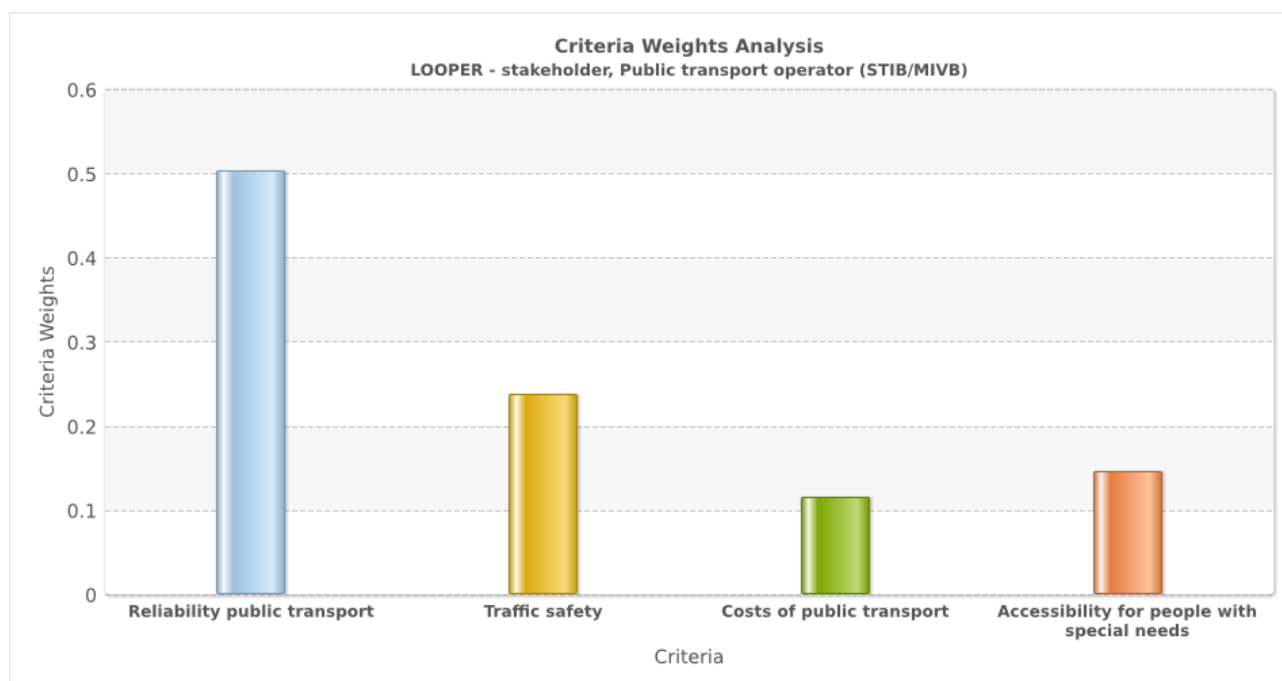


Figure 10 Criteria and weights – public transport operator

### 6.5.2. Expert evaluation of criteria and alternatives

Table 9 shows the evaluation of the expected impact of the alternatives on the public transport operator's criteria. Four out of five alternatives have a (slightly) positive impact on traffic safety; almost all the other public transport operator's criteria are not impacted by the alternatives.

Alternative	Reliability public transport	Traffic safety	Costs of public transport	Accessibility for people with special needs
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<b>Improve signalisation at intersection</b>	<i>Slightly positive</i>	<i>Positive</i>	<i>Neutral</i>	<i>Neutral</i>
<b>Alternative cycling routes</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>
<b>Awareness campaign</b>	<i>Neutral</i>	<i>Positive</i>	<i>Neutral</i>	<i>Neutral</i>
<b>Temporarily reduce road width</b>	<i>Neutral</i>	<i>Positive</i>	<i>Neutral</i>	<i>Neutral</i>
<b>Speed meters</b>	<i>Neutral</i>	<i>Slightly positive</i>	<i>Neutral</i>	<i>Neutral</i>
<b>No intervention</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>

Table 9 Evaluation impact alternatives on criteria – public transport operator

Figure 11 shows the evaluation score of each alternative on the public transport operator’s criteria. The weight of each criterion is shown in the grey bar and the evaluation scores in the coloured lines. The alternatives have a neutral or positive impact on the public transport operator’s criteria. The alternative with the highest evaluation score for the public transport operator is the improvement of the signalisation at the intersection of Chaussée de Helmet and Rue Waelhem.

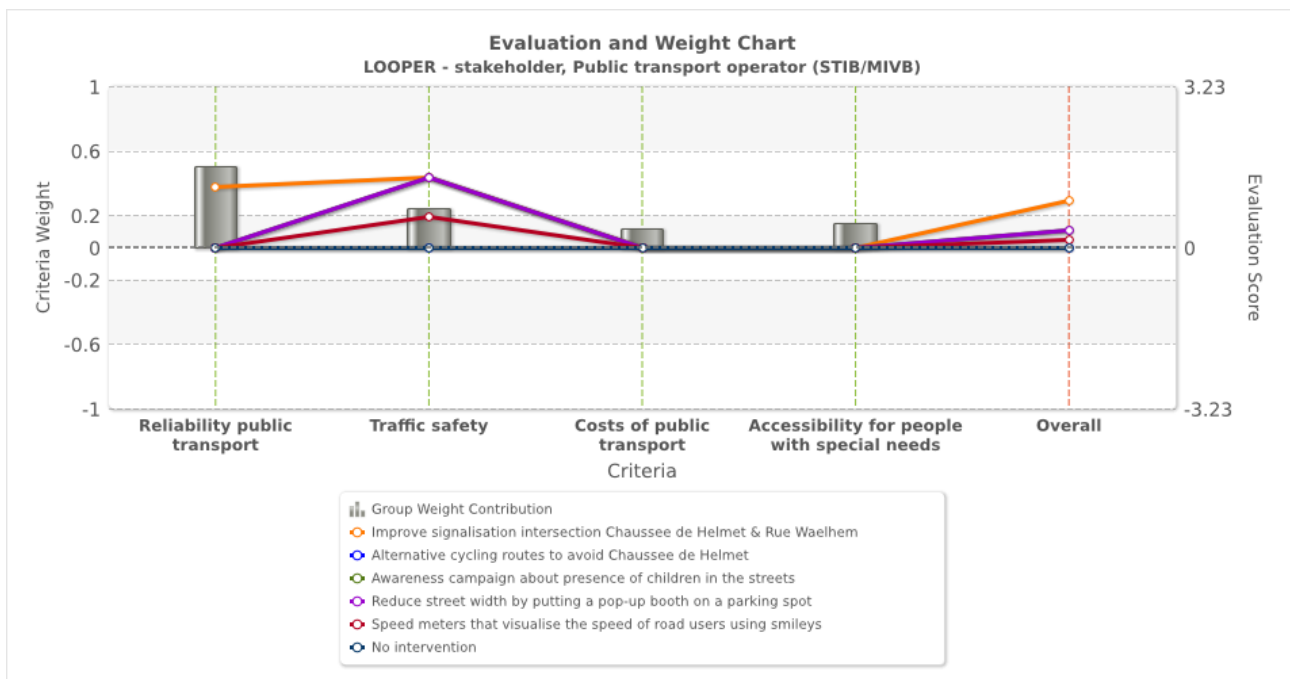


Figure 11 Evaluation and weight chart – public transport operator

### 6.5.3. Criteria group evaluation line/bar chart

The improvement of the signalisation at a dangerous intersection will have the most positive impact on the criteria of the public transport operator, followed by the awareness campaign and reducing the street width (see Figure 12). The alternative cycling routes, speed meters, and no intervention have a negative impact on the public transport operator’s criteria.

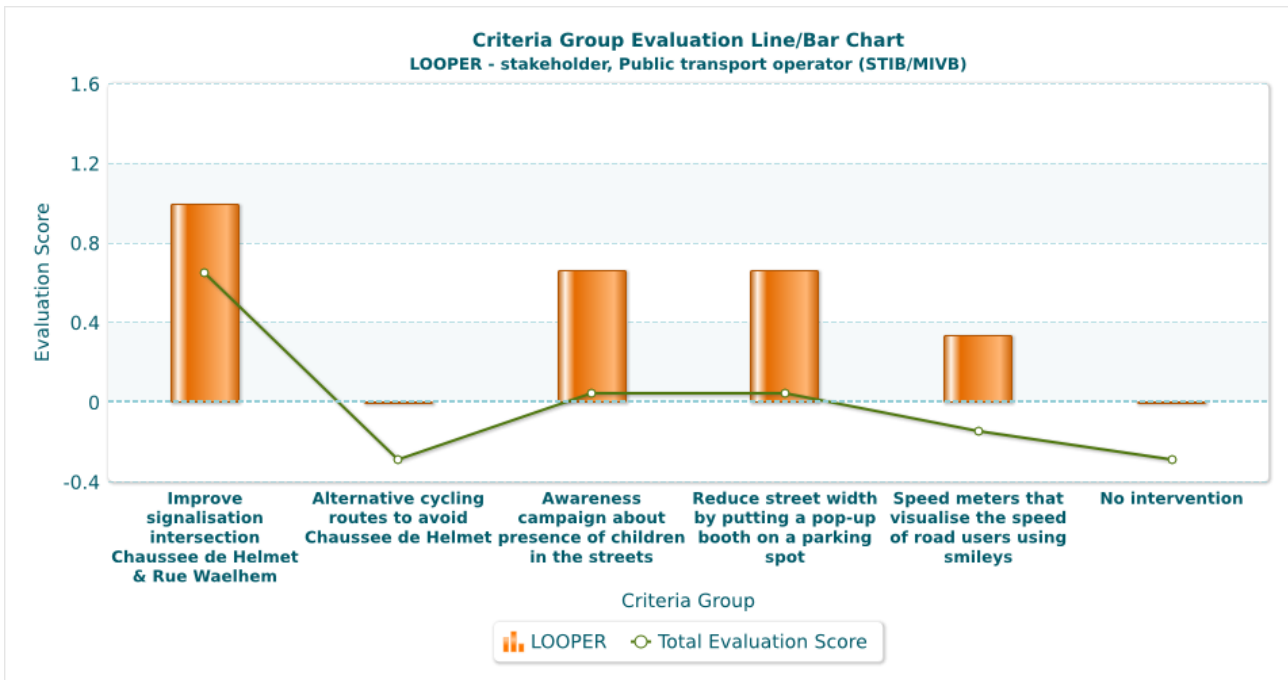


Figure 12 Criteria group evaluation line/bar chart – public transport operator

## 6.6. Evaluation impact of alternatives on criteria regional ministry of mobility

### 6.6.1. Criteria and weights

The criteria and weights from the Brussels regional ministry of mobility are shown in Table 10 and are visualised in Figure 13. The regional ministry of mobility prioritises the circulation of traffic, followed by traffic safety, accessibility for people with special needs, and liveability.

CRITERIA NAME	WEIGHT (%)
Traffic safety	22.71%
Accessibility for people with special needs	21.44%
Circulation	37.78%
Liveability	18.06%

Table 10 Criteria and weights – regional ministry of mobility

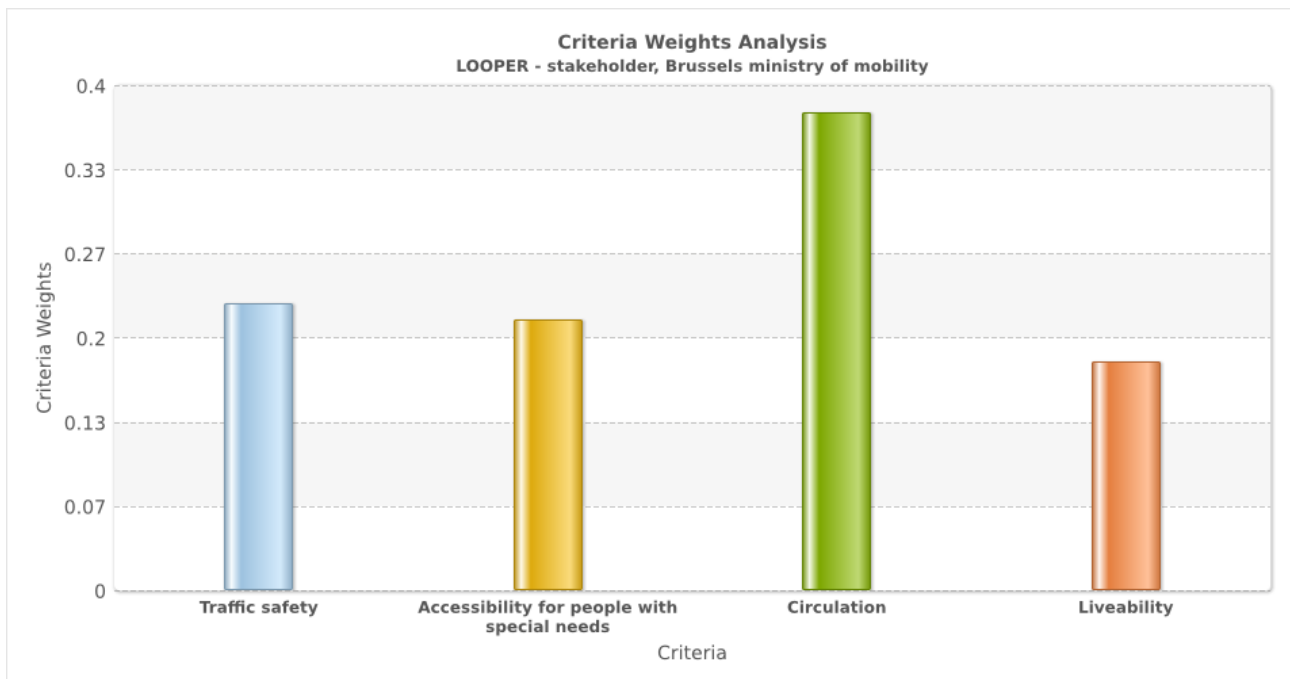


Figure 13 Criteria and weights – regional ministry of mobility

### 6.6.2. Expert evaluation of criteria and alternatives

Table 11 shows the evaluation of the expected impact of the alternatives on the criteria of the regional ministry of mobility. Two criteria – accessibility for people with special needs and liveability – are not impacted by the alternatives. The alternatives have a neutral or (slightly) positive impact on the criteria traffic safety and circulation.

Alternative	Traffic safety	Accessibility for people with special needs	Circulation	Liveability
<b>Improve signalisation at intersection</b>	<i>Positive</i>	<i>Neutral</i>	<i>Very positive</i>	<i>Neutral</i>
<b>Alternative cycling routes</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>
<b>Awareness campaign</b>	<i>Positive</i>	<i>Neutral</i>	<i>Slightly positive</i>	<i>Neutral</i>
<b>Temporarily reduce road width</b>	<i>Positive</i>	<i>Neutral</i>	<i>Positive</i>	<i>Neutral</i>
<b>Speed meters</b>	<i>Slightly positive</i>	<i>Neutral</i>	<i>Slightly positive</i>	<i>Neutral</i>
<b>No intervention</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>

Table 11 Evaluation impact alternatives on criteria – regional ministry of mobility

Figure 14 shows the evaluation score of each alternative on the criteria of the regional ministry of mobility. The weight of each criterion is shown in the grey bar and the evaluation scores in the coloured

lines. The alternatives have a neutral or positive impact on the criteria of the regional ministry of mobility. The alternative with the highest evaluation score is the improvement of the signalisation at the intersection of Chaussée de Helmet and Rue Waelhem. The alternative cycling routes do not impact the criteria of the regional ministry of mobility.

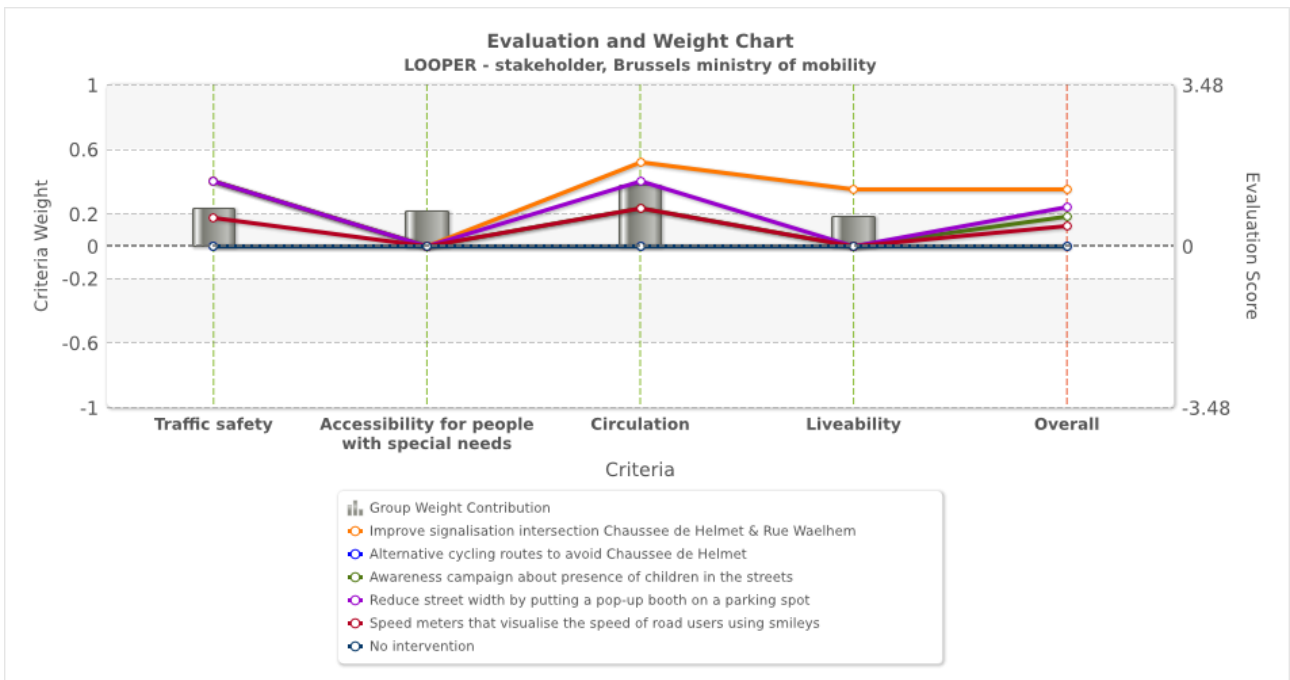


Figure 14 Evaluation and weight chart – regional ministry of mobility

### 6.6.3. Criteria group evaluation line/bar chart

The improvement of the signalisation at a dangerous intersection will have the most positive impact on the criteria of the regional ministry of mobility, followed by reducing the street width and the awareness campaign and (see Figure 15). The alternative cycling routes, speed meters, and no intervention have a negative impact on the criteria of the regional ministry of mobility.

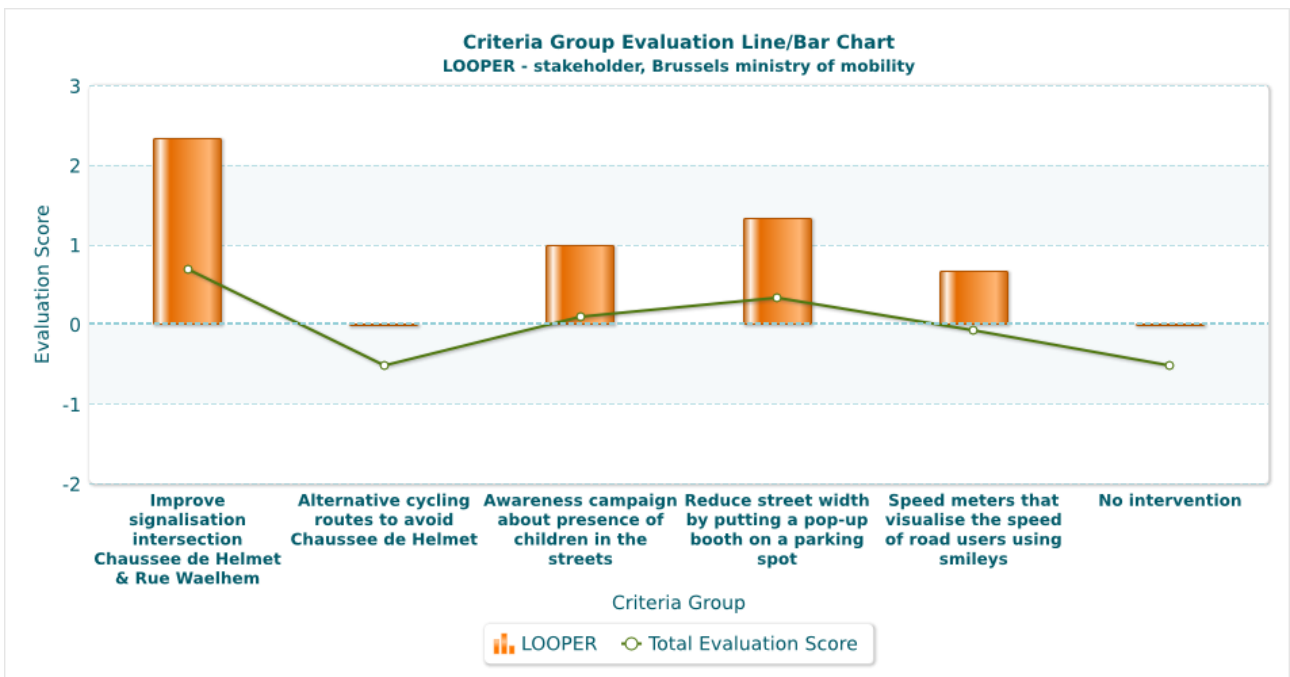


Figure 15 Criteria group evaluation line/bar chart – regional ministry of mobility

## 6.7.Evaluation of impact alternatives on criteria local government

### 6.7.1.Criteria and weights

The criteria and weights from the municipality of Schaerbeek are shown in Table 12 and are visualised in Figure 16. The municipality clearly prioritises traffic safety, followed by accessibility for people with special needs and air quality. Noise pollution has relatively little importance to the municipality.

CRITERIA NAME	WEIGHT (%)
Air quality	15.40%
Noise	4.07%
Traffic safety	63.54%
Accessibility for people with special needs	16.99%

Table 12 Criteria and weights – local government

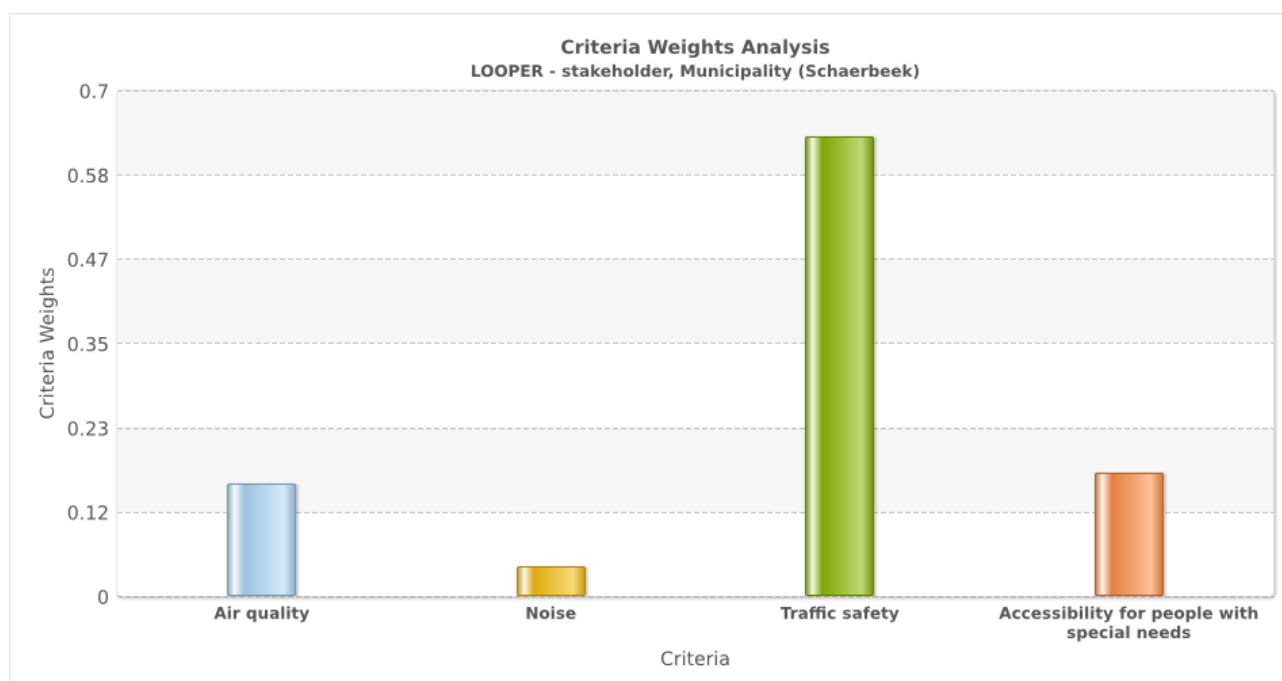


Figure 16 Criteria and weights – local government

### 6.7.2.Expert evaluation of criteria and alternatives

Table 13 shows the evaluation of the expected impact of the alternatives on the criteria of the municipality of Schaerbeek. Accessibility for people with special needs is not impacted by the alternatives; air quality is only impacted marginally. The impacts of the alternatives on the criteria noise and traffic safety range from neutral to positive.

Alternative	Air quality	Noise	Traffic safety	Accessibility for people with special needs
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<b>Improve signalisation at intersection</b>	<i>Neutral</i>	<i>Slightly positive</i>	<i>Positive</i>	<i>Neutral</i>
<b>Alternative cycling routes</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>
<b>Awareness campaign</b>	<i>Neutral</i>	<i>Slightly positive</i>	<i>Positive</i>	<i>Neutral</i>
<b>Temporarily reduce road width</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Positive</i>	<i>Neutral</i>
<b>Speed meters</b>	<i>Slightly positive</i>	<i>Slightly positive</i>	<i>Slightly positive</i>	<i>Neutral</i>
<b>No intervention</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>

Table 13 Evaluation impact alternatives on criteria – local government

Figure 17 shows the evaluation score of each alternative on the municipality’s criteria. The weight of each criterion is shown in the grey bar and the evaluation scores in the coloured lines. The alternatives have a neutral or positive impact on the public transport operator’s criteria. Two alternatives have the highest evaluation score: the improvement of the signalisation at the intersection of Chaussée de Helmet and Rue Waelhem as well as the awareness campaign about the presence of children in the streets. The alternative cycling routes do not impact the municipality’s criteria.

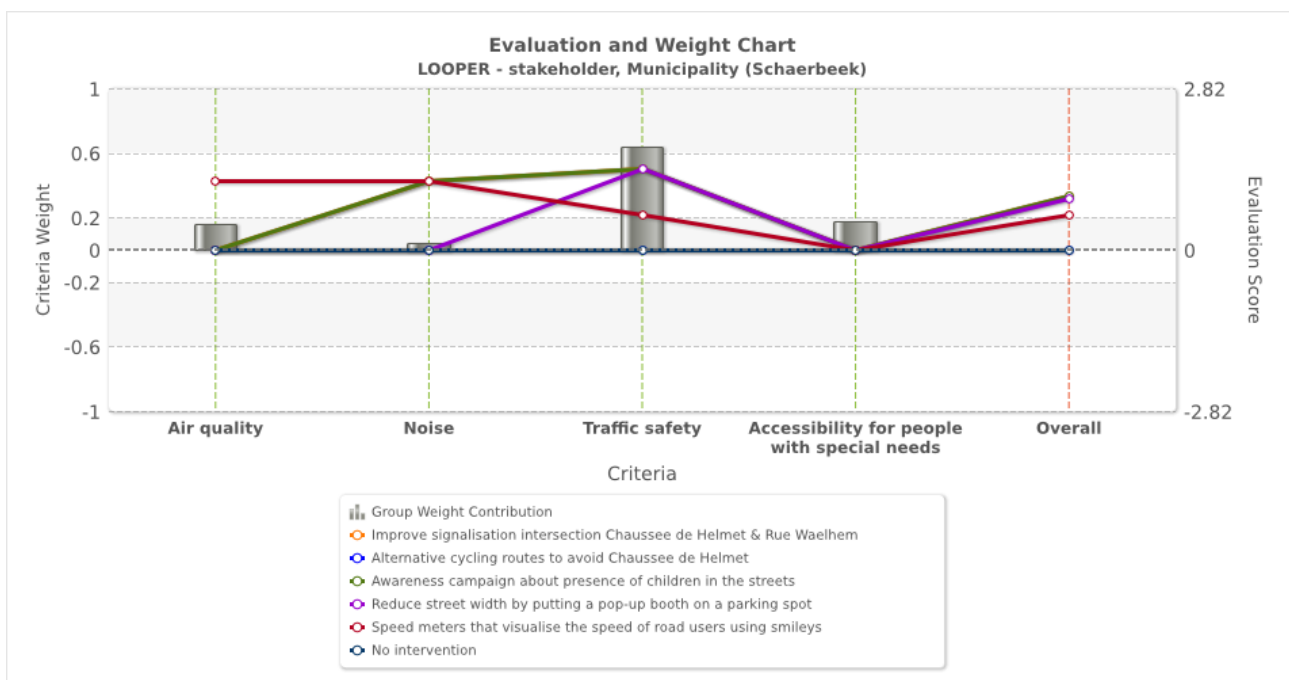


Figure 17 Evaluation and weight chart – local government

### 6.7.3. Criteria group evaluation line/bar chart

The improvement of the signalisation at a dangerous intersection and the awareness campaign about the presence of children in the streets will have the most positive impact on the municipality’s criteria, followed by reducing the street width and the awareness campaign and (see Figure 18). The alternative cycling routes as well as no intervention have a negative impact on the municipality’s criteria.

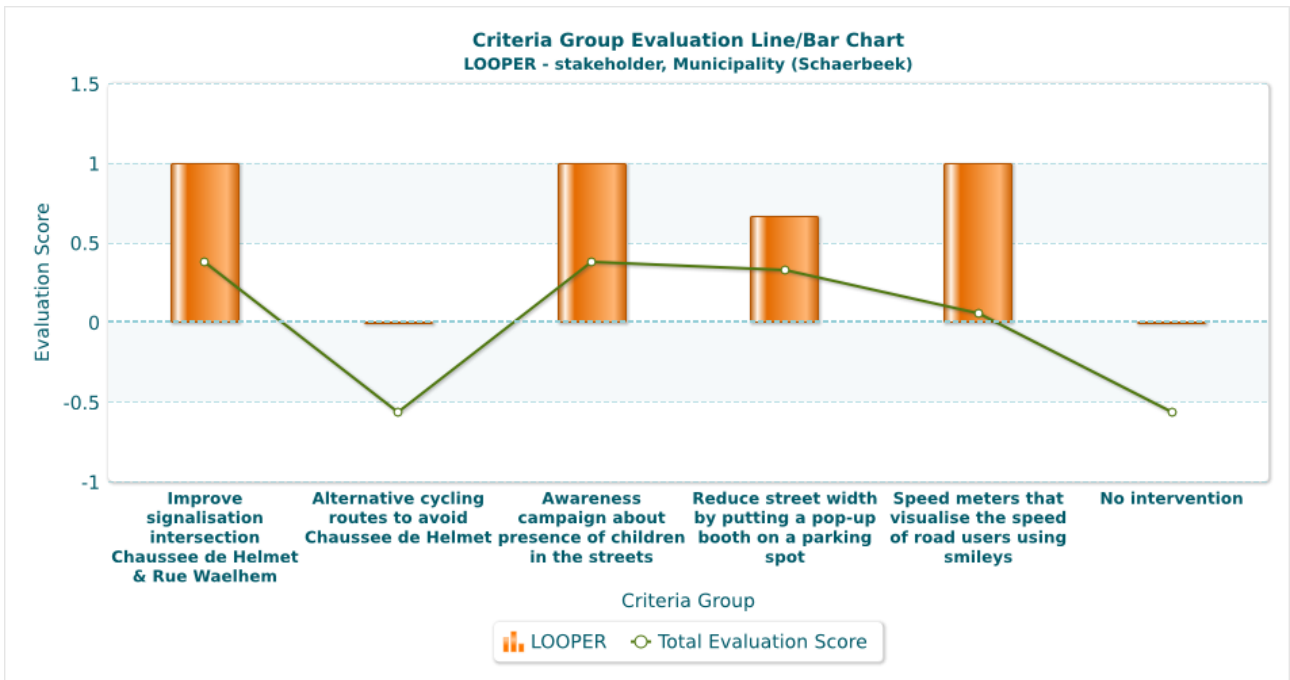


Figure 18 Criteria group evaluation line/bar chart – local government

## 6.8. Evaluation of impact alternatives on criteria cycling association

### 6.8.1. Criteria and weights

The criteria and weights from cycling association GRACQ are shown in Table 14 and are visualised in Figure 19. The cycling association prioritises traffic safety and quality of cycling infrastructure, followed by air quality. Cost-effectiveness has relatively little importance to the cycling association.

CRITERIA NAME	WEIGHT (%)
Traffic safety	38.33%
Air quality	10.75%
Cost-effectiveness	5.20%
Quality of cycling infrastructure	45.72%

Table 14 Criteria and weights – cycling association

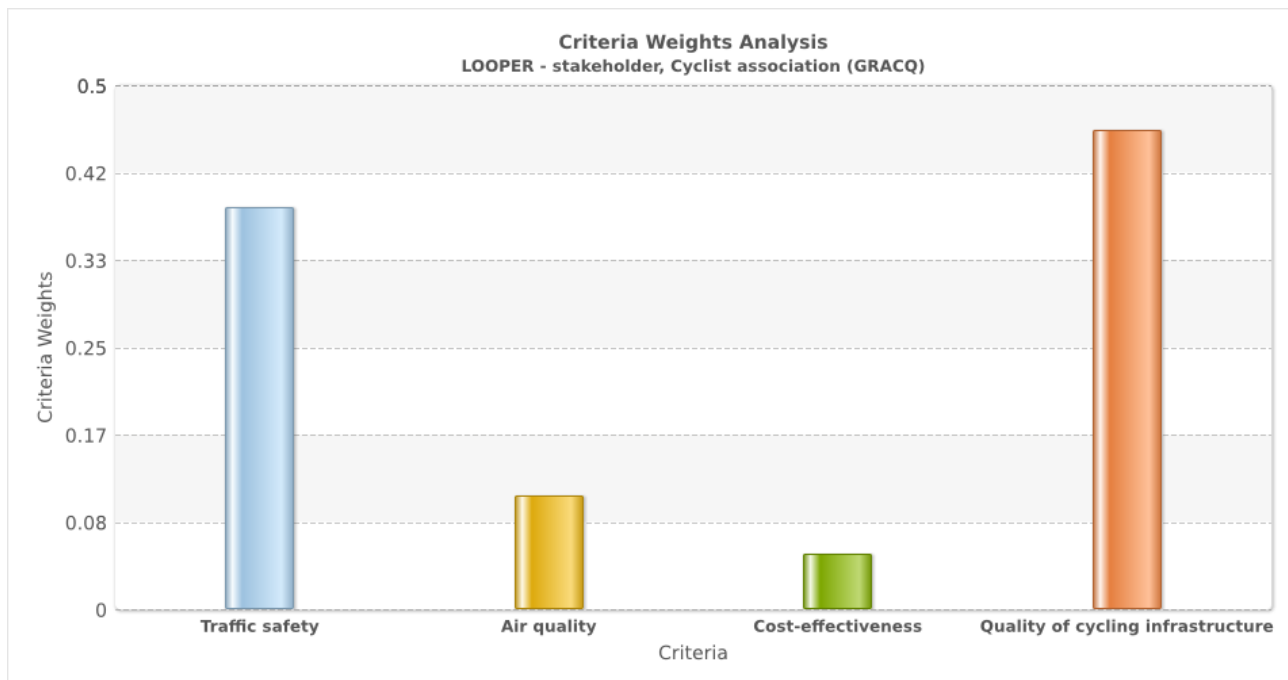


Figure 19 Criteria and weights – cycling association

### 6.8.2. Expert evaluation of criteria and alternatives

Table 15 shows the evaluation of the expected impact of the alternatives on the criteria of the cycling association. The criteria 'quality of cycling infrastructure' is not impacted by the alternatives; air quality is only impacted marginally. The impacts of the alternatives on the criteria traffic safety range from neutral to positive; the impacts on the alternatives on the criteria cost-effectiveness from slightly negative to positive.

Alternative	Traffic safety	Air quality	Cost-effectiveness	Quality of cycling infrastructure
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<b>Improve signalisation at intersection</b>	<i>Positive</i>	<i>Neutral</i>	<i>Slightly positive</i>	<i>Neutral</i>
<b>Alternative cycling routes</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Positive</i>	<i>Neutral</i>
<b>Awareness campaign</b>	<i>Positive</i>	<i>Neutral</i>	<i>Positive</i>	<i>Neutral</i>
<b>Temporarily reduce road width</b>	<i>Positive</i>	<i>Neutral</i>	<i>Slightly positive</i>	<i>Neutral</i>
<b>Speed meters</b>	<i>Slightly positive</i>	<i>Slightly positive</i>	<i>Slightly negative</i>	<i>Neutral</i>
<b>No intervention</b>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>	<i>Neutral</i>

Table 15 Evaluation of impact alternatives on criteria – cycling association

Figure 20 shows the evaluation score of each alternative on the cycling association’s criteria. The weight of each criterion is shown in the grey bar and the evaluation scores in the coloured lines. The alternatives have a neutral or positive impact on the public transport operator’s criteria. The improvement of the signalisation at the intersection of Chaussée de Helmet and Rue Waelhem has the highest evaluation score. The alternative cycling routes and no intervention do not have an impact on the municipality’s criteria.

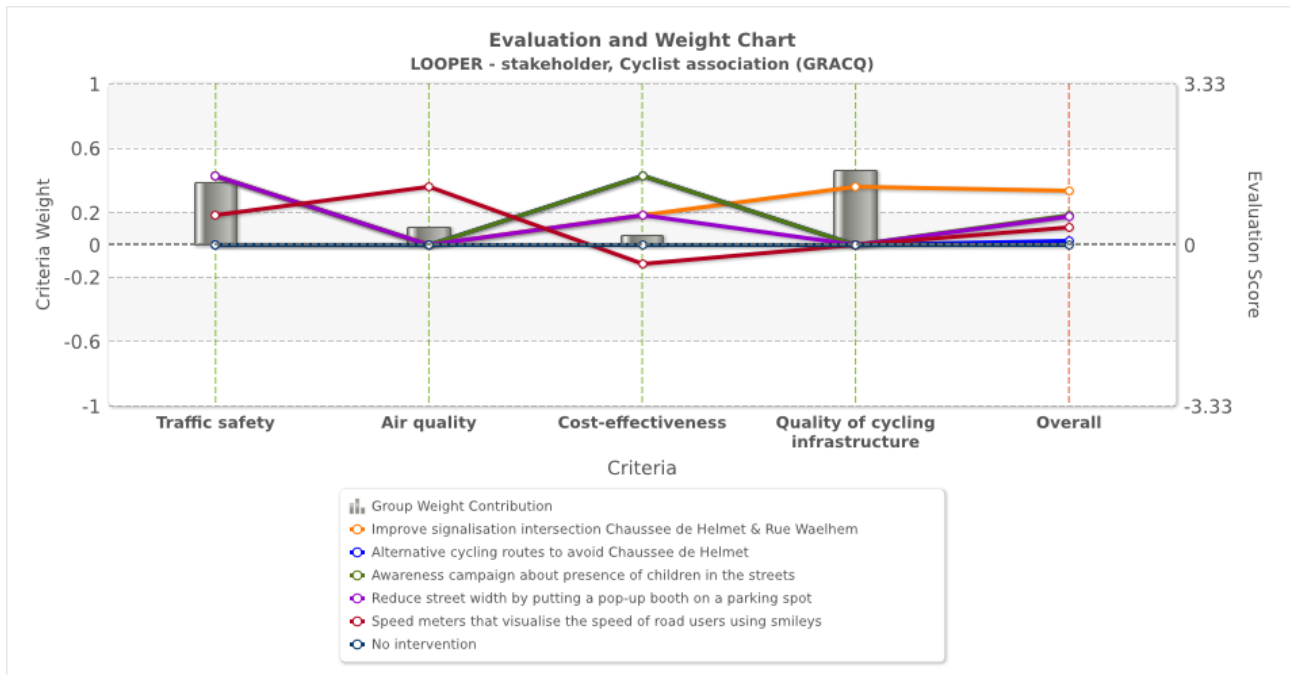


Figure 20 Evaluation and weight chart – cycling association

### 6.8.3. Criteria group evaluation line/bar chart

The improvement of the signalisation at a dangerous intersection will have the most positive impact on the cycling association’s criteria, followed by the awareness campaign about the presence of children in the streets and reducing the street width (see Figure 21). The alternative cycling routes, the speed meters, as well as no intervention have a negative impact on the cycling association’s criteria.

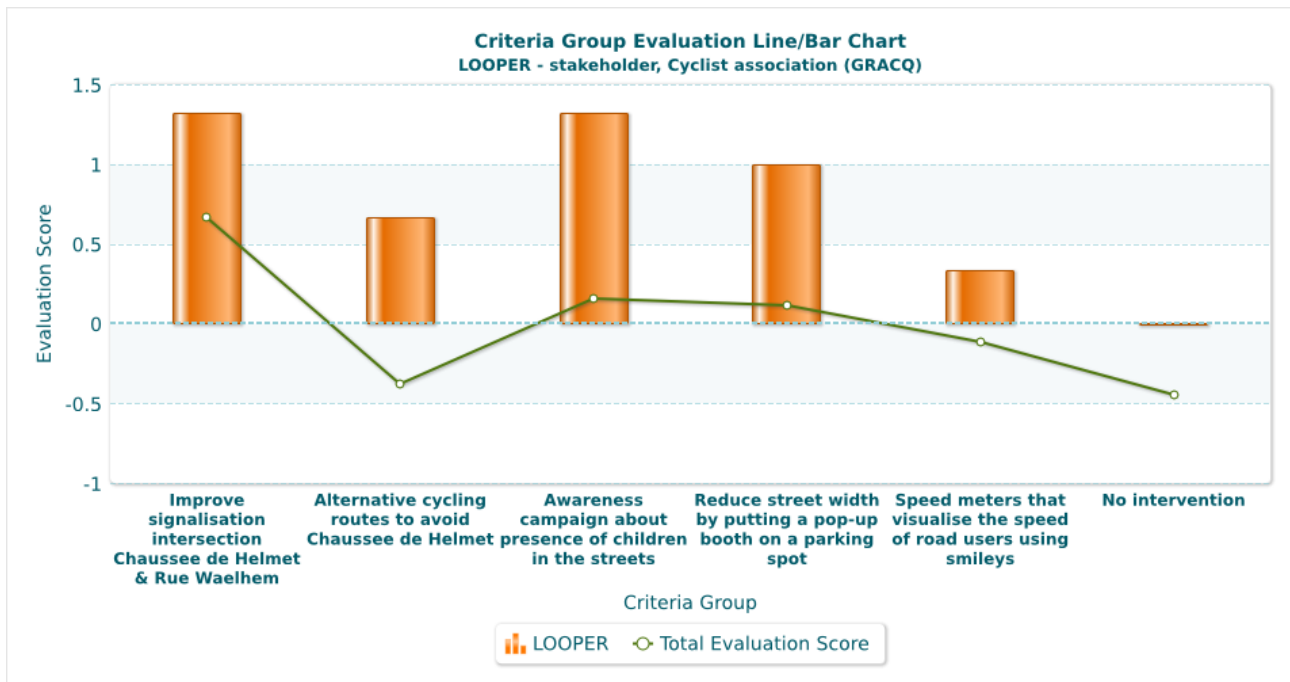
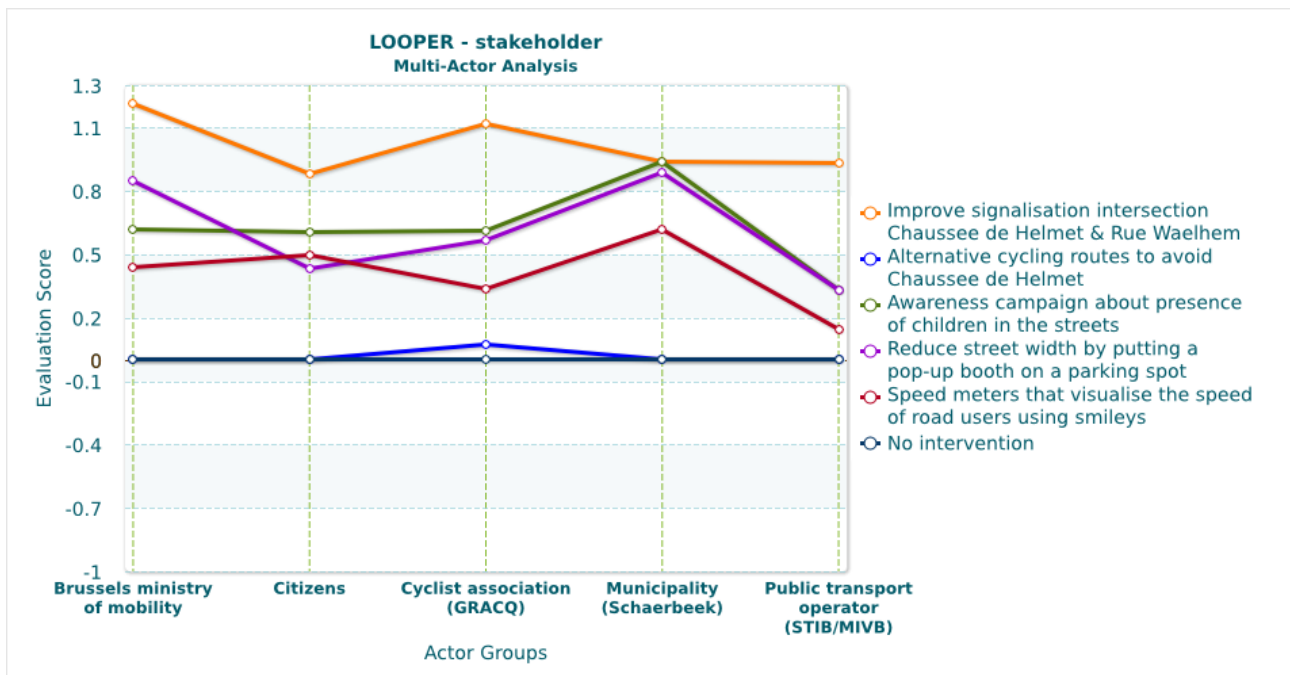


Figure 21 Criteria group evaluation line/bar chart – cycling association

## 6.9. Overall evaluation scores

The alternative with the highest evaluation score for all five stakeholder groups is the improvement of the signalisation at the intersection of Chaussée de Helmet and Rue Waelhem, as is shown in Figure 22. This means that on the basis of the expert evaluations, this alternative is expected to gain the most support from the stakeholders because it has the most positive impact on the criteria of the stakeholders. The alternative cycling routes and no intervention have the lowest evaluation scores and can be expected to gain little support from the stakeholders. The remaining three alternatives – awareness campaign; reducing street width; and speed meters – are also expected to receive support from the stakeholders, although not as much as the improvement of the signalisation.



*Figure 22 Multi-actor analysis*

## 6.10. Conclusions

The two co-designed ideas with the most positive evaluation scores in the Brussels LOOPER Living Lab – improving the signalisation at a dangerous intersection and an awareness campaign about the presence of children in the streets – are shown in Figure 23. The evaluation score is shown on the vertical axis and the different stakeholders can be found on the horizontal axis. Improving the signalisation at the dangerous intersection will have the most positive impact on the criteria of all stakeholders. It is therefore expected that the implementation of this alternative will gain the most support from stakeholders.

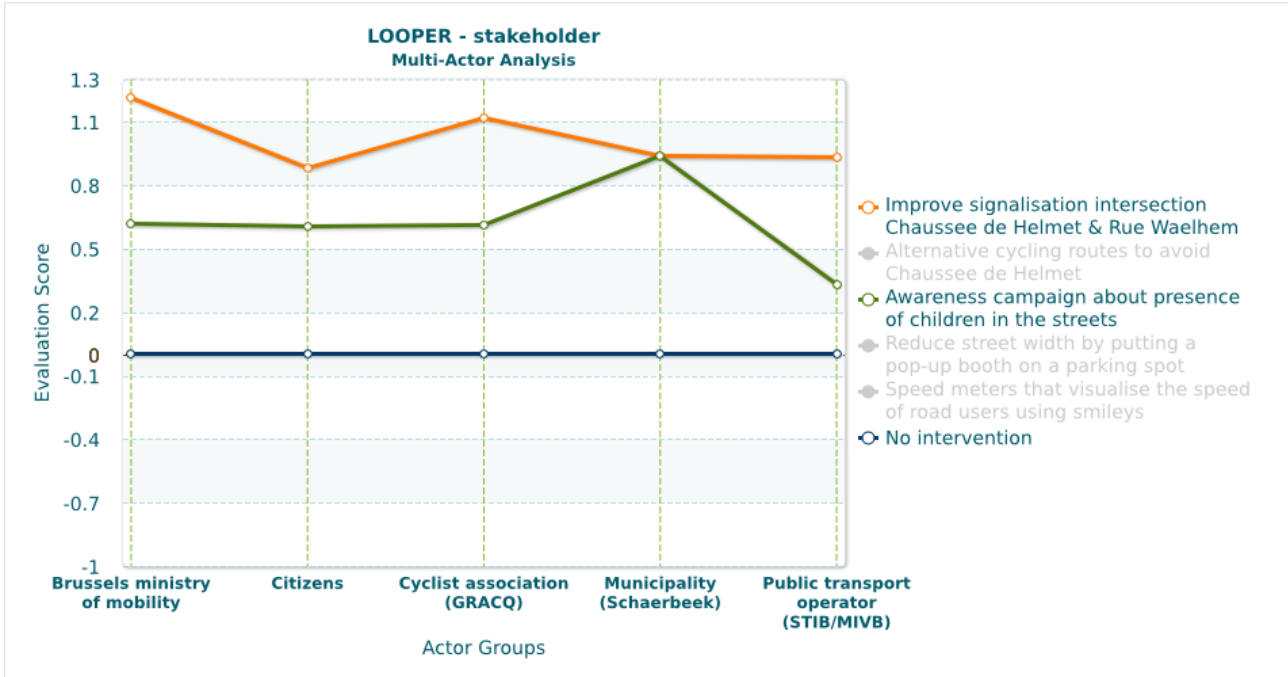


Figure 23 Preferred alternatives

## 7. IMPLEMENTATION OF CO-DESIGNED IDEA

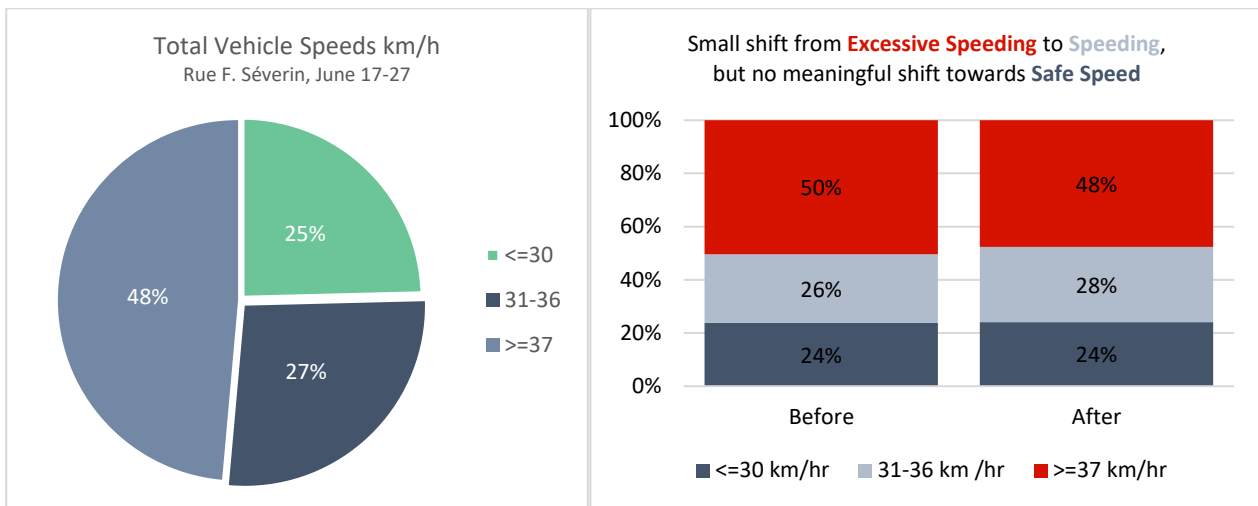
The idea implemented in the final phase of the first loop was the awareness campaign about the presence of children in the streets in the form of a mandala created at an intersection. This idea was chosen by citizens because it was relatively easy to implement. In practice, this involved the designing and colouring of a large mandala at the intersection in front of La Gerbe AMO. The mandala was roughly 25 square meters and created by local artists and coloured in using chalk by residents. The creation of the mandala was done during La Gerbe AMO's annual street party on June 22; the road was closed off and a multitude of events were organized for locals. The LOOPER project oversaw the creation of the mandala alongside other planned activities to draw the attention of residents.

Alongside the physical implementation of the mandala, the police set up a speed measurement device on the street to monitor speeds from June 17-27. This allowed the Living Lab coordinators to analyse before and after speed measurements to deduce if any change was made to the speed of vehicles travelling on the road after having seen the mandala.



A total of 29 480 vehicles were recorded on Rue Fernand Séverin travelling towards Rue du Tilleul and Square Riga. The analysis looked at those travelling towards Rue du Tilleul (24 418 vehicles) – as these vehicles speeds were taken after having passed the location of the mandala. Of these vehicles during the whole monitoring period, 75% travelled over the speed limit (>30km/h), with 48% at speeds at which they could be fined (>36km/h). There was a small drop in excessive speed (>36km/h) after the implementation of the mandala when comparing data from before June 22 and after June 22. This entails that there are still over three quarters drivers not respecting the speed limit. The highest speeds were recorded during the evening, between 0.00 and 06.00, however excessive speeds were recorded at all times of the day.





As such, a mandala did not significantly affect traffic speeds, and speeds on rue Fernand Séverin were too high, further corroborating the findings of the initial speed measurements taken at other locations. Concrete infrastructural changes are better suited to address this, as was raised by the police contact in charge of the speed measurements and what is found in the literature on traffic calming.

Just when the Living Lab organisers wanted to publish the results described above on the local platform, we were informed by the police – who supplied the speed data – that we were not allowed to publish detailed data because it might be misinterpreted by citizens.

## 8. EVALUATION

One aim of the co-design stage in the LOOPER Living Labs is to test the applicability of formal evaluation methods such as MCA and MAMCA to more informal co-creation processes. As learning is part of the LOOPER approach, this section gives the experiences of the Living Lab coordinators in Brussels. The questions below are taken from Deliverable 3.3 – integrating evaluation tools in the LOOPER platform.

*How did stakeholder selection take place? Who was responsible for the selection?*

The Living Lab coordinators (VUB-MOBI and BRAL) selected stakeholders by listing actors who would be impacted by or could impact the implementation of (one of) the five selected co-designed alternatives. In urban contexts, there often are the ‘usual suspects’ such as the municipality or the public transport operator. This list was complemented by input received from citizens during the workshops or via the online co-design platform, as well as by discussions with stakeholders.

*How easy was it to engage stakeholders to participate in the evaluation process? What was the cause of this?*

Despite the relatively short timeframe for evaluation – there was one month between the workshop where a shortlist of five co-designed ideas was made and the workshop where the results of the evaluation were presented – the Living Lab coordinators managed to engage stakeholders to participate in the evaluation. One exception is the police: permission from the Schaerbeek mayor was necessary before a representative of the police could participate in the evaluation process and there was not enough time to obtain this permission.

Since the usefulness of the evaluation depended completely on the willingness of stakeholders to participate, the Living Lab coordinators were very flexible in finding appropriate timeslots to meet the stakeholders. The stakeholders were generally interested in involving the public in finding solutions to urban problems and were curious about the project.

*Do you believe stakeholders understand the methodology behind MCA and MAMCA?*

The methodology was explained to citizens during the second co-design workshop. The general perception of the Living Lab coordinators is that the stakeholders understood that the MCA gives an indication of the level of sustainability of each alternative and that the MAMCA can be used to indirectly

measure the support for each alternative based on a list of criteria they find important when talking about mobility.

*Do you believe stakeholders trust the methodology behind MCA and MAMCA?*

Since the execution of the MAMCA is done during one-on-one interviews that allow for qualitative discussions, the method is highly appreciated and judged as trustworthy.

*Do you believe the sustainability MCA and MAMCA had an impact on the selection of the alternative(s) that will be implemented?*

The sustainability MCA concluded that none of the alternatives would have a negative impact on the sustainability of the Helmet neighbourhood. If an alternative would have had a negative impact, it would not have been selected for implementation. Since this was not the case, the MAMCA did not 'solve' any disagreements between stakeholders. Nevertheless, the results of the MAMCA helped all participants to consider the views of others. This definitely had an influence on the selection of the alternative to be implemented: the ideas with the highest evaluation scores support were also those that were considered as best to implement by the stakeholders.

*Does MCA and MAMCA add extra value to the co-creation process?*

The evaluation methods used in the LOOPER project stimulate discussions on two key aspects of decision-making: what is the impact of the co-designed ideas and who can be expected to (be) influence(d) by the ideas? On paper an idea might seem a great solution to a problem, but the sustainability MCA can reveal negative impacts that had not been thought of before. Similarly, MAMCA stimulates a closer examination of who is a stakeholder and is an opportunity to engage new stakeholders that would have otherwise not participated and/or be heard. As stated before, since the evaluation scores were rather similar for the different stakeholders, the MCA/MAMCA could not be used to 'solve' any disagreements between stakeholders.

*What would you improve if you had to do another evaluation using MCA and MAMCA?*

The criteria of each stakeholder in MAMCA have to be distinct: there should be no overlap. If there is overlap between criteria, the evaluation of the impacts of the alternatives on the criteria measure the same thing twice. Some of the criteria mentioned by stakeholders do somewhat overlap, however. More attention should be paid to this in the future. Furthermore, MCA and MAMCA are more easily explained by using examples instead of explaining the rather abstract mechanisms behind the method.

*Do you believe the online MAMCA software was useful?*

Yes, the MAMCA software is seen as a relatively easy to use tool that speeds up and provides structure in the evaluation process. Since MAMCA as an evaluation method is based on mathematical foundations, some aspects of the software – such as the difference between weighing methods – are more difficult to understand.

*How easy was it to weigh the criteria of stakeholders?*

The weighing of stakeholder criteria was done right after the criteria were confirmed by the stakeholders. Using pairwise comparison, each stakeholder individually ranked their criteria and thus attached weight to their criteria.

*How easy was it to evaluate the impact of alternatives on criteria?*

Evaluating the impact of alternatives on criteria was sometimes difficult, as for some criteria it is difficult to estimate how they will be impacted. Instead of having a clear negative or positive impact on a criterion, an alternative may impact a criterion both negatively *and* positively. For example, the impact of an alternative on the criteria "accessibility" can be positive for one group of citizens or stakeholders and negative for the other.

*How easy was it to use and explain visuals/results from the online MAMCA software?*

Many of the visuals from the MAMCA software were found to be too complex to be used in non-expert meetings as they give unnecessary and too detailed information. The multi-actor graph (see Figure 24)

was used during the workshop in the Brussels Living Lab, which allows participants to understand the results of the evaluation. The graph was slightly adapted to match the LOOPER colour template.



Figure 24 MAMCA graph used during the second co-design workshop

## 9. ACKNOWLEDGEMENTS

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## 10. ANNEX 1 – SUSTAINABILITY MCA

### 10.1. Cost effectiveness

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Cost effectiveness	Investment costs Operating costs Revenues
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Slightly positive</i>	Costs are limited to repainting pedestrian crossings and triangles on the road.	BRRC
<b>Alternative cycling routes</b>	<i>Positive</i>	Costs are limited to placing signalisation.	BRRC
<b>Awareness children</b>	<i>Positive</i>	Some arts and crafts supplies go a long way.	BRRC
<b>Reduce street width</b>	<i>Slightly positive</i>	The costs will depend on the design of the pop-up booths.	BRRC
<b>Speed meters</b>	<i>Slightly negative</i>	This idea is more expensive compared to e.g. idea 3. Meters can be bought or rented (or does the municipality have them?).	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 10.2. Economic activity

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicators</b>
		Economic activity	Shop occupancy in the area Hotel occupancy in the area Employment opportunities
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

### 10.3. Public funding of transport

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Public funding of transport	Level of transport subsidies for investments Level of transport subsidies for operating costs
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 10.4. Reliability and travel time

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI); Florence Lepoudre (BRAL); Tim Cassiers (BRAL)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Reliability and travel time	Cost of deliveries and pickups Punctuality of deliveries and pickups Travel time of business travellers
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Slightly positive</i>	Improved signalisation can reduce accidents, thereby improving the punctuality of deliveries and reducing travel times of business travellers.	VUB-MOBI; BRAL
<b>Alternative cycling routes</b>	<i>Slightly positive</i>	Less cyclists on Chaussée de Helmet could improve the punctuality of deliveries and may reduce travel times.	VUB-MOBI; BRAL
<b>Awareness children</b>	<i>Slightly positive</i>	Reducing speeds can have a positive effect on traffic flow.	VUB-MOBI; BRAL <a href="#">Transport &amp; Environment</a>
<b>Reduce street width</b>	<i>Slightly positive</i>	Reducing speeds can have a positive effect on traffic flow.	VUB-MOBI; BRAL <a href="#">Transport &amp; Environment</a>
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL

## 10.5. Air quality

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Air quality	PM2.5 emissions NO <sub>x</sub> emissions
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	Lower speeds = less pollution	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI



## 10.6. Greenhouse gas emissions

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Greenhouse gas emissions	CO <sub>2</sub> emissions
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 10.7. Land consumption

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Land consumption	Extent of land consumption by project implementation
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Reduce street width</b>	<i>Slightly positive</i>	The execution of the alternative can reduce the land used for transport infrastructure (i.e. car parking).	VUB-MOBI
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 10.8. Noise

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI); Florence Lepoudre (BRAL); Tim Cassiers (BRAL)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Noise	Perception of transport noise Exposure to transport noise Produced noise
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Slightly positive</i>	Improved 'readability' of the road can reduce conflicts between road users, thereby decreasing road noise such as honking and shouting.	BRRC; BRAL
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Awareness children</b>	<i>Slightly positive</i>	The noise from road traffic could decrease.	BRRC
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	In case it stops the road racers.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 10.9. Resource use

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Resource use	Energy efficiency of vehicles Proportion of alternative energy sources used
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 10.10. Accessibility for people with special needs

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Accessibility for people with special needs	Level of fully accessible services
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 10.11. Equity

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI); Florence Lepoudre (BRAL); Tim Cassiers (BRAL)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Equity	Accessibility of employment Accessibility of healthcare Accessibility of services Accessibility of public transport stops and stations Levels of service from the nearest public transport stop or station Cost of mobility
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL

## 10.12. Health of citizens

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Health of citizens	Level of health of citizens
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Slightly positive</i>	Crossing becomes easier to “read”. If the main cycling route follows the tram rails, cyclists will get priority.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Awareness children</b>	<i>Positive</i>	Traffic safety may improve during the campaign. The question remains how long this effect lasts after the campaign has ended.	BRRC
<b>Reduce street width</b>	<i>Positive</i>	The booths – depending on the design – can have a positive impact on the neighbourhood and draw more people to the streets. This effect may disappear after the booths have been taken away.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	The traffic safety and liveability improve if road users adhere to the speed limit.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

### 10.13. Liveability

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI); Florence Lepoudre (BRAL); Tim Cassiers (BRAL)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Liveability	Walkability and pedestrian friendliness Quality of urban space
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Very positive</i>	Reduced speeds improve people's perception of the area; area could be transformed for pedestrian use.	VUB-MOBI; BRAL
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL
<b>Awareness children</b>	<i>Slightly positive</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL
<b>Reduce street width</b>	<i>Positive</i>	Reduced speeds improve people's perception of the area; area could be transformed for pedestrian use.	VUB-MOBI; BRAL
<b>Speed meters</b>	<i>Slightly positive</i>	Reduced speeds improve people's perception of the area.	VUB-MOBI; BRAL
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI



## 10.14. Safety

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Traffic safety	Number of accidents Perception of safety
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Positive</i>	If the alternative improves the “readability” of the road, there will be less unexpected manoeuvres which could lead to more traffic safety.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Difficult to say: will more people bike because of signalisation? And can signalisation (towards safer routers) contribute to better cycling safety? What about the local cycling traffic in the Ch. de Helmet?	BRRC
<b>Awareness children</b>	<i>Positive</i>	Perhaps the increase in traffic safety is only temporary.	BRRC <a href="#">Mobiël Vlaanderen</a>
<b>Reduce street width</b>	<i>Positive</i>	The effect may only exist as long as the booths are in the street.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	Traffic safety is improved when road users adhere to the speed limit.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 10.15. Security

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Security	Perception of crime and security Reported crime
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 10.16. Socio-political acceptance

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI); Florence Lepoudre (BRAL); Tim Cassiers (BRAL)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Socio-political acceptance	Citizen's approval of/satisfaction with the mobility policy or project
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Slightly positive</i>	If the alternative improves traffic safety and makes it easier to drive on this road, the socio-political acceptance will grow.	BRRC
<b>Alternative cycling routes</b>	<i>Slightly positive</i>	Alternative shows citizens that the municipality is working on traffic safety.	BRRC; BRAL
<b>Awareness children</b>	<i>Positive</i>	'Using' children to improve traffic safety may work.	BRRC
<b>Reduce street width</b>	<i>Positive</i>	Could boost more citizen participation in other campaigns BUT removing parking spots is a sensitive issue.	BRRC; BRAL
<b>Speed meters</b>	<i>Slightly positive</i>	Road users get instant feedback about their speed (without a fine). Other road users can also see who is speeding.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 11. ANNEX 2 – MAMCA

### 11.1. Citizens

#### 11.1.1. Air quality

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Citizens</b>		<b>Criterion</b>	<b>Indicator</b>
		Air quality	PM2.5 emissions NO <sub>x</sub> emissions
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	Lower speeds = less pollution	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

### 11.1.2. Traffic safety

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Citizens</b>		<b>Criterion</b>	<b>Indicator</b>
		Traffic safety	Number of accidents Perception of safety
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Positive</i>	If the alternative improves the “readability” of the road, there will be less unexpected manoeuvres which could lead to more traffic safety.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Difficult to say: will more people bike because of signalisation? And can signalisation (towards safer routers) contribute to better cycling safety? What about the local cycling traffic in the Ch. de Helmet?	BRRC
<b>Awareness children</b>	<i>Positive</i>	Perhaps the increase in traffic safety is only temporary.	BRRC <a href="#">Mobiël Vlaanderen</a>
<b>Reduce street width</b>	<i>Positive</i>	The effect may only exist as long as the booths are in the street.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	Traffic safety is improved when road users adhere to the speed limit.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

### 11.1.3. Availability cycling infrastructure

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Citizens</b>		<b>Criterion</b>	<b>Indicator</b>
		Availability cycling infrastructure	Availability of separated cycling lanes and bike parking.
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Slightly positive</i>	Cyclists coming from the Rue de Waelhem no longer have to give priority to traffic coming from the right. Only the cyclists that are on Chaussée de Helmet and enter the crossing (with Rue de Waelhem on their left), should in the new situation give priority to all vehicles coming from the left, where this in the current situation is only the trams. Although cyclists have to give priority, the 'readability' of this intersection will increase. In other driving directions the situation remains unchanged.	Belgian Road Research Centre
<b>Alternative cycling routes</b>	<i>Neutral</i>	Signalisation towards alternative routes does not increase cycling infrastructure.	Belgian Road Research Centre
<b>Awareness children</b>	<i>Neutral</i>	The alternative does not have an effect on the criterion.	Belgian Road Research Centre
<b>Reduce street width</b>	<i>Neutral</i>	The alternative does not have an effect on the criterion.	Belgian Road Research Centre
<b>Speed meters</b>	<i>Neutral</i>	The alternative does not have an effect on the criterion.	Belgian Road Research Centre
<b>No intervention</b>	<i>Neutral</i>	The alternative does not have an effect on the criterion.	

### 11.1.4. Traffic noise

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI); Florence Lepoudre (BRAL); Tim Cassiers (BRAL)</i>	
<b>Citizens</b>		<b>Criterion</b>	<b>Indicator</b>
		Noise	Perception of transport noise Exposure to transport noise

<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Slightly positive</i>	Improved 'readability' of the road can reduce conflicts between road users, thereby decreasing road noise such as honking and shouting.	BRRC; BRAL
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Awareness children</b>	<i>Slightly positive</i>	The noise from road traffic could decrease.	BRRC
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	In case it stops the road racers.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

### 11.1.5. Availability car parking

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Citizens</b>		<b>Criterion</b>	<b>Indicator</b>
		Availability car parking	Availability of parking spaces for cars
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	The alternative does not have an impact on the criterion.	Belgian Road Research Centre
<b>Alternative cycling routes</b>	<i>Neutral</i>	The alternative does not have an impact on the criterion.	Belgian Road Research Centre
<b>Awareness children</b>	<i>Neutral</i>	The alternative does not have an impact on the criterion.	Belgian Road Research Centre
<b>Reduce street width</b>	<i>Slightly negative</i>	The number of parking spots will be lower when the pop-up booths have been installed.	Belgian Road Research Centre
<b>Speed meters</b>	<i>Neutral</i>	The alternative does not have an impact on the criterion.	Belgian Road Research Centre
<b>No intervention</b>	<i>Neutral</i>	The alternative does not have an impact on the criterion.	



### 11.1.6. Reachability public transport stops

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Citizens</b>		<b>Criterion</b>	<b>Indicator</b>
		Reachability of public transport stops	The average distance to a public transport stop
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	The alternative does not have an impact on the criterion.	Belgian Road Research Centre
<b>Alternative cycling routes</b>	<i>Neutral</i>	The alternative does not have an impact on the criterion.	Belgian Road Research Centre
<b>Awareness children</b>	<i>Neutral</i>	The alternative does not have an impact on the criterion.	Belgian Road Research Centre
<b>Reduce street width</b>	<i>Neutral</i>	The alternative does not have an impact on the criterion.	Belgian Road Research Centre
<b>Speed meters</b>	<i>Neutral</i>	The alternative does not have an impact on the criterion.	Belgian Road Research Centre
<b>No intervention</b>	<i>Neutral</i>	The alternative does not have an impact on the criterion.	

## 11.2. Public transport operator – STIB/MIVB

### 11.2.1. Reliability of public transport

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>STIB/MIVB</b>		<b>Criterion</b>	<b>Indicator</b>
		Reliability of public transport system	Percentage of metros, trams and busses that are on time
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Slightly positive</i>	Improved 'readability' of the crossing where it is clear who has priority can reduce the number of accidents and thereby improve the reliability of public transport.	
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	

### 11.2.2. Traffic safety

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>STIB/MIVB</b>		<b>Criterion</b>	<b>Indicator</b>
		Traffic safety	Number of accidents Perception of safety
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Positive</i>	If the alternative improves the “readability” of the road, there will be less unexpected manoeuvres which could lead to more traffic safety.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Difficult to say: will more people bike because of signalisation? And can signalisation (towards safer routers) contribute to better cycling safety? What about the local cycling traffic in the Ch. de Helmet?	BRRC
<b>Awareness children</b>	<i>Positive</i>	Perhaps the increase in traffic safety is only temporary.	BRRC <a href="#">Mobiël Vlaanderen</a>
<b>Reduce street width</b>	<i>Positive</i>	The effect may only exist as long as the booths are in the street.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	Traffic safety is improved when road users adhere to the speed limit.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

### 11.2.3. Costs of public transport

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>STIB/MIVB</b>		<b>Criterion</b>	<b>Indicator</b>
		Costs of public transport	Level of transport subsidies for investments Level of transport subsidies for operating costs
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

#### 11.2.4. Accessibility for people with special needs

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>STIB/MIVB</b>		<b>Criterion</b>	<b>Indicator</b>
		Accessibility for people with special needs	Level of fully accessible services
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 11.3. Regional government – Bruxelles mobilité

### 11.3.1. Traffic safety

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Bruxelles mobilité</b>		<b>Criterion</b>	<b>Indicator</b>
		Traffic safety	Number of accidents Perception of safety
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Positive</i>	If the alternative improves the “readability” of the road, there will be less unexpected manoeuvres which could lead to more traffic safety.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Difficult to say: will more people bike because of signalisation? And can signalisation (towards safer routers) contribute to better cycling safety? What about the local cycling traffic in the Ch. de Helmet?	BRRC
<b>Awareness children</b>	<i>Positive</i>	Perhaps the increase in traffic safety is only temporary.	BRRC <a href="#">Mobiël Vlaanderen</a>
<b>Reduce street width</b>	<i>Positive</i>	The effect may only exist as long as the booths are in the street.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	Traffic safety is improved when road users adhere to the speed limit.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

### 11.3.2. Accessibility for people with special needs

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Bruxelles mobilité</b>		<b>Criterion</b>	<b>Indicator</b>
		Accessibility for people with special needs	Level of fully accessible services
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

### 11.3.3. Circulation

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Bruxelles mobilité</b>		<b>Criterion</b>	<b>Indicator</b>
		Circulation	Flow of traffic for all road users. In order of importance: pedestrians, cyclists, public transport and private transport.
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Positive</i>	Improved signalisation will improve the “readability” of the crossing, thereby reducing the number of (near) accidents.	VUB-MOBI
<b>Alternative cycling routes</b>	<i>Neutral</i>	Cyclists have to take a detour to reach their destination, but flow of traffic may increase due to less cyclists on main road.	VUB-MOBI
<b>Awareness children</b>	<i>Neutral</i>	Alternative does not have an impact on this criterion.	VUB-MOBI
<b>Reduce street width</b>	<i>Neutral</i>	Alternative does not have an impact on this criterion.	VUB-MOBI
<b>Speed meters</b>	<i>Neutral</i>	Alternative does not have an impact on this criterion.	VUB-MOBI
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI



### 11.3.4. Liveability

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI); Florence Lepoudre (BRAL); Tim Cassiers (BRAL)</i>	
<b>Bruxelles mobilité</b>		<b>Criterion</b>	<b>Indicator</b>
		Liveability	Walkability and pedestrian friendliness Quality of urban space
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Very positive</i>	Reduced speeds improve people's perception of the area; area could be transformed for pedestrian use.	VUB-MOBI; BRAL
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL
<b>Awareness children</b>	<i>Slightly positive</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI; BRAL
<b>Reduce street width</b>	<i>Positive</i>	Reduced speeds improve people's perception of the area; area could be transformed for pedestrian use.	VUB-MOBI; BRAL
<b>Speed meters</b>	<i>Slightly positive</i>	Reduced speeds improve people's perception of the area.	VUB-MOBI; BRAL
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 11.4. Local government – Schaerbeek municipality

### 11.4.1. Air quality

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Schaerbeek municipality</b>		<b>Criterion</b>	<b>Indicator</b>
		Air quality	PM2.5 emissions NO <sub>x</sub> emissions
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	Lower speeds = less pollution	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 11.4.2. Noise

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI); Florence Lepoudre (BRAL); Tim Cassiers (BRAL)</i>	
<b>Schaerbeek municipality</b>		<b>Criterion</b>	<b>Indicator</b>
		Noise	Perception of transport noise Exposure to transport noise Produced noise
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Slightly positive</i>	Improved 'readability' of the road can reduce conflicts between road users, thereby decreasing road noise such as honking and shouting.	BRRC; BRAL
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Awareness children</b>	<i>Slightly positive</i>	The noise from road traffic could decrease.	BRRC
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	In case it stops the road racers.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

### 11.4.3. Traffic safety

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Schaerbeek municipality</b>		<b>Criterion</b>	<b>Indicator</b>
		Traffic safety	Number of accidents Perception of safety
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Positive</i>	If the alternative improves the “readability” of the road, there will be less unexpected manoeuvres which could lead to more traffic safety.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Difficult to say: will more people bike because of signalisation? And can signalisation (towards safer routers) contribute to better cycling safety? What about the local cycling traffic in the Ch. de Helmet?	BRRC
<b>Awareness children</b>	<i>Positive</i>	Perhaps the increase in traffic safety is only temporary.	BRRC <a href="#">Mobiël Vlaanderen</a>
<b>Reduce street width</b>	<i>Positive</i>	The effect may only exist as long as the booths are in the street.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	Traffic safety is improved when road users adhere to the speed limit.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

#### 11.4.4. Accessibility for people with special needs

<b>Evaluator</b>		<i>Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Schaerbeek municipality</b>		<b>Criterion</b>	<b>Indicator</b>
		Accessibility for people with special needs	Level of fully accessible services
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>Speed meters</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 12. CYCLING ASSOCIATION - GRACQ

### 12.1. Traffic safety

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Bruxelles mobilité</b>		<b>Criterion</b>	<b>Indicator</b>
		Traffic safety	Number of accidents Perception of safety
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Positive</i>	If the alternative improves the “readability” of the road, there will be less unexpected manoeuvres which could lead to more traffic safety.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Difficult to say: will more people bike because of signalisation? And can signalisation (towards safer routers) contribute to better cycling safety? What about the local cycling traffic in the Ch. de Helmet?	BRRC
<b>Awareness children</b>	<i>Positive</i>	Perhaps the increase in traffic safety is only temporary.	BRRC <a href="#">Mobiël Vlaanderen</a>
<b>Reduce street width</b>	<i>Positive</i>	The effect may only exist as long as the booths are in the street.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	Traffic safety is improved when road users adhere to the speed limit.	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

## 12.2. Air quality

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Schaerbeek municipality</b>		<b>Criterion</b>	<b>Indicator</b>
		Air quality	PM2.5 emissions NO <sub>x</sub> emissions
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Alternative cycling routes</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Awareness children</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Reduce street width</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	BRRC
<b>Speed meters</b>	<i>Slightly positive</i>	Lower speeds = less pollution	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI

### 12.3. Cost-effectiveness

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
		<b>Criterion</b>	<b>Indicator</b>
		Cost effectiveness	Investment costs Operating costs Revenues
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Slightly positive</i>	Costs are limited to repainting pedestrian crossings and triangles on the road.	BRRC
<b>Alternative cycling routes</b>	<i>Positive</i>	Costs are limited to placing signalisation.	BRRC
<b>Awareness children</b>	<i>Positive</i>	Some arts and crafts supplies go a long way.	BRRC
<b>Reduce street width</b>	<i>Slightly positive</i>	The costs will depend on the design of the pop-up booths.	BRRC
<b>Speed meters</b>	<i>Slightly negative</i>	This idea is more expensive compared to e.g. idea 3. Meters can be bought or rented (or does the municipality have them?).	BRRC
<b>No intervention</b>	<i>Neutral</i>	Alternative will probably not have an impact on criterion.	VUB-MOBI



## 12.4. Quality of cycling infrastructure

<b>Evaluator</b>		<i>An Volckaert (BRRC); Jesse Pappers (VUB-MOBI); Imre Keserü (VUB-MOBI)</i>	
<b>Citizens</b>		<b>Criterion</b>	<b>Indicator</b>
		Quality of cycling infrastructure	Infrastructure such as separated cycling lanes and bike parking.
<b>Alternative</b>	<b>Evaluation score</b>	<b>Justification</b>	<b>Sources</b>
<b>Improve signalisation</b>	<i>Slightly positive</i>	Cyclists coming from the Rue de Waelhem no longer have to give priority to traffic coming from the right. Only the cyclists that are on Chaussée de Helmet and enter the crossing (with Rue de Waelhem on their left), should in the new situation give priority to all vehicles coming from the left, where this in the current situation is only the trams. Although cyclists have to give priority, the 'readability' of this intersection will increase. In other driving directions the situation remains unchanged.	Belgian Road Research Centre
<b>Alternative cycling routes</b>	<i>Neutral</i>	Signalisation towards alternative routes does not increase cycling infrastructure.	Belgian Road Research Centre
<b>Awareness children</b>	<i>Neutral</i>	The alternative does not have an effect on the criterion.	Belgian Road Research Centre
<b>Reduce street width</b>	<i>Neutral</i>	The alternative does not have an effect on the criterion.	Belgian Road Research Centre
<b>Speed meters</b>	<i>Neutral</i>	The alternative does not have an effect on the criterion.	Belgian Road Research Centre
<b>No intervention</b>	<i>Neutral</i>	The alternative does not have an effect on the criterion.	