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WEST-TANGENT: NEW INFRASTRUCTURE PLAN IN AMERSFOORT

EVALUATION OF THE PROJECT AND RECOMMENDATIONS

ACADEMIC CONSULTANCY TEAM (2038)

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PREFACE

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The West Tangent of Amersfoort, a topic arising consequently in the media. Over a long time, a discussion concerning the infrastructure on that location is taking place. The residents experienced the need of involving another (objective) party to address their issues, hence the Science Shop of Wageningen University and Research got involved. We, as Academic Consultancy Team, are consulted to resolve some uncertainties around this matter.

We are a motivated, transdisciplinary team of Master students from Wageningen University and Research that did not know each other before our project started. By contributing to this project from the Science Shop, we have been exposed to team challenges, whereby we had the opportunity to personally develop. Hopefully, our contribution will improve the situation at the West-Tangent.

The exact problem and questions addressed to us were difficult to grasp, since the problem encompasses a long history and a lot of different people and groups were and still are involved. As team we had to execute a lot and worked our way through the project, experiencing these weeks as intensive. This also relates to the appearance of our final product. The – in our opinion bold - idea to not only write a scientific report, but to write a complete booklet came to mind just in time, to be precise four days prior to the deadline. Nonetheless, we believe we managed to provide an overview considering the project regarding the different scenarios from the municipality and the residents, the environmental effects and plans for nature compensation, certainly within the limited amount of time available and the complexity of the project. This was only possible through the help of the people involved in this project. Therefore, we would like to thank Ernst Bos and Theo Vogelzang for supporting the project, Thomas Mattijssen for answering all our questions and reflections on the content of our work. We would also like to thank Pieter de Waard for being available for the team at any time to support the group process, certainly regarding specific issues we were confronted with.

Very important to accomplish our project was the collaboration and contact with the different stakeholders involved. Hence, we would like to thank Dick and Liedewij Haver Droeze, not only regarding the close communication and quick exchange of information but also by welcoming us to their personal surrounding. Subsequently, we would like to thank Helmer Nijland and Anton van der Beek for the cooperation and the explanation of the planned changes in Amersfoort into detail. Additionally, we would like to thank all respondents for taking part in the interviews.

While executing our project we sensed one common ground amongst each person involved, the fact that everyone is doing their best effort to improve the current situation at the West Tangent, which kept us motivated for the project and providing this unique overview.

To finalize, with pleasure we present this booklet which will contribute, hopefully to a large extend, to the project of the Science Shop and consequently provide insights in order to reach consensus.

EXECUTIVE SUMMARY

English summary

The municipality of Amersfoort works together with the province of Utrecht on the project 'Verder' to which the improvement of the West Tangent in Amersfoort belongs to. For this project the municipality designed different scenarios which have been assessed in multiple participation sessions, involving different stakeholders including interest and resident groups. Residents also developed a scenario 10+. After the separation of the college, whereby the participation ended, the municipality chose for the variant 7B (2015).

The goal of this study is to add to a better understanding of the current situation and the plan of municipality Amersfoort to implement scenario 7B (2015) for the West-Tangent, regarding environmental impact, nature compensation and communication. Scenario 10+ was not taken into account in this evaluation, as the information was insufficient to use.

First, we made an inventory on the relevant legislation- and regulation for the protected species and natural areas, that were relevant for the planning area of the 7B (2015) scenario. Then we analyzed the report of the ecological assessment and additional documents that were available to give an overview of the present protected species, ecological impact, the legal nature compensation, and extra-legal damage, -measures, and -enrichment. We conclude from the ecological assessment that all the needed steps have been taken. However, the impact of the measures for the 7B (2015) scenario on ecological function of the area should be substantiated more in depth. Also, we conclude an additional report or note should mention if and which species have gained protection after entry of the new Nature Conservation Act, and which species became Red List species. For the compensation area 'Melksteeg' there should already been done an ecological assessment, and a compensation plan ready, as the plan is to implement 7B (2015) as soon as possible. The enrichment measures were advised, so it is not certain that these will be implemented.

Then, we investigated the CBA (Cost-Benefit Analysis) of scenario 7B (2013) and developed an adapted one (CBA*) for the variant of 2015. It showed that, the planned infrastructural changes on the western part of Amersfoort can have both positive and negative impacts in the area. Concerning the benefits which are taken into account in the CBA, only the saved travel time, reliability of travel time estimation, traffic safety and connectivity for businesses are indicated. Although many environmental effects are taken into account some important effects are missing e.g. the removal of trees is not included in the CBA. The analysis of the CBA showed that the CBA* for scenario 7B (2015) will be different than the CBA executed in 2013 for scenario 7B (2013) as changes exist between the two scenarios. And we recommend that a quantitative CBA should be performed for scenario 7B (2015).

We also developed a critical assessment of the SEA (Strategic Environmental Assessment) report (2015), possible aspects that could affect the implementation of the different scenarios at the West Tangent are displayed in detail. However, for some parts argumentation needs to be improved.

Furthermore, the project is investigated by conducting an analysis on the strengths, weaknesses, opportunities and threats on the communication and participation (SWOT). It showed that there is a lack of understanding and a clear communication between the local residents and the municipality. Moreover, they do not share the same definition of the traffic problem and how to solve it, as well they perceive differently the participation process. From the interviews, all respondents stated that at this point there is no communication between the stakeholders. As there is no understanding between the different parties, trust has to be restored to be able to cope with each other in a positive way regardless of how the project proceeds. Last but not least, recommendations addressed to the main stakeholders are also included in the report.

Dutch summary

De verbetering van de Westelijke Ontsluiting valt binnen het project 'Verder' waar de gemeente Amersfoort en de provincie Utrecht samen bij betrokken zijn. Verschillende scenario's zijn ontwikkeld door de gemeente in het kader van veranderingen in de infrastructuur. Deze zijn besproken in meerdere participatie bijeenkomsten, waarbij meerdere stakeholders betrokken waren, waaronder geïnteresseerden en bewonersgroepen. De bewoners hebben een eigen scenario; 10+ ontwikkeld. Na de val van het college, waarbij de participatie eindigde, heeft de gemeente voor scenario 7B (2015) gekozen.

Het doel van dit onderzoek is om kennis te vergaren over de huidige situatie, en het plan van de gemeente om scenario 7B (2015) te implementeren in het Westelijke Ontsluiting project, in relatie tot milieu impact, natuur compensatie en communicatie. Scenario 10+ is niet meegenomen in de beoordeling, aangezien de informatie hierover in onze opinie niet volledig bleek te zijn.

Allereerst hebben we een inventarisatie gemaakt van de relevante wet- en regelgeving voor de beschermde soorten en natuurgebieden in het plangebied van scenario 7B (2015). Vervolgens hebben we het rapport over het ecologisch onderzoek geëvalueerd, mede als aanvullende documenten die beschikbaar waren om een overzicht te geven over de beschermde soorten, ecologische impact, wettelijke natuurcompensatie, en bovenwettelijke compensatie en verrijking. We concluderen dat alle nodige stappen zijn genomen in het ecologisch onderzoek. Desalniettemin, de impact van scenario 7B (2015) op de ecologische functies van het gebied zou meer in diepte kunnen worden onderbouwd. Daarbij concluderen we dat een aanvullend onderzoek uitgevoerd moet worden, waarin wordt ingegaan op welke soorten onder de nieuwe Wet natuurbescherming vallen en welke soorten op de Rode Lijst zijn komen. Voor het compensatie gebied 'Melksteeg' had al een ecologisch onderzoek gedaan moeten worden en een compensatie plan beschikbaar moeten zijn, gezien de korte termijn waarop 7B (2015) uitgevoerd moet worden. Voor de verrijkingsmaatregelen wordt vooral benoemd wat er gedaan zou kunnen worden, maar niet concreet wat zal worden uitgevoerd.

Vervolgens is er onderzoek gedaan naar de kosten-baten analyse van scenario 7B (2013) waarbij een aangepaste versie (In English CBA*) voor de variant 7B (2015) is ontwikkeld. Deze aangepaste versie laat zien dat er zowel positieve als negatieve effecten zijn voor de veranderingen in de infrastructuur in het westelijke gedeelte van Amersfoort. Onder de positieve veranderingen die waren meegenomen in de CBA vielen de gespaarde reistijd, verkeersveiligheid en bereikbaarheid van bedrijven. Opmerkelijk is dat bepaalde effecten op de omgeving, zoals het verwijderen van bomen, niet is meegenomen in de CBA. Ook hebben we de strategische milieu beoordeling van 2015 (In English: SEA) kritisch geëvalueerd. Mogelijke aspecten die zouden kunnen worden beïnvloed door de verschillende scenario's van de Westelijke Ontsluiting zijn in detail behandeld, maar de argumentatie zou kunnen worden verbeterd. De CBA* laat zien dat de MKBA die is uitgevoerd in 2013 voor scenario 7B (2013) zal veranderen voor scenario 7B (2015). Hierom bevelen we aan om een kwantitatieve MKBA uit te voeren voor scenario 7B (2015).

Verder is de communicatie en participatie binnen het project onderzocht op basis van een SWOT-analyse (strengths, weaknesses, opportunities en threats), oftewel een analyse van sterke en zwakke punten, kansen en bedreigingen. Deze analyse laat zien dat er een gebrek aan begrip en duidelijke communicatie tussen de bewoners en de gemeente is. Bovendien hebben zij verschillende opvattingen over het verkeersprobleem in Amersfoort en hoe dit op te lossen, daarnaast hebben zij een verschillende perceptie van het participatieproces. Alle respondenten gaven in de interviews aan dat er op dit moment geen communicatie is tussen de verschillende stakeholders. Met oog op communicatie, zal het vertrouwen moeten worden hersteld om het mogelijk te maken om op een positieve manier met elkaar om te gaan ongeacht wat de uitkomst van het project is. Tenslotte bevat het rapport aanbevelingen die zijn geadresseerd aan de belangrijkste stakeholders.

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Abbreviation table

Abbreviation	English	Dutch	Explanation
AJ-lane		Aletta Jacobslaan	
AMH		Amersfoortse Mixed Hockeyclub	
APV		Algemene Plaatselijke Verordening	
Bnl		Beleidsregels Natuur en Landschap	
Bw-laan/BW-lane	Barchman wuytierslaan	Barchman Wuytierslaan	
CBA	Cost Benefit Analyses	(Maatschappelijke) Kosten baten analyses	An approach to estimate the costs and benefits from a certain project to be able to determine the best option.
DF-laan/DF-lane	Daam fockemalaan		
EMS	Ecological Main Structure	Ecologische Hoofdstructuur (EHS)	Was the official name for the network of existing- and to be created natural areas within the Netherlands until 2013. Since then, Natuurnetwerk Nederland (NNN) has this responsibility.
FF law/FF-law	Flora- and Fauna law	Flora- en Fauna wet	Former law for the nationally protected species (until 1st of January 2017).
GS	Provincial executive	Gedeputeerde Staten	A Dutch administrative body that forms the daily board of a province.
NCA	Nature Conservation Act	Wet natuurbescherming	
NNN	Nature Network Netherlands	Natuurnetwerk Nederland	Is the official name for the network of existing- and to be created natural areas within the Netherlands since 2013.
OEI	Overview to see the effects of infrastructure	Overzicht Effecten Infrastructuur	The methodology used in the Netherlands to develop a Cost Benefit Analyses.
OL		Oranje Lijst	
PDF	Potentially Disappeared Fraction		An indicator of Potentially Disappeared Fraction of species.
RvS	Council of State	Raad van State	

SEA	Strategic Environmental Assessment	Strategische Milieu Beoordeling	Analyses of the environmental effects of different scenario's.
SWOT			Analysis of the strengths, weaknesses, opportunities and threats of a topic.
TAI	traffic arrangement installation	Verkeersregelingsinstallaties (VRI)	An infrastructural tool to increase the flow of traffic.
Vnl		Verordening Natuur en Landschap	
	Area protection	Gebiedsbescherming	
	Appropriate evaluation	Passende beoordeling	
	Code of Conduct	Gedragscode	A set of rules outlining the norms for an individual.
	Dispensation	Ontheffing	A public law indication for a disposition of an administrative body, whereby an exception can be made for a legal-prohibition or commandment.
	Exemption	Vrijstelling	
	Forest law	Boswet	
	Logging notification	kapmelding	
	Nature reserves	Natuurgebieden	
	Nature vision	Natuurvisie	
	Tree preservation order	Kapverbod	

Chapter 1: Introduction

Chapter 1: INTRODUCTION

Overview of chapter

This chapter introduces the West Tangent project (Amersfoort) and the issues related to it. Firstly, in the background of the project, a timeline of the selection process for a scenario to be implemented is presented, as well as the doubts some resident groups (A. Jacobslane group) have regarding the selected scenario. In addition, we explain our Academic Consultancy Team's role related to the West Tangent project. Furthermore, our problem analysis of the ongoing situation between the main stakeholders engaged (local residents, municipality of Amersfoort) is presented. A brief description of the area is provided to present the current situation and an introductory stakeholder analysis is also performed to show the different objectives. The chapter ends with a small paragraph where the aim and research questions are formulated, framing our study. Therefore, this chapter touches upon the complexity of the problem at the municipality of Amersfoort and indicates why this overview, in form of a book, is necessary to resolve the issue.

1.1 BACKGROUND

To improve connectivity of the western side of Amersfoort (Figure 1), and to deal with excessive traffic due to the railway crossing at the end of the road “Daam Fockemalaan”, it was decided by the municipality that a change in infrastructure should be made (H. Nijland, personal communication, May 25, 2018). Multiple scenarios for the “West-Tangent”, including different infrastructure plans, were developed by Sweco. In 2011 a Strategic Environmental Assessment (SEA) was done by Bureau Ruimtewerk, and traffic studies were performed by Muconsult. In 2013 scenario 7 (including variants 7A, 7B) was added and a Cost-Benefit Analysis (CBA) for all the scenarios was performed. The 7B (2013) scenario proposed an alternative for a route. The new route is supposed to run parallel to the Aletta Jacobslane and passes through the military quarters and under the railway. In 2015, 7B (2013) was further optimized by a few substantial changes, such as addition of a cycle bridge, extra nature compensation. This scenario, 7B (2015) was selected by the municipal council as ‘best value for money’. However, the effects of these adjustments were neither integrated in the existing CBA nor was a new CBA performed (E. Bos, personal communication, May 16, 2018).

The residents of the Aletta Jacobslane have many arguments against the selected scenario (7B 2015) since they believe that the nature that will be lost in the process will not be compensated sufficiently and that the ecological assessment conducted by the municipality does not include all the essential components. Additionally, there is no updated CBA to support the decision of the council. Therefore, the local interest groups developed an alternative scenario, scenario 10+ (2015), which was based on the already existing scenario 2 (2013). The 10+ scenario was presented to the municipality, but it was not considered seriously (L. Haver Droeze, personal communication, May 25, 2018). As a result, the local residents contacted Science Shop Wageningen to execute a CBA on their 10+ scenario.

Our commissioner is the Science Shop Wageningen, by which we were asked to investigate how the adjustments made on the 7B (2013) scenario affects the existing CBA and to compare the 7B (2015) and 10+ scenario in terms of impact. With this report an overview is provided showing insights considering the West Tangent of Amersfoort.



Figure 1. Plan map of the infrastructure at the West Tangent, Amersfoort; grey represents the current situation (and resembles the infrastructure for scenario 10+), the black represents scenario 7B (2015). Source: image provided by L. Haver Droeze.

1.2 PROBLEM ANALYSIS

Over the past decade, no consensus could be reached to choose a scenario with infrastructural changes to improve the West-Tangent, due to conflicts between the residents and the municipality, and even within the municipality itself. This is an issue because the residents doubt the need for this new infrastructural change, which will have huge environmental impacts and affect their daily life. They believe the increasing traffic problems, which is the main concern of the municipality, can be solved by taking simple measures. The residents tried to show their disapproval towards the project in the various participation sessions, but their suggestions were not granted by the municipality. This increased the tension between the main stakeholders and delayed the process even more. By providing an overview after assessing the available aspects for certain scenarios (environment, economic, cultural etc.,) we try to improve understanding of the situation.

According to the A. Jacobslane group, the local council selected scenario 7B (2015) without providing the information upon which the decision was made. The suggested scenario by the municipality lacks a (new) CBA, whereas 7B (2013) was supposedly strictly selected based on the 2013 CBA results. On top of this, the residents of A. Jacobslane do not agree with the proposal of compensating nature that is lost in their neighborhood somewhere else as it holds several types of values (e.g. natural, cultural) for them. Besides, there are doubts concerning the resolution of the nuisance problem and traffic jams. Due to the absence of scientific data regarding ecological and traffic related matters, it has been difficult for the residents to support their arguments.

Subsequently, the residents developed an alternative scenario 10+ (2015), which was based on the already existing scenario 2 (2013). Unlike 7B, in this scenario there is no new parallel road or a tunnel under the railway line. According to the residents, this will have limited effects on the surrounding environment, which requires very less nature compensation and yet solving the traffic problem. However, the plan was deemed as unfit and rejected by the local council, since scenario 10+ is based on the 2 (2013) scenario and the latter was rejected due to speed and safety conditions (H. Nijland, personal communication, May 25, 2018). This led to the fact that the residents do not feel taken seriously by the municipality. The communication between the two stakeholders have not been fruitful yet and the different interest groups feel that appropriate research could improve their scenario and their interaction with the local council.

The residents demand a performance of a CBA for the 7B (2015) and 10+ (2015) scenarios, in order to have a clear overview regarding the advantages and disadvantages, mainly concerning nature compensation and environmental impacts. However, the conflicts between the stakeholders indicate that there is an issue concerning communication as well. Therefore, both aspects (evaluation necessity and communication) should be tackled to potentially improve the relationship of the stakeholders and enhance the development of a common ground. Graphical representation of our problem analysis is given in the Figure 2. Our preliminary conclusion, based on the brief problem analysis from the information provided by the commissioner and found on the Internet, is that there is indeed a need for a CBA for both scenarios (7B 2015, 10+ 2015), for a proper comparison.

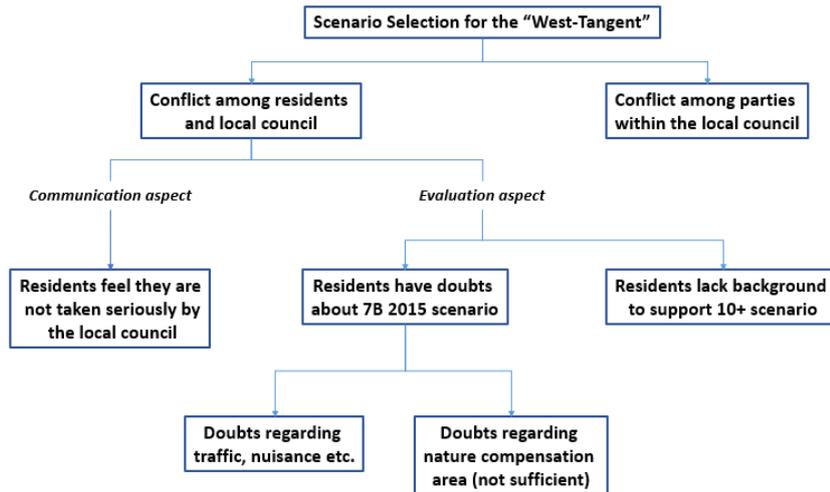


Figure 2. Graphical representation of the problem analysis performed in this report.

1.3 AREA DESCRIPTION



Figure 3. Map of Amersfoort and surroundings.

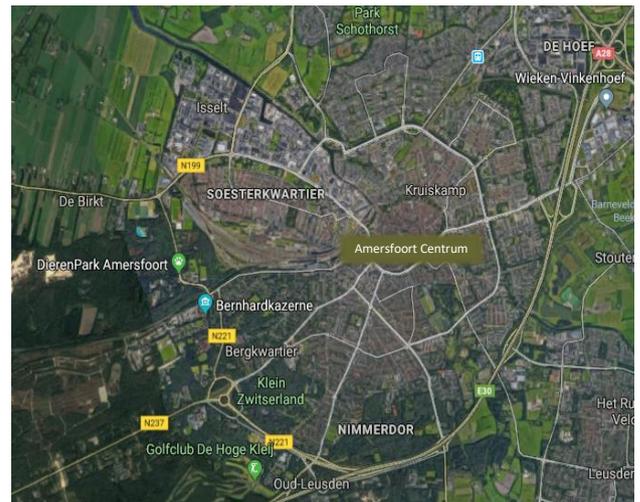


Figure 4. Satellite image of Amersfoort and surroundings.

Amersfoort is the second largest city in the province of Utrecht, with a population of around 155.000 (Statistics Netherlands, 2016). The study area is located in the west of the city centre (West Tangent), at the border of the densely populated region of the municipality (Figure 3). It is mainly surrounded by nature areas in the north, south and west (Figure 4). Specifically, bordering the north of the study area is a predominantly agricultural (Eempolder) and to the west there is a large forest area (under the management of the municipality of Soest). Finally, to the south lies a military training ground (Bernhardkazerne/Bernhard barracks) that largely consists of heathland and further to the south of the West Tangent there is again a large forest area (SEA report 2015).

Within the study area there are several special areas, such as the Birkhoven area, the zoo, the Bokkenduinen, the Bernhardkazerne (and surrounding buildings) and the Stichtse Rotonde. The two main streets running through this region (BW-laan and DF-laan) currently connect all those areas. A detailed map is provided, with all the streets and areas that will be frequently mentioned in the report (Figure 5).

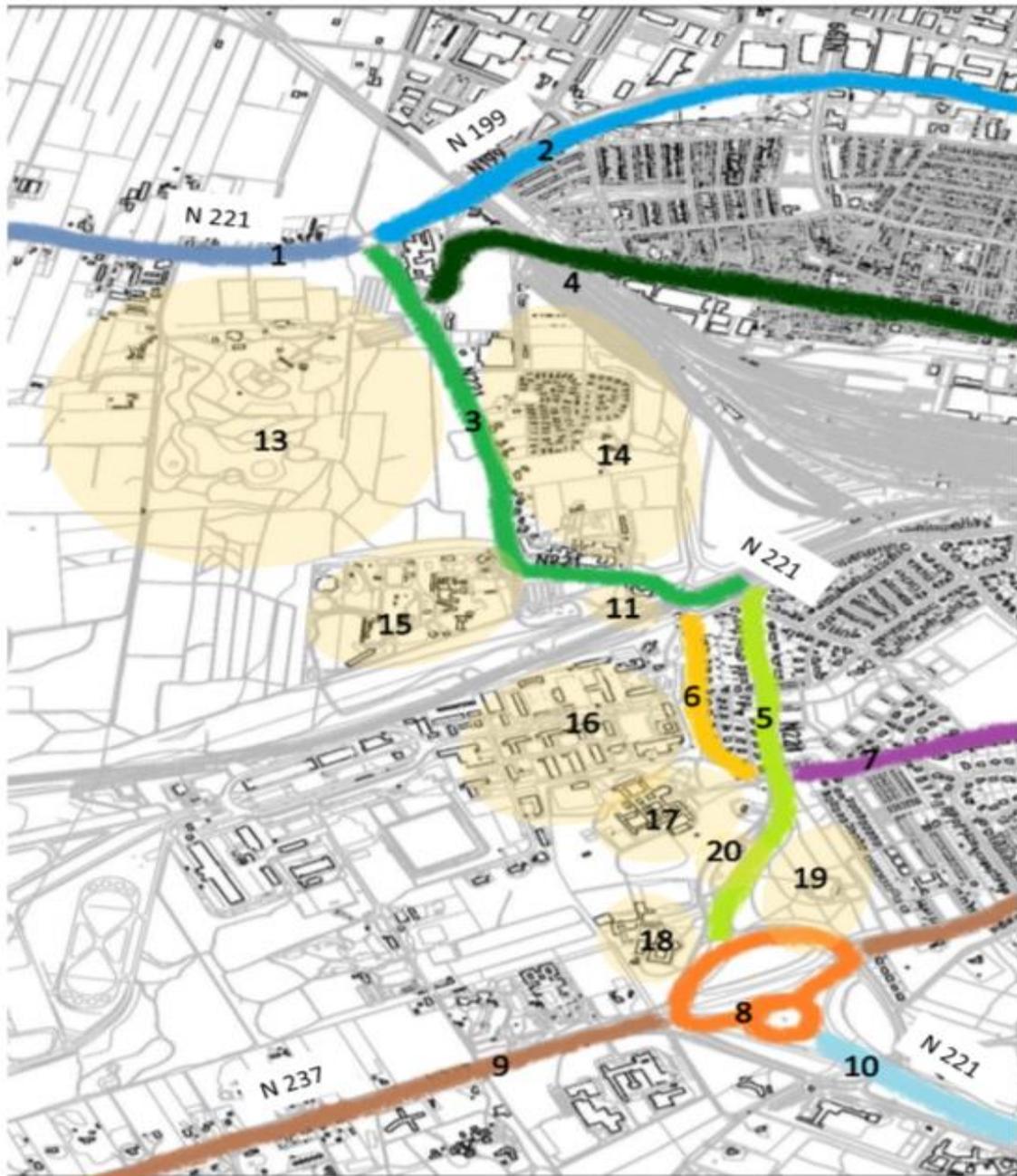


Figure 5. Map of the West Tangent area: 1. Birkstraat, 2. Amsterdamseweg, 3. Barchman Wuytierslaan (BW-laan), 4. Soesterweg, 5. Daam Fockemalaan (DF-laan), 6. A. Jacobsplane, 7. Prins Frederiklaan (PF-laan), 8. Stichtse Rotonde, 9. Utrechtseweg, 10. Rondweg Zuid, 11. Restaurant Vlasakkers, 12. Pieter Jelles Troelstralaan (PJT-laan), 13. Birkhoven Area, 14. Bokkenduinen Area, 15. Zoo, 16. Military Area (Bernhardkazerne), 17. Old Klooster, 18. Leerhotel Het Klooste, 19. Belgenmonument, 20. Gas station.

1.4 STAKEHOLDER ANALYSIS

1.4.1 Governmental stakeholders

The municipality of Amersfoort with its different political parties is a primary stakeholder in the project. In collaboration with the province of Utrecht the council takes part in the provincial programme “VERDER” (Mobiliteit in midden-nederland verder, n.d.) that aims at increasing the connectivity and flow of traffic in the centre of the Netherlands. A second programme “Beter benutten” focuses on the public transport and emphasises the liveability of the environment (Provincie Utrecht, n.d.). In regard of these projects, financial support to improve the infrastructure in Amersfoort is provided by the province of Utrecht and the municipality of Amersfoort. The municipality of Amersfoort is responsible for selection and implementation of the plan.

Within the municipality, different local parties are represented, holding different amounts of seats. In the Appendix A (Table A2) provides the list of those parties and their individual approval of the issue whether to implement the plan or not.

1.4.2 Community stakeholders

In contrast to the governmental stakeholders, local interest groups form the opposition to the project. Different interest groups, including nature conservation groups as well as resident groups, hold different opinions on the proposed changes of the infrastructure.

The committee ‘Famous Women Neighbourhood’ (Beroemde Vrouwenbuurt) is directly affected by the plan of the municipality, as the main road will adjoin their neighbourhood. The group spoke out against the plan of the municipality on several reasons, including nature depletion.

The ‘Samenwerkende groepering Leefbaar Amersfoort’ (SGLA) (SGLA, n.d.) is an umbrella group that campaigns for a preservation of the quality of life in Amersfoort and its neighbourhoods. Within the SGLA interest groups concerning a particular topic can be formed. The SGLA supports the interest groups to aim at a change for policies if possible in collaboration with governmental actors. They support the plans of the committee famous women neighbourhood, the VBBBB as well as the SWB to act against the chosen scenario of the municipality.

‘Stichting Woonklimaat Berg’ (SWB) (SGLA, n.d.) is another interest group, which aims at preserving the ‘green character’ of the green area Berg in Amersfoort. Moreover, they focus on protecting the nature value of the surrounding forests and green areas. Another interest is to maintain the protected view of the city of Amersfoort which will be affected by the scenario of the municipality.

The ‘Vereniging Behoud Bos Birkhoven en Bokkeduinen’ (VBBBB) (Samenwerkende groepering Leefbaar Amersfoort, n.d.) focuses on maintaining the areas of the forest “Birkhoven”. They act against developments in and surrounding this area that pose a threat to nature. As the plan of the municipality includes major changes regarding the forest structure of the area, the interest group speaks out against the plans.

A residents group (Destadamersfoort, 2015) that is actually in favour of the plans is the ‘Daam Fockemalaan’ group, which consists of residents that live at this street in Amersfoort. They are affected positively since the aim of the municipality scenario is to lead traffic away from this street to another road.

An overview of the main stakeholders and their respective opinions about the scenario 7B (2015) can be found in the Appendix A (Table A1).

1.4.3 Other stakeholder

Besides the resident groups, there are also other stakeholders that will be affected by the selected scenario. Mostly, enterprises and buildings are affected by the changes of the 7B (2015) scenario. As the new road passes through the military compound a building must be removed there. The entrance of the old monastery “O.L.V. Ter Eem” near the D. Fockemalaan, which is currently the base of several companies, has to be relocated. Similarly, the Zoo “DierenPark Amersfoort”, which is situated along the Barchman Wuytierslaan has to relocate part of their parking space. This actually benefits the Zoo as a new parking garage will be built, since the numbers of visitors have been increasing every year.

There are some other stakeholders that are affected by the infrastructure plan, we mention them in this section because they are single individuals and don't represent strong stances. The Restaurant “Kabouterhut” will need to change the entrance and the relocate their parking lot. The Restaurant “Vlasakkers” will be gone after the implementation of scenario 7B (2015) and the ground has already been sold to the municipality. Lastly, the Shell gas station, located in Daam Fockemalaan 18, has to move due to safety regulations.

1.4.4 Actors

We identified another group of actors that is involved in the project that will allow or take part in the implementation of the infrastructural changes, constructing plans and conducting researches on the project. Actors are Ecological Analysis and Engineering Consultancies, Wageningen Economic Research, which are further described in Appendix A (Table A3).

1.5 AIM and RESEARCH QUESTIONS

The main goal of our research is to add to a better understanding of the situation regarding the West Tangent project. As an Academic Consultancy Team, we will analyze and evaluate relevant information for scenario 7B (2015) and scenario 10+ (2015) in order to achieve our goal. Specifically, the environmental impacts for both scenarios will be investigated to address possible shortcomings of the respective studies that have been performed. For the same reason we will assess whether planned nature compensation is sufficient and according to the respective law. Finally, we will study the communication between the municipality and the residents (and interest groups) to gain insights on the interactions between the different stakeholders. To reach our project aim, we formulated three concise main research questions.

- 1. Is nature compensation of scenario 7B (2015) sufficient according to law and regulations?**
- 2. What are the differences between scenario 7B 2015 and 10+ 2015 in terms of environmental effects?**
- 3. What are the strengths, weaknesses, opportunities and threats (SWOT) in communication between the municipal council of Amersfoort and the residents?**

Chapter 2:

DESCRIPTION OF SCENARIOS

Chapter 2: DESCRIPTION OF SCENARIOS

Overview of chapter

This chapter provides all the scenario descriptions (7 (2013), 7B (2013), 7B (2015), 2 (2013) and 10+) which we studied. We obtained the scenarios from the municipality from their website and we translated these into English. Maps and detailed figures about the municipality plans were included on the website and we included those in this chapter to also have a visual overview. Considering the 10+ scenario, a figure is included containing the plans as created by the residents. The text in which the 10+ scenario is described, based on the figure, we translated into English and can also be found in this chapter. Finally, there is a paragraph which underlines the main differences between the scenarios 7B (2015) and 10+.

In this section we provide a description of the scenarios obtained from documents from the municipality of Amersfoort. These are: Scenario 7 (2013), 7B (2013), 7B (2015) and scenario 2 (2013) developed by Sweco. The first scenario described is 7 (2013) on which scenario 7B (2015) is based.

2.1 DESCRIPTION of SCENARIO 7 (2013)

The following point consist the changes that scenario 7 (2013) foresees. In Figure 6, an overview of the scenario is available.

- To improve the connection of the *Stichtse Rotonde* towards the road N237, a traffic arrangement installation will be placed.
- To improve connection of the *Stichtse Rotonde* to the *Daam Fockemalaan (DF-laan)*, a traffic arrangement installation will be placed. Bicycles will cross the roundabout at another height.
- A connection to the gas station along the *DF-laan* will be realized.
- Prior to connection with the *Prins Frederiklaan (PF-laan)* the newly created *Westelijk ontsluiting* road will make a turn and will be parallel to the *Aletta Jacobslaan (A. Jacobslane)*, crossing the current military terrain.
- The entrance road to the old Monastery (“O.L.V. Ter Eem”) will be connected to the parallel road, which will be connected to the *Westelijke ontsluiting*.
- Cyclist will cross the road by means of a tunnel.
- The bicycle road will remain parallel at one side of the *DF-laan* (two-way lanes).
- There will be a tunnel for cars under the railway at the *Barchman Wuytierslaan (BW-laan)*.
- The road entering the military terrain will be linked to a viaduct for cars crossing the *Westelijke ontsluiting* road.
- The *BW-laan* will be a two-way road to create a link between the *Westelijke ontsluiting* and the city.
- Bikes will be able to cross the *BW-laan* to reach the restaurant the “Kabouterhut”.
- At the Northern side of the railway, the road will be relocated to the current position of the *BW-laan* and the width of the road will decrease.
- The bus stops at the *BW-laan* will be moved and both will be relocated closer to the entrance of the Zoo in the future.
- The connection to the *Midland Parc* will be changed in such a way that cyclists and pedestrians will be able to cross the *Westelijke ontsluiting*.
- The connection to the *Soesterweg* and *Bosbad* will be designed as a ‘Largas’ solution. This means a broad median strip will be placed in the middle of the road to cross the street or turn, where pedestrians and cyclists cross the street without regulations.

At the intersection with the *Amsterdamseweg*, the capacity for traffic will increase. The heaviest load is *Amsterdamseweg – Westelijke ontsluiting* (and vice versa). For both sides two turning lanes will be created. Cyclists will be considered in these arrangements.



Figure 6. Map of scenario 7 (2013). Source: *Verbetering doorstroming verkeer aan de westzijde van Amersfoort, uitwerking coalitieakkoord. Gemeente Amersfoort (2013).*

2.2 DESCRIPTION of SCENARIO 7B (2013)

Scenario 7B (2013) contains the same measures as described in scenario 7 (2013), with the addition of the following changes. An overview of the scenario is provided through Figure 7.

- The route of *Westelijk ontsluiting* will start to deepen/lower after the gas station, although the bicycle lane will not lower with it. Near the buildings of the *A. Jacobs lane* the route will be at a level that will allow the elongation of the road till the *PF-laan* (more or less). At the ground level a connection will be made to the old Monastery (“O.L.V. Ter Eem”), which will be open for all traffic. To prevent that the road will become a shortcut only the house alongside the *DF-laan* will be accessible, behind this house the current parallel road will become a two-way bicycle lane directing to the “Leerhotel”.
- Alongside the lowered part of the *Westelijke ontsluiting* there will be no bicycle lane. The cyclists headed north-south will use the *DF-laan* that will be redesigned. The *Kapelweg* is pointed out as reference for the design.
- The traffic lanes will be separated by a median strip at the *Westelijke ontsluiting*, because the route will be deepening fast after the gas station and will deflect. The median strip will prevent that cars get on the wrong side of the road and the speed will be decreased, thereby increasing the safety.
- The cyclists will cross the *B.W-laan* at the same height and because it is expected that the traffic intensity will reduce, there will be no traffic arrangement installation placed at the crossing. The cyclists will move North, parallel to the *BW-laan* between the *BW-laan* and the rail to the *Westelijke ontsluiting*. Compared to scenario 7 (2013), the bicycle lane will be situated on the other side of the car tunnel, below the railway.
- The bicycle intersection at the restaurant the “Kabouterhut” will not be needed any longer in this scenario, since cyclists with destination the Zoo will be able to cross the road at the respective location.

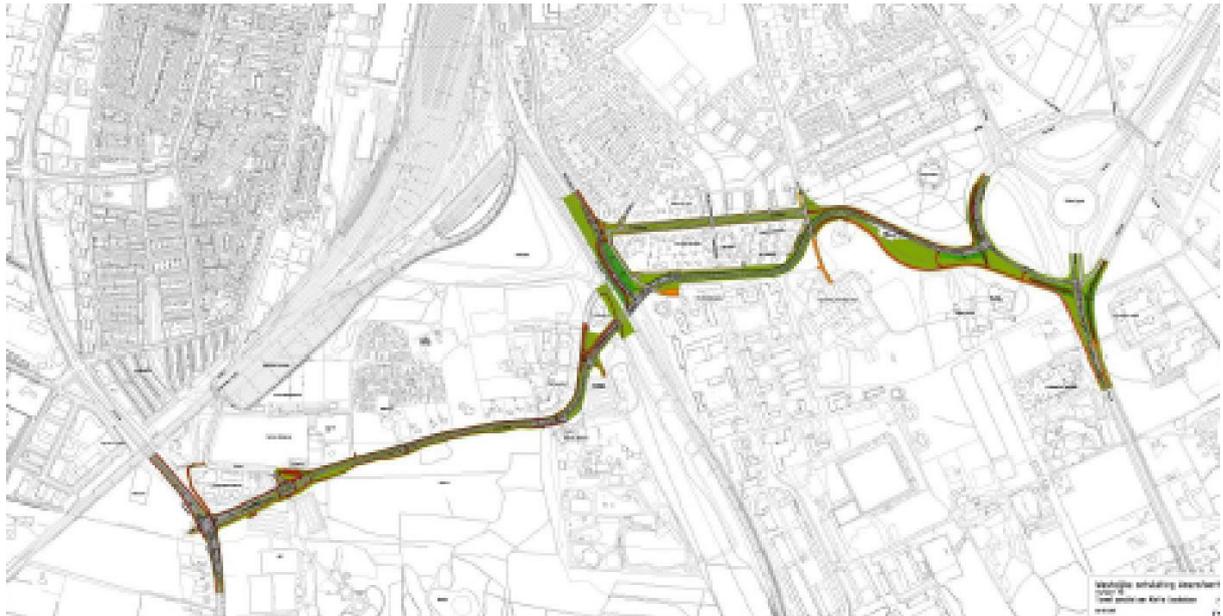


Figure 7. Map of scenario 7B (2013). Source: *Verbetering doorstroming verkeer aan de westzijde van Amersfoort, uitwerking coalitieakkoord. Gemeente Amersfoort (2013).*

2.3 DESCRIPTION of SCENARIO 7B (2015)

The description of scenario 7B (2015) contains all features of scenario 7B (2013) with additional changes as explained below. These changes are obtained from the Afwegingsnotitie Westelijke ontsluiting report (September 2015). A map of these adaptations from scenario 7B from 2015 compared to the scenario from 2013 is provided (Figure 8), with the different adaptations indicated with numbers (1-10).

1. The following changes will be made on the parallel road (situated on the west) of the *DF-laan*:
 - a. The road will be cut when it crosses the *Westelijk ontsluiting*.
 - (i) The bicycle road will be changed into a two-way road for cyclist (instead of one-way).
 - (ii) Entrance to “O.L.V. Ter Eem” will be removed from *DF-laan*.
 - (iii) This will result in more differences in the height of the roads.
 - b. The parallel road will be converted into a one-way road (directed towards the South), a bicycle strip will be added.
 - c. The road near the gas station will be shifted a bit and a bush will be put in between the roads.
 - d. The ground will be raised along the *Westelijke ontsluiting* to:
 - (i) create a noise barrier.
 - (ii) create another sight line.
 - (iii) compensate the differences in height of the road and entrance to the monastery.
2. The current green tree line will remain along the *A. Jacobslane* for most parts of the road.
 - a. The *Westelijke ontsluiting* road (which will be lower compared to the surface) will be further away from the *A. Jacobslane*.
3. The ‘Famous Woman Neighbourhood’ will be arranged differently.
 - a. No dead-end roads will be present anymore.
 - b. The part to turn on the *A. Jacobslane* will be removed. Additionally, a small area of current residential gardens will be used to build the new road on (in consultation with the residents).

- c. The *A. Jacobslane* will be connected with the *BW-laan*.
 - d. A sidewalk will be established from *A. Jacobslane* to the *PF-laan*.
 - e. Gardens at the *DF-laan* will be enlarged.
 - f. The crossing of the *DF-laan* and *PF-laan* will be increase in height.
 - (i) To compensate for the differences in height (necessary for the gas station).
 - g. The *DF-laan* will be the main cycle road in contrast to the current situation where the *A. Jacobslane* serves this purpose.
4. Cyclist will cross the railway by means of a bicycle bridge. This means that:
 - a. The sight and safety will be better due to the bicycle bridge.
 - b. A two-way bicycle road can be constructed without the need of crossing the *BW-laan* (which would be the case with the tunnel).
 - c. The height of the bicycle road will be different than the depth would be for the tunnel.
 - d. The slope of the bridge will be less than 4%.
 - e. The cyclists will not inhale air pollutants from cars when cycling over the bridge.
 5. The “Bernhardkazerne” will get another entrance and possibility for calamities to enter the terrain.
 - a. There will be an entrance to the *Westelijke ontsluiting* road for military convoy and emergencies (normally this entrance is inaccessible due to a gate).
 6. The *DF-laan* will be a “residential” street, being the main road for bicycle traffic which increases the safety for pedestrians.
 7. The entrance road to the zoo will be changed.
 - a. The barriers will be further on the terrain of the zoo (to prevent pedestrians blocking the cars).
 - b. The parking lot will be redesigned.
 - c. The entrance square will increase in size and changed due to a separation of the cyclist, pedestrians and cars in a way they do not need to cross each other.
 - d. Close to the entrance the parking spots for disabled people will be placed.
 - e. A parking garage will be built by the zoo (the zonal plan is adapted for this).
 - f. Around 100 parking places will be created for customers of the restaurant “Kabouterhut” (the bicycle road will be connected).
 8. The North part (compared to the railway) of the *BW-laan* will be relocated a couple meters.
 - a. A meandering bicycle road will be constructed.
 - b. Trees will be placed within a 6-meter distance between the main (*BW-laan*) and parallel road.
 - c. The bicycle road on both sides of the road will be 3 meters wide (and directing two ways), which is lower than the minimum requirements.
 9. The parking place from sport complex “Birkhoven” will be relocated due to the EMS (Ecological Main Structure).
 - a. The parking lot will be parallel to the hockey fields (with 316 places and a shorter walking distance to the entrance).
 - b. The road towards the sport complex will be relocated.
 - c. There will be a kiss and ride in front of the hockey terrain.
 - d. There will be a bicycle road to enter the sport complex.

Regarding the nature compensation needed for the changes planned for this scenario, there are two additional remarks (10-11), of which 10d and 11 are not visible in Figure 8. Because the location for the nature compensation as described in 10d is outside the figure boundaries and the changes of 11 do not contain a description for a specific area or location.

10. According to the findings of Bureau Waardenburg, the following nature compensation measures should (by law) and will be taken:

- a. An Eco duct will be constructed for the connection of the EMS.
 - b. The parking lot of sport complex “Birkhoven” will be demolished and replaced with an area for EMS.
 - c. There will be a ‘fauna passage’ at the North side of the *BW-laan*.
 - d. There will be a 4 Ha forest constructed at the end of the *Melksteeg* with the purpose of nature compensation.
11. Extra nature compensation will be arranged
- a. 600000 extras euros will be invested in nature compensation.
 - b. 0.5 Ha green will be removed for which it is necessary to compensate.
 - c. Extra nature compensation arrangements can be implemented (however this is not decided upon).



Figure 8. Map of scenario 7B (2015) with indicated changes. For the areas with a circle indicate the area that changes, compared to scenario 7B (2013), will occur. Source: *Verbetering doorstroming verkeer aan de westzijde van Amersfoort, uitwerking coalitieakkoord. Gemeente Amersfoort (2013).*

2.4 DESCRIPTION of SCENARIO 2 (2013)

Scenario 2 (2013) consist of a few measures as indicated below to be implemented in the current situation. A map of this scenario is provided as well (Figure 9).

- The traffic arrangement installations will be optimized.
- The road will be lengthened near the traffic arrangement installations.
- Extra lanes will be created near the traffic arrangement installations.
- The traffic arrangement installations will be situated at the *Stichtse Rotonde*, the *Utrechtseweg*, the *Amsterdamseweg* and the *BW-laan*.

Due to these measures the traffic will have a better flow, which will increase the reliability of the travel time estimation and subsequently less traffic will pass. Concerning noise, nature or recreational disturbances, it is indicated that no changes will occur compared to the current situation (obtained from studies conducted by Waardenburg (2012) and Aldeco (2011)).

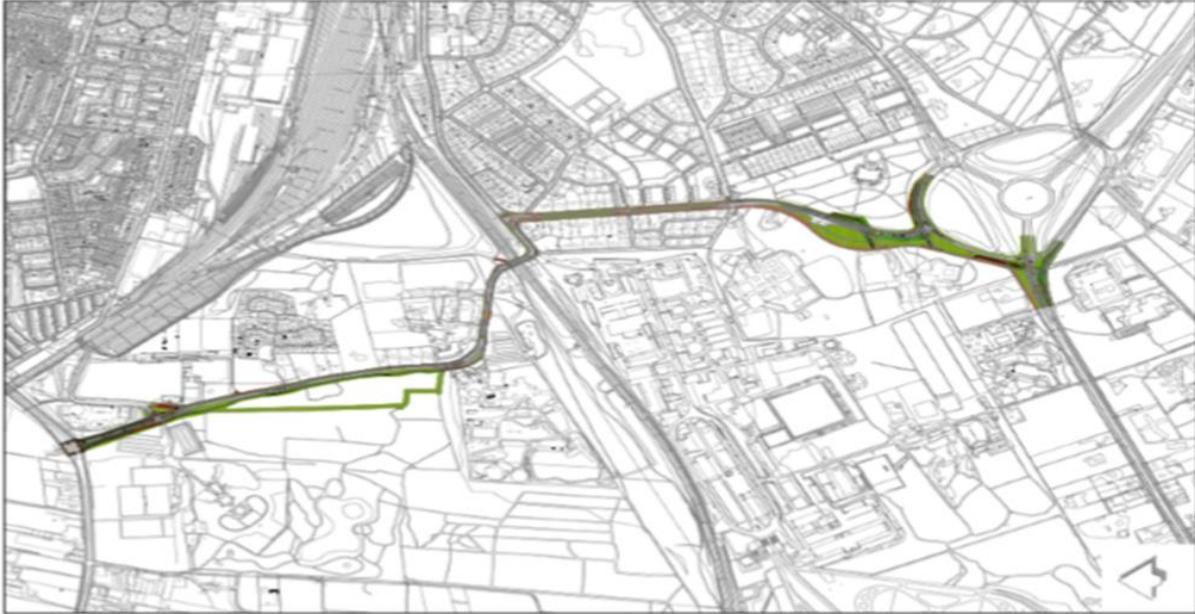


Figure 9. Map of scenario 2 (2013). Source: *Verbetering doorstroming verkeer aan de westzijde van Amersfoort, uitwerking coalitieakkoord. Gemeente Amersfoort (2013).*

2.5 DESCRIPTION of SCENARIO 10+

The scenario 10+ was developed by the residents and interest groups and is based on scenario 2 (2013). The changes that are planned for this scenario are presented in the form of bullet points and correspond to the changes from the left side (the North in reality) to the right side (South) of the map provided (Figure 10).

- Crossing *BW-laan – Amsterdamseweg/Birkstraat* has already been modified with a traffic arrangement installation
- Create an oval shaped roundabout at the crossing *BW-laan* and *Soesterweg* (access *Bosbad/hockey club*) within the existing profile instead of a crossroad with a traffic arrangement installation for cyclists and pedestrians, a good example for this can be found in Hilversum (city in The Netherlands) (*G. van Mesdagweg*). This requires less space, saves large trees and is a safe solution. Something similar will be developed for scenario 7B, but to a larger extend due to the broadened of the road where a lot of trees need to be cut.
- Improvement of the walking path at the existing beautiful forest lane in the forest “*Birkhoven*”. Visitors of the Zoo can be led over this path when they go from or towards their parking space. Currently, people walk unsafe and disturbingly over the bicycle lane alongside the *BW-laan*.
- Make a traffic island for safely inserting/exiting cars in front of the camping/bungalow park, this improves also the traffic flow and will lead to the cut off of only a couple trees locally due to the limited broadening of the road. The conservation of the current road will not or hardly affect the forest and the Ecological Main Structure (EMS) remains unharmed, the boundary of the EMS is situated on the edge of the asphalt.
- Expand the rustic cycle path at the different sides of the road and make the street suitable for two-way cycle traffic instead of making an additional street for cyclists at only one side of the *BW-laan*. Potentially, this would be partially possible as the cycle path at that spot becomes invalid and the sidewalk expands.

- Move the road profile of the *BW-laan* between the railway crossroad and the entrance of the Zoo a little in order that alongside the Northern side a normal sidewalk with a hedge as separation to the road remains. At the Southern side sufficient space will be created for a two-way cycle path and an expanded sidewalk, which improves the current unsafe situation.
- The old forest core can be maintained as the current railroad crossing will be maintained with a slight expansion because of the two-way cycle traffic. The old forest is part of the EMS and is an important corridor with the opposing forest area “Bokkeduinen” with a special eco-biotope next to the railroad emplacement marshalling yard?). Currently, roe-deer and other forest animals walk here.
- Besides, there would be no necessity for a viaduct at this low-lying location where in the future approximately 2 km of (strongly) sloping road ends which will result in a lot of disturbance in terms of flooding. The basin to collect rain between the *BW-laan* and the railroad at the East of the crossroad is already filled completely when it has been raining for some time. A possible solution for the excess of water could be a “main sewer” over more than 3 km to river ‘the Eem’, but for scenario 10+ this is not needed.
- Also, the huge bridge for cyclists and pedestrians is not necessary, which due to the height difference (deck of the bridge will be at least 8 meters above the railroad!) provides no connection towards the bicycle road and sidewalk alongside the railway, cyclist will need to make a major detour to continue their way. In the 7B scenario case a huge part of the old forest will need to be removed.
- In addition, a parking garage of 4 to 5 layers needs to be built to compensate for the lost parking lot due to the area necessary for the relocated road and the viaduct underneath the railway.
- Relocate the bus stop at the short part of the *BW-laan* and the “Bernhardkazerne” entrance to a location where the continuing traffic to the *DF-laan* will not be interrupted as the bus stops for passengers. At the moment especially in rush hour cars accumulate towards the railway crossing and the unsafe situation is created where cars switch driving lane to overtake the bus and end up on the opposite driving lane.
- The traffic arrangement installation the crossroad *BW-laan* and *DF-laan* has already been improved and is quick. Possibly a better arrangement can be made by closing the rail barriers for approximately 70 seconds (= on average half minute). Besides, it seems that closing the rail barriers regulates the incoming- and outgoing traffic of the “Bernhardkazerne”. One day, when the rail barriers were not working, there was instantaneously a huge traffic jam from- and towards the “Bernhardkazerne” terrain with more than 3000 jobs. A remaining option is to regulate the bicycle- and pedestrian traffic better on this crossroad.
- Maintain the crossroad between the *DF-laan* and the *Troelstralaan/Fl. Nightingalelaan* and the parallel bicycle lanes for one-way traffic.
- Alternate crossroad of the *DF-laan* and *PF-laan* in order to use by traffic directed towards the ‘Stationskwartier’. This in combination with relocation of the bus stop there.
- In this 10+ scenario the protected (‘tot rijksmonument’) building and gardens of “O.L.V. Ter Eem” in combination with large parts of the protected area (‘Rijks beschermde Stadgezicht’) can be maintained. This is the habitat of a lot of animal- and plant species that are listed in the ‘Natuurbeschermingswet’.
- Create a bicycle tunnel for children cycling to school nearby the crossroad if this seems to be necessary.
- Demolishing of a large part of the forest of the “Rijks Belgen Monument” for the by-pass to enable the ongoing traffic during the building of the 7B scenario will not be necessary.
- Relocate the entrance road to the “Leerhotel” to the outer ring of the *Stichtse Rotonde*, in order to have a smooth flow of traffic on the *DF-laan*.

- The building of a bicycle tunnel in the continuing bicycle lane on the outer ring of the *Stichtse Ronde* can possibly be avoided if the traffic towards the schools is better regulated, however this refers to a different budget of the Province. Meaning also that at this location a core of old forest could be maintained.
- Reopen the entrance to the “Bernhardkazerne” at the *Utrechtseweg* alongside the Nursing home “the Lichtenberg” accessible again, this would mean a huge relief for the traffic pressure at the railroad crossing.
- The traffic arrangement installation for the cyclists at the *Utrechtseweg* at the entrance of the “Lichtenberg” could then possibly be moved to the second entrance of the “Bernhardkazerne”.
- At last, in general this scenario is about the conservation of a beautiful green entrance of Amersfoort, that the municipality and the Province themselves call “De Poort naar de Heuvelrug – The Gate to the Heuvelrug”. A gate for the vacationer with a concentration of sport facilities, a beautiful Bosbad, an open-air theatre, sport unions with their terrains and not on the last place a very varied old country seat forest with a lot of dusty dune relief and a huge forest pond where ice-skating is possible during winter.
- It is not only the green gate creating the cities green image which forms a quality business card, but certainly also for the ecological quality of the city. This side of the city together with the ‘Eemdal’, the remaining quarter of the circle around the city, THAT HAS NOT YET BEEN locked by a dense infrastructure where plants and animals cannot pass. This isolation leads to a serious decrease of biodiversity in the city and therefore also for our living space.

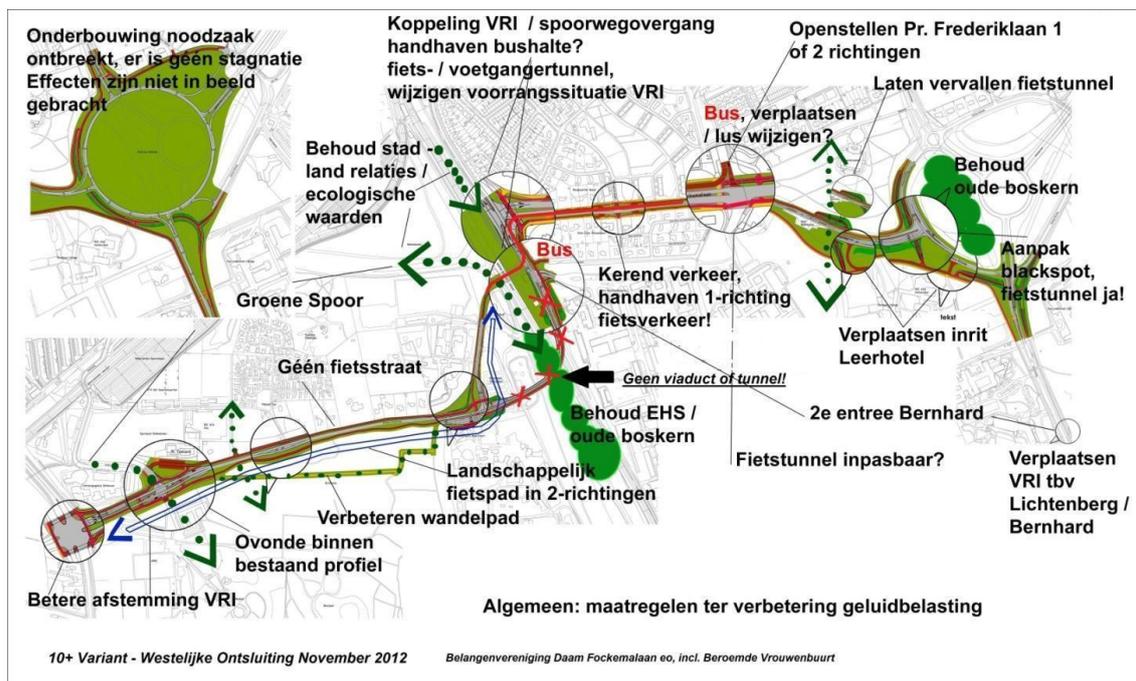


Figure 10. Map of scenario 10+. Source: provided by the resident group of the A. Jacobslane.

Remarks

Based on the description of scenario 10+ provided by the residents, one can conclude that the goal of this scenario is to prevent the degradation and further disturbance of the nature surrounding the Westelijke Ontsluiting. In contrast, scenario 7B (2015) foresees extensive changes in terms of infrastructure and therefore a considerable loss of nature. For example, scenario 10+ does not foresee the removal of buildings or nature as the cut of the old forest

core near the railway crossing for the construction of a tunnel and bicycle bridge, the removal of certain building, nor the degradation of the complex of the old monastery ("O.L.V. Ter Eem") and the Belgenmonument. This also means that no extensive nature compensation will be needed for scenario 10+. Additionally, the necessity of a cycling bridge, which will be around 8 meters over the railway, is controversial.

Chapter 3: **METHODOLOGY**

Chapter 3: METHODOLOGY

Overview of chapter

In order to evaluate scenario 7B (2015) and scenario 10+ (2015) and to enhance mutual understanding between the local council and residents of Amersfoort we divided our study in separate elements. This approach is described in this chapter. Additionally, there is an explanation provided why we had to change our initial methodology, which is described in our research proposal. Therefore, the initial methodology is not described here and only the methods we used are included in detail.

Scenario 7B (2013) was chosen by the municipality to be implemented in Amersfoort. However additional changes have been made to this scenario after the selection process, resulting in scenario 7B (2015). Because of this, a critical evaluation of the information on which the decision to choose a scenario is based on, was needed. To see whether the nature compensation complies with the law and regulations certain steps are taken to answer research question one, as explained in this chapter.

To answer our second research question and to be able to investigate the environmental impacts, we analysed the CBA for scenario 7B (2013) and the changes for 7B (2015). Subsequently we analysed the SEA report for scenario 2 (2013) and 7B (2015). Scenario 2 (2013) is investigated since it could be used to approach the analysis for the 10+ scenario.

To be able to answer the third research question, the methodology of the SWOT analysis is explained in this chapter.

Methodology adjustments

When performing our research, we realized we could not carry out our initial methodology. Because of this we had to adapt the goals for this study, mainly regarding the second research question. The initial goal was namely to analyse and evaluate the SEA report (2015) for scenario 7B (2015) and 2 (2013) to be able to produce an adapted version of the SEA for scenario 10+ to compare the environmental impacts. The same comparison would account for the study of the CBA. Combined this would allow a comparison of the environmental impacts for scenario 7B (2015) and 10+.

However, we were not able to do so since we faced some difficulties regarding the scenario description of 10+ made by the residents. The description we received was based on a map with indicated changes, according to the wishes of the residents. Just like for the scenarios of the municipality, we needed a thorough description from all changes the residents would like to see being implemented in the area. The description we received contained some changes with reference to the current situation, but also comments on the 7B scenario. When asking the residents for the scenario description we also encountered the difficulty that we received it multiple times with some changes. This was inconvenient while we were already working with the first version we received. Besides, the planned changes would only be implemented when necessary, which makes it hard to predict whether it will be implemented in the future. Another difficulty we encountered is that the scenario did not contain proper quantities. For instance, there was no information about the exact area of nature which would have to be removed. There was no detailed information about potential nature loss or a necessary nature compensation area either. Also, in this scenario, assumptions have been made which cannot be justified based on the information available at the moment. There is no support from (academic) research whether these assumptions are valid. For instance, the change which is recommended at the *Utrechtseweg* near the Nursing home “the Lichtenberg” could decrease the pressure on the traffic like indicated but is not certain. It could also increase the pressure at another location. Possible effects on the traffic at another location due to these changes were not investigated. This made it difficult to determine the exact consequences of the infrastructural changes for scenario 10+. Consequently, it was difficult, for example, to develop an indication for a Cost Benefit Analysis for scenario 10+, since it is not certain whether all changes described will be implemented.

Due to the difficulties described above regarding the description of scenario 10+, we were not able to perform our initial study. Therefore, we mainly focused on scenario 7B, which was developed by the municipality, for research question 1 and 2. This methodology chapter describes what we were able to do and have done for this study.

3.1 NATURE COMPENSATION and LEGISLATION

In order to answer our first research question, we conducted a literature research in the following steps:

1. Inventory of the current nature protection legislation
2. Reflection ecological research
3. Inventory of the current nature compensation regulation
4. Reflection nature compensation measures

3.1.1 Inventory nature protection legislation

The relevant nature legislation was inventoried using Dutch literature. We used literature about the Nature Conservation Act (2017), which includes area protection, species protection and forest area protection. For area protection aspect we cited an article written by van Vulpen (2017), for species protection aspect a document by the Ministry of Economic Affairs (2016), and for forest area protection aspect the policy documents 'Verordening Natuur en Landschap provincie Utrecht 2017' and 'Beleidsregels Natuur en Landschap provincie Utrecht 2017'.

3.1.2 Reflection ecological research

To reflect whether the ecological research of the municipality of Amersfoort was sufficient for species protection, we did an evaluation of the file 'Realisatie Westelijke Ontsluiting Amersfoort' by Bureau Waardenburg bv. (2016) with a comparison to the current nature legislation. Additionally, we used data from the Nationale Databank Flora and Fauna (NDFB), Waarnemingen.nl and an Excel file from Bureau Waardenburg bv. to have an overview of the present species.

To reflect whether ecological research was sufficient for forest area protection, we evaluated the files 'Bomen Effect Rapportage Westelijke ontsluiting Amersfoort' by Ekotree and De bomenconsulent (2015), 'Addendum afweging locatie boscompensatie Westelijke Ontsluiting' by Bureau Waardenburg bv. (2015), and 'Aanvulling Bomen Effect Rapportage' by Ekotree and De bomenconsulent (2016) and compared them with forest area legislation.

3.1.3 Inventory nature compensation regulation

For the inventory about the nature compensation regulation aspect we used, among others, policy documents and online interactive maps from the province of Utrecht like the 'Provinciale Ruimtelijke Structuurvisie' (PRS), 'Provinciale Ruimtelijke Verordening' (PRV).

3.1.4 Reflection compensation measures

To reflect if nature compensation measures were sufficient, we evaluated the files 'Realisatie Westelijke Ontsluiting Amersfoort' (2016), *Natuur rond de Westelijke Ontsluiting Amersfoort Maatregelen in het kader van verrijking en bovenwettelijke compensatie (2015)*, *Afwegingsnotitie Westelijke Ontsluiting (2015)*, 'Natuurwaarden rond de Westelijke Ontsluiting Amersfoort' (2015), and 'Addendum afweging locatie boscompensatie Westelijke Ontsluiting' (2015) by Bureau Waardenburg bv., and compared the measures with the current policy of the province of Utrecht.

3.2 ENVIRONMENTAL IMPACTS

Scenario 7B (2013) was chosen by the municipality to be implemented. However, additional changes have been made to this scenario after the selection process, resulting in scenario 7B (2015). Because of this, a critical evaluation of the information on which the decision to choose a scenario is based on, was needed to answer our second research question to be able to investigate the environmental impacts. Therefore, we analysed the CBA for scenario 7B (2013) and the changes for 7B (2015). Subsequently, we analysed the SEA report for scenario 2 (2013) and 7B (2015). Scenario 2 (2013) is investigated since it could potentially be used to approach the analysis for scenario 10+.

3.2.1 Cost Benefit Analyses

The CBA analysis was developed in 2013 by Wageningen Economic Research (former LEI) in cooperation with the municipality. It consists of multiple aspects which together determine the total balance. To get an insight in the CBA we assessed every aspect used in the CBA and explored why those were taken into account, this can be found in Appendix B (Table B2). It is assumed that the CBA is performed correctly in 2013. To assess the changes of the 7B (2015) scenario concerning the environmental aspects represented in the CBA, we made an adapted version of the CBA in which we indicated whether an aspect in the CBA from 7B (2013) would increase or decrease due to the infrastructural changes with colours (Table 1, Chapter 5). In Chapter 6 we provide arguments and explanations for the changes between the CBAs. The headers of the columns in the table correspond to the number of the change of scenario 7B (2015) compared to 2013 (as described in Chapter 6). The coloured cells mean that a change will take place in that specific aspect of the CBA. Pink indicates a decrease in the respective aspect and a blue cell an increase. The cells that are white indicate the absence of change. It is worth mentioning that some aspects in the CBA are defined in a positive way and others negatively.

3.2.2 Strategic Environmental Analyses

The SEA report is made by Bureau Ruimtewerk in September 2015. The authors of the report have chosen to divide the study area into six sub-areas (Figure 13, Chapter 6) and in the report every sub-area was assessed based on specific topics and respective assessment criteria, for each scenario. A scoring system was also developed for the different assessment criteria. Specifically, for each assessment criterion, the sub-area is graded with a Good, Sufficient, Insufficient or Poor score. A detailed description of the topics and assessment criteria is presented in the Table C (Appendix C). For the purpose of this report, two aspects of the SEA report will be evaluated; (a) the content and validity of the assessment criteria used and (b) the reliability of the scores attributed to scenario 2 (2013) and 7B (2015).

3.3 SWOT ANALYSIS

In addition to the comparison of the different scenarios (as visualized in Figure 2, Chapter 1) another aspect important in the project is the communication between the resident and interest groups, who are against the implementation of the 7B scenario and the local municipality council. Other stakeholders have been described in the stakeholder analysis (Chapter 1) will not be taken into account for this analysis.

We performed a SWOT analysis regarding the project, focused on the strengths, weaknesses, opportunities and threats of the participation and communication between the two different stakeholders. Therefore, literature of the MSP Guide and online resources suggested in the guide, have been used to prepare the SWOT analysis (Brouwer & Brouwer 2017). Making use of online toolkits helps to tailor the tool to the specific situation and allows for an adaption of the technique. Normally, a SWOT analysis is done by inviting the different stakeholders to take part in a facilitation session. This allows the different stakeholders to maximise their opportunities to find a voice in the process (Brouwer & Brouwer 2017). Furthermore, different perspectives are integrated, and the tool aims at creating a mutual understanding of each other's perspective on the project or issue. However, due to time and resource restrictions of this analysis, the SWOT analysis will be split between the two stakeholders and later integrated.

As a mean to generate data that can be used for the SWOT analysis, interviews with guiding questions will be formulated and asked to the local council as well as the local groups. Specifically, interviews with 7 participants will be conducted: 2 with the municipality and 5 with representatives from interest and resident groups. In order to be able to conduct a detailed SWOT analysis and to produce an overview of the participation situation, a preliminary SWOT analysis was made before the interviews (Appendix E, Table E1). These insights were used to make tailored interview questions and the answers to those questions were used to develop the final SWOT analysis (Appendix E, Table E2).

Chapter 4:

NATURE LEGISLATION & REGULATIONS

Chapter 4: NATURE LEGISLATION AND REGULATIONS

Overview of chapter

This chapter will describe our findings, discussion and conclusion on the ecological research, (requested) dispensations and mitigating/or compensating measures (statutory and non-statutory) for the 7B (2015) scenario. In the beginning of this chapter (section 4.1), we present our findings on the legislation for species- and natural area protection, derived from literature on national and international law. After (section 4.2), we present our inventory on regulation for the natural areas that are relevant to the West-Tangent project, derived from policy documents of the province of Utrecht. In the following sections an overview is provided of the ecological assessment of the presence and impact on protected species and protected natural area within the influence sphere of the planning area. Furthermore, an overview of the extra-law damage, extra-law measures, and enrichment are provided, including remarks or statements based on different sources. At last (section 4.5), we display a conclusion on whether ecological research, (requested) dispensations and mitigating/or compensating measures (statutory and non-statutory) for the 7B (2015) scenario were sufficient or not according to the relevant nature legislation and regulation. We did not include the 10+ (2015) scenario in our analysis, as there are no documents available on which area will be affected exactly, so we cannot assess the impact on protected species, protected area and the extra-legal damage.

4.1. Inventory Legislation (Nature Conservation Act 2017)

On the 1st of January 2017 the new 'Wet Natuurbescherming' (from here, Nature Conservation Act) went into effect in the Netherlands. This law replaced 3 previous laws: The Nature Conservation Act 1998, the Flora- and Fauna law, and the Forest law. The intention of the new law is to create more possibilities for spatial planning and to simplify procedures, without enhancing negative consequences for nature. Applications and objections regarding disturbing activities in protected area that were still pending before the 1st of January 2017, were treated according the new Nature Conservation Act (Witteveen en Bos, 2016). As scenario 7B (2015) was approved on the 20th of January 2018 (RvS, 2018), the conducted research, the (requested) dispensations, and mitigating/or compensating measures should be sufficient under the new law.

This paragraph is an inventory of the relevant legislation of the new Nature Conservation Act (NCA), divided in the following aspects:

- 4.1.1 Nature vision
- 4.1.2 Decentralization policy and authorizations
- 4.1.3 Area protection
- 4.1.4 Species protection
- 4.1.5 Forest protection
- 4.1.6 Exemptions- and transitional arrangements

4.1.1 Nature vision

National

In the national Nature vision, set by the Ministry of Economic Affairs, the guidelines of the pursued state policy are described (article 1.5 NCA). The vision is focused on *conserving* and where possible *increasing* biodiversity and *protecting* valuable (cultural)landscapes and the recreational-, educational-, and experience qualities of nature and landscape. Furthermore, it is important to also pay attention to societal interests like air quality, water safety and meeting places. The NCA explicitly states that the national Nature vision particularly needs to include (Stibbe, 2018):

- Favourable state of conservation of indigenous plant- and animal species
- Assuring a balanced, sustainable economic development
- Functioning of ecosystems in the nature reserves
- Landscapes with national- or international value, with respect to their cultural-historical characteristics
- Sustainable management of tree stands
- Effects of climate change
- Red List species

Provincial

Article 1.7 of the NCA states that the provinces also need to set a provincial Nature vision with guidelines of the pursued provincial policy. This vision at least needs to include policy focused on: conservation or restoration of the favourable state of conservation based on Bird- and Habitat Directives protected species and Red List species, as well as include policy on Nature Network Netherlands (NNN). Furthermore, the nature vision could include policy on unique provincial nature reserves and landscapes, but this is not obligatory. The province has to consider the coherence with relevant policy of other authorities like waterboards, municipalities and other provinces.

Legal status

As policy document, the nature vision has a relatively 'soft' juridical status. The nature vision is a strategic vision that only binds the administrative body (Minister and the provinces), and this administrative body may deviate if explained why. However, the nature vision should not be underestimated, as it is one of the most important tools to realise the favourable state of conservation of species through active species policy. Provinces must, in principle, always act according to the nature vision. For example, by granting permits and dispensation (Stibbe, 2018).

4.1.2 Decentralization

Before the new Nature Conservation Act, dispensation permits needed for the three nature laws had to be requested at different competent authorities. Apart from different competent authorities, these three laws also contained separate legal documents: notification, dispensation and permit (Ecogroen, 2018). Since the 1st of January 2017, the Provinces decide the 'Do's and Don'ts' for nature reserves and are responsible for permits and dispensation, which are now in one document. The Government is only responsible for the dispensation requests and codes of conduct as of now (RVO, 2018).

4.1.3 Area protection

Protection regimes

When planning activities in or close to natural area, the respective protection regimes of these areas need to be taken into account. Each standalone protection regime has its own to be protected stakes, sometimes overlapping. Therefore, different regimes need to be considered independently during decision-making processes of activities that could possibly harm the protected natural values. With respect to area protection the new NCA describes five types of protection regimes for nature reserves (van Vulpen, 2017): Natura 2000, Nature Network Netherlands (NNN), Unique provincial nature reserves and landscapes, Unique national nature reserves, National parks. The relevant protection regimes for natural areas for the West-Tangent project will be discussed in section 4.2.

Differences

The province in which a project is executed is the competent authority, so this is not always the province in which the effect occurs. To appeal against a project, one first has to go to provincial executive (GS) and then to the Council of State (RvS).

4.1.4 Species protection

For this section, all information is derived from the document '*Soortenbescherming bij ruimtelijke ingrepen*' from the Ministry of Economic Affairs (Ministerie van Economische Zaken, 2016).

Protected species

The first step in ecological research with regards to species protection is to know which species are protected and which areas should be investigated to find out if there are protected species in the affected area. Under the new NCA there are three categories of protected species.

1. Birds Directives species

In practice all birds that are present in the Netherlands as winter visitor, breeding-, sedentary- or migrating bird are protected, a total of around 290 birds. For all bird species the protection regime of paragraph 3.1 of the NCA is applicable.

2. Habitat Directives species (**including Bern Convention and Bonn Convention**)

The European protected species (that are not birds) are species of the Habitat Directives (appendix IV part a of the NCA), the Bern Convention (appendix II of the NCA) and the Bonn Convention (appendix I of NCA) that have their natural dispersal area in the Netherlands. For these species, the regime of paragraph 3.2 of the NCA is applicable.

3. Other species (**national protected**)

The list with nationally protected species was adjusted, resulting in 100 species to no longer be protected, and around 80 species to gain protection (8 dragonflies, 15 butterflies, 62 plants, and the Montane water vole). The nationally protected species under the NCA are mentioned in an appendix of the law in article 3.10 (mammals, amphibians, reptiles, fishes, butterflies, dragonflies, beetles, and vascular plants). This list is limitative, also called exhaustive, so it is a legal enumeration for which no extension is possible. The protection regime in paragraph 3.3 of the NCA is only applicable on the species in that list.

Research area

Species protection is only applicable to the species that are *present, nesting, breeding or resting* in or around the location where (disturbing) activities will take place. The planning area is where the actual activities take place, but disturbing effects can also occur outside the planning area. For example, noise disturbance violates the prohibition to intentionally disturb species. So, the research area is often bigger than the planning area, and the size depends on the influence sphere.

Inventory

The research area needs to be investigated for both the *presence* of, and *ecological function* (breeding sites, resting sites, and nests) for protected species. For a number of bird species their nests are protected year-round, even if the nest is not used at the time of the planned activity. This is the case if a bird species returns to the same nesting place and is not or nearly capable to find or make a new nest in its habitat. The same goes for a number of other animal species and their breeding- or resting sites. For example, winterstays of bats also need to be protected in summer when they are not in use. Protection of these ecologically important spots is to safeguard the functionality of the area. According to the 'European Guidance documents species protection', foraging areas or regular flight routes are not protected. However, jurisdiction points out that for Habitat Directives species, disturbing regular flight routes or damaging foraging area in a way that causes the species to leave their regular breeding- or resting site (even outside the planning area), is prohibited according to article 3.5 of the NCA, because such a perturbation affects the ecological functionality of the area.

Prohibitions

Instead of a uniform prohibition system for all nationally and internationally protected species, like the old FF law, prohibitions are now different for each protection category (Appendix D, table D1). For Bird- and Habitat Directives species, prohibitions are now closely aligned with the respective EU legislation. For Bird Directives species disturbing is not

prohibited anymore if it does not negatively influence the 'favourable state of conservation' of the species. Depending on the importance of the local bird population, it is possible there is an effect on the national favourable state of conservation. Cumulative effects on the national status of the species should therefore be taken into account. Damaging nests during breeding season is still prohibited, but disturbing birds is not, unless it influences the favourable state of conservation. It is the responsibility of the initiator to ascertain, and if needed prove, that activities are not a threat to the bird species and do not harm the favourable state of conservation. Also, unintentional activities that violate prohibitions are no longer prosecutable. Intentionally is: executing an activity and consciously accept the considerable chance that these actions will have harmful consequences for animals or plants. Nationally protected species ('other species') have less prohibitions compared to the FF law. Most notable is that it is no longer prohibited to *upset* nationally protected species or *disturb* regular breeding- or resting sites of these species. The FF law made a distinction between upsetting and disturbing, but under the new NCA both are not prohibited. The Habitat Directives do not make this distinction and prohibits *intentionally disturbing* of species. The prohibition on intentionally kill or capture, and the prohibition on destroying or damaging regular breeding- or resting sites, is not applicable on the wood mouse, house shrew or field mouse if they are in or on buildings or associated property or movable property (art. 3.10 part 3).

Measures to prevent violating prohibitions

Measures can prevent, diminish, ease or restore negative effects of a disturbing activity. If these measures prevent negative effects, there is no violation of the prohibitions. An example is postponing cutting of trees till breeding season is over, in order to not intentionally damage nesting places. This is a common measure. This is however not possible if a bird is protected year-round, and in this case, violation is mostly inevitable. Other measures could be: changing the work sequence, using different equipment, or a phased approach. Measures that restore effects on the place of the activity are *mitigating*, measures that elevate effects on the population through restoration or improvement in another area are *compensating*. For species protection there is not a strict distinction between mitigating- and compensating measures, unlike there is for area protection. Most important is the favourable state of conservation.

Exemption

The new NCA contains features whereby species can be exempted for (certain) activities. For example, provincial regulations, codes of conduct or an activity that is taken up in a Natura2000 management plan.

Provincial Regulation or Ministerial Arrangement

In a Provincial Regulation Order (PRV) or Ministerial Arrangement species can be included that are exempted for (certain) activities. The list of exempted species mostly differs based on the different states of conservation of species. Exemptions can be made for all three protection regimes, but for the for Bird- and Habitat Directives species exemptions can only be made for European Bird- and Habitat Directives interests. The prerequisite for exemption is always that it will not damage the favourable state of conservation of a species in their natural dispersal area (Habitat Directives and national protected species), or that it will not lead to a deterioration of the favourable state of conservation of bird species.

Programmatic approach

The NCA provides the option for a programmatic approach within species policy. This approach is broadly applicable for Natura 2000 areas and species policy with the aim to

connect economy and ecology more. A programmatic approach can be arranged by the government or the province.

Dispensation

A dispensation is a public law indication for a disposition of an administrative body, whereby an exception can be made for a legal- prohibition or commandment. A dispensation is needed if:

- there are no measures possible that can prevent violating a prohibition
- there is no exemption applicable, based on provincial regulation, a code of conduct, a Natura 2000 management plan, a programmatic approach or a ministerial arrangement

Application

An application needs to be accompanied with a project description, an ecological inventory, and an effect study that describes the effects on the favourable state of conservation the species in the area. In general, an application for dispensation needs to include information about:

- the activities that will take place
- for which species a dispensation will be requested
- for which prohibitions of the NCA a dispensation will be requested
- the goal and importance of the activities that will take place, and why there is no satisfying alternative
- which measures will be taken to limit or restore damage to species

Assessment application

The application for dispensation and accompanied reports have to be assessed for 'completeness' by the competent authority, to assure all needed information is available for a reasoned decision. The competent authority is the municipality if it concerns an application for an environmental permit. If it concerns a separate dispensation for species protection, the province is the competent authority. If the application is not complete, there is a chance for the initiator to provide additional material. The administrative body has to determine a reasonable period to do this. If the application is still not complete after this period, the administrative body has to decide to not process the request within four weeks.

There are three cumulative conditions for granting dispensation, which means only if these criteria are met, dispensation will be granted. The conditions are also applicable to all nationally protected species under the new NCA, unlike the old FF law:

1. deviating from the prohibition is only possible if there is no other satisfying solution
2. there has to be an interest that is mentioned in the law (this is indicated per protection regime in the law)
3. the favourable state of conservation of the species must not be detracted

To assess if these conditions are met, a review of interests and alternatives needs to be conducted with an ecological assessment.

Other satisfying solutions

The initiator needs to prove there are no satisfying alternatives for the disturbing activities (that will not violate the prohibition). The competent authority (in this case province Utrecht) to assess the alternatives. The following questions should provide the answer whether there is no satisfying alternative solution:

- a. What is the problem or the specific situation underlying the activity?
- b. Are there other solutions for this problem?
- c. If there are other solutions, what effect will they have on the prohibitions?

Other solutions could be an alternative location, plan, design, or execution of the activities. If a solution is 'satisfying' depends on the argumentation that has to be based on objective, verifiable data. The chosen plan should be restricted to the goal of solving the problem or specific situation.

Legal interest

The legal interests differ for the three protection regimes. The initiator has to prove that his actions serve one or more of these interests to be eligible for dispensation. The competent authority (the province of Utrecht in this case) has to be able to test this interest and to substantiate that the conditions are met. The character and importance of the interest has to be evaluated in relation to the importance of the protected species, for each specific activity, to determine the suitability of the dispensation.

For Bird Directives protected species, the only relevant legal interest for dispensation for the West-Tangent project would be 'in interest of public health or -safety'. For species protected by the Habitat Directives this would be 'in the interest of public health or -safety, or other enforceable purposes of strong public interest, with inclusion of purposes of social or economic character and inclusion of actual beneficial effects for the environment'. This legal interest is also applicable to other species, or nationally protected species. Additionally, a legal interest for this protection category is 'in interest of spatial development of areas, including the subsequent use of the arranged or developed area'.

Favourable State of Conservation

With the assessment if the favourable state of conservation of a species is at risk, it is allowed to include (planned) mitigating and compensating measures. Ultimately, the granting of a dispensation must not lead to a negative effect on the species. The ecological assessment criteria per protection regime are:

- Bird Directives: 'The activities do not lead to deterioration of the favourable state of conservation of the respective species'
- Habitat Directives: 'The aim to maintain the favourable state of conservation of the respective species in their natural dispersal area must not be detracted'
- Other species: 'The aim to maintain the favourable state of conservation of the respective species in their natural dispersal area must not be detracted'

For this ecological assessment the following questions need to be answered:

- a. What is the state of conservation of (the population of) the species (in its natural dispersal area)?
- b. What is effect of granting dispensation on the respective population(s)?

Although the assessment criteria for birds differ from Habitat Directives- and nationally protected species, European case law points out that with deviations from the Bird Directives the state of conservation of the population also needs to be considered.

4.1.5 Forest protection

Previously, the protection of forests (or tree stands) was arranged in the Forest law (1963). Now, this is arranged in Chapter 4 of the new NCA. The body of this law is formed by the logging notification (in Dutch: kapmelding) and the on-site replantation obligation within 3 years after the logging of the trees. The replantation needs to be executed in a forestry sensible way. The protection of forests does not as such arise immediately from international obligations but is of essential importance regarding national- and international nature-, landscape, and environmental objectives (Bnl Utrecht, 2017). Since implementation of the

new NCA the provinces got the regulating authority for forest protection. Therefore, forest protection will be further presented in section 4.2 (*Inventory provincial regulation*).

With the transition to the new NCA, the tree species *Tilia*, *Aesculus*, *Salix babylonica*, *Populus nigra cv. Italica* became protected and cutting of these trees needs to be reported.

4.1.6 Exemptions- and transitional arrangements

The new NCA is applicable on all application- and objection procedures after the 1st of January 2017, and all the applications and objections that were still pending on that date. An exception on this are the pending applications- and objections in regard to exemption for the old FF law. The competent authority remained the Minister of Economic Affairs, instead of the Province executive. Appeals that are directed against decisions made under the previous Nature Conservation Act, FF law and Forest law, and announced prior to implementation of the new NCA, were treated according to the old legislation (Stibbe, 2018).

4.2 Inventory provincial regulations

This paragraph focuses on the relevant provincial regulations on nature compensation by the province of Utrecht for the West-Tangent Amersfoort. In principle, it is prohibited to degenerate natural area by spatial developmental activities. However, under strict conditions, spatial plans can be allowed if they serve an overriding public interest and there is no alternative. In this case, the negative effects need to be limited as much as possible (*mitigation*) and if this is not possible, the effects need to be *compensated* sufficiently. With regards to nature responsibility, from January 2017 the provinces take over the governing role in nature compensation. What kind of compensation measures need to be taken depends on the protection regime that applies to the respective area. In the province of Utrecht this can be Natura 2000, Nature Network Netherlands (NNN), forest area, or autonomous policy (Randstedelijke Rekenkamer, 2017). For the West-Tangent project, the following provincial regulations and documents are relevant:

- forest areas: from policy documents '*Verordening Natuur en Landschap provincie Utrecht*' (**Vnl**) and '*Beleidsregels Natuur en Landschap provincie Utrecht*' (**Bnl**);
- and the Nature Network Netherlands: from policy documents '*Provinciale Ruimtelijke Verordening provincie Utrecht*' (**PRV**) and '*Provinciale Ruimtelijke Structuurvisie provincie Utrecht*' (**PRS**).

4.2.1 Forest areas

Background

The Province of Utrecht used the Forest law (1963) as a base but chose an approach wherein 'current day focal points' in nature conservation like space for dynamics, quality and openness were addressed (Vnl Utrecht, 2017). The Bnl Utrecht (2017) also describes the focus on space for nature restoration and nature development versus maintaining existing forest area (Bnl Utrecht, 2017).

Prohibitions (Tree preservation order)

Under the new NCA it is not possible anymore to simply alter the destination of a terrain with 'forest' to a 'not-forest' destination and subsequently execute activities for the new zoning plan. The Province executive can repeatedly prohibit felling of tree stand for a maximum period of five years for (Beleidsregels Natuur en Landschap provincie Utrecht, 2017):

- old forest cores
- forest reserves and A-locations
- cultural historical valuable old forests
- contiguous areas bigger than three hectares, unless it concerns production forests with poplar or willow, or with specific purposes
- valuable landscape elements

Notification

Submitting

A notification for logging trees needs to be submitted at least 4 weeks and at maximum one year before the actual logging. The initiator should have the following information on the affected tree stand: location (with at least a topographic map scale 1:25.000 including cadastral details), area (in ares), tree species, age, and, when it concerns a row of trees, the number of trees. The initiator also has to give an explanation for cutting. The notification should be submitted to the Provincial executive of Utrecht.

Exemption

Cutting down trees is exempted for notification if the intention is to a) create open spaces to enhance rejuvenation, or b) nature restoration (article 4.2 NCA).

Replanting

Criteria

Article 4.3 (NCA) states replantation should meet the following criteria:

- the area of replantation is at least equal to the cut down area
- replantation takes place by planting enough vital plant material or by natural rejuvenation
- the new tree stand can, in relation to soil quality and water management at the spot, expand to a full and sustainable tree stand (in terms of production, nature, landscape, cultural history and experience)
- the new tree stand can form a canopy with a density gradient of at least 60% within 5 years
- the replantation can in term represent at least equal ecological- and scenic value
- apart from tree species, only indigenous shrub species are allowed
- replantation in Natura2000 area takes place in a way and with species that cannot damage the applicable conservation objectives

Criteria for replantation in a different area

Article 4.5 (NCA) states that replantation in a different area should meet the following criteria:

- the area is free from a tree stand and of a replantation obligation (article 4.3 NCA)
- usage of the area falls within the existing nature- and landscape policy of the province and the municipality within the province of Utrecht (but exemptions can be made)
- the area is free from compensation obligations
- there are no statutory regulations that prohibit the replantation
- the replantation needs to be executed within three years after the obligation to replant formed
- there is a replantation plan written and submitted
- the replantation complies with the provisions of article 4.2.1 of this regulation

A justifiable replantation in a different area could consist of a surcharge in area, based on quality of nature, recovery time of the cut tree stand, and the spatial coherence. The Province executive could set further rules regarding replantation in different area. In appendix 1 of the policy document 'Beleidsregels Natuur en Landschap provincie Utrecht 2017' is a calculation model, named 'Quality surcharge and rules for forest compensation under the Nature Conservation Act'.

Exemption

Replantation is exempted in case of:

- removal of tree stands that improves ecological quality in the context of nature restoration, insofar this is in accordance with the applicable policy frameworks of the province of Utrecht
- removal of tree stands that provides prevention of a forest fire
- small scale removal that is needed for restoration and the visual experience of cultural-historical elements
- unique physical site circumstances
- a strong social interest

Also, an exemption for replantation period (normally three years) can be made in case of:

- natural rejuvenation
- unique physical site circumstances
- postponement is needed because the replantation is related to the execution of plans regarding Spatial Regulation
- ecological arguments
- a strong social interest

Compensation

The province of Utrecht imposes that, based on NCA, forest compensation needs to be equal in size, natural quality and spatial coherence to the lost forest area. To achieve this, the Bnl Utrecht (2017) applies surcharges and rules for forest compensation.

Surcharges

Apart from the 'one-on-one' compensation, Utrecht surcharges per hectare for recovery time and the presence of rare and endangered species in the forest area that will be lost (Appendix D, table D2 and D3). The recovery time is the time in which the respective forest was present (i.e. the age of the tree growing area). The rare and endangered species are the 'species of attention' from the 'active species policy' in the nature vision of the province of Utrecht. This concerns the (heavy) endangered Red List species, together with species that are typical for Utrecht (Bnl Utrecht, 2017). And of course, the NCA is also applicable to the protected species in the area.

If both surcharges (recovery time and rare and endangered species) are applicable, they need to be added up.

Rules

Besides surcharges, the following rules need to be taken into account for forest compensation (Bnl Utrecht, 2017):

1. It always has to be examined whether forest compensation can take place in close proximity of the damage. If this is not possible, compensation can take place somewhere else within the province, or with dispensation in neighbouring areas within the surrounding provinces.
2. The forest compensation at all times needs to be of good quality, lie next to a forest core, contribute to existing recreation-, nature- and landscape policy of the municipality or the province, or lead to an increase of scenic quality in the province.

Policy

According to the Bnl Utrecht (2017) the forests of Utrecht have an important regional social and economic function and contribute to the climate goals. The forest that are open for visitors provide recreation opportunities. Some forests have high natural values like the old forest cores, forest reserves and A-locations. These have high natural values because some trees and shrubs in these forests originate from the initial indigenous flora or had the opportunity to develop undisturbed for a long period of time accompanied with a characteristic biodiversity. In these forests (often part of the so called 'Nature pearls') the province is conservative in allowing logging, given their biodiversity goals. The policy is aimed at conservation, realisation of nature goals and protection of the forests.

For other forests in the province, Utrecht aims for diversity in favour of the balance between amenity- and natural value, and wood production. Depending on the local situation, one function can have a higher priority than another function.

4.2.2 Nature Network Netherlands (NNN)

Background

'Nature Network Netherlands' (in Dutch: Natuurnetwerk Nederland), or NNN, is since 2013 officially the name for the network of existing- and to be created nature areas within the Netherlands. Before, this was called the '*Ecological Main Structure*' (Ecologische Hoofdstructuur), or EHS. The purpose of the NNN is to improve, or establish, connections between natural areas and the surrounding agricultural area and to maintain their essential characteristics and values. These characteristics and values are expressed through '*management types*' (in Dutch: beheertypen), which are defined by the Province in which the nature area is located (Don, 2017). Each Province has a spatial policy to planologically protect quantity and quality of NNN areas. This is arranged in the '*Provincial Spatial Structure vision*' (in Dutch: 'Provinciale Ruimtelijke Structuurvisie' or PRS), '*Provincial Spatial Regulation*' (in Dutch: 'Provinciale Ruimtelijke Verordening' or PRV) and municipal 'destination plans' (in Dutch: bestemmingsplannen). For new spatial developments, the initiator should take into account nature and the Province has the competent authority to judge spatial plans (Province Utrecht, 2018).

PRS

With the recalibration of the PRS on 12th of December 2016, the province Utrecht officially took over the terminology Nature Network Netherlands. The PRS states this did not change the borders of NNN area, nor their policy. The province goal is to maintain and gain NNN area and prevent new spatial development that has a significant negative effect on the essential values and characteristics of their NNN. Activities that cause a significant effect are not allowed, unless there is a strong public interest, there are no alternatives and the negative effects are limited as much as possible. The remaining effects need to be compensated by realisation of new nature elsewhere.

'No, unless' principle

Utrecht protects the NNN areas with a 'No, unless' principle to assure spatial development will not affect their essential characteristics and values, as it is in principle not possible to execute activities that have a significant negative effect on the functionality of the NNN. The initiator of a project has to do a 'no, unless-research' to specify effects on the essential values and characteristics of the NNN area, which are:

1. present and potential value of the ecosystem, including environmental factors like soil and water;
2. the robustness and contiguity of the NNN;
3. presence of unique species
4. the function of the area to connect species and ecosystems.

Furthermore, the initiator needs to investigate if the activity will significantly decrease the size of the area, or the coherence between areas.

Compensation

If, based on the no, unless-research, a significant negative effect cannot be excluded, the initiator needs to compensate for the loss of NNN. The province of Utrecht describes the following criteria in their policy for nature compensation (the realisation of new nature somewhere else) (PRS, 2017):

- Compensation is at least *equal* to the degradation of the NNN. In case the area has high natural value and had a long development time, more compensation is expected.

- Compensation takes place next to the NNN, preferably within the Green contour (Groene contour) or within the NNN.
- Compensation needs to take place in direct surrounding if that is necessary for the functioning of the respective NNN.
- Realisation of the compensation needs to be assured at the time of confirmation of the spatial plan in which the degrading activity is arranged.

It is also allowed to compensate after the disturbing activities or do a financial compensation. A financial compensation makes it possible to postpone physical compensation, or to outsource it to a different actor or landowner (Rekenkamer, 2017).

Pluses and Minuses

A no, unless-research does not have to be conducted if the activity is minor with an existing function. The province of Utrecht assumes that such a small activity will not lead to significant consequences to the NNN, if the spatial substantiating shows the activity takes place on already disturbed terrain in direct proximity of existing buildings and inertisation. Furthermore, activities with a positive effect can also be considered in the spatial planning. In this case the activity does not lead to a negative effect. However, the positive activities need to be guaranteed. The province of Utrecht provides a tool, '*pluses and minuses*' (Plussen en Minnen), in their PRS for initiators to argument that the activity will not be affected or will even result in positive effects for the NNN.

Military terrain important natural value

The PRS mentions two military terrain with important natural value: the '*Leusderheide*' and '*Vlasakkers*'. These areas are not formally part of the NNN. The PRS states: 'If the military use (of the ground) is ended in time, both terrains will be added to the NNN':

"Mocht het militaire gebruik op termijn beëindigd worden, dan zullen wij beide terreinen toevoegen aan het NNN." (PRS Utrecht, 2017)

4.3 Reflection Legislation and -Regulations

The focus of this paragraph is to reflect whether the ecological assessment, (requested) dispensation, and the planned measures are in line with law and regulations, by using the obtained knowledge from paragraphs 4.1 and 4.2 and the available information on the research that has been done before the West-Tangent project.

4.3.1 Natura2000

For activities in or in close proximity of Natura 2000 areas, a permit is needed as these are protected under the new Nature Conservation Act (Don, 2017). The area of the West-Tangent is not part of, or in close proximity to a Natura2000 area (Figure 11). The closest Natura2000 areas are 'Arkemheen' in municipality Bunschoten at 10 km distance, 'Rivierengebied' in municipalities Amerongen, Leersum and Wijk bij Duurstede at 19 km distance, and 'Beekdalen' in municipality Ede at 22 km distance (MLNV, 2018). The concept 'in close proximity' could raise questions whether an activity is in close proximity. However, up until now, a 'bezwaar op relativiteit' (relativity requirement) stranded with a distance of 800 meters and more (KienhuisHoving, 2018).

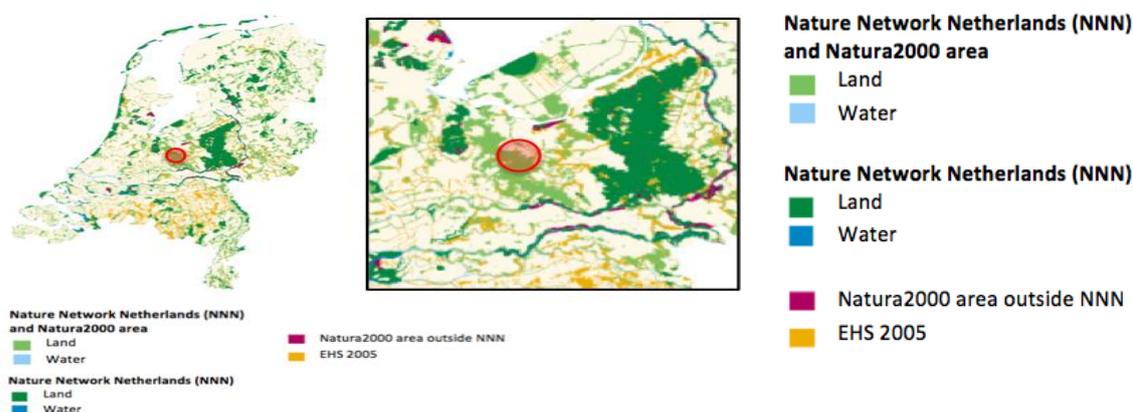


Figure 11. Nature Network Netherlands (NNN) and Natura2000 area. Location of Amersfoort is indicated with a red circle. Source: adapted from clo.nl/nl142502.

4.3.2 Species protection

The ecological assessment of the impact on flora, reptiles, breeding birds, terrestrial mammals, and bats for the 7B (2015) scenario for the West-Tangent area was conducted by Bureau Waardenburg in 2016 (Brekelmans, 2016). The report describes the present species, their ecology and if and which dispensation needs to be requested. The area of investigation included approximately 100 meters at both sides of the route according to Brekelmans (2016). All the information in this paragraph on the observed species and the impact on them are from the report of Bureau Waardenburg (sometimes referred to as 'ecological assessment'), unless another source is indicated.

Protected species of the West-Tangent

Plants

In the area several plant species that were protected under the FF law occur. Outside the research area longleaf speedwell (In Dutch: lange ereprijs), peach-leaved bellflower (In Dutch: prachtklokje), and hart's-tongue (In Dutch: tongvaren) occur. Inside the research area nettle-leaved bellflower (In Dutch: ruig klokje) *Campanula trachelium*, common primrose (In Dutch:

gulden sleutelbloem) *Primula veris*, (In Dutch: steenanjer) *Dianthus deltoides*, and oregano (In Dutch: wilde marjolein) *Origanum vulgare* occur. The species that occur inside the research area are located at or close to the Stichtse Rotonde. According to the ecological assessment the - at that time protected species - nettle-leaved bellflower, peach-leaved bellflower, and oregano could be lost due to planned activities and decoration of the plan area at the DF-lane at the Stichtse Rotonde. These species do not naturally occur at the locations and have been planted. Prohibition will be requested for populations of protected plant species in the area.

Reptiles

Three reptile species occur in the research area: the sand lizard, blind-worm, and grass snake. The red-eared slider (In Dutch: roodwangschildpad) has been released in the area and does not naturally occur here, so was not taken into account by Brekelmans (2016). The viviparous lizard (In Dutch: levendbarende hagedis) does not occur in- or in close proximity to the research area, and the adder went extinct in the eighties at the Utrechtse Heuvelrug.

Sand lizard

The sand lizard occurs at the Stichtse Rotonde but in the past has been found at other locations in the research area as well. Population size at the Stichtse Rotonde was limited. In 2010 40 sand lizards were released at the Stichtse Rotonde (20 males and 20 females), which had been caught at a location in Soesterberg due to development of the area. Monitoring the area after the release showed that there were more regional sand lizards at the Stichtse Rotonde. In 2014 the central part of the Stichtse Rotonde was not investigated and the sand lizard was not observed. In 2016 the species was observed by looking around the Belgenmonument at the northern side of the road of the Stichtse Rotonde (which was covered with heath), near the Utrechtseweg and the sightline towards the Belgenmonument. An estimation was made of approximately 15 animals. Brekelmans (2016) presumes that it is a recent establishment, since the sand lizard was not observed there since 1997 inducing that the area was no longer part of the habitat.

Measures in terms of the evaluated plan take place in grassy vegetation where the zandhagedis does not occur. At one location a small strip of 800 m² heath will be affected (North of Stichtse Rotonde) which is approximately 20% of the living area in this section (4600 m²). The total surface area actual living space at the Stichtse Rotonde is 23.000 m². The affected area is 3% of the actual living space. Due to the limited size and very low density the possibility of a negative effect on the sustainable survival of the population at that location can be excluded.

To strengthen the population, measures will be taken in the most eastern verge of the road. According to the ecological assessment there are no sand lizards in this verge due to the uniform character of the heath and the lack of structure. The measures will be to create 5 barren (sandy) spots of 25m² (total 125m²). Additionally, at 3 locations (with a surface area of 50 m²) the heath will be chopped to create more structure. Measures will be added in the management plan of the Stichtse Rotonde. Due to the plan a small part of the currently existing habitat will be affected. This has no negative effect on the survival of the local population. To strengthen the population the living area will be improved by increasing structure in a part of the heath where currently no sand lizards occur.

Blind-worm

According to the ecological assessment, the habitat in Amersfoort is locally under pressure due to planned spatial development. In the province of Utrecht, the blind-worm occurs scattered around on the Utrechtse Heuvelrug and its side areas, where the species is not rare. In Amersfoort the blind-worm occurs alongside the south-west

edge of the municipality (roughly from the Birkstraat to the Heiligenbergerbeek in the southeast. Forests and (poor) roadside form the habitat, including connecting gardens. The blind-worm occurs at low densities spread in and around the research area, locally the species occurs at higher densities. At the railroad crossing the habitat is ideal, so the species could occur there at a higher density.

Mentioned positive effects of the project would be the defragmentation of the BW-lane by the construction of two fauna passages and removal of the railway crossroad so that the area Bokkeduinen would be better accessible. Negative effects would be the effect of two living areas, a small terrain at the railway crossroad (1250 m²) and the slope alongside the Bernhard barracks (more than 2500 m²).

In order to prevent negative effects on the favourable state of conservation of the local population the current habitat will be improved. Insight is needed on the quality of the areas that will be affected and measures will be taken to prevent that that animals are killed or get injured.

According to the assessment the habitat at the railway crossroad consists of grassy vegetation with brush and store of young trees with a size of approximately 1250 m². The soil is slightly enriched, dry and the situation is not or very extensively managed. It was stated that this vegetation type is ideal for the blind-worm, so that the species can reach very high densities here. The vegetation develops spontaneously in succession 5-10 years after clearing the area from a barren sand situation. This vegetation, where grasses are dominant, can be maintained for a long time on slightly moist to dry situations which are not too rich in terms of nutrients. Eventually, trees take over and the situation becomes a forest. With extensive mowing forest development can be counteracted. With presence of rabbit's vegetation becomes too shortly grazed grassy vegetation, which is unsuitable for the blind-worm. In case nutrient richness is too high brushes (blackberry, broom) will take over and the situation will be covered too fast. When the soil is too poor or too dry heath vegetation will develop. This can be suitable for the blind-worm, but the development time is longer than for a grassy vegetation.

The habitat at the Bernhard barracks consists of a grassy vegetation with an herbaceous forest edge alongside the forest. This vegetation is present over the total length of the forest edge parallel to the Aletta Jacobslane and has a surface area of approximately 2500 m², thereby assuming a grassy zone of 2 meters wide and an underlying forest area of approximately 8 meters wide. So, vegetations which are grassy, rich of herbs and structure exposed to the sun alongside forest edges form an important biotope within the habitat. Inside the living area this biotope is realized by stimulating heath and characteristic deteriorated heath vegetation (Dutch: heischrale vegetatie) at the current forest edge of Birkhoven alongside the railway by 'setting the forest back', so by backwards succession. This happens over a length of approximately 700 meters and a surface area of approximately 4000 m². Besides that, the free space that arises from the cancellation of the railroad crossing is used for the realization of new habitat and the connection of Birkhoven with Bokkeduinen. According to the ecological assessment these measures are sufficient to guarantee the survival of the population around and within the research area.

To prevent that animals, get killed in the realization phase, blind-worms are caught prior to the execution of the measures in the period April-August. The animals that got caught are relocated to existing living space in the area. With respect to the blind-worm the prohibitions of article 9 (catching and obtaining) and 11 (affection usual rest- and residence areas) are violated. For this, dispensation of the FF-law will be requested.

Grass snake

According to the ecological assessment the grass snake has been observed in the research area at the Bernhard barracks and at Birkhoven, whereby the latter is the most important habitat within the municipality of Amersfoort. Within Birkhoven two areas are important for the grass snake, which are within the zone of the zoo and the zone of the Bosbad. The species have been mainly observed alongside paths and open, moss- and blueberry-rich locations, up to 15 meters distance from the current BW-laan.

As result of the expansion of the BW-lane and movement of the cycle patch the part of the habitat (living area) of the grass snake that will be affected is 0.5 ha. It is a terrestrial biotope and foraging area of a small number (3-5) of ringsnakes, which form approximately 1% of the total living habitat of the population of Birkhoven. All measures state as contribution to improvement of the living area, both in terms of quality as in quantity. Unlocking new living area by measures 1, 2, and 4: Construction of fauna passages under the BW-lane (measure 4); Connection of Birkhoven with the railway triangle (measures 1 and 2); The realisation of heath vegetation and structure-rich forest edge form in time ideal living habitat (measure 3); Also, the removal and relocation of the parking spaces of the Utrechts Landschap and the hockey fields creates new terrestrial biotope and foraging area. Implementing these measures creates approximately 2 ha new living habitat and unlocks more than 50 ha of living habitat according to the report. In addition to these measures for improvement of the living area measures are taken to prevent that grass snakes are killed or get injured during the execution of the construction. These measures could include catching of grass snakes at the project area. According to the ecological assessment the intended plan does not lead to negative effects on the favourable state of conservation of the grass snake, if the measures as stated above are will be executed. With respect to the grass snake the prohibitions of article 9 (catching and obtaining) and 11 (affection usual rest- and residence areas) are violated. For this, dispensation of the FF-law will be requested.

Birds

Breeding Birds

In 2011 four bird species were observed of which the nests are protected year-round, but in 2014 and 2016 no nests have been found in the research area. These species are: buzzard, hawk, sparrow, and house sparrow (all FF-law JBN, house sparrow Red List GE). The buzzard breeds at Birkhoven and the sparrow at the railway triangle, but their nests are located outside the zone that will be affected by the project. The house sparrow breeds in the Zoo and none of these locations will be disturbed. In the buildings that will be demolished also no nesting places were identified. The presence of nesting places of the house sparrow in buildings that will be demolished could be excluded according to Brekelmans (2016).

The measure can lead to disturbance of breeding birds, to prevent this no disturbing measures will take place in the breeding season. Prior to the measures that affect trees, bushes, and other breeding locations these will be inspected for breeding birds. Effects on frequent breeding locations in the surroundings of the research area can be excluded, based on the distance from these nests to the route. Regarding breeding birds no prohibitions are violated. It is not needed to request dispensation for breeding birds.

Terrestrial mammals

Three strictly protected species of terrestrial mammals have been observed under the FF law in and around the research area, namely the: squirrel (list 2), badger (list 3), and tree marten (list 3). Nests, burrows or other breeding locations of terrestrial stricter protected mammals

are not defined in the research area. The forest area however is part of the habitat of the squirrel. The habitat of the tree marten and badger are located outside the research area.

Squirrel

Based on earlier and more recent observations and data, the squirrel appears dispersed over the research area (Brekelmans, 2016). In 2011 it was confirmed that the squirrel dispersed over the low densities area. In 2014 it was only observed at one spot, but it was not stated in which locations the observation was made.

Approximately 4 ha of living area is affected by tree and forest removal. When keeping in mind the total size of the habitat where these forests are part of - the "Utrechtse Heuvelrug" - this amount is negligible according to Brekelmans (2016). The state of conservation of the national and regional population of squirrels will not be at risk as a result of this measure.

Locally, the squirrel will face negative effects of the road construction. At the route of the BW-lane the effects are not worth mentioning, the road profile and the ability to pass are almost equal to the current situation. Specifically, for the zone around the Aletta Jacobs lane movements between the Bernhard barracks, "De vrouwenbuurt" and "Bergkwartier" will be severely disturbed by the deepened location of the new road, over a distance of approximately 700m. This means that squirrels can only pass over at the North of the railway and the route of the Daam Fockemalaan South of the deepened location.

Badger & Tree marten

According to the ecological assessment the occurrence of the badger in Amersfoort is restricted to the south-west border of the municipality. Traces of badgers have been found at the Lichtenberg and also at a fence between the Lichtenberg and the Bernhard barracks. Within the boundaries of the research area no traces of the badger were detected.

The tree marten has large territories, so it is suspected by Brekelmans (2016) that the tree marten is still reproducing within the destination plan area. In 2010 a tree marten was spotted in a tree in Birkhoven, but in 2011 and 2014 the tree marten was not observed and no marks or traces of presence of the tree marten were found in Birkhoven.

The living areas and fixed breeding- and residence locations of tree marten and badger are located just outside the research area and are not affected as result of the project. The accessibility for wandering animals will change. North of the railway Amersfoort-Utrecht accessibility and crossing of the area will improve by constructing fauna passages and cancelling the current railroad crossing in combination with the Eco duct. With that the area "Bokkeduinen" is better accessible and the living space is enlarged. South of the railway accessibility will decrease on the part until the gas station. Here, the underlying area consists of residential areas and is for both species not important as living area.

According to the report of Brekelmans (2016) with respect to terrestrial mammals no prohibitions are violated and therefore it is stated that it is not needed to request dispensation for squirrel, badger or tree marten.

Bats around the West-Tangent

Common pipistrelle (*Pipistrellus pipistrellus*)

The Common pipistrelle has been observed within all investigations of previous years, whereby almost always foraging animals were observed. The species occurs very frequently within the destination area Birkhoven-Bokkeduinen, especially at the zoo and around the Bosvijver. According to the report of Bureau Waardenburg, no flight paths that are used by multiple animals have been found. Roosts of the species have been located, but the number of animals at these locations were small, large breeding groups (In Dutch: kraamgroepen) have not been found. Additionally, courting males have been detected which would indicate the presence of mating locations (In Dutch: paarverblijf). The buildings that will be demolished are not used by the Common pipistrelle.

Nathusius' pipistrelle (*Pipistrellus nathusii*)

The species seems to be quite rare in Amersfoort. In 2011 and 2014 the species has been observed at the access road to the sport fields of the Amersfoortse Mixed Hockey club (AMH) and at the Northern part of the Bernhard barracks close to the railway. In 2011 the animals were passing by or foraging, in 2014 a courting bat was detected at the parking area of the hockey club from a group old oak central of the parking area. In the forest around the Belgenmonument no roosts were detected in 2014, 2015, and 2016.

Serotine bat (*Eptesicus serotinus*)

Foraging Serotine bats have been detected in the area on numerous occasions, above the MW-lane, at the railroad crossing, at the parking area of the zoo and in the residence area west of the DF-lane. It was stated that in 2011 a large group of hunting bats was observed at the west of the DF-laan, but there was no indication of the roosts. Many buildings would be suitable as roosts. Since the species travels long distances, it was mentioned that it is possible that the roosts are located far from the research area. It was also stated that the importance of the area being a foraging area is limited, but that the detected large group at the DF-lane is remarkable. Also, in 2014 and 2016 only foraging animals were detected, similar to 2011. It is mentioned that there have to be roosts or breeding locations (In Dutch: kraamgroepen) in the surroundings of the research area, but none have been detected in the buildings to be demolished in- and directly next to the research area.

Common noctule (*Nyctalus noctula*)

The species resides in trees, whereby in Amersfoort roosts are known at all older parks and estates. In the past, roosts have been found at Birkhoven, and behind Amersfoort Zoo a breeding location was found. It was mentioned that the species relocates, so that it is likely that the species also resides in other trees. At the AMH a mating location was found, other trees in the research area were also suitable but no courting animals were detected. Foraging animals were detected spread in the research area, but no larger groups in 2011. In 2014 no mating location could be detected at the parking area north of the sport fields, but bats were foraging there every night. The breeding location was not visited due to the distance to the research area in 2014. In 2015 and 2016 no functions or roosts were determined in the forest around the Belgenmonument.

Measures to prevent violating prohibitions

Bat Boxes

Cutting down trees for the parking area South of the zoo affects a mating location of the common noctule. As a result, the network of roosts would be affected due to the locally limited number of territories. It is suggested that due to the aging of the forest and the management that is focussed on natural values, the number of roosts will increase in the coming years. Additionally, bat boxes (in Dutch: vleermuiskasten) will be placed to increase the number of potential roosts in the research area. The ecological assessment stated that based on this, the negative impact on the favourable state of conservation of the local population could be ruled out.

Of the Rugged pipistrelle one mating location was detected on 25 meters from the planning area. However, Brekelmans (2016) states that during the work some disturbance could go to these locations, which is plural, whereby functioning will temporarily be in danger. It is mentioned that after the realisation phase the functioning of these mating locations could be restored. However, from this part it remains unclear whether multiple mating locations will be disturbed or only one.

To prevent negative effects on the favourable state of conservation of the local population of the common noctule and nathusius' pipistrelle, bat boxes will be placed. These boxes will be located in close proximity of the breeding location, but further away from the planning area. For all each roost, five bat boxes (type Schwegler 1FF) would be hung to trees during winter 2016-2017. Thereby, it was mentioned that the area function remains the same and the bats have the opportunity to relocate to less disturbance. However, to guarantee that this measure will be successful, they have to make sure the bats are relocated to the bat boxes before starting the disturbing activities. Furthermore, for the original mating locations to function like in the past, the duration of the realisation phase is essential. If it takes too long, and if the bats don't use the bat boxes, the bats will have to move to different locations and it is uncertain whether they will return (Zoogdierenvereniging, 2018).

According to Brekelmans (2016) the mating locations and summer quarters of the common pipistrelle will not directly be affected, since negative effects could be excluded. This would be the case because the distance between the locations and the planning area is always more than 25 meters, the species is insensitive for disturbance, and the working activities will take place during the day. Negative impacts on the winter stay in the Belgenmonument could be ruled out on forehand according to the assessment due to the distance of 200 meters and the kind of construction activities that will take place.

Bat friendly lighting

The Common pipistrelle, Rugged pipistrelle, and Serotine bat connect very strongly to edges and line-shaped elements in terms of foraging areas.

According to Brekelmans (2016) there would be no negative impact on the Common pipistrelle, Rugged pipistrelle, and Serotine bat in terms of foraging areas, since these species connect very strongly to edges and line-shaped elements. It was stated that the foraging area at the BW-lane will not change. However, according to the scenario of 7B (2015) the BW-lane would move, so the edges shift, and also other road elements will be added.

The BW-lane is considered important foraging area, possibly due to the insects drawn here by the lighting and the warmer microclimate. However, no arguments were provided why the microclimate would be so different.

The foraging behaviour of the common noctule was mainly observed above the hockey fields. It was stated that the lighting present was a huge attracting factor for insects where this bat species benefited from. However, it was stated that the foraging behaviour

was relatively insensitive to lighting, while by combining these statements the foraging seems to be quite sensitive to lighting. It was concluded that negative effects of the plan on this species could be excluded.

Other species that forage mainly in forest areas and around trees (specifically the common long-eared bat and Natterer's bat) have not been observed, possibly due to the difficulty to detect them with the bat detector. It was assumed that these species forage in Birkhoven. Lighting in Birkhoven alongside the cycle path was pointed out as a negative factor affecting the foraging area, since these species are sensitive to lighting. In order to limit these effects, the lighting will be bat friendly, whereby the colour spectrum consists mainly of red- and orange tones. Effects will be minimized and effects on roosts as a result of affecting the forage area which the species use can be excluded.

The movements of the bats have been assigned as foraging routes or diffuse routes not linked specific locations or structures. Thereby, it was stated that the situation in the realisation- and usage phase will not be very different compared to the current situation, only traffic intensity will probably increase. The tunnel underneath the railway and the deepened road structure make that part of the route well accessible for bats. Based on these statements negative effects on flight paths would be excluded by Brekelmans (2016). However, the deepened road structure will be combined with noise walls and some parts of the road will be lifted. Therefore, the structure of the roads will change which might affect the species that rely on edges and line-shaped elements and also the lighting at these routes might change as well.

Bat friendly lighting will be implemented alongside the cycle path in the forest and alongside the BW-lane. For both will be investigated whether the lighting scheme can be adapted (out at 23:00) and usage of specific fittings (Illumis). It was mentioned that dispensation ex article 75 of the FF-law needs to be requested due to the temporarily disturbance of roosts in the construction phase.

NNN prohibitions

The narrow-leaved bitter-cress (In Dutch: springzaadveldkers) could occur in forest areas mainly alongside paths and at areas with some disturbance (Brekelmans, 2016). The species does occur alongside cycling paths in Birkhoven but was not mentioned in the part about flora. Of the Orange List species within the NNN only the growing area of this species will be affected. The biotope of this species will shift with the movement of the forest edge, but the biotope itself will be represented more than sufficiently and might even increase, according to Brekelmans (2016). Immediately afterwards, it was stated that some plants would be removed and planted elsewhere, in order to maintain the species. Based on this statement, it is arguable whether the species would still survive without this measure. It was concluded that negative effects on protected and threatened species can be excluded.

The connections and barriers between the current situation and the situation confirm scenario 7B will differ (Brekelmans, 2015). The lowered road structure will make it impossible for terrestrial fauna to cross the road there, but it was mentioned that currently species can cross the AJ-lane, which is also relatively small so more likely. It was concluded that the scenario will decrease the barrier at the North of the railway, due to a fauna passage, Eco duct, and in time tree cover will also make a connection but will increase South of the railway. At the South, fauna can pass via the ballast bed (In Dutch: het ballastbed) of the railway and the part of the road at the Stichtse Rotonde which is not lowered (Brekelmans, 2015).

Requested dispensation

Dispensation needs to be requested for species that have no exemption and there are no measures that can be taken (mitigating or compensating) to prevent violating the prohibition (§4.1.4). According to the ecological assessment, dispensation needed to be requested for

permanently affecting habitat, catching, and relocating of the blindworm and grass snake. For common noctule and rugged pipistrelle dispensation will be needed for temporal disturbance during the construction phase. For other protected species in and around the research area no dispensation needs to be requested, since violation of prohibitions can be prevented by mitigating measures. However, when reading other parts and looking at table 5.1 it is mentioned that for plant species nettle-leaved bellflower, common primrose, and oregano but also for the sand lizard dispensation of article 8 (plants) and 11 (sand lizard) need to be requested.

4.3.3 Forest protection

Notification

A notification for logging trees needs to be submitted at least 4 weeks and at maximum one year before the actual logging at the Provincial executive of Utrecht (in Dutch: Gedeputeerde Staten) (art. 4.1.1 Vnl Utrecht, 2017). For the West-Tangent, we question whether the notification was submitted within a year ago, since the plans for the 7B scenario exist since 2015. Furthermore, it is not clear whether the logging notification was submitted at the Provincial executive.

Replantation in planning area

There has to be one-on-one compensation for forest area. i.e. a hectare for a hectare. The West-Tangent scenario 7B (2015) will result in 3.04 ha permanently affected forest and 2.81 temporarily affected forest. The loss of forest area will be compensated partly within the planning area. It is expected that the total loss of temporarily affected forest can be compensated completely within the planning area, and up to 0.3 ha permanently affected forest (Brekelmans, 2016). In this case, the one-on-one criteria is met. However, the Vnl Utrecht (2017) mentions more criteria for replantation. The approach that will be used to assure that 1) the new tree stand can expand to a full and sustainable tree stand, 2) the new tree stand can form a canopy with a density gradient of at least 60% within 5 years and 3) that the replantation can in due time represent at least equal ecological- and scenic value, is not described.

Replantation in a different area

To compensate for the other almost 3 ha permanently affected forest, 3.5 ha of forest will be compensated in a different area, by changing the destination of an agricultural plot to 'forest-nature' (Brekelmans, 2016). The parcel lies close to the ecological connection Melksteeg alongside river the Eem and close to industrial zone Isselt (Figure 12). The area Melksteeg is currently free from tree stands (or a replantation obligation).

The plan is to first depend on spontaneous development by natural succession, as this would result in higher natural value and to create a natural forest. After three years they want to assess whether the succession process is not successful, and if not, native and regional species will be planted to support the process (Brekelmans, 2016). However, forest compensation has to be realized within three years after logging of the trees according to the forest regulation (art. 4.5 Vnl Utrecht, 2017). Article 4.2.1 states that the tree stand should be able to form a canopy with a density gradient of 60% within 5 years. These criteria for replantation will not be met with the current forest compensation plan. Furthermore, an official replantation plan should be written and submitted before logging of the respective tree stand(s). The replantation plan should also include measures or applications for dispensation for violating prohibitions for species protection, if that is necessary. The

agricultural plot is currently suitable for meadow birds, which are all protected under the NCA and are decreasing in numbers for years in the Netherlands (Weidevogeldrone, 2018).

In terms of landscape, it was mentioned that the creation of forest would fit in the landscape North of the river and the ascending planting alongside Isselt (Melksteeg) (Gemeente Amersfoort, n.d.). Thereby, the sightline from the Eempolder to the city would be greener, the industrial zone would be more out of sight, the openness of the landscape would hardly be affected, and it would do justice to the natural starting situation. In the current area the forest type is mixed oak-beech forest on dry sandy soil, which is very common on the Utrechtse Heuvelrug, according to Gemeente Amersfoort (n.d.). The area of forest compensation has a different composition than the area where forest is removed (Gemeente Amersfoort, n.d.). Therefore, it is not possible to create the same forest type in the compensation area, so the forest type in the compensation area will be different. The compensation area was historically forest area and has been deforested and used as agricultural land. Currently, according to Gemeente Amersfoort (n.d.), part of the area is still used as agricultural field. The type of forest that will be realized is moist forest, which is currently rare and represents high nature values (Gemeente Amersfoort, n.d.). The forest would be quantitatively equivalent. Thereby, it was stated that in Boswet-areas a “Bomenbalans” does not apply, only number of square meters of the forest area counts not the number of trees.

It was stated that it would be possible to create a mixed forest with species as common oak (*Quercus robur*), and ash (*Fraxinus excelsior*) (Brekelmans, 2016). Whereby making differences in relief would create opportunity to develop forest on dry rich soil as well as swamp forest. By Gemeente Amersfoort (n.d.) it was stated that it is impossible to create the type of forest that is lost in the West-Tangent area and that moist forest will be created that represents high nature value.

The nature compensation area is located outside Amersfoort, which is not completely in line with the basic conditions (nota van randvoorwaarden). However, according to legislation there is no constraint for the location of compensation, it might even take place in a different province (Vnl Utrecht, 2017).



Figure 12. Location compensation area in regards of the West-Tangent plan area (Gemeente Amersfoort, n.d.)

4.3.4 Extra-legal damage, compensation and enrichment

An assessment of the extra-legal damage, and research for possible measures for extra-legal compensation and enrichment was done by Bureau Waardenburg and described in a report

from Brekelmans in 2015. The findings and measures in this report are (summarized) below, combined with some statements and remarks based on other sources.

Extra-legal damage

The extra-legal damage included all the damage to ecological values, so every size, which will not be compensated within the measures by law. Excluded were NNN, habitat protected species, important connections or whereabouts of protected species, forest under forest law (boswet), trees (when under APV). Structures that will be affected during the realisation and usage are the grassy and herblike vegetation at roadsides of the DF-lane, the same type vegetation at roadsides at the cycle tunnels under DF-lane and Utrechtseweg, the lawns on the terrain of former OLV Ter Eem Monastery, the grassy and herbaceous vegetations in roadsides on the terrain of the Bernhard barracks, the grassy roadsides alongside the BW-lane.

The loss of parking spaces for the zoo and the Kabouterhut will be compensated possibly at a parcel at the AZC. Most of this parcel will be lost and will not be compensated, since it is not part of the EHS, no protected species occur there, and it is not part of the forest law (boswet) or APV due to a lack of trees. It was mentioned that the parcel was used for agriculture (corn) but was not used anymore. The nature value was low as agricultural field, but due to succession the value will increase with time. This needs to be taken into account, since loss of nature value will then also increase with time as this parcel will be used later. When used as parking space, trees will be placed between the parking lots which would represent a higher ecological value than what is currently the case. It was mentioned that agricultural fields could be part of foraging areas of badger, deer, and fox. Then it was stated that these species do not or rarely occur here, so the field as such was not important. No further elaboration was provided here about the occurrence of these species.

The defined forest plantation qualifies according the forest law (boswet) and large trees under APV. Compensation of about 10% takes place locally, trees will be compensated alongside the BW-lane where locally spontaneously undergrowth may develop. Furthermore, small bushes and small trees may develop in between the lowered road and noise wall of the AJ-lane (Brekelmans, 2015). Based on the information it is not sure whether all forest plantation will be compensated, because the area size of the roadsides of the BW-lane are not provided.

The compensation according to the forest law is all part of legal compensation. Almost half will be compensated within the plan area at temporarily affected places and new forest in roadsides and former parking areas in Birkhoven. Outside the research area a maximum compensation area of 3.5 ha was assumed.

The loss of lawn will be overcompensated, there are no rare species on the affected lawns and these provide foraging areas for common species as common blackbird (In Dutch: merel). Most will be lost at the monastery and it will be mainly compensated in roadsides alongside the DF-lane. There is no extra-legal damage according to Brekelmans (2015).

In terms of roadside with trees it is mentioned that this type is not part of the forest law, due to the limited number of trees, small size, and not being linked to the forests nearby, but are part of the APV. The roadside with trees will also be overcompensated, since in the new situation it will be almost a ten-fold. It mainly be compensated in the 6 meters wide roadside of the BW-lane, embankments around the viaduct and deepened road at the zoo, alongside the BW-lane centre side and the DF-lane. Here, according to the report, hundreds of trees can be replanted using different styles of planting, whereby there will be room for development of a more natural undergrowth.

Grass (In Dutch: grasberm) will be slightly overcompensated, but grassy vegetation of other locations will also be affected. East of the DF-lane it has restricted ecological value and

also at the Stichtse Ronde where the cycle tunnels will be developed. At the BW-lane between the railway and the footpath is a special location with lots of characteristic species due to the poor quality. North of the railway is less poor than south, and ecological value is restricted.

Heath will also be overcompensated in the plan, by almost a fourfold. It was mentioned that the Stichtse Ronde is most important within Amersfoort, whereby the northern part is not so well developed. Characteristic species that do not occur there are sand lizard, grayling (*Hipparchia semele*), and heath violet (*Viola canina*). It is not mentioned how this vegetation will be compensated. There is a small area of *Calluna vulgaris* (in Dutch: struikheide) at the entrance of the Leerhotel. The area size is too small to inhabit characteristic species as on the Stichtse Ronde and does not develop well because of mowing. At Belgenmonument also heather vegetation which is overruled by other plant species; no characteristic species for heath vegetation occur. Rarer *Genista anglica* (In Dutch: stekelbrem) exists between roadside and Belgenmonument but is outside of the affective area of the road.

“Zoomvegetatie” is described as a mainly rough, herbaceous vegetation type that marks the transition between forest and open area (Brekelmans, 2015). It has not developed at all transitions in the area but was affected amongst others at the roadsides of the Belgenmonument. At this location new zoomvegetatie will be created, which will mainly be heath and be part of the heath corridor.

Other structures affected are the pillars which are grown by wall-rue (*Asplenium rutamuraria*), which is not a rare species but is part of city nature.

The total effect of the project would be a loss of approximately 1.5 ha, but this is depended on the location of the parking area of the zoo (Brekelmans, 2015; Gemeente Amersfoort, 2015).

Measures extra-legal compensation

Due to the construction of cycle tunnel at Stichtse Ronde heath will be temporarily affected, therefore the quality will be improved relative to current situation by: creating relief in the soil, remove organic layer to make the soil poorer. Heath that was mown at Stichtse Ronde will be placed on the soil for the biodiversity, and spontaneous natural development. All in order to improve the current quality by adding characteristic species and more structure. It was mentioned that Settlement of the sand lizard might be out of reach due to the small size. Grasshopper, lesser mottled grasshopper or greyling can settle.

A heath corridor between Stichtse Ronde and Belgenmonument will be created at the roadside east of the cycling lane by removing top-layer, top the soil with mowed heath of Monikkenbos or Stichtse Ronde, removal current overruling plants, follow-up management for conservation and development structure-rich heath. By creating this corridor more heath would be created in this part of the plan area, and also more possibilities for demanding heath species.

The roadside east of the cycle path from the Belgenmonument to the north (DF-lane) will be developed into zoomvegetatie for *Calluna vulgaris* (In Dutch: struikheide) and *Melampyrum pratense* (In Dutch: hengel). Nutrient rich top layer will be removed, and/or nutrient poor sand will be added, and unwanted species will be removed from the forest edge to benefit development of herbs and native species.

Nutrients will also be removed from the roadsides of the westside of the DF-lane, since the nature value is currently low also due to the nutrient richness. The vegetation will be improved by removing the top layer, adding nutrient poor sand, adding mowed heath of Stichtse Ronde or Monnikenbos and follow-up management to develop *Nardus* grassland (In Dutch: heischraal grasland).

According to the report it will be investigated whether one of the viaducts of the lowered road can be made accessible for terrestrial species by for example a walking strip (In Dutch: loopstrook) or fauna passage (In Dutch: faunabuis). Both elements will be separated from the traffic function to limit disturbance, but technical practicality and feasibility need to be investigated. Since this part of the road is a barrier for terrestrial fauna it would be beneficial to create a corridor. Besides, if this is not possible the terrestrial species have to move to the Stichtse Rotonde to cross the road.

At both sides of the lowered BW-lane a zone not accessible for humans with a width of three to four meters will be created where succession can take place, in order to get a high biodiversity. In the sound barriers small cut-outs will be made so that these are accessible for terrestrial fauna. It is questionable whether the fauna will be able to pass, also because of the slope.

The small walls at the entrance of the monastery contain wall-rue, which is not a protected species, but this kind of species is under pressure in urban area by development and management measures. These walls will be relocated in the plan area to maintain this biotope, probably to the zone between the sound barriers, in order to maintain the ecology.

The vegetation type at the railway embankment will be rich of structure, with combinations of pioneer species as well as trees. Besides, heath mown at Stichtse Rotonde or Monnikenbos will be added to stimulate the development of heath and nutrient poor sand will be added.

At the roadside of the BW-lane the goal is to develop an open forest type, with diverse undergrowth. Development will take place by adding nutrient poor sand from plan area, the creation of relief, planting common oak, beech, and Scots pine, and adding heath- and roadside mown from Stichtse Rotonde. It was mentioned that the sand will not be used everywhere in order to not negatively affect growth and development of the trees.

The sound barrier of the lowered BW-lane will be overgrown by creepers. Different species will be used to also encourage wild bees and moths. Also nest locations for wild bees will be created.

Both the tender and management system of the municipality of Amersfoort are tools that will be used to be sure of the execution and continuity of the measures. The focus of the tender will be on nature, whereby including nature, plants (green), and ecology. This will apply on the style of working, whereby the affection of nature should be minimized, but also to emphasize the implementation of "green" measures. Possibly for all nature, green, and ecological related working activities at certain parts of the route green specifications (In Dutch: een groenbestek) will be used. Thereby, changes in management of roadsides and public gardens will be implemented in the management system for nature of the municipality.

Enrichment

In addition to nature compensation 600.000 euros will be invested in extra measures for nature enrichment according to the "Nota van randvoorwaarden" (Brekelmans, 2015; Gemeente Amersfoort, 2015). Based on interaction with residents and stakeholders and wishes for development of nature in and around the research area 22 possible measures were described (Brekelmans, 2015). For all 22 measures the goal, an explanation, management and assurance, and costs were given if it was possible, after which the measures were rated based on certain criteria. Of these 22 measures five were pointed out as advice of the project group. The creation of a nature area at the A.P. Hilhorstweg was the first. Reasons why this was advised was because a relatively large area of nature could be created, of which the current nature value was relatively low except for the edges (roadside, ditch, hedgerow). The owner at that time wanted to contribute as well, which was important for the feasibility of the project. Thereby, there would be possibilities to create special aquatic nature and seepage-

dependent (wet) meadows here due to the seepage, it was relatively extensively used (limited phosphate load) according to the report so that the measures would be relatively “easy” to develop species rich vegetation in short-term, using measures such as removing the top layer, and other management for deterioration. In another report it was mentioned that - at the time of that report - part of the area was used as agricultural (corn)field (Gemeente Amersfoort, n.d.). Other arguments provided for this measure were that the nature type flower rich deteriorated grassland was quite rare in the Province of Utrecht and other projects converting agricultural land to this type were mostly successful (Brekelmans, 2015). However, the report also mentions that there was criticism and there were some worries about this measure. These included the fear that the West-Tangent would be extended northwards whereby possibly this future nature area would be affected, that the money could better be invested in the city than at the edge in terms of on sustainable urbanization focussed management, and also that the area Melksteeg is already part of policy and a plan. Against all points were arguments, the first was irrelevant since it would not happen according to F. van Vliet of the municipality, the second that the creation of one large area provides more opportunity than several small in urban area especially since the aim of nature enrichment was maximum efficiency for nature, the third is right for the other part of the nature area at the other side of the road, on the westside it was mentioned as an opportunity but is was not concrete before for which is a budget available, besides no other (compensation)measures could give substance to the idea (Brekelmans, 2015).

Additional measures that were advised were the bat-tunnel (5) and -bunker (6), small-size measures for the brown hairstreak (In Dutch: sleedoornpage) (4), and assessment of possibilities to increase accessibility of fences of residents (12) (Brekelmans, 2015). Arguments for these measures were the small size and low costs in combination with important gain for nature. Based on this, these measures would be relatively cost-effective. The bat-tunnel would increase the number of winter stays for bats in an already existing tunnel below the Amsterdamseweg which is not in use. In order to make it suitable some adaptations would be needed such as vandal-proof doors or possibly even closing up one of the sides. After these adaptations it was mentioned that it could also be used as fauna passage for terrestrial species, but when one side is closed up this becomes impossible and probably the vandal-proof doors will also limit the accessibility for terrestrial species. Thereby, also shelter possibilities at the walls need to be created since the walls were smooth. For the same purpose the bat-bunker would be implemented which is located at the corner of the BW-lane and the Birkstraat. According to the document it could be suitable for diverse bat species, such as common long-eared bat, whiskered bat, Natterer's bat and Doubentons' bat. To do so, the entrances should be made accessible again by digging out and provided with a vandal-proof entrance. Both will be managed by the municipality of Amersfoort. The measures for the brown hairstreak is about conservation and strengthening of the population in Amersfoort, which is the most threatened butterfly in Amersfoort and measures are considered needed for conservation. The measures include increasing the number of the hostplant blackthorn (In Dutch: sleedoorn) and also increasing the number of nectar sources. The measures will be taken in the living areas (Groengordel Soesterkwartier and Melksteeg) and surroundings of Soesterweg and Amsterdamseweg. Enlargement of the habitat and population are the goal, the locations for measures are managed by the municipality of Amersfoort and the management will be documented in a separate management plan. The other measure was the removal of fences at resident's houses to decrease the barrier alongside the BW-lane. These were considered locally and small-scale point of attention, since due to vegetation and limited barrier it forms, but locally the accessibility might be improved. This measure would be managed by the residents.

Another measure that was argued about was the purchase and decoration of camping terrain but was not seen feasible since it was not expected that the nature gain would be large

due to the relatively small size of the area and the pressure for recreation from the environment. Thereby, the area is not part of a nature passage (doorlopende groenstructuur) to Bokkeduinen and the existing houtwallen alongside the terrain function already as connecting element for terrestrial fauna and bats. It was mentioned that from this it could be interesting to increase this connectivity by possibly broaden the houtwal at the northern edge. In relation to the field at the Mgr. Blomstichting it was not bought yet, but conversation would be happening with the owner in terms of temporary measures that could be taken for nature. The area would offer opportunity for development of nature value and strengthen the areas Bokkeduinen and railway triangle. The forest between the railway and zoo was considered important as part of the NNN and as link to the railway triangle, which would relate to the functioning of Birkhoven. Most other measures were considered as not cost-effective enough. For management and decoration of the public green areas diverse measures will be taken in terms of the implementation of the road. The faunabridge would improve the connection but would be at most additional to other measures with this purpose (Brekelmans, 2015).

4.4 Discussion Legislation and -Regulations

4.4.1 Nature vision

The NCA states that the provincial nature vision needs to include policy on conservation or restoration of the favourable state of conservation based on Bird- and Habitat Directives and Red List species (Stibbe, 2018). The nature vision of the province of Utrecht uses the terminology 'sustainable state of conservation' (in Dutch: duurzame staat van instandhouding) (Appendix D, table D4). The nature vision includes the Bird- and Habitat Directives protected species, as well as Red List protected species. Furthermore, Utrecht selected 'icon species' and 'species of interest' (in Dutch: Utrechtse aandachtsoorten) and included these in their policy. With so called 'nature pearl areas' (in Dutch: Natuurparels) that are assigned certain measures they want to realise the sustainable state of conservation of these species. If in time the state of the species does not improve, the province plans to move on with stronger measures to meet the integral goal of the NCA (Natuurvisie provincie Utrecht, 2017). The nature vision mentions it is also not enough to connect natural areas, but these areas also need to improve in quality. According to the new NCA and the policy of the province of Utrecht, protected, Red List and species of interest (or icon species) should be taken into account with compensation for forest- and NNN area. A lot of icon species and Red List species were found in the research area of the West-Tangent project, which have not been mentioned in the ecological assessment report (Brekelmans, 2016) (Appendix D, table D5). One reason for this is that the nature vision, and herewith the list of icon species was updated in 2017, thus after the ecological assessment had been done. A possible reason for the difference in Red List species is the fact that the species on the Red List have been changed with the change to the new NCA. In total, 32 species in the observation list of 2011 (Brekelmans, 2016) are currently Red List species. Considering the new NCA is applicable to this project, we recommend that the impact on these species will be assessed further, as this has not been done before. In addition, in the report of Brekelmans (2016) it is stated that new data from between 2011-2016 was added in the last ecological assessment. This data should also be analysed for new Red List- and icon species, as well as species of attention for the province of Utrecht. It would strongly be against the policy of the Province of Utrecht to disregard these species. The NCA also states that the province must, in principle, always act according to their nature vision with granting permits and dispensation.

4.4.2 Species protection

Protected species

The Bird- and Habitat Directives species remained the same under the new NCA. For 'other species' 100 species are no longer protected (previous FF law), but 8 dragonflies species, 15 butterfly's species, 62 plants species, and the Montane water vole gained protection from the regime 'other species' (Ministerie van Economische Zaken, 2016). In the list with observations from the ecological assessment by Bureau Waardenburg in 2011 there are no species that gained protection under the new NCA (Appendix D, table D6-D10). However, in the report of Brekelmans (2016) it is stated that new data from between 2011-2016 was added in the last ecological assessment. We recommend this updated excel sheet from Bureau Waardenburg to be analysed for the protection regimes under the new NCA.

Area size

According to the report of Brekelmans (2016), the range of the ecological research was approximately 100 meters at both sides of the route, while the report of Brekelmans (2014)

describes a range of 50 meters. However, the map with area indication in 2016 is similar to the map of 2014, apart from three areas (one in the north, the middle and the south of the trace). This raises questions whether the map of 2014 or 2016 is incorrect or not. Furthermore, the reports (Brekelmans 2014; Brekelmans, 2016) do not describe how they determined the size of the research area. The research area for protected species is often bigger than the planning area, where the size of the research area should depend on the influence sphere of the activities in the planning area. Both reports do not contain a description of the activities that will occur in the area in terms of equipment that will be used, nor does it include argumentation on what the influence sphere of the activities and used equipment will be.

Inventory

According to the 'European Guidance documents species protection', foraging or regular flight routes are not protected. The ecological research however did include impact on this ecological function of the area for bats. Jurisdiction has pointed out that it is prohibited to damage foraging or regular flight routes if this causes the species to leave the area. This ecological function was not clearly pointed out in the report (Brekelmans, 2016). We recommend going more in depth on this, as damage to an important ecological function of an ecosystem is easily made but restoring it can be extremely expensive and time consuming or impossible. With the international-, national-, provincial- (Natuurvisie provincie Utrecht, 2017) and regional (Biodiversiteitsplan Amersfoort, 2013) goals to improve and maintain biodiversity it is key to consider each ecological component for ecosystem functioning.

Requested dispensation

Dispensation needs to be requested for species that have no exemption and there are no measures that can be taken to prevent violating the prohibition (§4.1.4). The application for dispensation needs to describe for which species and for which prohibitions dispensation is requested. The report of Brekelmans (2016) describes this for all the (at that time) protected species for which there were no mitigating measures possible. Leaving out the discussion whether their assumptions were correct (see § 4.3.2), the report does not mention possible measures or dispensations for species that currently are present in the compensation area Melksteeg. As the forest compensation at that location is part of the West-Tangent project, and it is likely that meadow birds are present at that location (Waarnemingen.nl), the impact on these species should also be described. We recommend performing an inventory on the protected species at the Melksteeg before logging of the trees that are protected under the NCA takes place. A negative impact on protected species has to be excluded, mitigated or covered by a compensation plan before it can be assigned as compensation area.

Dispensation for all protection regimes can only be granted if three cumulative criteria are met: 1) there is no other satisfying solution, 2) the interest is legal, 3) the favourable state of conservation is not at risk. From our perspective, it is not investigated thoroughly enough if there is no other solution, as the chosen plan should be restricted to the goal of solving the problem or specific situation. Moving on to the legal interest, in the application for dispensation the importance of the project needs to be described. The report by Brekelmans (2016) did include a description of the importance of the project, written by an employee of the municipality of Amersfoort. For Bird Directives protected species, the only legal interest to get dispensation would be 'public health or –safety'. In the description of the importance of the project, the (employee of) the municipality of Amersfoort does not mention 'health'. 'Safety' is mentioned three times but is not followed by a full explanation how safety is at risk and what aspects will improve by implementation of scenario 7B 2015 (Brekelmans, 2016). For Habitat Directives species and other species, the interest 'public health or -safety, or other enforceable purposes of strong public interest, with inclusion of purposes of social or economic character and inclusion of actual beneficial effects for the environment' would be

valid. So, the interest in the project is assessed to different criteria for Bird Directives species than the other two protection regimes, which has not been included in the ecological assessment. Concerning the favourable state of conservation, the following questions should be answered: 1) what is the state of conservation of (the population of) the species (in its natural dispersal area), and 2) what is the effect of granting dispensation on the respective population (s)? The approval of the Council of State did not include answers to these questions. Whether the three criteria are met or not, is for the province to assess. In the case of the West-Tangent, the State Council (RvS) has decided. Our recommendation would be to have the province assess the alternative solutions, argumentation, legal interest and favourable state of conservation of protected species for the West-Tangent project.

4.4.3 Compensation

There has to be one-on-one compensation for forest area. i.e. a hectare for a hectare. Furthermore, the regulation of the province of Utrecht describes a surcharge is added for the recovery time and for the number of rare or endangered species. The species that are currently on the Red List, and that are taken up as icon species in the regulation of Utrecht (Appendix X), have not been taken into account yet. How much protected, Red List or icon species are in the forest area that will be logged is unclear at this moment. Furthermore, the report of Brekelmans (2016) does not explain how the old forest cores, which have a high recovery time have been assessed. On the other hand, since the provinces are responsible for their forest areas since the 1st of January 2017, this would be something to be assessed by the province Utrecht. In the report of Brekelmans (2016) it is mentioned that some parts of the old forest cores are not categorized ('particularly valuable', 'very valuable', or 'valuable') by the province of Utrecht. The Randstedelijke Rekenkamer (2017), who did research on how the province of Utrecht would fulfil their role in nature compensation, points out that Utrecht does not have their registration in order regarding the borders, characteristics and size of their forest areas. Taking this into account, ecological assessment of these areas is a complex task. For example, Brekelmans (2016) had to categorize the old multi-trunk trees that will be cut down next to the cycle lane themselves. Our recommendation is to do another assessment for the impact on, especially, the old forest cores and multi-trunk trees that are in the planning area. In this way, the surcharge in hectares that is needed to compensate for the recovery time and the number of rare or endangered species can be calculated.

The regulation of the province points out that compensation at all time should be of good quality, lie next to a forest core, contribute to existing recreation- nature- and landscape policy of the municipality or the province, or lead to an increase in scenic quality in the province. The report by Brekelmans (2016) argues how the measures for forest compensation will contribute to natural- and scenic value, as it will withdraw the sight of an industrial area. Our recommendation is that, with creating a forest compensation plan, the scenic value that the area has at this moment should be taken into account, which is an open landscape. With the entry of the new NCA, the province of Utrecht became the competent authority to assess the dispensation application. However, the approval for the zoning plan was made by the Council of State. It is not very clear when the dispensation where approved. Was this before, or after entry of the new law. If the dispensation were assessed after the 1th of January 2017, the minister of economic affairs was still responsible for approving dispensation for species under the FF law. From the documents we evaluated we cannot conclude on whether the process was followed correctly, as this information was not found.

4.4.4 Policy province of Utrecht

According to the regulation of the province of Utrecht (Bnl Utrecht, 2017), the forests of Utrecht have an important regional-, social-, and economical function. The logging of the large number of trees (approximately 3500) for the 7B (2015) scenario could influence especially the regional and social function of the forest area. As a result of the forest being, partly, compensated in a different area, part of the recreational function will be lost locally.

The Bnl Utrecht (2017) also states that forest areas are contributing to the climate goals by fixating CO₂ and contribute to health of the community by fixating particulate matter. Logging approximately 3500 trees will result in less fixation of CO₂ and particulate matter in the area. In combination with more CO₂ and particulate matter emission from the increase in number of cars and traffic speed after implementation of the 7B (2015) scenario, this will lead to a higher degree of air pollution. Research showed that the effects of air pollution cost society a minimum of four billion euros, and maximum of forty billion euros per year (Singels et al., 2005). Our advice would therefore be to also take these costs up in a Cost-Benefit-Analysis, to get a more realistic overview of the costs of the 7B (2015) scenario.

4.5 Conclusion nature legislation- and regulations

Regarding the ecological assessment, a lot of aspects have been covered thoroughly. However, we conclude that there should be an argumentation for the size of the research area and the statements about important ecological components of protected species not being affected. Furthermore, it is not clear whether there are species present in the area that gained protection after the entry of the new Nature Conservation Act.

Regarding the requested dispensations we conclude that the right procedures were followed according to legislation, apart from the possibility that the application for dispensation for protected species in the compensation area (area Melksteeg) is missing. About the assessment of the applications for dispensation we conclude that it is not clear which authority (Council of State or Province executive) assessed the dispensations and when. We argue that it should be made clear and publicly available which authority assessed the applications, and what their judgement was, including explanation.

Regarding compensating measures, we conclude there should be an individual report of the area Melksteeg, including ecological assessment and detailed compensation plan. Furthermore, a clear division between the measures that were needed, planned or executed for previous compensation (Amersfoort Zoo) and nature compensation needed for the 7B (2015) should be made.

Chapter 5: Cost benefit analysis

Overview of chapter

This chapter provides information concerning the CBA performed for scenario 7B (2013). In addition, we compared the infrastructural changes as described for scenario 7B (2015) and studied whether these would change the results of the CBA of 2013. This resulted in a *qualitatively* adapted version of the CBA (CBA*) and the outcome is presented in the form of a table in this chapter, including relevant argumentation. Subsequently, striking aspects are discussed which we encountered when we performed our study. At the end, the obstacles encountered, indications of the missing elements as well as our overall conclusions considering the study of the CBA are presented.

5.1 CBA analysis

The CBA performed by Wageningen Economic Research (former LEI) in cooperation with the municipality of Amersfoort is made with guidelines provided by the government, the “OEI” method (Eijgenraam et al., 2000) is used. This specific CBA is based on numbers for valuation in which the effects of a change is expressed as generally changing amount, in terms of money multiplied the number, or amount of changes. The general changing amount is obtained from studies conducted before, or from guidelines provided by the government, as Ernst Bos (2006) states. In our research we only focus on the CBA of 7B.

In the CBA different variables are taken into account, see Appendix B (Table B2). These variables are based on conditions which are set by the municipality and referred to in the last column in the table where the number of the condition is indicated. An English explanation of the (numbered) conditions are provided in Appendix B (Table B1). Next to the conditions set by the municipality, a participation group of residents created by the municipality also discussed and had a say in the aspects which are considered in the CBA (MKBA, 2013).

The calculations for the traffic effect are based upon a traffic model which estimated the amount of traffic. The outcome from the study resulted in numbers of which the following percentages are used: an increase in traffic for the years 2020-2030 of 1% a year is expected, in the years 2030-2040 this would be 0.5%, after 2030 there is no grow expected. The same percentages are used and considered for the reliability for the travel time estimation. The effects on the bicycle travel time or safety are not considered, however, this is qualitatively included in the conclusion of the report.

In Table 1, we provide the adapted version of the CBA (CBA*). The numbers on the headers of the columns refer to the list of changes of scenario 7B (2015) compared to 2013 (as described in Chapter 2). The aspects of the CBA (2013) affected by those changes are taken into account, and through the use of two different colours we indicate in which way they are affected; pink cells refer to a decrease of the aspect, blue cells refer to an increase of the aspect and white to the lack of change. For example: due to change *1b* the *saved travel time* will decrease, but the same aspect due to the change *3a* is expected to increase. The CBA* has been developed in qualitative terms.

5.2 Development of the CBA*

Arguments, assumptions made and/or potential references for all the changes indicated in Table 1 are described below.

- **Saved travel time for vehicles** will decrease as the parallel road (situated on the west) of the DF-laan will be converted into a one-way road. It means that people need more time to reach their destination. There are also other changes between the two scenarios exist which will increase the saved travel time. For example, the “Famous Woman Neighbourhood” will be arranged differently and no dead-end roads will be present anymore, increasing the connection and therefore decreasing travel time. The **traffic safety** will increase due to the new entrance to the *Westelijke Ontsluiting* road for military convoy and emergencies (normally closed with a gate) to the terrain of the Dutch military (Bernhardkazerne). In case of emergency or calamities, the extra entrance will allow specific vehicles to enter and leave the terrain. The traffic safety will also increase due to the change of the entrance road to the zoo: the barriers will be further on the terrain of the zoo which will prevent pedestrians from blocking the cars entering the parking lot. In addition, the entrance square will increase in size and changed by a separation of the cyclist, pedestrians and vehicles, without the need to cross one another.
- **Saved travel time for cyclists and walkers** is going to increase because of the sidewalk that will be established from A. Jacobslane to the PF-laan, decreasing the distance. At the BW-laan Noord, a meandering two-way bicycle road will be added allowing more space for cyclists and reducing their travel time. A bicycle road will be built to enter the sport complex, increasing the saved travel time for cyclists as well.
- **Connectivity for businesses** will be affected in the new CBA. It will decrease due to some changes in scenario 7B (2015) and increase due to others. The connectivity will decrease as the parallel road will be converted into a one-way road inducing an increased time to reach the destination. In addition, accessing O.L.V. Ter Eem, in which multiple businesses are located, will only possible from the parallel road instead of the current main road DF-laan, which will decrease the connectivity. The Bernhardkazerne will get another entrance, positively affecting the connectivity. The same accounts for changes related to the zoo (the creation of 100 new parking places, the increase of the entrance square and dislocation of the barriers on the zoo terrain).
- In relation to the quality of the environment, we realized that the noise, odour and the trembling are affected by the changes of the scenario and will be different in the CBA*. The **noise** is going to decrease because of the creation of a new noise barrier at the parallel road of the DF-laan. The trees, which will be placed between the main and parallel road next to noise barrier, will also enhance nuisance decrease; several studies exist concerning the effectiveness of trees as barrier for screening the noise and the review by Huddart (1990) shows the value of the service. DF-laan will be a “residential” street and main road for bicycle traffic, decreasing the noise. As no dead-end roads will be present anymore in the “Famous Woman Neighbourhood” the noise will increase due to the increasing traffic. The connection between A. Jacobslane and BW-laan will also increase the noise as more cars will drive through that street, as well as due to the new parking areas. About the **odour and the trembling**, the trees situated between the main and parallel road will reduce those aspects. As the noise was reduced, also the odour and the trembling will decrease due to the changes in DF-laan. However, these aspects are going to increase near the zoo due to the new parking garage and the changes in the “Famous Woman Neighbourhood”.
- The **Social safety** is quantified by the deaths per year and wounded persons per year; in the table the changes of this aspect are expressed as increase or decrease in numbers of wounded and deaths per year. As the parallel road of DF-laan will be changed to a two-ways road for cyclists, cyclist safety will be increased (Alrutz et al. 2002). The cycling

bridge over the railroad will decrease the deaths per year (increase the social safety) as cyclists will not cross the BW-laan. Based on the provided report, the cyclists will not inhale air pollutants from cars when using the bicycle bridge, as they will be separated from them. Additionally, the slope of the bridge is planned to be less than 4%, which will reduce the speed of downward moving cyclist. Due to the changes of the entrance road to the zoo, pedestrians, cyclists and cars will not cross each other, which is expecting to increase the social safety. In the BW-laan Noord the bicycle paths on both sides of the road will be 3 meters wide (two way), which is lower than the minimum. This may negatively affect the cyclist safety. On the other hand, the construction of a bicycle road without cars to enter the sport complex will increase the cyclist safety. Finally, the connection for emergency services is going to increase due to the extra entrance to the Bernhardkazerne.

- The **view quality** is an aspect that is going to change in the CBA*. The soil will be raised near the gas station and other sight lines will be created. The parallel road of the DF-laan will increase in height more gradually and will decrease the view quality since people will look towards the road and don't have a sightline. In the description of scenario 7B (2015) is stated that the sight will be better due to a bicycle bridge. The view quality will be reduced in the area near the zoo due to the new parking garage and because of the new parking lots for the restaurant "Kabouterhut". The trees that will be placed within a 6-meter distance between the main and parallel road are going to increase the view quality of that area. For the compensating nature areas, we assume that those will increase the view quality as well.
- **Disturbance** is going to increase due to the new parking areas for the restaurant "Kabouterhut" and the zoo.
- **Loss of habitat (nature)** will increase mainly due to the new parking areas but it will reduce by the measures related to the nature compensation (the Eco duct for the connection of the EMS and the "fauna passage" at BW-laan Noord). This last aspect is described more in depth in the nature compensation chapter (Chapter 4).
- **Particulate matter, SO₂, NO_x and CO₂ emissions** from cars are going to increase since no dead end-roads will be present anymore in the "Famous Woman Neighbourhood", as well as due to the connection between A. Jacobslane and BW-laan, leading to more traffic in this area. The emissions are expected to increase also due to the new parking places.
- Overall the **effect of nature on mental health** are increasing due to the nature compensation areas (the Eco duct, the fauna passage and the extra nature compensation arrangements expected) and the enlargement of the gardens at the DF-laan. The trees planted along the BW-laan Noord will also have a positive effect.
- The last two aspects that are going to change in the new CBA are the **investment and maintenance costs**. We argue that the building of a cycling bridge will increase the construction and maintenance costs, as well for building the new parking places and the changes on the roads characteristics. Likewise, for the nature compensation and its maintenance.

5.3 Discussion

When evaluating the changes on the CBA we took only into account the changes which are planned for the execution of scenario 7B (2015) compared to 2013. We assumed that every infrastructural change of scenario 7B (2013) is encountered in the CBA report of 2013. Unfortunately, it is not explained which infrastructural changes of the specific scenario can be attributed to which changing aspects and magnitude in the CBA. For every aspect several valuations are attributed to the change based on studies performed previously or values provided by the government (Ernst Bos 2006). If the studies conducted previously would

contain inconsistencies, this number and therefore the balance from the CBA could be wrong. Additionally, the values used could be outdated.

The method on which this CBA is based on is the OEI, obtained from the Dutch government. Indicated is that this analysis is an unreliable quantity since all aspects are governed within one number (expressed as amount of money). However, it is a useful tool to support the decision-making process (Eigenraam et al., 2000). The people which base their decisions on a CBA should be aware of this and put the outcome of the CBA into perspective.

CBA* Remarks

In the CBA investment and maintenance, costs are only indicated for a viaduct, tunnel or road widening. We attributed some changes to increase these costs, but in reality, these are more nuanced than specified, since major reconstruction will take place for scenario 7B (2015). On top of this, we do not know whether costs are included for measures on pumping of the groundwater and its effect for the construction costs. Besides, just outside the project area there is a water supply station, which does not seem to be considered in the study. It could mean that the construction can influence the quality of the drinking water.

We have noticed that some changes between the scenario of 7B (2015) and 7B (2013) could have a positive as well as a negative effect on the same aspect in the CBA. As we have developed the CBA* for scenario 7B (2015) in a qualitative way, we are not able to argue, if overall specific aspects increase or decrease compared to the CBA of 7B (2013), since we do not know the extension of the impacts (neither in terms of money). To resolve this issue a quantitative evaluation of the CBA for scenario 7B (2015) is necessary and we recommend this for a complete analysis.

During the development of the CBA*, we noticed that some changes affect only a few people and others affect the whole community. To have a more representative study we argue that (in future studies) a stakeholder analysis should be included in the CBA, or the CBA should be performed differently for different (interest) groups. Doing so, it would be possible to understand which group would benefit from the scenario and will be negatively affected by the scenario. To add to this, while making the CBA* we encountered that the infrastructural changes will have different impacts in different sub-areas within the study area. For instance, when the main road will change its locations, the disturbances (in noise pollution for instance) on that location will decrease, where these will increase along the new location of the main road. Since we are doing a qualitative analysis we cannot determine the overall effect. However, in the CBA performed in 2013 some aspects are considered for different sub areas, leading to a net change in the whole study area.

Considering the infrastructural changes for scenario 7B (2013), we do not know how far into detail research has been done to implement certain aspects in the CBA. For instance, lowering of the road will create a street canyon that will trap air pollutants, depending on the geometry of the (upper) walls, which will in- or decrease the air quality in the adjacent areas (Xie & Wang, 2005). The emissions aspect in the CBA will not be influenced by this since it determines the emission based on the number of vehicles. However, to encounter the effects of the air pollution, the people or area exposed to air pollution should be determined. Nevertheless, we did not take into account the lowering of the road in the CBA*, as it is not a change between scenario 7B (2013) and 7B (2015). Another unclear aspect is whether the property value of the affected estates is considered for the CBA 2013. This would have an economic effect since one would expect that the price of the houses will increase in some locations in the study area and decrease in others.

In relation to the nature compensation arrangements we only considered the nature compensation arrangements within the study area for the CBA. This means that the 4 Ha forest at the end of the Melksteeg and its effects are not considered. Construction costs of

the new parking garage that will take place on the terrain of the zoo are not considered in the CBA* either, as those costs will be covered by the zoo. Furthermore, we recognized the necessity of an environmental assessment (REF: Notitie van Randvoorwaarden) to support the CBA, since not all environmental impacts are reflected properly, and some are even missing in the CBA 2013. For instance, a missing aspect in the CBA 2013 is the trees that will be removed. The amount of cultural historical area (in Ha) to preserve for future generations is considered, but only as positive aspect. However, the negative aspect (so tree removal) could have more impact. Another aspect that is missing in the CBA 2013 is the biodiversity loss, in addition to the loss of habitat. The specific indicator could be PDF/m²/y, where PDF stands for Potentially Disappeared Fraction (of species) (CE Delft, 2018).

5.4 Conclusions

From our analyses we can conclude that the planned infrastructural changes on the western part of Amersfoort can have both positive and negative impacts in different sub-areas on the environment as expressed in the CBA. In addition, we can conclude that the CBA* for scenario 7B (2015) will be different than the CBA which is executed in 2013 for scenario 7B (2013). This means that the CBA performed in 2013 on scenario 7B does not represent the changes in the infrastructure as the municipality is planning to execute at this moment, as indicated in scenario 7B (2015).

Concerning the benefits which are taken into account in the CBA, only the saved travel time, reliability of travel time estimation, traffic safety and connectivity for businesses are indicated. Since around 69.1 million euros will be invested in this extended project, we would expect more benefits in order to support these plans. Especially since the increase for the ongoing traffic is indicated to be only 2.5% for scenario 7B (REF: samenvatting onderzoeken). Besides the benefits, we foresee more negative aspect compared to what is included in the CBA at this moment. Even though many environmental effects are taken into account, we believe that not all potentially affected aspects are included. For example, a striking aspect that is not considered in the CBA is the removal of trees, especially since Amersfoort is known for its greenery and even has a policy guidance document for this based on the 'green vision' established by the municipality of Amersfoort (REF: bomenleidraad).

Chapter 6:

**STRATEGIC
ENVIRONMENTAL
ANALYSIS**

Chapter 6: STRATEGIC ENVIRONMENTAL ANALYSIS

Overview of chapter

The SEA report of 2015 was critically evaluated. The division of the study area into smaller sub-areas as investigated in the report, is also how it is described in this chapter. Firstly, the assessment criteria used by the authors were evaluated based on the description provided in the Appendix of the report. Then, an evaluation of the scores with respective explanation are performed for all sub-areas that were affected by scenario 7B (2015) and/or 2 (2013). Remarks are provided only for the parts that were not clear or where argumentation was lacking. At the end of the chapter, the conclusions about the overall content of the SEA report and the results of the critical evaluation are presented.

Even though our critical evaluation focused on both scenarios, not many remarks are provided for scenario 2 since not many comments or explanations were given by the authors either. This is probably because the foreseen changes for scenario 2 do not influence greatly the surrounding environment. Additionally, for the sake of brevity, no remarks are provided for the scorings that were clearly and sufficiently explained.

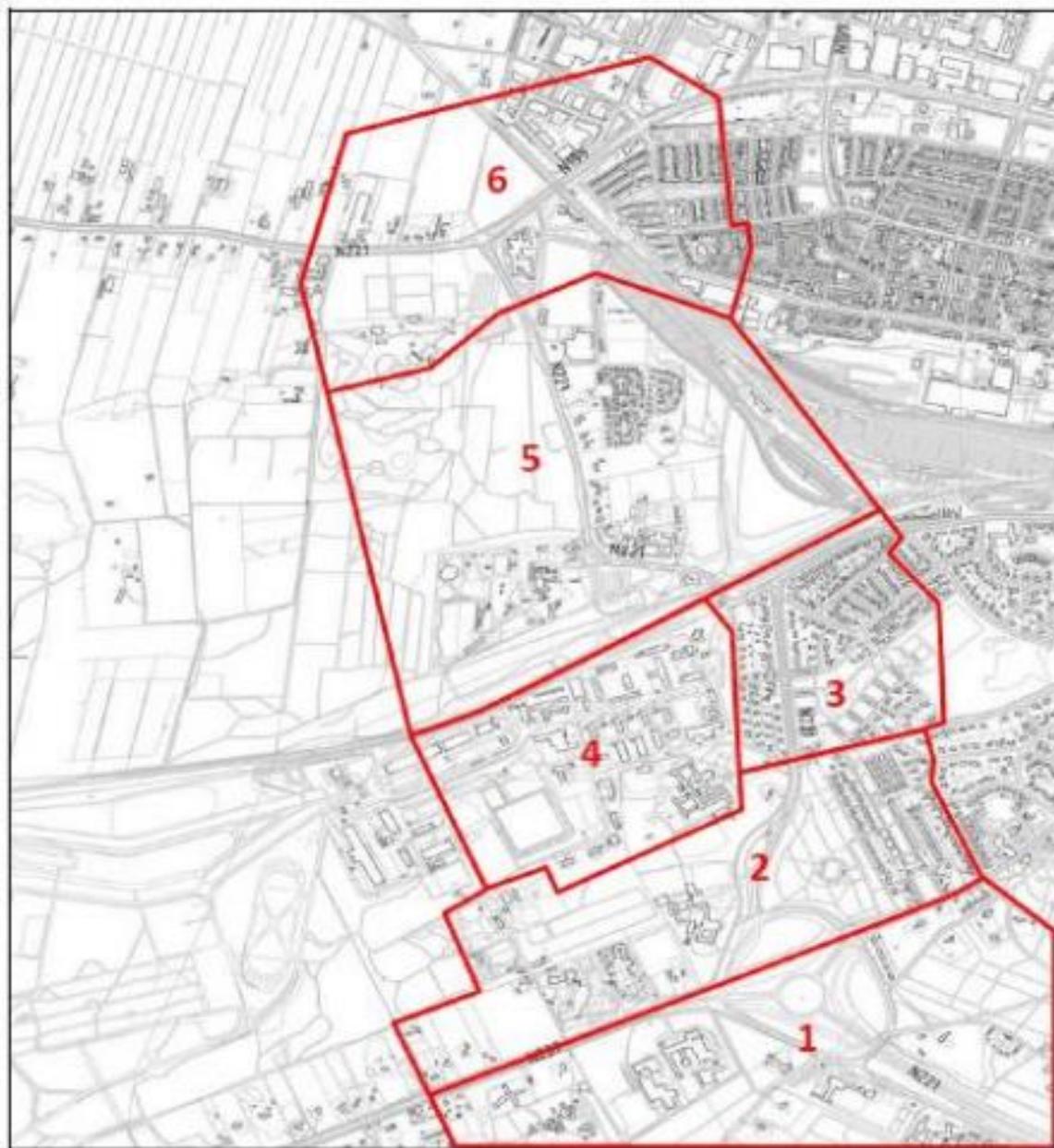


Figure 13. Study area divided into six sub-areas: 1. Little Switzerland (area south of the Utrechtseweg); 2. Bergkwartier (area between Utrechtseweg and Prins Frederiklaan); 3. Environment DF-laan (between Prins Frederiklaan and BW-laan); 4. Surroundings Bernhard barracks; 5. BW-laan (between railway and Amsterdamseweg [Birkhoven Bokkeduinen]); 6. Amsterdamseweg and Soesterkwartier.

6.1 Critical evaluation of the assessment criteria

It is understandable that some of the aspects for investigation are difficult to assess, not to mention creating a scoring system for them. However, during the critical evaluation of the system used, a certain vagueness and lack of explanation was found for several assessment criteria (Appendix C, Table C).

It is stated that traffic intensity is assessed based on the number of vehicles, but the scoring description uses the number of roads that are stagnant as a measure. No explanation is provided. Bicycle traffic, public transport and emergency services do not have scoring description, without explanation given. Regarding the unexploded ordinances, the areas with no suspected unexploded ordinance were graded with a Good score and if many unexploded ordinances are suspected to be in the area, the area was graded as Poor. There are two remarks about this criterion; there is no definition of what 'many' stands for and no scoring description is given for Sufficient and Insufficient conditions, although both scores are attributed in the report to several sub-areas. For the nature aspect there are remarks for all three criteria:

- Ecosystem functioning: Sufficient and Insufficient are described as the situation when moderate and reasonable damage occurs, respectively. However, the authors do not define the terms moderate or reasonable, which makes the critical evaluation of the scoring attributed to the sub-areas and scenarios impossible.
- Unity/connectivity and size: Again, there is no definition of the term "hardly reduced" used for the description of the Sufficient score. Additionally, there is no argumentation why unity and connectivity could simultaneously be assessed with one criterion. It is unclear what the score would be if, for example, in a sub-area there is no damage of the connectivity, but a large area was deteriorated.
- Protected and endangered species: It is not clear what the score would be if for one protected species there is a positive trend and for another a negative. Additionally, there is no explanation regarding the quantitative difference between a negative and a strongly negative trend.

There is only a description of the scores Good and Poor for geomorphology (soil criterion) and specifically the areas that have no intersections disturbing the soil score Good and Poor when many cuts occur. No definition of the term "many" is provided nor a description for the Sufficient and Insufficient scores. This is the case for all landscape assessment criteria, since all criteria grade as Good sub-areas with no loss and Poor areas with significant loss. However, significant is not quantified and there is no scoring description for the other scores. The same applies to cultural history, the social and health aspect. Additionally, regarding the demolition of homes (social aspect) there is no explanation about why only the number of homes is considered and no other characteristics like the surface occupied and value.

6.2 Critical evaluation of the arguments supporting the scores

Overall, to scenario 2 is given little importance in the environmental assessment, probably due to the limited changes it suggests to the current situation. Nevertheless, scenario 2 scores less than Good for some aspects and no further explanation is provided to support this decision. Therefore, the following critical evaluation mainly focuses on the explanations the authors provide for the scoring of scenario 7B (2015). A summary of the final scores given by the SEA (2015) for both scenarios, for all the aspects discussed, is found in Table 2 and 3.

Table 2. Overall conclusion table for scenario 2 (2013). Probably a conclusion table for scenario 10+ would have been similar, since not many changes with environmental impact are foreseen.

Aspect	2 (2013)					
	Sub-area 1	Sub-area 2	Sub-area 3	Sub-area 4	Sub-area 5	Sub-area 6
Intensity						
Traffic at sections						
Bicycle traffic						
Noise						
Air						
Transp. Of hazardous sub.						
Un. explosives						
Nature: EHS 1						
Nature: EHS 2						
Nature: Species						
Soil quality						
Geomorphology						
Flooding						
Water quality						
Landscape structure 1						
Landscape structure 2						
Landscape characteristics 1						
Landscape characteristics 2						
Historical geography						
Monuments						
Archeological sites						
Archeological value						
Social safety						
Demolition of homes						
Accessibility						
Health						

Table 3. Overall conclusion table for the 7B (2015) scenario. The (+) and (-) signs are used to indicate whether the respective sub-aspect has decreased or increased in terms of score compared to the table of scenario 2 (2013).

Aspect	7B (2015)					
	Sub-area 1	Sub-area 2	Sub-area 3	Sub-area 4	Sub-area 5	Sub-area 6
Intensity						
Traffic at sections	+	+	+	+	+	+
Bicycle traffic						
Noise			+	+		
Air				+		
Transp. Of hazardous sub.						
Un. explosives		-				
Nature: EHS 1						
Nature: EHS 2						
Nature: Species					-	-
Soil quality		-	-	-		
Geomorphology					-	
Flooding						
Water quality						
Landscape structure 1						
Landscape structure 2		-		-	-	
Landscape characteristics 1					-	
Landscape characteristics 2				-		
Historical geography			+			
Monuments						
Archeological sites				-		
Archeological value				-	-	
Social safety						
Demolition of homes			-			
Accessibility			+			
Health			+	+		

6.2.1 Traffic aspect

The traffic effects section includes the assessment of different aspects: traffic intensity and traffic models, traffic flow and finally bicycle traffic, public transport and emergency services.

Traffic intensity and traffic models

The report states that a reduction or a maximal increase of 11% regarding traffic could occur at the Amsterdamseweg when the West Tangent project is implemented. However, the authors stress that this limited increase does not negatively affect the viability of the project. It is not clear from the text nor from the assessment criteria descriptions why 11% is considered as limited increase and to which scenarios this is applicable.

For scenario 7B, the traffic intensity of the new route passing by the A. Jacobslane will be between approximately 20,000 and 24,000 motor vehicles per day (p. 57, §2). It is striking, however, that it is not clearly mentioned whether the overall traffic at this road will increase or decrease and how much. This is the only occasion where the authors provide the actual number of vehicles and not just the increasing or decreasing percentage. Additionally, even though for all other main road they provide a graphical representation of the estimated traffic effect of the different scenarios, this is not given for the A. Jacobslane. This remains unjustified and eliminates the possibility to draw an independent conclusion regarding the either increase or decrease of the traffic intensity in this street and whether there are better scenarios.

Furthermore, there are no scores for the traffic intensity for the different sub-areas for scenario 2, which also eliminates the possibility of drawing an independent conclusion regarding the traffic intensity of scenario 2 compared to scenario 7B. No argumentation or explanation is given for the exclusion of the scenario from the comparison table and this exclusion occurs only in the table throughout all the report. On the other hand, there is no clear explanation why scenario 7B scores Sufficient instead of Good for the sub-areas 1, 5 and 6.

Traffic flow

The conclusion of the chapter about the traffic effects states that scenario 7B results in the greatest reduction of travel time. Based on the table in the report that presents the speed increase (and thus travel time savings), the speed increases around 50% (p. 61, table 6.3). It is unclear whether this increase is enough to justify the extreme expenses needed for the implementation of scenario 7B.

Bicycle traffic, public transport and emergency services

The authors argue that the difference between the scenarios (in this case between 2 and 7B) does not lead to different effects on the bicycle traffic and therefore also not on the scoring of the scenarios (p. 63, §1). However, one would expect that the building of a bicycle bridge over the tunnel at the railway crossing would (positively or negatively) influence the safety of the track and therefore its traffic compared to the current situation or scenario 2.

6.2.2 Noise aspect

For the noise pollution, the noise deriving from the road and the railway was used in the statistical analysis. Based on the results, the different sub-areas for scenario 7B and 2 were graded for noise-affected dwellings, noise-affected surface due to the road traffic, noise with a necessary source and shielding measures. To all these sub-aspects one overall score was given, which means that only the average is presented in the respective table (p. 70, Table 7.1).

- It is mentioned that the noise limit of 48 dB can be exceeded at some locations on the DF-laan and A. Jacobslane, despite the use of shielding measures such as “quiet asphalt”, “noise barriers” (P.69, §2). As a solution it is said that “Higher limit values will be set for those locations” which does not seem to answer the question of keeping everything under the limit.
- No discussion is done on how to deal with the noise generated during the construction of the western access irrespective of the variant chosen. As this project is quite big and may take more than a year to complete, measures to keep the construction noise limited is also important topic to address.
- Additionally, in the report it is stated that “silent” asphalt will be used for scenario 7B in multiple sub-areas (p.72, §1). However, this is not mentioned in the respective scenario description.

6.2.3 Air quality aspect

Air quality is assessed only based on the background concentrations. Specifically, the study carried out focused on two aspects: (a) nitrogen dioxide (NO₂) and whether the annual average concentration and the amount of times the hourly limit was exceeded, and (b) particulate matter (PM₁₀) and whether the annual average concentration and the amount of days in which the daily limit was exceeded. The substances SO₂, CO₂, lead, benzene and other oxides of nitrogen have not been studied since these are not expected to be exceeded, however this is not supported by any argument. Especially for NO the air pollution concentrations are interesting since these are emitted by cars.

- As the main route will shift to the new road near A. Jacobslane in 7B (2015), intensity of traffic on DF-laan will decrease and hence the air quality in this area will improve compared to the current situation. The air quality assessment is correctly taking into account the annual mean values (with limits as described in the law) and the previously described limit values on a shorter time scale. However, it is also stated that the assessment is performed late in the process, with some small difference in assumptions of the scenarios taken into account. This asks the reliability of the overall environmental assessment if other assumptions are taken into account for different aspects.
- To calculate the air pollutants in the future the amount and kind of emission of traffic are used. A decrease in heavy polluting traffic is expected, which poses the question whether the vehicles from the Bernhardkazerne are taken into account.
- Another feature in the air quality assessment is that the conclusion is that outside the distance of 10 meters, the air pollutant concentrations are barely affected by the presence of the road. However, the bicycle roads will be situated nearby the road, leading to a higher exposure of the air pollutants to the cyclist. This is not taken into account in the study.
- Another aspect which was expected to be considered is the air pollution when a lot of traffic is present, for instance during rush hour since these peak concentrations can be of major influence for human health.
- What is also missing in the air quality assessment is the air pollution sources of other sources rather than cars, since other polluting sources may be present in the area as well, but this is not investigated.

6.2.4 External safety aspect

In this section, the authors assess the safety issues on the routes, within the studied area, that are used to transport hazardous substances (road and railway). In addition, the safety risks

concerning the railway yard and areas with suspected unexploded ordnance in the region. Additionally, near the Stichtse Rotonde there is a gas station which could pose safety risks.

The only aspect that could affect the West Tangent project are the suspected unexploded ordnance areas. Scenario 2 and 7B have identical scores (Sufficient or Insufficient) for all sub-areas except sub-area 2, which scores worse in 7B than in scenario 2. Although it is suspected that sub-area 2 scores worse in 7B due to the construction of a part of the new infrastructure, there is no a solid explanation provided to support the scoring. Additionally, scenario 7B includes the constructing this new road and specifically the deepening of this road in sub-area 4. However, the authors do not mention if and how this influences external safety and the score for sub-area 4 remains the same (Insufficient) with scenario 2. This raises the question of how these two scenarios score the same since one of them (7B) involves a large landscape change.

6.2.5 Nature aspect

In this section, the authors address the different nature aspects that could be affected during the implementation of one or more scenarios. They looked into the effects on the EMS (Ecological Main Structure) areas within the study area and the effects on protected and endangered species. The EMS areas are investigated in terms of ecosystem functioning and nature purpose type, as well as unity/connectivity and size of the affected area.

Ecosystem functioning

In the studied area, mainly sub-areas 5 and 6 are EMS areas and are part of a larger area called Birkhoven (Figure 14). According to the report, Birkhoven is not a natural forest and it consists of pine, oak, beach; in the understory several local species can be found that enhance the natural character of the forest. It is not clear whether scenario 2 will significantly influence these sub-areas. In contrast, 7B foresees the widening of the BW-laan and a narrow strip of the EMS will be cut to implement this.



Figure 14. Nature values regarding the forest based on the Province; (a) light green represents moderate valuable areas, (b) dark green represents reasonable valuable areas, (c) light brown represents valuable old forest cores, (d) dark brown represents very valuable old forest cores.

- Under the section about the ecosystem functioning, the authors stress that this will not affect the vegetation composition development (p. 86, §1). However, they do not mention the width of the strip and therefore it is not possible to assess whether an edge effect could play a role in this case. An edge effect is already present at the boundary of the forest with the current road but changing the boundary of the edge could further affect the interior of the forest (de Casenave et al. 1995).

- Furthermore, the authors argue that the most important impacts deriving from the road are nitrogen deposition and noise. However, they do not provide reference for this statement. They argue also that the high nitrogen deposition in the area is not caused by the road and thus 7B will not add to it but is mainly driven by the overall high deposition in the Netherlands (p. 87, §1). This statement raises questions about the existence of research done to support this. The residents stress that the 7B new infrastructure could lead to the increase of vehicles using, among others, the BW-laan, which would increase the nitrogen deposition originating from traffic. Regarding noise, it is stated in the report that increasing noise will not have an additional negative effect because the birds are affected also by other sources (recreational activities, the zoo), which is supported by the fact that no breeding areas near those areas (p. 87, §2). However, again no research findings are referenced, which makes the statement more an assumption. Therefore, it could be important to investigate the arguments about the deposition and noise, since that is probably the reason why scenario 7B scores the same or even better than scenario 2 (similar to current situation).

In addition to the EMS areas, there are also old forest cores that have been declared as valuable by the Province of Utrecht (Figure 15). The authors state that no significant degradation of the old forests cores near the project will take place. However, 7B will cross, in the form of a tunnel and a bicycle bridge, a valuable old forest core present near the zoo (sub-area 5).

- The authors argue that the total (net) impact of 7B is positive because in addition to the tunnel, an eco-duct of approx. 30m wide will be laid over it, removing this way an important existing ecological barrier. Even though it is not clearly stated, this is probably the reason why 7B scores Good for ecosystem functioning in sub-area 5. Of course, the existence of an eco-duct is a very important advantage compared to the current situation as well to scenario 2. However, it is striking that valuable old forest cores are compared with and presumably compensated by an eco-duct. This raises the question of how one can calculate net value by adding and subtracting aspects that cannot be compared (old forest cores, eco-duct). Especially since the eco-duct is a characteristic that is already taken into account for the score of the criterion about connectivity later on.

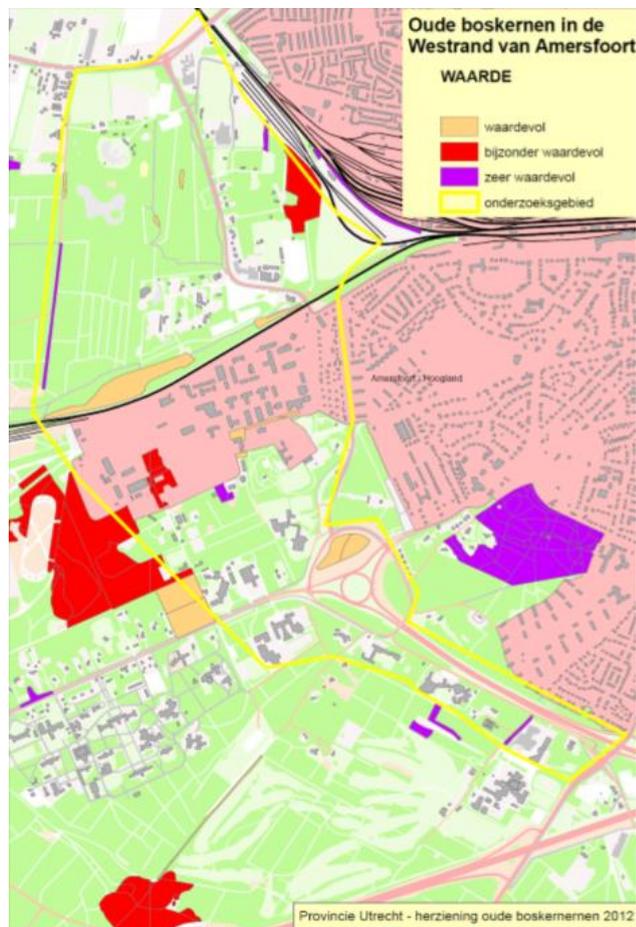


Figure 15. Value of old forest cores in the Westrand area of Amersfoort based on the Province of Utrecht: (a) pink represent the urban zone, (b) light brown represents the valuable old forest cores, (c) red represents the particularly valuable old forest cores and (d) purple represents the very valuable old forest cores.

- Scenario 7B also scores Sufficient for sub-area 2 regarding ecosystem functioning. However, there is no available explanation in the text for this scoring, whereas scenario 2 scores Good.
- Finally, scenario 7B will also lead to the cut of a small strip of EMS area in sub-area 6, due to the widening of the crossing section between the Birkstraat and the Amsterdamseweg (p. 89, §4). The authors say that this cutting will not affect the EHS and therefore this action can take place, however, no further explanation regarding the surface of the strip, the vegetation growing in the area or why this will not significantly affect the EMS area are provided.

Unity/connectivity and size

It is stated that scenario 7B will lead to the loss of a limited surface area at the railway (sub-area 5), specifically less than 0.5 ha, which includes dominant and no special animal or plant species (p. 91, §2). However, 7B scores Good for the unity/size criterion for both EMS sub-area, even though in the description of the assessment criteria it is stated that a scenario scores Good when there is no reduction of surface area or damage of connections. Presumably, the eco-duct that will be created over the tunnel would compensate at least partially for the surface lost but no information about the exact surface in m² or in terms of number of trees (and thus justification for the scores) is provided.

In sub-area 6, the enlargement of the crossing of the BW-laan and the Amsterdamseweg, for scenario 7B, will result in the placement of the road in the EMS area alongside the existing crossing (p. 94, §1). However, the authors stress that no *direct* damage will be done to the EMS area although no further explanation regarding the current vegetation state of the area that will be cut, or the existence of *indirect* damage, is given. In the same sub-area, the parking lot of the hockey club will be translocated to an area directly attached to the hockey field and the area where the parking lot is currently will be converted into EMS (p. 94, §3). This new EMS area will be connected to the forest area of Birkhoven. This will contribute to the compensation for the northern area of the BW-laan that will be lost and explains the Good score of 7B for sub-area 6, even though other EMS areas are cut. However, there is no information is provided about neither the current state of the area that will be converted into parking lot (type of nature, species, value) nor its surface.

The authors stated that except the eco-duct, the widening of the BW-laan with the addition of a green strip will also increase connectivity, especially for the soil-bound species (p. 94, §4). However, there are neither references provided to support this argument nor details regarding the distance between the green strip and the nature areas alongside the road. For instance, will the future distance with the green strip be small enough to enhance the soil-bounded species? Additionally, the figures in the report indicate that to implement this plan, another part of the nature area lying alongside the road will be opened up for the bicycle path. Therefore, it is not clear whether the new infrastructure will increase connectivity or increase fragmentation and what the effects will be for the forest and wildlife (Jordan 2000). After all these modifications, 7B scenario scores for both 5 and 6 sub-areas Good.

Protected and endangered species

Overall, the report explains to an extent the score attributed to sub-areas 5 and 6 (Sufficient), however, the following critical remarks strongly indicate the need for re-evaluation of the scoring, since it could have been Insufficient or even Poor.

According to the report, sub-area 2 includes very important species, especially in and around the Stichtse Rotonde and the Belgenmonument. Simultaneously, for scenario 7B the sub-area scores Sufficient regarding the ecosystem functioning. Even though there is no explanation about this scoring, it indicates a change in the sub-area. Changes in an area with

such a value is expected to lead to a less the Good score for scenario 7B regarding the protected and endangered species criterion, which is not the case.

In sub-areas 3 and 4, scenario 7B will result in the cut of a forest area between the entrance of the Bernhardkazerne and the railway and a forest area in the yard of the Old Monastery, and a forest strip area alongside the A. Jacobslane (p. 98, §1). These forest areas are known to be used as life and foraging habitat by squirrels and several species of bats. Similarly, around the railway (sub-area 5) the area is used for foraging for quite some species from Table 3 of the Flora and Fauna Act (p. 99, §2). Nevertheless, the authors stress that, since all these areas are not of high importance for the respective species, the changes will almost have no negative effect. This statement raises multiple questions, such as what the total surface of the habitat that will be cut is and on which findings/research the authors base their conclusion regarding the importance of these areas for the different species. Their conclusion might be correct, but the lack of arguments and reference weakens the validity of the scoring attributed to scenario 7B regarding the respective sub-areas.

In sub areas 5 and 6, the forest areas that will be cut down along the BW-laan and around the zoo for scenario 7B are also living areas of many species. For the squirrel, it is stated that, since the surface that will be affected is small, there will be almost no negative effects on the species (p. 98, §2). Similar to the previous remarks, it is not clear how the authors know the changes will almost not affect the population of the species. Additionally, even though it is stated that the area cut around the zoo will be small, based on the Tree report the area is in total around 0.5 ha (REF doc 31). One of the affected species, which also currently occurs in and around the zoo is the grass snake (ringslang or *Natrix natrix*). Since the affected area is to the best of their knowledge not a breeding area and the habitat that will be degraded is limited, the negative effect for the individuals living there might be slightly negative but the authors *rule out* the possibility of negative effects on the population level (p. 100, §3). Reference for the exclusion of this possibility, as well as possible measures to protect the individuals affected during the construction phase are missing.

On the other hand, the habitat of the hazelworm (*Anguis fragilis*), which is a protected species, is also affected in the sub-area 5 (railway crossing) with scenario 7B. Measures in order to reduce the impacts are given, like translocating the species to the Eco duct after finalizing of the project, but the authors stress the need for an exception from the Flora and Fauna Act for the implementation of scenario 7B (p. 98, §3). An exception is also needed for other species from Table 3, like bats (p. 99, §2) but just for the temporary degradation of their habitat (p. 101, §2). This raises a question regarding the decision-making; how can scenario 7B be selected before having the exceptions needed for all the species and areas. In addition, scenario 7B has a score of Sufficient for sub-area 5 and 6, although according to the scoring system Sufficient represents a stable occurrence of protected and endangered species. Why the sub-areas were scored with Sufficient is not clear, which also underlines the lack of clarity of the assessment criteria overall.

Bats seem to be a controversial issue throughout the report, since some large habitat alterations are said to have almost no effect on the species populations and other less invasive modifications are addressed with caution and further research is suggested. As it is stated in the report, most species are strongly bound to dense vegetation in urban areas and are sensitive to lighting and habitat fragmentation (p. 99, §2). At this point, the authors address the impact light conditions may have on species for the first time (e.g. Davies et al. 2012, Newport et al. 2014, Bennie et al. 2016), whereas changes discussed in previous sections will influence light conditions as well. The widening of the BW-laan could also negatively affect the foraging behaviour, flight safety and movements since the distance between the nature along both sides of the road increases. This is another reason why a green strip with trees will be created on the current BW-laan, which would potentially eliminate the crossing problem. In addition, special lighting (amber and UV) could be installed to reduce the changing lighting

conditions after the project implementation. However, for both cases (planted trees and special lighting) no references or arguments about the success of similar measures in other projects are provided. Specifically, is there any evidence that the bats will use the green strip as a pass-through area? How will the green strip reduce the impact during the first years since the trees that will be planted are not going to be tall enough to ensure safe flight movements for the species? Attraction and repulsion to different types of artificial lighting is a species-related characteristic. Specifically, based on Rowse et al. (2015), the reaction to the different lights is different for the different bat species. Additionally, UV light is known to attract insects and therefore insectivorous bats (Rowse et al. 2015). During brief literature research, it was not possible to find hard evidence that suggests that UV lights will reduce the light pollution for the bats, regardless of the species, leading to the questioning of the argument used in the report. In the report it is mentioned that, during the construction phase on the different bat habitats, bat boxes will be hung to mitigate the impact (p. 101, §2). However, again, no reference regarding the success of such a measure in similar projects in the past is given.

6.2.6 Soil and water aspect

Soil aspect

Regarding the soil, the authors considered soil quality in terms of intersection of registered and suspected locations of special soil conditions and geomorphology in terms of the degree of intersection of morphological characteristics, or the degree to which the natural relief is affected in the plan area. For all sub-aspects there is an acceptable explanation provided as to the attributed scores. On the other hand, there is no reference to the soil aspect of the deepening of the new road in the sub-area 5 and it is unclear whether this could change the scores of scenario 7B.

Water aspect

In the report the water aspect is assessed with regard to flooding events for the different sub-areas and the ecological surface water quality for the Bosvijver (forest pond) area.

The groundwater level in the study area is the deepest at the Stichtse Rotonde and closer to the surface at the Amsterdamseweg, which is expected due to the altitude slope of the surrounding area (Figure 16). Specifically, the groundwater is less than 1m below ground level, but no information is given for the depth of the groundwater at the other end. Scenario 7B scores Good, especially compared to scenario 6 that has plans for a tunnel at the Amsterdamseweg (p. 107, §1). However, the authors do not mention at all what will be the state of the tunnel planned for the railway crossing. Some of the questions that raise are about the frequency of flooding events (if any) of the tunnel and the feasibility of possible measures. Finally, there is no reference to possible waterlogging or respective preventing measures for the deepened new road in

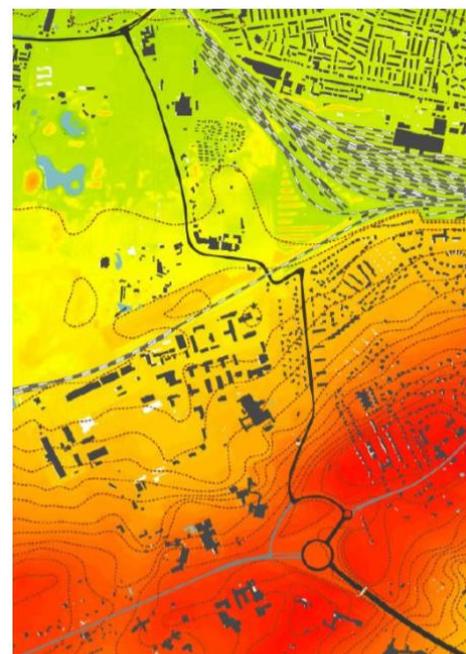


Figure 16. Elevation map of the West Tangent area; red indicates higher elevated areas and green lower areas.

sub-area 5. Based on these last remarks, it is unclear whether the score for scenario 7B should remain Good. There are no striking remarks for the Bosvijver area.

6.2.7 Landscape aspect

The authors address two different aspects related to the landscape; (a) the landscape type and structure and (b) the spatial-visual characteristics. Regarding the type and structure, the loss of characteristic structures, patterns and elements, and affecting or adding of image-determining elements in the landscape were investigated. On the other hand, spatial-visual characteristics are approached in terms of affected visible characteristics and damage to the integrity of the landscape characteristics.

Landscape type and structure

There are two main National Landscapes in the proximity of the study area, National Landscape Arkemheen Eemland and Utrechtse Heuvelrug, from which there is a remark only for the former (Figure 17). National Landscape Arkemheen Eemland (NLAE) is located at the northern side of the study area (close to sub-area 6) and is characterized by wide and open meadows. The report states that no interventions are foreseen in the relevant part of the study area (p. 109, §1) and therefore sub-area 6 scores Good. For scenario 7B a large compensation area has been planned outside the study area to balance out the surface of forest that will be lost with its implementation. However, the authors do not provide any information regarding the present value and potential in terms of biodiversity for this extra compensation area. Based on Figure 18, it is possible that the area is located within the NLAE, which could be an important point of discussion regarding the effects on landscape type and structure. However, this is not clear neither from the maps provided in the report nor the text. If this is true, it would probably not alter the score of the sub-area but should be considered for the overall score of the scenario.

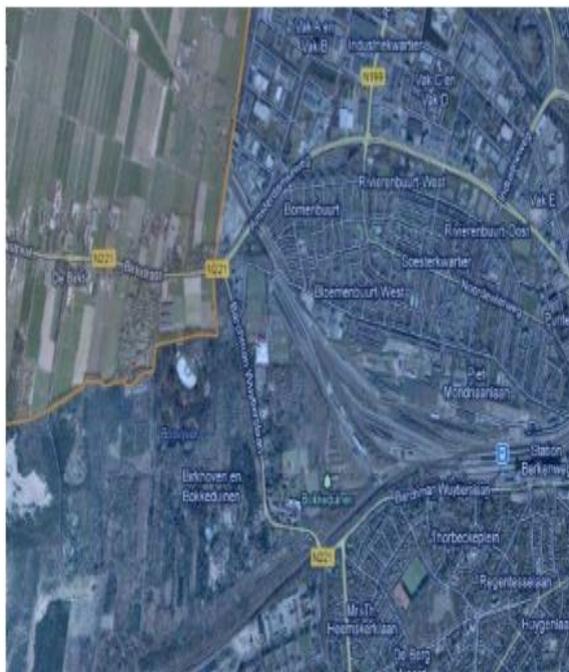


Figure 17. The area indicated with light yellow is the National Landscape Arkemheen Eemland. The dashed black circle indicates part of the study area adjacent to the National Landscape (SEA report 2015).



Figure 18. Aerial picture of the northern part of the study area. With red is the directly affected area from scenario 7B. The area that is separately from the rest indicates the location of the extra compensation area.

Apart from the National Landscapes, there are also other landscape-determining elements within the study area. Two of them are the Stichtse Ronde (located in sub-areas 1 and 2) and the surroundings of the old monastery complex (Klooster O.L.V. Ter Eem), which is in sub-areas 2, 3 and 4. Scenario 7B includes the crossing of the gardens of the monastery and therefore is attributed with a Sufficient score. Even though it is expected that the scenario would not score Good for this aspect, due to the vague description of the respective assessment criteria and because no further explanation is provided by the authors in the text it is unclear why the score is Sufficient and not e.g. Insufficient.

Spatial-visual characteristics

The authors describe several of the spatial-visual aspects that will be altered at the old monastery complex with the implementation of scenario 7B (p. 112, §4). For example, the main entrance will be moved, part of the gardens will disappear and a non-protected from the monument regulations building will be demolished. Consequently, there will be significant changes to the spatial and visual characteristics of sub-area 2 and 4. Nevertheless, these sub-areas score just Sufficient for scenario 7B. Since the assessment criteria are also not clear regarding this aspect it is not possible to evaluate whether this score is correct or an underestimation.

In sub-area 5, the cutting of trees and the construction of the tunnel and bridge at the railway crossing will alter the visibility compared to the current situation (p. 112, §7). Therefore, scenario 7B has a Sufficient score for deterioration of landscape characteristics, however, it is again not clear on what grounds this score is attributed. Additionally, it scores Good for damaging the integrity of the spatial-visual landscape characteristics. It is unclear why a tunnel, an Eco duct and a bicycle bridge at the same area do not affect at all this former aspect. The new route planned for scenario 7B will affect the gardens of the old monastery, the monumental fencing, the caretaker's house and foresees the construction of a bridge as the new entrance to the monastery, which will probably face A. Jacobslane. These are some of the radical changes that will occur in sub-areas 4, 3 and 2 (p. 114, §1). However, only sub-area 4 scores Sufficient and only for one of the spatial-visual characteristics aspects without clear explanation. This leads to the questioning of the attributed scores for scenario 7B regarding these landscape aspects.

6.2.8 Cultural and archaeological aspect

Cultural history aspect

The authors address the cultural history of the study area based on the historical geography: (change in culturally historical patterns and valuable structures) and on the historical (urban) engineering (monument impairment). Specifically, in sub-area 2 there is the Belgenmonument and in sub-area 4 (border of 2 and 3 as well) there is the old monastery complex.

The entrance to the old monastery (O.L.V. ter Eem) complex will be removed along with the entrance and the garden area in the scenario 7B (2015). However, the scenario scores Sufficient (p.123, Table 7.19), since these changes are considered very small and they do not affect the final score. It is not clear why this huge change is considered to be minor. The Belgenmonument is located along the DF-laan and will be influenced to a large extent during construction of the Westelijke Ontsluiting road. Although this area holds a great cultural value among the local residents, the changes to this monument are not discussed in the assessment at all and scenario 7B score Good for this aspect.

Archaeological aspect

In the report, the archaeological aspect was investigated in terms of known archaeological sites and sites with expected value. The scoring was attributed based on the expected impact of the planned intervention on the value and size of the respective sites.

According to the research, the area of the Stichtse Rotonde in sub area 1 of the study has a high archaeological value due to the expectation of finding burial mounds and prehistoric habitation. No archaeological research has taken place in this area. In scenario 7B (2015) major changes to the roundabout are proposed, which includes lot of excavation and yet this area scores Good (p. 129, Table 7.21). In it unclear why the authors do not provide an explanation for this score.

6.2.9 Social and health aspect

Social aspect

The authors investigate the following social aspects that may be affected by the project: social security (improvement / deterioration), demolition of dwellings (number) and accessions to homes and plots (improvement / deterioration). There is a critical remark only for the second criterion, about the demolition of dwellings.

In the document “Realisatie Westelijke Ontsluiting Effectstudie natuurwaarden en maatregelen natuurwetgeving” (Brekelmans, 2016, Appendix 2) there is a list of buildings that will be demolished in the process in 7B (2015). In total the list included six buildings, a building located at: the Bernhardkazerne, the Restaurant Vlasakkers, a house and a small electricity house on the terrain of “O.L.V. Ter Eem”, 2 small electricity houses on the terrain of the Bernhardkazerne. Out of these six, only Restaurant Vlasakkers is situated in sub area 3, and the other five buildings located in sub area 4. Yet, in the scoring Table 7.23 (p. 132) for 7B (2015) the sub area 3 scores Poor and sub area 4 scores Sufficient. Consequently, based on this list and the assessment criterion for the demolition of dwellings, the scoring is not correct. Additionally, the assessment criterion itself is not explanatory enough as it does not mention clearly how many numbers of buildings should be demolished to score Good, Sufficient, Insufficient or Poor.

Health aspect

Finally, the health aspect is assessed in terms of air quality and noise. Therefore, health scores Sufficient for all the sub-areas except 3 and 4 for which it scored Good, since the air quality and noise is supposedly improved after the implementation of scenario 7B (2015). Consequently, the critical remarks about the improvement of the two later aspects (air quality and noise) apply generally to health as well.

6.3 Conclusions

Overall, the authors investigate thoroughly possible aspects that could be affected by the implementation of the different scenarios at the West Tangent. Even though for a large part of the report sufficient argumentation and references are provided, there are still some points that could be improved. Detailed description and references for the assessment criteria, further explanation for the attributed scores and addressing *all* possible impacts might help diminish the doubts regarding the credibility of the SEA report.

Chapter 7:

COMMUNICATION and PARTICIPATION

Overview of chapter

This chapter aims at presenting an analysis of the strengths, weaknesses, opportunities and threats [SWOT], regarding the communication and participation between the municipality of Amersfoort and the opposing interest and resident groups regarding the project West Tangent. First, there is an introduction section in which we try to define the term “Participation” and describe the approach the municipality of Amersfoort adopted. Then, a summary of the final SWOT analysis on the project is displayed, which was based on five interviews. Lastly, the results of the SWOT analysis are discussed and recommendations on how to improve the communication between the main stakeholders are given.

7.1 Participation

Communication in multi stakeholder processes can be challenging. Different beliefs, norms, values and emotions as well as interests, cultures and styles affect how people communicate. Power dynamics also play a role in communication. Communication between political parties and interest groups with regard to local projects might be challenging due to different power dynamics. Political stakeholders have their own agenda and major decision-making power. However, this does not mean that citizens in the affected area automatically approve the political choices being made. Often, citizens wish they would have been consulted by local councils before major decisions are implemented (Zimmermann and Rappaport, 1988).

The inclusion of local stakeholders in a participation group in order to bring in new ideas to improve a certain aspect of the municipality, is called participation. Participation, which is often demanded by citizens so that they could communicate their needs and desires regarding certain projects/decisions and feel included in the decision-making process, is common in the Netherlands. However, “participation could also be defined as involvement in any organised activity [...]” (Zimmermann and Rappaport, 1988). Thus, definitions of participation differ not only regarding perceptions on what is included in participation but also regarding the degree of decision making power. Zimmermann and Rappaport argue that citizen participation is an important mechanism for developing psychological empowerment that is linked to decision-making, as individuals identify resources and develop strategies to achieve a certain goal. Scholars identify advantages of citizen participation in government decision making for both citizens and governments. Advantages are visible for the decision process as well as for the outcomes. Irvin et al. (2004) argue that regarding decision making, education and persuasion concerning strategy building on both sides is considered favourable since barriers to effective policy are transcended. Regarding the outcomes, an advantage for the citizens is that they are able to gain some control over the policy process. On the other hand, governments benefit from participation by avoiding litigation costs. In general, participation is said to lead to better policy and implementation decisions. Fung (2015) adds to this by stating that citizen participation has the potential to advance three values of democratic governance namely: effectiveness, legitimacy and social justice. However, the author also stresses that *‘efforts to increase social justice through citizen participation face the greatest obstacles’*.

The municipality of Amersfoort enabled participation on the project of the West Tangent. Residents, interest groups and stakeholders took part in participation sessions to examine various scenarios concerning traffic at the West side in Amersfoort in 2011-2013. Subsequently, in 2013-2016 details for the 7B scenario were discussed with the participation group. According to the information available in the project archive of Amersfoort, the first round of participation consisted of three interactive meetings, fifteen participation meetings, two information meetings and four resident evenings. In the participation group representatives from interest groups, resident groups, as well as other stakeholders affected by potential changes of the infrastructure, were present. The aim of the chapter is to present a SWOT analysis of the communication and participation between the municipality of Amersfoort and the opposing interest- and resident groups, referred to as interest groups. Conducting a SWOT analysis would help to contribute to a better understanding of the strengths, weaknesses, opportunities and threats of the communication as perceived per stakeholder and enable the formulation of recommendations regarding possible communication improvement.

7.2 Final SWOT

Five semi structured-interviews have been conducted with seven participants (2 from the municipality, 5 from interest/resident groups), which resulted in five different SWOT analyses due to the diversity of interest and stake. A summary of the perceived strengths, weaknesses, opportunities and weaknesses follows, whereas the detailed SWOT analyses can be found in Appendix E (Table E3). It must be noted that these statements are personal opinions of the interviewees.

7.2.1 SWOT for Municipality

Strengths

The municipality initiated the project West Tangent to solve the perceived traffic issue, as they state that this would also improve the quality of the surroundings on multiple levels. Before the participation regarding the project started, basic conditions were defined jointly by the municipality and the residents / participants. The project has to meet these criteria set in order to be implemented.

In order to involve the community and affected stakeholders the municipality invited the residents and interest groups to participate in a participation programme to share their ideas and thoughts on the project concerning various scenarios available. Moreover, the participation meetings have been chaired by an independent chair. Throughout the participation a great variety of stakeholders have been included and the municipality describes the selection process as fair: *'if people were interested they were welcome to participate'*. According to the municipality, the participation program also included interest groups that were not directly influenced by the project, such as the 'Stichting Woonklimaat Berg'.

After scenario 7B (2015) had been chosen by the municipality council, a second round of a participation was initiated to discuss the details of that scenario. A positive outcome of the second participation round was the decision to deepen the road and to make it possible to create a larger distance between the A. Jacobslane and the newly built road. The municipality bought land from the military grounds to implement this adjustment. The municipality did not consider negotiating for this area if it wasn't for the residents. Additionally, the municipality agreed on implementing extra measures for noise reduction.

The municipality communicated their plans via several channels like: newsletters, presentations and information meetings. For the participation, the municipality states that they stayed on speaking terms with all involved stakeholder and reached out to the residents and offered them to ask questions if something was not clear. Furthermore, all decisions that have been made were provided with a detailed explanation about the choices.

Weaknesses

Perceived weaknesses by the municipality include the communication and discussions between the interest groups. The municipality experienced the discussions as difficult due to a lack of understanding from the opponents on certain choices that had been made by the municipality. Furthermore, the municipality states that the strong opinion against the plan by the interest groups hindered the participation to stay constructive.

Additionally, participation was hindered by a lack of accepting collectively made definitions about traffic and problems. The municipality states that there is no collaboration between the different stakeholders at this moment as there is no need for participation anymore, since the project is already in the starting phases of implementation.

Opportunities

Opportunities stated by the municipality consider improvements for participation processes, as well as dealing with residents and interest groups in the future. For future participation processes the municipality states that there is a need for more focussed participation sessions. A good starting point to improve communication is that the municipality is aware of the fact that certain interest groups think they are not heard and included in the process. Moreover, before contracts with construction companies are made, the municipality is willing to include relevant details by residents before the plan is finally implemented.

Threats

A perceived threat is that there is no communication with interest groups at this moment in the process. The municipality reports that media and politics spread incorrect stories and wrong information resulting in obstacles for collaboration.

During the interview, the municipality compared the project opponents as residents with a view of 'not in my backyard (NIMBY)'. We argue that it is a threat to use this definition for the residents as it might create misunderstandings about how serious the municipality takes the residents and their insights. Easily, this attitude can lead to a lack of trust between the two different parties. Contrary, the municipality reported that they have to deal with the bad image and stereotype that is handled by some of the opponents.

7.2.2 SWOT for Residents / Interest groups

It should be noted that three of the respondents have been directly involved in the participation of the project West Tangent and two of the respondents have not been included. Nevertheless, the perceptions of these two residents are taken up into this analysis as they might perceive different interesting effects compared to the people that have been included in the process.

Strengths

The first part of the participation is experienced by most of the respondents as good. Formulating basic conditions and listing all important stakeholders helped guiding the process at the beginning. Respondents that took part in the participation appreciated that they were given the opportunity to gather to analyse the different scenarios. The impression from the interviewees was that everyone was working towards finding a solution that fit the needs regarding the project.

A shared positive impression was that the participation groups had the possibility to choose certain research institutes and formulate research questions for certain topics. Additionally, the fact that a lot of research has been done on the situation was described as beneficial for the project by the interviewees. For example, the participation enabled research on the current traffic situation as well. Respondents appreciated that they got to know other parties that participated in the project, which they otherwise might not got to know.

A strength of the communication concerning the municipality is the system they use to display information, which is called 'Notubiz'. Respondents noted that it is helpful to be able to access the same information as the municipality council members. Additionally, the project archives provided a good source of information about the history and background of the project.

Weaknesses

Respondents perceive the outcome of the participation (fall of the council) as harmful to the participation as their advice has not been picked up by the municipality. They feel that

choosing scenario 7B was not justified since this plan has never been discussed into details within the participation. In addition, the reason why 7B has been chosen is still unclear to the participants. The opponents refer to the project as a 'prestige project' that is implemented by the municipality to improve the image of the city.

Regarding the participation, basic conditions have been violated by the municipality for the first part of the participation and for the second part of the participation these basic conditions have been altered. Although, participants were invited to think about the research questions, the participants experience that some of the questions have been influenced by the municipality to aim for a certain outcome. For some researches, research questions were already formulated by the municipality and put on the market. Generally, respondents shared the mutual feeling about the content, which was generated in the participation and has not been taken seriously by the municipality. This led to a diminished collaboration with the municipality. According to the respondents, the municipality not only communicated the necessity of the project but also that every deviant opinion is wrong.

Accessibility and spreading important information has been described as being done strategically according to the needs of the municipality. Furthermore, they state that wrong information regarding the agreement of participants and interest groups have been communicated to the media resulting in the spreading of the wrong information. Regarding the process of the participation, respondents shared the feeling that they were flooded with technical information. The problem is that not every one of the participation group had the technical background to process the information. After the fall of the council, the participants felt that they have been misused to support the arguments of the municipality since the municipality chose for scenario 7B.

Two of the respondents stated that they have not been included in the participation process, although the plans are adjacent to their neighbourhood. The reason for this was that they did not know about the large impact of the project and the existence of a participation for interest groups. They admit that there has been an invitation for an informal meeting, but they clearly state that this did not reveal the big impact of the project. Moreover, they think that the project as such is unstructured and unclear. Respondents questioned the municipality why they were not taken into account in the participation process. They received the answer that the municipality thinks that they have been represented by the SWB which has been included in the process, however the respondents feel different about this matter. Specifically, they mentioned: *'One person from a foundation does not represent the interests of the residents that are influenced by the impact of the project'*.

Regarding the communication with the municipality, respondents report that decisions that have been made lack sufficient explanation and answers to questions mainly consist of legal paragraphs and set phrases. The interviewees felt that the questions they asked were not taken seriously by the municipality and that some questions have not been answered at all. The interviewees reported that even before the participation started, the municipality communicated that the project is going to be implemented no matter what. Respondents criticise that there has been unprofessional behaviour regarding officials that screamed and yelled at them. They also mentioned that after the project management was changed, the new project manager did not introduce himself to the neighbourhood.

In general, even though the municipality did not consider them (residents) as experts, the residents perceive themselves as knowledgeable and able to share insights and provide input that benefits the project. This resulted in the residents feeling that in many occasions they just had to accept the information that was provided to them although they had critical remarks and had identified inconsistencies in documents and researches that have been done. Another subject that was perceived as a weakness of the participation is that the opponents of the plan had to pay for all the research to proof the inconsistencies they had found.

Opportunities

For future projects, interviewees identify a big opportunity to make the participation successful by making sure to include all of the important stakeholders and to structure the participation process in a better way. The residents wish that the municipality would recognise possible talents present in the resident and interest groups and use them for the benefit of the project. For participation aspect, the respondents stated that in order to have a successful participation the expectations of what participation means has to be clear (*'Everyone has to be on the same page'*). Moreover, this would help to identify whether there is enough space for participation to take place. The most important condition for the respondents is that the municipality takes participation seriously.

Additionally, a co-production model or the model of the 'nieuwe samenwerking' would have been appreciated for this project. Communication has to happen with an open attitude towards the input and insights of the community. Treating each other in a respectful way was identified as an opportunity to improve communication as well. Furthermore, the residents stated that an improvement, considering trust and transparency, could be to create an additional budget for second opinions regarding research. Finally, communicating after decisions have been made would be appreciated by the interest groups to achieve better collaboration and communication.

Threats

The residents and interest groups perceive that the fixed determination of the project is a threat to participation. Moreover, they feel that participation especially for the second part can be described as 'sending' information.

Another threat identified by the residents was the political character of the project as it influenced the collaboration with the municipality. This point hints at what they perceive as fixed determination of the project. As a lot of politicians are involved in the project the interest groups stated that some officials do not favour including residents and the community since they perceive residents as a plague and not sufficiently knowledgeable.

Interviewees were concerned that the new road could attract new traffic with the improvement and renewal of the infrastructure. They handle a different understanding of the traffic problem in Amersfoort and do not see the need to implement big infrastructural changes in their area. The attitude of the municipality is described as not willing to listen or take the participants seriously is perceived as the biggest challenge for good communication and participation.

7.3 Discussion

The outcomes of the interviews were exclusively used as input for the analysis and thus represent an objective analysis. The information presented might be sensitive for both addressed parties, however, this information is necessary to identify the possible communication problem.

The question whether the improvement of the infrastructure at the West- Side of Amersfoort is needed or not is going to be addressed in the general discussion (Chapter 8). Nevertheless, the necessity of the project is a starting point for participation. The interviews revealed that interest groups and the municipality do not share the same problem definition of the traffic 'issue' in Amersfoort. The municipality believes that according to research that has been done on the tracks, this will be a problem in the future for this area. Contrary, the interest groups do not think that traffic is a problem at the moment. They acknowledge that two times per day traffic is increased during rush hour due to cars and cyclists driving at the same time.

Before participation on different varieties and scenarios for a 'problem' takes place, it is important to find out whether there actually is a problem regarding the traffic in the area.

Therefore, research has to be conducted before a possible participation of a project is implemented. Conducting research on the problem enhances a detailed problem definition which in turn can be used to set the stage for a possible participation. Another point is that the problem definition has to be clear to all participants. If there are different understandings of the problem between participants, this influences the possible outcomes of the participation that should add to a successful project. In the case of the West Tangent it is clear that participants and the municipality did not share the same understanding of the traffic 'problem', which influenced the process of participation.

Even though the basic conditions for participation on the project had been set in an early stage of the project, there was still confusion about what the participation compassed and what the influence of the group would be.

For a successful participation process, a detailed description of participation including what participation means, which form of participation is used specified to details of the project that is participated about has to be made before participation starts. This is beneficial for a good participation process because it not only provides a clear set of basic conditions for the municipality and the participants but also guides what all involved parties can expect from the participation as such.

Therefore, a question could be: how can one be certain that everyone has the same understanding of what participation represents? Interviewees from the residents and interest groups state that they have been asked to co-produce a solution for the 'problem' which made them think they had decision making power regarding the project. *'Participation does not automatically mean that participants have decision making power'* (Municipality). Interviewees from interest and resident groups stated that they would have liked to see a co-production participation model for this participation. They as experts of their surroundings see that there are projects within the city that make use of the 'nieuwe samenwerking'. After a brief literature search, no information about how this particular form of participation is functioning.

A stakeholder analysis can help include all the important stakeholders that are influenced by the infrastructural changes. Reported from the interviews some neighbourhoods which are directly influenced by the changes have not been approached to take part in the participation programme. By including at least one representative of every resident group that will be influenced by the changes would not only enhance transparency but also diminish the possibility for conflicts when people feel they have been excluded.

Designing a participation programme can be challenging. So, how can one decide how much and what kind of direct public participation should be implemented? Fung (2006) developed a framework for assessing the space for participation. He identified three dimensions to which forms of direct participation can vary. The first-dimension concerns who participates. The second dimension defines how participants exchange information and make decisions. The third dimension specifies the link between discussions and policy or public action. These three dimensions increase the understanding of the potential and limits of participatory programmes. Funk (2006) put these three dimensions together into what is called 'a democracy cube' that helps designing participation mechanisms. Making use of the democracy cube thus could be useful for identifying whether participation is feasible for future projects and how to design participation.

Basic conditions are set to guide the participation and to set the rules of the game. When these basic conditions are violated, this decreases the trustworthiness and transparency of the municipality. Moreover, it decreases willingness for collaboration by participants and sets a bad connotation on the participation process. Due to the fact that basic conditions have been changed and violated throughout the process of the participation for the West Tangent, the trust towards the municipality has been described as lost by the local residents. This trust has to be reinstalled for a successful collaboration and cooperation

between the stakeholders involved. Violating basic conditions that determine the expectations of both municipality and participants is non-negotiable as basic conditions are formulated to enhance trust between all stakeholders.

Both parties described that the attitude towards each other has been deteriorating due to the participation. For example, the municipality states that they are seen as bad by the interest groups due to the decisions that have been made in the participation. Thus, the municipality has to deal with the stereotype that they are labelled with. Interestingly, the resident groups describe that they feel treated disrespectfully by the municipality and that the municipality did not provide all possible information. All interviewees share that this issue led to the fact that there is no communication and collaboration anymore between the municipality and the resident groups.

Another issue that needs to be addressed is who is the expert. Citizens could be described as experts of their surroundings as they have been living in the area for a long time and are exposed to it every day. Regardless of their academic background, residents own situational and practical knowledge. Researchers instead are known to have specific knowledge regarding their background. They are masters of their field, working on models and conducting research to investigate a certain topic. Regarding situational and spatial changes, the question is whether models or experience should be used to make a decision about infrastructural changes. Models are called models because they are simplifications of the reality. They cannot capture every aspect. However, models are an accepted tool to make predictions about the future. Nevertheless, perceptions from citizens can differ from the predictions a model can make. Then, one can wonder which data to trust, especially when there are large differences regarding outcomes. Maybe by combining outcomes from different models we could come closer to what is considered the reality. For example, using the same model twice can already lead to different outcomes, depending on the person using the model.

Interviewees were asked to give insights about how the communication between the municipality and the interest groups has been. Striking is that no arguments were given how the communication has been. Respondents rather answered with content related issues or hinted at the lack of understanding between the two parties. Although there are different views, perceptions and understandings of the project and how things took its turn, communication can influence how the future will look like. Regardless whether the 7B scenario or the 10+ scenario will be implemented, restoring trust and communication between the different parties will be a challenge, but a challenge needs to be addressed. The project West Tangent will proceed, that is for sure, and it is up to the different stakeholders on how they want to proceed with it as well. However, due to a lack of understanding for each other and for the other, we recommend doing a facilitation session with a neutral facilitator. A facilitation session might bring the estranged parties on one table in a neutral setting, to share feelings and opinions in a safe environment. The idea of a facilitation session is not to solve the conflict but to possibly create a better understanding between the different parties.

Chapter 8:
DISCUSSION and
CONCLUSIONS

Overview of chapter

This discussion and conclusion chapter elaborates on the necessity of the implementation of an infrastructural change at the West-Tangent. Certain arguments derived from the scenario descriptions are reflected upon. Additionally, the choice from the municipality for a scenario is discussed. Besides, this text touches upon the issues we faced as ACT team. To end with, conclusions concerning our study, subsequently research questions are formulated.

8.1 How necessary are infrastructural changes at the West-Tangent?

This study assumes that an infrastructural change is needed in the West-Tangent. However, this point of view differs amongst the various stakeholders, mainly regarding arguments which support or oppose the increase of traffic in the future.

The results of the traffic study (SEA 2015) showed that the average speed does not significantly fall under the speed requirements all the time. In addition, the input data and results of the traffic study are debatable according to the residents. This would make the study unreliable and enforces the argument of the residents that there is no traffic problem. They conclude that there is no need for an expensive and extremely invasive infrastructural change in the West-Tangent, at least for now. In order to assess the validity of the traffic studies provided by the municipality, the residents evaluated the traffic themselves. The scenario developed by the resident (10+) is based on these assumptions and it displays that minor traffic related stagnations could be solved with simple traffic control measurements.

The local council's point of view regarding the traffic problem is different. They argue a traffic problem is present, which will increase in the future with more cars and trains passing the area. Therefore, to be able to deal with the traffic in the future it is required to improve the infrastructure in the West-Tangent at this moment.

As indicated there are different opinions and arguments regarding the future traffic in the area. Due to the limitations we faced as ACT team we were not able to conduct an analysis on the traffic, but we believe it is necessary that future studies assess this. Additionally, there are more aspects playing a role in the necessity for the infrastructural changes in the West-Tangent, but not all acknowledged/recognized. The municipality indicates a tunnel will be beneficial not merely for the flow, but also for the safety of the traffic. Accordingly, it will be beneficial for the ambulances which need to pass the rails. The amount of trains will also increase, which would lead to closure of the railway barriers more often. Furthermore, there is the fact that pedestrians see possible incidences happening while trains pass by, which can lead to traumas. In the past people (including children) have witnessed a suicide at this crossing. Another aspect is the economic benefits stated by the municipality. For instance, the municipality argues that the reachability of businesses will increase with scenario 7B (2015), but supporting arguments are difficult to identify.

8.2 Scenario Choice

There are some uncertainties regarding the different scenarios description obtained from the municipality as well as from the residents. Certain statements are made, which are not supported by arguments or cannot be traced or justified based on the available information. For instance, in scenario 7B (2015) it is stated that the safety for cyclist will increase with a bridge instead of a tunnel. This statement is made, but not supported. In a study, as referred to in text from Hembrow (2014), in the design manual for bicycle traffic made by CROW (a non-profit knowledge partner for (local) government bodies, contractors and consultancy firms) it is stated that tunnels are preferred over bridges. The arguments opposing constructing a tunnel is not indicated in the scenario description or reasoning, and the advantages to build a bridge are not justified for the specific location. Neither the measures to increase the safety for cyclist over the bridge are specified. Another argument to construct the bridge is that the cyclist will not inhale air pollutants from cars, which is also not supported by references.

The municipality choose to implement scenario 7B (2013) based on the CBA and SEA (2013). Afterwards, the municipality included some changes in the 7B scenario (7B 2015), which would influence the CBA, as our results show. This means that the information which upon the decision to implement scenario 7B was based on, is not valid anymore. This poses the question whether the choice of the municipality to adapt scenario 7B instead of choosing

another scenario is justified. Especially because the municipality is aware that not only the CBA will be influenced by a scenario but also the SEA, since in the past they discarded scenario 6 due to its negative environmental effects even though based on the CBA 6 was shown to be the most beneficial scenario. Moreover, this emphasizes the importance of the environmental analyses since the CBA does not reflect all environmental impacts of the scenarios.

Concerning the description of scenario 10+, in the section Methodology adjustment, it is already indicated which aspects are missing and in the Chapter 9 (Recommendations) certain aspects to improve scenario 10+ are provided. However, concerning the content of this scenario we find it interesting that the construction of a bicycle tunnel nearby the Stichtse Rotonde is suggested, since this is indicated as a no-boring zone (Figure 19) in the SEA report (2015). It is not clear from the description of the respective scenario whether there is a conflict regarding the water management of this area. Another aspect concerning the water management is that the basin currently collecting the rainwater near the railway crossing will not be affected by scenario 10+, since there is no need for the construction of a tunnel according to the scenario.

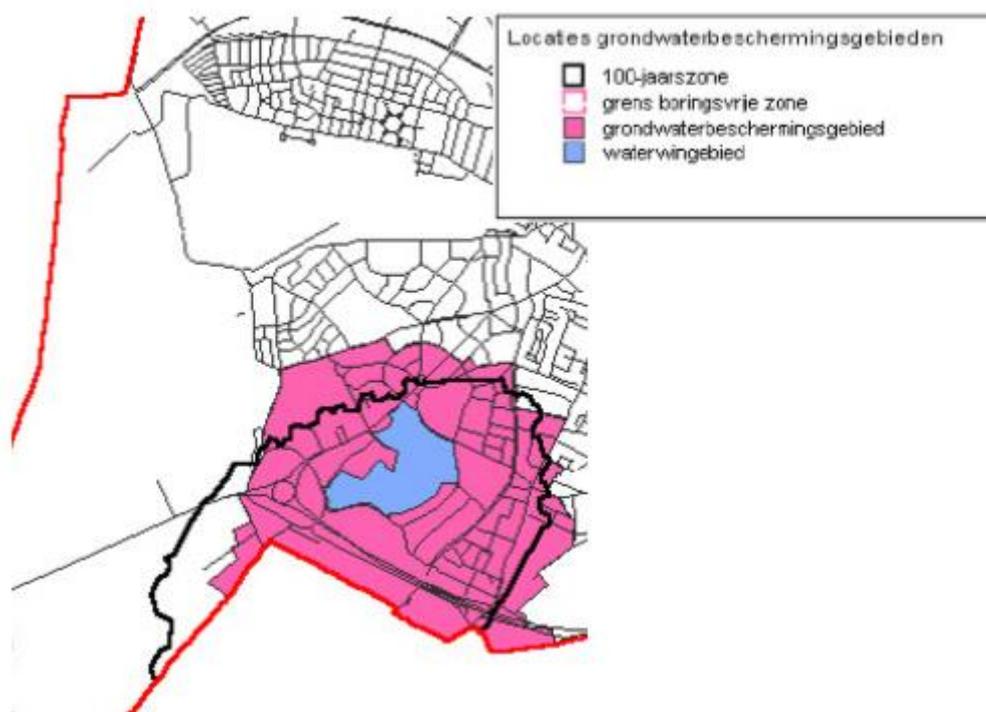


Figure 19. This map indicates the soil-protective areas at the West Tangent (SEA report 2015).

8.3 Limitation act group

As Academic Consultancy Team we experienced some struggles, which are described below.

Time constraint

We had a total of eight weeks to carry out this study. The first three weeks we worked (half days) in order to analyse the situation and write a research proposal. Another four weeks were available for the realization of the actual research and writing of the report. During these weeks we also attended several meetings with, for instance, the commissioner and interviews with selected stakeholders (for which we had to go to Amersfoort), which was time consuming. During the last week the report was turned in and we had to present our study. Consequently, the time to conduct our research was limited, which minimised the possibility

to look for plenty of references to support arguments. Therefore, we provided this report/booklet as overview concerning the three research objectives instead of diving into all aspects of the conflict in Amersfoort.

Organizational risks

Regarding the organizational risks we anticipated beforehand, we can look back to efficient scheduling with different stakeholders; we only had to go to Amersfoort once with the whole group. To conduct the SWOT analysis two members went there for two days. This was beneficial for the time we could spend on the project.

Data & information retrieving

To perform our research, we faced the issue of not being completely clear of which documents contained information for our study or what was available. For this we did a lot of (online) research in which we obtained a lot of important documents. However, we encountered that there are multiple versions available from the same document, for example the SEA. Another difficulty we encountered is that there were a lot of different documents available with small alterations, mainly concerning the scenario descriptions. Due to this we decided to make the overview ourselves (in English). Additionally, concerning the scenario description we experienced the difficulty that not everything was stated clearly. For instance, the exact amount of nature compensation was not indicated explicitly. There was an indication that measures will be implemented in the future with examples, but not accurately or how this would affect the area. Additionally, we received information about the 10+ scenario which was not matching our expectations, which hampered our study and resulted in adapting our methodology and research goals compared to the proposal.

Dutch literature

Since this project focuses on the municipality of Amersfoort in the Netherlands all literature was available only in Dutch. Since more than half of our team members are non-native Dutch speakers this held back the pace of our work and restrained the amount, since we had to translate (the main line of) several documents.

Expertise

As ACT team students from different disciplines were represented in our group. However, the studies we conducted were not all within the area of our expertise, for instance the assessment of the Cost Benefit Analyses. This complicated the research we had to perform, but since the group consisted of seven members, we managed to meet our objectives.

8.4 Goal study

Despite the limitations and the adaptation of certain aspects within our study we believe that we accomplished the goal by creating an overview and hence a better understanding on the situation at the West-Tangent. With this study we analyse the situation by answering our research question. The issues detected are stated in the conclusion and possible solutions are presented in the chapter Recommendations. These will hopefully contribute to a better future perspective of the West-Tangent.

8.5 Overall conclusions

Based on the results that we have obtained from our study and on the discussion that we provided, in this chapter we briefly present our main conclusions.

As a group, with our different expertise (and despite our gaps in knowledge), we can state that we reached our main goal for this project, since we added to a better understanding of the situation regarding the West Tangent project. In particular, we believe that the overview that we developed regarding the scenarios and the communication between the stakeholders highlights, what we think are, the missing aspects and the unclear ones. In addition, we argue that this report provides an added value to the current situation and useful recommendations addressed to the main stakeholders engaged.

In relation to the research questions we claim that comparing scenario 7B (2015) and 10+ in terms of environmental effects (the second research question), was not possible due to the description of 10+, and so we were not able to completely assess that questions.

In fact, we faced that the data available for the 10+ scenario is not sufficient to compare it with scenario 7B (2015), regarding environmental effects and nature compensation. Further information and a detailed description, including an ordered list of measures, support of the measures and the effects these measures have on the surrounding area should be made for 10+ (2015). For the 7B (2015) scenario, we reached the conclusion that the municipality should include argumentations for the changes compared to the 2013 variant, justifying and explaining them.

Regarding the ecological assessment, we conclude that all the needed research has been conducted. However, the impact of the measures for the 7B (2015) scenario on ecological function of the area should be substantiated more in depth. Also, we conclude an additional report or note should mention if and which species have gained protection after entry of the new Nature Conservation Act, and which species became Red List species. For the compensation area Melksteeg there should already been done an ecological assessment, and a compensation plan ready, as the plan is to implement 7B (2015) as soon as possible.

According to our findings of the assessment of the CBA of scenario 7B (2013), a new CBA should be performed for scenario 7B (2015). In fact, we noticed that the changes between scenario 7B 2013 and 2015 have effects on the CBA, but a qualitative approach is not enough. Another important remark is that the municipality has selected the scenario 7B (2015) without developing a new CBA, thus we again argue that a new one is needed.

Regarding the SEA report, not all possible impacts are elaborated and taken into account in the assessment. Detailed descriptions and references for the assessment criteria are also missing. We hope that the critical assessment we developed on that report is useful to show the missing aspects, which can be researched further for an improved report.

From the data of the SWOT analysis it can be concluded that, between the municipality and the local residents, there is a lack of understanding and of an open and positive communication. Measures have to be taken to improve the trust between these two parties, to facilitate coping with each other in this complex situation. We found out that a reason of this lack of understanding are also the unclear descriptions and definitions of the scenarios themselves. We can conclude that if, for example, the residents develop a more clear and detailed description of scenario 10+, chances to be taken seriously by the municipality may increase. Moreover, the traffic problem is differently perceived by the stakeholders, which also results in a lack of understanding.

Overall, we argue that the municipality could reconsider the implementation of scenario 7B (2015), as it is a massive and expensive project; when small and focused changes of the current situation could lead to positive effects as well. According to the previous point we also conclude that the necessity of that infrastructural project could be reconsidered and maybe invest that money on climate change mitigation measures and on improving the public transports.

Chapter 9: **RECOMMENDATIONS**

Chapter 9: RECOMMENDATIONS

Overview of chapter

In this final chapter, the recommendations made throughout the report are briefly summarized, as well as the aim of having them. In addition, our suggestions are presented in groups, according to the stakeholders that could implement them.

Last but not least, we will present our recommendations, which could be used as guidelines for the achievement of our initial goal; to enhance the understanding of the current situation at the West Tangent. As we have demonstrated in the previous chapters, several aspects of scenarios 7B (2015) and 10+, related to our analysis, are missing and we identified possible knowledge gaps. Consequently, the aim of the following paragraphs is to clearly present what could be improved and assessed in the future, according to the subjects of all our research questions. The recommendations in this chapter are obtained from the recommendations provided per topic/chapter, hence these are presented in the form of bullet points. Additionally, our suggestions are grouped based on the stakeholders to which they are addressed to. Specifically, these final remarks/recommendations are addressed towards: the commissioner, Wageningen Economic Research; the Municipal Council of Amersfoort and Province Government of Utrecht; and finally, to the resident and interest groups involved in the West Tangent project.

9.1 Addressing Wageningen Economic Research

These recommendations mainly concern the improvement of a CBA, which will be beneficial for future research performed by Wageningen Economic Research. Based on the results and the discussion concerning the developed CBA* for scenario 7B (2015) in Chapter 5, we recommend:

- a quantitative evaluation of the CBA for scenario 7B (2015) has to be created, to know the exact balance of the CBA for 2015 and to be able to compare it with the CBA for scenario 7B (2013)
 - an evaluation of the CBA for scenario 7B (2015), considering changes in aspects for different sub areas, subsequently calculation of the net change in the whole study area (as performed in the CBA for scenario 7B 2013).
- to provide more references or arguments to support the changes in the CBA for scenario 7B (2015).
- to consider in the CBA for scenario 7B (2013) and (2015) a kind of stakeholder analysis in order to analyse which group(s) will experience advantages and disadvantages due to the implementation of the scenario.
- to implement additional aspects on both CBAs, such as:
 - costs for the measures to cope with the groundwater,
 - the biodiversity loss,
 - the health related to the presence or absence of the trees and nature,
 - the changing price of the houses affected by the infrastructural changes.
- to investigate the effects of changes of traffic on other locations within the area of the West-Tangent.

9.2 Addressing the public sector

9.2.1 Municipal Council

Our recommendations towards the municipality of Amersfoort concern the selected scenario 7B (2015), as well as the SEA report conducted, the planned nature compensation and aspects of communication with the residents.

Recommendations for scenario 7B (2015)

Regarding scenario 7B (2015) we recommend:

- to include arguments why the changes on scenario 7B (2013) to create 2015 are made and to include an explanation how to deal with possible negative effects

SEA evaluation

Based on the critical evaluation of the SEA report of Chapter 6, we believe that the municipality should contact the agency hired for the performance of the SEA and forward the following suggestions:

- to characterize the scoring system and assessment criteria with more clarity and to support those with detailed explanations, to strengthen their value.
- to add references and clear arguments to support the conclusions as stated in the report.

Additionally, due to the lack of information regarding the water management, we would suggest conducting an environmental research on the aspect of water in the study area, especially regarding the water quality which is pumped up near the *Stichtse Rotonde* and which could be (negatively) affected by the infrastructural changes. This aspect, in combination with the respective costs, should also be included in the (new) CBA.

Remarks about nature regulation and compensation

Based on Chapter 4 regarding the nature compensation planned for scenario 7B (2015), we suggest:

- to assess the impact on the Red List species that have been added considering the new NCA that applies.
- to analyse the updated Excel sheet (2016) from Bureau Waardenburg for the protection regimes under the new NCA.
- to further assess the damage on foraging and regular flight routes of bats.
- to perform an inventory on the protected species at the Melksteeg before logging of the trees that are protected under the NCA takes place.
- to do another assessment for the impact on, especially, the old forest cores and multi-trunk trees that are in the planning area.
- to create a forest compensation plan, whereby the scenic value that the area has at this moment should be taken into account.
- to elaborate more on the favourable state of conservation.
- to describe the biodiversity of the area (biodiversity index) in order to implement this aspect in the CBA.
- to consider recreational/ recreational functions and value of the natural area (forests).
- to consider the challenges and responsibilities the municipality (and the rest of the Netherlands) has to innovate in sustainable ways of transportation.
- to consider the regulating ecosystems services the forests provide in terms of air quality, and the value this has for air quality.

Remarks about the communication

Based on the SWOT analyses, we recommend:

- to formulate a shared problem definition together with the residents.
- to investigate the traffic situation before the participation process in the future.
- to define a clear set of basic conditions regarding decision making processes.
- to define a clear set of basic conditions for the participation.
- to make use of the democratic cube to design the participation process.

- to participate in facilitation sessions with a neutral facilitator to add to a better understanding between the different actors.
- to achieve a common understanding of the problem.

9.2.2 Recommendations for the Province Government

According to our discussion and conclusions in Chapter, we would like to address the following suggestions to the Province Government. We would recommend:

- to question once more if the necessity of the project is valid.
- to take another look at the project and other ideas for changes that improve the traffic, such as:
 - the use of smaller and more local infrastructural changes
 - the improvement of the public transport
- to consider and implement efforts concerning the mitigation of climate change.
- to define legislative instruments in order to enforce the nature compensation measures will take place.
- to update the registration of the forests areas within the province, regarding borders, size and characteristics
- to assess the alternative solutions, argumentation, legal interest and favourable state of conservation of protected species for the West-Tangent project.

9.3 Addressing the residents committee

The recommendation addressed to the residents are mainly related to the scenario 10+ description but also concern the communication with the municipality.

Remarks about the 10+

Based on the provided scenario 10+ description and the available information, we would suggest:

- to include argumentation (if possible) for the specific changes in the scenario description.
- to explain the different plans thoroughly, by providing details and a description of all the effects.
 - at least regarding the amount of nature which will be removed or compensated for.
- to make a list with the order of the changes which will be implemented, to be able to analyse the scenario (stepwise).
- to indicate, if changes will take place, whether changes at other locations will occur.
- to provide one single description only concerning the scenario itself, without referring to others for instance.
- to clarify the map of the scenario.
- to perform an ecological assessment of scenario 10+, whereby it becomes clear what the impact of the scenario would be. When this is concrete, it is possible to compare the information of the 7B (2015) scenario with the 10+ scenario.

Remarks about the communication

Based on the SWOT analyses, we would like to recommend:

- to formulate a shared problem definition together with the municipality.
- to participate in facilitation sessions executed by a neutral facilitator to add to a better understanding between the different actors.
- to achieve a common understanding of the problem.

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APPENDICES

APPENDIX A | Stakeholder Analysis

The main stakeholders, as described in the Chapter 1, with their interests and challenges are provided in Table A1. Local parties within Municipality and their stance to the scenario 7B (2015) are provided in Table A2. In Table A3 the other actors engaged in the infrastructure plan are presented.

Table A1. The main stakeholders, their interests and challenges.

Stakeholder	Interest and strategies	Challenges and problems
Municipal Council of Amersfoort	Decided on the plan 7B (2015) in 2016	Faces resistance from different interest groups on the decision to implement the plan
	Want to implement and carry out the plan as soon as possible	Have been working on the project for a long time and still have not implemented it
		Several parties with different viewpoints on the project (see Table 2)
Committee Famous Women Neighbourhood	Disagrees with municipalities decision to choose scenario 7B	Due to the new elections power dynamics changed as new parties entered the council
(Beroemde Vrouwenbuurt)	Created scenario 10+	Few legal options to prevent the plan of the municipality are available
	Their aim is to have the plan 10+ considered by the municipality	Are not feeling heard by the municipality regarding their developed scenario
	10+ depicts a more efficient scenario regarding the traffic issue in the area	Lack evaluation and comparison of their plan
	They asked Science Shop Wageningen to make a cost benefit analysis for their plan	Have low decision-making power
	Teamed up with the SGLA, VBBBB and SWB to act against the plan of the municipality	Need crowdfunding to conduct research
Local residents, group D. Fockemalaan	Agrees with scenario 7B	Are to a certain degree dependent on the other groups they teamed up with
SGLA	Are against the 7b scenario	Little legal options are left to act against the plan of the municipality
(Samenwerkende groeperingen Leefbaar Amersfoort)	Teamed up with SWB,CBV and VBBBB to act against the plan of the municipality.	Need crowdfunding for further research
		Are to a certain degree dependent on the other actors they teamed up with
SWB	Are against the 7b scenario	Little legal options are left to act against the plan of the municipality
	Teamed up with CBV, VBBBB and SGLA to act against the plan of the municipality.	Need crowdfunding for further research
(Stichting Woonklimaat Berg)		Are to a certain degree dependent on the other actors they teamed up with
VBBBB	Are against the 7b scenario	Little legal options are left to act against the plan of the municipality
(Vereniging Behoud Bos Birkhoven en Bokkeduinen)	Teamed up with SWB,CBV and SGLA to act against the plan of the municipality.	Need crowdfunding for further research
	Disagree especially with the amount of nature that will be destroyed	Are to a certain degree dependent on the other actors they teamed up with
OLV Ter Eem (old monastery)	Negatively affected by scenario 7B (2015)	A small amount of trees has already been cut down
		Peacefulness should remain
Zoo, DierenPark Amersfoort	Are willing to make changes to their enterprise for an improved accessibility	Entrance road will have to change with 7B A new parking garage is going to be built

Table A2. Local parties within Municipality and their stance to the scenario 7B (2015).

Parties	Support/Against the project
D66	Support
VVD	Support
CDA	Support
Christenunie	Support
PVDA	Support
Amersfoort 2014	Against
SP	Against
Burger partij Amersfoort	Against
Groenlinks	Neutral

Table A3. other actors engaged in the infrastructure plan

Actors	Tasks
Arcadis (Engineering Company)	Dutch design and consultancy company for natural and built assets. Arcadis is currently optimizing the chosen scenario.
Bureau Waardenburg (Ecological Analysis Consultancy)	Performed an environmental assessment and assessed nature compensation on scenario 7B (2013).
Royal Haskoningdhv	Performed a study on the air quality of the zoning plan in 2015.
Bureau Ruimtewerk (Engineering Consultancy)	Executed an ecological analysis for the plan 7B (2015).
Sweco (Engineering Consultancy)	Designing the concrete construction plan for implementation of scenario 7B.
Nederlandse Spoorwegen and ProRail	Manage barriers of the railway regularly. Expect to increase train traffic by 30%.
Bureau XTNT	Conducted research on the traffic of the affected area.
Science Shop Wageningen	The local resident group A. Jacobslaan contacted the non-profit organization of WUR, the science shop, with the question to assess scenario 10+ with a Cost-Benefit Analysis (CBA).
Wageningen Economic Research WUeR	Conducted cost benefit analysis for different scenarios of the municipality considering the West Tangent. Will be conducting a cost benefit analysis of the scenario 10+ of the interest groups.

APPENDIX B | Cost Benefit Analysis

Table B1. English explanation of the (numbered) conditions used in the development of the adapted CBA (CBA*).

Condition	Explanation
2	Research
2.12	All the possible scenarios will be weighted in a Strategic Environmental Assessment (SEA) which will not be limited to the environmental effects only but also looking to further (traffic) alternatives[AS1] . Additionally, a CBA will be performed on all scenarios in which at least the quality of the environment, the costs of the different alternative possibilities in relation of the social benefits and the financial consequences for real estate will be balanced.
5	Spatial model
5.2	The 'red' developments are being approached with caution. A boundary condition of the project is that the green and the character of the landscape will be preserved or enforced.
6	Improvement of traffic flow
6.4	There will be an overall review on the area considering the built area, infrastructure, landscape and environment.
6.5	The solution has to be an improvement for all residents and users.
6.6	The solution need to preserve or improve the effects on the environment in the adjacent neighbourhoods. Ecological damage will be compensated preferably in the near area or at least within Amersfoort.
6.7	The solution should lead to preserve or improve the liveability of the adjacent neighbourhoods (traffic safety and reachability). Therefore it is not preferred that the B. Wuytierslaan will be a dead end road.
6.8	All houses, enterprises, businesses, and facilities should be easy and safely accessible.
6.11	If the best solution is the development of a new route, the following conditions apply:
	a. The route should fit adequately in the landscape
	b. The new route should not form a barriers in between the neighbourhood and the green area
	c. Green connections should be implemented where possible
6.12	If changes need to apply to the Daam Fockemalaan,
	a. The quality and solutions should be good for the spatial and urban development
	b. The changes should result in an easily accessible and safe traffic area in coherence with the Bergkwartier (neighbourhood)

Table B2. Variables used for the development of the adapted CBA (CBA*).

CBA	Specified	Unit	Condition	
Users				
Saved travel time, reliability of travel time estimation, traffic safety	Live/work	Hours per year, euros per year	6.4, 6.7, 6.8	
	Business	"	"	
	Other	"	6.4, 6.7, 6.8	
Saved travel time and changing costs for non-cars		"	6.4, 6.7, 6.8	
Indirect effects				
Connectivity for businesses		Qualitative	6.8	
External effects				
Effects on quality of environment	Noise	Ha residential area > 48 dB	2.12, 6.4, 6.6, 6.7, 6.11	
	Odour	Ha with odour nuisance	2.12, 6.4, 6.6, 6.7	
	trembling	Hz	"	
	Social safety and connection for emergency services	Deaths a year		2.12, 6.4, 6.7, 6.8, 6.12
		Wounded persons a year		
		Material costs a year		
View, quality of view, cultural heritage	Qualitative		2.12, 6.4, 6.6, 6.7, 6.10, 6.11, 6.12	
Nature	Intersection	Qualitative	2.12, 5.2, 6.6, 6.11	
	Disturbance	Ha > 48 dB	"	
	Loss of habitat	Ha nature	"	
Recreation: areal loss	Inheritance value culture historical landscape	Ha	2.12, 5.2, 6.4, 6.11	
Recreation disturbance	Cyclist	Ha > 48 dB	"	
	Walkers	"	"	
Air quality	Fine matter	Emissions from vehicles	2.12, 6.4, 6.6	
	SO2	"	"	
	NOx	"	"	
Climate		CO2 emission	2.12, 6.4	
Quality of public transport		Hours delay a year		
Other	Effect of nature on mental health			
	Light disturbances			
	Not exploded explosives			
Total effects				
Costs investments and maintenance				
<i>Investments</i>		Total costs investments		
Infrastructure	Viaduct		2.12, 6.4	
	Tunnel		"	
	Road widening		"	
Moving sport fields			"	
Mitigating arrangements	Nature compensation		2.12, 6.4, 6.6	
	Noise barriers			
<i>Maintenance</i>		Total costs maintenance		
Infrastructure	Viaduct		2.12, 6.4	
	Tunnel		"	
	Road widening		"	
Moving sport fields				
Mitigating arrangements	Nature compensation		2.12, 6.4, 6.6	
	Noise barriers		"	
Total costs				
Balance			6.5	

APPENDIX C | Strategic Environmental Analysis

Table C: Assessment criteria and description of the scoring system. Source: SEA report 2015 (translated from Dutch).

Aspect	Topic Sub-aspect	Assessment		Grading		
		Assessment criteria	Good	Sufficient	Insufficient	Poor
TRAFFIC	Intensity	Number of motor vehicles per 24 hours.	Good traffic flow on main roads.	Limited blocking of traffic on 1 main road.	On 1 or 2 main roads regularly blocking traffic.	2 or more main roads almost daily block of traffic.
		Travel time and / or average speed	Improvement > 50%	Improvement between 50 and 75%	Improvement <25%	No improvement
	Bicycle traffic	Improvement / deterioration				
		Public transport				
		Emergency services				
NOISE	Noise-affected dwellings due to road traffic noise	Number of dwellings per hindrance score (number of dwellings with a higher load than 48 dB times a factor) and an indication of road lengths with noise-affected dwellings.	Decrease >10%	Current situation +/- 10%	Increase >10%	Increase <10%
		Legal standards	The yearly average of NO2 concentration is well under the limit value (<35µg/m3); the hourly average concentration <10 exceedances.	The yearly average of NO2 concentration is slightly under the limit value (35-40µg/m3); the hourly average concentration <18 exceedances.	The yearly average of NO2 concentration is the same or slightly under the limit value (40µg/m3); the hourly average concentration >18 exceedances.	The yearly average of NO2 concentration is higher than the limit value (>40µg/m3); the hourly average concentration >18 exceedances.
AIR QUALITY	PM10	Legal standards	The yearly average of PM10 is well under the limit (<35µg/m3); the hourly average concentration <20 exceedances.	The yearly average of PM10 is slightly under the limit (35-40µg/m3); the hourly average concentration <35 exceedances.	The yearly average of PM10 is the same or slightly under the limit (40µg/m3); the hourly average concentration >35 exceedances.	The yearly average of PM10 is higher than the limit (>40µg/m3); the hourly average concentration >35 exceedances.
		Situation-related risk	No exceedances of the PR with (limited) vulnerable objects.	No exceedances of the PR with vulnerable objects; =/< 10 limits vulnerable objects within the PR 10-6 contour.	No vulnerable objects within the PR 10-6 contour; =/> 10 limits vulnerable objects within the PR 10-6 contour.	1 or no vulnerable objects within the PR 10-6 contour; =/> 10 limits vulnerable objects within the PR 10-6 contour.
EXTERNAL SECURITY	Transport of dangerous goods by road	Group risk (GP)	The GR is less than 0.1 times the orientation value.	The GR is less than the orientation value (between 0.1 and 1).	The GR is higher than the orientation value, but not more than two times the orientation value.	The GR value is more than two times the orientation value.
		Presence on route	No explosives			Many explosives in the trace
NATURE	Ecologische Hoofd Structuur (EHS)	Functioning current and / or intended ecosystem / nature purpose type (Nature: EHS 1)	No damage to natural values / No damage to old forest cores	Damage to Moderate natural values / Only damage of Valuable old forest cores	Damage to Reasonable natural values / Degradation of Particularly Valuable old wood cores	Damage to Good or Excellent natural values / Degradation of Particularly Valuable old forest cores
		Unit / size and connections in or between nature areas (ecological connection zones) (Nature: EHS 2)	No reduction area or damage of connections	Hardly reducing EHS area or damaging connections	Loss of less than 1 ha and damage to connections	Loss of more than 1 ha of EHS and damage to connections
	Protected and endangered species	Degree of disruption and destruction (Nature: Species)	Prevention of heavily protected and threatened species has a positive trend.	Occurrence of heavily protected and endangered species is stable.	Prevention of heavily protected and endangered species has a negative trend.	Prevention of heavily protected and endangered species has a strongly negative trend.

SOIL	Soil quality	Crossing of registered and suspect locations	The soil is mostly clean. The soil meets the local soil quality.	Some cases of light to moderate soil contamination. No human or ecological risks.	Some cases of light to serious soil contamination. Control measures have been taken. No human or ecological risks.	Cases of serious soil contamination with human or ecological risks (emergency/locations). Many or large cuts / large degradation
	Geomorphology	Degree of intersection and / or damage to morphological characteristics of the plan area	No intersections / damage			
WATER	Waterlogging	Preventing flooding	No flooding	One case of flooding per year.	Several cases of flooding per year.	Chronic flooding
	Chemical surface water quality - Bosbad	KWR- guidelines	The chemical water quality meets the KRW- guidelines.	For a maximum priority substance, the KRW- guidelines are slightly exceeded.	For a single priority substance a large overrun of the KRW- guideline value is well exceeded.	For multiple priority substances the KRW- guideline value is well exceeded.
	Ecological surface water quality - Bosvijver	Nitrogen deposition	The ecological water quality meets the good ecological potential.			The surface water bodies meet the Good Ecological Potential.
LANDSCAPE	Landscape type and structure	Loss of characteristic structures, patterns and elements (Landscape structure 1)	No loss			Significant loss
		Deterioration and / or addition of image-determining elements (Landscape structure 2)	No degradation			Significant degradation
	Spatial-visual characteristics	Danger of visibility of features (Landscape characteristics 1) Damage to deterioration (Landscape characteristics 2)	No degradation No degradation			Significant degradation Significant degradation
CULTURAL HISTORY	Earth values	Impairment of the geologically valuable areas	No degradation			Significant degradation
	Historical geography	Change culturally historical patterns, valuable structures	No change			Significant change
	Historic (urban) construction	Affecting monuments (Monuments)	No monuments affected	10% of monuments affected	25% of monuments affected	50% of monuments affected
ARCHEOLOGY	Well-known archaeological sites (Archeological sites)	Expected impact of the planned intervention on the value and size of known archaeological sites	Quality of existing archaeological values is strengthened by design and management measures.	Quality of archaeological value remains intact.	Quality of existing archaeological value is reduced by destruction, intersection, excavation.	Quality of existing archaeological value is removed by the loss of those archaeological values.
	Areas with expected value (Archeological value)	Expected impact of the planned intervention on the value and size of areas with high expected value	Quality of existing archaeological values is strengthened by design and management measures.	Quality of archaeological value remains intact.	Quality of existing archaeological value is reduced by destruction, intersection, excavation.	Quality of existing archaeological value is removed by the loss of those archaeological values.
SOCIAL ASPECTS	Social safety	Qualitative: improvement / deterioration	No deterioration			Significant deterioration
	Demolition of homes Accessions to homes and plots (Accessibility)	Several Exclusivity: improvement / deterioration	No demolition Improvement of accessions	No deterioration of accessibility	Limited deterioration	Large numbers of demolition Large deterioration
HEALTH		Qualitative / number of dwellings charged with both noise and emissions	No deterioration			Large deterioration

APPENDIX D | Nature compensation

Table D1. Overview of prohibitions in the Nature Conservation Law 2017 (in Dutch: Wet natuurbescherming) per protection regime. Source: Ministerie van Economische Zaken, 2016).

Bird Directives (§ 3.1 NCA)	Habitat Directives (§3.2 NCA)	Other species (§3.3 NCA)
Art. 3.1 part 1. It is prohibited to kill or capture wild birds.	Art. 3.5 part 1. It is prohibited to kill or capture species in their natural dispersal area.	Art. 3.10 part 1a. It is prohibited to kill or capture species.
Art. 3.1 part 2. It is prohibited to <i>intentionally</i> destroy or damage nests, resting places or eggs of birds, or to remove their nests.	Art. 3.5 part 4. It is prohibited to destroy or damage breeding- or resting sites of animals.	Art. 3.10 part 1b. It is prohibited to <i>intentionally</i> destroy or damage permanent breeding- or resting sites of animals.
Art. 3.1 part 3. It is prohibited to collect eggs and possess these.	Art. 3.5 part 3. It is prohibited to <i>intentionally</i> destroy or collect eggs of animals in nature.	Not applicable
Art. 3.1 part 4 and part 5. It is prohibited to <i>intentionally</i> disturb birds, unless the perturbation is not of significant influence on the 'favourable state of conservation' of the respective bird species.	Art. 3.5 part 2. It is prohibited to <i>intentionally</i> disturb animals.	Not applicable
Not applicable	Art. 3.5 part 5. It is prohibited to <i>intentionally</i> remove, pick, collect, cut, uproot, damage or destroy plant species in their natural dispersal area.	Art. 3.10 part 1c. It is prohibited to <i>intentionally</i> remove, pick, collect, cut, uproot, damage or destroy plant species in their natural dispersal area.

Table D2. Surcharge per hectare (expressed in hectares) for recovery time of the forest that will be lost, as addition to the required one-on-one forest compensation. Source: Beleidsregels Natuur en Landschap provincie Utrecht, 2017.

Recovery time (years)	Surcharge per ha
<10	0,1
10-50	0,3
50-100	0,5
>100	0,7

Table D3. Surcharge per hectare (expressed in hectares) for presence of rare and endangered species in the forest that will be lost, as addition to the required one-on-one forest compensation. Source: Beleidsregels Natuur en Landschap provincie Utrecht, 2017.

Number of species	Surcharge per ha
1	0,1
2	0,2
3	0,3
4	0,4
...	
≥10	1

Table D4. Pillars with accompanied goals regarding nature of the province of Utrecht. Source: Nature vision province Utrecht 2017.

Pillar		Goal		Approach
1	Nature in a robust network	1	Develop new nature	active
		2	Secure space for nature	passive
		3	Connect nature	active
2	Nature with quality	1	Perpetuate nature quality	active
		2	Improve nature quality	active
		3	Protect species	passive
3	Experience and Involve	1	Improve experiential value of Utrechts nature	active
		2	Increase social involvement with nature	active
4	Towards sustainable financing and utilization	1	Optimize existing and new funding sources	active
		2	Promote sustainable use of nature	active
5	Monitor balance	1	Find a balance between conservation and development	active/passive
		2	Promote balance in species populations	active
		3	Preserve the balance between different types of nature	passive

Table D5. Red List species that were found in the research area of the West Tangent in 2011. Source: Bureau Waardenburg, 2011.

Dutch name	Scientific name	English name
Beemdkroon	<i>Knautia arvensis</i>	Field scabious
Boerenzwaluw	<i>Hirundo rustica</i>	Barn swallow
Bremzandbij	<i>Andrena ovatula</i>	Small gorse mining-bee
Bruinsprietwespbij	<i>Nomada fuscicornis</i>	Small guernsey nomad
Donkere zomerzandbij	<i>Andrena nigriceps</i>	Black headed mining-bee
Dwergviltkruid	<i>Filago minima</i>	
Groot dikkopje	<i>Ochlodes sylvanus</i>	Large skipper
Groot koolwitje	<i>Pieris brassicae</i>	Cabbage white
Grote tijm	<i>Thymus pulegioides</i>	
Gulden sleutelbloem	<i>Primula veris</i>	Common primrose
Hazelworm	<i>Anguis fragilis</i>	Blindworm
Heideblauwtje	<i>Plebejus argus</i>	Silver-studded blue
Heidezandbij	<i>Andrena fuscipes</i>	Heather mining-bee
Heivlinder	<i>Hipparchia semele</i>	Grayling
Hondsviooltje	<i>Viola canina</i>	
Huismus	<i>Passer domesticus</i>	House sparrow
Keizersmantel	<i>Argynnis paphia</i>	Silve-washed fritillary
Klein warkruid	<i>Cuscuta epithymum</i>	
Konijn	<i>Oryctolagus cuniculus</i>	European rabbit
Korenbloem	<i>Centaurea cyanus</i>	Cornflower
Kruiskruidzandbij	<i>Andrena denticulata</i>	Grey-banded mining-bee
Laatvlieger	<i>Eptesicus serotinus</i>	Serotine bat
Nachtzwaluw	<i>Caprimulgus europaeus</i>	European nightjars
Raaf	<i>Corvus corax</i>	Common raven
Ringslang	<i>Natrix natrix</i>	Grass snake
Rode koekoekshommel	<i>Bombus rupestris</i>	Cuckoo bumblebee
Rosse Vleermuis	<i>Nyctalus noctula</i>	Common noctula
Sikkelsprinkhaan	<i>Phaneroptera falcata</i>	Sickle-bearing bush-cricket
Stekelbrem	<i>Genista anglica</i>	
Vroege Glazenmaker	<i>Aeshna isoceles</i>	
Zandhagedis	<i>Lacerta agilis</i>	Sand lizard
Zoemertje	<i>Stenobothrus lineatus</i>	Stripe-winged grasshopper

Table D6. Icon species of Utrecht that were found in the research area of the West Tangent in 2011. Source: Bureau Waardenburg, 2011.

Dutch name	Scientific name	English name
Donkere zomierzandbij	<i>Andrena nigriceps</i>	Black headed mining-bee
Kruiskruidzandbij	<i>Andrena denticulata</i>	Grey-banded mining-bee
Hazelworm	<i>Anguis fragilis</i>	Blinworm
Ringslang	<i>Natrix natrix</i>	Grass snake
Zandhagedis	<i>Lacerta agilis</i>	Sand lizard
Franjestaart	<i>Myotis nattereri</i>	Natterer's bat

Table D7. Bird Directives species that were found in the research area of the West Tangent in 2011. Source: Bureau Waardenburg, 2011.

Dutch name	Scientific name	English name	Year-round
Appelvink	<i>Coccothraustes coccothraustes</i>	Hawfinch	
Boerenzwaluw	<i>Hirundo rustica</i>	Barn swallow	
Bonte Vliegenvanger	<i>Ficedula hypoleuca</i>	European pied flycatcher	5
Boomklever	<i>Sitta europaea</i>	Nuthatch	5
Boomleeuwerik	<i>Lullula arborea</i>	Woodlark	
Boompieper	<i>Anthus trivialis</i>	Tree pipit	
Bosuil	<i>Strix aluco</i>	Tawny owl	5
Buizerd	<i>Buteo buteo</i>	Buzzard	4
Carolina-eend	<i>Aix sponsa</i>	Carolina duck	
Fluiter	<i>Phylloscopus sibilatrix</i>	Wood warbler	
Gekraagde Roodstaart	<i>Phoenicurus phoenicurus</i>	Common redstart	5
Glanskop	<i>Poecile palustris</i>	Marsh tit	
Goudhaan	<i>Regulus regulus</i>	Goldcrest	
Goudvink	<i>Pyrrhula pyrrhula</i>	Eurasian bullfinch	
Grasmus	<i>Sylvia communis</i>	Common whitethroat	
Grote Bonte Specht	<i>Dendrocopos major</i>	Great spotted woodpecker	5
Havik	<i>Accipiter gentilis</i>	Nothern goshawk	4
Huisemus	<i>Passer domesticus</i>	House sparrow	2
Kleine Bonte Specht	<i>Dendrocopos minor</i>	Lesser spotted woodpecker	
Kuifmees	<i>Lophophanes cristatus</i>	European crested tit	
Merel	<i>Turdus merula</i>	Common blackbird	
Nachtzwaluw	<i>Caprimulgus europaeus</i>	European nightjars	
Pimpelmees	<i>Cyanistes caeruleus</i>	Eurasian blue tit	5
Raaf	<i>Corvus corax</i>	Common raven	5
Roodborst	<i>Erithacus rubecula</i>	European robin	
Roodborsttapuit	<i>Saxicola rubicola</i>	European stonechat	
Scholekster	<i>Haematopus ostralegus</i>	Common pied oystercatcher	
Sperwer	<i>Accipiter nisus</i>	Eurasian sparrowhawk	4
Staatmees	<i>Aegithalos caudatus</i>	Long-tailed bushtit	
Visarend	<i>Pandion haliaetus</i>	Western osprey	
Vuurgoudhaan	<i>Regulus ignicapilla</i>	Common firecrest	
Zwarte Mees	<i>Parus ater</i>	Coal tit	5
Zwarte Roodstaart	<i>Phoenicurus ochruros</i>	Black redstart	5

Table D8. Habitat Directives protected species (birds and not-birds) that were found in the research area of the West Tangent in 2011. Source: Bureau Waardenburg, 2011.

Dutch name	Scientific name	Engelish name
Boomklever	<i>Sitta europaea</i>	Nuthatch
Gewone Dwergvleermuis	<i>Pipistrellus pipistrellus</i>	Common pipistrelle
Gewone grootoorvleermuis	<i>Plecotus auritus</i>	Common long-eared bat
Goudhaan	<i>Regulus regulus</i>	Goldcrest
Havik	<i>Accipiter gentilis</i>	Nothern goshawk
Laatvlieger	<i>Eptesicus serotinus</i>	Serotine bat
Roodborsttapuit	<i>Saxicola rubicola</i>	European stonechat
Rosse Vleermuis	<i>Nyctalus noctula</i>	Common noctule
Ruige Dwergvleermuis	<i>Pipistrellus nathusii</i>	Nathusius' pipistrelle
Sperwer	<i>Accipiter nisus</i>	Eurasian sparrowhawk
Visarend	<i>Pandion haliaetus</i>	Western osprey
Vuurgoudhaan	<i>Regulus ignicapilla</i>	Common firecrest
Waternvleermuis	<i>Myotis daubentonii</i>	Doubenton's bat
Zandhagedis	<i>Lacerta agilis</i>	Sand lizzard
Zwarte Mees	<i>Periparus ater</i>	Coal tit
Zwarte Roodstaart	<i>Phoenicurus ochruros</i>	Black redstart

Table D9. Nationally protected that were found in the research area of the West Tangent in 2011. Source: Bureau Waardenburg, 2011.

Dutch name	Scientific name	English name
Hazelworm	<i>Anguis fragilis</i>	Blind worm
Ringslang	<i>Natrix natrix</i>	Grass snake
Eekhoorn	<i>Sciurus vulgaris</i>	Red squirrel

Table D10. Exempted species that were found in the research area of the West Tangent in 2011. Source: Bureau Waardenburg, 2011.

Dutch name	Scientific name	English name
Bosmuis	<i>Apodemus sylvaticus</i>	Wood mous
Bruine Kikker	<i>Rana temporaria</i>	Common frog
Gewone Pad	<i>Bufo bufo</i>	Common toad
Konijn	<i>Oryctolagus cuniculus</i>	European rabbit
Ree	<i>Capreolus capreolus</i>	European roe deer
Rosse Woelmuis	<i>Clethrionomys glareolus</i>	Bank vole
Vos	<i>Vulpes vulpes</i>	Red fox

APPENDIX E | Communication and SWOT Analysis

Table E1. Outcomes for the preliminary SWOT analysis, which was based on literature and participation reports, which were provided by the municipality of Amersfoort.

INTERVIEWS					
SWOT topics	1 - Municipality	2 - Residents	3 - Residents	4 - Residents	5 - Residents
Project	Through the document 'participatie en inspraak in Amersfoort' the basic conditions of participation are clear: the degree of influence and participation is described in the nota for every participation form	In the first meeting they collectively worked towards formulating basic parameters/ basic conditions to which the project has to account to.	the old project leader aims at a solution that was created with the consensus of the residents and the users and interest groups.		
Participation	Participation is considered beneficial by the local council	Participation guidelines increases participants knowledge of the expectations and degree of influence. Participation group can advise over the Cost Benefit analysis	Central to the first meeting was what the residents think about the project.	4 weeks time to send ideas for the basic parameters	all the participants have equal rights and responsibilities
	The municipality is looking for solutions with the involved parties / residents / participants	The participant will be informed about the research questions and will be given the opportunity to respond to this.			
Communication	Communication politics of the local council is to see the expectations of different stakeholders in the process. They want to involve the residents more in the process.	Different types of Participation: in this case adviseren: advantage: residents and involved people are offered the opportunity to participate to the people can form small committees to discuss important matters	concerns of the interest groups could be shared	enables participants to ask questions about the project	
	the municipality elaborated in a document which suggestions and wishes have been included and which not.		- people can be creative in how they are working	- develop a tool to measure transparency and whether the basic conditions are followed	
	municipality can communicate their plans and answer questions they might forgot to answer				
	panel discussions, the municipal council encourages everyone to speak freely on the topic: however rules have		- leads to structure and helping with the organisation of the responsibilities	- also developed own basic conditions to come to a suitable advice	
Other	The municipality has to elaborate on their decisions this enhances transparency.	Participation is about thinking, participation in the first stages of the project forming and political forming.	they have people that 'read-along': these people should then inform people from the participation group to ventilate	they could agree on a definition of sluijverkeer	reflection about the process of participating in a group.
WEAKNESS					
Project	work intensive for the participants and the municipal council	several steps for the project had to be done at the same time: research for example although it is a basic condition that participants can help formulate the research questions.	The next half year they will look at if there are discrepancies regarding the basic conditions	There was already research being planned for the traffic.	

Participation	participation is time consuming (half a year) the municipality decides on the basic conditions for the participation the municipality decides whether there is participation or not, it also decides on who to invite to the participation	participation does not always lead to a basis for the project
Communication	the municipality already formulated some basic conditions to present in the first meeting (which cannot be objected to)	'collective advice' no scattered advice in the groups the participants had to ask a lot of times for the same information or they had to ask questions all over again to get them answered.
Other	The degree of participation determines the degree of legal objection	Discussion on the basic parameters will be done internally.
OPPORTUNITY		
Project Participation	municipality thinks that through participation plans will be communication and participation with residents is seen to	Different types of Participation: in this Participation is about thinking. In the first meeting they wanted to look
Communication	Communication politics of the local council is to see the	
Other	the advice of the group will be presented to the municipal council	
THREAT		
Project Participation		In the first meeting they wanted to look at collective interests: can be a threat to not keep in mind that there are different and diverging interests.
Communication	Municipality decides on who to invite to the participation Different understandings of where the problems with the	could lead to a worsening of the relationship between the local council and the residents tension between the different interest
Other	you can only add basic conditions but not erase some.	

Table E2. Questions formulated for the interviews with the municipality and the resident groups.

Municipality		Residnets groups	
#	Questions	#	Questions
Westelijke ontsluiting			
1	Hoe en hoe lang bent u betrokken bij het project Westelijke Ontsluiting?	1	1. Hoe en hoe lang bent u betrokken bij het project Westelijke Ontsluiting?
2	Wat is het probleem volgens u met betrekking tot het verkeer in Amersfoort?/ waarom moet 7B worden uitgevoerd? En waarom niet scenario 6 of 4 of een andere?	2	Wat is het probleem volgens u met betrekking tot het verkeer in Amersfoort?
3	Kunt u het project Westelijke Ontsluiting kort beschrijven?	3	Kunt u het project Westelijke Ontsluiting kort beschrijven?
4	Wat is u mening over het project?	4	Wat is uw mening over het project?
		5	Zou u het scenario 10+ kort kunnen beschrijven?
Participatiebijeenkomsten			
1	Wat hebben jullie gedaan om de lokale groepen te betrekken bij het project Westelijke ontsluiting?	1	Hoe is de participatie met betrekking tot het project Westelijke Ontsluiting tot stand gekomen?
2	Hoe is de participatie met betrekking tot het project Westelijke Ontsluiting tot stand gekomen?	2	Bent u betrokken geweest bij het opstellen van de Nota Participatie en inspraak in Amersfoort, uitgangspunten, spelregels en afwegingsinstrumentarium, die als basis wordt gebruikt voor participatieprocessen?
3	Bent u betrokken geweest bij het opstellen van de Nota Participatie en inspraak in Amersfoort, uitgangspunten, spelregels en afwegingsinstrumentarium, die als basis wordt gebruikt voor participatieprocessen?	3	In de Nota wordt uitleg gegeven over de verschillende vormen van participatie. In het geval van de Westelijke Ontsluiting was gekozen voor een adviserende rol in plaats van een coproducerend. Hoe denkt u over de keuze?
4	In de Nota wordt uitleg gegeven over de verschillende vormen van participatie. Waarom was voor een adviserende rol gekozen voor het project Westelijke Ontsluiting in plaats van een coproducerend model?	4	Bent u persoonlijk betrokken geweest bij de participatiebijeenkomsten?
5	Bent u persoonlijk betrokken geweest bij de participatiebijeenkomsten?	5	Kunt u kort beschrijven wat de uitkomsten van de participatie zijn geweest?
6	Welke uitkomsten uit de participatie zijn meegenomen in het project Westelijke Ontsluiting?	6	Wat zijn activiteiten die volgens u goed waren in de participatie- / Informatiebijeenkomsten?
7	Wat zijn activiteiten die volgens u goed waren in de participatie- / Informatiebijeenkomsten?	7	Wat zijn de reacties geweest met betrekking tot het participatieproces van betrokkenen?
8	Wat was het feedback op de participatiebijeenkomsten?	8	In hoeverre was de participatie effectief voor een verbetering van het project de Westelijke Ontsluiting?

9	In hoeverre was de participatie effectief voor een verbetering van het project de Westelijke Ontsluiting?	9	In hoeverre was de participatie effectief voor een verbetering van de samenwerking tussen lokale groepen en gemeente?
10	In hoeverre was de participatie effectief voor een verbetering van de samenwerking tussen lokale groepen en gemeente?	10	Zijn er dingen die niet effectief waren of mis zijn gegaan in de participatie?
11	Zijn er dingen die mis zijn gegaan in de participatie? Wat zijn obstakels in de samenwerking met de lokale groepen?	11	Wat zijn obstakels in de samenwerking met de gemeente?
Communicatie			
1	Hoe zou u de communicatie tussen de gemeente en de lokale groepen beschrijven?	1	Met betrekking tot de communicatie in het project Westelijke Ontsluiting: Hoe is de communicatie over de belangen van de gemeente en de belangen van de lokale groepen geweest?
2	Wat zijn sterke punten van de communicatie met de lokale groepen? Wat ging goed in de communicatie?	2	Wat zijn sterke punten van de communicatie met de gemeente? Wat ging goed in de communicatie?
3	Wat ging echter mis in de communicatie met de lokale groepen?	3	Wat ging echter mis in de communicatie met de communicatie?
4	Een groep van inwoners hebben een eigen scenario ontwikkeld; zij noemen het scenario 10+. Hebben zij hun scenario 10 plus aan de gemeente laten zien?	4	Hebben jullie het 10+scenario aan de gemeente laten zien?
5	Hoe hebben zij de plannen gecommuniceerd?	5	Hoe hebben jullie de plannen gecommuniceerd?
Toekomst			
1	Wat zijn verbeterpunten met betrekking tot de communicatie tussen de gemeente en de lokale groepen over het project en de verschillende belangen?	1	Wat zijn verbeterpunten met betrekking tot de communicatie tussen de gemeente en de lokale groepen over het project en de verschillende belangen?
2	Wat zijn uw wensen voor de verdere communicatie met de lokale groepen?	2	Wat zijn uw wensen voor de communicatie met de gemeente?
3	Heeft u ideeën over hoe de communicatie verbeterd kan worden?	3	Heb je ideeën over hoe de communicatie verbeterd kan worden?
4	Wat zou voor u een succesvolle samenwerking met de lokale groepen zijn?	4	Wat wil je graag zien voor een succesvolle samenwerking met de gemeente?
5	Wie kan helpen bij het verbeteren van de communicatie tussen de lokale groepen en de gemeente?	5	Wie kan er misschien bij helpen om de communicatie tussen de lokale groepen en de gemeente te verbeteren?
6	Wat kan eventuele problemen veroorzaken in de verdere samenwerking?	6	Wat kan misschien problemen veroorzaken in te toekomst voor een verdere samenwerking?

Table E3. Outcomes from the final SWOT analysis, which was based on the interviews done for our report.

INTERVIEWS					
SWOT topics	1 - Municipality	2 - Residents	3 - Residents	4 - Residents	5 - Residents
Project	<p>the project solves more than the traffic problem</p> <p>quality of life is enhanced by the project</p> <p>received positive feedback throughout the project process</p>			<p>invitation to look at the plans that should be realised</p>	
Participation	<p>Active participation programme with basic conditions described and decided upon with the participants</p> <p>High inclusion of stakeholder, with open participation for all of the people that were interested - even though if they were not directly influenced by the project</p> <p>the results of the participation included the adaptation of scenario 7B to meet the need of the residents by buying land of the military to implement a demanded deepening and distancing of the road from A. Jacobslaan and extra measurements for noise pollution</p> <p>Implementation of an independent chair for the participation</p>	<p>Listing of all the stakeholders regarding the project was formulated as well as the basic conditions needed to determine the way of working in the participation sessions</p> <p>Regarding the participations process, participants came together and analyzed all scenarios and possibilities.</p> <p>a lot of research has been done to improve clarity on the situation</p>	<p>Listing of the stakeholders by the participants.</p> <p>Results: enabling a 'nudging' and inventurisation of important elements for the research that has been done</p> <p>Participation Process has been perceived as good for the first part of the participation</p>	<p>Participants formulated the basic conditions</p> <p>Regarding the process: choosing the research institute for the CBA</p> <p>positive feelings that your ideas and opinions/ thinking together about the assignment formulation are taken seriously</p> <p>results of the researches</p>	
Communication	<p>Communication channels: the municipality organized information sessions to keep the whole city updated, send out newsletters and had general presentations</p> <p>Communication style: municipality reached the residents for the participation and after the selection of 7B the municipality approached the different groups per area to discuss how details could look like, had transparent communication and argumentation was communicated for the different decision</p> <p>The municipality actively asked the stakeholders for possible queries, answered all the questions posed and provided detailed explanations</p> <p>Regarding the future, the municipality is willing to take relevant ideas (minor details) into account during construction</p>	<p>Notubiz Programme: system that enables you to access the same information as 'gemeenteraadsleden'</p> <p>Project archives: good website with all the information about the project</p> <p>Approachability of the 'gemeenteraadsleden'</p>	<p>communication of residents about the consequences of the chosen plan</p> <p>spreading of information</p>	<p>being able to share your own input and knowledge from the surrounding/ trying to work out a solution that fits everyone - through scenario 10-</p> <p>being able to give your own vision about how the participation process went</p> <p>good participation for the first part of the participation</p>	
Other					

WEAKNESS

Project

Not all potentially interest group were aware of the project when the participation sessions started - some of them (interview) found out in 2015 information about the project was insufficient: the interviewee participated in one information meeting where they walked in and walked out, no explanations etc.

prestige project

<p>Participation</p> <p>There were difficulties in the participation programme due to the ambiguity of the project.</p> <p>In general participation is expensive and requires active work and time.</p> <p>There were too many different interests in the participation (more residents than other stake holders) and discussion over and over the same things were ineffective.</p> <p>Participation conditions changed after the political change in power</p>	<p>project is unclear and unstructured</p> <p>residents of the neighbourhood of the Belgenmonument have not been included in the participation</p> <p>we made the effort to clear out this issue not the municipality</p> <p>SWB: they do not represent us as residents; it is not a resident group</p>	<p>the fall of the political power was the result of the participation outcome</p> <p>7b has never been discussed and worked out in the participation</p> <p>Participation groups had the advisor role and were not really included in the planning and decisions</p> <p>After the selection the only aspect of the project the participation groups had a say was about the colour of the tiles</p> <p>basic conditions have been violated and changed</p> <p>research questions: mostly influenced by the municipality for a certain outcome</p> <p>agreements have been made with individuals</p> <p>municipality played interest groups and residents groups against each other</p> <p>feedback: we submitted a complaint to the 'ombudsman'</p> <p>CBA: soft cultural measures: how to give them a value</p> <p>the content that was produced by the participation process was not taken seriously by the municipality and in the end th participation worsened the collaboration with the municipality</p>	<p>the fall of the political power was the result of the participation outcome</p> <p>our ideas and efforts were not taken seriously</p> <p>we have been flooded with technical information</p> <p>The second part of the participation (?) was no participation</p> <p>The municipality did not investigate scenario 10+</p> <p>no collaboration, we were used for a support of their arguments</p> <p>certain interest groups played a wrong game</p>	<p>the fall of the political power was the result of the participation outcome</p> <p>our advice was not taken seriously</p> <p>feedback about the participation has been negative after the fall of the 'college'</p> <p>participation has not been effective because they did not do anything with our advice and chose 7b instead</p> <p>7b does not fulfill the basic conditions we agreed on</p> <p>basic conditions have been violated</p> <p>residents group have been played and finally split after negotiations and promises with individuals have been made</p>
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Communication	The communication with the residents and interest groups that were against the project was difficult	decisions by the local council are made without sufficient explanation	they communicate that everyone else's meaning is wrong	'wethouder' communicated that the project will be implemented no matter what -> no participation then needed	the 'wethouder' communicated that the project would be implemented no matter what
	Constructive discussion were after a point not possible anymore due to the communication disfunction	answers about why we did not participate were answered with legal documents / paragraphs	how do we know whether information has been withheld by the municipality	communicated the necessity of the project although this has not been proved unprofessional behaviour of officials that screamed and yelled at us questions have been answered insufficiently or not taken seriously	any other solution that did not include a tunnel or a viaduct for cyclists was not feasible - communicated through the province presented 7b as preference scenario
	Definitions that were made were not acceptable by some participants	no structured communication	information has been given out at strategically suitable points by the municipality	they just acknowledged the 10+ but did not investigate it	questions were not taken seriously and some questions have been insufficiently answered or not even answered at all
	Currently no collaboration	Some of the questions they have have not yet been answered and overall answering of questions is very time consuming	spreading of wrong information: they said all the participants agreed and this was not the case	one way information	one-way information track no explanation of why they do not investigate 10+ just acknowledgement of the plan
Other		you have to trust the information from experts, although we revealed mistakes in the researches that have been done		we have to pay for all the research we do to prove that mistakes have been made	we had two minutes to defend our point of view in front of the council no asking and listening about our needs and wants new project leader did not introduce himself
		Inconsistencies in documents and researches		no gain for the quality of life with the project nature is not being compensated in the same municipality	
OPPORTUNITY					
Project	For future projects maybe it is better to have less participation sessions and simultaneously more forced sessions				
Participation	There is awareness formt he side of the municipality about the residents feeling that they were not included and heard	For the future make sure that the participation includes all the important stakeholder	a coproduction model		take the residents seriously and show respect
	The municipality is open to implement relevant details in the contract phase of the construction	Use the knowledge and talent of the participants	'nieuwe samenwerking'		open for participation on the project if I had the feeling that they would take me seriously
		participation can be successful if done right; it helps to start the process early and have a good structure	people that are willing to take us seriously do so		

you have to build up trust

All the participants (and municipality) should be on the same page regarding the meaning and what the project includes.

Figure out the scope of participants and take them seriously

Make money available for participants to do research

Communication	From the side of the municipality there are possible communication improvements like staying on speaking terms from both side, stay on a positive attitude to make space to think and act constructively There has to be a better understanding between the different groups and the municipality	do not stop speaking after decisions have been made	a good municipality secretary	communicating and thinking with an open mind/ attitude	introduce yourself to us and approach us
Other			municipality has to see each other above their political parties	listening to what residents say and taking it seriously who: someone that has not been working for the municipality before	react understanding to our worries and claims explain why you do certain things the way you do them

THREAT

Project	fixed idea about the character of the project	political character of the project	could attract new traffic with new infrastructure		
Participation	The attitude of NIMBY (Not in my back yard) was adapted by the participants perception of the municipality that what they do is never enough for the people that are against the plans - they see no way to improve this A coproduction model not possible due to the multitude of different interests and it is difficult to make sure that all these different interests will be included in the project when choosing for a co-production.	participation does not feel like participation there is a certain pattern how the municipality approaches projects	officials that think residents are a plague	attitude of the municipality	people thought it was coproduction - makes people think they have decisions making power

officials that think we are not knowledgeable enough

Communication	There is no communication with the interest groups currently There is no participation currently media and politics spread wrong stories and information wrong and bad stereotype of the municipality	it is no communication but a sending of information communication only with lawyers and mediators	no communication possible		no communication about the plans they want to implement especially about 'overlast' attitude of the officials there is no contact and no communication no trust for the municipality communication in front of judges
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