

# Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



## Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners ([Examencommissie-BK@tudelft.nl](mailto:Examencommissie-BK@tudelft.nl)), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

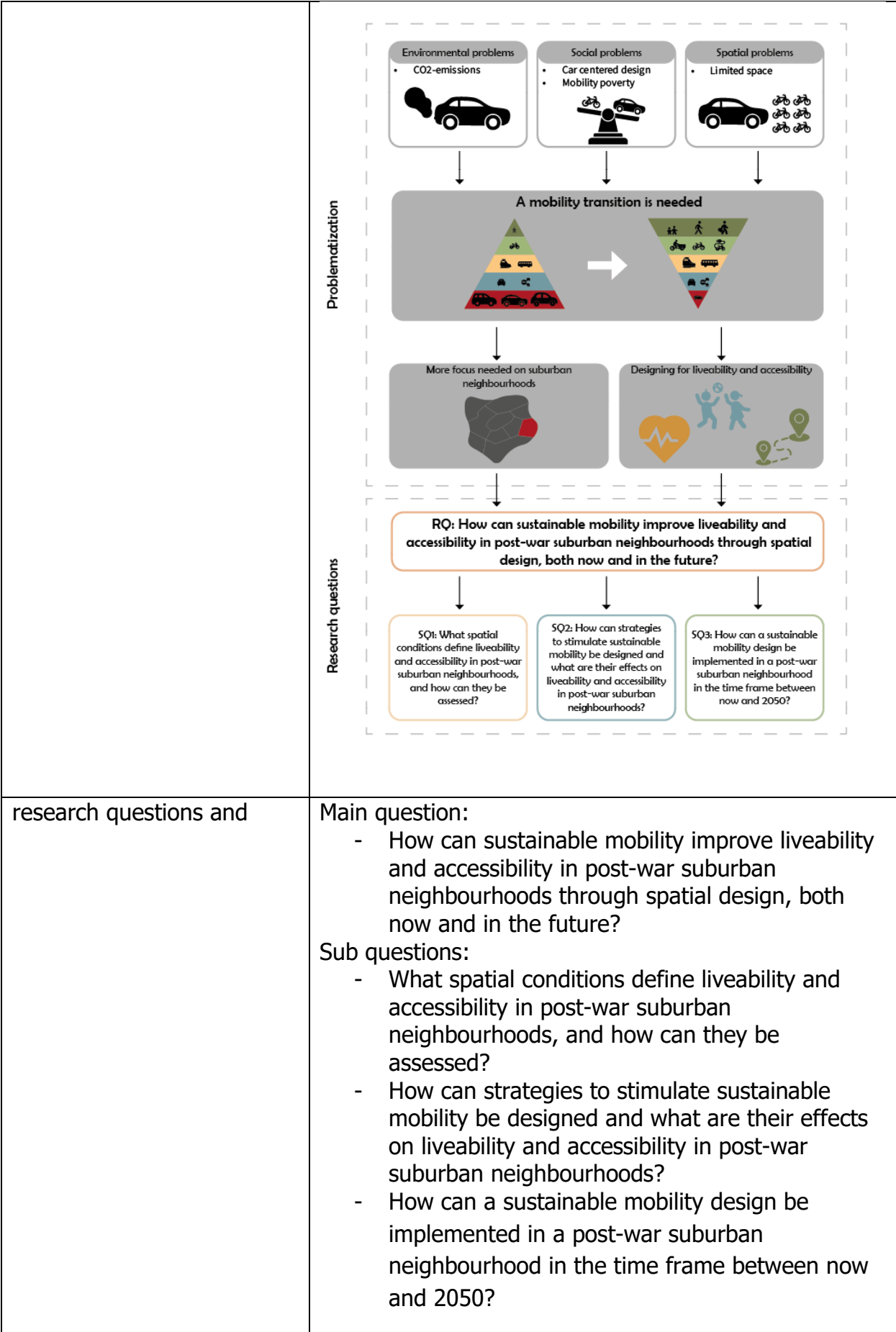
The graduation plan consists of at least the following data/segments:

Personal information	
Name	<b>Brenda van der Meer</b>
Student number	5226155

Studio	
Name / Theme	Design of the Urban Fabric
Main mentor	Rients Dijkstra      Urban Design
Second mentor	Machiel van Dorst      Urban Studies
Argumentation of choice of the studio	For my project I will focus on designing mobility in the public space that improves liveability and accessibility by stimulating sustainable mobility on a neighbourhood scale. This is very related to what DUF describes: DUF deals with the interplay between the physical urban elements and the socio-cultural processes that foster sustainable and liveable places. These design interventions are elements on the neighbourhood scale, which fits well with the DUF scale. The strategies will be more on city scale. In DUF the focus will be on smaller scale design elements. I will start broader research on general typologies in The Netherlands, but zoom in to one case study (Hoge Vucht, Breda) for designing different scenarios to test the relationship between these design implementations and their impact on liveability and accessibility.

Graduation project	
Title of the graduation project	<b>From Streets to Spaces: Designing sustainable mobility to improve liveability and accessibility in post-war suburban neighbourhoods</b>
<b>Goal</b>	
Location:	Breda, Hoge Vucht <ul style="list-style-type: none"> <li>- Breda is a medium-sized city in The Netherlands, with relatively high car usage. One of the post-war suburban neighbourhoods in Breda is Hoge Vucht. In Hoge Vucht the liveability is low, so there is a need for improved liveability. Therefore, this neighbourhood is a good case study location for this project.</li> </ul>
The posed problem,	Problem statement

	<ul style="list-style-type: none"><li>- From environmental, social and spatial perspective, there is a mobility transition needed to go from a mobility system that is mainly car focused to a mobility system where pedestrians, cyclists and public transport have main priority. Shared mobility can also become of importance in this new mobility hierarchy.</li><li>- Most research about sustainable mobility focuses on city centres. Post-war suburban neighbourhoods are designed for the car as main transportation and therefore have a higher car usage than city centres. These suburban areas still have a high density, so there is lots of potential to make them less car dependent.</li><li>- There is a shifting perspective that we should not only design our mobility system from an efficiency perspective, but we should focus on accessibility and the humans living and using the area. When designing for sustainable mobility it is needed to know for designers and municipalities how different designs impact liveability and accessibility.</li></ul>
--	--



design assignment in which these result.

City strategy for Breda  
 Neighbourhood design for Hoge Vucht (mainly focused on mobility)  
 Street sections from some street typologies in Hoge Vucht

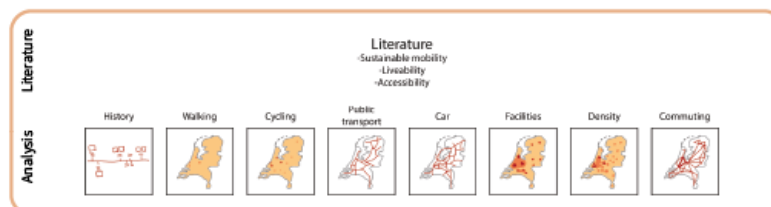
## Process

### Method description

**RQ: How can sustainable mobility improve liveability and accessibility in post-war suburban neighbourhoods through spatial design, both now and in the future?**

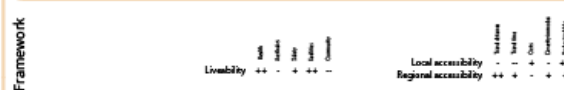
The goal of the main research question is to investigate how sustainable mobility strategies can be spatially implemented to enhance both liveability and accessibility in post-war suburban neighbourhoods

- For this a case study will be used: Hoge Vucht, Breda



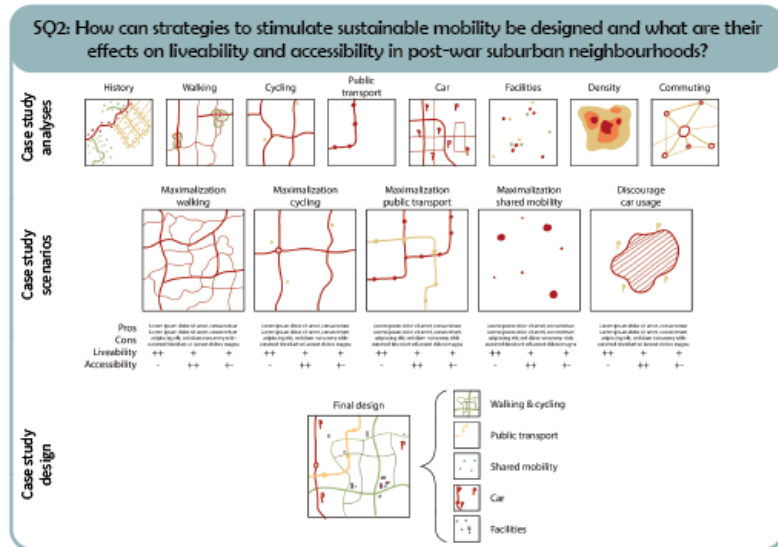
- The first step will be to define the concepts "Sustainable mobility", "Liveability" and "Accessibility" through existing literature [Literature]
- Also some general analysis about mobility will be done
  - History analysis [books]
  - Current mobility patterns, current modal split, commuting traffic [data from CBS]
  - Literature about specific modalities [for example, walking and theories about walkability (Jeff Speck, 2012)]
  - Street sections (standard, typologies) [photos, guidelines for designers]

**SQ1: What spatial conditions define liveability and accessibility in post-war suburban neighbourhoods, and how can they be assessed?**



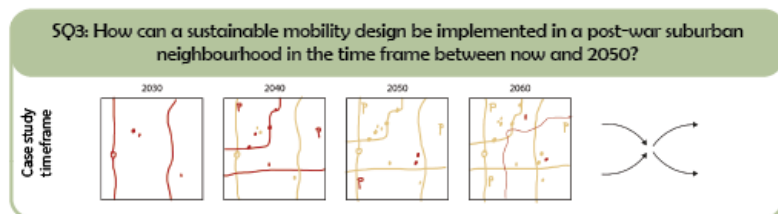
The first subquestion will define and operationalize key values and indicators of liveability and accessibility

- To do this, two frameworks will be made [Literature, (mobility) vision from Breda and Stedelijke Regio Breda Tilburg, talk with municipality Breda?]



The second subquestion aims to explore, value and translate strategies into spatial design for a case study area (Hoge Vucht, Breda)

- First some analysis for Breda and Hoge Vucht will be done (history, existing mobility infrastructure, density, facilities)
- Some (+-5) scenarios will be made with a focus on different modalities and how the neighbourhood can be designed to encourage use of this sustainable alternative for the car
- These designs will be valued by the frameworks from SQ1 to see their impact on liveability and accessibility
- The scenarios will be compared to see where they overlap (complete) and conflict (compete) with each other
- These scenarios will be combined in one final design for Hoge Vucht



The third subquestion will be about developing a phasing strategy for the design (from SQ2) for Hoge Vucht (combination of back-casting and fore-casting)

- There will be a phased timeline from now until 2050 and there will be looked at the X-curve for transitions (DRIFT, 2022)

## Literature and general practical references

Important literature about sustainable mobility:

- SHARE-North. (2021). *A Planner's Guide to the Shared Mobility Galaxy*. [www.share-north.eu](http://www.share-north.eu)
- Bradshaw, C. (1992). *The Green Transportation Hierarchy*. <https://hearthhealth.wordpress.com/about/previous-published-works/feet-first-early/the-green-transportation-hierarchy-a-guide-for-personal-public-decision-making/>
  - The new mobility pyramid, describing the new hierarchy in transportation
- Banister, D. (2008). The sustainable mobility paradigm. *Transport Policy*, 15(2), 73–80. <https://doi.org/10.1016/j.tranpol.2007.10.005>
- Zijlstra, T., Witte, J.-J., & Bakker, S. (2022). *De maatschappelijke effecten van het wijdverbreide autobezit in Nederland*.
  - Broad analysis about the car and its effects in The Netherlands (perceived dependence, vicious circle, mobility poverty, difference between urban and rural places)

Important literature about liveability:

- van Kamp, I., Leidelmeijer, K., Marsman, G., & de Hollander, A. (2003). Urban environmental quality and human well-being Towards a conceptual framework and demarcation of concepts; a literature study. In *Landscape and Urban Planning* (Vol. 65).
  - Literature research about liveability, comparing many different definitions and models
- Cardoso, R., Sobhani, A., & Meijers, E. (2022). The cities we need: Towards an urbanism guided by human needs satisfaction. *Urban Studies*, 59(13), 2638–2659. <https://doi.org/10.1177/00420980211045571>
- Mandemakers, J., Leidelmeijer, K., Burema, F., Halbersma, R., Middeldorp, M., & Veldkamp, J. (2021). *Leefbaarometer 3.0 Instrumentontwikkeling*. [www.atlasresearch.nl](http://www.atlasresearch.nl)
  - Leefbaarometer background

Important literature about accessibility:

- Bastiaanssen, J., & Breedijk, M. (2024). *Beter bereikbaar? Veranderingen in de toegang tot voorzieningen en banen in Nederland tussen 2012 en 2022*.
- Bastiaanssen, J., & Breedijk, M. (2022). *Toegang voor iedereen? Een analyse van de (on)bereikbaarheid van voorzieningen en banen in Nederland*.
- Geurs, K. T., & van Wee, B. (2004). Accessibility evaluation of land-use and transport strategies: Review and research directions. *Journal of Transport Geography*, 12(2), 127–140. <https://doi.org/10.1016/j.jtrangeo.2003.10.005>
  - Common used definition of accessibility

- Hamersma, M., & Roeleven, I. (2024). *Acceptabele bereikbaarheid; Een reizigersperspectief (Achtergrondrapport)*.  
 → Research to what people perceive as acceptable travel times to different destinations

#### Data

- CBS Statline. (2024). *Mobiliteit; per persoon, vervoerwijzen, motieven, regio's [Data set]*.  
<https://opendata.cbs.nl/statline/#/CBS/nl/dataset/84710NED/table?dl=BFC84>  
 → A lot of travel data in The Netherlands (distance, trips, travel time, destination, etc.)

### Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?
  - For my project I will focus on design strategies that improve liveability and accessibility by stimulating sustainable mobility in post-war suburban neighbourhoods. This is very related to what DUF describes: DUF deals with the interplay between the physical urban elements and the socio-cultural processes that foster sustainable and liveable places. These design interventions are elements on the neighbourhood scale, which fits well with the DUF scale. The strategies will be more on city scale. In DUF the focus will be on smaller scale design elements. I will start broader research on general typologies in The Netherlands, but zoom in to one case study (Hoge Vucht, Breda) for designing different scenarios to test the relationship between these design implementations and their impact on liveability and accessibility.
  - At urbanism we work towards (re)creating sustainable urban landscapes. We do this by understanding that the quality of the urban environment is crucial for societies' social, economic and environmental performance. The goal of this research is to transform a neighbourhood to a more sustainable, more social equal and more accessible place (with the lens of sustainable mobility).
  - Doing this graduation is a combination of research and spatial planning within the context of the built environment (neighbourhood), with a focus on sustainability and social equality.
2. What is the relevance of your graduation work in the larger social, professional and scientific framework.
  - The topic of the mobility transition in The Netherlands is something a lot of companies, research groups and municipalities are working with. This transition also impacts many people, since it is needed to change people's travel behaviour on a bigger scale. That there is a need for this transition is already described in a lot of visions on both national and local scale, but knowledge is lacking for how this impacts people (liveability and accessibility) and most research and solutions are focussing on high density city centres. This research tries to contribute to fill (part of) this knowledge gap.