

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), 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	Pien Adank (Petronella Anne Adank)
Student number	4842286

Studio		
Name / Theme	Architectural Engineering	
Main mentor	Mo Smit	Architecture
Second mentor	Nico Tillie	Landscape Architecture
Argumentation of choice of the studio	The freedom offered by the Architectural Engineering Studio was the reason to chose this studio for my graduation. The implementation and focus of technical aspects in the design are necessary in my opinion to make a well-rounded and realistic plan. This multifaceted studio enables me to make my graduation personal and something to be proud of in the end.	

Graduation project	
Title of the graduation project	Natures Refuge; Future-Proof Biophilic Design for Resettlement Housing
Goal	
Location:	TU Delft Campus
The posed problem,	Currently Europe is in the throes of the refugee crisis. Hundreds of thousands flee their homes in search of safety and a better life (Universiteit Leiden, no date). This is noticeable in the Netherlands as well. In 2023 alone, more than 50.000 refugees have registered in Ter Apel, in hope of asylum in the Netherlands (CBS, no date). After an often long journey and going through the application process in Ter Apel, refugees are housed in an Asylum Seekers Centre, Asiel Zoekers Centrum (AZC) in Dutch. They will be placed at different places in the Netherlands to wait there until their procedure is completed by the Centraal Orgaan opvang asielzoekers (COA). Many people remain in the AZC even after getting status while waiting for housing (COA, no date b). An overview of the

process and the housing during the process of asking for asylum in the Netherlands is shown in Figure 1.

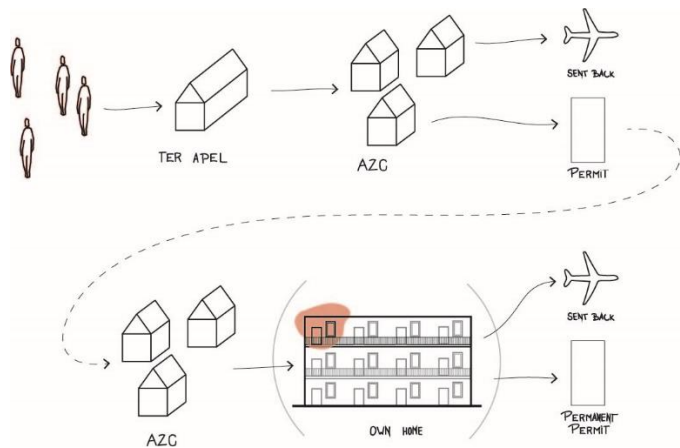


Figure 1: Overview of route of a refugee in the Netherlands [illustration made by author]

The types of AZC's can roughly be categorized into two types of shelter: a regular shelter or an emergency shelter. This does not necessarily have any implication for the architecture but merely tells you something about the timeframe of the AZC (COA, no date a). The appearance and organisation of the AZC's of both types can differ. Architectural typologies can, for example, vary from the renovation of old schools and prisons to container dwellings as well as purpose-built buildings. The number of shelters is too few at this moment and it is estimated that there will be increasing shortages as can be seen in Figure 2 (COA,2024). The cause of the problem mostly finds its origin in the political, economic and social fields, but that does not change the fact that many buildings will have to be added in the near future. Here comes the role of the architects. The limited space and timeframes pose a challenge that calls for multifunctional use of space and flexible future use.

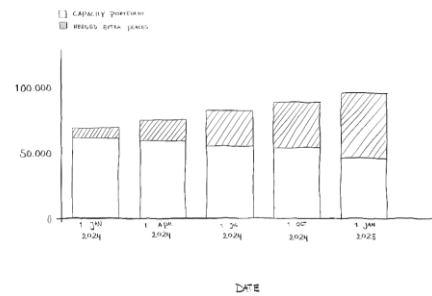


Figure 2: Overview of current stock and extra needed housing stock [illustration made by author based on information (COA, 2024)]

The right to adequate housing for refugees in resettlement housing in the Netherlands currently falls short of habitability (Kinderombudsman and Nationale ombudsman, 2023). The housing does not extensively support the well-being of its residents while the dominant user group of the architecture is prone to mental health issues due to their past trauma (United Nations and Office of the United Nations High Commissioner for Human Rights, 1991). This threatens the human right to adequate housing as described in the same rapport by the UN. For the architect, it is therefore important to look for both quantity and quality in the design.

When looking at architecture that supports well-being, different approaches can be seen in literature. Van der Voordt (2021) summarises seven approaches for this purpose. Only some of these theories can be applied to AZC architecture due to the scale, program and/or application. Salutogenic outcomes are especially important for this target group. This outcome focuses on (general) prevention and not treatment of specific diseases. As everyone has their own experiences and you want a generalist approach that helps as many people as possible. With salutogenic architectural design as a goal, you still need a method or strategy to accomplish this. An already widely

	<p>researched design strategy applicable to dwellings, on the scale of an AZC, is biophilic design (Van Der Voordt, 2021). As of yet, this has not been applied to resettlement housing and there are no practical design guidelines for this that would allow an architect to get started right away. Because such a translation of well-being architecture to resettlement housing has not yet been made, (mental) health and well-being are not included in the design.</p>
research questions and	<p>Design question;</p> <p>How can we design a refugee shelter on the TU Campus within the framework of the COA with a focus on well-being through biophilic design, that maximises the lived space for its occupants as well as takes flexible use for the future in mind?</p> <p>Subquestions;</p> <ol style="list-style-type: none"> 1. How can biophilic design elements be translated into practical design guidelines to be used to increase the well-being of refugees in resettlement housing within the framework of the COA? 2. How can we design for multifunctional use? 3. How can we design for flexible use both in construction as well as functionality? 4. How can biophilic design elements that promote well-being be integrated into the design of an AZC on the TU Campus? <p>Thematic research question;</p> <p>How can biophilic design elements be translated into practical design principles and guidelines to be used to increase the overall well-being of residents in resettlement housing in the Netherlands within the framework of the COA?</p> <p>Sub questions;</p> <ul style="list-style-type: none"> • How can we categorise biophilic design elements, and how are they relevant for well-being? • How can we analyse biophilic case studies and what can we learn from them?

	<ul style="list-style-type: none"> • What is the current state of the relationship between AZC's and biophilic design? • What practical implications does the implementation of biophilic design elements in resettlement housing have within a set framework of the COA?
design assignment in which these result.	<p>Within this graduation project, the design of an asylum seekers' centre that supports the well-being of its residents plays a central role. By looking at the possibilities of multifunctional and flexible use, the aim will be to design a regular shelter that, if necessary, can be used with a different function when the time comes. This is not only cheaper for COA, as emergency housing is twice as expensive as regular housing (NOS, 2023), but also offers the opportunity to invest in fitting and human architecture. Architecture that cares for the well-being of its residents. To be able to accomplish this, aspects such as health, multifunctional use and flexibility are important. This will be done in within the framework of the COA as proposed in their Ruimtelijk Plan van Eisen. The design will strive to be an ideal environment and will therefore serve as an inspiration and example for future resettlement design.</p> <p>TECHNICAL: By delving deeper into the relationship between the health benefits of biophilic design and refugee housing, practical design guidelines can be drawn up that can be applied to the design. The knowledge gained will be applied to the AZC of Delft.</p> <p>CONTEXT: The AZC of Delft is currently housed on the TU Campus and falls under COA's emergency accommodation. A contract has been signed for the next five years to accommodate at least 320 asylum seekers. Currently, there are containers here to provide shelter. The objective of this design will be to build an AZC on the current site that can be converted into student housing in the future (flexible use). This would help with the refugee problem now and contribute to student housing</p>

	<p>for the planned growth of TU Delft in five years' time. By designing with flexible use in the early phases of the design we can ensure that the design is not only beneficial for its current use(rs). The design will focus on different scales; its environment, the building and the dwelling.</p> <p>PROGRAM: Within the AZC, housing will have a dominant role. Other functions such as, for example, communal spaces, offices for staff, spaces with educational functions, spaces for wellbeing and connection with its surroundings will be realised. When looking at the program, this project will take a look at multifunctional use of space. This will be done in order to see if and how we can maximise the use of space within the framework of the COA. The infill of the program of requirements will be done both by case-studies and literature as well as interviews with refugees and staff.</p>
<p>[This should be formulated in such a way that the graduation project can answer these questions. The definition of the problem has to be significant to a clearly defined area of research and design.]</p>	
<p>Process</p>	
<p>Method description</p> <p><i>Literature research</i> To create a solid foundation on which to build further research, literature will be used. Literature research will be used as a way to define and frame, but also to incorporate quantitative data and analysis. It gives a comparison and ensures academic and objective research. The literature will be used to get an overview of biophilic design elements and their beneficial application in architecture. Literature research will also be used to look at resettlement housing in the Netherlands.</p> <p><i>Case-studies</i> Through different case-studies in literature, the opportunities, challenges and values of the architecture of both biophilic inspired projects as well as AZC designs will be analysed. The criteria are as follows; <i>Criteria case-study biophilic design:</i></p> <ul style="list-style-type: none"> • The scale of the project must be comparable to the scale of a resettlement housing project • The design must be placed on a (semi) urban location 	

- The project, preferred, has a residential function
- The project must be placed in a climate comparable to the Netherlands

Criteria case studies AZC's:

- The projects must have different typologies
- The projects must be housed in the Netherlands
- The project should at least accommodate 100 refugees

Ethnography

Ethnographical research will provide a closer connection to the target group and their daily life and therefore give more insight into their use of architecture. In combination with the literature research, this qualitative data can bring the human scale into the research. To be able to get the relevant information, two different ethnographical research methods will be used.

Observation

Observation will be done at different moments throughout the research. During the thematic research, it will be used to see how the current AZC's function. If the case studies that will be used for the research on biophilic design are close enough, observation can also play a role in the analysis of these projects.

Interviewing

For the interviews, semi-structured and unstructured interviews will be executed. During the observations of the AZCs and case studies, unstructured interviews can be used to discover how residents/users perceive the building. This will not directly result in research outcomes but will shape the researcher for the design later on. Secondly, interviews will be held to gain a more thorough knowledge of the possibilities of resettlement housing. The interviews will give more in-depth information where literature and observation might fall short. These interviews can be conducted with refugees, staff of the COA, volunteers and architects that have designed for resettlement housing.

During the design phase, other methods will be used such as; *Research by Design, Prototyping and other design methodologies.*

Literature and general practical references

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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)?

The Architectural Engineering programme seeks innovative and inspiring architectural solutions for environmental and societal issues. My project combines an urgent and relevant societal issue of resettlement with environmental issues. This project focuses on the impact of the architect on these problems, which is relevant in the master track of architecture and therefore in the broader context of the built environment.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

This design will show how generic knowledge of biophilic design in resettlement housing can be used to improve its (quality of) design. This project can serve as an inspiration when designing future AZC's. With its focus on both human experience as well as their well-being, the project brings back the human aspect to refugee housing. By focusing on well-being, not only the lived experience of its users improves but the expectation is that greater numbers of dwellings can be accomplished. This does not automatically result in a luxurious resort design, but it does result in housing where your mental well-being is not at stake. The project aims to show the possibilities within the framework that exists, therefore being beneficial for refugees, COA and future AZC architects.

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