

REFLECTION PAPER

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My graduation project is about the renovation of the post-war building stock in the Netherlands. This post-war building stock is a big part of the total housing stock. They were built in these enormous amounts because of severe damage after the war and the enormous increase of the Dutch population at that time. Nowadays these buildings are not rising up to the current sustainability standards anymore (energy label G, no insulation, small cramped spaces, especially kitchen and bathroom, small outside space and accessibility). This graduation project specifically focusses on tenement apartments 'portieklats' designed by Jo van den Broek in Carnisse, Rotterdam. The goal of the project is not to only renovate them, but to redevelop the whole neighbourhood into a more resilient and self-sustaining area where the different physical and energy flows (water, waste, energy, nutrients, materials) become closed loops on a local level.

The relationship between the graduation topic and the studio topic

The aim of this studio is to integrate technical solutions in an architectural design. The studio strives to bridge the gap between the technical and the architectural realm. There are three main topics, Make, Flow and Stock and six design locations. Within this framework, students come up with their own graduation project. The difference with other studios at this faculty is that next to the formulation of an overall design question, the students have to come up with a thematic research question which will be answered in the thesis, the research paper. This research focusses on a specific technical aspect which informs the design. The outcome of this research will generate (technical) starting points for the design and need to be translated into tools for architects. In this way the topic of the graduation studio, which starts with a technical fascination, will be a substantiated part of the design.

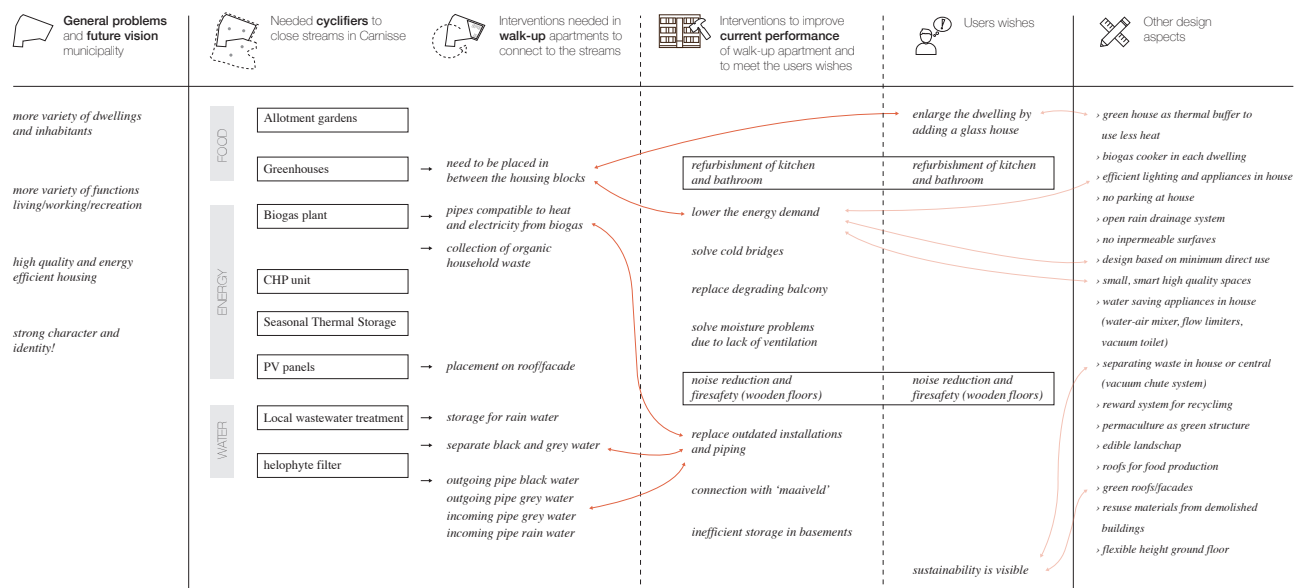


image 1 - Roadmap

The relation between research and design

The thematic research question that I came up with for my paper is as follows:

What interventions are needed in the post-war walk-up apartments to improve their current performance and connect them to different types of local streams (water, waste, energy, nutrients, materials) in the neighbourhood?

This question was answered by analysing the whole area of Carnisse to find the potential of the flows and the possibilities to short-circuit these flows. Next to that a literature review of the location Carnisse, the architecture of Jo van den Broek and the current constructive status of the walk-up apartments was done. The result of the research paper was a roadmap on how to integrate the post-war housing into sustainable neighbourhoods (image 1). This roadmap formed the basis for the design strategy of the project.

Before the P2 presentation the roadmap was translated into a concept for the redesign of the neighbourhood (image 2). This was based on several aspects of the roadmap. In order to supply food locally greenhouses are needed in the neighbourhood. In between the housing blocks there's plenty of space to put these greenhouses. By placing them in between the blocks the greenhouses can also provide the needed extra living space for the dwellings and at the same act as a thermal buffer. Therefore the concept that arose from the roadmap was the greenhouse as a catalyst to upgrade the neighbourhood Carnisse. Quite soon after the P2 more research was done about the needed space to supply food locally. This research showed that not all the space in between the housing blocks are needed to grow crops. This meant the greenhouses could be placed partly in the courtyards or even on the roofs of the existing building. This changed the design drastically. The courtyard could become collective outdoor space and the focus of the design became more and more on the renovation of the walk-up apartments itself. How to enlarge them in another way, how to make them more life cycle proof and to create more diversity in dwellings and inhabitants. The starting points that arose from the roadmap were not relevant anymore due to further research during the design process. The roadmap however did provide a clear guideline throughout the whole design process, whereas it contains all the aspects that need to be addressed within the design to make Carnisse self-sustaining and resilient.

Elaboration on research method and approach in relation to the graduation studio methodical line of inquiry

The methodological line of inquiry of this graduation studio is starting with a technical fascination. Then the students try to find a design location that fits their technical fascination and from there they form a design question. For me the research started slightly different whereas I chose to do research within the research group Beyond the Current where they have different example post-war neighbourhoods. Therefore the methodological line of inquiry started with a location instead of a technical fascination. My technical fascination, integrating flows into renovation strategies, came later.

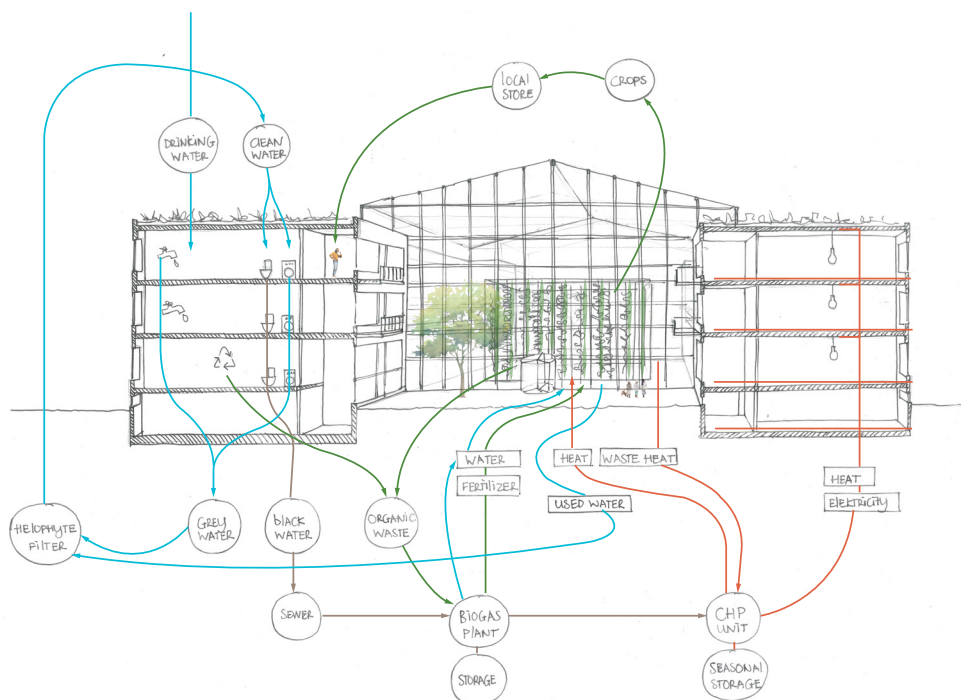


image 2 - concept for design at P2

Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project results

The design that arose in the past months is a new strategy of dealing with our ageing building stock and the neighbourhoods that they form. The walk-up apartment is a generic type of dwelling that in Rotterdam alone covers almost 70% of the total building stock. These dwellings are not rising up to current sustainability standards anymore, let alone to the future environmental goals we need to achieve.

The redesign of the block of walk-up apartments in Carnisse (Eilandenbuurt) can be used as an example for other projects on how to redesign a neighbourhood in a more integral way, going a step further than just renovating the dwellings, but making them more sustainable for the future. Whereas the type of dwellings, the tenement apartment, is a very common type in the Netherlands and many of them still need to be addressed. The practical part about the design of the dwellings could partially be copied to other apartment blocks. However, the design is based on the specific character of this neighbourhood (existing flows and how they can become closed circuits is depended on every individual situation), so for each case this analysis should be the starting point for redevelopment, whereas locality and adaptability of a system, is the basis of the integral approach towards more resilient neighbourhoods (by example of nature). The design however also focusses on more general issues of the tenement apartment itself (no insulation, cold bridges etc.) that occur in general in these apartment blocks. Also several social and neighbourhood issues (monotone composition of inhabitants, low value of housing, low diversity in housing and public spaces etc.) apply to similar cases. The design tools used to tackle these issues can be used for other neighbourhoods/cases.

Ethical issues and dilemmas that have been encountered

In the graduation project a design of a structure is made that can be added to the existing apartment blocks. In this way it's possible to preserve the existing buildings and prepare them for the future. Apart from the greenhouse structure that can be added on top of the dwellings, quite some measures need to be taken to renovate the walk-up apartments in such a way that they meet the current and even the future sustainability standards. Thirty centimetre thick insulation is added, all the window frames need to be replaced and new installations and pipes are needed to be able to connect them to the flows. If such a project would be done right now it probably won't be economical viable whereas the costs of renovating in relation to the value of the dwellings are much higher than if one would built a complete new project. This dilemma has been in my mind during the whole graduation project. The most important thing to me in this project was to find a new strategy of dealing with these neighbourhoods and the starting point was to keep the existing and find a way to integrate them into locally closed loops (image 3). It was about going a step further than only updating them to the current sustainability standards, about the future of sustainable and resilient neighbourhoods. Our existing, ageing building stock is an inevitable part of that.

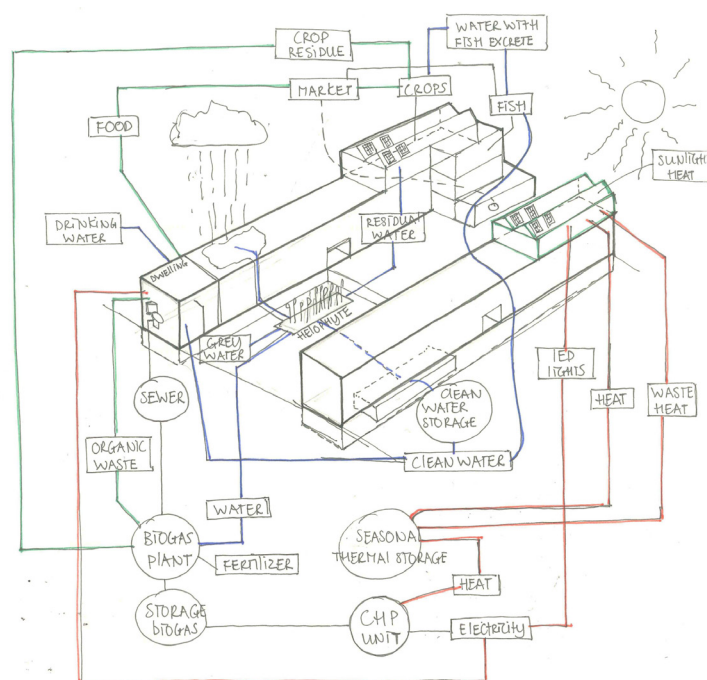


image 3 - closed loops within the block