

Graduation Report P2

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Graduation Plan

Week	Plan	checklist
46 - 19 nov	-Preparing Reuversweerd presentation - Finalize solutions in terms of closing the energetical and waste cycles. - Sketch of floorplans (vlekkenplan for functions)	
47 - 26 nov	-Finalize program and program locations - 1 or 2 scenario's (storytelling) of different visitors - Definitive floorplans with program - Volume studies (for the tower and box-in-box constructions)	
48 -3 dec	-Solutions for: 1. Restoring damages 2. Insulating 3. Modular construction techniques	
49 - 10 dec	-Focusing on cultural value, why do I want to preserve and why do I want to change?	
50 - 17 dec	-Preparing 5 minutes pitch. -Preparing questions for Wessel de Jonge - First idea's for P2 presentation structure	
51 - 7 jan	-Finalize D&T (1. Definitive floorplans 2. Definitive design (signature). 3. Definitive technical solutions) - Preparing all the P2 products	
52 - 14 jan	P2 presentation 1. lessons learnt from analysis, 2. intervention strategy, 3. scenarios, brief, 4. program of possibilities, 5. masterplan, 6. conceptual design including overall images interior and exterior. 7. Graduation Plan. 8. Graduation Report	

H&D conclusions

In this section the most important conclusions from the P1 report will be listed. With focus on Reuversweerd I will explain briefly and list the most relevant conclusions which I will use as base for my personal design.

Surrounding

One of the most important difference between the Hammen boerderij and Reuversweerd is the development of the urban environment which the buildings are located in. During 1830 till nowadays, Reuversweerd's site has been always surrounded by nature and agricultural land. The IJssel movements (overflows and shape changes) were and are an important influence on the surrounding land. The Hammenboerderij has been (almost) totally submersed by the city densification of Delft. The surrounding changed from agricultural land till a mix of university campus, dwellings and industrial areas. Because of these (both) urban developments, the Hammenboerderij is more easily to reach by publictransport because of the city densification towards the south of Delft (thus, towards the Hammenboerderij). Reuversweerd is not reachable with the public transport. A car or bicycle is needed to reach Reuversweerd .

Site

The site development of Reuversweerd has changed in the past 188 years. From only a farmhouse till a farmhouse with a castle till a castle with several farmhouses and stables. The Hammenboerderij had originally different smaller buildings (farmhouse with different small stables and chumbarn) and transformed itself into one farmhouse, the chumbarn and one big stable where all other smaller stables were merged together. Reuversweerd developed from one building into more buildings and the Hammenboerderij developed from more buildings into three buildings.

Building

Both sites had (and have) similar functions in terms of agricultural purposes. Reuversweerd has changed its aesthetics after 1921. An additional wing was added to the building and the façade changed a part of its materialization and some of its ornamentations. The Hammenboerderij had a similar transformation. The original farmhouse was duplicated and mirrored on the longitudinal side of the building. However, the façade looks symmetrical but the 'mirrored' sides have some differences from each other.

Space and surfaces

The floorplan of Reuversweerd's castle has a clear division with the servant's and the owner's space. The more representative rooms (owner's space) are more decorated and have more fine materialization (wallpapers, parkette, marble, natural stone and stucco ornamentations). The servant's rooms have a simpler wall and floor finish. This floorplan division is similar to the Hammenboerderij. From our research conclusion: The hierarchical layout within the map and the complex clearly show the character of the locations. The strong urge to steer the guests in the right direction adds to the former function of both locations.

Landscape conclusions

In this section of the Graduation Report, the most important conclusions will listed down below. Here again, I focus more on the conclusions for Reuversweerd's landscape.

The vegetation at and around Reuversweerd is mostly herbaceous. Because of the tree cut in 2016 around the Ijssel, in order to give the river more space to overflow, there are not many trees around this area. On the site of Reuversweerd there are still trees (with age value) located in the gardens and in front of the main house. These higher vegetations are creating an interesting eyecatcher for the surrounding since this part of the area is the only part with this amount of higher trees.

The fauna is mostly composing out of sea eagles, beavers and cattle animals from surrounding farms. If we look at the soil properties in and around Reuversweerd we can see that the soil is really fertile because of its clay composition. Because of this property, most of the surrounding land is used for agricultural purposes. Because of the variations of the surrounding vegetations, and the speed of growth of these vegetations, there is a promising potential for biogas production in this area.

As mentioned before, the Ijssel is one of the most important landscape element around the site. Because of its developments in terms of shape and size, the surrounding buildings and buildings positions had to adapt to it. The height of the Ijssel in this area is around the 174 cm and the 376 cm. The speed of the river is around the 2 and 4 km/h. This property can be used to generate green energy with attention to the height and the boat traffic of the river. There are some possibilities to gain drinking water from the surrounding soil. However, the Ijssel water can't be used for potable water but can be used for agricultural purposes and for householding. Finally, we can see that the Ijssel can be a dangerous zone in terms of overflowing. It is calculated, with the rising up of the sea level, that Reuversweerd will be completely overflowed by the Ijssel in the future (if no future preventives are taken).

H&T conclusions

Services and stuff

From the cultural value matrix in the report conclusion we can see that objects and services which are specially made for that particular room or site have a cultural and historical value. In Reuversweerd we find out that the kitchen located at the ground floor, the elevator and the library are the most significant objects which are located at Reuversweerd. This also count's for the Hammenboerderij. The hand painted 'wooden' doors are particularly made for this building. The kitchen at the ground floor is also specially made for this farmhouse and has a certain age value.

Atmosphere

For both locations the amount of light in the different rooms, the direction of the daylight, the height of the ceilings, the present objects, furniture and services and the materialization of those rooms are defining the atmosphere in both locations. These elements are also defining the Spirit of Time in both

locations. The atmosphere is concluding the most important elements in Space, Surface and Services and Stuff chapters which defines the Spirit of Time.

Construction

The construction at Reuversweerd has some war and some humidity damages. The war damages can be repaired more easily than the humidity damages. The humidity source which provokes these damages needs to be shut down by waterproofing the affected elements and by (preferably) removing these humidity sources. The floorplan at Reuversweerd has different bearing walls which make the floorplan subdivision not flexible. The location of these walls needs to be taken into consideration for future design on these floorplans. There are several possibilities listed which gives us different methods to restore damages, to insulate and to waterproof the building.

H&V conclusions

In our report we used the cultural value matrix to help us evaluate each different chapter in terms of value attachment in different fields of both sites. From the Value Assessment conclusion we listed the following elements which have a cultural value: stucco ornaments, fireplaces, repertory and posh façade, the wooden window frames, war damages, some age valuable trees and the objects made specially for Reuversweerd (mentioned in Stuff and Services). The last mentioned category (in Stuff and Services) could have an indifferent value. Based on the future use of those objects there could be placed a cultural and/or historical value to these objects. For example, the kitchen will be a good showpiece in a museum, as well as the and bookcases or after restoration, the kitchen could be made functional again. However, it does not mean that it is a valuable addition to the building itself.

Starting point for design

These conclusions help us to create a base for our design. With this information we have more underground to argue our future design reasons and decisions. With starting an analysis based on needed and preferred functions on the site and function and program in the surrounding, we can make a concept program for the most suitable functions for Reuversweerd. After this analysis of both sites we know where we need to add interventions in order to restore damages

Intervention strategy

- Assessment on new program
- Restoration of damages (if needed)

- Assessment on essential installations (sanitary, kitchen, solar panels, wind/water turbines, aquifer, greenhouse and biogas installations and equipments)
- Architectural gesture (design typology or style)

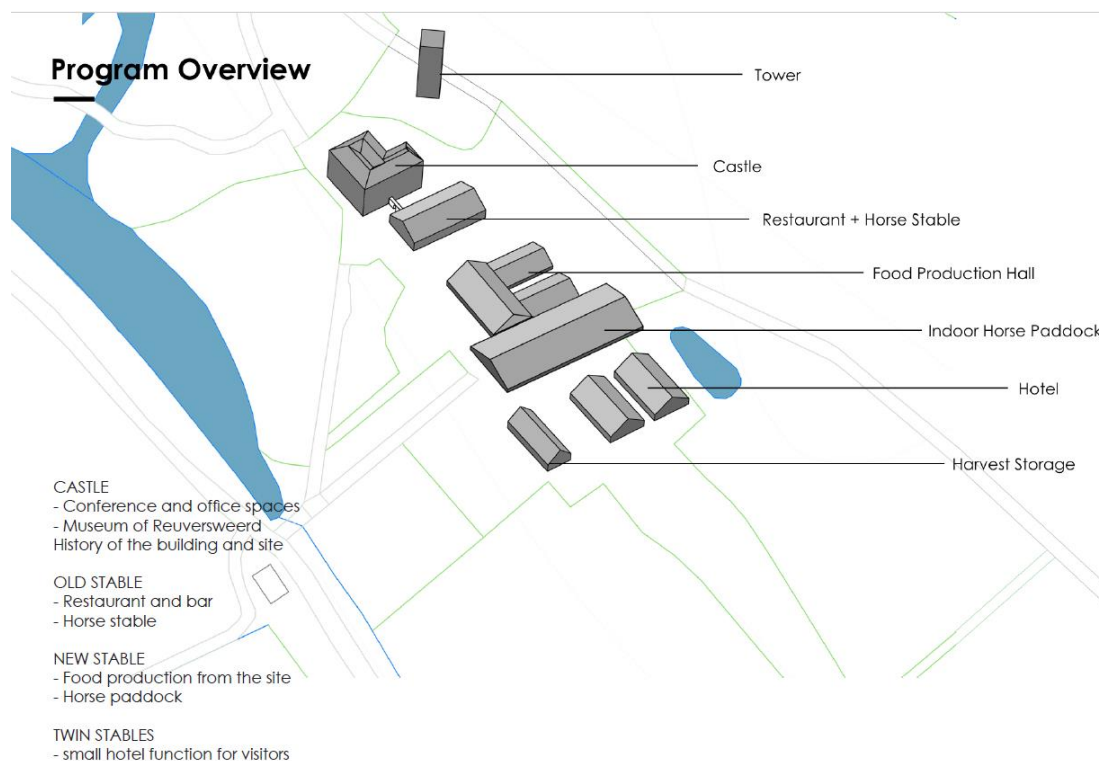
First design ideas P1

“Can Reuversweerd be renovated without losing its cultural and historical value, while giving back some of the originals functions and adding additional functions in order to revitalize the site and area in a sustainable way while producing a positive footprint regarding energy, water, air and material? “

My goal is to give Reuversweerd a second (or maybe third) live while respecting the heritage and the environment (in terms of sustainability and without disturbing the natural reserves in the surroundings). Prof. A. van den Dobbelsteen introduces a new term, the E-novation. This term is focusing on the energy innovation in renovation. “Preserving old poor-quality buildings is not always the best solution.” (A. van den Dobbelsteen). In order to, not only, restore in a sustainable way, I’d like to try make Reuversweerd completely self-sustainable in terms of energy, water, air, food and (if possible) materialization. With this in mind, cycles needs to be closed. These cycles are based on water use, ventilation use, material use and energy use and energy generation. With this we are creating a positive footprint on each element (more energy out than in - cleaner water out than in – cleaner air out than in- flexibility of floorplans and material bank).

In order to give Reuversweerd a second live it is important to give this plot an adapted program. The first requirement was to transform this building into a congress, conference and office building. An addition of function is added to reinforce this site which has lot of potentials and which will attract more people :

conferences and offices spaces, agriculture land use, museum which will tell Reuversweerd’s story, a restaurant and bar, bringing horses back to Reuversweerd, hotel accommodation for visitors and the production of green energy.



Master

plan P2

I developed an interest into transformation architecture. The art and interesting analysis which brings the design into an integration of the old and new brought me to choose this studio. This interventions are most of the time expensive and not sustainable. My interest lies in this architecture branch but with a high priority related to sustainability. With this project I want to achieve a balance with the new and the old architecture. The same balance is projected into the design and the environment which will try to reach a high level of sustainability.

The two given locations have both interesting challenges. My personal preference lies in Reuversweerd's estate. The 'isolated' location, the history and the architecture of this site called my attention at the first encounter with Reuversweerd. My personal interests about transformation/ heritage architecture fits more with this location. This is why I will only focus on Reuversweerd.

I made an extra analysis regarding sustainability and the adaption towards these solutions for Reuversweerd. The design will integrate these solutions. This will be a result of renewable energy solutions, materialisation choices and building technology solutions shaped or adaptable for Reuversweerd. This extra report will focus on the next starting points:

1. All five resources renewable or from renewable sources.
2. Effects on ecology, economy and equity as a framework to assess the desired developments.
3. Urban development areas as testing grounds.
4. Securing interdisciplinary collaboration

The first part of this report during P2 is focused on point 1. The architecture of my design proposal will follow these sustainable solutions while finding a balance and meaning regarding the existing architecture and its different values.

Program: museum, conference center, hotel, restaurant, luxury management, food production, biomass and energy production, panorama tower

Target groups: business, high-end hotel visitors of any age, tourists, cyclists, hikers, surrounding inhabitants.

\$: From expensive (hotel and management) to affordable (museum, walking routes on site, restaurant).



Design strategy

As mentioned before, the design strategy is to find balance between: the old and the new design; the design and its environment. The first balance is tried to reach by a design which respects the existing

buildings while distinguishing itself from the original building parts. The additional new design has a continuity reached by the same materialization and shapes.

1. Design continuity in:

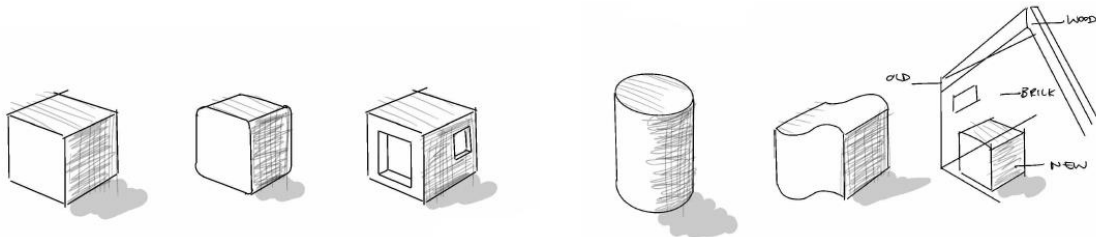
Materials



Present materials

New materials

Shapes



The war damages in the main house will be repaired. This reparation will have another materialization than the original material. In this way, the war damages are still clearly visible to the visitors. The aim is to tell the story of this estate, whether it's a good or bad ending story. This story telling is also projected in the exterior. Each building had a different function and building year. With a minimal intervention of façade painting, each story of each building is told from the exterior. A black and white gradient is applied to the different buildings' facades. In this way it is visible (after telling the visitors the story behind it) that each building was built in another period and that each building had/had another function. Thanks to this gesture, the different buildings on the plot will have a more visual continuity from the exterior.



The other balance is between the buildings and its environment. With this balance sustainability is involved. The aim is to generate renewable energy on and around the site and to use recycled and recyclable materials on the site. The idea is to get more estates, like Reuversweerd, work together towards a greener future. These estates will produce together green energy which creates a chain of renewable energy production.

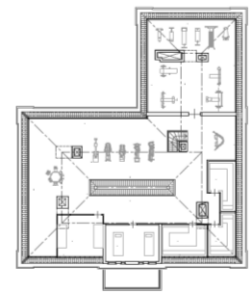
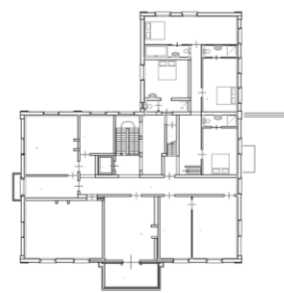
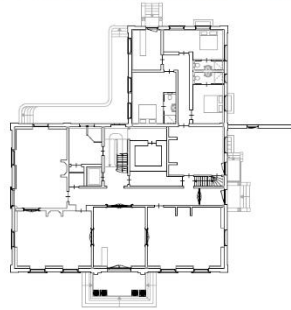
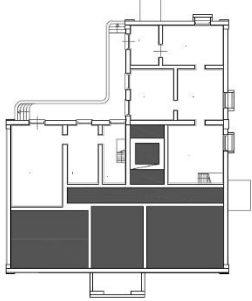


Conceptual design

Mainhouse

The main house has room for a museum on the ground floor, where the story of Reuversweerd can be exhibited. On the ground floor there is the original kitchen and in the servant area luxe hotel suites. The first floor will have some rooms for the conference and office spaces. On the first floor in the servant's part of the building, the hotel will continue on this floor. The attic is reserved for SPA and wellness functions.



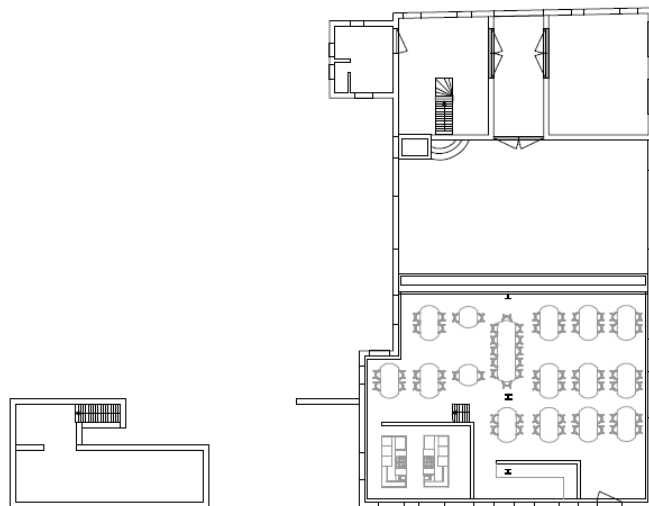
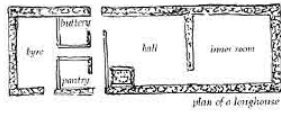
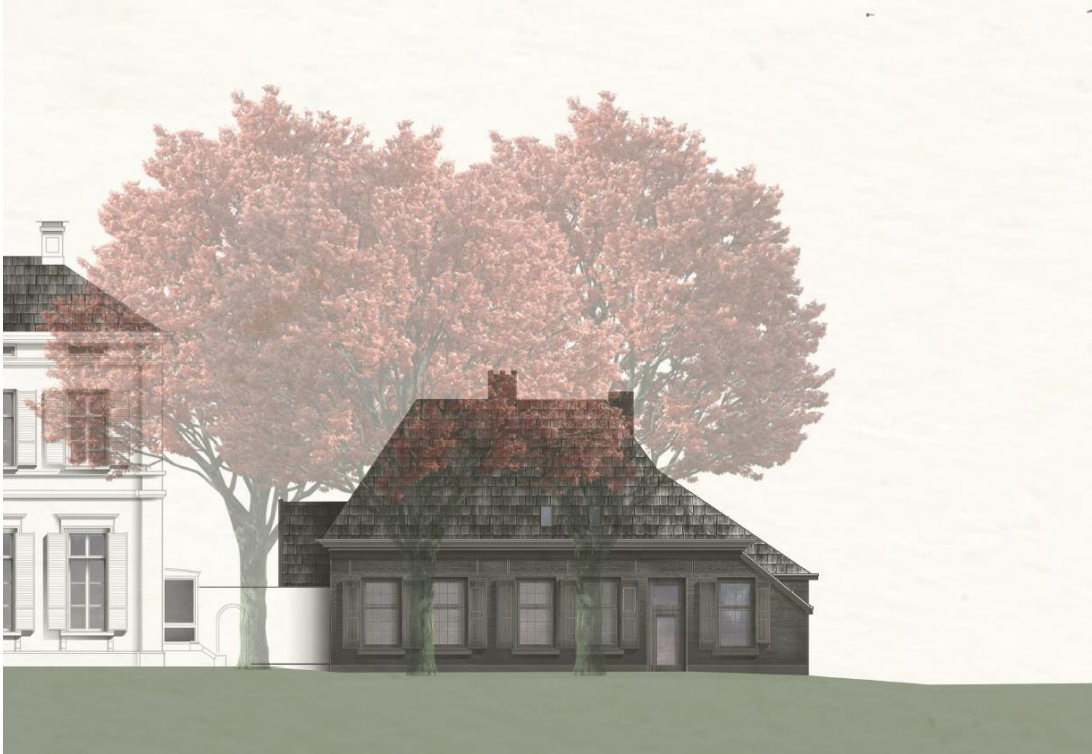


The exterior of the main house will be restored and the natural stones and stucco will be cleaned and restored as well. The building is going to be insulated from the inside of the exterior walls and the roof is going to be insulated on top of the existing construction.



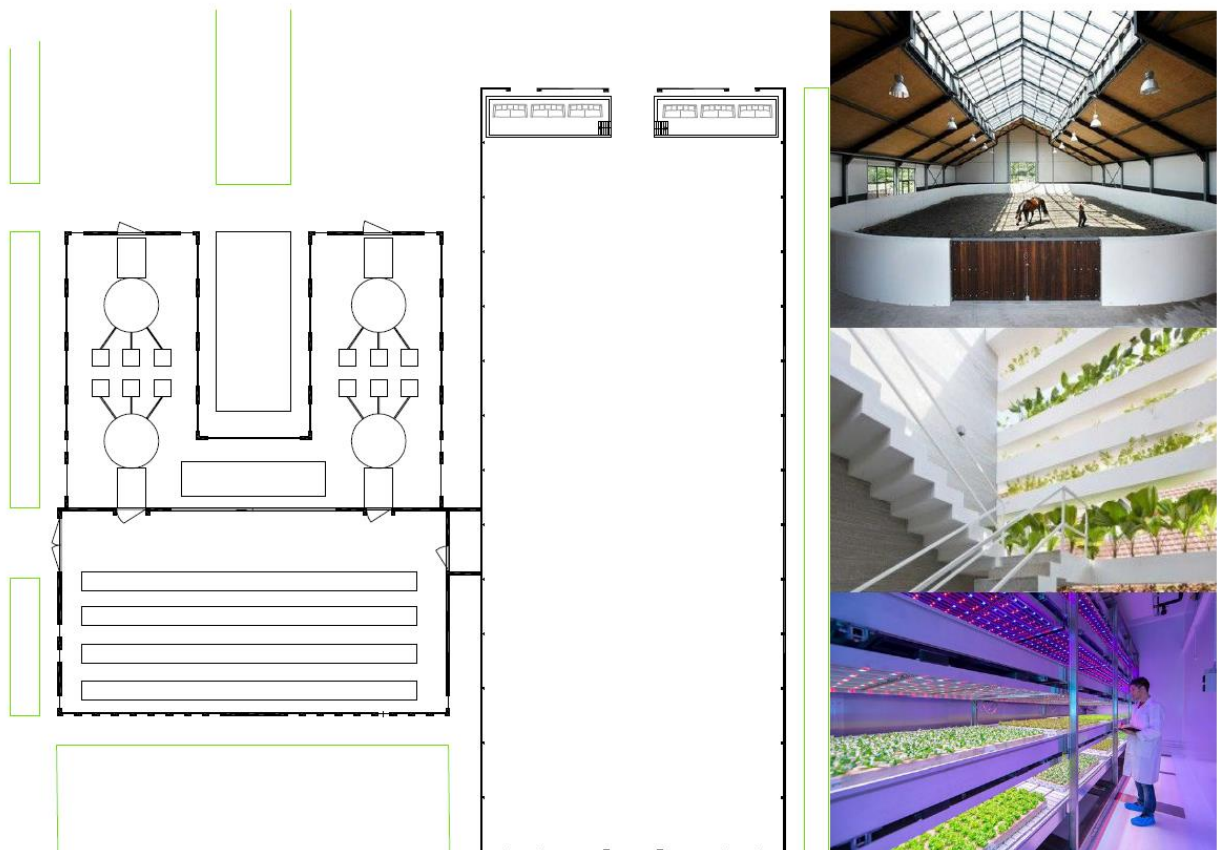
Farm house

The farm house is split in two, one part is a restaurant and the other part is a horse stable. The horse stable is from the inside of the restaurant visible through a glazed wall. The principle from the mediaeval farmhouse is applied to this building, which means that the stables are attached to the farmhouse in order to give warmth (from the animals) to the farmhouse. The first floor of this building is also split in two, the floor above the restaurant continues with the same function and the floor above the stable is storage for hay and horse food. The outside of the building is painted with a light grey color. The restaurant will mainly use the local food production on the site.





Moving forward towards the right of the farm house, we will see the cubic stable and the original cow stable. The cubic stable is turned into a green house and a biogas plant. The cow stable is rebuilt, with a higher roof, for an interior horse paddock. The cubic stable façade is painted black and the paddock a dark grey. Inside and around the cubic stable, there is room for trucks to load the biomass in the biodigesters. The paddock has two small sitting areas.

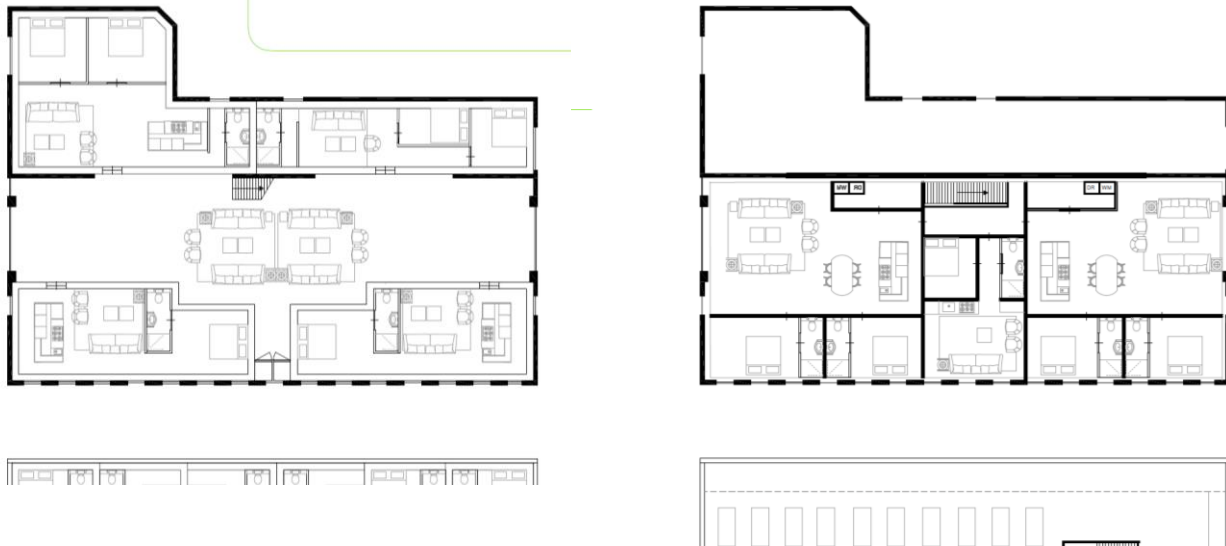




Horse stable and Ankerschuur

These two stables are transformed into a stable hotel. Here, 20 different rooms are designed for couples, singles and families. The different rooms are all insulated from the inside. In this way, the original construction is from the inside visible.





Building technology

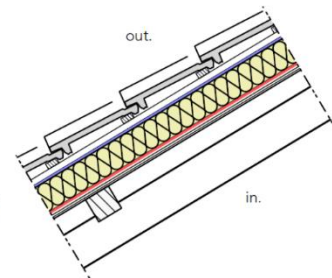
In the field of building technology, my aim is to use environmental friendly products and to use electricity and potable water as less as possible.

Insulation

An interesting 100% biodegradable material to insulate the buildings with a high R value is straw. With 500 mm straw, this insulation layer can reach 8,3 - 9,1m²K/W.



Insulation from the inside

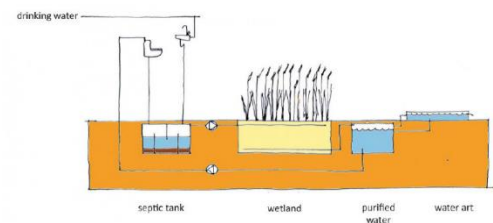


Insulation from the outside

In order to make the roof construction in the different buildings visible, it is possible to insulate the roofs from the outside of the roof construction.

Water

2/3 of the potable water can be saved by filtering the toilet and sink water and by using grey water. The exterior planters can filter this water and use the minerals and nutrients inside this water. After filtering this water, the water will be pumped back so it can be reused for the toilets flushing.

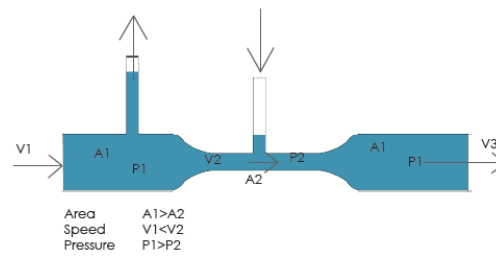


cycle

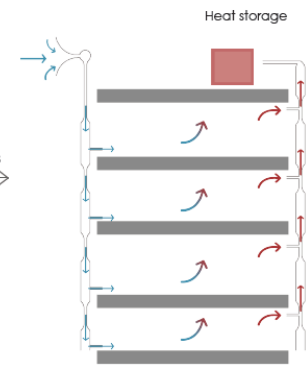
Saving 2/3 of potable water

Ventilation

There are many ways to use air flows in order to stimulate a natural ventilation. One possible way is to use the venturi model showed on the right. Applying this principle into a vertical pipe, cold air from the outside can be blown inside the rooms and warm air from the inside can be sucked into these pipes. In this way, a natural flow is created to refresh the rooms with air.



Venturi tube for natural ventilation



Ventilation system based on Venturi principle

Reflection

The lessons learnt from the analysis Architectural, Technological and on Cultural Value aspects are mentioned down below.

For the Architectural analysis it is important to know why some design decisions were taken. This is linked with the building age. Some specified bricks were used or some floorplan typologies were applied. To redesign these historic buildings it is difficult to find a balance with the old and the new floor plan, for instance. Understanding the building typology and building year is therefore an important tool which helps the design to be grounded to its previous design. This part is also linked with cultural value. The research whether an object, façade or roof tile has a certain cultural value is not the easiest task. Profound research needs to be taken in order to understand the importance of that object and why is it important? When an object or building element (or the whole building) has a certain value, this object is part of the estate and contributes in the overall atmosphere of the estate.

Since the buildings on the site have a certain building age, some details or construction interventions decisions are difficult to relate. With (some) lack of construction and detail drawings it is difficult to estimate the precise construction. In this case, some assumptions needs to be taken, which can be wrong.

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