GRADUATION PLAN
MASTER OF SCIENCE ARCHITECTURE, URBANISM & BUILDING SCIENCES

PERSONAL INFORMATION

Name	Juliëtte Catharina Zegers
Student number	4281683
Telephone number	-
Private e-mail address	-

STUDIO

Name / Theme	AR3AH110 Heritage and Architecture: Revitalizing Heritage, Winterswijk (KaDEr LLAB-XL-URBAN)
Main mentor	Hielkje Zijlstra - Architecture
Second mentor	Frank Koopman - Technology
Argumentation choice of the studio	Heritage is our past and will be our future. Old buildings have always caught my attention because of the various stories they bring forward through their layers of time. Working with these buildings in order to give them a further future is complex but a wonderful challenge: we should not destroy them! Through the research this studio offers I would very much like to dive into details and materials: the old and the new. How to combine these two in a design is something I find very interesting and a skill that I would like to develop.

GRADUATION PROJECT

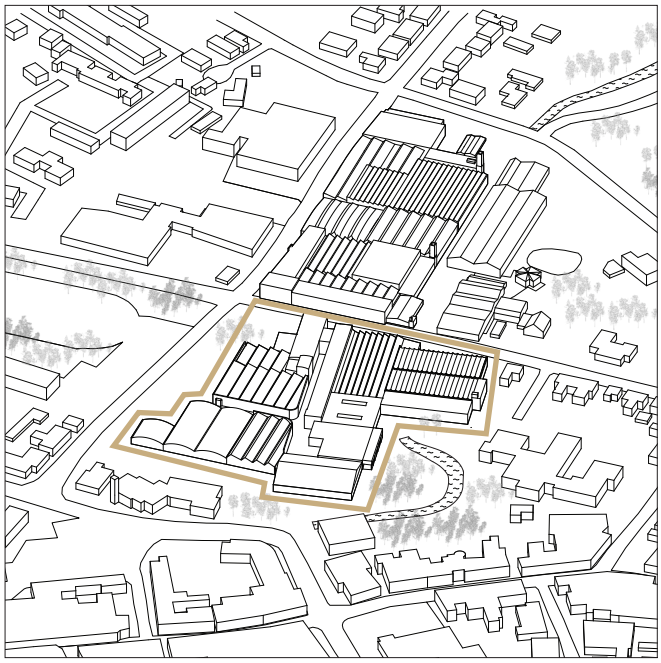
Title of graduation project	Timber Town

GOAL

Location	Winterswijk, Gelderland, The Netherlands
The posed problem	The province of Gelderland founded the KaDEr project in order to redefine their strategy in the field of heritage, since restoration and transformation of heritage is becoming a common future interest. The project is a collaboration between the Province of Gelderland and the Faculty of Architecture of the Technical University of Delft (Zijlstra, 2018). The industrial area in Winterswijk is appointed as one of the (partly) abandoned heritage sites within the KaDEr project. Textile manufacturing, which began with the craftmanship of the farmers around Winterswijk, has been an important driver for the development of the village and its inhabitants. In the late 19th Century the craft was taken to the industry and soon grew out to the pride of the village. The project is a building ensemble within an industrial area, close to the village centre. It is divided into four parts: Gaudium, Morsepoort, Hazewind and Janfleur. A creek –the 'Whemerbeek'- used to be one of the elements which were very important within the area regarding the production process. It is now partly covered because it has lost its function. Furthermore, regardless of the textile industry fulfilling the core function of Winterswijk's prosperity in the past, part of the area currently lays unused and deteriorated: only Gaudium is still functioning as a textile factory. Despite the presence of this factory, the industrial area has lost its status as a showpiece for the village and the inhabitants do not feel connected to the area anymore. For that reason, the focus of this project will be to revive the Morsepoort.


HAZEWIND
MORSEPOORT
GAUDIUM
JANFLEUR


DEPOT
1913



RESEARCH QUESTIONS

Research question

How can the industrial ensemble regain its purpose based on past and future craftmanship, fulfilling the function of pride of the village?

Sub questions:

- How to deal with the spatial conditions of the ensemble and its relation with the surrounding area and the hinterland?
- How to deal with the characteristics of the ensemble itself and its original inner connections, view lines and appearance?
- How can functions of certain buildings and building complexes contribute to counteracting demographic decline?
- What craftmanship can be the centre of the project and will be durable for the future?
- How to transform buildings which were originally built for textile industry into buildings with a variety of functions?
- What elements from the past can be an inspiration for the future?
- How can the spirit of place be kept whilst at the same time a refreshing design will be produced?
- In what way can sustainability and circularity be incorporated into the design?

Design assignment in which these result

Since Gaudium is still functioning and embodies the craftmanship of the past, the focus of the project will be to transform the Morsepoort into the area with future craftmanship. Together the areas will form the new pride of the village.
The aim of the project is to react on multiple studies which are conducted on the topic of demographic decline and the measures which can be taken in order to counter this.

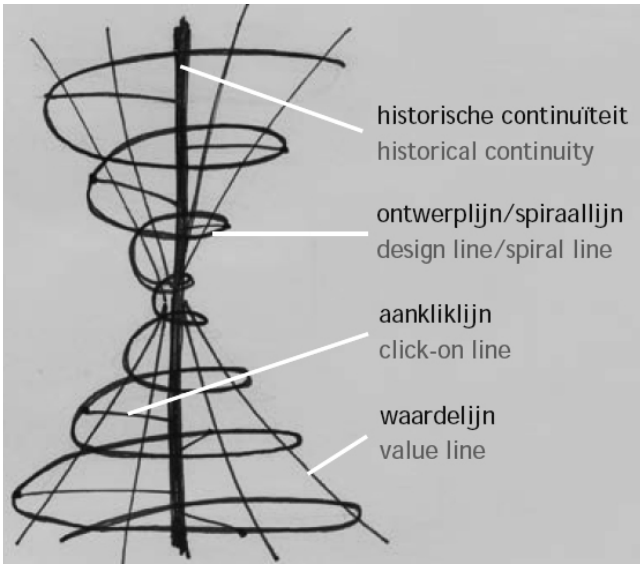
In the first place, the creek will be exposed and will function as the backbone of this project, since it appears to be of high value for Winterswijk and the industrial area. A new bike lane and parallel primary walking routes reconnect the village centre towards the hinterland, where the area functions as a transitionary space.
Secondly, there will be an introduction of new functions in the area to stimulate mixed-use. The general connecting theme will be timber, hence the name of the project. The manufacturing industry is very common and well-practiced in the Achterhoek and working with timber fulfils a big role within this. A large part of the new functions, accommodated according to the different typologies of the buildings and accompanying characteristics, have a direct connection with timber. The other buildings also link to timber, but it a more subtle way: for example within the materialisation and detailing.

The challenge is to engage people with the area and to provide them with something new, but also reminding them of the origination of the place itself. Also, with the use of timber as a building material and the focus on circularity, the topics of sustainability and durability can be made visible and tangible to the wider public.

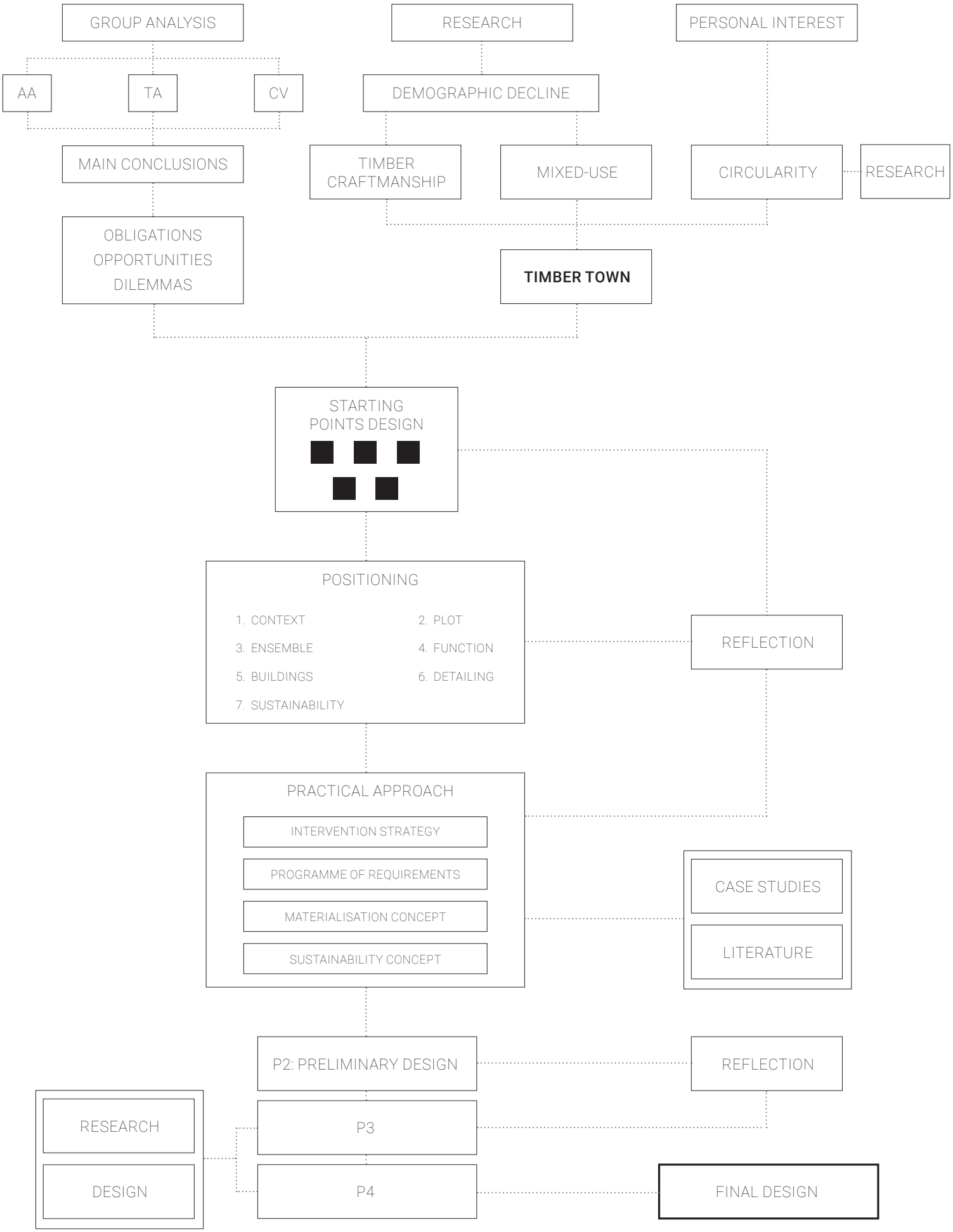
PROCESS

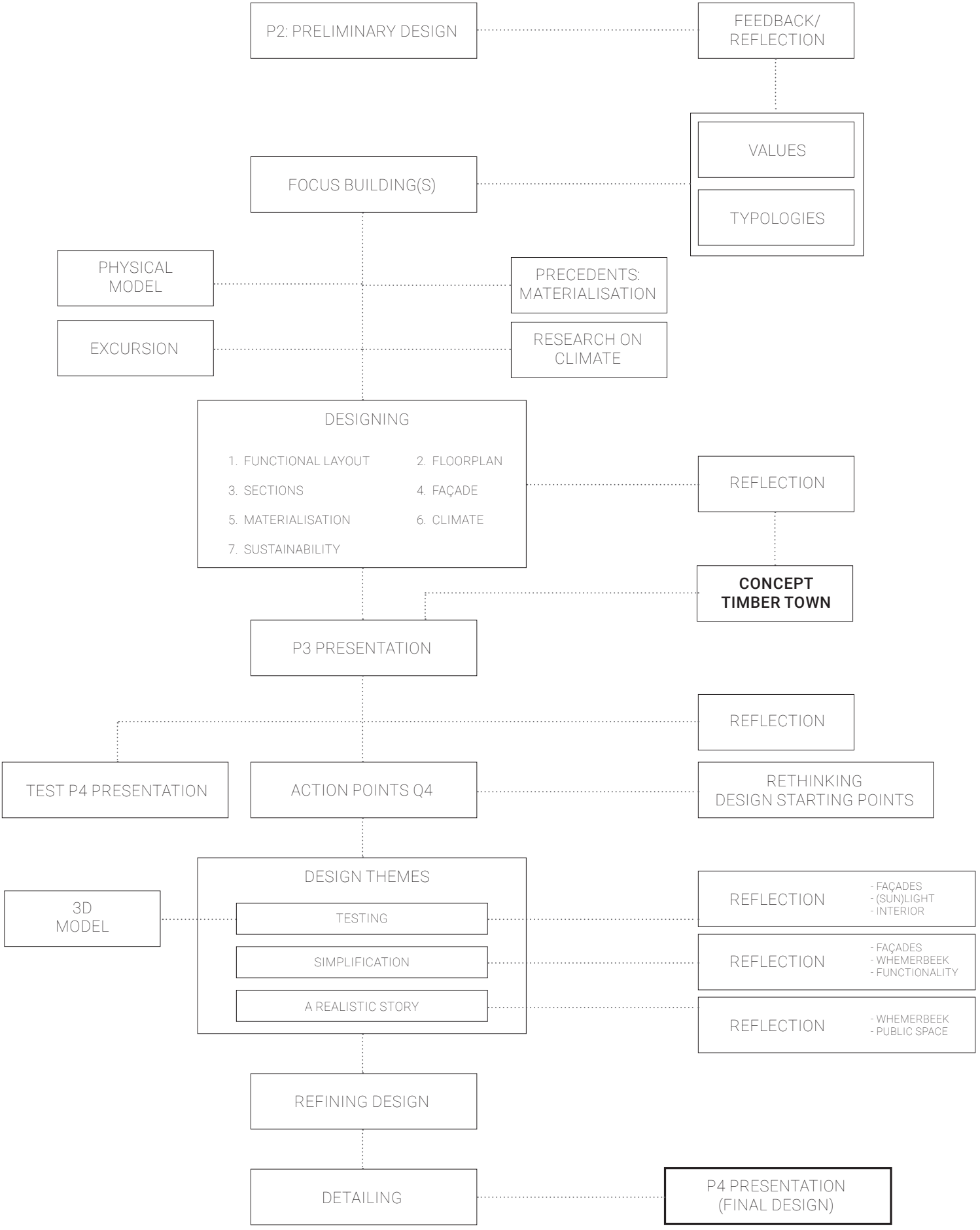
HERITAGE TRANSFORMATION

Job Roos explains about the whole process of heritage transformation in his book, 'Discovering the assignment'. He introduces a spiral as symbol for the process, where the cyclic and linear process are incorporated. Within this spiral different important aspects come forward, as shown in the image on the right. The lower part of the spiral embodies extensive research, the upper part is the starting point for further developments and this is where the chosen interventions will be translated into a spatial design. In the middle all four aspects come together, where the idea for the whole design should be born: the discovery. The axis of historical continuity continues in the upper part, because within heritage architecture it is important to sometimes loop back to (new) historical characeristics and for example, sometimes design decisions cannot be worked out. Then the designer needs to take a step back and look at new relations and design options. Roos also stresses that in general it is important to reflect on the characteristics of the building(s) and their connection with other aspects of the assignment (Roos, 2007).
My own process also followed this way, where the base consisted of thorough research and deriving the values. 'The discovery' is comparable to the determination of the design starting points in my own design process. But it is the last part of the spiral that interests me the most, where reflection and taking a step back is extremely important. It did indeed seem very fruitful for me to reflect often while designing. This is also very present in the schemes below.
Below the schemes I will elaborate more on the methods and process.



PROCESS


GROUP ANALYSIS
AA
TA
CV
MAIN CONCLUSIONS
OBLIGATIONS
OPPORTUNITIES
DILEMMAS
RESEARCH
DEMOGRAPHIC DECLINE
TIMBER CRAFTMANSHIP
MIXED-USE
PERSONAL INTEREST
CIRCULARITY
RESEARCH
TIMBER TOWN
STARTING POINTS DESIGN
POSITIONING
1. CONTEXT
2. PLOT
3. ENSEMBLE
4. FUNCTION
5. BUILDINGS
6. DETAILING
7. SUSTAINABILITY
REFLECTION
PRACTICAL APPROACH
INTERVENTION STRATEGY
PROGRAMME OF REQUIREMENTS
MATERIALISATION CONCEPT
SUSTAINABILITY CONCEPT
CASE STUDIES
LITERATURE
P2: PRELIMINARY DESIGN
REFLECTION
RESEARCH
DESIGN
P3
P4
FINAL DESIGN


P2: PRELIMINARY DESIGN
FEEDBACK/ REFLECTION
VALUES
TYPOLOGIES
FOCUS BUILDING(S)
PHYSICAL MODEL
EXCURSION
PRECEDENTS: MATERIALISATION
RESEARCH ON CLIMATE
DESIGNING
1. FUNCTIONAL LAYOUT
2. FLOORPLAN
3. SECTIONS
4. FAÇADE
5. MATERIALISATION
6. CLIMATE
7. SUSTAINABILITY
REFLECTION
CONCEPT TIMBER TOWN
P3 PRESENTATION
REFLECTION
TEST P4 PRESENTATION
ACTION POINTS Q4
RETHINKING DESIGN STARTING POINTS
DESIGN THEMES
3D MODEL
TESTING
SIMPLIFICATION
A REALISTIC STORY
REFLECTION
- FAÇADES
- (SUN)LIGHT
- INTERIOR
REFLECTION
- FAÇADES
- WHEMERBEEK
- FUNCTIONALITY
REFLECTION
- WHEMERBEEK
- PUBLIC SPACE
REFINING DESIGN
DETAILING
P4 PRESENTATION (FINAL DESIGN)

METHOD DESCRIPTION (SCHEMES ABOVE)

First a thorough group analysis was done based on the following topics: Architecture (AA), Building Technology (TA) and Cultural Values (CV). The main conclusions and values were structured into obligations, opportunities and dilemmas. These form the first part of the starting points of the design. The second part is shaped by actualities and facts of Winterswijk, but also by a personal interest in circularity. Together these two analyses form the base for the starting points of the design. The next step is positioning on multiple aspects and scale levels of the project, taking into consideration the starting points. In this phase of the design there is a continuous reflection on the implementation of the starting points. With every idea or position, are they compromised? And if they are, is there a good reason for it? Once a clear position towards the context, the plot, the ensemble, the function, the buidings, the detailing and sustainability was formed, the practical approach could be determined. How to actually design according to the principle mentioned before? Again reflection plays an important role. As for the practical approach, research through case studies and literature was done. These show real-life examples on how to treat heritage and what solutions are possible in certain situations.
In the part after P2, a closer focus on a building or some buildings was desired. Therefore a reflection on the values and typologies was done. Afterwards multiple research methods were used to form the base of the design decisions: physical modelling, an excursion, precedents on materialisation and research on climate. This together with the idea of phasing the project, formed the P3 presentation.
After P3, the 3D model gained a lot of importance. With this tool a lot of different aspects could be tested: the roof shells, multiple façades, sunpaths and shading, lighting and the architectural appearance in general.

METHOD REFLECTION

Reflecting on the process and methods as described above and showed in the schemes, there was not one approach or road that I tried to follow. A lot of different research methods and tools were used to form the base for the design and design decisions. Furthermore, looking at the scheme, it becomes very appearant that during my process, there was a lot of reflection. Especially after P3, I was constantly reconsidering the design at that stage and asking myself questions: are the design starting points followed? Why did I design something in a certain way and what is the reasoning? How can the building become more functional? How can the building become more easy to use? In the end I believe that it made my design stronger.

LITERATURE AND GENERAL PRACTICAL REFERENCE

RESEARCH METHODOLOGY
- Groat, L., Wang, D. (2013). *Architectural research methods*. Hoboken, NJ: John Wiley & Sons Inc.
- Ray, L. (2016). *Research Methods for Architecture*. London, England: Laurence King Publishing Ltd.
- Roos, J. (2007). *Discovering the assignment*. Delft University of Technology

HERITAGE ARCHITECTURE
- Van Hees, R., Naldini, S., Roos, J. (2014). *Durable past - sustainable future*. Delft University of Technology
- Kuipers, M. & De Jonge, W. (2017). *Designing from Heritage*. Delft University of Technology
- Meurs, P. (2016). *Heritage-based design.* Delft University of Technology

OTHER ARCHITECTURAL LITERATURE
- Architectenweb (2020). *Mei ontwerpt volledige houten woongebouw.* Retrieved on 4 May 2020 from https://architectenweb.nl/nieuws/artikel.aspx?ID=47190
- Crook, L. (2020). French public buildings to be built with 50 per cent wood. Retrieved on 4 May 2020 from https://www.dezeen.com/2020/02/12/france-public-buildings-sustainability-law-50-per-cent-wood/?utm_medium=email&utm_campaign=Dezeen%20Weekly%20660&utm_content=Dezeen%20Weekly%20660+CID_2de5a5a6f3c1329f3e266fac31d46eea&utm_source=Dezeen%20Mail&utm_term=Read%20more
- De Klerk, E. (2017). *The city as a shell*. Amsterdam, The Netherlands: Valiz
- Geldermans, B. & Rosen Jacboson, L. (2015). *Materialen & Circulair Bouwen*. Retrieved on 4 May 2020 from https://www.cirkelstad.nl/wp2/wp-content/uploads/2015/07/Materialen-en-Circulair-Bouwen.pdf
- HAUT (n.d.) Het gebouw. Retrieved on 4 May 2020 from https://hautamsterdam.nl/nl/gebouw/
- NOS (2018). 'Hout groeit tot in de hemel': houten wolkenkrabbers in trek. Retrieved on 4 May 2020 from https://nos.nl/artikel/2218442-hout-groeit-tot-in-de-hemel-houten-wolkenkrabbers-in-trek.html
- Stora Enso (2017). *The future of Timber Construction CLT – Cross Laminated Timber.* Retrieved on 4 May 2020 from https://www.clt.info/wp-content/uploads/2017/06/Stora-Enso-The-future-of-timber-construction-EN.pdf
- Superuse Studios (n.d.) About us. Retrieved on 4 May 2020 from https://www.superuse-studios.com/en/about-us/
- Waugh Thistleton Architects (2018). *100 Projects UK CLT.* Downloaded on 4 May 2020 from https://www.thinkwood.com/clt100book

OTHER LITERATURE
- Erfgoedstem. (2019). *Per 2020 vernieuwde opleiding Hout & Restauratietechniek op MBO-3 niveau in Gelderland*. Retrieved from https://erfgoedstem.nl/per-2020-vernieuwde-opleiding-hout-restauratietechniek-op-mbo-3-niveau-in-gelderland/
- Provincie Gelderland. (2017). *Bevolkings- en huishoudensprognose 2017.* Retrieved from https://www.gelderland.nl/bestanden/Documenten/Gelderland/Kaarten-en-cijfers/170327_Bevolkings-_en_huishoudensprognose_Gelderland_2017.pdf
- Tubantia. (2017). *Design-meubelfabriek Arco uit Winterswijk wil project Local Wood wereldwijd uitrollen.* Retrieved from https://www.tubantia.nl/achterhoek/design-meubelfabriek-arco-uit-winterswijk-wil-project-local-wood-wereldwijd-uitrollen~a10658a7
- Werkgroep Krimp Winterswijk. (2013). *Krimp biedt kansen!.* Winterswijk, The Netherlands: eDruk
- Zijlstra, H. (2018). *KaDEr Gelderland: Tussenreportage fase 1 2017-2018*. Delft University of Technology

REFLECTION

1.

As written on the website of the TU Delft about the section of Heritage & Architecture: "Transformation of cities and buildings is one of the main themes in architecture today. An appropriate balance between the old and the new is a fundamental interest for contemporary design in architecture. Heritage & Architecture is concerned with preservation and renewal in existing architecture. The research by design concentrates on the architectural and technical aspects involved in the growing need for the conservation and transformation of buildings, including those of cultural significance." (TU Delft, Heritage & Architecture, n.d.).
In this respect, the section of Heritage & Architecture is involved in the KaDEr project to come up with a new strategy for heritage in Gelderland and to think of a future perspective for abandoned buildings in the province (Zijlstra, 2018). That transformation of cities and buildings and finding an appropriate balance as described before, is a specific topic here, where the province of Gelderland and the region of the Achterhoek have their own characteristics and unique heritage. Also the studio 'Revitalizing Winterswijk' of the section Heritage & Architecture has its own specifics. The village of Winterswijk is an island within a beautiful landscape where tourists love to go, but the village also deals with demographic decline. The challenge here is to come up with a strategy and a design which can benefit all of those aspects.

I believe that my graduation topic in the shape of Timber Town is an appropriate project for Winterswijk. In the first place because a bottom up approach and a mixed-use area is proposed for the transformation of the industrial heritage, which can counteract demographic decline. In the second place the function of a shared timber workshop and related programme links to the manufacturing industry, which is very large in the eastern part of The Netherlands. The strategy of dealing with the heritage is made as realistic as possible, due to the different stages of development which are designed and the inclusion of the municipality's vision and ideas.

2.

Research
The research conducted in Q1 is bundled in an extensive analysis report of 270 pages and consists of literature research, historical research and site observations. It is based on the Cultural Value matrix, developed by the section of Heritage & Architecture of the TU Delft. "The matrix is specifically intended to guide students in detecting the essential qualities of the heritage buildings in their present state and to understand them better in relation to the historical evolution" (Kuipers & de Jonge, 2017). After we had put the multiple values into the matrix, the next step was to assign different levels of significance to the values. The result was a great list of Obligations, Opportunities and Dilemmas, which was very helpful for us. Indeed it helped in "communcation and differentiation during the next steps of our value-based design from built heritage process" like Kuipers and de Jonge explain in their book (Kuipers & de Jonge, 2017). But on the other hand I thought that it was difficult to connect these directly to the first design steps and it took a while for me to figure this out. For me it was important to understand that the results of the matrix should be more of a guideline, and that from there I had to define and crystalize the values that for me would be most important to capture within this project and that would stand at the forefront of the design, instead of the ones that are more present in the background. If I now read the Obligations, Opportunities and Dilemmas in the analysis report, I think that all of them are respectively included into the design.

Approach on viability
This project can show how an area ilke this can grow from the inside out, where it only needs an investment of the municipality at the beginning of the process to start revitalizing the area. Therefore there is an increase on viabilty and credibility embedded in the project. This is linked to the cultural value strategy on how to slowly develop industrial heritage sites in the Achterhoek like the site in Winterswijk.

Approach on inclusiveness
By making the area mixed-use in the first place, and in the second place inviting multiple types and groups of people to the area, the first step to inclusiveness is made. Also a lot of initiative is taken to incorporate the users of the area into building and shaping the area themselves.

Approach on circularity
Within the more professional and scientific scope, the project contributes to a sustainable future because it focuses on the topic of circularity. The phenomenon of circularity is a very broad and therefore I will try to explain circularity in Timber Town according to three themes:
- Modularity
- Sustainable use of timber
- Reusing materials

- Modularity:
As stated in a report from the TU Delft, adaptive building and circular building are strongly connected. Within this idea of adaptive building, incorporating standardized elements within our building practice can be very beneficial. Next to causing less impact on the environment and a smaller CO^2 footprint, the approach is also economically attractive (Geldermans & Rosen Jacboson, 2015). Timber Town fits into this approach. The modular structure of the interior is fast to produce, easy to mount, possible to extend and the structure is repeatable. In this way it would be possible to expand the life span of the structure

the first place, or in the second place to give it a new life somewhere else. With also involving the users in this process, they are given flexibility to deal and experience the building themselves.

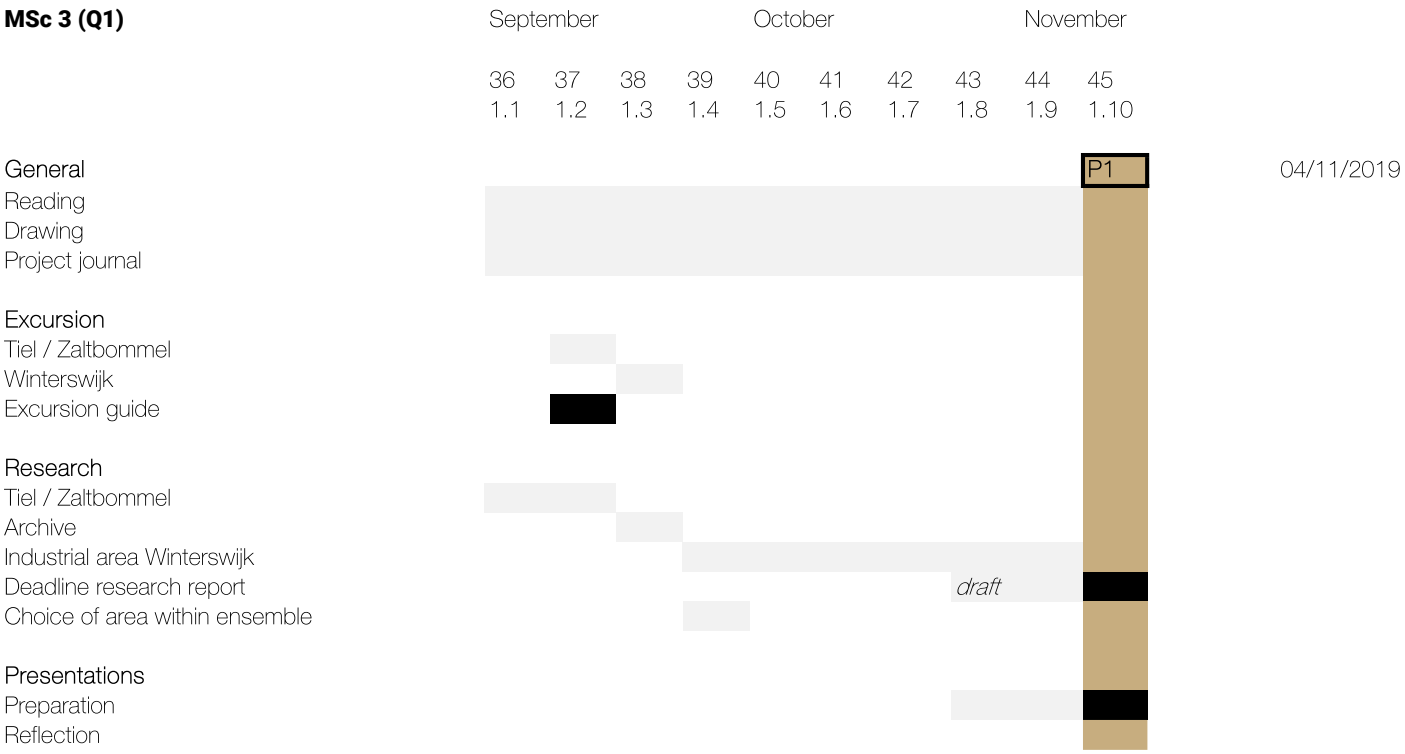
- Timber as a building material
Wood is one of our oldest building materials and certainly one of our most sustainable, since it is the only material on earth that can compensate for the exhaust of its own production process (Waugh Thistleton Architects, 2018). Therefore, nowadays the importance of timber as a building material is gaining importance. Multiple buildings with completely timber structures, roofs and infill are designed and being built in the Netherlands (Architectenweb, 2020)(NOS, 2018)(HAUT, n.d.). Building with timber is the future: "If the terms naturalness, comfort and ecology are considered in the context of using materials for building future-oriented architecture, then it becomes apparent relatively quickly that this must concern the raw material wood" (Stora Enso, 2017). In that respect, 'Timber Town' can contribute to a sustainable future.
Also governments are aware of the developments in the field of timber building and acknowledge its importance. The French government for example, has announced plans for 2022 in which the government wants to implement a new sustainability law where all new public buildings will have to be built from at least fifty percent timber (Crook, 2020).

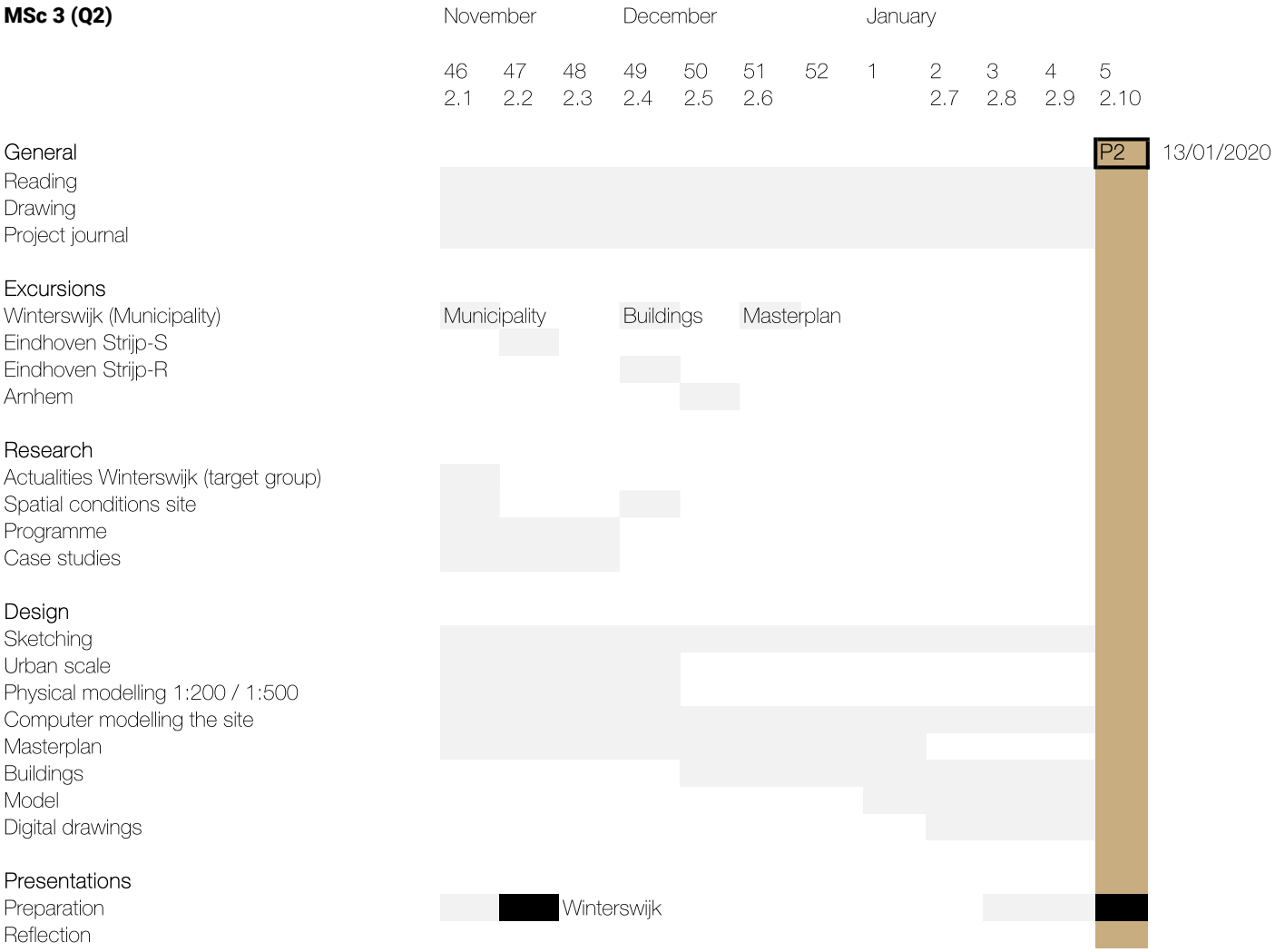
- Reusing materials
Also reusing materials is gaining importance. For example, the concept of building passports (Madaster Foundation) is introduced by Thomas Rau to make the reuse of materials easier (Rau, 2019).Also multiple architectural firms completely focus on the reuse of materials for their architecture, like Superuse Studios. They write their vision on their website: "A design is not considered as the beginning of a linear, but circular process: A phase in a continuous cycle of creation and recreation, use and reuse." (Superuse Studios, n.d.)

In 'Timber Town', the reusage of materials is present in multiple different ways. Bricks from the few demolished buildings or façades are reused in the design of the public space. All other materials are directly transported to one of the buildings of the ensemble where there is a first start of the Circular Shop: a shop where used materials are sold to begin a second life in a new structure. The modular elements of the Creative Cubicles which the renters of the space can compose themselves, will include reused window frames and other reused materials are to be found on even a smaller scale.

On the scope of Winterswijk, the project is also contributing to awareness of sustainability. The project cooperates with multiple initatives in the surrounding area on the topics of wood and reuse, and makes the topic of circularity visible to the public. This is also a desire from the municipality of Winterswijk.
Scientifically, the project is part of the KaDEr research project: Living Lab - XL - Urban - Winterswijk. In this way it also contributes to the bigger picture of revitalizing heritage in the province of Gelderland in a sustainable way and exchanging knowledge on this topic.

GRADUATION PLANNING





MSc 4 (Q3)

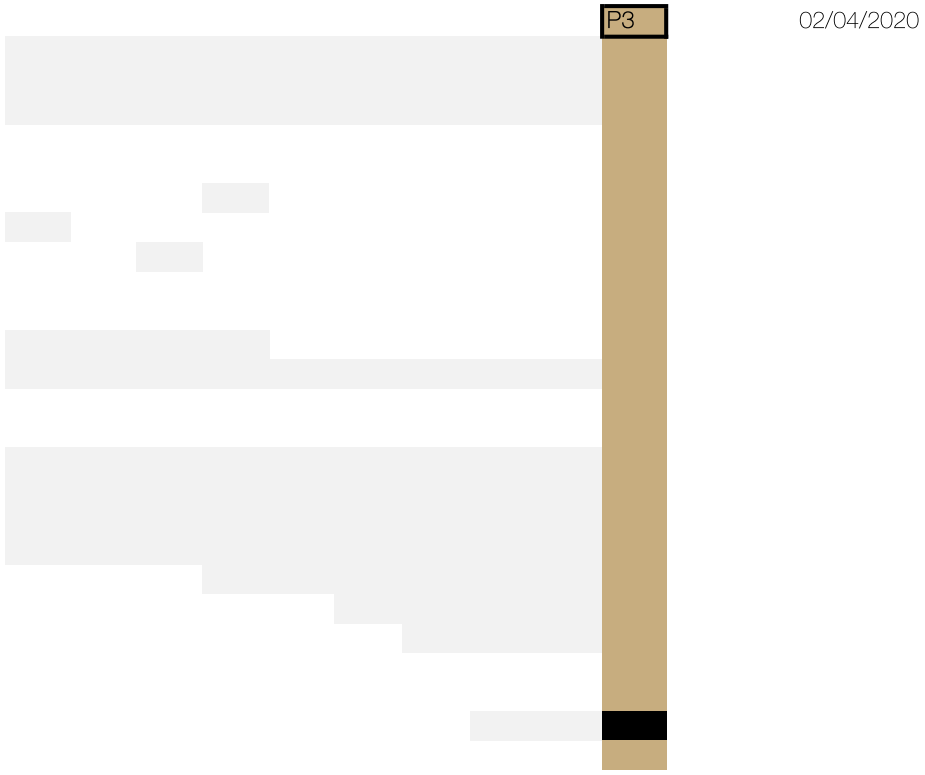
General
Reading
Drawing
Project journal

Excursions
Winterswijk
Tilburg
Westergasfabriek, Amsterdam

Research
Case studies
By design

Design
Sketching
Physical modelling 1:200 / 1:500
Computer modelling the site
Buildings
Façades
Model
Digital drawings

Presentations
Preparation
Reflection



MSc 4 (Q4)

General
Reading
Drawing
Project journal

Excursions
Winterswijk
Excursion circularity

Research
By design

Design
Sketching
Façades
Technical: details
Model
Digital drawings

Presentations
Preparation
Final models
Reflection