The Future of Countryside Living

Graduation project

Mees Frederik Wijnants

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Delft University of Technology
Faculty of Architecture and the Built Environment

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Supervision by:

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Acknowledgments

This has been a challenging year, that's clear, and a strange moment to be set free from student life... However, it is because of my tutors that I "walk away" with a sense of accomplishment. Even thoughI keep wondering what could have happened if we would have been able to sit at the 'espresso bar', being able to sketch and explain in tandem.

Yet, I would like to thank Frits van Loon, for basically giving me a crash course in landscape architecture and ecology. I never expected to go that route with my graduation project but I'm glad it did, because now I see that it is a vital part in basically any project.

I want to thank Jan van de Voort for truly increasing my knowledge and understanding of not merely building technology, but a 'feasible' approach towards architecture. In addition, I always thoroughly enjoyed our meetings and hope that I slightly changed your opinion on the Noordoostpolder

To my main mentor, Leontine, thank you for almost always being able to see what's behind a sketch or an idea, and to be able to critical and encouraging at the same time!

Then I want to thank Maarten Abe Nijenhuis for helping me for three long days and three short nights with building the model. Also thanking Emiel van der Vlies for his time helping to make the model that day. I want to thank Thomas de Boer for making his wood shop and tools available to us.

I want to thank my parents for their unconditional support and lingering involvement.

Finally, I want to thank my girlfriend Eva, of whom without this project just simply wouldn't have ended as well as it did.

Foreword

Me and my older brother Coen

My hometown will always be Emmeloord, a small town in the Noordoostpolder. When people ask me, “where is the Noordoostpolder?”, I explain it by saying, “go north from Amsterdam, past Almere and Lelystad, and then it’s that octagonal shaped thing at the top.” I was born in the Noordoostpolder in 1994 and lived there for almost twenty years until I moved to Delft to study at the University of Technology. When I was four years old, I moved to a converted farmhouse where my parents currently still live. During my teenage years I started to become more aware of how unusual the Noordoostpolder actually is. I still remember how once in high school we got asked the question: “who is happy with where you live?” And my answer was “I’m not... everything is designed with a ruler and nothing is created organically over time!”

It was only when I went to university that I started to realize the benefits of living in the Noordoostpolder. Going back home for the weekend, I could truly appreciate the space, quietness and sheer expansiveness. I started to see the possibilities the area has to offer, thinking about how for instance, old farmhouses could be converted into multiple spacious homes with wide open views. Yet, I also became aware of how relatively little interest architects and planners have for areas such as the Noordoostpolder. Throughout my time at the faculty of architecture, the city was always seen- and presented as the domain of the architect. This was justified because half of the population nowadays lives in cities. Ironically, this also means that the other half does not. Instead, they live in areas such as the Noordoostpolder. We must also not forget, that the Noordoostpolder used to be the pinnacle of Dutch ingenuity. This perceived lack of interest for the countryside and my personal connection with it, made me decide that for my graduation project I wanted to focus on the Noordoostpolder.

Before I started my graduation project, I went on a half-year adventure to the United States. Specifically, to the state of Vermont, where I worked at architecture office and building company Birdseye to work on private residential projects in extraordinary rural environments. There I got inspired by what countryside life can offer and how vibrant small rural communities can be.

My graduation project started almost simultaneously with the exhibition of ‘Countryside the future’ in the Guggenheim by Rem Koolhaas in February 2020. As a result, the countryside came back into the spotlight. And then the pandemic hit... All of a sudden, the countryside was not a narrow focus point anymore, people started to see the downside of the city. For my project, I did not yet know exactly what I would focus on, other than knowing that I wanted to do something in the Noordoostpolder and preferably something with housing. I started by doing research on the future of agriculture. When I saw more and more evidence on how the current agricultural system is quickly becoming unsustainable and especially how it could change for the better by completely transforming the landscape, I started to put two and two together. Because I grew up cycling through an industrial mono-cropped agricultural landscape, I got extremely excited about this possible future: a landscape which could be transformed into a lush, vibrant and three-dimensional landscape whilst simultaneously restoring biodiversity and making the production of food more resilient. Would this not be a great environment to live in?

Noordoostpolder

The Noordoostpolder was the pinnacle of Dutch ingenuity. 48000ha of reclaimed land all designed by man. The polder was reclaimed in 1942 and development of the area began after the second world war. It was designed from a blank slate with the mindset that the complete mechanization of agriculture would guarantee that we would never experience hunger again.[1] It was and is a true agricultural factory where every single element came straight from the drawing board: the landscape, the architecture and even the projected future Polder residents where in a way, designed.

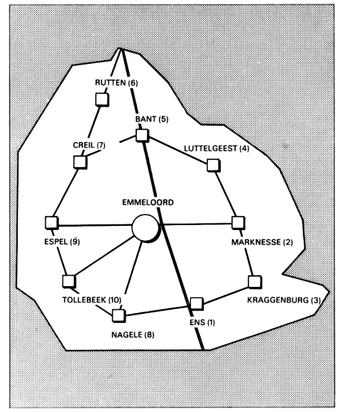


Fig A. 'Dorpenplan Noordoostpolder'.

[1] Stuvel, Dorpen Noordoostpolder, 1967, Bouwen op nieuwe bodem (Assen: Van Gorcum, 1967), 167

Fig A. Bruin, W and Staal, A, North Eastern Polder, Forum (Amsterdam: Van Saane, 1955).

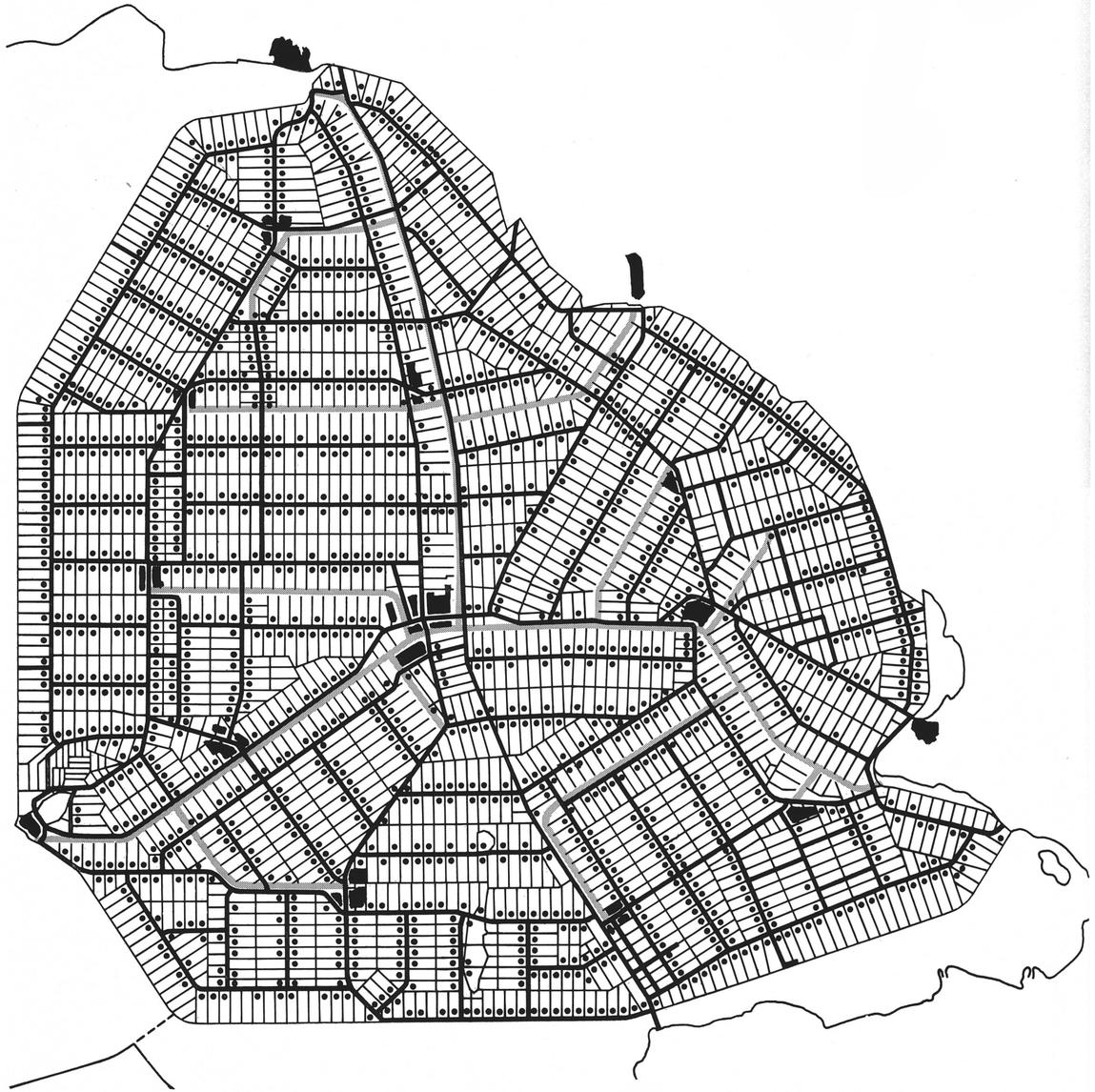


Fig B. Verkavelingsplan Noordoostpolder

This makes explaining the layout and design of the Noordoostpolder relativly easly. Ten satellite villages surround the central town of Emmeloord connected by a ring road and spokes with agricultural land in between. The thinking was that wherever you are in the area, you were always within biking distance of a village or town. The largest part of the Polder, the agricultural landscape, has been designed with mechanization and mono-cropped fields in mind, making it highly homogenic, in order to be as efficient as possible for using heavy machinery. This is clearly evident in the grid of perfectly rectangular 300- by 800-meter plots that dominate the landscape. However, an open plain of these dimensions would be uninhabitable. To make the scale more comprehensible, the horizon was brought closer by planting trees along roads, dividing the land up in multiple green compartments.[2] These compartments become smaller in scale closer to a village, as shown in figure A and B.

The Noordoostpolder, March 2020

Fig B. H. Stuvel, Dorpen Noordoostpolder, 1967, Bouwen op nieuwe bodem (Assen: Van Gorcum, 1967), 165

[2] Stuvel, H, Bouwen Op Nieuwe Bodem Ten Behoeve van de Gemeenschap in Het Voormalige Zuiderzeebekken (Assen: Van Gorcum, 1967), 16.

However, there is a problem. The endless push for mechanization and industrialization of the agricultural sector of which the Noordoostpolder leads the way, is quickly becoming unsustainable.

The Noordoostpolder, March 2020

The Noordoostpolder, March 2020

Countryside in crisis

Soil in the Noordoostpolder, May 2020

The Dutch agricultural landscape is not nature. Crops are grown in large mono-cultures where every year, the ground is made devoid of any vegetation in order to give a crop the exclusive right to grow. Every year, these crops extract nutrients from the ground and it is only with the use of artificial fertilizer, pesticides and heavy machinery that production levels can be maintained.[2] As a result, soil health is rapidly depleting. Even though the Dutch landscape might be perceived of as nature, it exists predominantly of these fragile industrial agricultural landscapes that keep the cycle of nature outside the door. Furthermore, the agricultural landscape offers few and limited habitats for animals and insects. As a consequence, the Dutch agricultural landscape has become a landscape that provides us humans with food but does not provide any other life form with food or shelter.

[2] Mark Shepard, Herstellende lanbouw: Agro-ecologie voor boeren, burgers en buitenlui, 2nd ed. (Jan van Arkel, 2019), 20.

Fig. C. “Fauna in agrarisch gebied” Compendium Voor de Leefomgeving, November 29, 2019, https://www.clo.nl/indicatoren/nl1580-trend-fauna-agrarisch?ond=20877

[3] dr.ir. Marlies Sanders, “Nederland haalt de biodiversiteitsdoelen in 2020 niet,” WUR, October 28, 2019, https://www.wur.nl/nl/nieuws/Nederland-haalt-de-biodiversiteitsdoelen-in-2020-niet.htm.

[3] “Achteruitgang Boerenlandvogels,” C4mpendium Voor de Leefomgeving, March 27, 2017, https://www.clo.nl/nieuws/achteruitgang-boerenlandvogels.

[5] J. Bélanger and D. Pilling, “The State o the World’s Biodiversity for Food and Agriculture 2019,” Www.Fao.Org, accessed September

[6] 2020, http://www.fao.org/state-of-b6odiversity-for-food-agriculture/en.

[7] Centraal Bureau voor de Statistiek, “Minder landbouw, meer natuur,” webpagina, Centraal Bureau voor de Statistiek, accessed September 27, 2020, https://www.cbs.nl/nl-nl/nieuws/2016/08/minder-landbouw-meer-natuur.

As a result, biodiversity in the Netherlands is plummeting (Fig. C). A decades long process of replacing biodiverse landscapes with agricultural monocultures has led to the threat of extinction for nearly 40% of all animal species in the Netherlands,[3] and, since 1960, a decline of 60-70% in the presence of meadow birds.[4]

This is extremely concerning because biodiversity is crucial in supplying many vital ecosystems, creating and maintaining healthy soils, pollinating plants, controlling pests and providing habitats for wildlife, each of which is vital to agricultural food production and livelihood.[6] Furthermore, the Food and Agriculture Organization of the United Nations stresses why it is so important to restore biodiversity:

“Biodiversity makes production systems and livelihoods more resilient to shocks and stresses, including those caused by climate change. It is a key resource in efforts to increase food production while limiting negative impacts on the environment. It makes a variety of contributions to the livelihoods of many people, often reducing the need for food and agricultural producers to rely on costly or environmentally harmful external inputs.” [6]

The scale of the issue must not be overlooked. In 2015, the Dutch Central Bureau of Statistics labelled 68% of the surface of the Netherlands as green space, of which 54% agricultural land.[6] The scale of the agricultural sector suggests a significant negative impact but is also an indicator of the potential positive effectiveness of transforming the agricultural landscape.

REPORTAGE LANDBOUW

Zaaien op beton

Akkerbouwers zijn amper bekomen van de vraaguitval door de coronacrisis of ze worden geconfronteerd met een van de droogste lentes ooit. ‘Het is alsof ik op beton moet zaaien.’

Volkskrant article on the long period of drought in the spring of 2020.

Fauna in agrarisch gebied

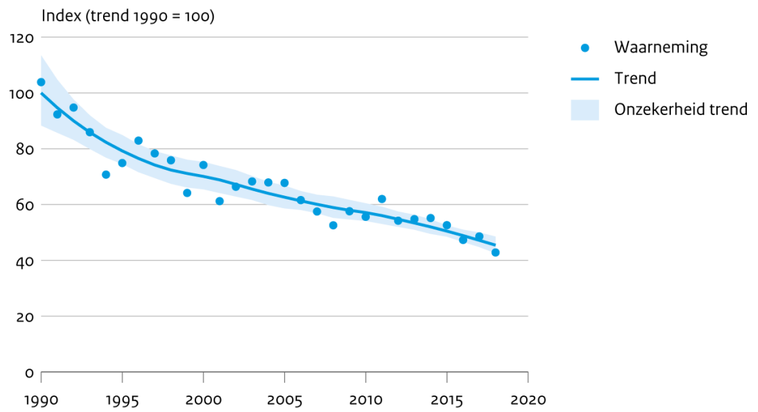


Fig C. Fauna in agrarisch gebied. CBS 2020

Nature inclusive agriculture

What can be done to restore biodiversity and increase resilience? One way to do so is by a strong departure from the current way of farming, by adopting **nature inclusive agriculture**, a term that will be used frequently throughout this paper. Nature inclusive agriculture is defined by Wageningen University as “a form of circular agriculture which utilizes and protects biodiversity in and around the farm and where food is produced within the limits of the natural- and the living environment.”[8] In other words, instead of trying to control nature, technology must be used to enable the inherent complexity of nature.[9] To do so, the agricultural landscape will have to change dramatically.

Nature inclusive agricultural plot

[8] Anne van Doorn, “Natuurinclusieve landbouw,” WUR, September 22, 2015, https://www.wur.nl/Natuurinclusieve-landbouw.htm

[9] Carolyn Steel, “Food as a Portal into the Future: FutureHero Carolyn Steel,” Atlas of the Future, May 20, 2019, https://atlasofthefuture.org/carolyn-steel-urban-visionary-food/.

[10] Isabella Selin Norén Andrew Dawson, “Inspiratie Voor Een Biodiverse Akkerbouw: Bouwstenen Voor Integratie van Biodiversiteit in de Bedrijfsvoering” (Wageningen University, 2019), https://www.wur.nl/InspiratievooreenBiodiverseakkerbouw.pdf.

First of all crops should be diversified by creating small strips or pixels and cultivating those with smaller, lighter and smarter machinery; secondly, permanent habitats for animals and insects must be created by planting biodiverse buffer zones within and around the agricultural plot in the form of wildflowers, hedges, bushes and trees.[10] In addition, these buffer zones can still be used to produce yields in the form of fruit and nuts or construction wood.[10] Figure D is a sketched visualization of how this future agricultural landscape could look like.

Figure D. Sketch of the future agricultural landscape.

Elements of nature inclusive agriculture from top to bottom: stripfarming; smaller, smarter, and lighter machinery; biodiverse buffer zones; nature inclusive shores; agroforestry

Why live in the countryside?

Not only the necessity of this change is important, it is also this change in the landscape that got me really excited. Because if more of the agricultural countryside could look a little bit more diverse, more vibrant, more dynamic, wouldn't this become a great place to live?!

Maxon house by Olson Kundig

Right now, we are in the midst of a pandemic and even Though there is now light at the end of the tunnel, the impact will remain... The COVID-19 pandemic merely accelerated an existing trend. In 2019, before the pandemic hit, 39% of all working professionals in the Netherlands worked at least one day from home.[11] There are many indicators that even after the pandemic, people will keep working from home, at least for a few days a week.[12] It will become less common to commute to work during rush hour and as such the office building will function more as a place to meet co-workers than a space for work.[13] According to professor of Urban Geography at the TU Delft, Maarten van Ham, our home has become our new office and not merely a place of relaxation. As a result, we are setting new requirements for our homes such as having a balcony or a large garden and a separate work room.[14]

These requirements make a home in the city unaffordable for most people. Moreover, these requirements come on top of an already exploding housing market, where the average price of a home has increased with 51% since 2013,[15] with the bulk of the price increase occurring in the Randstad.[16] It explains the current noticeable departure out of the city towards the countryside, especially for young families.[17] In 'Countryside a Report', Niklas Maak describes a future where the countryside could offer space for dissatisfied urbanites who only occasionally go to town,[18] leaving the city for more space, privacy and tranquility.

[11] Centraal Bureau voor de Statistiek, "Bijna 4 op de 10 werkenden werkten vorig jaar thuis," Centraal Bureau voor de Statistiek, accessed September 28, 2020, https://www.cbs.nl/nl-nl/nieuws/2020/15/bijna-4-op-de-10-werkenden-werkten-vorig-jaar-thuis.

[12] Sanne Wolters, "Derde van de thuiswerkers wereldwijd wil na de crisis niet terug naar kantoor," AD.nl, May 12, 2020, https://www.ad.nl/ad-werkt/derde-van-de-thuiswerkers-wereldwijd-wil-na-de-crisis-niet-terug-naar-kantoor-br~a5dd2c61/.

[13] Yasmine Esser, "Het nieuwe werken na de coronacrisis: veel meer vanuit huis, als het aan deze bedrijven ligt," de Volkskrant, May 18, 2020, https://www.volkskrant.nl/gs-b26b407f.

[14] Tom Flipse, "Dit is waarom het coronavirus jongvolwassenen verdrijft uit de grote stad."

[15] Centraal Bureau voor de Statistiek, "Koopwoningen ruim 8 procent duurder in augustus," Centraal Bureau voor de Statistiek, accessed September 28, 2020, https://www.cbs.nl/nl-nl/nieuws/2020/39/koopwoningen-ruim-8-procent-duurder-in-augustus.

[16] Rick van de Lustgraaf, "De Randstad Wordt Duurder En Duurder | Trouw," accessed September 28, 2020, https://www.trouw.nl/nieuws/de-randstad-wordt-duurder-en-duurder~b6405e0a/.

[17]Frederieke Hegger, "Meer groen en een groter huis: we willen anders wonen door corona," RTL Nieuws, August 12, 2020, https://www.rtlnieuws.nl/woonwensen-woningmarkt-koop-huur-funda-nvm-landelijk-wonen-randstad.

[18] Rem Koolhaas, Countryside a Report (New York: Taschen, 2020), 42.

[19] Malini Witlox, "Thuiswerken: tussendoor de hond uitlaten maakt ons creatiever en productiever," RTL Nieuws, July 16, 2020, https://www.rtlnieuws.nl/economie/life/artikel/5171464/thuiswerken-werkgeluk-tno-vertrouwen.

[20] Stephen Kaplan, "The Restorative Benefits of Nature: Toward an Integrative Framework," Journal of Environmental Psychology 15, no. 3 (1995).

[21] S de Vries, J Maas, and H Kramer, "Effecten van nabije natuur op gezondheid en welzijn," n.d., 91.

But other than space and relative affordability, what else can the countryside offer? One could confidently say that working from home can also be tiring, especially those long and intense Zoom meetings. Yet it seems that productivity is on average higher compared to working in an office, depending on the circumstances at home.[19] As mentioned, space is one requirement, but there is also a need for nature. Living in an environment with an abundance of nature can have a positive influence on one's recovery of fatigue or stress.[20] Even though there is no academic consensus on exactly what type of nature provides optimal recovery, there are some conclusive requirements. For instance, the perceived 'nature' must evoke a sense of leisure or recreation, like gardening or sports. Additionally, the landscape must have a form of continuity, creating the sense that you could endlessly wander through it.[21] Perhaps then, having the home office in a natural environment, which adheres to the mentioned requirements, is a more productive place to work.

All in all, offering people the possibility of a relatively affordable, high-quality home in the countryside, can be an interesting proposition to many, provided that it includes certain benefits as space, tranquility and privacy to make the move worthwhile.

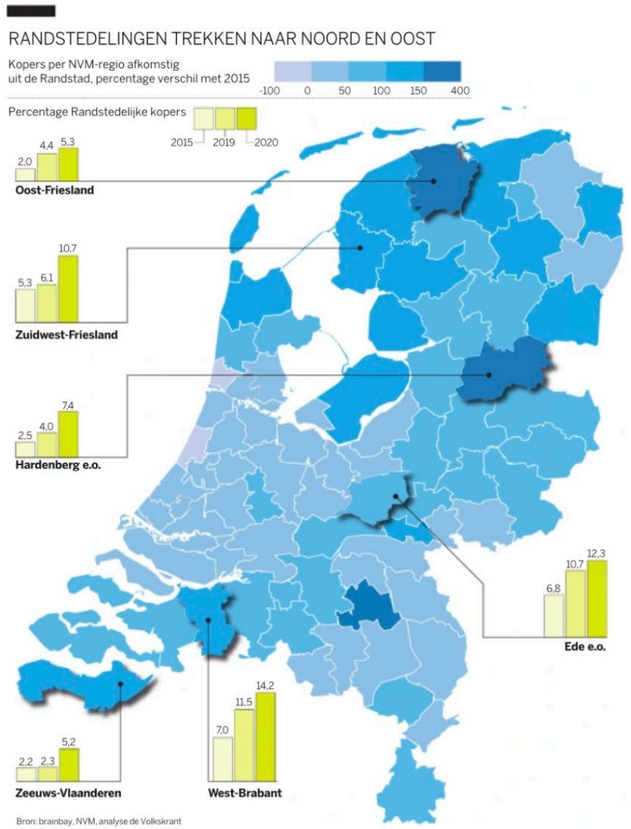
Late night show, 0p1, talking about the visible change in demand for homes outside of the city.

A

Randstedeling verhuist steeds vaker naar de regio

Vorig jaar kocht 10 procent van de Randstedelijke kopers een woning elders in het land, bijna een verdubbeling ten opzichte van 2015. De coronapandemie lijkt die trend te hebben versterkt.

Door **Jurre van den Berg** en **Marc van den Eerenbeemt**



B

De Randstad is vol, dus laten we ons verspreiden over het land

C

Regio steeds meer in trek bij senioren en gezinnen met hogere inkomens uit de Randstad

Huizenkopers uit de vier grote steden wijken steeds vaker uit naar kleinere buurgemeenten en regio's buiten de Randstad. In 2020 kocht 10 procent van de Randstedelijke kopers een woning elders in het land, bijna een verdubbeling ten opzichte van 2015. De trend lijkt afgelopen jaar in elk geval in sommige gebieden door de coronacrisis versterkt.

Jurre van den Berg en **Marc van den Eerenbeemt** 14 januari 2021, 10:00

The problem is that the increased demand in housing and the need for nature-inclusive agriculture are currently competing issues. That is because the Netherlands is a country of which every square meter is accounted for, thus, to make space for nature or residential areas, something else has to give. This is already visible in the incremental expansions of cities where agricultural land is being replaced by residential areas.[22] To illustrate this point, the Dutch governmental architect, Floris Alkemade, warns on hastily building new residential areas on agricultural land, explaining how this will form a barrier for the transition to sustainable agriculture.[23] So what if, instead of seeing nature, residential areas and agriculture as separate functions that take away space from one another, all three functions work together in symbiosis on the same plot of land? Figure E considers how these issues could overlap, creating potential ground where both housing and biodiversity goals could be achieved.

This leads to the core question of this paper:

How can the development of new homes be integrated with the transition towards nature inclusive agriculture, whilst maintaining the level of food production?

[22] "Nederland versteent: landbouwgrond wijkt voor bouw," accessed October 19, 2020, https://nos.nl/l/2298985.

[23] Floris Alkemade, De toekomst van Nederland: De kunst van richting te veranderen, 108.

[Fig. A] J. van den Berg en M. van den Eerenbeemt De Volkskrant, January 15, 2021

[Fig. B] H. Redeker, Trouw, January 31, 2019

[Fig. C] J. van den Berg en M. van den Eerebeemt De Volkskrant, January 14, 2021

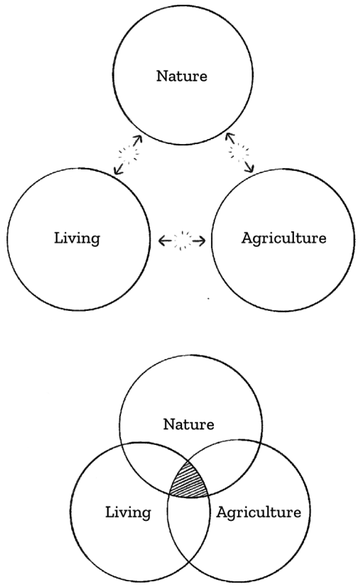


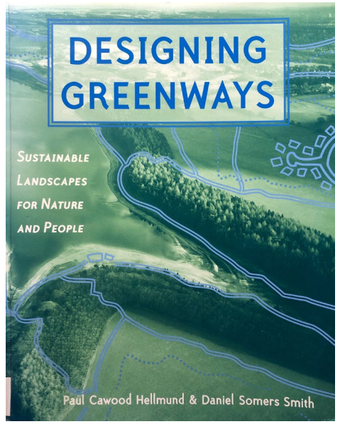
Fig E. Are the three land designations mutually exclusive or is it possible to integrate the three?

Transitioning the landscape

The transition towards nature inclusive agriculture will have a big impact on the landscape of the Noordoostpolder. To propose that the entire polder will have to change simoultaniously is not very likely and will also be very disruptive with regard to the landscape heritage of the Noordoostpolder. Therefore, potential sites for a case study with the possibility of future expansion in mind must be chosen carefully within the landscape design of the polder.

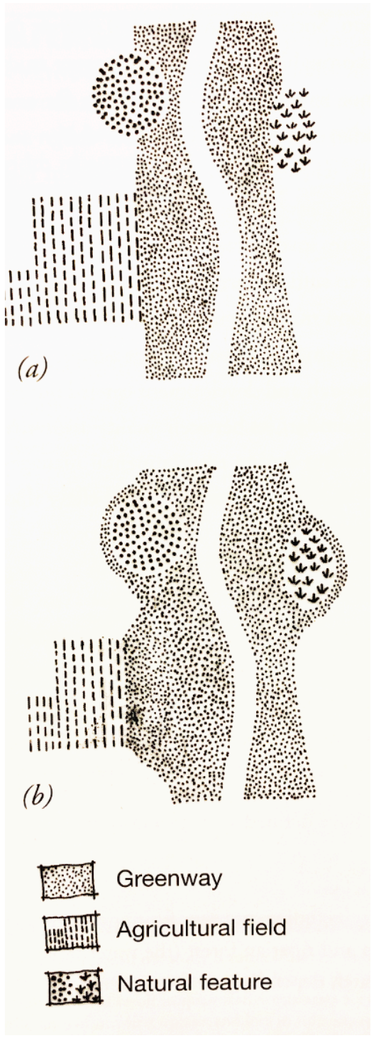
A quintisessential view in the Noordoostpolder

Agroforestry and the visible densification of the landscape

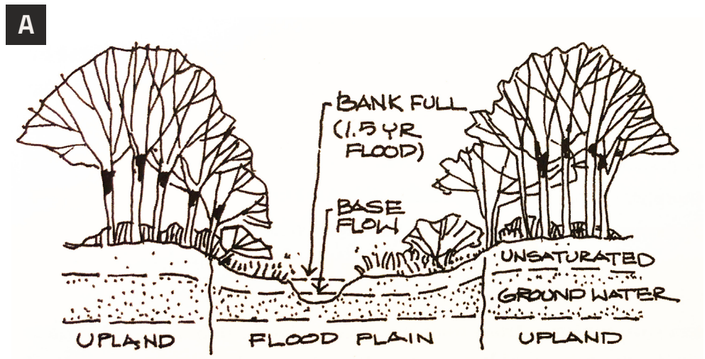


Luckily, the polder is home to a variaty of ‘green’ compartments. Basically the spaces that are created by the roads which are lined with trees. These compartments become relativly smaller around the villages which then also house smaller farms. These compartments can become the starting point of the agricultural transition, limiting the impact on the overal landscape of the polder bij keeping the centre, which offers quintessential expansive polder views open, as identified by landscape architects Feddes/Olthof.

My proposal is to make a green ecological belt around the polder of nature inclusive farms, linking all these compartments together to create an ecological structure.[23] throughout the Noordoostpolder.



A



Green structures in the Noordoostpolder

My proposal, creating a green ecological belt of nature inclusive farms through the Noordoostpolder

[23] [Fig A] .Paul Cawood Hellmund and Daniel Somers Smith. Designing Greenways: Sustainable Landscapes for Nature and People. Washington: Islandpress, 2006.

[24] Wijnand Sukkel, “Biodiversiteit op de akker door gewasdiversiteit,” n.d., 4.

[25] Herenboeren, “De baten... en de kosten – Herenboeren,” accessed September 28, 2020, https://www.herenboeren.nl/de-herenboerderij/de-baten-en-de-kosten/.

[25] De Melkbrouwerij, “Ons Verhaal – De Melkbrouwerij.”

[25] Pieter Hotse Smit, “‘Biodiversiteit als rendement’: samen grond kopen om het landschap te herstellen,” de Volkskrant, June 10, 2020, sec. Nieuws & Achtergrond, https://www.volkskrant.nl/gs-b03c9da1.

[Fig. A] P. Hotse Smit, De Volkskrant, January 13th, 2021

[Fig. B] P. Hotse Smit, De Volkskrant, June 10th, 2020

Now, let’s Look at the role development of homes can play. Why would we want to take up even more valuable agricultural land to build homes?

Even though there are clear observations that nature inclusive agriculture can help restore biodiversity, make the farm more resilient and even increase yields, the agricultural landscape is still dominated by large mono-cropped fields. Steadily rising costs in combination with consistent low prices result in the farmer having to resort to ever more mechanization and efficiency instead of taking the leap towards sustainable agriculture.[24] The investment that is required to farm in a nature-inclusive way, financing advanced machinery and structurally changing the way the farm operates, is a significant barrier towards change.

Diversifying the agricultural business by introducing the development of homes can be a way to finance this transition, or a starting point to imagine a new type of farm. For instance, a collective farm where residents become part owner of the farm sharing costs and benefits. Moreover, this is already happening in some places. Many sustainable collective and local farms are popping up all over the country.[25] I imagine to expand on this idea by introducing the aspect of actually living there.

A

DE VOLKSKRANT
WOENSDAG 13 JANUARI 2021

Productie blijft stijgen, aantal boeren neemt af

Pieter Hotse Smit
Amsterdam

De schaalvergroting van de landbouw gaat onverminderd door. Terwijl de afgelopen twintig jaar de productie steeg, is het aantal boerenbedrijven bijna gehalveerd. Dit blijkt uit de voorlopige Landbouwtelling 2020 van het Centraal Bureau voor de Statistiek (CBS).

Door een gebrek aan opvolgers dreigt het komende decennium nog eens 30 procent van de resterende 53 duizend boerenondernemingen te verdwijnen. De productie zal naar alle waarschijnlijkheid grotendeels worden overgenomen door de almaar grotere boerenbedrijven die nog overblijven.

Landbouwbedrijven worden steeds kapitaalintensiever. Dit maakt het bij pensionering van de boer steeds lastiger voor zoons en dochters om het geld voor een overname van het ouderlijk bedrijf bij elkaar te krijgen. Ook zijn ze doorgaans hoger opgeleid dan vroeger en kijken ze voor werk vaker verder dan het boerenerf.

De Europese Unie en het kabinet proberen jongeren op allerlei manieren alsnog over de streep te trekken. Zo trok landbouwminister Carola Schouten bij haar aantreden direct 75 miljoen euro uit voor startende jonge boeren omdat, zo was eind 2017 haar onderbouwing, ‘nog geen 4 procent van alle boeren in Nederland jonger is dan 35 jaar’.

De inspanningen zijn nog niet terug te zien in de cijfers. Van de boerenbedrijven met een bedrijfshoofd van 55 jaar of ouder heeft 59 procent nog altijd geen opvolger klaarstaan. Het opvolgingsprobleem is bij de kleinste boeren – met een opbrengst tot 25 duizend euro – het grootst. Van de vergrijzende ‘keuterboeren’ heeft 82 procent geen zicht op een vervanger.

Dat laatste is een probleem. Niet per se voor de totale landbouwproductie, legt CBS-landbouweconoom Cor Pierik uit, want de kleinste 19 duizend boeren (ruim eenderde van het totaal) zijn samen goed voor slechts 2,5 procent van de totale productie. ‘Maar die kleine gezinsbedrijven spelen wel een cruciale rol in de aankleding en het onderhoud van het landschap’, zegt Pierik. ‘Als daar duizenden van wegvallen, zal dit het karakter van het platteland beïnvloeden.’

Twintig jaar geleden telde het CBS nog 97 duizend landbouwbedrijven, tegenover de kleine 53 duizend nu. De daling vlakte recentelijk wat af. Tussen 2012 en 2016 gingen nog zo’n 12 duizend bedrijven verloren, in de afgelopen vier jaar waren dit er grofweg drieduizend.

Onder de 16 duizend bedrijven zonder opvolger voor het bedrijfshoofd van 55 jaar of ouder zijn de doorgaans kleine schapenbedrijven het minst populair. Niet meer dan 19 procent heeft een opvolger. Melkveehouders hebben het vaakst een opvolger klaarstaan (bijna tweederde van de bedrijven). Het aantal bedrijfsopvolgers in de land-en tuinbouw is het kleinst in Limburg (34 procent). In de provincies Friesland en Flevoland ligt dit percentage op ruim de helft.

Zeeuwse boer bemest zijn land. Foto Peter Hilz

B

In biodiversiteit en biologische landbouw scoort Nederland slecht. Een coöperatie die daar iets aan wil doen, vraagt burgers hun spaargeld te steken in landbouwgrond. De gekochte hectaren worden dan verpacht aan duurzame boeren.

REPORTAGE COÖPERATIE LAND VAN ONS

Grond kopen om het landschap te herstellen

Franke Remerie van Land van Ons (links) loopt met Rick en Arjana Huis in ’t Veld over een aan te kopen perceel bij hun boerderij in Lettele. Foto Harry Cock / de Volkskrant

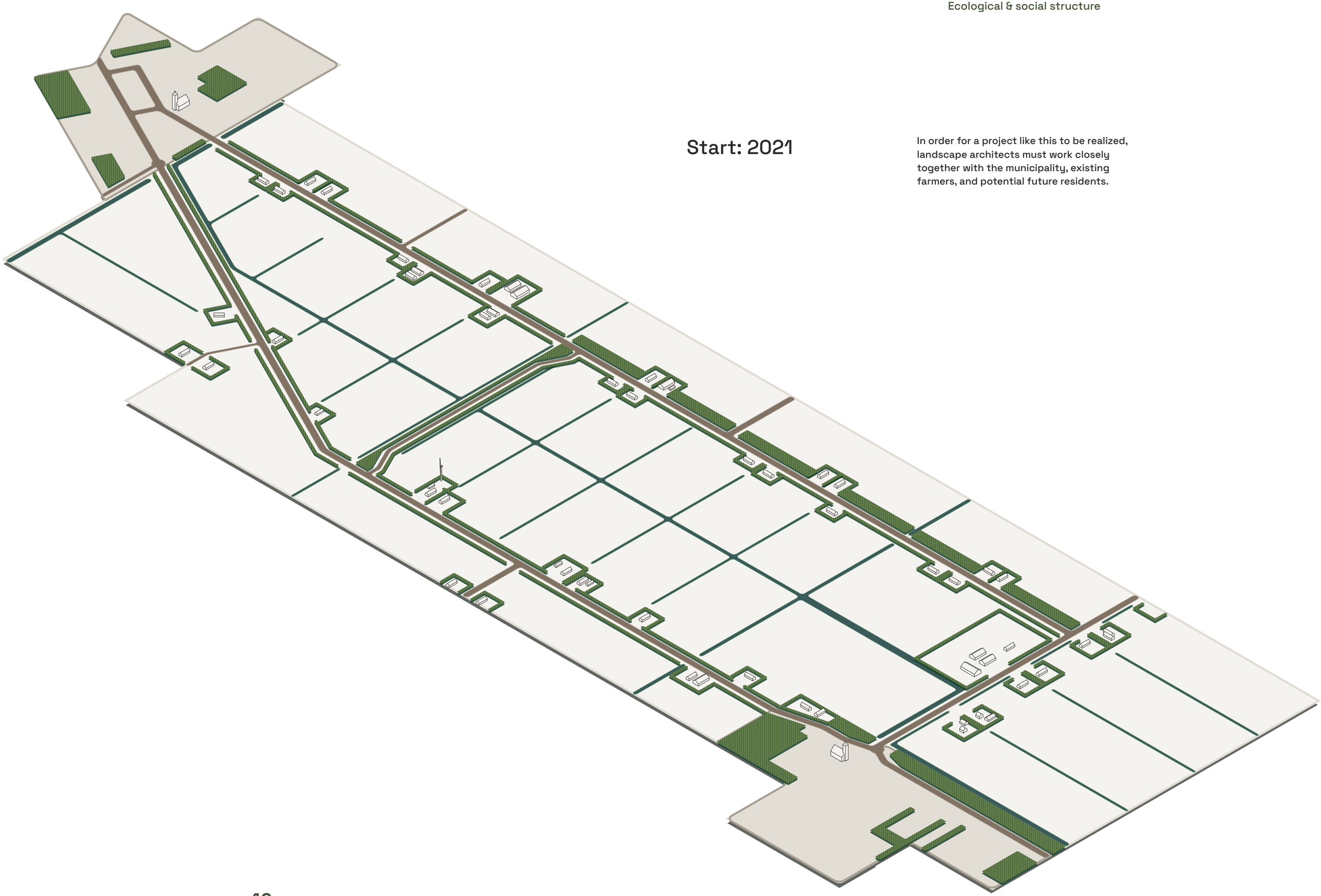
Ecological & social structure

To see how a project like this would develop, I have chosen a specific area in the Noordoostpolder. It is between the villages Espel and Creil. Espel has a primary school and Creil offers a small supermarket, furthermore, there is a quick connection to Emmeloord which makes a commuting time of 1 hour possible to Amsterdam. Then there is the existing greens structures which makes this site well suited to illustrate a first project like this.

On site, facing west.

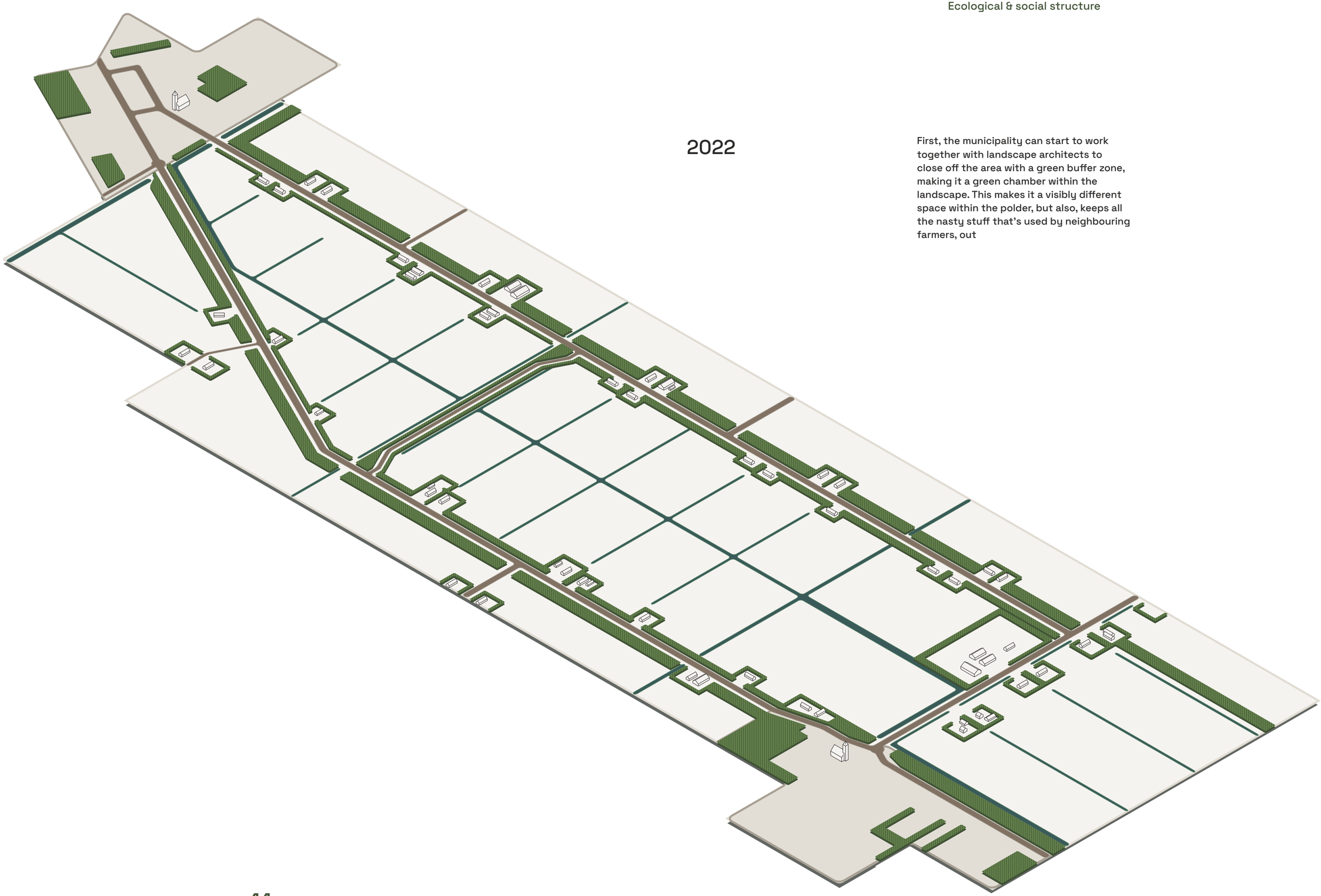
On site, facing south.

On site, facing east.



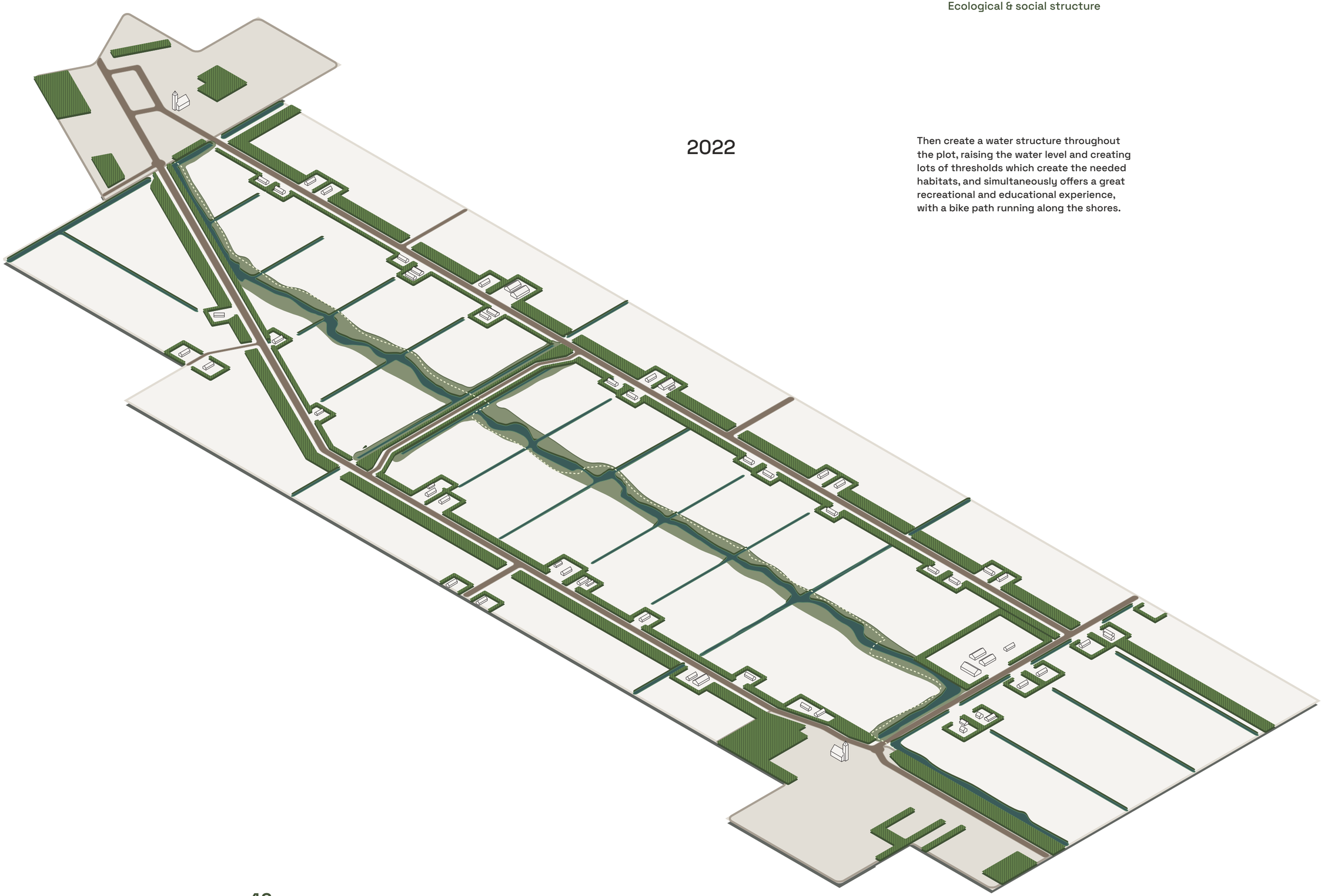
Start: 2021

In order for a project like this to be realized, landscape architects must work closely together with the municipality, existing farmers, and potential future residents.



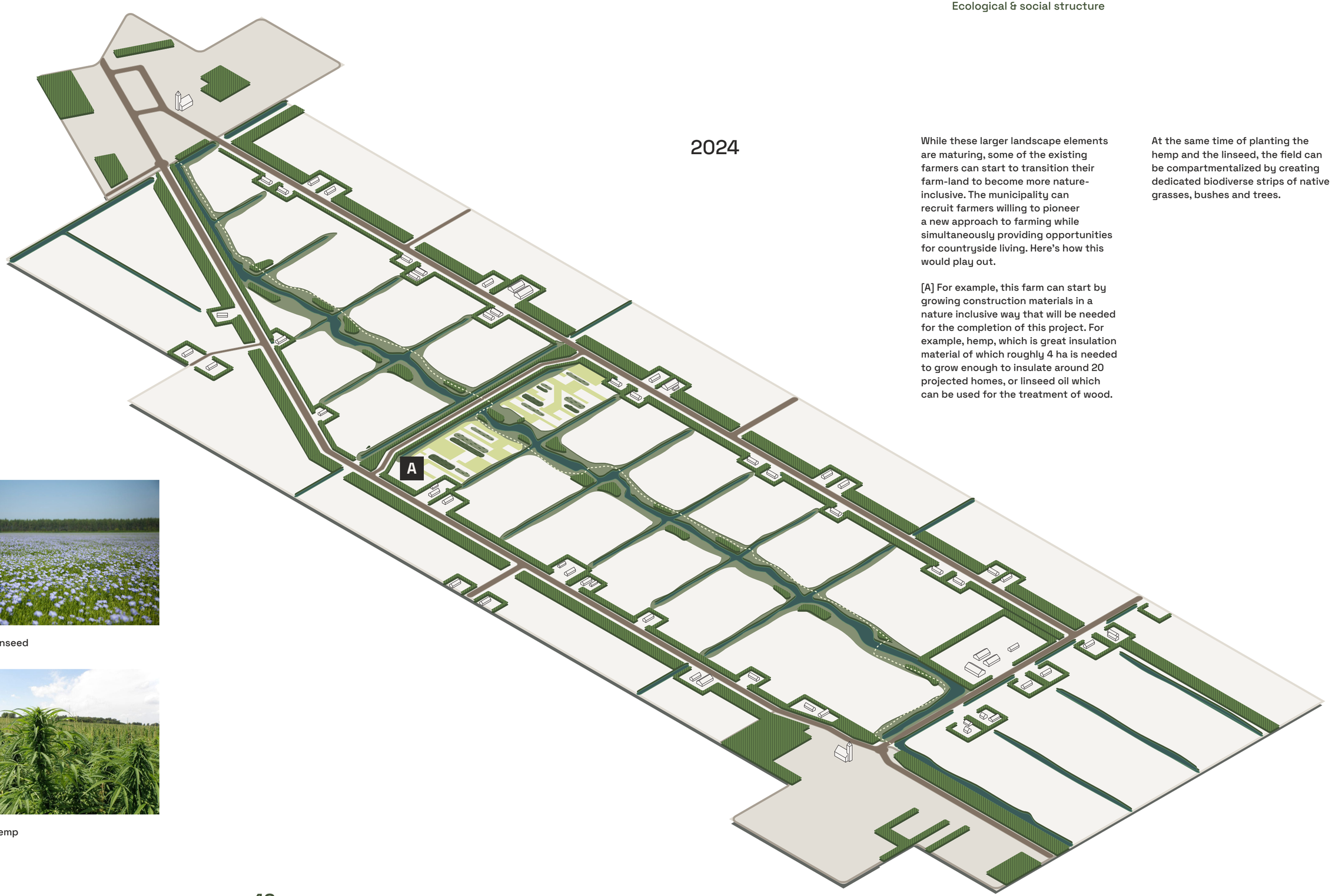
2022

First, the municipality can start to work together with landscape architects to close off the area with a green buffer zone, making it a green chamber within the landscape. This makes it a visibly different space within the polder, but also, keeps all the nasty stuff that's used by neighbouring farmers, out



2022

Then create a water structure throughout the plot, raising the water level and creating lots of thresholds which create the needed habitats, and simultaneously offers a great recreational and educational experience, with a bike path running along the shores.



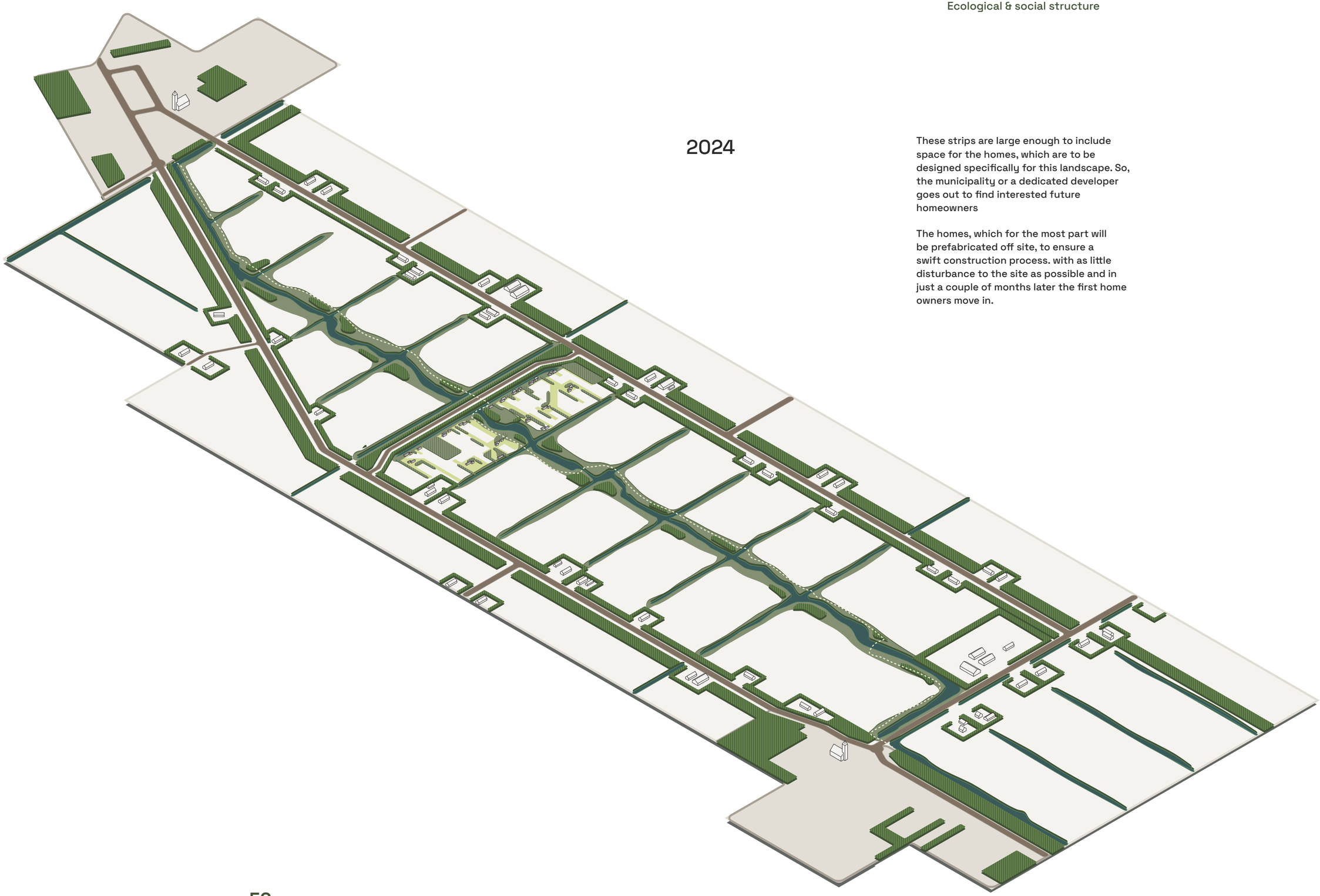
Field with Linseed

Field with Hemp

While these larger landscape elements are maturing, some of the existing farmers can start to transition their farm-land to become more nature-inclusive. The municipality can recruit farmers willing to pioneer a new approach to farming while simultaneously providing opportunities for countryside living. Here's how this would play out.

[A] For example, this farm can start by growing construction materials in a nature inclusive way that will be needed for the completion of this project. For example, hemp, which is great insulation material of which roughly 4 ha is needed to grow enough to insulate around 20 projected homes, or linseed oil which can be used for the treatment of wood.

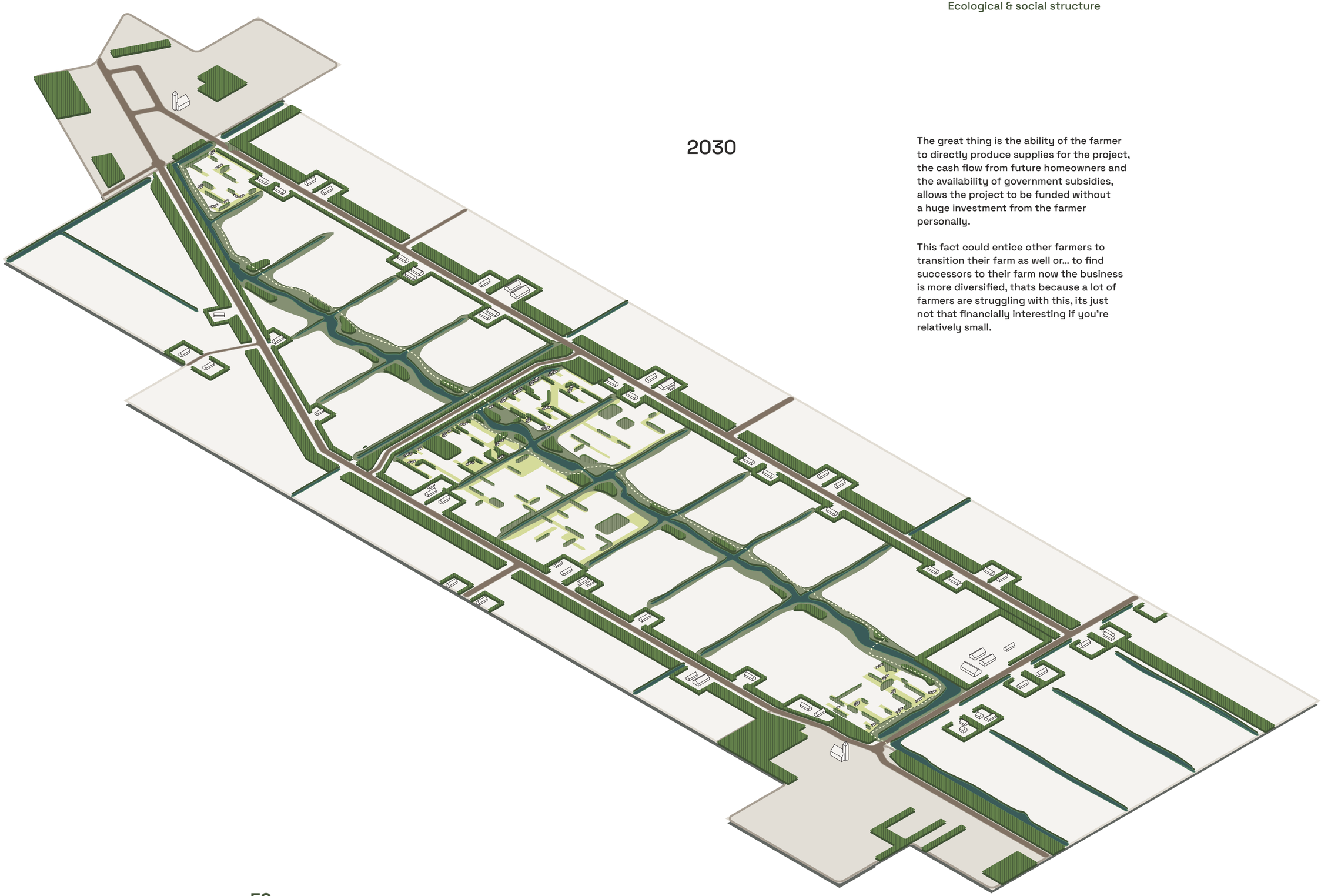
At the same time of planting the hemp and the linseed, the field can be compartmentalized by creating dedicated biodiverse strips of native grasses, bushes and trees.



2024

These strips are large enough to include space for the homes, which are to be designed specifically for this landscape. So, the municipality or a dedicated developer goes out to find interested future homeowners

The homes, which for the most part will be prefabricated off site, to ensure a swift construction process. with as little disturbance to the site as possible and in just a couple of months later the first home owners move in.



2030

The great thing is the ability of the farmer to directly produce supplies for the project, the cash flow from future homeowners and the availability of government subsidies, allows the project to be funded without a huge investment from the farmer personally.

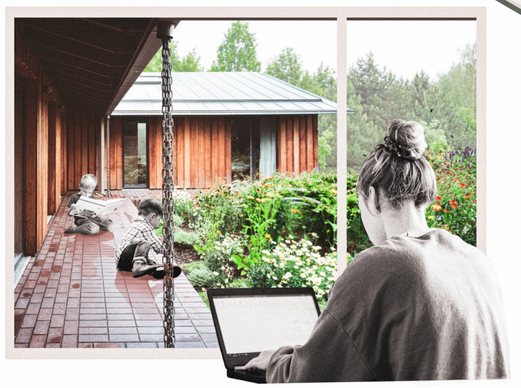
This fact could entice other farmers to transition their farm as well or... to find successors to their farm now the business is more diversified, thats because a lot of farmers are struggling with this, its just not that financially interesting if you're relatively small.

2035

Over time, a diverse landscape of nature inclusive agriculture, a range of different types of living environments and a beautiful vibrant natural areas will start to emerge.

Not only will there be people living here in an extraordinary landscape, the influx of new Polder residents can give an impulse of life to the two villages,

C: The largest garden immaginable at your disposal.

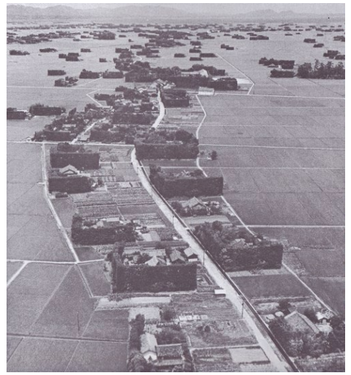


A: A home in the future agricultural landscape

B: A community hub

Landscape design

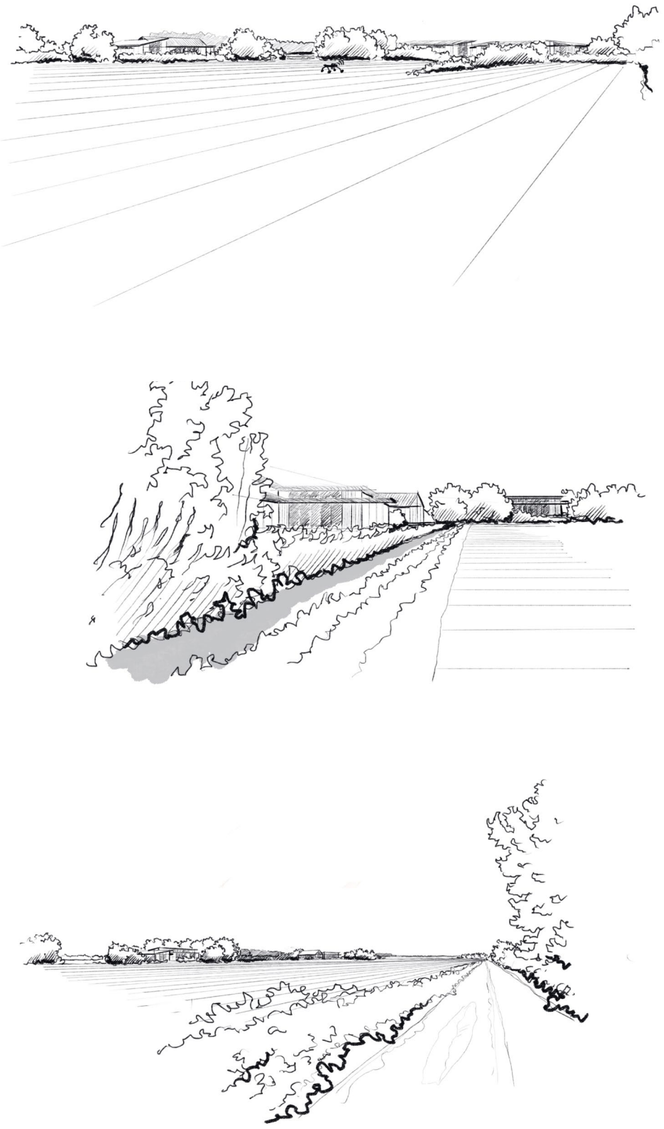
Now zoom let’s zoom in further, on the first pilot project. Seeing and reading about nature Inclusive agriculture, especially the fact that trees and rows of bushes will have to planted within the field, reminded me of images from the coulissen landscape, as we know in the eastern part of the Netherlands, and the Loosdrechtse plassen. Both these references almost look like a parametric design of small strips. These images are some of the references I kept in the back of my mind during the design process of the landscape plan of the first pilot project.



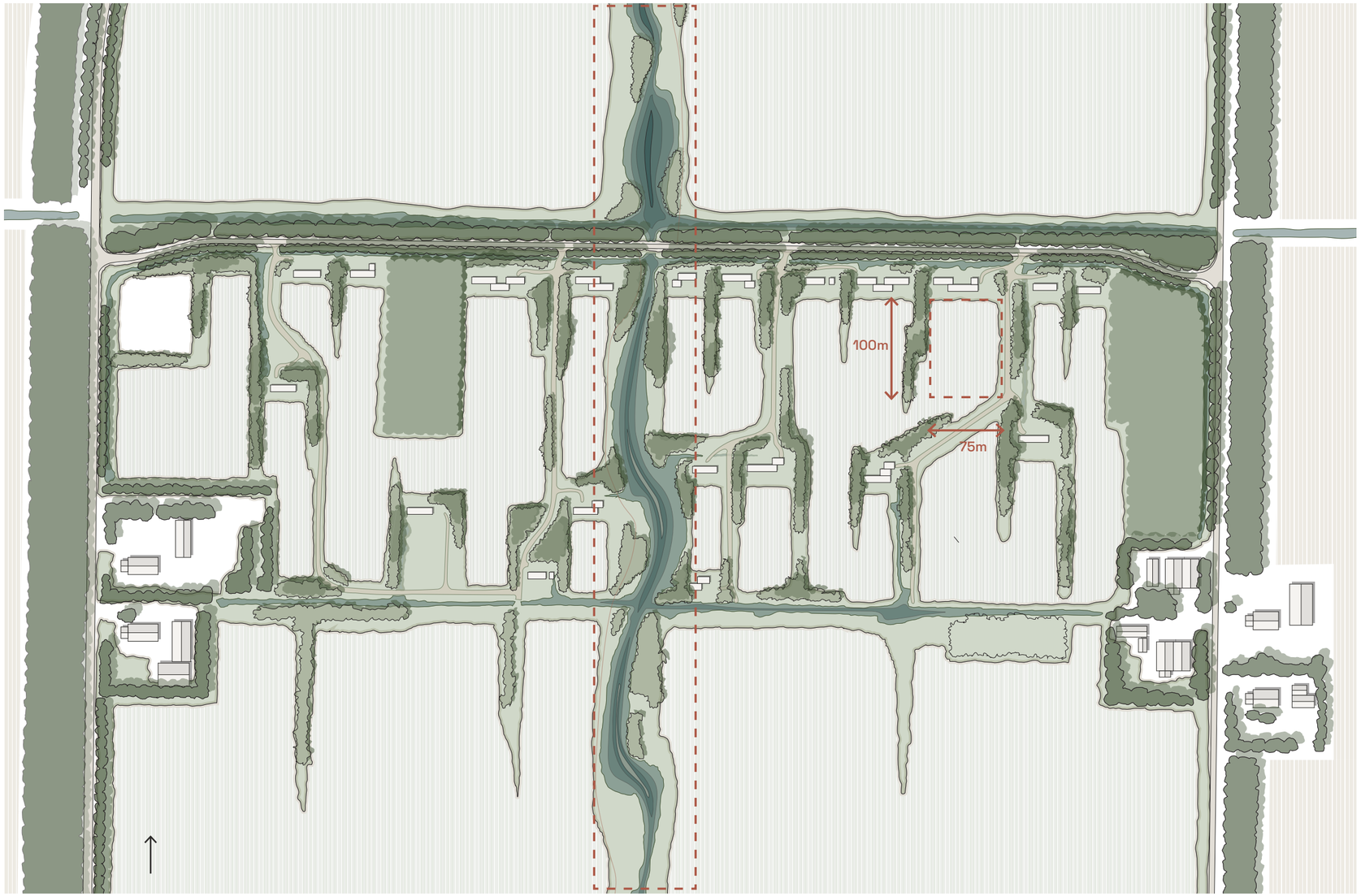
Old reference project in Japan. Individual windfringes per farm

“Loosdrechtse plassen”

Coulissen landscape



Sketches of experience of the new landscape



Similar to the Coulissen and Loosdrecht landscape, this plan has ambiguity in the design. The central ecological axis is fixed, but the final layout of the compartments can end up differently. However the distances, which are around 50 - 100m, based om the dimension of the wind fringes in the NOP and a north south orientation of the agriculture are fixed

The Landscape tools in order to create the compartementalization of the landscape are native trees, bushes and grasses, which can be placed in such a way to keep the wind out, but to remain an open view of the landscape.

[A] ~ 250m² plot. These plots offer the possibility of creating a form of communal living with multiplehouseholds on one plot.

[B] ~ 150m² plot. Single home plot.

[C] Dirt road

[D] Ecological water structure

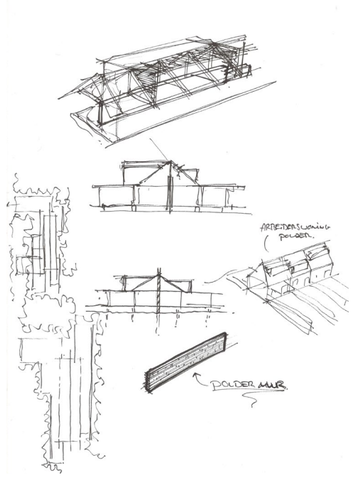
[E] Nature inclusive stripfarming

[F] Native grasses and wildflowers

[G] Agroforestry

Architectural framework

This project is not a typical residential area, it remains valuable agricultural land, where agriculture and biodiversity restoration are most important. These homes are for people who care about nature, and actually want to invest in it, both financially and mentally. It is about that integration of living and restoration agriculture. It is about constructing homes whilst simultaneously restoring biodiversity . To make sure this vision will be upheld, there is a certain framework in which future residents and their architects have to work within as well as the future residents.



Sketches, figuring out an architectural language and framework

[A] Height

The Polder Home has a restricted height of 5500mm from ground level. This ensures that non of the homes stick out too much in the landscape but does provide some space for a loft if desired.

The Polder Home must remain slim in order to establish “lightness” in terms of construction, material use, daylight and visual appearance.

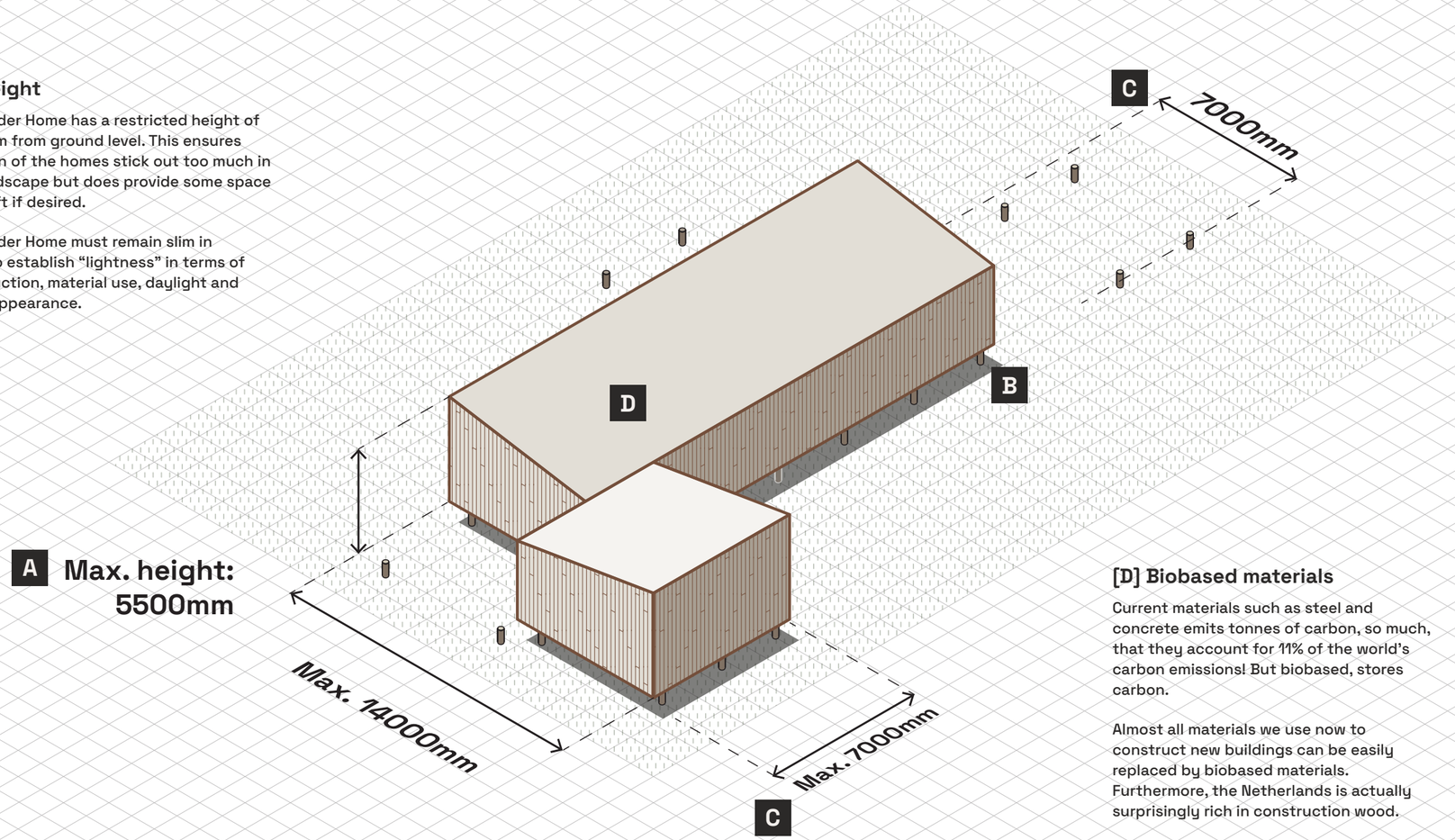
[B] Foundation

The home is lifted from the ground, and sits on poles made of wood with only the top part made of concrete to ensure its longevity, extra of these foundation poles can be made at the start of the project so the home can grow and adapt over time.

[C] Width restriction

As a requirement, the home has a maximum width of 7000mm (interior width). However, volumes can be linked parallel but overlap is limited to also 7000mm.

This ensures the home to remain slender. Lightness also requires less beefy foundation poles, reducing the lasting impact on the land.



[D] Biobased materials

Current materials such as steel and concrete emits tonnes of carbon, so much, that they account for 11% of the world’s carbon emissions! But biobased, stores carbon.

Almost all materials we use now to construct new buildings can be easily replaced by biobased materials. Furthermore, the Netherlands is actually surprisingly rich in construction wood.

A biobased home is also a healthier place to be. Current construction materials emit harmful toxins whilst biobased does not. In the new work-life situation, working from home in a biobased home is significantly more sustainable and healthy.

[C] Filtered water

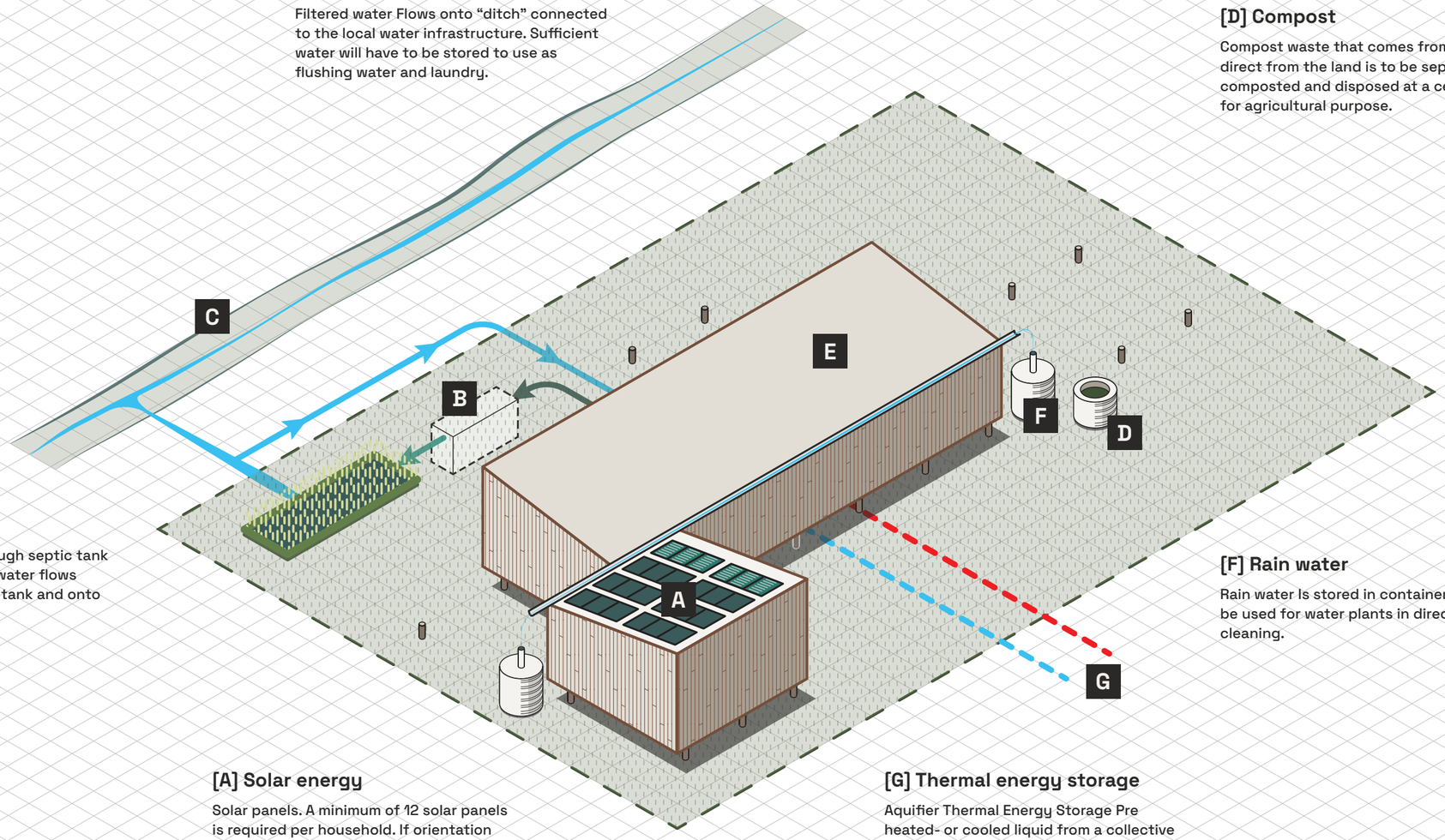
Filtered water Flows onto “ditch” connected to the local water infrastructure. Sufficient water will have to be stored to use as flushing water and laundry.

[D] Compost

Compost waste that comes from food direct from the land is to be separately composted and disposed at a central bin for agricultural purpose.

[E] Prefabricated

Construction of the home must be finished swiftly to ensure the least disruption to the landscape. Therefore homes must be prefabricated as much as possible so they can easily be assembled on site. You will need less labor, fewer movements, less waste and an overall faster and construction process.



[B] “Waste” water

“Black” water flows through septic tank onto helofyt filter. Grey water flows through separate septic tank and onto helofyt filter.

[F] Rain water

Rain water Is stored in containers and can be used for water plants in direct vicinity or cleaning.

[A] Solar energy

Solar panels. A minimum of 12 solar panels is required per household. If orientation of a homes roof is not optimally suited, collaboration between fellow residents is encouraged. In addition, solar boilers must also be placed in order to bridge most of the heat demand from the Thermal heat.

[G] Thermal energy storage

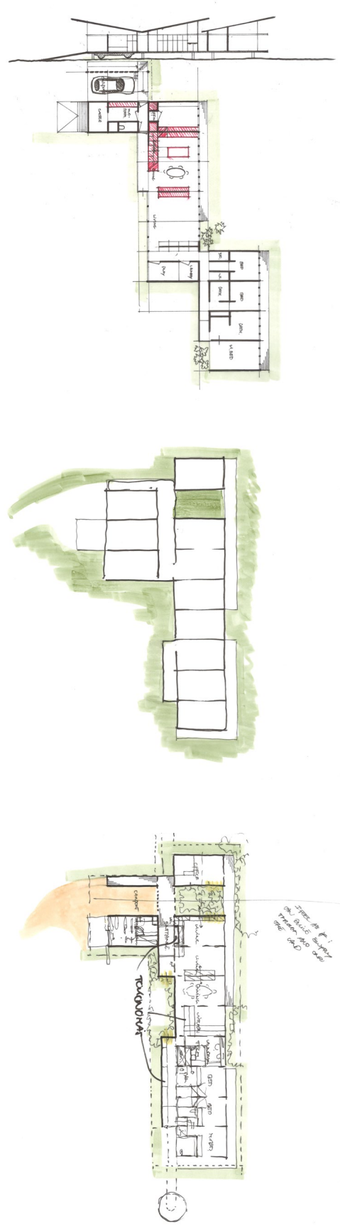
Aquifier Thermal Energy Storage Pre heated- or cooled liquid from a collective ATES is used to heat or cool the home with the use of low temperature floor heating.

Case study house

The framework, which prescribes long slender pavilion like structures lifted from the ground is something that developed simultaneously during the design process of my case study home.

For this case study home I wanted to design a family home, Specifically for those who are fed up with the city, and who want their kids to grow up with nature plus have all the desired space that comes with the change in demand. So separate flexible office space, plenty of storage, a playroom, carport, storage for bikes etc... All the things that make it worthwhile, to move out here.

So, Thinking of a Polder home, Especially a first project like this, standing on the wide open plain, even though more sheltered, is like designing a house in the desert, you have harsh conditions the trade of is an exceptional landscape to look out on

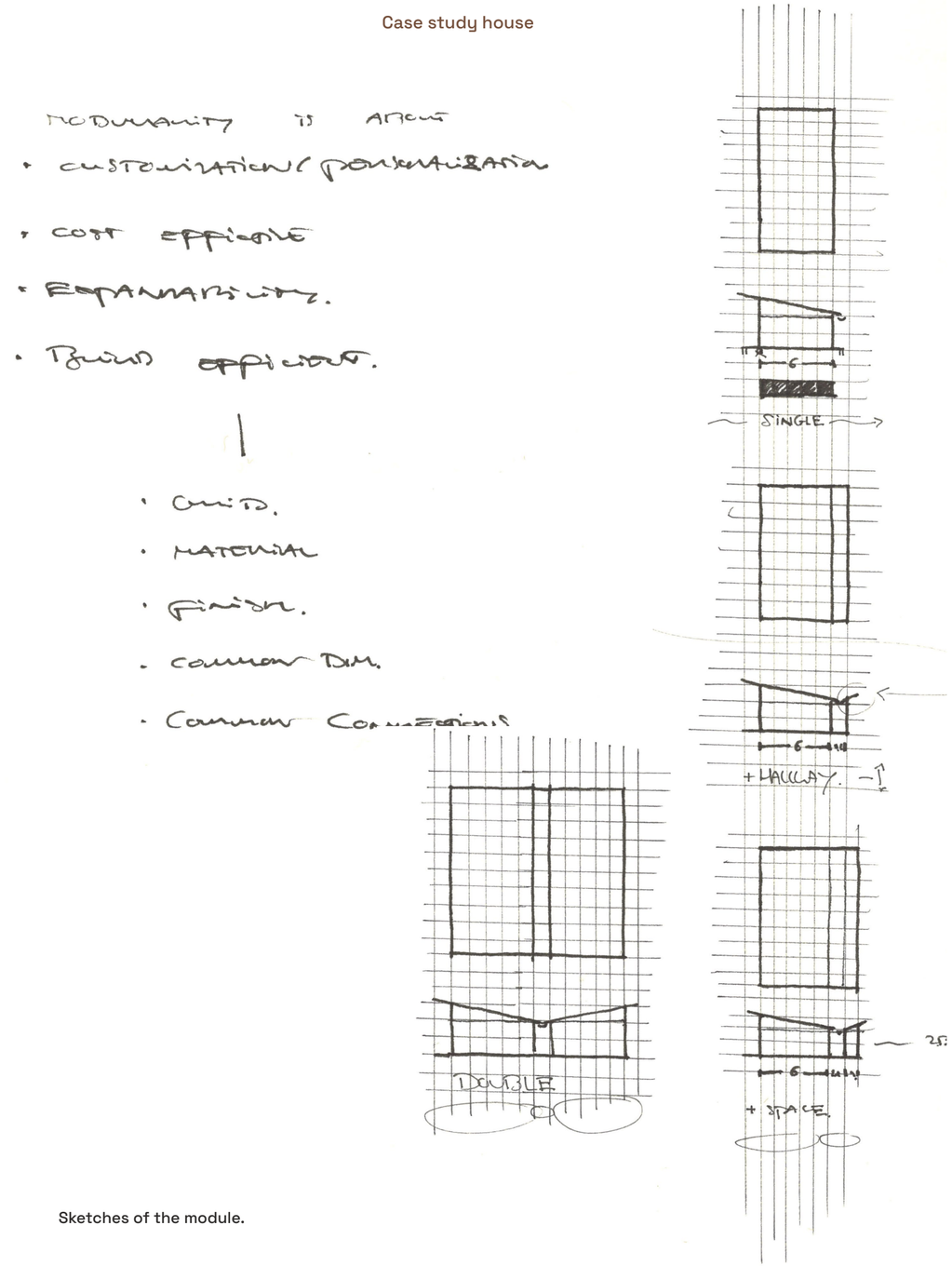


Sketches of multiple iterations of the layout of the home

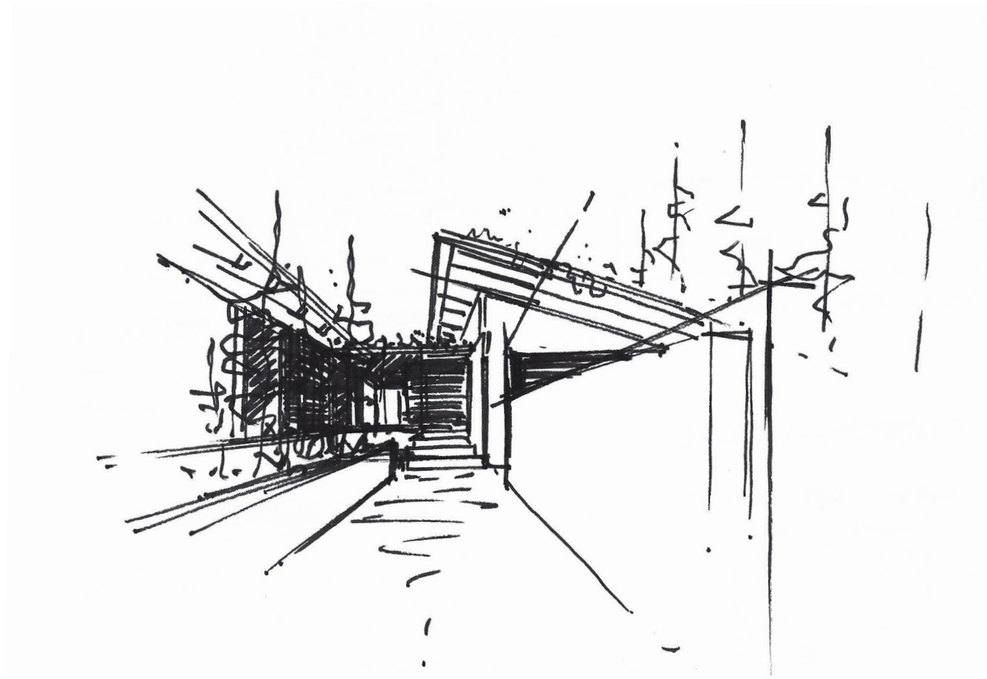
From the start I've been sketching out homes to be accessible and adaptable, so you can start small and gradually adapt the house to new unforeseen futures. Thus a form of standardization and modularity has always been at the forefront of the design process.

The Search for a form language basically started and ended with the shed roof, with once in a while a sidestep to other shapes. However the shed roof has some inherent qualities, that make it extremely well suited for a home here in the polder. It gives great direction towards the view and there is the possibility to make efficient use of passive solar gain, reducing the amount of artificial light needed and passively heating the home during winter reducing the need for external heating.

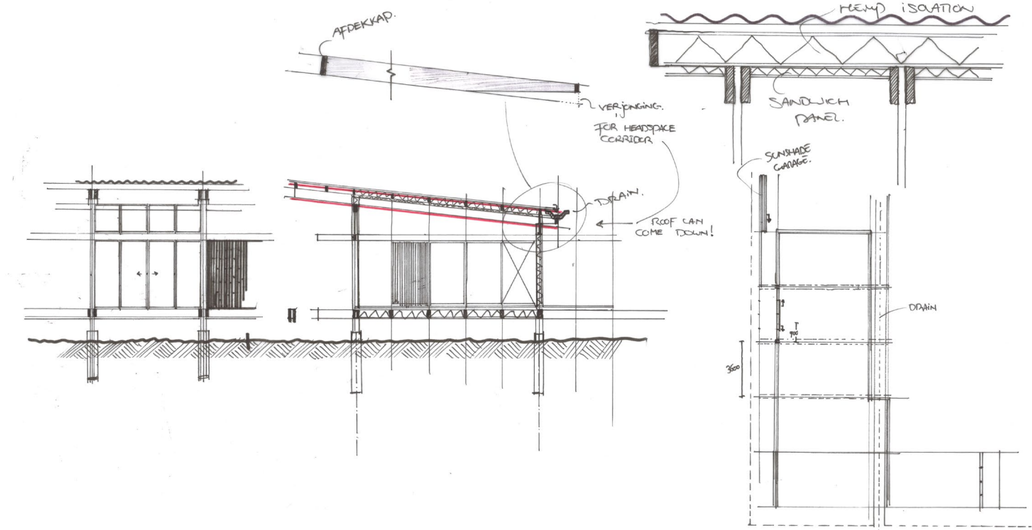
Both construction and finishes are predominantly made out of Douglas fir wood. This type of wood is well suited for both purposes and is plentiful available. Large production forests originally intended for the mining sector are readily available.



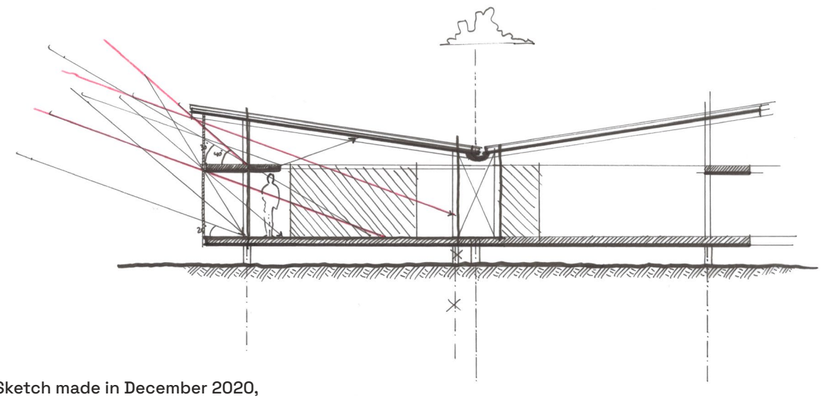
Sketches of the module.



Sketch made in April 2020, envisioning the entrance to the home.

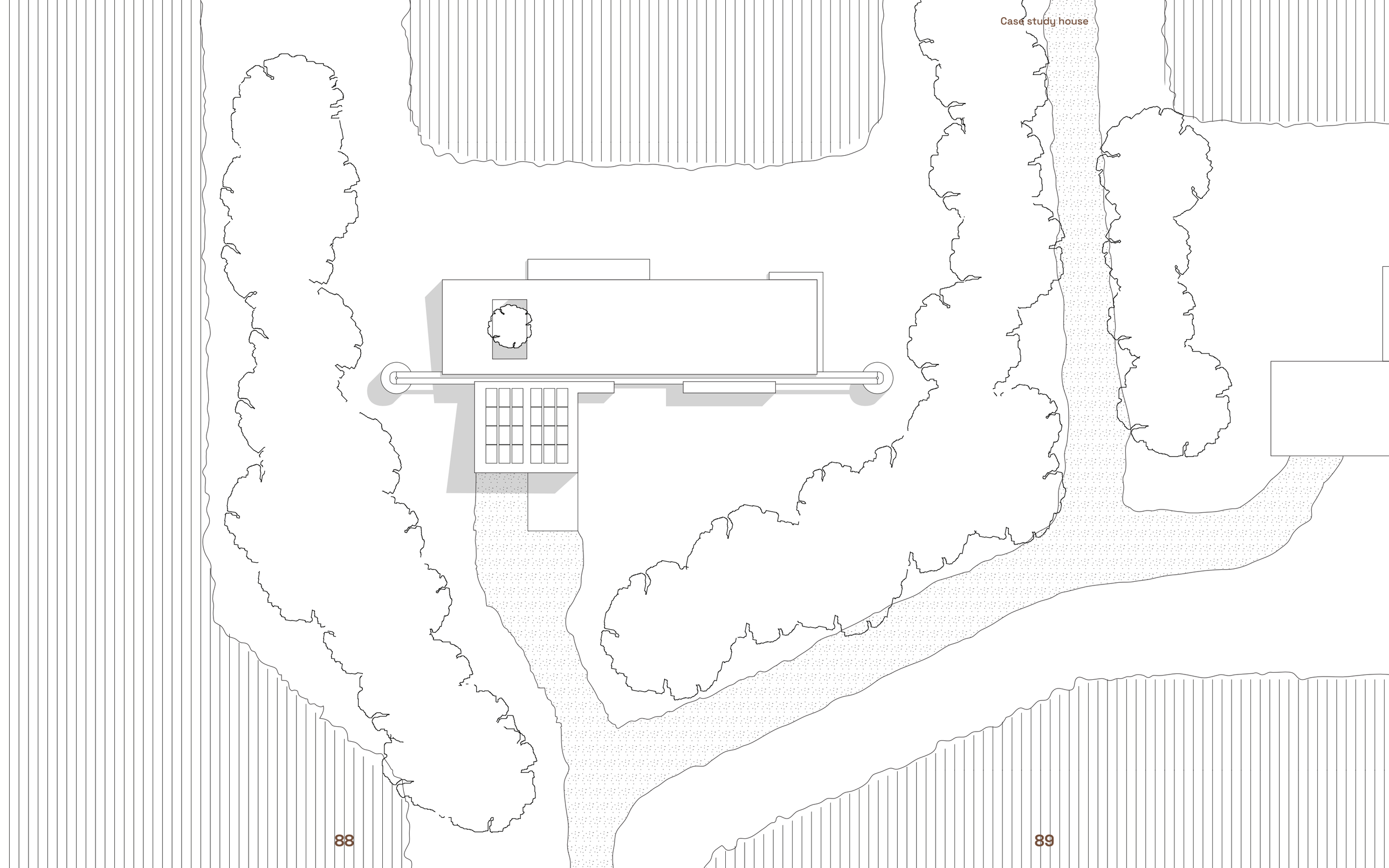


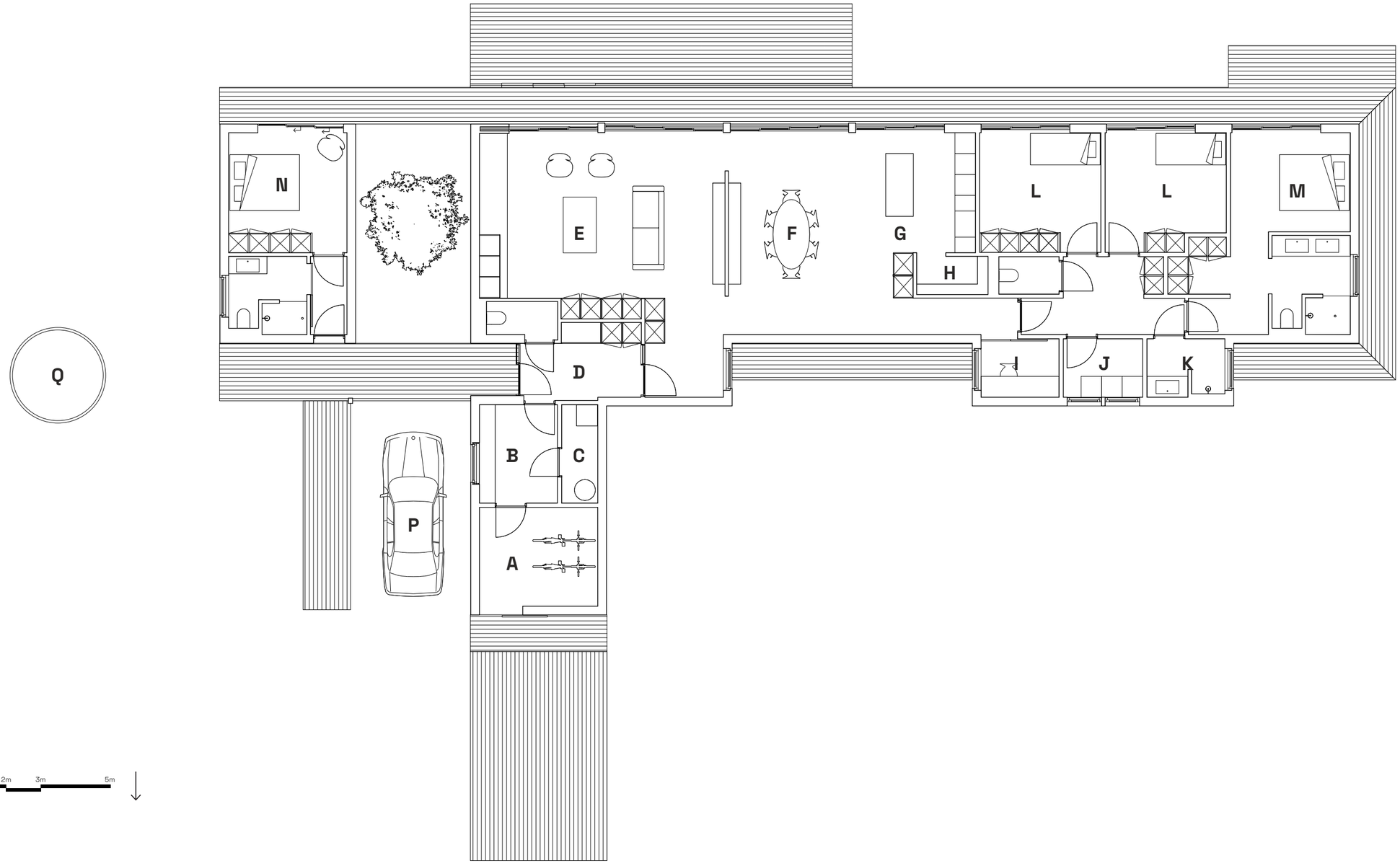
Sketch made in January 2021, trying to integrate construction and finishes.



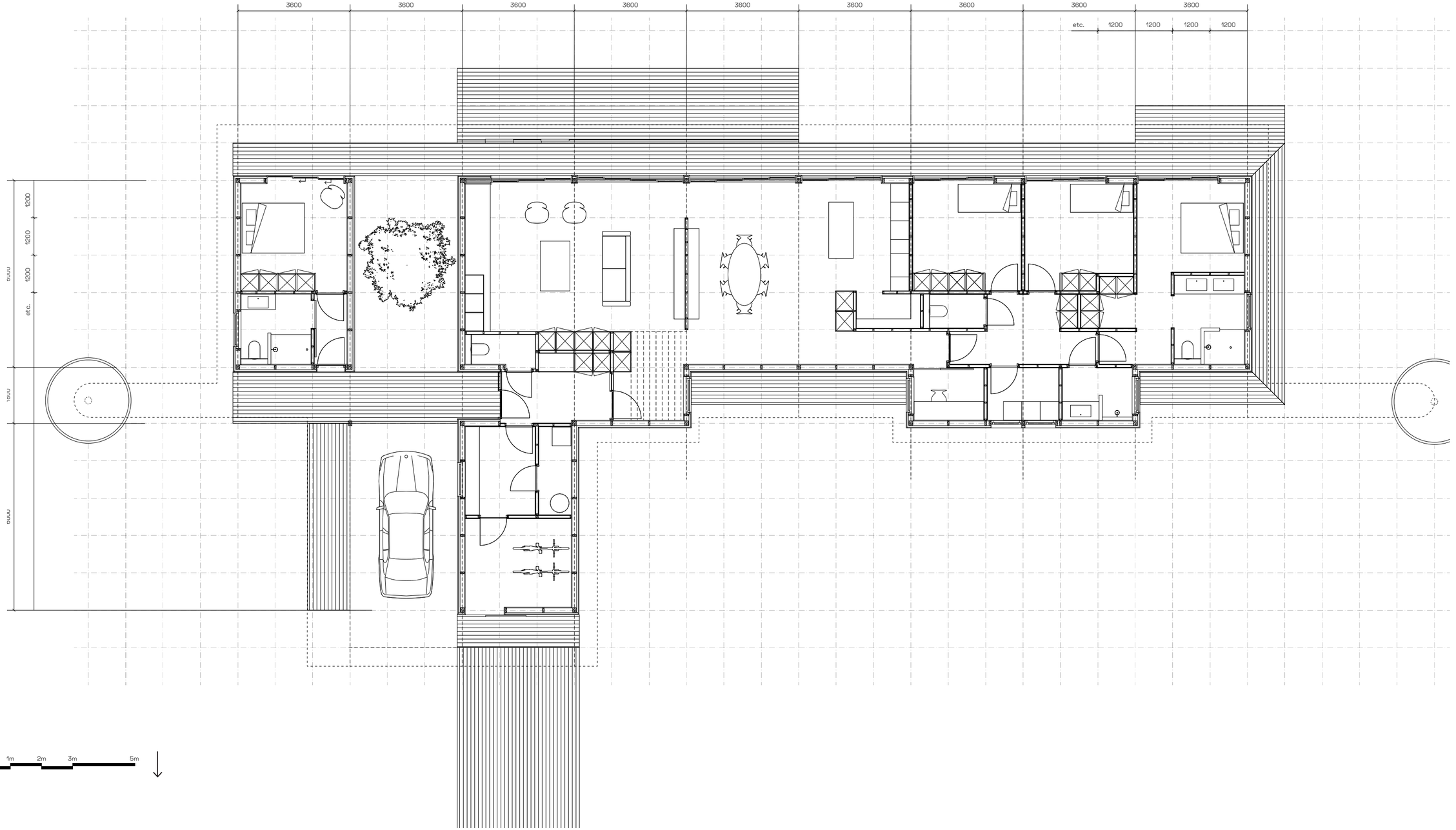
Sketch made in December 2020, establishing the three levels in the home: floor, mid-level and roof. Plus researching the eaves and passive solar gain.

Case study house





[A] Garage
[B] Mudroom
[C] Tech. Room
[D] Entrance hallway
[E] Living
[F] Dining
[G] Kitchen
[H] Pantry
[I] Computer room
[J] Laundry
[K] Bathroom
[L] Bedroom
[M] Master bedroom
[N] Guest house/ Office / Art studio
[O] Rainwater sto.
[P] Carport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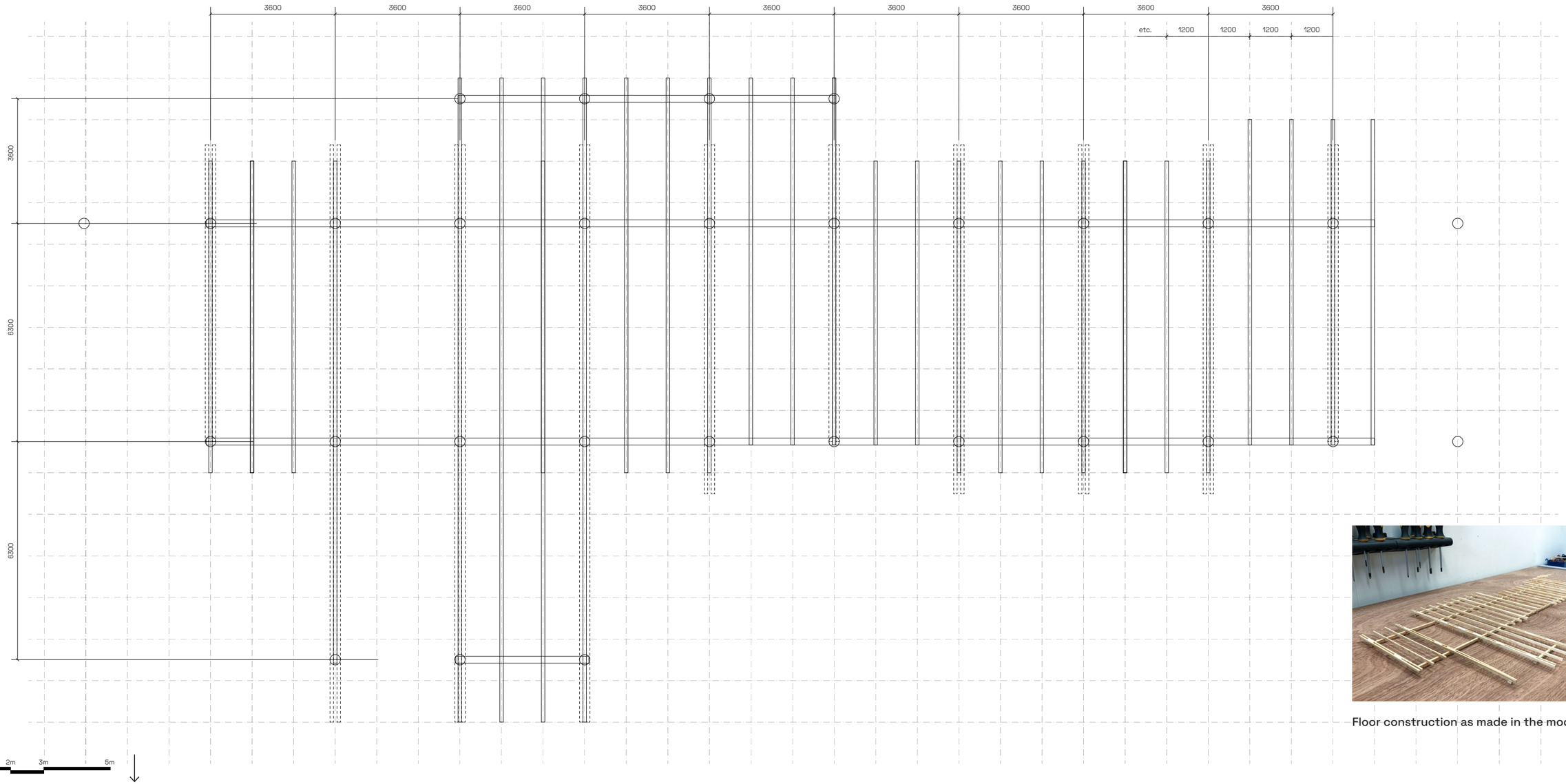
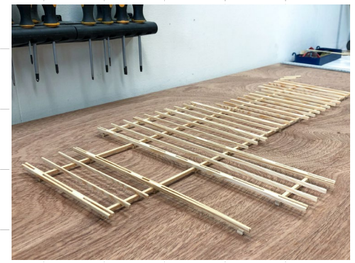
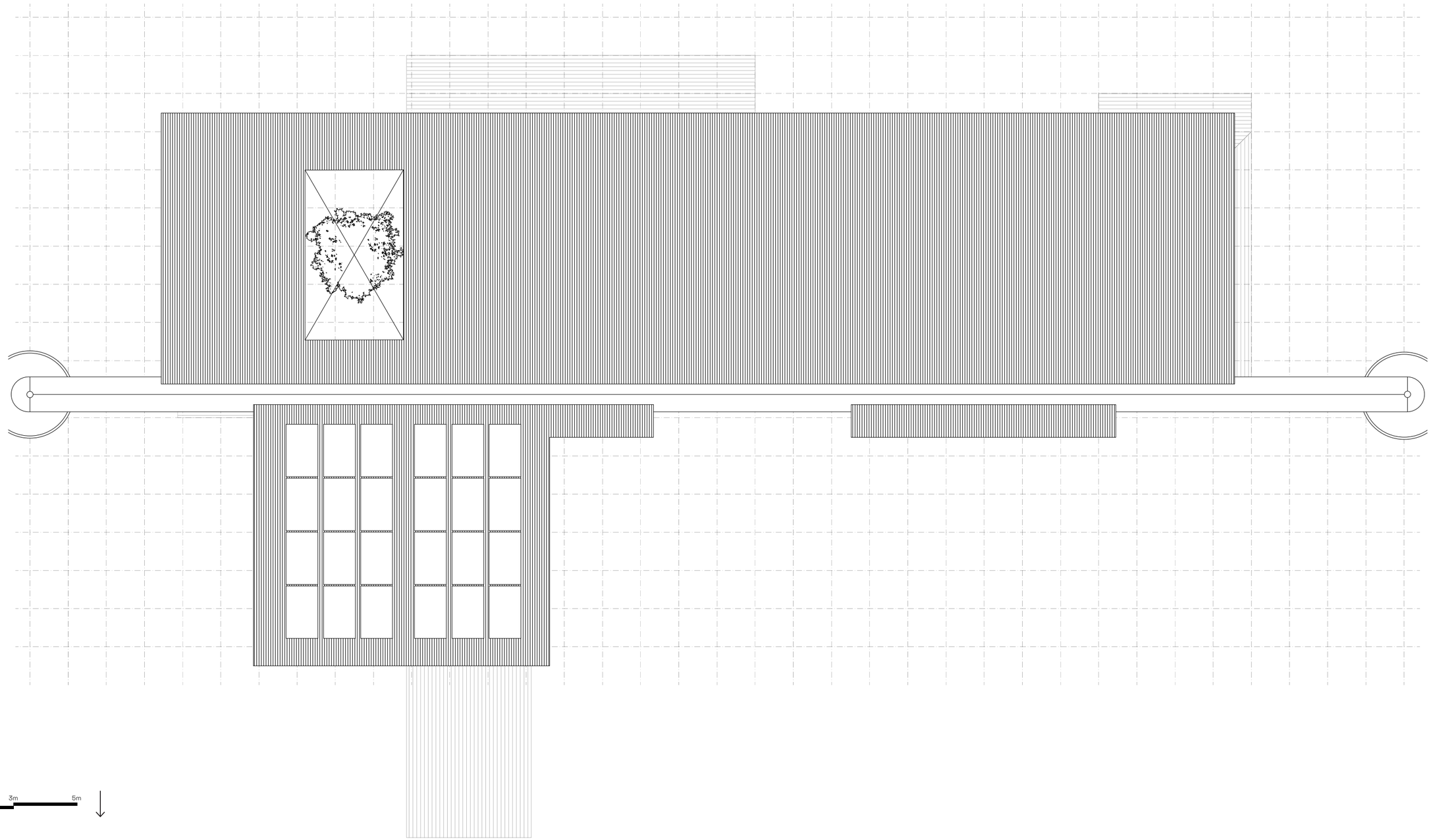




Floor construction as made in the model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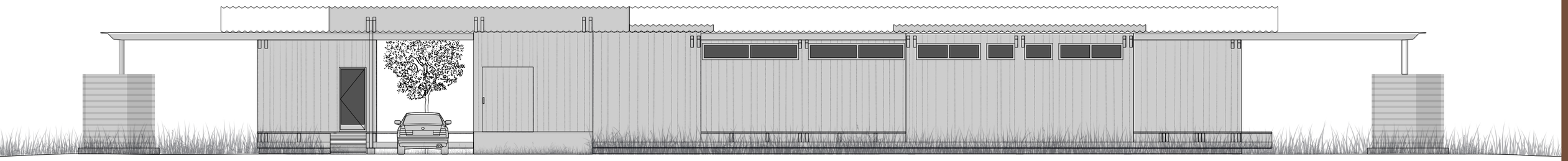

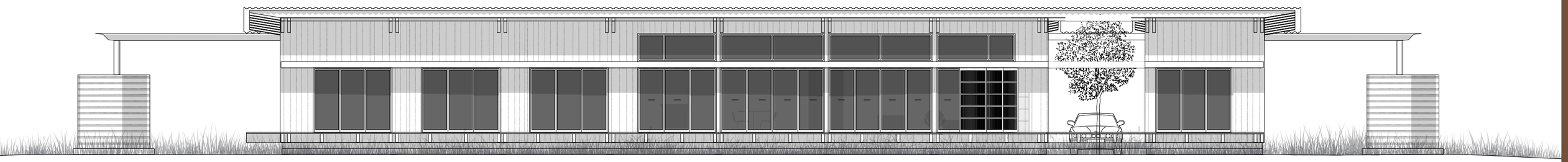


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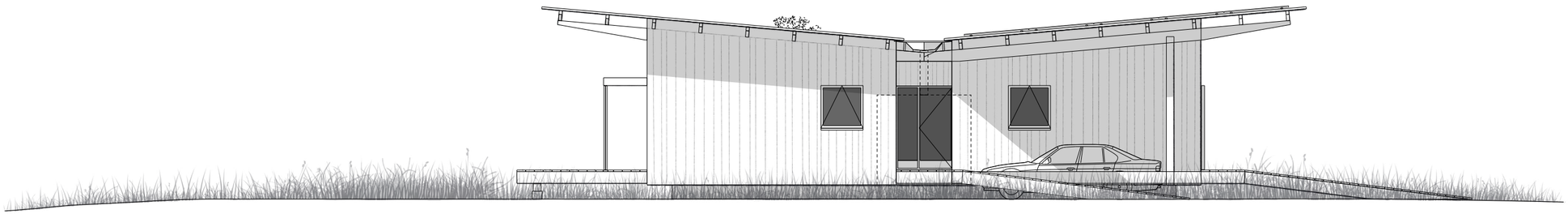

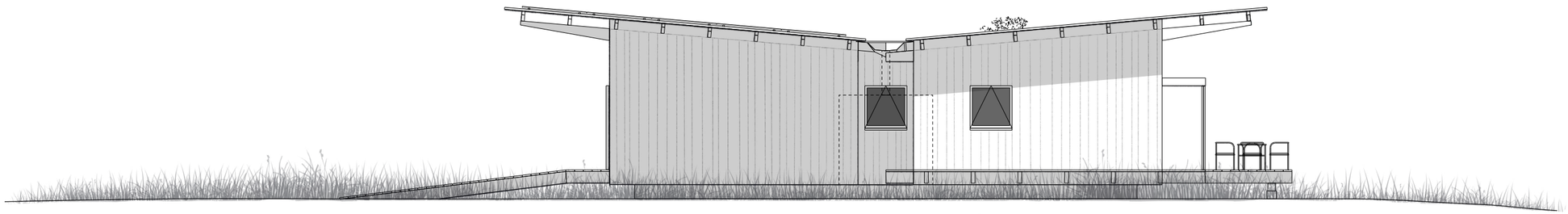


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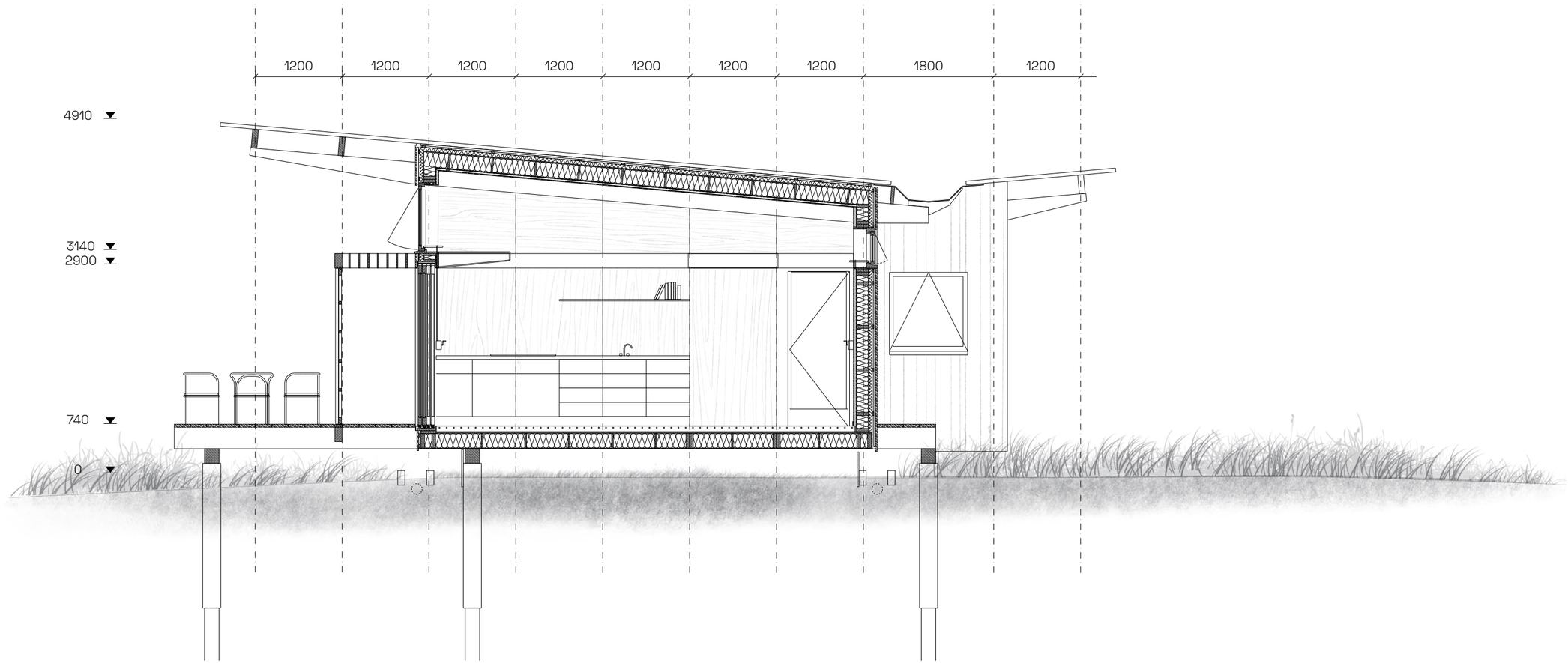
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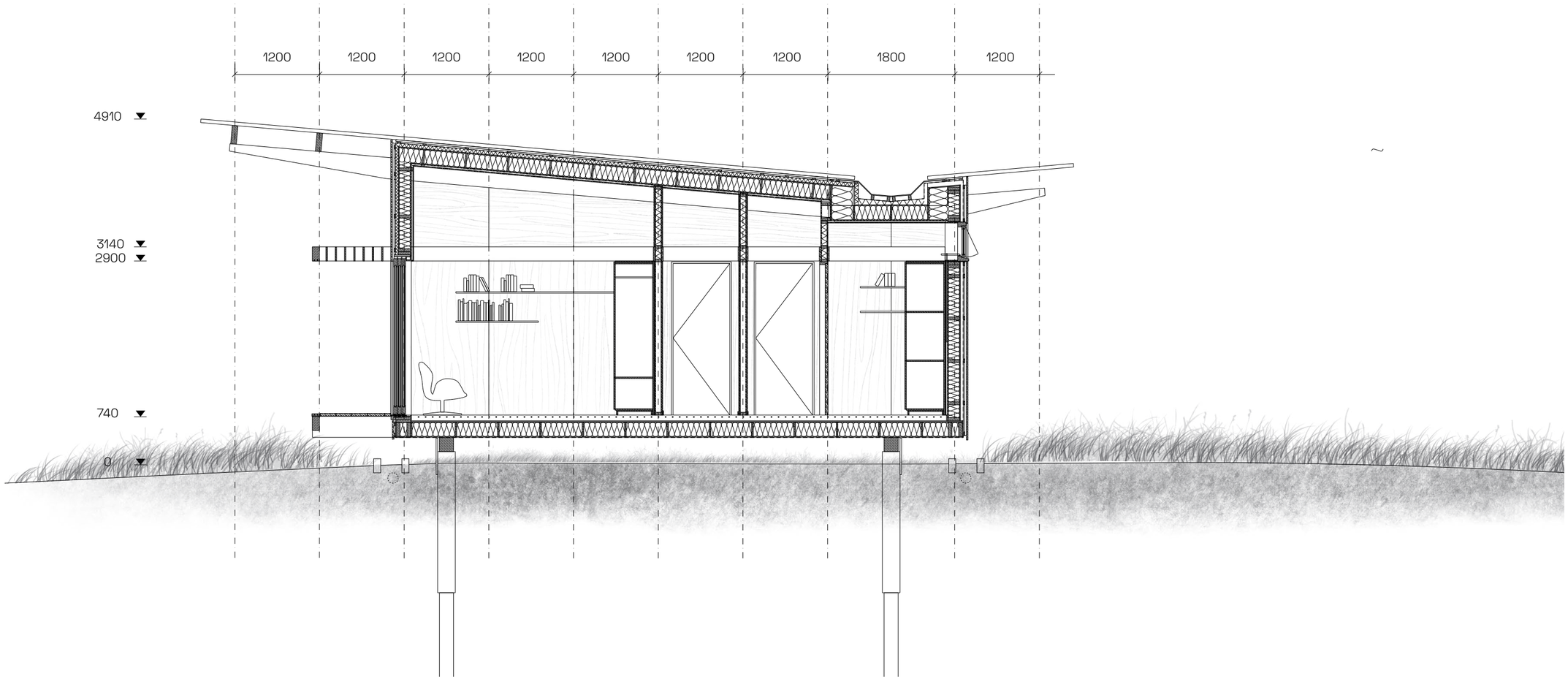
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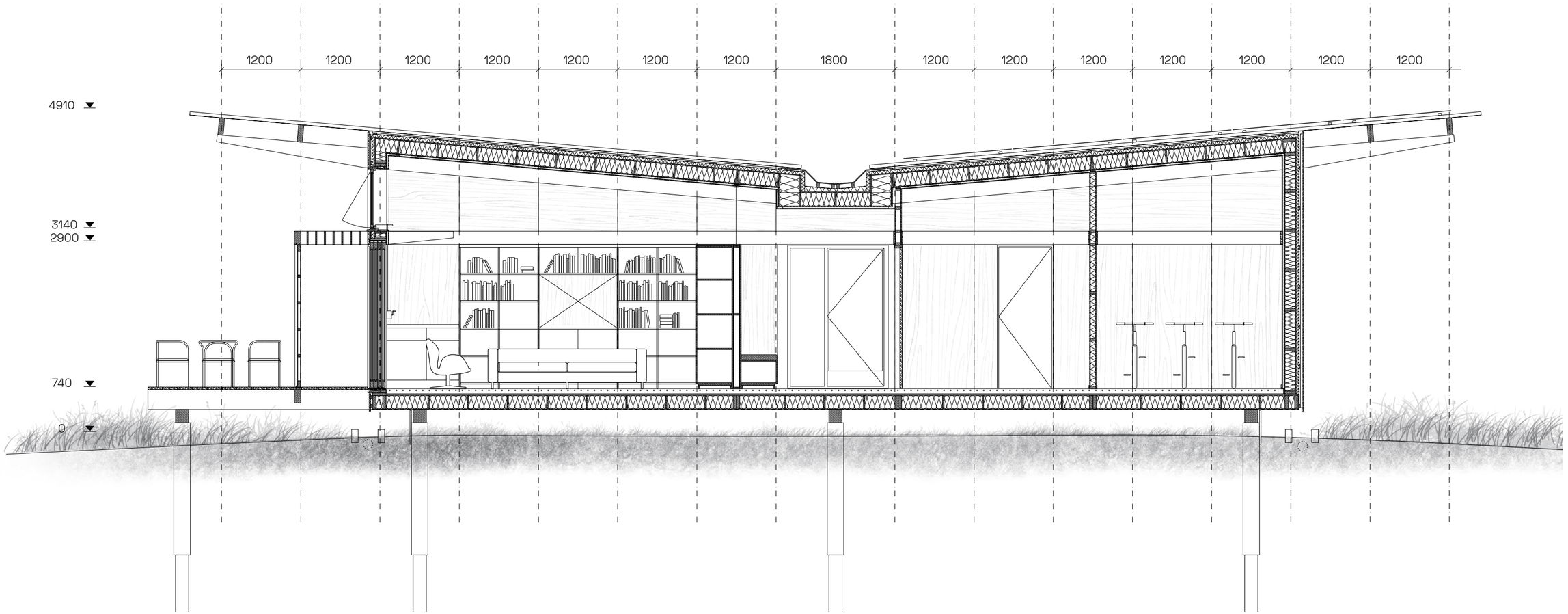
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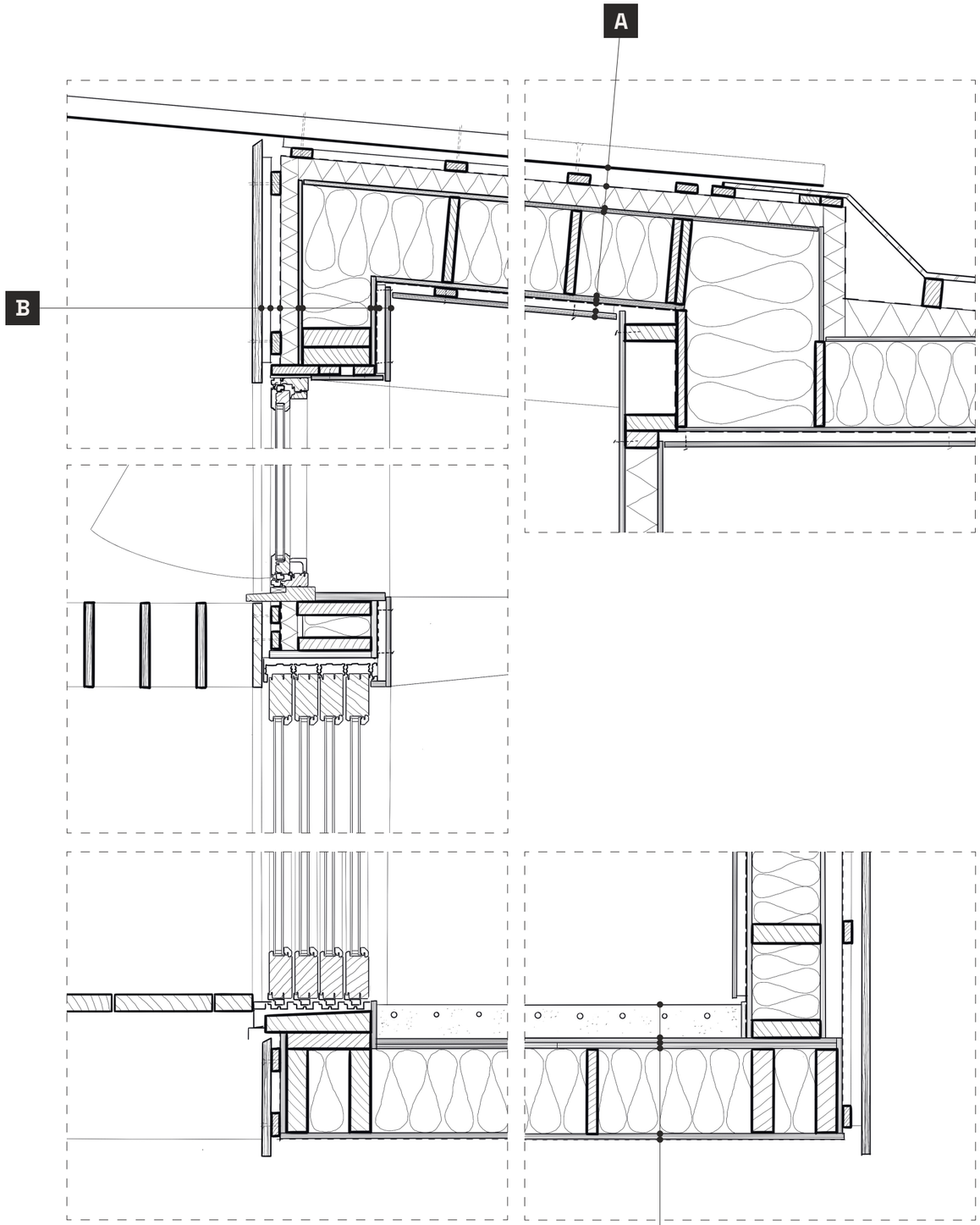
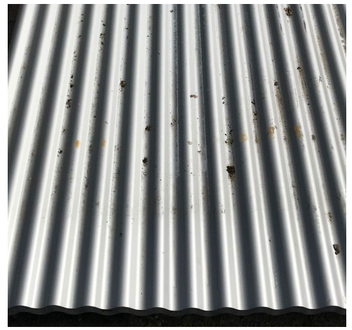
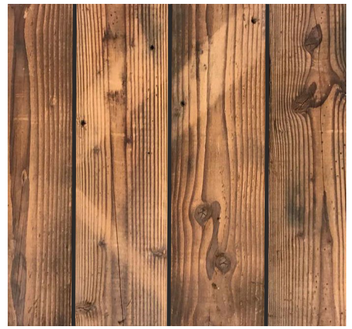


[A] Roof:
Rc: 6.43
Plywood finish 12mm
Battens 22mm
Pro Clima Intello® Foil
Chip board 12mm
Hemp: Biofib 200mm
Chip board 12mm
Wood fiber: Pavatex Isolair 52mm
Breather membrane
Battens 22mm
Corrugated metal roof 0.55mm



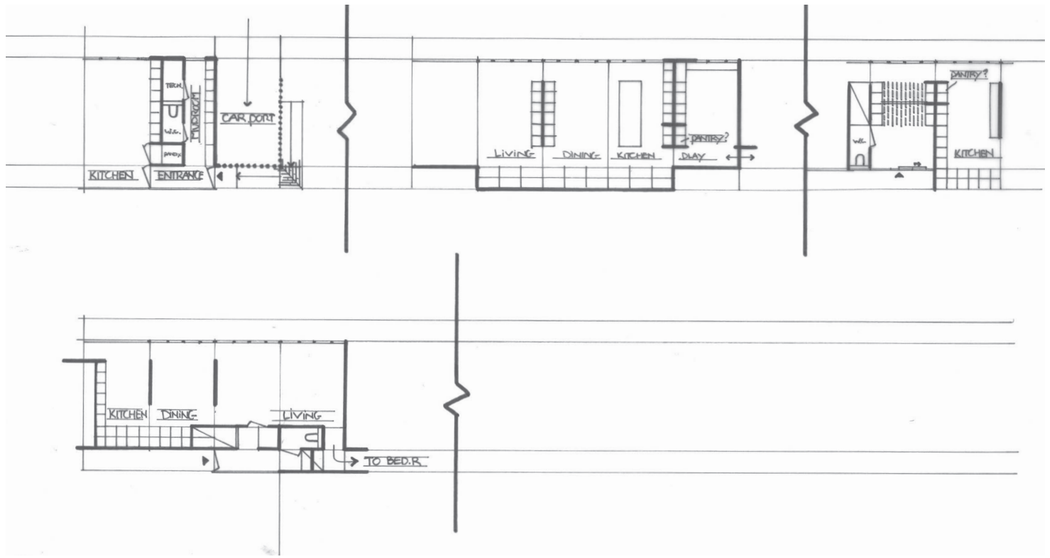
[B] Facade:
Rc: 5.23
Plywood finish 12mm
Battens 22mm
Pro Clima Intello® Foil
Chip board 12mm
Hemp: Biofib 145mm
Chip board 12mm
Wood fiber: Pavatex Pavatherm 40mm
Breather membrane
Battens 22mm
Douglas Fir, vertical cladding 22mm
(Linseed oil treatment)

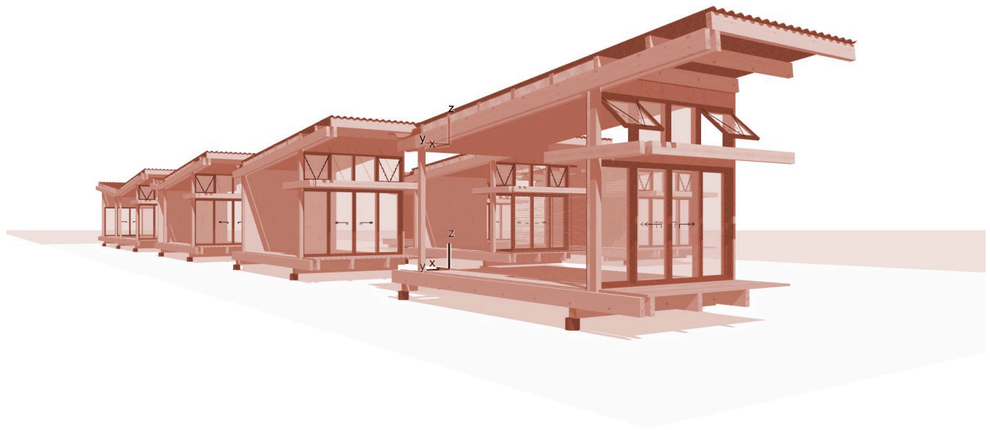


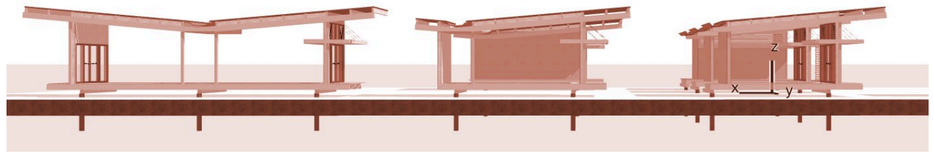
[C] Floor:
Rc: 6.66
Concrete 80mm
Wood fiber: Pavatex Pavatherm 40mm
Underlayment 12mm
Underlayment 12mm
Hemp: Biofib 200mm
Chip board 12mm
Pro Clima Intello® Foil

Bedroom, bathroom layouts

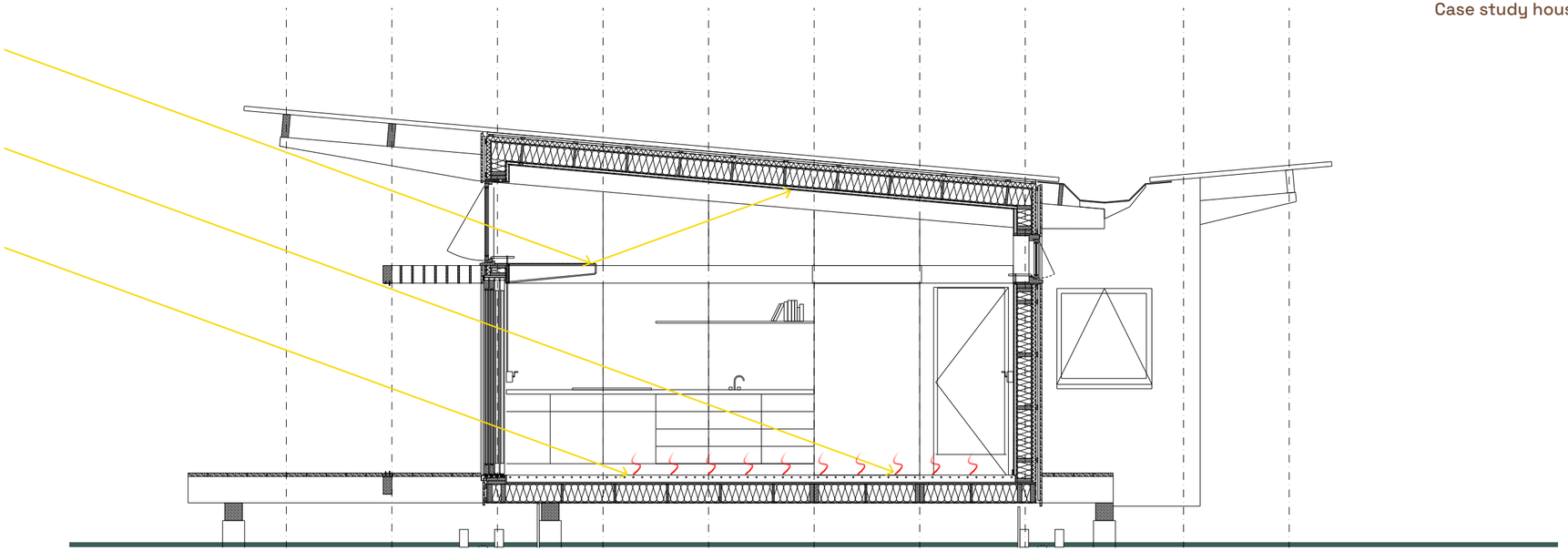
Kitchen, dining, living and entrance layouts



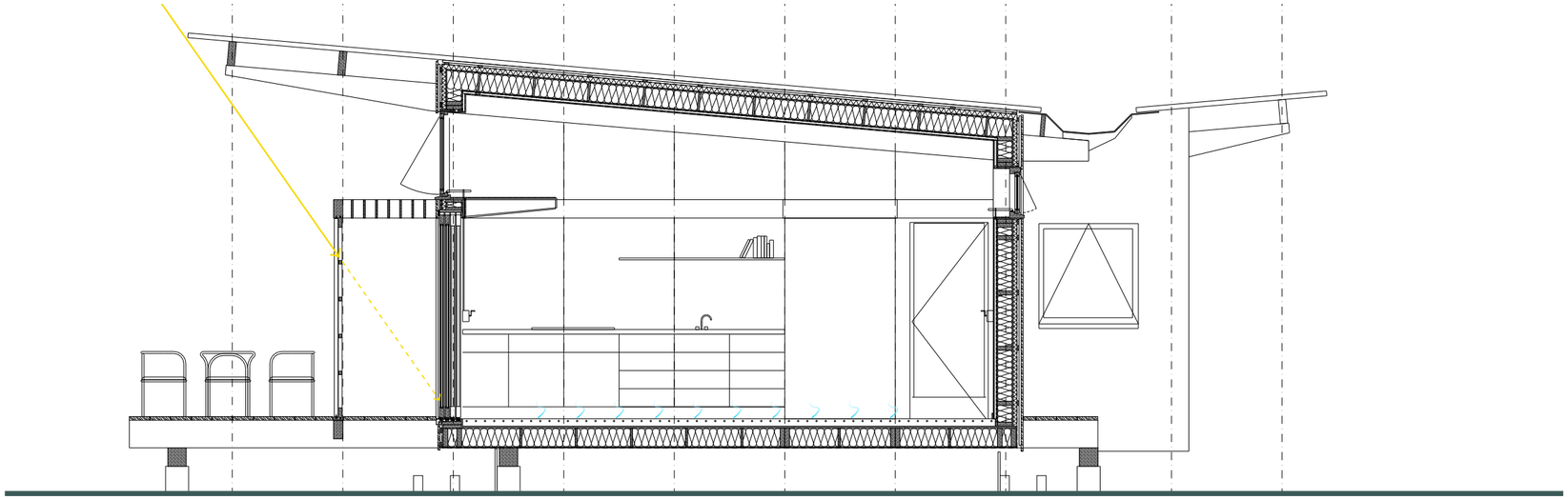




ArchiCad screenshots of the three different modules



Winter situation



Summer situation

Budget breakdown estimate

Total surface home: 217m²

Each 3.6m x 6m module: ~22m²

Framing:	60.000 - 50.000
Wood decking:	18.000 - 36.0000
Plumbing:	23.000 - 24.000
Cabinetry & Millwork	23.000
Electrical Lighting	23.800 - 33.300
Foundations	25.950
Window Wall system	18.500 - 23.000
Ext. Finish + insulation	45.800 - 21.000
Int. Finish	33.800 -
HVAC	4.500 - 12.000
Roof	5.500
Doors & Hardware	17.000 - 23.000
USD$	_____

Lowest estimate: $264000 = €217760

= €1000/m2 > €22000/ Module

High estimate: $345000 = €284600

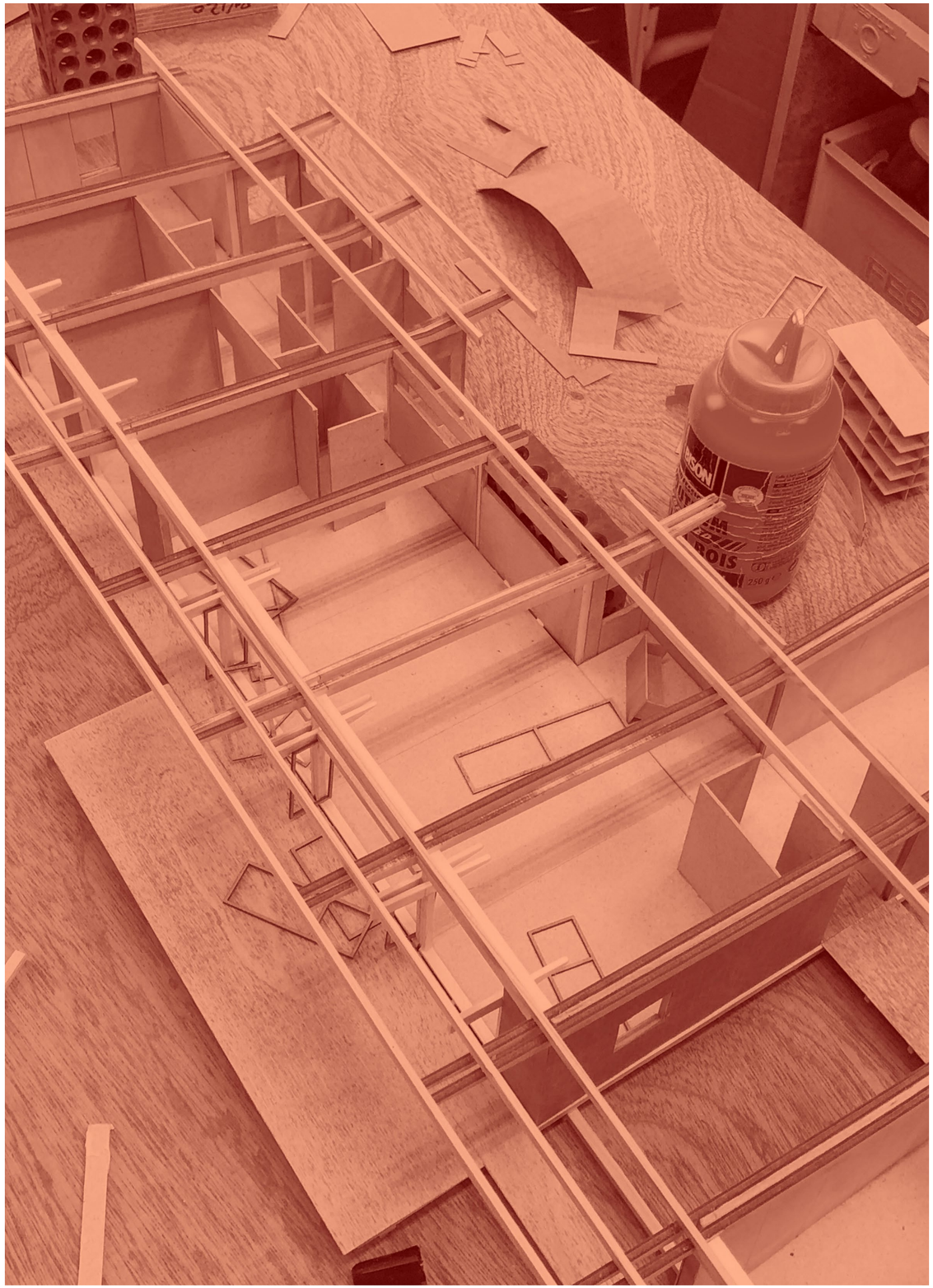
= €1310/m2 > €28800/ Module

Prices are based on three budget breakdowns of similar homes found on Dwell.com

https://www.dwell.com/article/forest-cabin-helen-pang-9a5f3fce

https://www.dwell.com/article/casa-tobita-max-a-arquitectura-arquitectura-del-paisaje-bd7b7225

https://www.dwell.com/article/tree-house-faye-and-walker-architecture-5457c85d



Conclusion

Our current way of farming is quickly becoming unsustainable, depleting soil health, lacking resilience to cope with climate change and not offering habitats for animals and insects with the result of plummeting biodiversity. The solution will not only tackle these issues, securing our food supply and helping restore biodiversity, it will also enrich the agricultural landscape of the Dutch countryside.

The agricultural sector must transition towards nature inclusive agriculture. At the same time, there is a shift in demand where more and more people want to move to the countryside. The projected change in the landscape, the demand for new countryside homes and the financial and mindset change the farmer has to make creates the opportunity to envision a project where the transition towards nature inclusive agriculture is integrated with the development of new homes.