

**Interdisciplinary  
Thesis Lab  
2022-2023:  
Circular Building  
and Area  
Development  
Thematic  
Assignments**  
LDE CfS Cities-Hub



**Universiteit  
Leiden**  
The Netherlands

**TU Delft**

**Erasmus  
University  
Rotterdam**

# COLOFON

This document includes the thematic assignments for **Interdisciplinary Thesis Lab 2022-2023: Circular Building and Area Development** organised by the LDE CfS Cities Hub.

## Thesis Lab

The Circular Building and Area Development lab program runs from the beginning of February until the beginning of July 2023. It is a biweekly program where students from a lab come together to follow in-depth lectures and workshops related to their sustainability challenge given by one of the five different caseholders. During these sessions, the students discover and discuss the interdisciplinary aspect of this challenge. At the end of the program, an interdisciplinary result to the sustainability challenge will be formulated by the students during a "pressure cooker"

## Cities Hub

The Cities Hub facilitates practice oriented research and education that goes beyond sectoral and disciplinary boundaries. We bring researchers, students and various stakeholders from urban practice together to work on innovative, inter- and transdisciplinary approaches.

We offer an entry point for those who want to collaborate with LDE-researchers and students: to develop and share knowledge, innovative methods and approaches. We welcome your contribution. We can connect you to others who are passionate about innovating in impactful urban knowledge production for the sake of more sustainable cities.

Make sure to check the [website](#)

## Interested in joining the Thesis Lab?

Get in touch with



### Saskia Ruijsink

Thesis Lab Coordinator and  
Coordinator of the Cities Hub  
s.m.ruijsink@tudelft.nl  
+31 (0)6 18 89 14 38



### Karel van den Berghe

Assistant Professor Spatial Planning and Urban Development  
Academic Coordinator of the Thesis Lab  
K.B.J.VandenBerghe@tudelft.nl  
+31 (0)15 27 85 261  
+31 (0)6 18 18 92 00

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**Thomas van Daalhuizen**  
Student Assistant Cities Hub  
t.j.vandaalhuizen@tudelft.nl  
+31 (0)6 48 34 28 61

# 01 | MUNICIPALITY WESTLAND

## Introduction

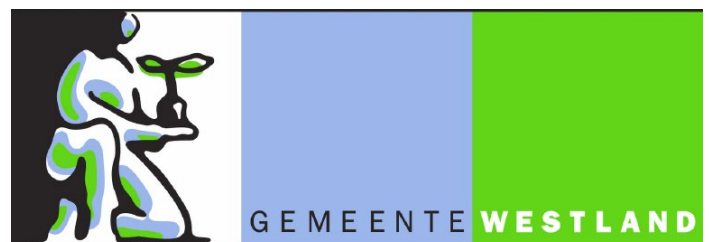
The municipality of Westland is located in between Delft, The Hague, and the Port of Rotterdam. The municipality is mainly known for its horticulture landscape and the knowledge centres surrounding it. The horticulture sector of the future is ultra-sustainable and drives change. Current challenges including change in diets, ecological footprint of food production, energy usage and the carbon emissions have to be overcome. The municipality of Westland has taken an innovative approach by setting up the World Horti Centre, clustering knowledge to help out.

The World Horti Centre in Westland will act as a catalyst to start sustainable transitions of other sectors such as construction, mobility, health, and technology. Westland aims to be a frontrunner in these transitions. The horticulture innovation centre already exists but is rather isolated and a large-scale area development is needed to develop a new heart of Westland: 'het Floragebied' into a circular, sustainable, and innovative district. The municipality is currently developing 'het Floragebied' campus and has set up the development perspective concerning the way this area can come along the transition. This area exists of old auction warehouses and industry. Westland now works on developing this into a space where living, working, innovating, researching, and studying is combined in the same area. This development is connected to the establishment of high-quality sustainable

mobility networks to enhance the connectivity with the rest of the Randstad.

## Thematic Assignments

1. *Positioning & Area Development:* The positioning of Westland in the regional context and how Circularity and Sustainability can be used to put the region on the map? What kind of opportunities and challenges are associated with circularity and sustainability in terms of Health, Horticulture and Technology? How can the campus development (Floragebied) add to the image of the Flora-area (Floragebied) as a showcase for the future of horticulture? How can stakeholders be engaged in the area development process?
2. *Mobility & Area Development:* What are the opportunities and challenges between accessibility and sustainability (emissions



## Useful Links

Website

<https://www.floragebied.nl/default.aspx>

Development plan Floragebied

[https://www.gemeentewestland.nl/fileadmin/documenten/ondernemen/Ontwikkelperspectief\\_Floragebied.pdf](https://www.gemeentewestland.nl/fileadmin/documenten/ondernemen/Ontwikkelperspectief_Floragebied.pdf)

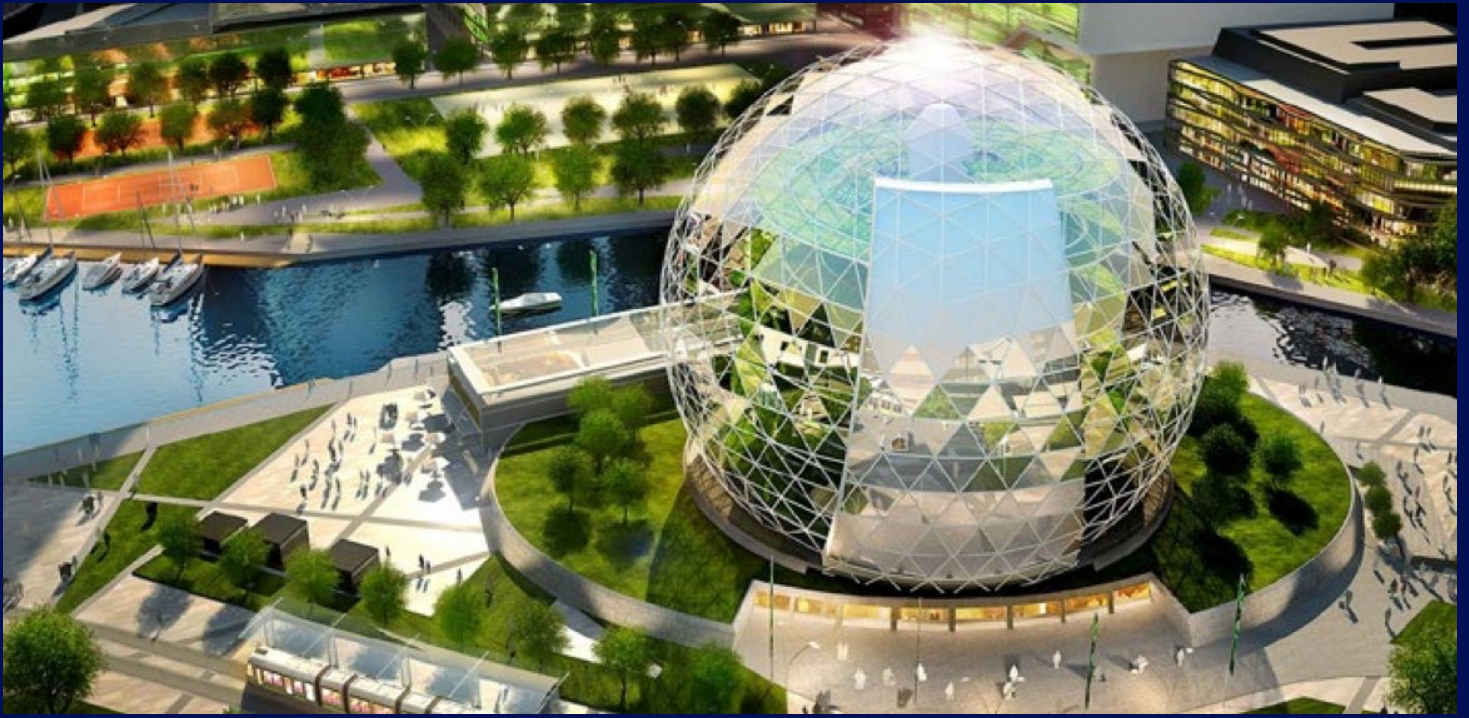


Image: [https://www.gemeentewestland.nl/fileadmin/documenten/ondernemen/Ontwikkelperspectief\\_Floragebied.pdf](https://www.gemeentewestland.nl/fileadmin/documenten/ondernemen/Ontwikkelperspectief_Floragebied.pdf)



Image: [https://www.gemeentewestland.nl/fileadmin/documenten/ondernemen/Ontwikkelperspectief\\_Floragebied.pdf](https://www.gemeentewestland.nl/fileadmin/documenten/ondernemen/Ontwikkelperspectief_Floragebied.pdf)

# 02 | ANTEA GROUP

## Introduction

Antea Group is a global consulting and engineering firm with its origin and a large chapter in the Netherlands. It is a private sector organization that needs to be financially sustainable and that is concerned with ecological and social dimensions of sustainability and embraces the Sustainable Development Goals (SDGs).

## Thematic Assignments

### 1. *Monitoring, Evaluation and Learning*

- How can sustainability and circularity in a diverse range of construction, infrastructure and area development projects be evaluated, monitored used as input to learn for future projects? This research will build on the work of Antea Global that uses the SDGs as a tool for showing how projects contribute to realizing sustainability. This approach is still very basic and does not give much quantified information that can effectively be used for Monitoring, Evaluation and Learning. This research assignment is concerned with developing this assessment further, based on theory and evaluations of projects of Antea group (mostly documented in Dutch).
- What is the relationship between (financial and time) investments and the sustainability and circularity performance in a diverse range of construction, infrastructure, and area development projects? This research is connected to the work on Monitoring, Evaluation and Learning and draws on theory and evaluations of projects of Antea group (mostly documented in Dutch).

### 2. *Sustainability in a commercial organization*

- How can projects be commercially viable and sustainable? In practice sustainable projects often are, or seem more expensive and higher costs can result in a lower profit margin. What are design principles that influence the commercial viability and the sustainability of construction, infrastructure, and area development projects?

### 3. *Future thinking – the role of Antea Group in a new (circular) economy*

- The economy of the construction and infrastructure sector is changing due to new concepts of ownership (e.g., sharing economy), new technological possibilities and new global realities with shortages of materials, increasing prices of materials and energy. This means the entire chain of actors needs to redefine its role. How can the role of an engineering and consulting firm in the construction and infrastructure sector develop? How do other actors in the supply and demand chain see this position? What kind of relationships can be developed among the various actors in the supply and demand chain?



## Useful Links

Website

<https://anteagroup.nl/>



Image: <https://anteagroup.nl>

# 03 | BOUWCAMPUS

## Introduction

The Bouwcampus aims to start transitions within three complex, urgent societal tasks.

1. Replacement & Renovation Infrastructure
2. Sustainability Buildings & Environment
3. Redesigning the Urban Foundations

## Thematic Assignments

### 1. *Circularity in industrial building & construction*

- How can industrial processes contribute to a circular outcome? What is the relation between industrial processes and circular building and area development?

Currently a shift is seen towards the desire for circular building and area development. However, it is unclear how an industrialized process can ensure a circular outcome. Thus, the relationship between an industrialized process and a circular building and area development outcome needs to be known.

- How can the current industrial manufacturers make the systemic shift to biobased industrial building? What are the reasons of clients to decide or not decide for circular manufacturers? Multiple builders have shifted from conventional building towards industrialized building, where houses are made in an industrialized way. This can lead to a more sustainable process. However, how can these industrialized process makes the shift towards industrialized building via biobased materials to gain optimal sustainable benefits.

### 2. *Connections between circularity & other sustainable challenges in building and area development*

- In what way does living in a house made of biobased materials influence the living quality?
- How can we better understand the connections (e.g., with a multi-perspective approach) between sustainability transitions (circularity, climate, biodiversity, energy, etc.) focussing on construction and area development?

The transition to a circular economy is happening simultaneously with other sustainability transitions such as climate and energy.

### 3. *Going beyond pilots and experiments*

- How can circular building and construction initiatives overcome the pilot-paradox? How could a multi-perspective approach contribute to better understanding the pilot-paradox?

It's necessary and challenging to reach a certain maturity level in sustainability transitions. It is important to go beyond pilots and experiments, but typically it is easier to find funds and support for new pilots than investing in structural change.



## Useful Links

Website

<https://debouwcampus.nl>





Image: <https://www.biind.nl/nieuws/bouwcampus-sluit-aan-bij-city-deal-openbare-ruimte>

# 04 | PROVINCIE ZUID HOLLAND

*Disclaimer: This thematic assignment has been set up in very broad terms and will be further defined together with the students interested in this topic.*

## Introduction

As a rapidly growing, highly urbanized province, South Holland faces a major housing challenge. We want to build fast and a lot, but it is not just about numbers. Now more than ever it is necessary to build future-proof, in other words: climate-adaptive, circular/biobased, energy-neutral, healthy, emission-free, and nature-inclusive.

## Thematic Assignments

1. Assessing factors and conditions (e.g., technical, ecological, economic, locational, social, geopolitical, etc.) that influence the transition towards future-proof housing; with a key role for sustainable, biobased, and circular building, infrastructure, and area development in Zuid-Holland. Students can focus on one or a combination of factors and conditions.
2. How do different aspects of future-proof housing (circular, climate adaptation, nature inclusive, energy neutral) play a role in area development in Zuid-Holland and how can the combinations between these aspects be strengthened?



**provincie  
Zuid-Holland**

## Useful Links

Website

<https://www.zuid-holland.nl>

Future Proof Building

<https://www.zuid-holland.nl/onderwerpen/ruimte/wonen/toekomstbestendig-bouwen/>



Image: <https://www.zuid-holland.nl/onderwerpen/ruimte/wonen/>



Image: <https://www.zuid-holland.nl/onderwerpen/ruimte/wonen/>

# 05 | MINISTERIE VAN BINNENLANDSE ZAKEN EN KONINKRIJKSRELATIES

## Introduction

The area of work of the ministry of Interior and Kingdom Relations is, among many other things, addressing the spatial challenges created by the shift towards a circular built environment, including a circular building sector. The concept of circular economy is about preventing the use of 'virgin' commodities and materials and closing loops in production and consumption processes. In relation to this, the ministry is looking at different scale levels at which used (building) materials can be re-used or recycled and at accompanying policies. There are many different building materials used in the construction of a building and they all have a different flow of resources. Those different material flows also operate at different spatial scale levels; depending on where they can be manufactured, where raw materials come from and where and how the rest-products can be re-used. Creating a better understanding of the various scales of operation is related to understanding more about spatial and physical aspects in terms of manufacturing, transportation and storing the materials. Additionally, it is concerned with less tangible elements such as funding mechanisms, policy instruments and knowledge creation and sharing that can help or hinder the transition.

## Thematic Assignments

1. *Spatial scale level of building sector related resource flows.*
  - What is the expected scale on which flows of resources will operate. What type of storage is needed for existing and newly developed bio-based materials. What is the optimal scale to operate on when it comes to the flow of resources and the impact of this flow on its surroundings.
2. *Reusing and optimising flows in building and area development projects:*
  - What conditions have to be present to optimise and reuse existing flows of resources in new (regional) developments? Which flows of resources have the potential to be optimised with limited impact on its surroundings (impact of transportation and manufacturing)? Which flows of resources create nuisance when being optimised?
3. *Policy and knowledge:*
  - What policy changes can be used as an incentive to optimise existing flows or create new sustainable flows? Or to remove barriers or perverse incentives that prevent this. What are the scales of operation when it comes to implementing the policy changes? How can knowledge about circular economy and its transitions be operationalised in the field of circular building and area development?



Ministerie van Binnenlandse Zaken en Koninkrijksrelaties

## Useful Links

Website

<https://www.rijksoverheid.nl/onderwerpen/circulaire-economie>

Planbureau voor Leefomgeving

<https://www.pbl.nl/monitoring-circulaire-economie>

Circular raw material use

<https://themasites.pbl.nl/o/circulariteit-in-de-bouw/superuse/>

Circular Main Frame

<https://marcovermeulen.eu/nl/projecten/circular+mainframe/>



Image: <https://themasites.pbl.nl/o/circulariteit-in-de-bouw/superuse/>