

# Research paper

*Architectural Solutions for shared-economy  
principles on the neighbourhood scale*

*Annex 2 - Case Studies*

# Case Studies

## SCALE

### Neighbourhood

Scale of neighbourhood had been chosen as a size of the graduation project, therefore of analyzes case studies as well. To chose the projects for analyzes formulation of specific definition of „neighbourhood“ was necessary.

Neighbourhood - spatially located communitied, within bigger dwelled area, urban or rural. It provides opportunities for direct interactions between its residents in form of social networks. It is often defined by shared values, habits, high-levels of socialisation or specific identity.

## CASE STUDY CHOICE CRITERIA

To assure high relevancy of each of the case studies for graduation project, they have to fullfil several starting requirements.

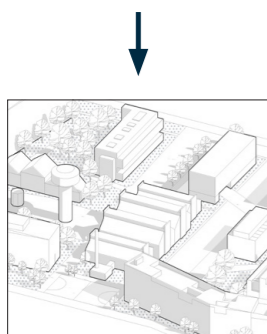
Firstly case studies ought to be located within post-industrial environment, potentially being transformation project that is interrelated with existing infrastructure.

Secondly, the organisational model structure for the project had been non-profit oriented development, following the statement from the hypothesis of this research paper. Thirdly, as graduation project goal is circular neighbourhood, case study should constitute of high quality sustainable, environmentally-friendly development.

Finally, to relate to ambition to create community-building neighbourhood case study should possess proven social qualities, evidence of social resilience within the developed community

## CASE STUDY DIVISION

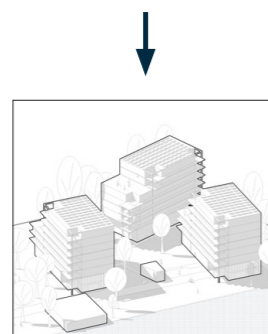
### CORPORATIONS



#### GWL Terrein

Amsterdam, The Netherlands

### BAU-GRUPPE



#### Spreewald

Berlin, Germany

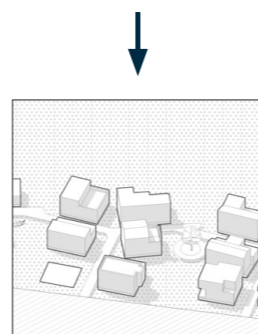
### PUBLIC-PRIVATE



#### BO01

Malmo, Sweden

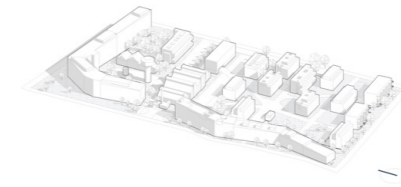
### CPO



#### Schoonship

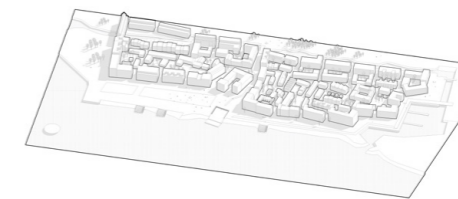
Amsterdam, The Netherlands

## Housing models definitions



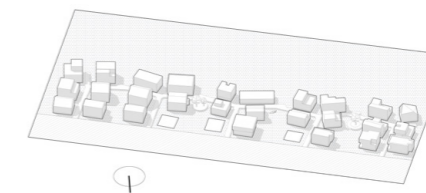
### Housing corporations

Dutch housing corporations are private legal entities that are formed to build housing developments. Their social role is focused on providing dwellings to low-income residents, mainly within social-housing sector. They are supported by the government with specific land prices, loan system etc. Those entities are additionally responsible for maintenance and social cohesion of the residential areas in their possession.



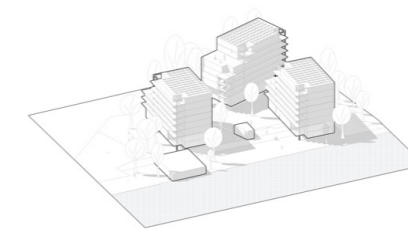
### Public-private

A Public-Private Partnership is a cooperation of one or more public actors and one or more private actors, to realize a mutually agreed upon goal in an organizational structure that provides the means, accepts the risks and shares revenues.



### CPO | CPC

Collective Private Commissioning is form of a bottom-up housing organisation model, where group of individuals forms a legal entity with an objective of building housing developments. This entity assigns other parties, necessary for succesful realization of the project. It is a non-profit oriented scheme, were each of the investors is the end user.



### Co-housing

Organised form of private dwelling units arranged among shared amenities. Each of the homes possess basic functionalities, like kitchen, bathrooms, living spaces. Additionally there is several collective spaces, tools, functionalities that residents can use. The most common organisation structure is housing association or housing cooperative.

## Case Study Analyzes | Part 1

### Cookbook

Concept of the „cookbook“ is evidence-based formulation of a neighbourhood scale design assesment in terms of theoretical transformation of existing neighbourhood to follow circular economy principles. Assess which solutions already fulfill those requirements and where it is necessary to re-think the approaches.

#### AMBITIONS

It's essential to define the starting point ambitions of the development, its main goals and objectives to be able to assess the end results.

#### ACTORS

In the circular housing developments organisation of the developments, flows and social interaction will be crucial, therefore it is important to highlight the process and contemporary organisation of the case studies - reflecting on efficiency that it provides for all of the beforementioned domains.

#### FLOWS

As circular economy is based on technological and biological closed-loops it is extremely important to reflect on the resource flows within the neighbourhood scale to be able to reflect on which elements are already in closed-loops, and where improvements are necessary.

#### ASSESSMENT METHOD

Outstanding example of qualities in the domain, in front of its times on the neighbourhood scale.	● ● ● ● ●
Exceptional example of this domain, reaching the highest standards of its time.	● ● ● ● ○
High level of qualities achieved in this domain.	● ● ● ○ ○
Present elements of this domain, lacking of qualities	● ● ○ ○ ○
Signs of presence of this domain or poor qualities	● ○ ○ ○ ○
No signs of presence of this domain,	○ ○ ○ ○ ○

## Case Study Analyzes | Part 2

### Book of Patterns. Sharing as crucial element of circular economy transition.

EllenMcArthur Foundation, important NPO think-tank focused on transition towards circular economy, has formulated six essential topics that will have to be re-thought.

The one that this research paper is focusing on is „share“, exploration of what is shared in contemporary housing projects that are assessed to be exceptional in terms of sustainable design. Those analyzes lead to creation of a catalog of patterns, elements that enables sharing. Divided into three main domains: spatial, social and technological.

This catalog is followed by personal reflection, search for aspects that could have been improved to achieve complete circular „sharing“ on a neighbourhood scale.

#### SPACIAL DESIGN

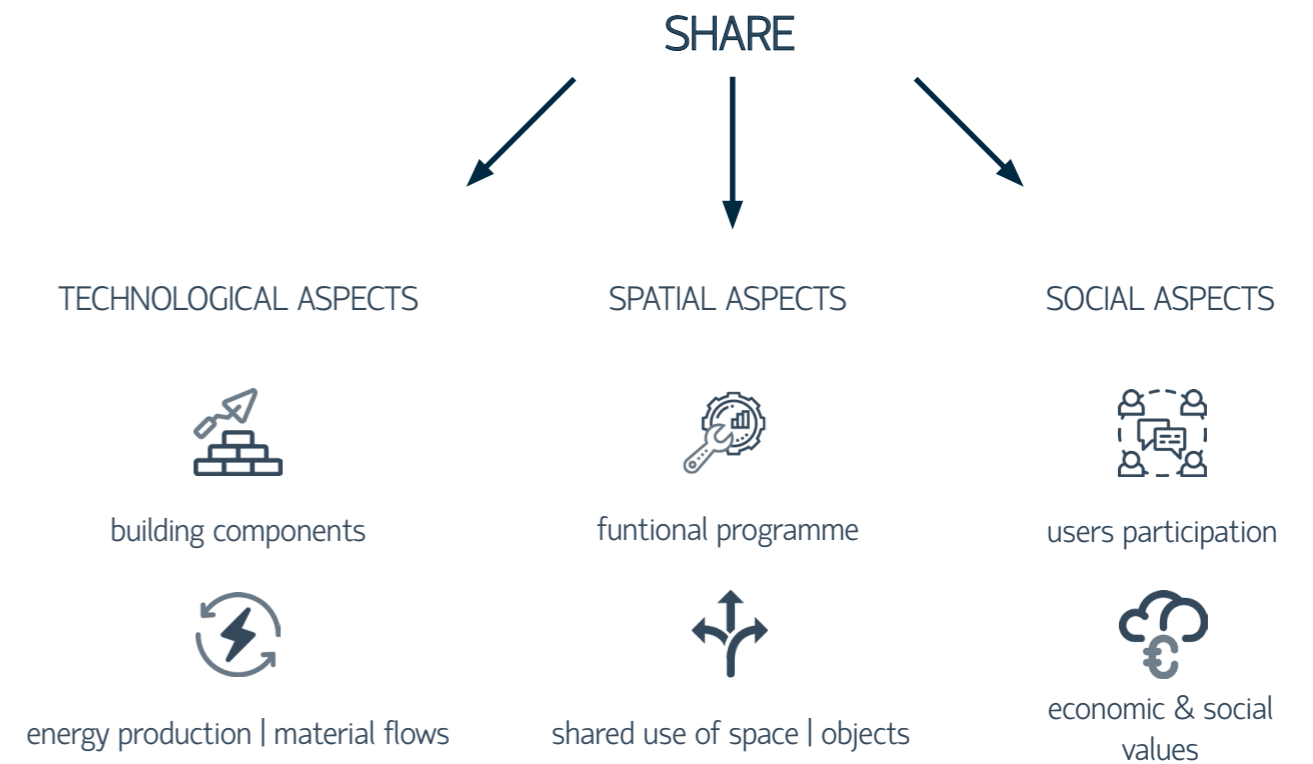
In terms of spatial solutions this analyzes is focused on amenities, spaces, places that are collectively owned or shared by residents in the usage of it. Consequently formulation of catalog of spaces, their design solutions and patterns of usage is created.

#### SOCIAL FACTORS

It is highly important to analyze social interaction between the inhabitants of the neighbourhood, as well as participation of the „end-users“ within the design process. That leads to knowledge about relation between scope of residents/tenants participation within neighbourhood and the quality of social life in it.

#### TECHNOLOGICAL ASPECTS

Finally the technological aspects analyses, divided into physical components and technological flows, that reflects on sharing of certain aspects, especially relevant as the neighbourhood scale provides organisational possibilities for that.

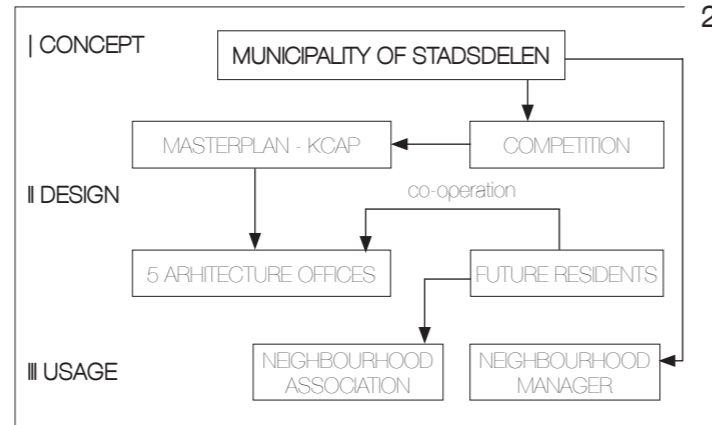




1

**GWL Terrain** is one of the first ecological neighbourhoods in Amsterdam, significant example of implementation of sustainable measures, while maintaining high spatial qualities. Realized on former water board area, transforming post-industrial site into car-free, liveable residential district.

Developed by several housing corporations constitutes of an example of socially resilient living space, combining private and social sector in one architectonically coherent area.



2



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years of development: 1993-1998  
 location: Amsterdam  
 client: Ecoplan Amsterdam  
 masterplan design: KCAP  
 architects: DKV Architecten, NRA, Meyer & Van Schooten, Zeinstra van der Pol  
 plot size: 6 Ha  
 number of dwellings: 597  
 FSI: 0,45  
 surface of buildings: 29000  
 surface of public building: 4535  
 surface of greenery: 14534  
 surface of parking lots: 1200  
 organisation: corporations joint venture  
 stakeholders: municipality, housing associations, private owners,

- 1 | Aerial photography GWL Terrain. source: www.rainproof.nl
- 2 | Diagram of stakeholders involved
- 3 | GWL Terrain Site plan

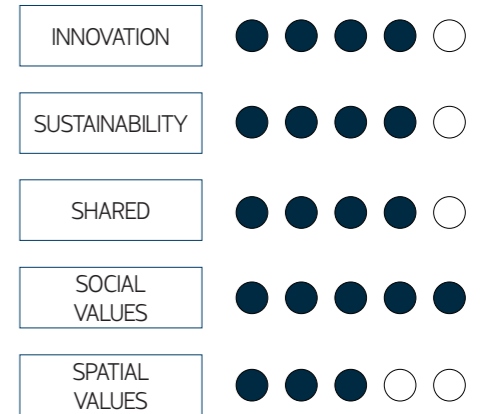
## AMBITIONS

The main initiator of the development - municipality of Stadsdelen set the ambitions on really high level in comparison to other housing projects of its times. They have planned that the housing project should preserve the existing postindustrial buildings and provide them with new functionalities. As much as possible of existing vegetation should not be destroyed as well.

The general concept assured that the GWL Terrein should become „ecological” neighbourhood, a term not established at the beginning of 90. on this scale of project. Apart from sustainability measures municipality wanted to increase social diversity of the place, by mixing owner-occupied and rental units within the project.

Finally, to increase the social resiliency and satisfaction of future residents, their participation in the whole design process was predicted.

## AMBITIONS



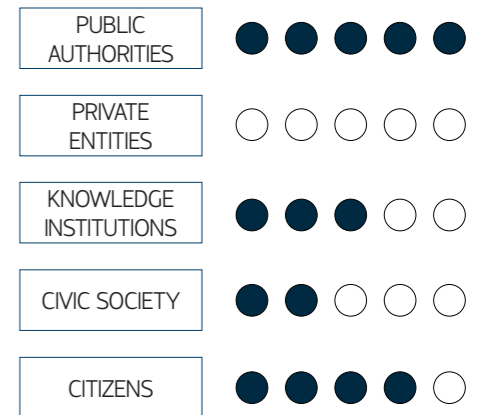
## ACTORS

The organisational model of the whole development was highly extensive. First part included municipality of Waterleiding leaving the space and municipality of Stadsdelen planning to redevelop the area.

Local residents were surveyed about their needs, ambition levels had been defined and competition for masterplan was organized. KCAP proposed a masterplan basing on winning proposal, then 5 different architectural offices were involved in designing each of the buildings separately. Every project assured that the future users were involved into the design process.

After completion of the project neighbourhood manager was assigned, as well as a community association was formed to represent all of the residents and tenants.

## ACTORS

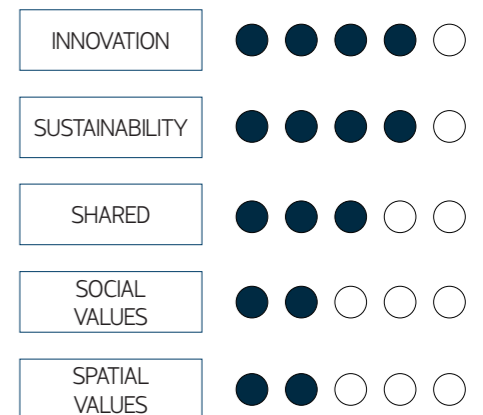


## FLOWS

Several innovations were implemented in GWL, to achieve low levels of the energy performance, district uses solar energy, there is a building dedicated to cogeneration plant for heating and power production, eventually reducing CO2 emissions by 50%. Moreover, all of the rainwater is being collected and directed by drainage system to the site green areas or re-used in toilets as a grey water.

The nature inclusive design had been highly emphasizes, there's plenty of green spaces on site with various purposes, varying from private gardens, through shared vegetable gardens, till public spaces with playgrounds for children. In terms of waste GWL implemented innovative in that time underground waste collection system, that also separates various materials from each other.

## FLOWS



## FUNCTIONAL PROGRAMME

Several spaces has been predicted to serve for the whole neighbourhood community: community room in existing building, gastronomies and office spaces in the old Waterpump station, ground floor design proposed dwelling entrance door next to each other, to imply shared entrance zones, circulation in buildings has been reduced to increase propability of interactions.

## SHARED USE OF SPACE | OBJECTS

GWL terrain has been assessed as a neighbourhood with high level of social cohesion mainly due to specific spacial solutions, collective vegetable gardens, fruit tree gardens, each of the buildings possess shared roof terrace accessible by all of the residents as well as, car sharing facilities.

## USERS PARTICIPATION IN DECISION-MAKING

From the beginning of design process high level of future residents participation was provided, overall masterplan vision public consultations, architect-residents co-design meeting, finally the maintenance of the neighbourhood and decision-making process on contemporary issues is still preserving involvement residents representatives.

## ECONOMIC & SOCIAL VALUES

The involvement of joint venture of housing corporations as developers of the neighbourhood has resulted in significant amount of subsidized dwellings in social housing sector, that due to coherent architectural language of the neighborhood are not recognisable from the private sector units. That reduces potential tensions between different income groups.

## BUILDING COMPONENTS

Due to environmentally-friendly oriented design, several aspects in terms of materials were chosen, in terms of sharing, mainly choice of reusable kitchen units could be highlighted, as well as brick used for external walls, instead of standard insulation that could be easily replaced and is more durable.

## ENERGY PRODUCTION & MATERIAL FLOWS

In terms of material flows, there was attention paid to the life cycles, recyclable PVC tubing, reusable kitchen units and local pine wood was used instead of imported tropical hardwood types. Energy is produces and distributed in cogeneration plant that serves all of the neighbourhood, water cycle had been designed to reduce the sewer system loads and create communal water features in public spaces and re-used as gray water in toilets.

## Architecture for sharing

Sharing programme ●●●●○

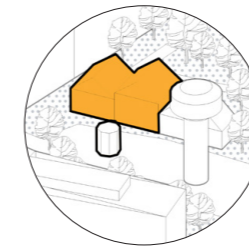
Shared use ●●●○○

Collective Participation ●●●●○

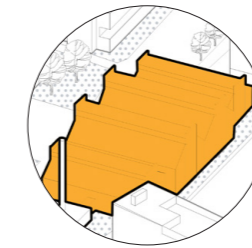
Affordability & Social cohesion ●●●○○

Circularity of the components ●●○○○

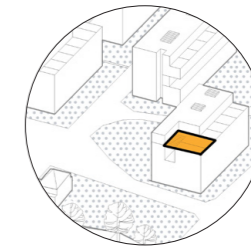
Shared energy & flows ●●●○○



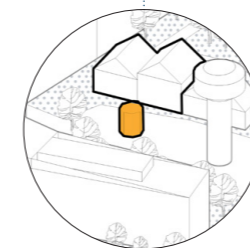
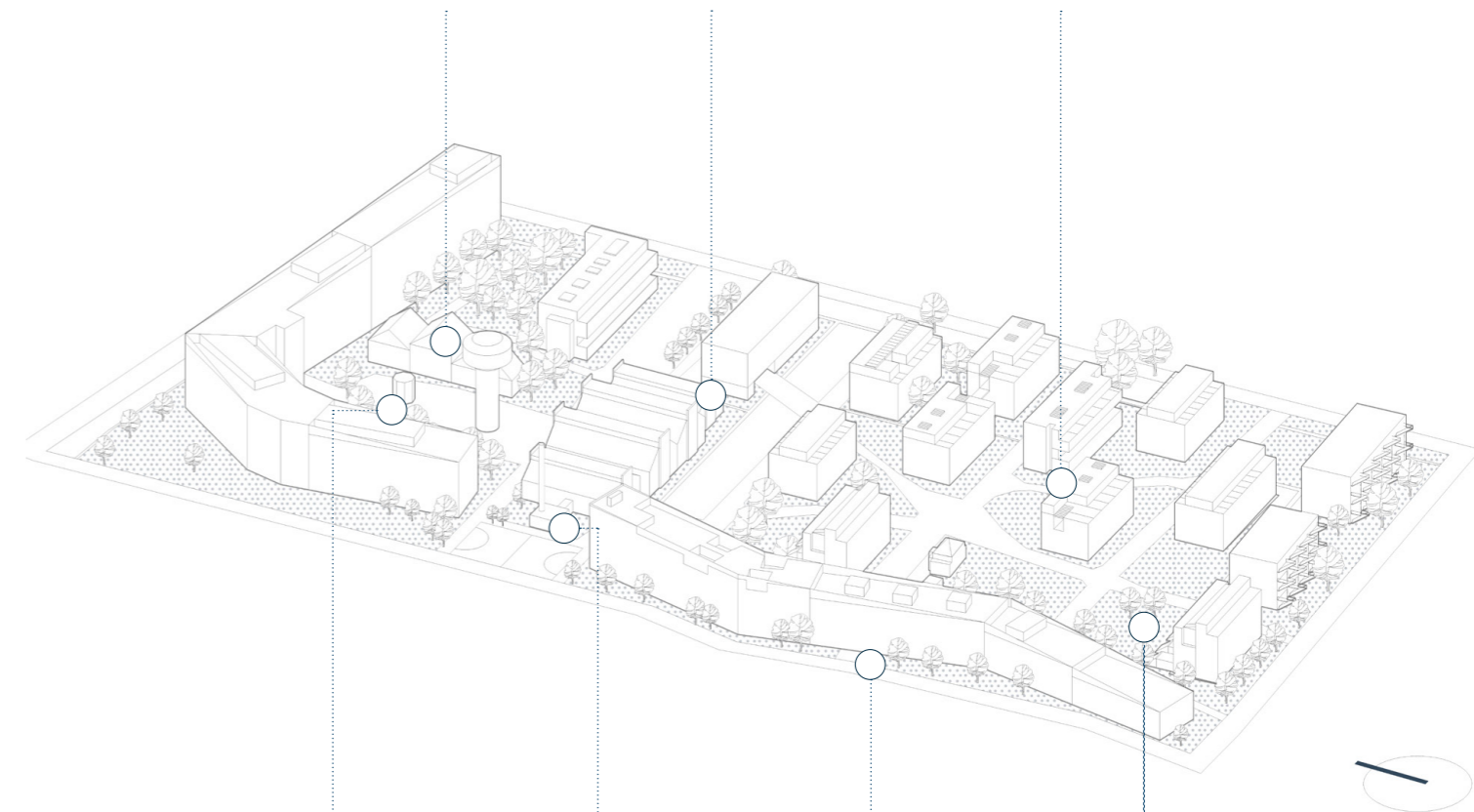
Community Center



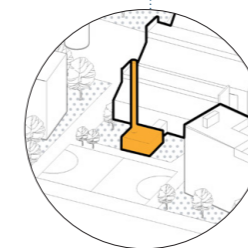
Adaptive Re-use



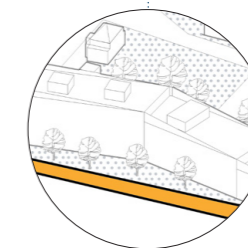
Collective roof terraces



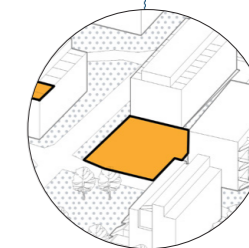
Residents co-owned hotel



On-site power, heat plant

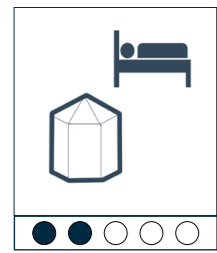


Car sharing facility



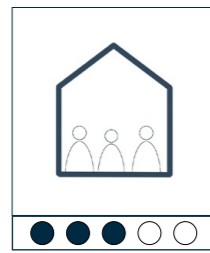
Community gardens

## SHARED FUNCTIONAL PROGRAMME



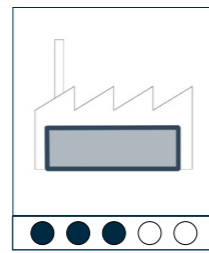
*COLLECTIVE HOSPITALITY*

Group of residents has preserved historic building by organising small hospitality unit.



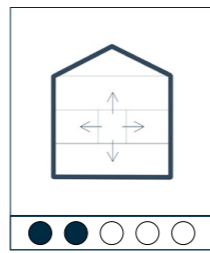
*COMMUNITY CENTER*

Neighbourhood possess rooms predicted for social & cultural activities.



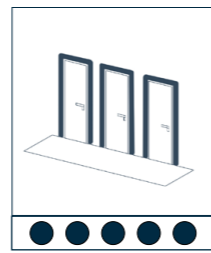
*ADAPTIVE RE-USE*

Existing building transformed into mixed-use spaces used by residents.



*REDUCED DWELLING CIRCULATION*

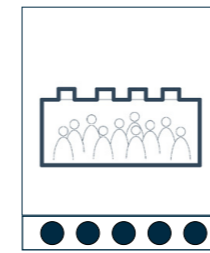
Typologies reducing circulation, increasing density of entrance zones to the dwellings.



*SHARED ENTRANCES ZONES*

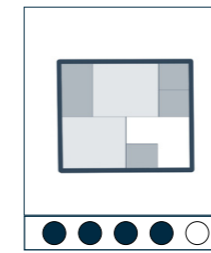
Location of the entrance door next to each other, implying shared entrance transition spaces

## ECONOMIC & SOCIAL VALUES



*SHARED IDENTITY*

Specified objectives towards ecological environment has enabled people with similar lifestyle to live together



*TYPOLGY VARIATIONS*

High level of diversity of typologies of dwelling units enabled different target groups to dwell in the neighbourhood.



*SUBSIDIZED HOUSING INCLUDED*

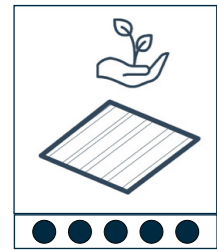
About 50% of housing units has been created in a way allowing the subsidies in the social sector



*ASSOCIATIONS FOR SOCIAL COHESION*

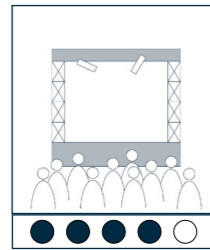
Several residents-based associations serve organisation of social and cultural events to integrate neighbourhood members

## SHARED USE OF SPACE | OBJECTS



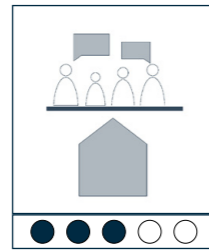
*VEGETABLE GARDENS*

Ground floor design predicted space for collective urban agriculture zones, managed by residents association.



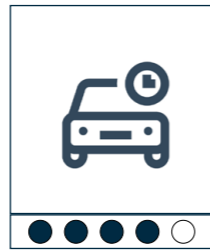
*EVENTS FIELD*

Masterplan predicted neighbourhood sport field that is occasionally used as social events space as well.



*ROOFTOP SHARED TERRACES*

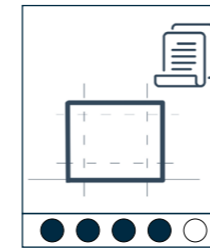
Each of the buildings included in typology accessible terraces that are used by residents for outdoor cooking and meetings



*CAR SHARING*

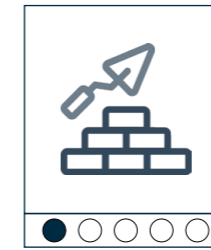
Innovative approach towards car free neighbourhood ended up in creation car sharing facility with 5 cars.

## BUILDING COMPONENTS



*RULE-BASED FACADES*

Choice of one material for all of the buildings increased affordability and reduced maintenance complexity.



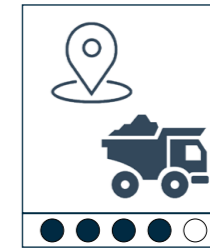
*REUSABLE FACADE MATERIAL*

One layered facade walls out of big scale masonry blocks enables re-use with no necessity of extra insulation layer.



*RECYCLABLE MATERIALS*

Use of recyclable PCV in glazing, significantly reduced waste amounts at the end of the lifecycle.



*LOCAL MATERIALS*

Choice of standardized red brick and pine wood as only allowed facade materials (produced on national market).

## USERS PARTICIPATION IN DECISION-MAKING



*MASTERPLAN COLLABORATION*

Neighbourhood future residents co-oped with municipality to formulate objectives for the new masterplan.



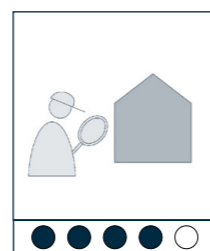
*ARCHITECT-RESIDENTS CO-Design*

Masterplan buildings design has been divided between 5 architects that co-designed it with residents.



*NEIGHBORHOOD COUNCIL*

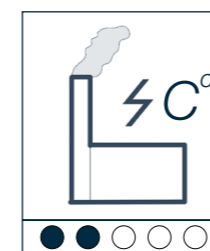
Neighbourhood council has been created to assure that residents are participating in decision making process.



*NEIGHBOURHOOD MANAGER*

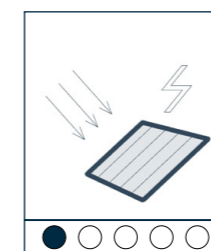
Municipality has placed manager to organise and control associations on the neighbourhood level.

## ENERGY & MATERIAL FLOWS



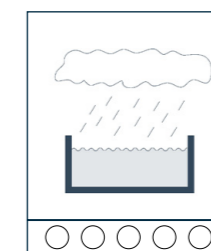
*ON-SITE COGENERATION PLANT*

Locally placed cogeneration plant generates heat and power for the whole neighbourhood. Disadvantage of it is natural gas dependence.



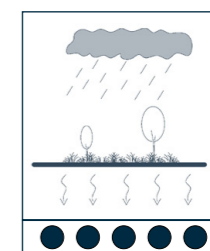
*SOLAR ENERGY PRODUCTION*

Solar panels located on each of the buildings allows reduction of the city grid energy consumption.



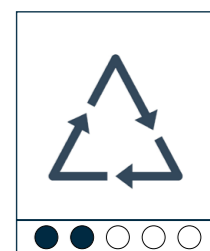
*RAINWATER COLLECTION SYSTEM*

Rainwater is collected on green roof and re-used in the toilets as the grey water.



*SEWAGE LOADS REDUCTION*

Open gutter systems and high amount of non-paved surfaces allows natural retention of rainwater.



*WASTE COLLECTION*

Underground waste collection system, with on-site segregation of waste

## RELEVANCE FOR GRADUATION PROJECT

There's several important domains in which GWL Terrein project is highly relevant for the graduation project of „Circular Affordable Community“.

Firstly the organisation model and ambitions level during the time of the development were relevantly high, private developers were not willing to fulfill those requirements for ecological neighbourhood. That is very similar to the significantly high goals of the city of Groningen for SuikerUnieTerrein that has already been formulated in strategy development plan for the graduation project site.

Joint venture of housing corporation was created to achieve this level of qualities, simultaneously high level of future residents involvement had been realized. It eventually led to diversity of dwelling typologies, as well as general affordability of the project (with over 30% of dwelling units that are government-subsidized).

### GRADUATION PROJECT SITE

- Existing post-industrial infrastructure
- ~10 Ha of site area
- Ambitious objectives formulated by the municipality, achieving energy neutral housing developments

### CASE STUDY

- Existing post-industrial infrastructure
- ~6 Ha of site area
- High ambition levels of local municipality to create an ecological neighbourhood

### ASSESSMENT I

What qualities has been achieved due to sharing?  
WHAT ELSE COULD BE SHARED?

GWL neighborhood has definitely achieved high qualities of broadly defined liveability of the living environment, the assessments reports have confirmed high levels of residents satisfaction from their living spaces. Its close-knit community, organized within various organisations and committees enabled overall social resiliency of the project.

Architectural framework for the masterplan, that insisted on use of only one material, by specific approach to aesthetics allowed creation of a sense of a community and territorial independency from the urban context.

Created community gardens for urban agriculture has resulted in close social relations between the residents, and higher ratio of their presence within internal public spaces of the neighbourhood.

Shared economy and shared living principles are highly developed on the scale of the neighborhood in the social aspects, although in terms of material & resources flows a lot could have been improved, especially relating back to the development process and decisions about sustainable measures. By application of contemporary technologies residents could have shared energy production systems, waste management etc.

In terms of spatial programme a more extensive shared spaces use is missing, especially within each of the buildings on the level of dwelling clusters. Several buildings possess rooftop collective terraces, but the general typological structure is a standard condominium one with grouped private appartments and circulation zones. There would be a great potential to add collectively used spaces for each of the buildings to stimulate formation of smaller communities within the whole neighborhood.

## TYOLOGY TRANSFER EXPERIMENT

Idea of typology transfer methodology is to verify the case-study within the graduation project concept to be able to imagine scales relation between succesfull neighbourhood design examples and the chosen site. That constitutes of preparation towards preliminary design phase with individual masterplanning.



### CONCLUSIONS

Typology transfer has enabled several spatial conclusions. Firstly the masterplan, that forms a enclosed perimeter block that separates the interior green areas and free standing blocks in „urban villa“ typology could be an interesting solutions in terms of separation from environmental negative impacts (highway ring, railway line etc.).

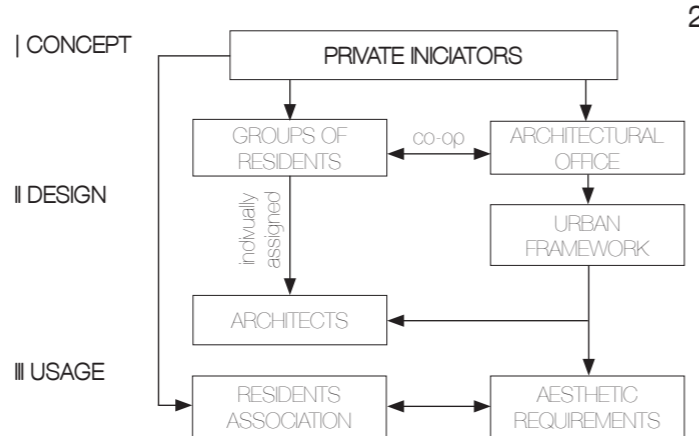
Moreover the urban framework rules for use of materials has resulted in succesful creation of coherent identity for the whole development. It is important to reflect on the possibility of using rule-based masterplan design in the SuikerUnieTerrein design phase.

Finally, the significant amount of vegetation ratio on the site, as well as view axis (spatial openings) should be taken into account as an important reference for neighbourhoods design on site.



1

**Schoonship** is a floating village, extraordinary development in transforming, post-industrial Buiksloterham district in Amsterdam. It's a bottom-up development of group of individuals that formed a CPO coordinated by Space&Matter Architects to achieve sustainable, circular, off-grid neighbourhood. It consists of 30 floating units, that in total forms 46 dwellings for over 100 residents. Main architects created rule-based framework for each of the units designed, that had been followed by individually chosen by residents designers.



2



3

years of development: 2009-2020  
 location: Amsterdam  
 client: Schoonship  
 urbanplan design: Space&Matter  
 architects: more than 20 architectural offices

plot size: ~0,85 Ha  
 number of dwellings: 30  
 FSI: 0,52  
 surface of buildings: 4500  
 surface of public building: -  
 surface of greenery: -  
 surface of parking lots: 0

organisation: CPO  
 stakeholders: group of owners, municipality of Amsterdam,

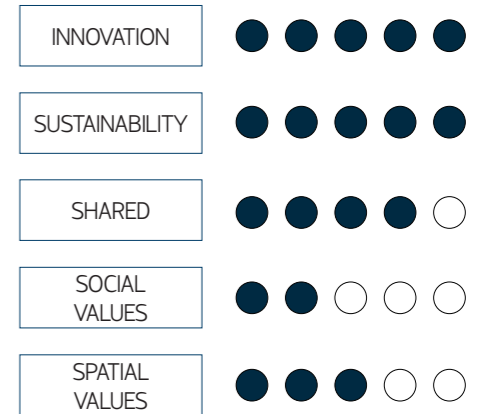
- 1 | Aerial photography Schoonship. source: www.spaceandmatter.nl
- 2 | Diagram of stakeholders involved
- 3 | Schoonship site plan

## AMBITIONS

The initiating group of individuals has formulated extremely high level of ambitions - creation of circular, sustainable, off-grid floating neighbourhood. That has resulted in several spatial, social and technological directions. Neighbourhood ought to be spatially diversified, providing freedom to the users to express their individual floating units, yet several rules had to be set to assure overall coherence of the outcome. Another goal, was focused on creating socially resilient neighbourhood. Residents from different backgrounds, ages, professions etc. were chosen to create diversified and dynamic social environment, although it was essential for them to share similar ambitions and values in terms of sustainable, ecological lifestyles.

Schoonship cooperative wanted to be pioneer in the newest sustainable technologies, to achieve closed-loops for water, energy and sewage management, moreover no connection to natural gas network was one of the requirements.

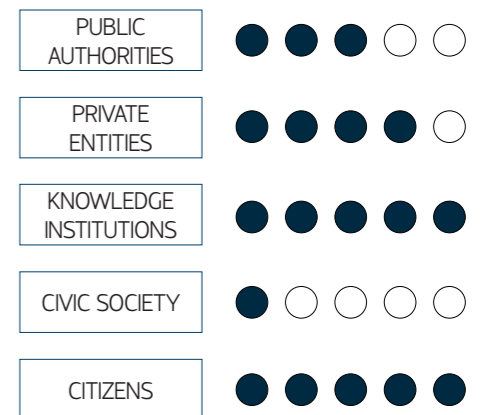
## AMBITIONS



## ACTORS

Number of actors involved in this project is significant, to be able to understand their roles, it is essential to review the development process since the beginning. Project had been initiated by group of individuals, that had ambitious plan to create the most sustainable floating village in Netherlands. They have assigned Space&Matter Architects to realize their plans. Architectural office coordinated gathering of additional groups of future residents as well as general project development. Foundation and later co-operative has been formed. To fulfill the high-level of ambitions of tenants, well organized communication with municipality of Amsterdam was necessary, to achieve „experimental” status of the neighbourhood. Consequently sustainable technologies challenge caused innovative companies to join the process to develop new tools and verify newest sustainable technics. All of those co-operations resulted in site design created by Space&Matter Architects, that allowed each of the residents to assign individual architect, that would have to follow specific rules of urban framework.

## ACTORS

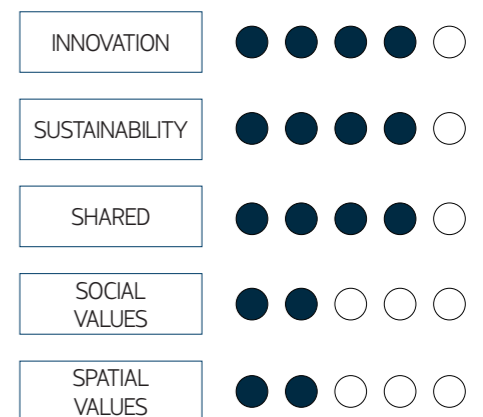


## FLOWS

Schoonship is an exceptional example of innovative and intrasigent approach towards achieving circular and sustainable architecture. Power is generated by 500 solar panels that are located on roof of each of the floating units, together they form smart grid network, that allows real-time energy trading. Whole project has only one connection to national power grid, used only to trade with energy surplus. Moreover, every dwelling possess its own li-on batteries to store solar energy and increase levels of self-sufficiency. In terms of water management, each dwelling re-uses rainwater as a gray watey, black water from toilets and showers is treated on site, including heat restore.

High levels of insulation (EPC=maximal zero) combined with water heat pumps located in the kanaal provide enough heat to do not rely on external sources, like for instance, national gas network.

## FLOWS





### FUNCTIONAL PROGRAMME

In terms of spaces programmatically predicted for sharing in Schoonship only the pier (circulation zone), two floating recreational segments and floating community center can be mentioned (still under construction). Mainly the spatial organisation of units clusters among piers creates a sense of community and sharing collectively all of the circulation zones.

### SHARED USE OF SPACE | OBJECTS

Schoonship floating development do not possess significant amount of spaces predicted for shared use, it is mainly shared circulation pier, that is also a place, where various recreational objects are located, like elements of children playground, bicycles etc. Important object sharing strategy is car sharing facility, developed as part of new sustainable mobility programme in Amsterdam.

### USERS PARTICIPATION IN DECISION-MAKING

Schoonship project is based on participation of the end users, as they are the main investors in form of cooperative. Each of the residents has been involved in all of the decision about the project development from the beginning. Starting with setting up ambition levels, common values, through spatial decision in creation of urban framework, till final, individual cooperation with each of the architects that was designing specific dwelling units.

### ECONOMIC & SOCIAL VALUES

In relevance to property prices in Amsterdam at the time of construction of Schoonship, price per m2 of each of the floating units combined with collective spaces and systems has been preserved on an market average level. Despite the fact of using innovative sustainable technologies, and achieving extremely high levels of energy efficiency of the buildings.

### BUILDING COMPONENTS

The community has decided to set the ambitions for using only environmentally friendly materials, therefore low-impact and circular material management has been applied (including material passport database). High level of criteria in terms of materials embodied energy resulted in urban design rules allowing use of only local wood for all of the facades.

### ENERGY PRODUCTION & MATERIAL FLOWS

Schoonship project has emphasized importance of achieving as high self-independency as possible. Consequently 100% self-sufficiency in terms of power generation has been achieved. Moreover smart-grid system has been implemented, allowing real-time energy trade. All of the units are heated with use of water heat pumps located within canal. 70% of non-drinkable water is collected from rain. There's a development plan for on-site food production on separate floating unit.

### Architecture for sharing

Sharing programme ● ○ ○ ○ ○

Non-physical sharing ● ● ● ○ ○

Collective Participation ● ● ● ● ●

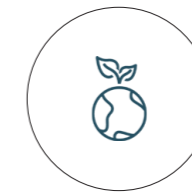
Affordability despite innovations ● ● ○ ○ ○

Circularity of the components ● ● ● ● ○

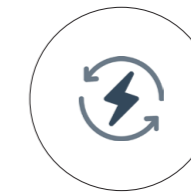
Shared energy & water ● ● ● ● ●



Community Center



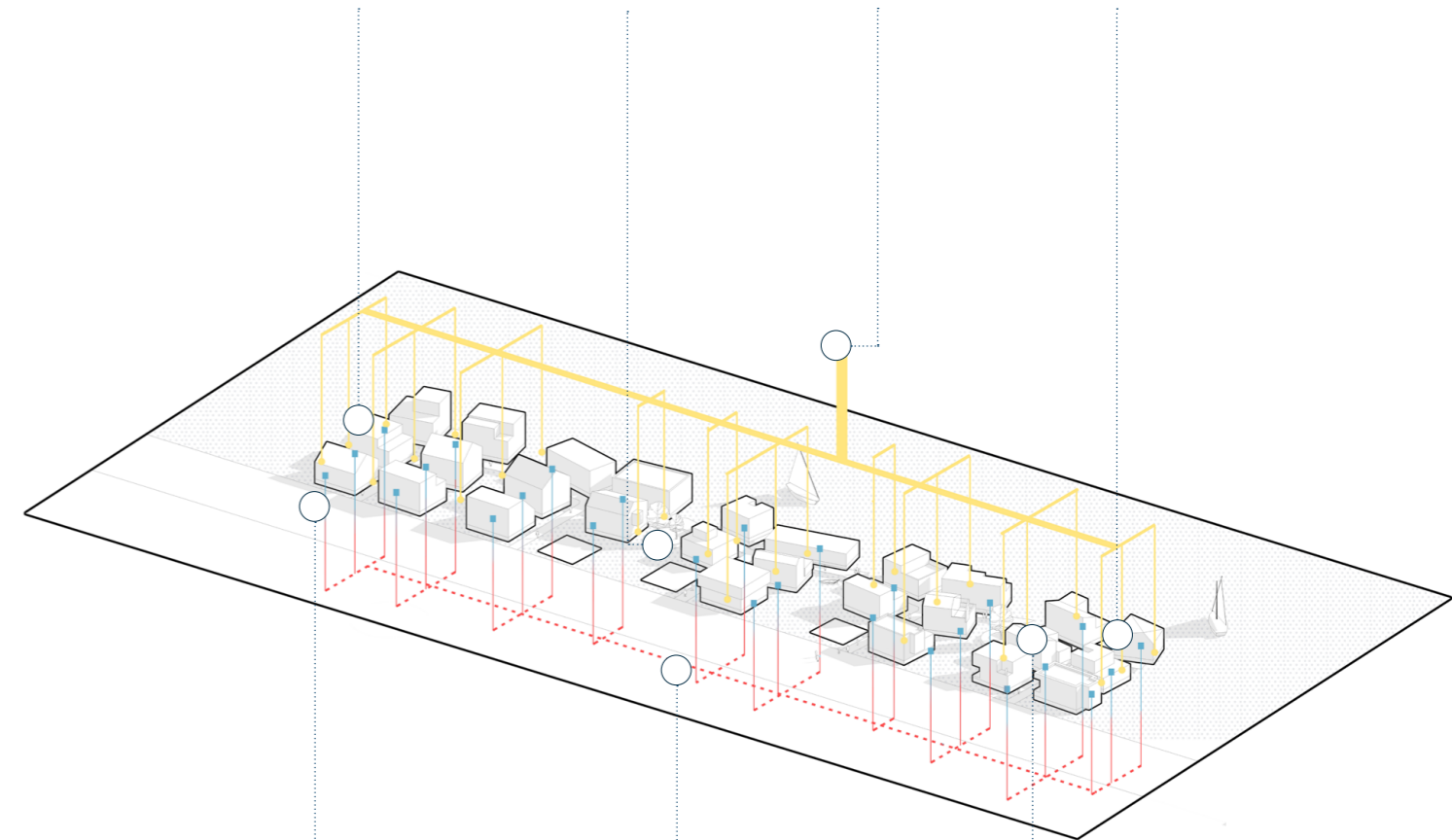
Recreation platforms



Smart grid Energy trading



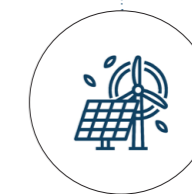
Collective circulation pier



Car sharing facility Urban mobility programme

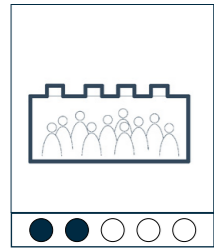


30 Water heat exchanger system



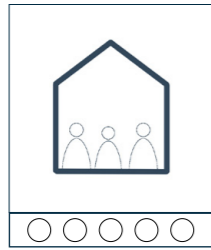
500 Photovoltaic panels

## SHARED FUNCTIONAL PROGRAMME



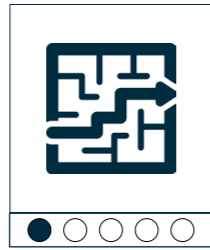
RECREATIONAL UNITS

Separate floating units with vegetation and seating spaces has been funded by residents.



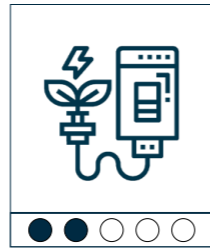
COMMUNITY CENTER

One of the floating units serves as social, cultural hub for the community.



SHARED CIRCULATION

The main circulation node of the community is shared by residents, increasing amount of interactions.



CHARGING POINT FOR E-BIKES

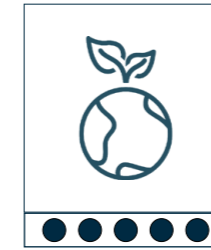
Collective charging points for scooters and electric bikes has been located close to the entrance zone.

## ECONOMIC & SOCIAL VALUES



ACHIEVED AVERAGE MARKET PRICE

Even though several innovative technologies had been used private commissioning model preserved the price on market average level.



ENVIRONMENTALLY FRIENDLY DEVELOPMENT

Schoonship is energetically self-sufficient, using many environmentally friendly measures to reduce its negative impacts.



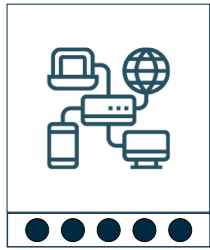
LONG-TERM ECONOMIC VALUES

Power/heat self generation provides high turnover ratio for residents increasing economic model reasonability.



STRONG IDENTITY | SOCIAL COHESION

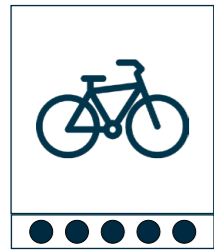
Group of residents sharing specific vision, that decided to use the same aesthetics for their buildings created strong identity.



OPEN-SOURCE PROJECT

Project provides a lot of values for society, as it is open-source project, sharing all of the knowledge gain during the development.

## SHARED USE OF SPACE | OBJECTS



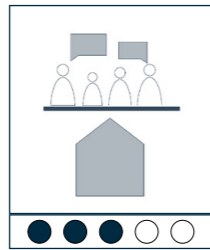
E-BIKE SHARING

Several electric bikes has been included in the innovative mobility approach.



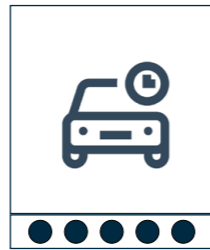
NEIGHBOURHOOD ELECTRIC BOATS

Neighbourhood cooperative will possess shared electric boats for recreational purposes (concept phase)



„SMART JETTY“ HYBRID UNITS

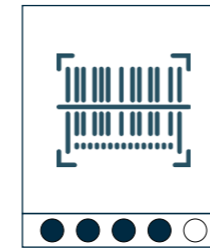
There are hybrid units, that include more than one dwelling on the floating platform with shared entrance and terrace.



CAR SHARING

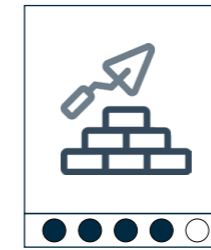
Innovative approach towards car free neighbourhood ended up in creation car sharing facility connected to Amsterdam mobility platform.

## BUILDING COMPONENTS



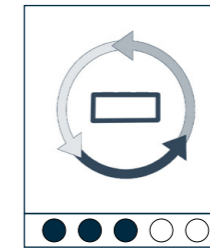
MATERIAL PASSPORT

Project management team has decided to create used material database to achieve results closer to entirely circular development.



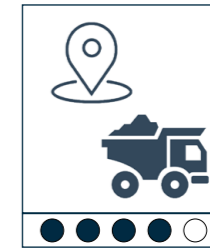
LOW-EMBODIED ENERGY

Low-embodied energy, environmentally-friendly materials has been prioritized by the investors.



RECYCLABLE MATERIALS

Use of recyclable facade materials is reducing negative environmental impact of the development.



LOCAL MATERIALS

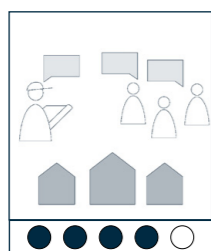
Rules of site development plan has assured use of local timber for facades as only allowed material.

## USERS PARTICIPATION IN DECISION-MAKING



FOUNDING COOPERATIVE

Residents well initiator of this sustainable floating village, they created foundation and cooperative to proceed with development.



ARCHITECT - RESIDENTS CO-Design

Site design framework has been divided between individual architects that co-designed each of them it with residents.



SHARING SUSTAINABLE VALUES

As the neighbourhood has been started by a group with a clear vision



RESIDENTS CO-DESIGN URBAN RULES

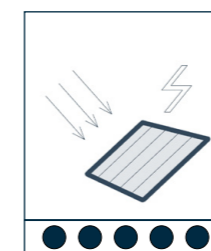
Residents in cooperation with main architect defined spatial, aesthetical and technological requirements for each of the buildings.

## ENERGY & MATERIAL FLOWS



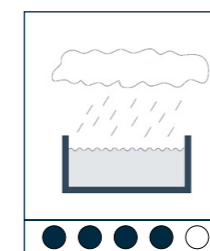
SMART GRID

Each of the dwellings is connected to each other in smart grid, enabling real-time energy trading.



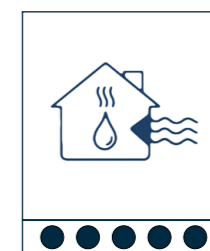
SOLAR ENERGY PRODUCTION

500 solar panel has been installed to achieve self-independency of the neighbourhood, supported with storage system.



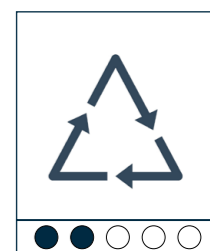
RAINWATER COLLECTION SYSTEM

75% of non drinkable water is rainwater collected on green roof and re-used in the toilets as the grey water.



WATER HEAT PUMPS SYSTEM

30 water heat pumps are located in the canal to provide heat for energy efficient dwellings.



SEWAGE ENERGY RESTORE

Innovative energy restore system has been integrated with sewage to re-gain heat energy.

## RELEVANCE FOR GRADUATION PROJECT

At first glance Schoonship project might not be seen as highly relevant for new developments on Sugar Factory site, due to its scale and amount of dwelling units. However achieved level of self-sufficiency in terms of heating, electricity and water management, highly interesting organisational model of CPO that with help of architects formulated ruled-base urban design, preserving freedom of expression in individual developments, meanwhile achieving coherent identity. All those solutions should be considered for implementation on the graduation project site, naturally requiring scaling up.

The technological innovations, like blockchain-based energy trade in a smart grid system, or sewage nutrients heat restore system, can reinterpreted for bigger scale of the SUT.

### GRADUATION PROJECT SITE

- Existing post-industrial infrastructure
- ~10 Ha of site area
- Ambitious objectives formulated by the municipality, achieving energy neutral housing developments

### CASE STUDY

- Located within post-industrial district
- ~0,8 Ha of site area
- Ambitions to achieve the most sustainable, self-sufficiency floating neighbourhood in Netherlands

### ASSESSMENT I

What qualities has been achieved due to sharing?  
WHAT ELSE COULD BE SHARED?

Schoonship development group has formulated a clear sustainable living ambitions. They have achieved a highly valuable implementation of sharing and exchanging energy generation system. The smart-grid and energy storages allows real-time interaction between each of the tenants. The shared vision and objectives has resulted in close-knit community that had gone through a long and demanding process of forming a cooperative and realising the project. Therefore the highly valuable aspect is a shared membership in the decision-making process enabling increase propability of the tenants satisfaction from the end result.

Reflecting on bigger scale and interrelation between the city and neighborhood, Schoonship constitute of one of the incubating developments that are enabling transformation of a post-industrial district into mixed-use residential and vibrant part of the city. Moreover the shared mobility systems integrated with mobility platform developed in the city is reducing the negative impact of traffic CO2 emissions, as it incorporates electric cars and bicycles.

In terms of potential expansion of shared aspects scope, it requires reflection whether this typology of floating neighborhood do not require higher amount of collective spaces (playgrounds, leisure zones) for the local community. It is important to reflect, if apart from shared energy system, a material bank, objects sharing (i.e. furniture) could be incorporated.

## TYOLOGY TRANSFER EXPERIMENT

Idea of typology transfer methodology is to verify the case-study within the graduation project concept to be able to imagine scales relation between succesfull neighbourhood design examples and the chosen site. That constitutes of preparation towards preliminary design phase with individual masterplanning.



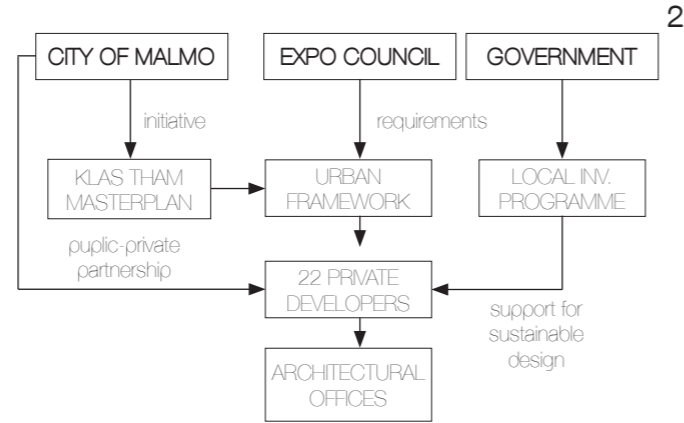
### CONCLUSIONS

Schoonship model in the typology transfer experiment has been placed on the main canal that is adjacent to the site. Firstly it allows reflection on the scale of the site and canal and potential of including floating housing within the graduation project programme. Additionally, it helped in reflection on the logic of urban spatial framework, set of rules and „backbone” of the masterplan that still preserves the possibility to differentiate each of the parts. Even though floating units vary in scales and internal typologies and layouts the the general logic of the masterplan is very clearly visible and as an indirect reflection should be further elaborated during the design process.



1

**BO01** is an example of mixed-use residential development as a form of transformation of decayed post-industrial area and reconnection to the city in form of vibrant city district. Realized in 2001 as part of European Housing Expo. This revitalisation project was focused on creation of sustainable living environment to bring back the devastated post dockyard district to the city of Malmö. It showcases how natural environment can be blended with highly dense urban realisations.



2



3

years of development: 2001-2005  
 location: Malmö, Sweden  
 client: City of Malmö  
 urban plan design: Klas Tham  
 architects: 22 architectural offices

plot size: ~18 Ha:  
 number of dwellings: 1000:  
 FSI: ~0,42:  
 surface of buildings:  
 surface of public building:  
 surface of greenery:  
 surface of parking lots:

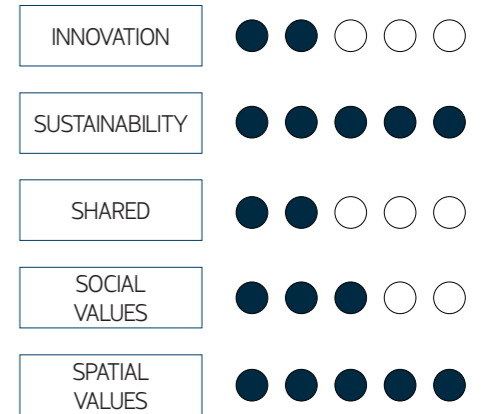
organisation: public-private partnership:  
 stakeholders: group of owners, municipality of Malmö,

- 1 | Aerial photography BO01. source: <https://makinglewes.org>
- 2 | Diagram of stakeholders involved
- 3 | BO01 site plan

## AMBITIONS

City of Malmö wanted from the very beginning to transform problematic post-industrial district of Västra Hamnen into a new symbol of sustainable transformation of the city. To build a framework and all necessary support systems to achieve world's most sustainable information and welfare society. Municipality together with housing expo council has formulated high level of ambitions towards achieving 100% renewable sources generation of energy via local, decentralised system. Moreover it was highly important to introduce blue-green grid systems, to eventually create nature inclusive, healthy living environment that as an output increases the biodiversity of the local ecosystem. Finally initiators wanted to proceed with creation of holistic approach towards district management in terms of energy, mobility, waste disposal, water management etc.

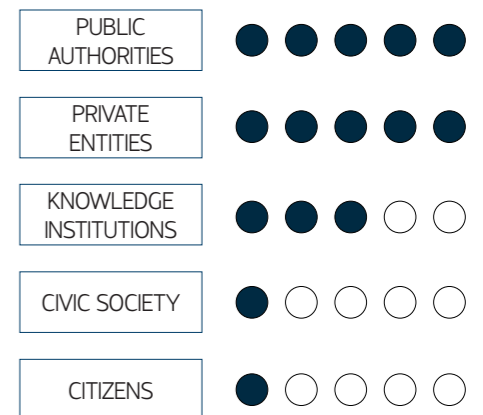
## AMBITIONS



## ACTORS

BO01 development had been started by initiative of the city that wanted to find a solution to stimulate the local economy after the shutdown of the dockyard ship construction industry. After winning the competition for organisation of the housing expo, municipality together with Klas Tham created masterplan for the project, then together with Housing Expo Council formulated goals and requirements for the development. Private developers were invited to realize energy-efficient sustainable housing blocks, economically achievable due to governmental subsidies in form of Local Investment Program (LIP). Overall energy management strategy has been created by Sydkraft, whereas all of the urban infrastructure had been developed by municipal departments.

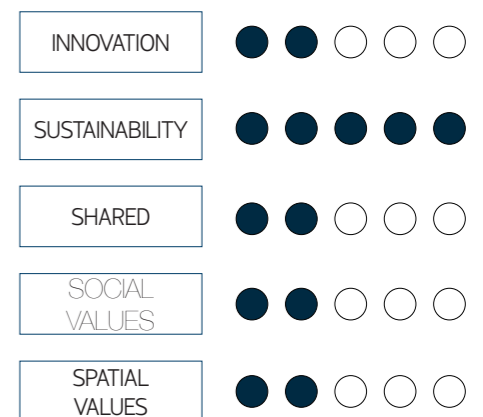
## ACTORS



## FLOWS

Several flows have been taken into account in this development. In terms of energy, self-sufficiency based on locally generated out of renewable sources. Wind, solar and biogas has been used to generate 6200 MWh of heating, 3000 MWh of cooling and 6300 MWh of electricity per year is generated for 1000 houses units out of those sources. For self-sufficiency of the heating system heat pump plant has been installed supported by 1400 m<sup>2</sup> of solar collectors on rooftops. Common facilities for waste segregation system has been installed to separate organic waste and transport it to biogas plant. Water management system includes re-use of rainwater in form of grey water in toilets, as well as, natural water runoff in open gutter system of natural water reservoirs predicted within site. Finally all of the hard surfaces, for instance pavements are built with tiles and stones that are easy to replace and reuse.

## FLOWS



## FUNCTIONAL PROGRAMME

Programme of BO01 could be defying as mixed-use with high ratio of dwelling vs. non-residential functions. Main shared use functional programme is related to use of public space. In terms of urban scale it is Standpromenaden among the seashore with commercial amenities, as well as, man-made canal park. There is a high diversity of public squares of different sizes and scales used by local residents for leisure and entertainment.

## SHARED USE OF SPACE | OBJECTS

In BO01 according to McKnight Foundation assessment there are 2 residents organisations related to urban agriculture and community events organisation. There is no information about specifically predicted physical spaces for meetings, although public space design and humanization of low-rise scale urban interiors is assessed as vibrant place of social interactions.

## USERS PARTICIPATION IN DECISION-MAKING

Actual participation of end users in decision making process did not took place, although quality of their living spaces has been assured by quality requirements set imposed on the private developers by Malmo municipality. Moreover residents had chance before the development started to take part in public consultations about the vision of the whole project.

## ECONOMIC & SOCIAL VALUES

Important social impact of the project was promotion and education of sustainable urban developments and connection of various parties approaches into one coherent vision. Moreover this development has stimulated whole city part toward further developments. It has become an added public life value in the city of Malmo, place for social interactions for the whole urban area.

## BUILDING COMPONENTS

Quality programme has defined use of environmentally friendly and healthy materials in each of the projects, high emphasis had been put on location of the material source, only locally produced sustainable components, could have been taken into account for the construction of the dwellings.

## ENERGY PRODUCTION & MATERIAL FLOWS

BO01 was developed with the goal to be reliable on only renewable sources of energy, applied on all scales from public infrastructure till individual project and apartments. Energy, heating and waste system has been developed to reduce the environmental impact of the development. Energy is produced mainly via wind farms located on the sea supported with photovoltaic panels, heating is generated via water heat pump system. Energy is recovered from waste and sewage, where additionally nutrients for agriculture are collected.

Sharing programme ● ○ ○ ○ ○

Non-physical sharing ● ○ ○ ○ ○

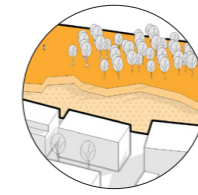
Public-private partnership ○ ○ ○ ○ ○

Liveable city district ● ● ● ● ○

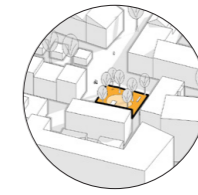
Energy efficient materials ● ● ● ● ○

Renewable sources self-sufficiency ● ● ● ● ●

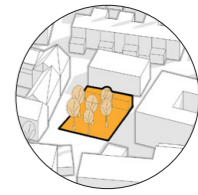
## Architecture for sharing



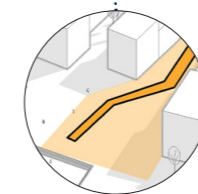
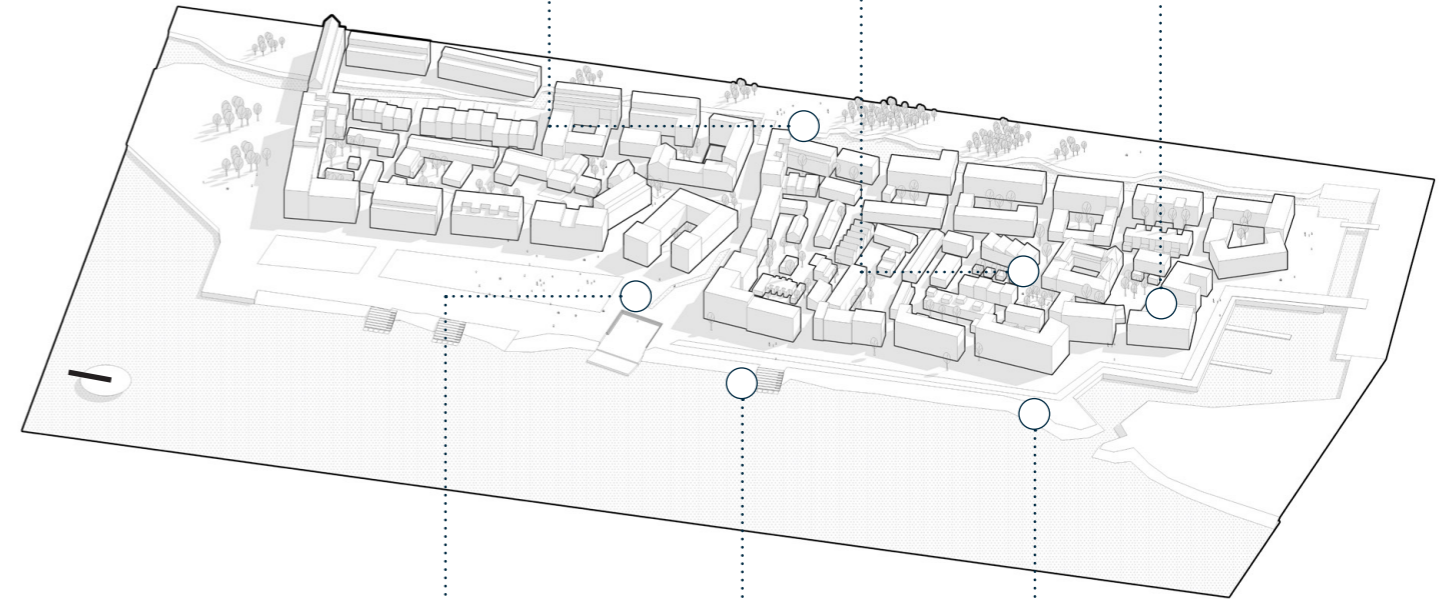
Man-made riverside leisure environment



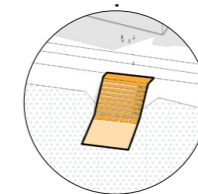
Collective nature leisure spaces



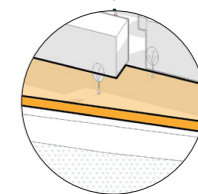
Urban agriculture vegetable gardens



Neighbourhood scale public spaces with water features



Common leisure facilities in form of public bathing zones



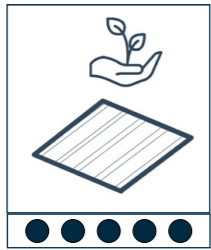
Urban scale public promenade with commercial amenities

### SHARED FUNCTIONAL PROGRAMME



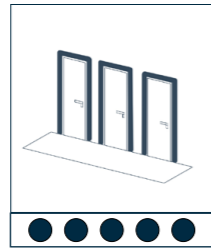
**PUBLIC PROMENADE WITH MIXED-USE AMENITIES**

Main seashore promenade with nearby amenities creates vibrant public space used by residents and citizens.



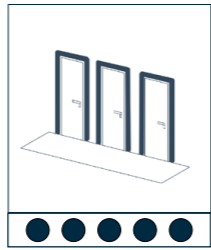
**VEGETABLE GARDENS**

Several vegetable gardens maintained by residents organisations are present in the development.



**SHARED BUILDING BLOCK GREEN COURTYARDS**

Each of the building blocks provides nature inclusive courtyard collective spaces for leisure



**SHARED ENTRANCES ZONES**

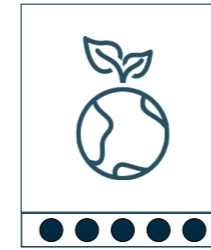
Location of the entrance door next to each other, implying shared entrance transition spaces

### ECONOMIC & SOCIAL VALUES



**STIMULATION OF THE LOCAL ECONOMY**

Even though several innovative technologies had been used private commissioning model preserved the price on market average level.



**SHARED KNOWLEDGE ABOUT DEVELOPMENT**

Schoonship is energetically self-sufficient, using many environmentally friendly measures to reduce its negative impacts.



**LONG-TERM ECONOMIC VALUES**

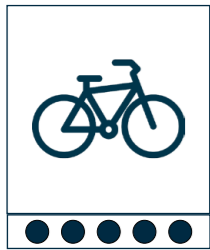
Power/heat self generation provides high turnover ratio for residents increasing economic model reasonability.



**STRONG IDENTITY | SOCIAL COHESION**

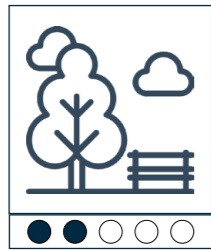
Residents living within specific vision, that decided to use the same aesthetics for their buildings created strong identity.

### SHARED USE OF SPACE | OBJECTS



**E-BIKE PARKING WITH CHARGING POINT**

Few bike parking sheds includes charging points for e-bikes.



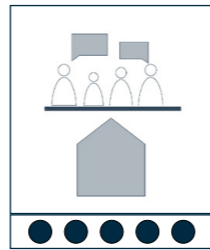
**MAN-MADE CANAL PARK**

Park located among the eastern part provides residents with leisure space including sitting areas and outdoor gym.



**USE OF MICRO PUBLIC PLAZAS**

Internal part of the development is rich in green squares with water features of different scales and designs.



**SEVERAL SHARED ROOF TERRACES**

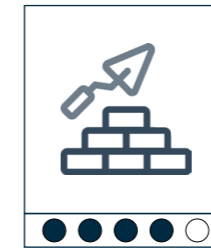
Most of the perimeter blocks possess roof terraces accessible for building residents, although it is not a general standard for all of the buildings.

### BUILDING COMPONENTS



**LOCAL MATERIALS**

Rules of site development plan has assured use of local timber for facades as only allowed material.



**LOW-EMBODIED ENERGY**

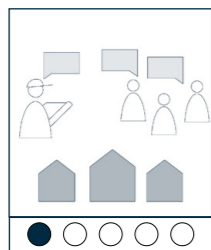
Low-embodied energy, environmentally-friendly materials has been prioritized by the investors.

### USERS PARTICIPATION IN DECISION-MAKING



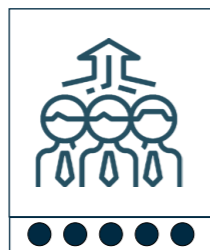
**PUBLIC VS. PRIVATE CO-OP.**

Municipality in co-operation with governmental organisations, knowledge organisations and private developments.



**FUTURE RESIDENTS IN PUBLIC CONSULTATIONS**

Residents could take part in series of public consultations about the development, especially the public spaces design directions.



**SHARING SUSTAINABLE VALUES**

Municipality had a clear vision and high level ambitions to create a sustainable urban development.



**QUALITY PROGRAMME**

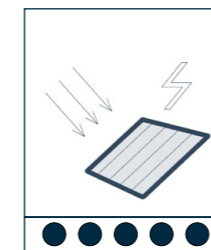
Even though no direct impact of residents on design had been assured, municipality formulated quality requirements for living environment.

### ENERGY & MATERIAL FLOWS



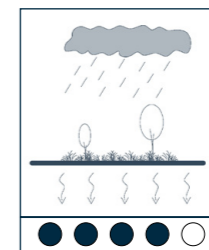
**SMART GRID**

District is connected with the city via smart grid system transferring energy to city system in summer and opposite way during the winter.



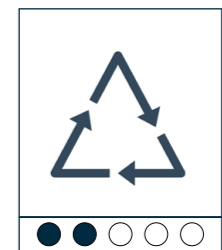
**OFF-SITE WIND TURBINES**

Wind turbines located 1.5km from the neighbourhood generates energy that covers most of the demand.



**NATURAL WATER RUNOFF**

System of open gutters and slopes directs stormwater back to the sea and canals surrounding the neighbourhood.



**SEWAGE ENERGY RESTORE**

Innovative energy restore system has been integrated with sewage to re-gain heat energy.

## RELEVANCE FOR GRADUATION PROJECT

BO01 has possess many characteristics highly relevant for the graduation project site and topic. Firstly, its has been developed as form of innovative residential project, envisioned towards sustainable urban developments. Moreover it is located within post-industrial Malmo harbour, analogically graduation project site is a post-industrial location. Various applied sustainable measures provides a great learning potential for this case study. Finally, the significant amount of various parties taking active part in development and operation of a new city district is highly relevant for reflection on actors organisation envisioning for the graduation project.

### GRADUATION PROJECT SITE

- Existing post-industrial infrastructure
- ~10 Ha of site area
- Ambitious objectives formulated by the municipality, achieving energy neutral housing developments

### CASE STUDY

- Located within post-industrial area
- ~18 Ha of site area
- Ambitions to achieve sustainable urban development, district self-sufficient in terms of energy production and waste.

### ASSESSMENT I

What qualities has been achieved due to sharing?  
WHAT ELSE COULD BE SHARED?

BO01 district has certainly achieved high quality of living environment in terms of public space, variation of scales and uses of public plazas, gradation from highly urban spaces used by residents of other neighbourhoods like promenade and canal park, through internal leisure plazas within the developments used by local residents, finally each building block incorporates courtyard for the tenants. Those public space gradations and preservation of human scale via reduction of building heights in the internal part of development high level of social resiliency has been achieved.

BO01 had definately missed smaller scale sharing programme defined in the quality programme before the start of the design phase. Shared amenities and spaces within each the building block would serve as additional potential for social interaction as well as would have provided a more sustainable use of space and objects. Moreover shared mobility development is missing, potential for used of car sharing, e-bike sharing or more extensive public transportation system should be considered.

## TPOLOGY TRANSFER EXPERIMENT

Idea of typology transfer methodology is to verify the case-study within the graduation project concept to be able to imagine scales relation between succesfull neighbourhood design examples and the chosen site. That constitutes of preparation towards preliminary design phase with individual masterplanning.



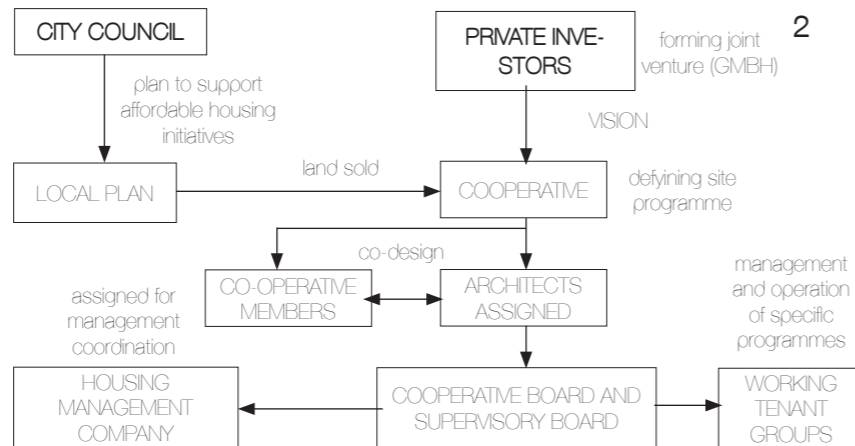
### CONCLUSIONS

Typology transfer has enabled several spatial conclusions. Especially in terms of the masterplan design directions. BO01 scale very accurately fits into the graduation project context, increased heights of the perimeter blocks, that in case of the BO01 are serving as wind protection on the project site provide enclosed ,low-rise environment that could be incorporated to achieve different atmospheres within the designed residential development. Moreover, the variation of sizes of buildings blocks and their interrotation provides high level of diversity of public spaces. The street typologies varies in each part of the development adapting to the surrounding typoogies. Those qualities should be implemented in the graduation project. Finally the urban scale public promenade next to the water and spatial design that enables direct connection with water level has proved to be a succesful strategy and should be incorporated in the design phase.



1

**Spreefeld** is an example of mixed-use residential development as a form of transformation of decayed post-industrial area and reconnection to the city in form of co-housing development open towards the surrounding neighbourhood. Realized in 2013 as a common vision of individuals to create a shared, sustainable housing development that will bring added values towards the surrounding areas, incorporating public spaces and beyond-dwelling functions open to wider public.



2



3

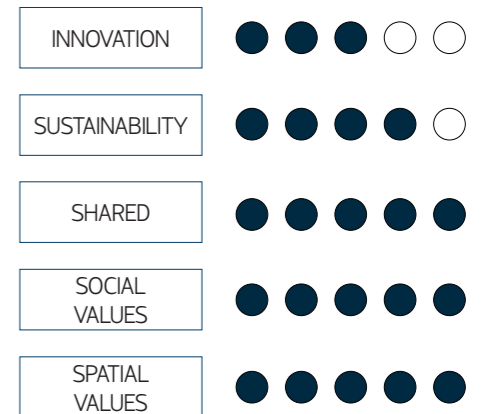
years of development: 2011-2013  
 location: Berlin, Germany  
 client: Spreefeld Cooperative  
 urban strategy design: Berlin City Council  
 architects: Bar Architekten, Silvia Carpaneto, FAT Koehl Architekten  
 plot size: ~0,6 Ha  
 GFA: 7600m²  
 FSI: ~1,26  
 surface of buildings: ~1520m²  
 surface of greenery: ~4300 m²  
 surface of parking lots: -  
 organisation: private co-operative, group of individuals  
 stakeholders: of individuals

- 1 | Aerial photography BO01. source: <http://dakaphotography.carbonmade.com/>
- 2 | Diagram of stakeholders involved
- 3 | Spreefeld site plan

## AMBITIONS

Group of initiators has been able to acquire the land for this development by firstly fulfilling the requirements of the city for the post-industrial area among river Spree - affordable housing, eco-friendly developments and creation of public spaces among the river. The cooperative has formulated clearly the common values and sub-goals for the housing development. It was supposed to follow sustainable building principles with renewable sources of energy, it should be open towards public domain with inclusive, active and mixed-use typologies finally they wanted to incorporate as many shared spaces for the living programme as possible. The sub-goals included gradation of private, communal and public spaces; modular building and construction; resource saving, low-cost building; self production of renewable energy; economy of scale (shared and communal spaces) and co-ownership of the development.

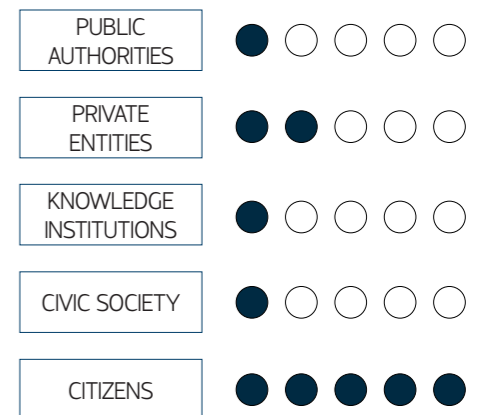
## AMBITIONS



## ACTORS

Spreefeld project was enabled by the development plan of the city that wanted to activate socially the post-industrial area and promote bottom-up developments in the area. City council formulated Local Development Plan that expected affordable housing on most of the unbuilt plots (that were in possession of federal government). Therefore cooperative formed by group of individuals could acquire the land for affordable price, as they were willing to fulfill the requirements of the city in terms of community raising, affordable development scheme. Cooperative has decided to assign three different architectural offices to design three buildings with common architectural language, but different ways of use and layouts. Each of the offices codesigned the building with cooperation of the future residents. For the maintenance of the neighbourhood cooperative board and supervisory council has been formed. There are several „working“ groups of residents designated to specific spaces and tasks to operate the buildings. External housing management company has been assigned to operate the house-keeping services and general maintenance.

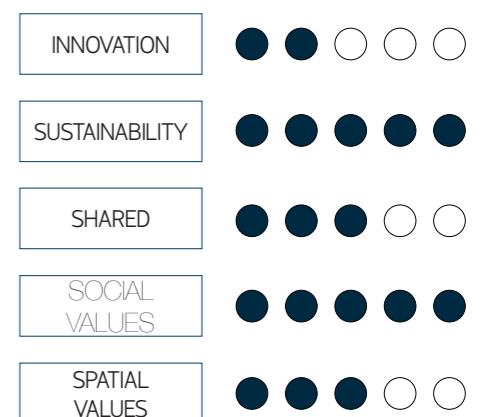
## ACTORS



## FLOWS

In relation to sustainable ambitions of the project there are several ambitions flows management methods applied. The electricity and heating energy is generated on site with use of photovoltaics, geo-thermal heat pumps system and cogenerative unit. Moreover only environmental friendly materials has been used, buildings meet the „Passivhaus“ standard for energy efficiency. Use of wood has been promoted, for instance for wooden exterior walls, wood wool insulations and solid wood balconies. In terms of economical flows, via the cooperation assuring the financing of the development the rents could be assured to reach the subsidized housing levels, although none of the dwelling units is governmentally subsidized, that enabled socially diversified and inclusive residential development.

## FLOWS





## FUNCTIONAL PROGRAMME

Spreefeld development is build around shared programme that constitutes of 59% of the GFA. To mention most important multi-purpose rooms,workshops, youth club, communal kitchens, communal terrace, storage, laundries, kids space, co-working area. The commercial functions are open to surrounding neighbourhoods as well.

## SHARED USE OF SPACE | OBJECTS

Residents living in the cluster units share living zones and main kitchens with each other. All of the residents share collective roof terraces, co-working spaces, guest apartments, organise events in the flexible rooms, kids are spending time in kids zone together with kids from other neighbourhood in predefined space.

## USERS PARTICIPATION IN DECISION-MAKING

The members of cooperative had played from the beginning an important role in the development process of the project. From establishing common vision for the project, through co-design with the architectural offices and finally the democratic decision-making process for operation period of the buildings with regular cooperative members meetings and working teams assignments.

## ECONOMIC & SOCIAL VALUES

In economic sense cooperative size of 64 members assured spreaded financing via bank loan, that has result in affordable rents, preserving inclusiveness of the whole scheme for low-income tenants. That has resulted in socially and culturally diversed environment enriching the local community. Moreover the approach of opening towards public domain results in the added value of the project for the whole district.

## BUILDING COMPONENTS

Cooperative insisted on use of sustainable materials with low-embodied energy, therefore architects has promoted use of modular wooden facade panels filled with wooden wool insulation. Modularity of the building has been crucial for affordable developement. For instance catalog of bathrooms has been formulated to achieve higher level of overall flexibility.

## ENERGY PRODUCTION & MATERIAL FLOWS

Spreefeld cohousing possess its own cogeneration plant and central geothermal pump station located in the center of the development. Additionally rooftops are covered with photovoltaic panels for decentralized production of electricity. Chosen environmental-friendly materials, especially wooden components and wood wool insulations has been assured to be locally produces to reduce the CO2 emmision levels.

Sharing programme ● ● ● ● ●

Non-physical sharing ● ● ● ● ○

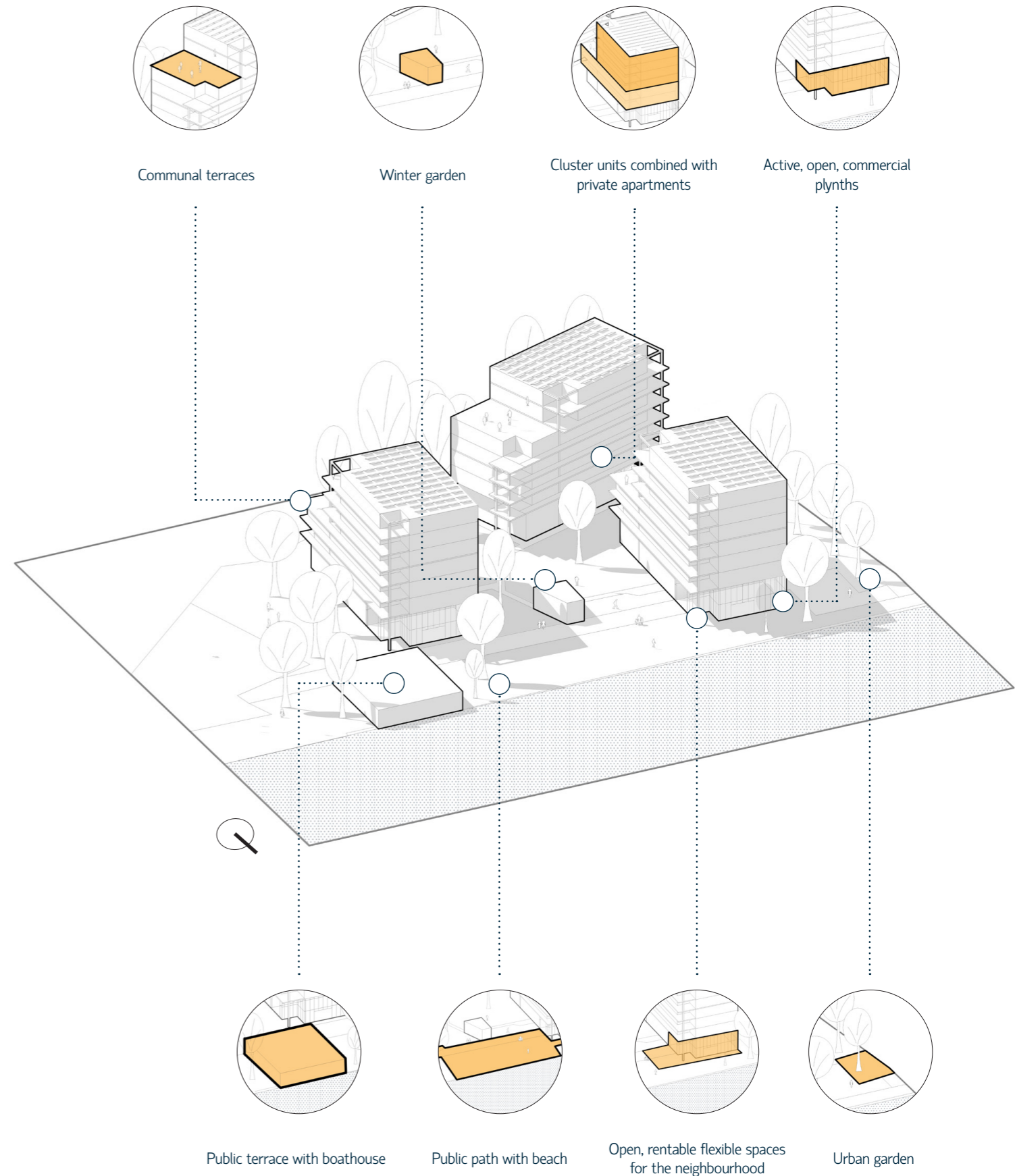
Democratic project development ● ● ● ● ●

Private housing open to the public ● ● ● ● ○

Energy efficient materials ● ● ● ● ○

Renewable sources self-sufficiency ● ● ● ○ ○

## Architecture for sharing



Communal terraces

Winter garden

Cluster units combined with private apartments

Active, open, commercial plynths

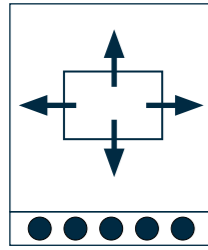
Public terrace with boathouse

Public path with beach

Open, rentable flexible spaces for the neighbourhood

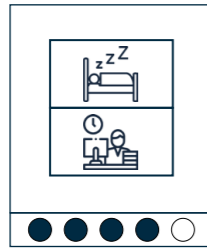
Urban garden

## SHARED FUNCTIONAL PROGRAMME



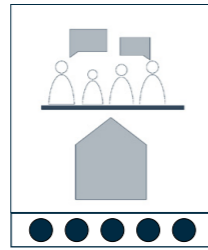
**MULTI-FUNCTIONAL RENTABLE SPACE**

3x128m<sup>2</sup> (4%) of rentable multi-use spaces, generating profit for cooperative.



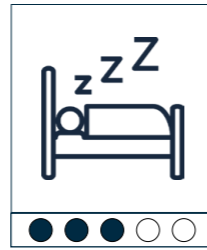
**CO-WORKING PROGRAMME**

980m<sup>2</sup> (13%) of GFA predicted for commercial use, combining living&working.



**ELEVATED COLLECTIVE SPACE**

Residents possess access to shared roof terrace as compensation to highly public plinths



**GUEST APARTMENTS**

Each of the buildings possess additional apartment for use of the residents to accommodate guests.



**KIDS SPACE**

In the development collective space predicted for children as internal playground is predicted.

## ECONOMIC & SOCIAL VALUES



**AFFORDABLE HOUSING**

Significant size of the cooperative and shared financial loan has enabled preservation of the rent price on level of social housing.



**ADDED VALUE FOR WHOLE DISTRICT**

Rich beyond dwelling program of the project has stimulated the local social environment and interacted with surrounding districts.



**LONG-TERM ECONOMIC VALUES**

Power/heat self generation provides high turnover ratio for residents increasing economic model reasonability.



**KNOWLEDGE SHARING**

Cooperative is sharing information about their process development and operating methods in form of open source.

## SHARED USE OF SPACE | OBJECTS



**SHARED KITCHENS**

In cluster typology units (that possess minimalized surface) residents share main kitchen area.



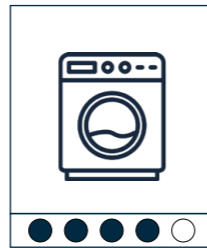
**SHARED LIVING ROOMS**

In cluster typology units residents share spatio-temporal living zones.



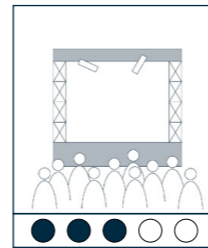
**SHARED STORAGE SPACE**

Each of the buildings includes storage spaces shared by all of the tenants.



**SHARED LAUNDRIES**

For more sustainable use of space, residents share laundries, that are more efficiently used.



**EVENT SPACE**

The multifunctional rooms on the ground floor are used for various events organized by the community.

## BUILDING COMPONENTS



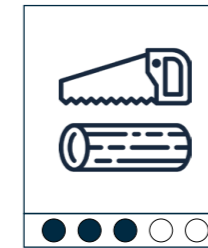
**LOCAL MATERIALS**

Architects sustainable design decisions has assured use of local timber for facades as only allowed material.



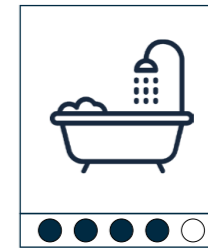
**LOW-EMBODIED ENERGY**

Low-embodied energy, environmentally-friendly materials has been prioritized by the cooperative.



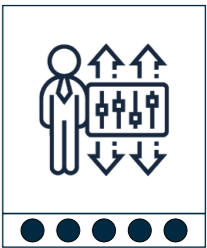
**TIMBER COMPONENTS**

Timber has been implemented in many places in the buildings like prefabricated facade panels,



**BATHROOM CATALOG**

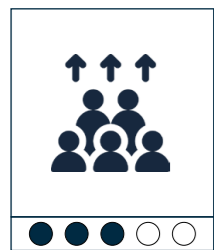
Bathroom catalog has been formulated to optimize design and increase the overall flexibility and diversity of the layouts.



**FLEXIBILITY VIA STRUCTURE SIMPLICITY**

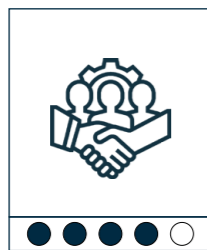
Simple column-beam structure allowed 62 different layouts of apartments adapted to individual needs of the tenants.

## USERS PARTICIPATION IN DECISION-MAKING



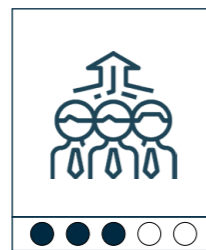
**FORMING SHARED VISION**

Cooperative formed by a group of individuals shared a common vision towards affordable and sustainable development.



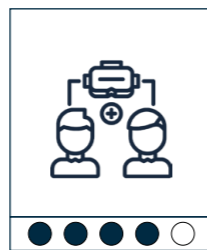
**CO-DESIGN WITH ARCHITECTS**

All of the members of cooperative as future residents and clients co-designed the buildings with architectural offices.



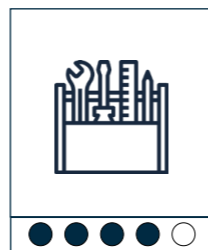
**COOPERATIVE BOARD**

Cooperative possess leading board and supervisory team composed of representatives of the tenants to operate the housing.



**WORKING TEAMS**

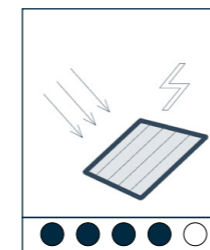
For maintenance and decision-making about specific parts of the neighbourhood working teams of tenants had been formed.



**DIY INTERIORS OF APARTMENTS**

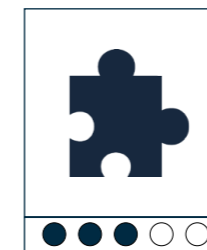
For economic inclusiveness and design freedom each of the tenants had possibility to finish the apartment by themselves.

## ENERGY & MATERIAL FLOWS



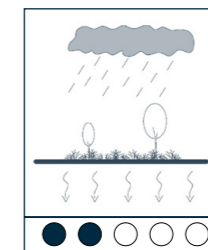
**RENEWABLE ENERGY SOURCES**

Housing development is generating power and heating energy via renewable sources.



**MODULAR GLAZING**

Architects had applied principles of use of building systems from structure till finishing elements for increase affordability.



**NATURAL WATER RUNOFF**

System of open gutters and slopes directs stormwater back to the Spree river.

## RELEVANCE FOR GRADUATION PROJECT

Spreefeld project has many correlational points with the graduation project. Firstly it is located within post-industrial context, next to the Spree river, graduation site is a post-industrial site next to main city canal. Moreover, project organisation structure of housing cooperative could be incorporated in the graduation project as a private commissioning scheme, where high level of affordability had been achieved. The ambition „to share“ as much as possible within the project is highly relevant to the graduation topic and research paper as well. Finally a graduation of communal programme scales (from dwelling units interrelations till response of the project to the surrounding urban realm) is correlative with graduation project scope.

### GRADUATION PROJECT SITE

- Existing post-industrial infrastructure
- ~10 Ha of site area
- Ambitious objectives formulated by the municipality, achieving energy neutral housing developments

### CASE STUDY

- Located within post-industrial area
- ~18 Ha of site area
- Ambitions to achieve sustainable urban development, district self-sufficient in terms of energy production and waste.

### ASSESSMENT |

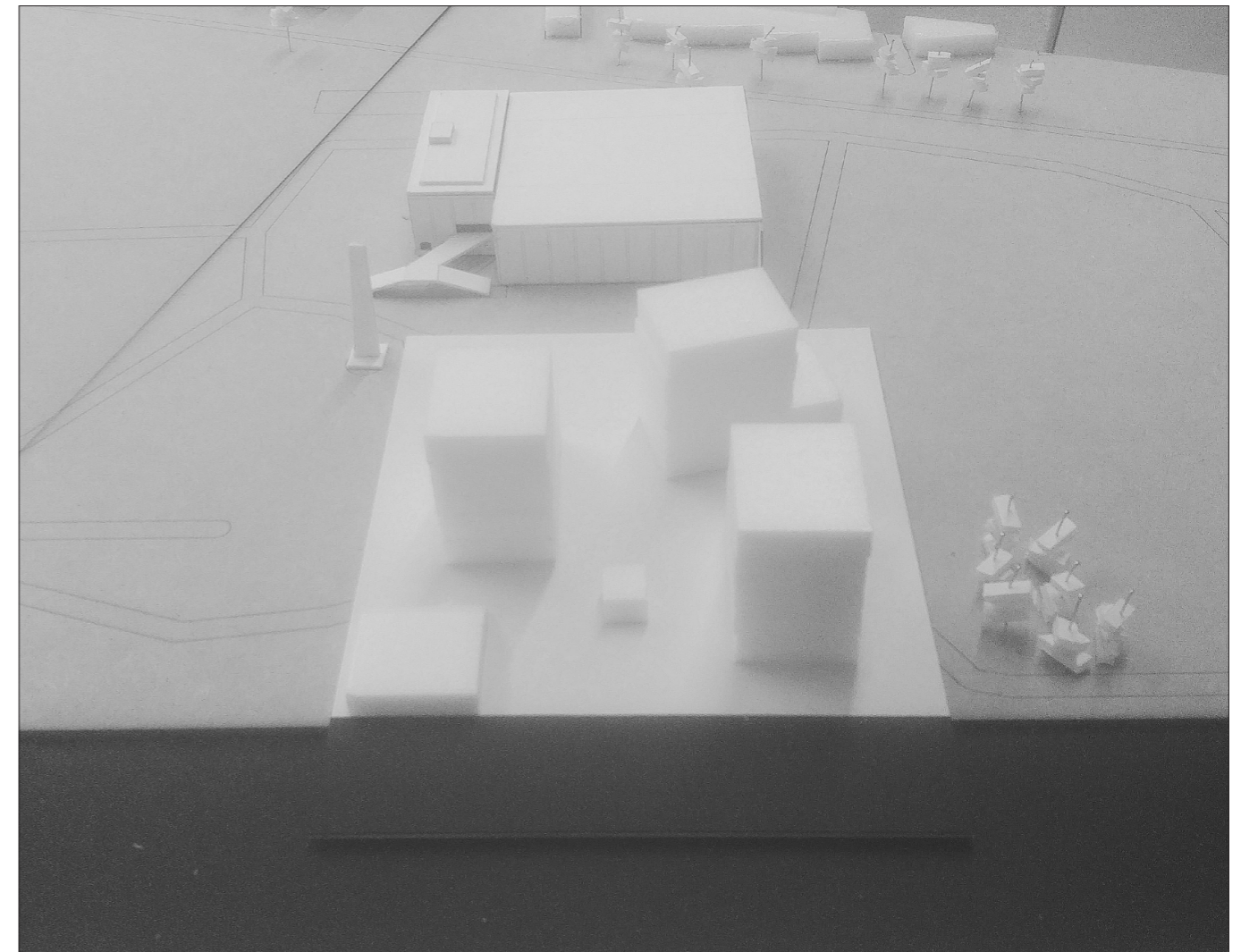
What qualities has been achieved due to sharing?  
WHAT ELSE COULD BE SHARED?

Community within the Spreefeld project is stimulated created via „cluster“ dwelling typology with shared living spaces, defined and used as spaces for social interactions. Moreover, high quality of public spaces open the broader audience had been provided, therefore the designed housing buildings had been incorporated within the district. Meanwhile the neighbourhood scale collective spaces had been preserved in form of elevated outdoor terraces for leisure and social interactions. Residents are sharing the ownership of the building, therefore having the chance to be constantly involved in the decision-making process about future directions for their direct living environment. Shared semi-public programme like co-working spaces and „open“ use rooms enables combination of living and working that increase qualities of life of the residents that do not have to be affected by urban high traffic.

Eventhough Spreefeld case is an exceptional example of sharing-oriented neighborhood scale community, where a clear emphasis has been put on it from the very beginning of the development process, there are still domains to be developed. For instance, there is a potential of renewable energy generation with co-owned by residents energy company organisation. There is a potential of closing „loop“ of waste management and re-thinking the collective, active plinth functions to use similar to the co-working zone, although as the makers zone, where sorted waste could be up-cycled, reused. There's a potential of adding shared mobility system for residents, car-sharing or e-mobility system.

## TYOLOGY TRANSFER EXPERIMENT

Idea of typology transfer methodology is to verify the case-study within the graduation project concept to be able to imagine scales relation between successful neighbourhood design examples and the chosen site. That constitutes of preparation towards preliminary design phase with individual masterplanning.



### CONCLUSIONS

Typology transfer experiment for Spreefeld development has been highly valuable for reflection on the relation between housing development and water, as well as scale of the inbetween public spaces. The specific logic of elevation of collective outdoor zone is clearly understandable on the physical model. Moreover, it allowed reflection on the maximum heights of the buildings and the 8 story high buildings are not proper for implementation within the site, that should definitely preserve low-rise, mid-rise character.

