



Spatial Integration of Property-Close Recycling

Author: Kristina Palmlöf

Institution: Chalmers School of Architecture

Department of Architecture & Civil Engineering

Year of publication: 2025

Examiner: Nils Björling

Supervisor: Maja Hjertén Knutson



CHALMERS
UNIVERSITY OF TECHNOLOGY

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Master's program: Architecture and Planning Beyond Sustainability

Urban and Rural Design and Planning

ABSTRACT

The health of the planet is declining rapidly, and we are depleting nature's capital faster than it can regenerate. To save our environment, a transformative shift in society is urgently needed. Sweden has traditionally played a leading role in waste management, but despite the progress, recycling has become increasingly challenging due to higher ambitious targets in the European Union (EU).

To attempt to meet the new goals Sweden is currently in the process of implementing a new law, which mandates that by January 1, 2027, all households and co-located businesses must have "property-close recycling". It means that after 2027, residents can no longer be directed to recycle their packaging waste (paper, plastic, metal, and colored or clear glass) at a public recycling station, but should instead be able to do so from, or near, their property. The new rules aim to make it easier to sort packaging waste and to counteract poor waste management.

Implementing property-close recycling presents challenges. The thesis is an examination of the spatial consequences that may arise with the new law on property-close recycling, as well as proposals for solutions that address the challenges from an architectural perspective and promote sustainable resource management.

Through an iterative process based on research and design, the thesis examines three specific areas in Gothenburg: Robertshöjd, Haga, and Brännö. Where the implementation of the new legislation presents various challenges.

The result is three different design proposals, grounded in circular economy principles, nudging theory and gathered data. These proposals illustrate how recycling spaces can evolve beyond just functional areas. By incorporating additional features and creating inviting environments, these spaces can become places where engaging with the waste hierarchy feels more intuitive and natural. The potential for spontaneous interactions and a sense of community can transform recycling from a task into an asset.

By highlighting the architectural perspective in waste management, the thesis aims to demonstrate how the architect's role can contribute to making recycling easier and counteracting unsustainable resource management.

STUDENT BACKGROUND

My enthusiasm for recycling and reusing comes from the belief that it is about thinking outside the box. By making the most of, and finding new ways to give objects new life, it not only contributes to a more sustainable world but also promotes creative thinking – a valuable resource one can never have too much of.

EDUCATIONAL BACKGROUND

*MSc, Architecture and Planning Beyond
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Chalmers university of technology, Göteborg
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I. INTRODUCTION

PURPOSE & AIM

The health of the planet is declining rapidly, and we are depleting nature's capital faster than it can regenerate. To save our environment, a transformative shift in society is urgently needed (WWF, 2014). Raw material extraction accounts for half of global climate emissions and four-fifths of the loss of biodiversity (Hansson & Davidsson, 2024), which has consequently led to increased attention on waste recycling in the European Union (EU). The Environmental Objectives of EU state that member countries should work actively to prevent waste and should strive to reach more circular resource management.

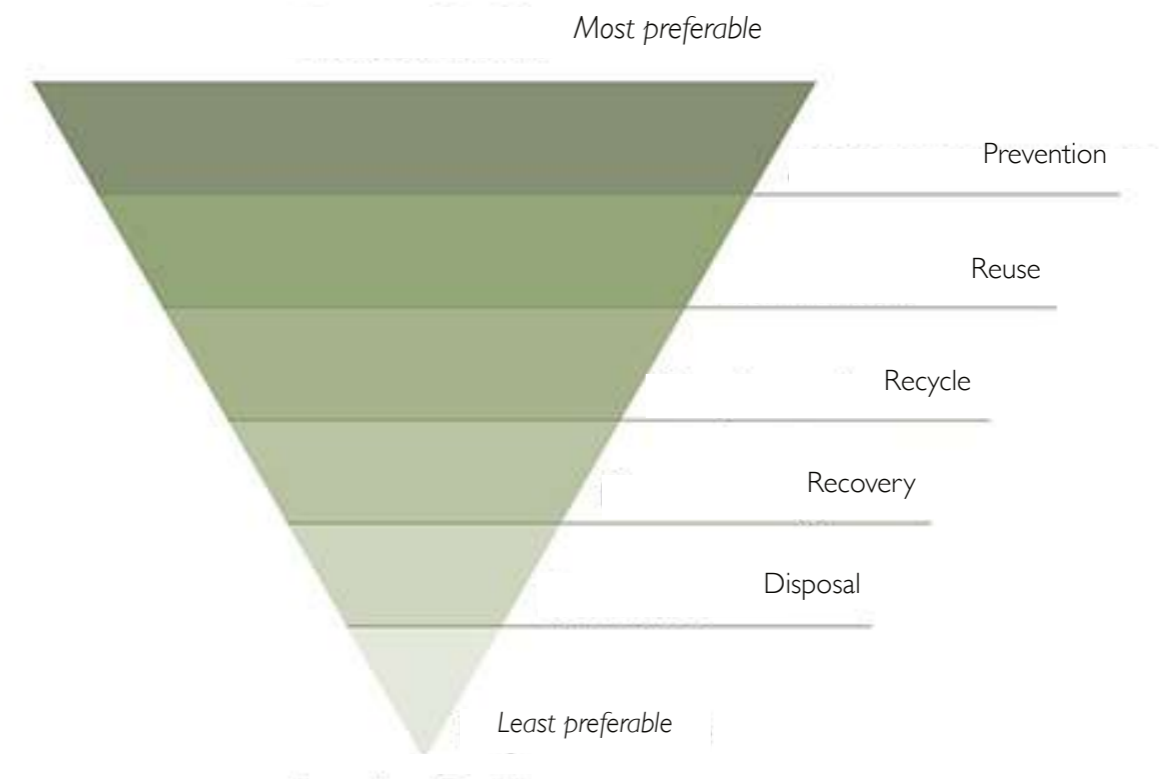
The foundation of EU waste management is the five-step "waste hierarchy": prevention, preparing for reuse, recycling, recovery, and disposal. This hierarchy establishes an order of preference for managing and disposing of waste (European Commission, n.d.). The directive is incorporated into the Swedish Environmental Code and governs how waste should be managed (Naturskyddsforeningen, 2021).

Additionally, the EU aims to promote a transition to a circular economy. The circular economy is a model of production and consumption that involves sharing, renting, reusing, repairing, refurbishing, and recycling existing materials and products for as long as possible. In practice, this means reducing waste to a minimum. When a product reaches the end of its life cycle, its materials are kept within the economy for as long as possible through recycling. This contrasts with the traditional linear economic model, which is based on a take-make-consume-dispose pattern (European Parliament, 2023).

The thesis aims to demonstrate how highlighting the architectural perspective in waste management can contribute to making recycling easier and thereby counteract unsustainable resource management.

THESIS QUESTIONS

- What spatial consequences may arise from the implementation of property-close recycling?
- What architectural solutions can address the spatial challenges that arise while also promoting sustainable resource management?



BACKGROUND

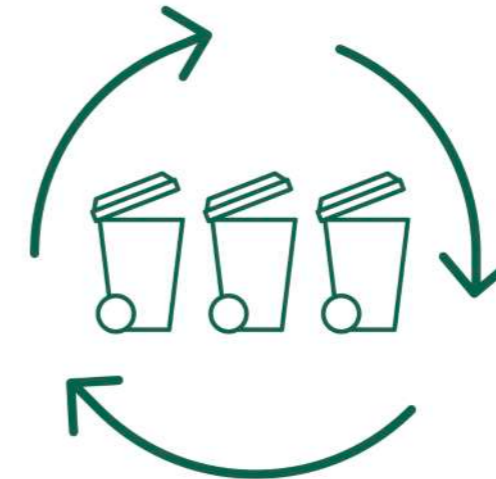
Sweden has traditionally played a leading role in waste management (Avfall Sverige, 2021, 2022), but despite the progress, recycling has become increasingly challenging due to higher ambitious targets. Sweden, along with 17 other EU countries, has been warned for failing to meet EU's recycling goals (Hansson & Davidsson, 2024), and Sweden's focus is now on achieving the 2030 goal of 60 percent material recycling or reuse of municipal waste (Avfall Sverige, n.d.). To attempt to succeed in this (Avfall Sverige, n.d.) Sweden is currently in the process of implementing a new law, which mandates that by January 1, 2027, all households and co-located businesses must have "property-close recycling".

Property-close recycling is defined as follows: *Collection from a property where a household has waste, or if such collection is not possible due to the property's design, location, traffic safety, or other circumstances, collection from a location near the property where the household has waste (SFS 2022:1274).*

It means that after 2027, residents can no longer be directed to recycle their packaging waste (paper, plastic, metal, and colored or clear glass) at a public recycling station (Regeringen, 2022), but should instead be able to do so from or near their property. The public recycling stations that exist today will primarily be for larger and bulky packaging, and over time, the number of these stations is expected to decrease (Göteborgs stad, n.d.).

The new rules aim to make it easier to sort packaging waste and to counteract poor waste management (Regeringen, 2022). Statistics from Avfall Sverige (Swedish Waste Management) indicate that residual waste levels are lower in municipalities that already have property-close recycling. In municipalities with property-close recycling, 0.7 kg of packaging ends up in residual waste per week for a single-family household, while in municipalities without property-close recycling, the amount is 1.2 kg. Residents with property-close recycling are also more satisfied with their recycling system compared to those who do not have access to this service (Avfall Sverige, 2022).

In addition to property-close recycling of packaging waste, also textile waste must be collected separately from other types of waste starting January 1, 2025. The purpose of this collection is to create a more circular handling of textile waste, so that textiles can be put to use again, primarily through reuse or by being used to manufacture new products. Sweden consumes an average of about 13–14 kilograms of newly produced clothing and home textiles per person each year. On average, each Swede disposes of 7–9 kilograms of textiles annually by throwing them in residual waste or taking them to recycling centers, where they are incinerated for energy recovery. Almost half of this waste has been found to be in such condition that it could have been used for a longer time, and a significant amount of the rest could be recycled into new materials (Naturvårdsverket, 2025).



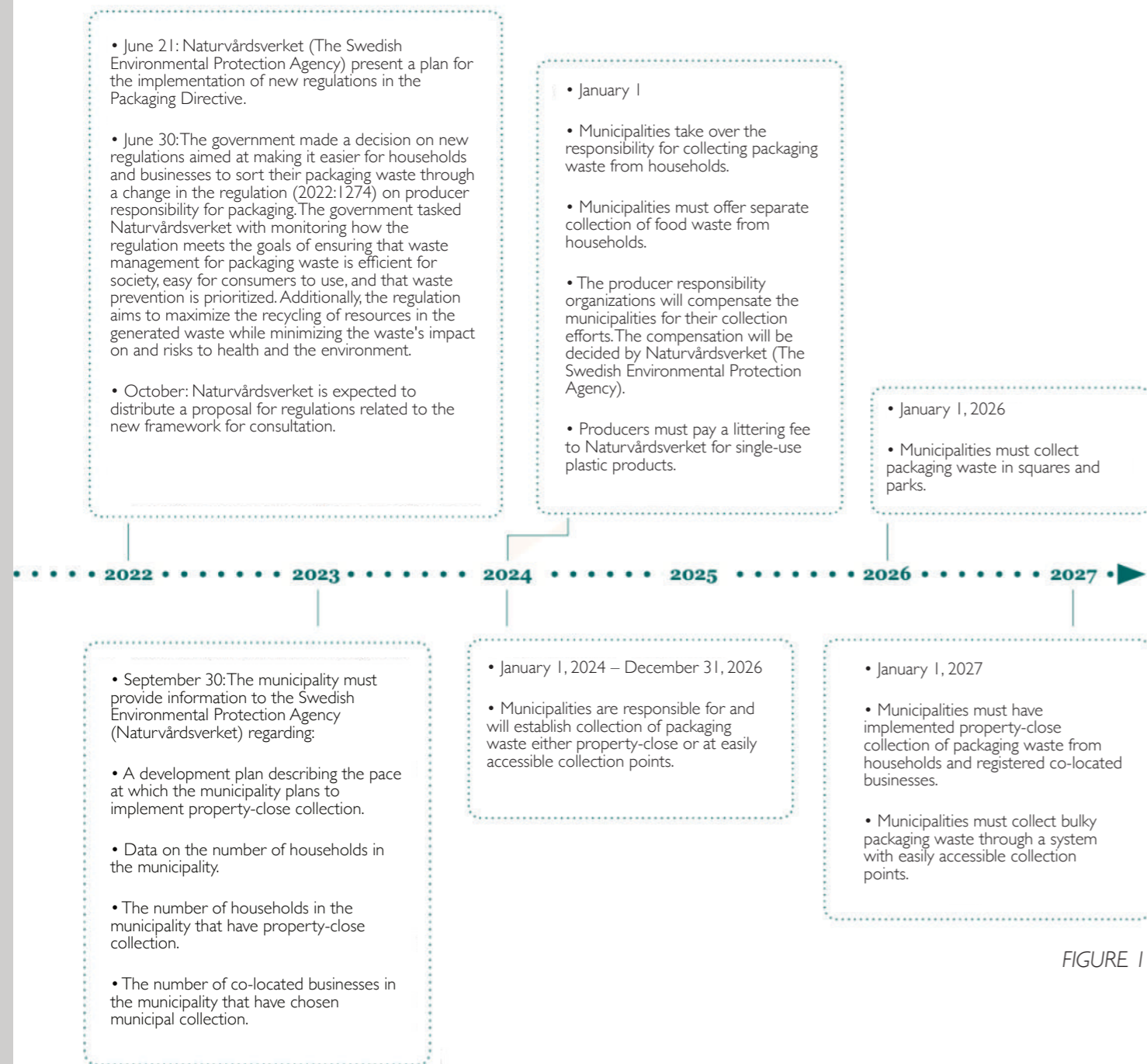


FIGURE 1

Property-close recycling is a major reform that means the municipalities are facing an extensive transformation process (Avfall Sverige, n.d.). Municipalities need to rapidly establish an infrastructure for property-close collection of packaging waste from households and co-located businesses, together with food and residual waste (Avfall Sverige, 2025), and property owners are responsible for providing space for the expanded waste management system (Göteborgs stad, n.d.). This applies to those who have not yet implemented property-close recycling, which statistics from 2022 show is approximately 75% of Sweden's municipalities (Avfall Sverige, 2022) and 40% of all multi-family homes (Avfall Sverige, 2021, 2022).

It will be challenging to implement property-close recycling in certain areas (Stockholm Vatten and Avfall, n.d.). This can, for example, involve buildings or residential courtyards and plots that have too little space for the construction of waste management rooms or places to store bins, or limited vehicle accessibility (Näringspolitisk chef Fastighetsägarna, personal communication, 24 January, 2025), or situations where entrances are not at ground level (Projektledare Kretslopp och Vatten, personal communication, 22 January, 2025).

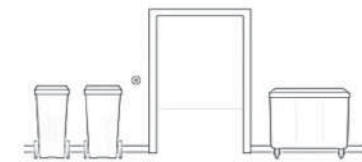
To manage this, several complementary solutions will likely be needed, which could include agreements on neighborhood-based collection solutions, mobile collection solutions, or other methods (Stockholm Vatten and Avfall, n.d.).

Göteborgs stad (n.d.) notes that it is not entirely clear what distance will be considered "property-close". The goal is for it to be as easy for residents to dispose of their sorted packaging as it is to dispose of regular household waste. Currently, building regulations require that waste handling spaces must be available in or near a building for all users.

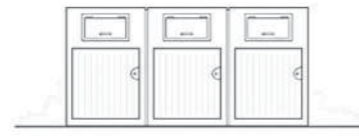
As a supplement, general advice (in section 3:422 of the BBR) recommends that the distance between a building's entrances and waste handling facilities should not exceed 50 meters (Boverket, 2021). According to Boverket (2023), this specifies the requirement that waste handling spaces or facilities must be in or near a building.

In cases where property-close recycling is not feasible due to the property's design, location, traffic safety, or other factors, collection can occur from a location "near" the property (see definition above, (SFS 2022:1274)). In such cases, the municipality can either reach an agreement with the property owner on an alternative site or designate a location within a "reasonable distance" from the property (Boverket, 2023). What this will mean is not yet clearly defined, as there is currently no legal precedent or clear legal guidance on how the term should be interpreted (Naturvårdsverket, 2024).

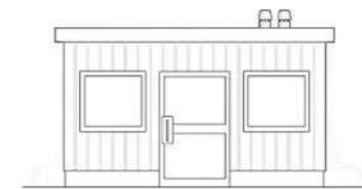
A proposal is currently under consideration that states the designated or agreed-upon location may be at most 400 meters from the boundary of a property where waste is generated, if collection from the property is not feasible due to the property's design, location, traffic safety, or other factors (Klimat- och näringslivsdepartementet, 2024). Naturvårdsverket (2024) gives examples that near a property could mean establishing a shared collection site for residents of an area where property-close collection is deemed unfeasible due to local conditions, like the absence of a safe turnaround area. Or a smaller island without road connections, where waste is collected at one or several shared pickup points on the island, such as at a communal dock. Assessments will need to be made on a case-by-case basis regarding what is considered reasonable (Boverket, 2023).



Environmental room



Waste cabinet



Separate environmental house



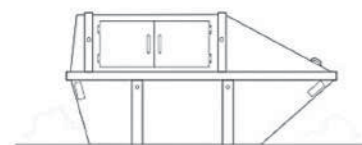
Outdoor sorting yard



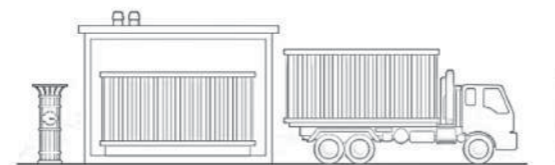
Four- or two-compartment bins
(for villas and townhouses)



Underground containers



Permanent container



Stationary and mobile waste vacuum system

FIGURE 2

WASTE SYSTEMS

It is the property owner's responsibility to create space on the property for the collection of all eight types of waste (residual waste, food waste, paper, plastic, metal, and colored or clear glass). It is up to each property owner to determine the best way to create space based on their circumstances (Göteborgs stad, n.d.). The alternatives used in Sweden today are waste bins in different sizes and spaces, waste cabinets, underground containers, containers and waste vacuum systems (see drawings to the left) (Vasyd, 2024).

Waste management often conflicts with aesthetic requirements.

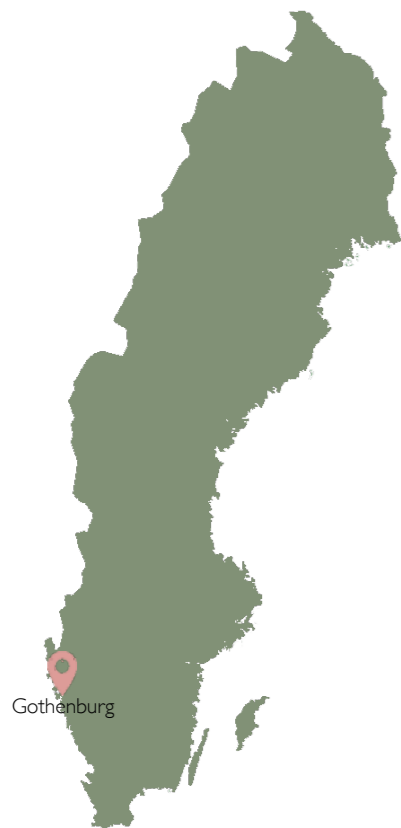
Recycling design involves many containers or bins, which often vary in shape and color and requires a lot of space. Additionally, municipalities have requirements to ensure a good working environment for waste collectors. This often creates a challenge in developing solutions that respect urban and landscape aesthetics, as well as the natural and cultural value of the area, while still meeting requirements for dimensions, form, color, and material. A particularly sensitive issue, according to Boverket, is how recycling should be organized in culturally and historically important areas and more complex environments, such as old city centers (Boverket, 2011).

GOTHENBURG CONTEXT

VILLAS & TOWNHOUSES

In Gothenburg the replacement of the current waste bins with bins for property-close recycling will take place gradually. All owners of villas and townhouses will receive the new bins during the years 2025, 2026, and 2027.

In Gothenburg today, there are two bins for villa- and townhouse households, one for food waste and one for residual waste. With the new law on property-close recycling, the current bins need to be replaced. In several other municipalities in Sweden, two larger bins with four compartments have been chosen. In Gothenburg, however, the decision was made to use three slightly smaller bins with two compartments each (Göteborgs Stad, n.d.). It is not possible to have fewer bins, and there are no smaller bins with two compartments.

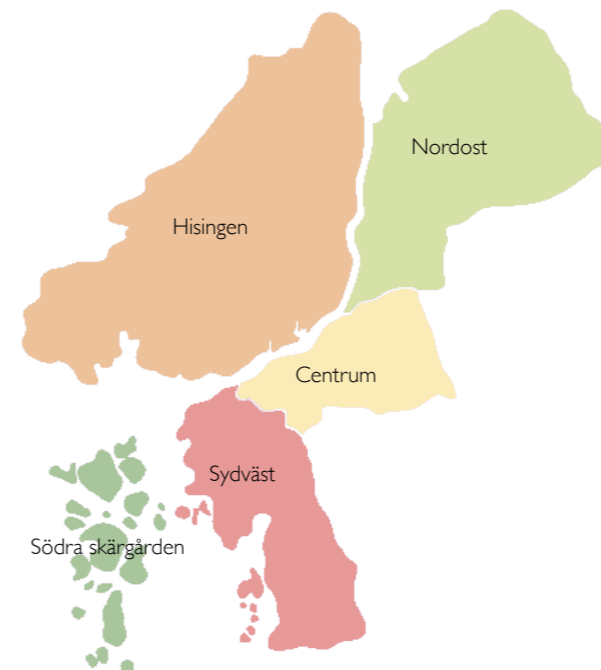


Even so, there is an opportunity to choose a service where you have a separate bin for residual waste that is emptied every four weeks and a separate bin for food waste that is emptied every two weeks. In total, you will then have four bins instead of three: a separate residual waste bin, a separate food waste bin, bin 2 (for paper and plastic packaging), and bin 3 (for clear glass, colored glass, and metal packaging) (Göteborgs Stad, n.d.).

The bins do not need to be placed next to each other, but Göteborgs Stad (n.d.) encourages all bins to have a permanent, easily accessible location at the property boundary to make it convenient for both the property owner and the waste collector. If that is not feasible, the bins can be placed elsewhere on the property and then rolled to an accessible spot at the property boundary on collection days (Göteborgs Stad, n.d.).

The new waste bins were showcased during Gothenburg's Culture Festival in 2024. Many people were positive about being able to sort packaging at home, but some wondered how they would find space for three bins (Vårt Göteborg, 2024). Göteborgs Stad (n.d.) suggests shared solutions in response to this concern.

According to Göteborgs Stad (n.d.), a shared solution with neighbors might be beneficial if you for example live in a community association where accessibility is challenging due to narrow streets, lack of turning zones, or if it is otherwise unsuitable for the garbage truck to reach each property. Shared solutions can include setting up a waste management room, a waste cabinet, or an underground container at one or more locations in the residential area where a garbage truck can easily access them. It could also involve organizing an area where all the individual bins from each property can be placed, either permanently or temporarily, before the garbage truck arrives (Göteborgs Stad, n.d.).



Gothenburg is divided into four areas for implementation (Göteborgs stad, n.d.).

MULTI-FAMILY HOMES

For multi-family housing, the property owner is responsible for providing space for property-close recycling before January 1, 2027, and ensuring that waste management functions effectively. Good service, proper sorting, and clear information are essential factors for effective waste management in multi-family buildings (Göteborgs Stad, n.d.).

For guidance and recommendations in planning, designing, and constructing safe and efficient waste management systems, the municipality refers to the document "Gör rum för miljön" ("Make Room for the Environment") (Kretslopp och vatten, 2024). This document emphasizes that waste management is crucial for creating a pleasant and healthy living environment. If a waste room is well designed and maintained, residents are more likely to sort their waste correctly, leading to smoother waste management processes. The document also states that the waste room should enable sustainable waste management in line with the EU's waste hierarchy (Kretslopp och vatten, 2024).

2025	Nordöstra Göteborg, Örgryte och Härlanda
2026	Hisingen
2026	Centrum, Majorna och Linnéstaden
2027	Sydvästra Göteborg

(Södra skärgården will not receive property-close recycling (Göteborgs Stad, n.d.))

DELIMITATIONS



This thesis is limited to examining the architectural perspective in the implementation of new regulations for property-close recycling in urban environments. Therefore, it does not address how waste collection is managed within individual homes. To maintain this architectural focus, the thesis will also not include detailed analyses of project budgets or legal aspects. Geographically, the scope is limited to Gothenburg, with attention given to the specific locations and scenarios defined within the study.

METHOD



CONVERSATIONS & INTERVIEWS

The project will involve conversations and interviews with relevant stakeholders, including municipalities, property owners, and professionals in the industry. The goal is to gather insights into current recycling practices and research in the field, as well as to identify potential challenges in meeting new requirements across different locations. Additionally, the discussions and interviews will help develop a deeper understanding of the target audience and the context in which the design will be implemented. Conversations with AI tools will also be conducted to assist in correcting any potential language errors.



LITERATURE STUDIES

The literature study will include research on the new law regarding property-close recycling to understand the regulatory framework that will govern recycling practices. Relevant statistics, such as recycling rates and environmental impact metrics, will be examined to contextualize the study and highlight areas for improvement. Literature studies is also crucial for examining waste management designs on both large and small scales to assess existing methods and technologies in the field. Additionally, the study will explore innovative design references that can inspire and inform new approaches. Theoretical frameworks will be reviewed to provide a foundation.



CASE STUDIES & SITE VISITS

Different cases will be identified and reviewed, focusing on examples from spaces where the new recycling laws may face potential challenges. To gain spatial awareness and a deeper contextual understanding of the chosen locations, site visits will be conducted for each case.



VISUALIZATION

Various sketching and visualization techniques will be used to express and understand the spaces explored in the thesis. Conceptual sketching will allow for the exploration of different solutions and ideas without being constrained by practical limitations. Models and prototypes will test and communicate ideas in a more concrete manner, helping to uncover potential improvements and issues early on. Diagramming will be used to analyze the current site, logistics, and flows, as well as future projections.



FEEDBACK SESSIONS

Feedback sessions and analysis will be made to understand and identify what works and what needs improvement.

2. THEORY

CIRCULAR ECONOMY

The circular economy is a model of production and consumption that involves sharing, renting, reusing, repairing, refurbishing, and recycling existing materials and products for as long as possible. This extends the life cycle of products. In practice, this means reducing waste to a minimum. When a product reaches the end of its life cycle, its materials are kept within the economy for as long as possible through recycling. (European Parliament, 2023). The thesis adopts the model and assumes that the theory of circularity is desirable.

NUDGING

Nudging is an established method based on Richard Thaler and Cass Sunstein's book *Nudge: Improving Decisions about Health, Wealth, and Happiness* from 2008. The theory focuses on understanding how people make decisions and the behaviors that influence their choices. By consciously designing decision environments, it is possible to steer behaviors in a desired direction without restricting individual freedom of choice. Nudging does not mean making other options harder to choose, such as by increasing their costs in terms of time, availability, or social sanctions. A central aspect of nudging is that the behavior changes it encourages should be beneficial for both the individual and society (Sunstein & Reisch, 2014).

Nudging can, for example, involve simplifying actions to increase the likelihood of desired behaviors being carried out (Mullainathan & Thaler, 2000). This can be achieved by eliminating both physical and psychological barriers that stand in the way of the desired behavior. For example, research shows that recycling rates increase when the perceived distance to recycling stations is shorter (Ando & Gosselin, 2005; Lange et al., 2014).

Nudging can also involve social norms, which play an important role in decision-making as individuals often follow what is already socially accepted in a given situation (Thaler, 2018). Places and environments are influenced by these norms, which in turn shape the behavior of visitors (Cialdini, 2003). A study investigating participation in a recycling program in a suburban neighborhood showed that individual factors, such as attitudes toward recycling and environmental awareness, were not decisive for participation in waste recycling. Instead, it was found that information about friends and neighbors also recycling their waste had a significantly greater impact (Oskamp et al., 1991).

By applying the principles behind nudging in the thesis, strategies that promote sustainable behaviors can be identified. Insights about nudging emphasize how simplification and social influences can shape and guide our actions in environmental matters. In the gap between intention and action, nudging can be a powerful tool.

PILOT PROJECT

In 2020, Kretslopp och vatten collaborated with four property owners in different areas of Gothenburg on a pilot project aimed at reducing waste. Both residents and staff participated in developing and testing measures to reduce waste. The result was guidance for waste prevention in multi-family housing, with the main points being: reducing paper waste, showing statistics on how much is being thrown away and its associated costs, facilitating borrowing, sharing, and repairing, providing tips on how residents can reduce waste, creating swapping spaces in the building, and collecting items for reuse (Kretslopp och vatten, 2021).

In addition to achieving reductions in waste generation, it was observed that in multi-family housing, measures to reduce waste can also increase community engagement and perceived safety. The residents had something in common to talk about and could meet in spaces such as swapping rooms, carpentry workshops, on exchange days, or around lending pools. A tenant participating in the project mentions, "It doesn't happen much in a stairwell. So, it's also a social thing here - we have a reason to talk to each other".

HSB LIVING LAB

In a conversation with HSB Living Lab (Property Manager HSB Living Lab, personal communication, February 5, 2025), insights were shared on how the design of recycling areas influences recycling behavior. According to the property manager, effective waste management is fundamentally about human behavior. People need guidance and should not have to search for information on how to sort correctly. Additionally, the longer people spend in an environmental room, the more likely they are to sort their waste correctly. To encourage this, the environment must be inviting. No one wants to stay in a place that smells bad or feels uncomfortable, especially when accompanied by children. Features like places to hang bags, wash hands, or even activities for children can encourage longer visits and more thorough sorting.

According to HSB Living Lab, behaviors can be influenced through both physical design and information. Examples include themed rooms, clear and attractive signage, and visual cues such as color-coding and floor markings. Inspiration can be drawn from other contexts, like IKEA's footprints guiding children to handwashing stations. By using colored lines, it becomes easier to find the correct bin, for example, following a purple line to the plastic recycling bin. Information also plays a significant role. When, and how, information is provided are crucial for the system's success. Successful initiatives include for example feedback on how much money or environmental impact is saved. Economic incentives are powerful drivers for behavior change. HSB Living Lab points out that the ambition to create inspiring and functional environmental rooms often conflicts with budget constraints. However, the difference in user experience and efficiency between these options can be substantial.

Regarding property-close recycling, the property manager states that many people, despite good intentions, dispose their bulky waste in the property-close recycling bins instead of taking it to recycling stations. This leads to more challenges, since when bins are full, it often leads to recyclable materials ending up in the residual waste.

When it comes to the waste hierarchy and spaces for reuse, HSB Living Lab identifies challenges. If there are areas in environmental rooms where people can leave items, these spaces often become a place for dumping. Therefore, it is crucial to carefully plan how these spaces are used. In some cases, it might be better to direct people to other areas, such as hobby rooms, for managing reusable items.

3. REFERENCES

RECYCLING CENTER, NORDHAVN

The aim of the local recycling centre in Nordhavn was to create a place where waste handling is as effective and easy as possible for users, which in turn increases the value of the material fractions generated at the center (Architizer, n.d.).

The architects (Lendager Group, n.d.) behind the recycle center ask the question:

“What if visiting the local recycling center was friendly and intuitive? What if the centre was a social meeting place and hub for exchanging ideas and objects and build out of household waste? And what if you sometimes came home with more than you dropped off?”

The recycling centre is a natural hub for recycling related activities in Nordhavn. Except for recycling, people can learn about for example the environment, waste and upcycling. It also includes a workshop and a “swap shelf”. The workshop makes it possible to repair broken things, and the swap shelves can be used to swap things that are still functional or need a bit of repair.

Parts of the swap shelf have wheels and can be moved out to the square in front of the recycling centre, to make the center more prominent

In the centre of the swap shelf there is a seating area, where lectures about recycling can be held, for example for school classes. The center has manned opening hours when it is possible to ask the staff about things related to recycling.

The walls of the recycling centre are made of waste, which makes the place itself a physical manifestation of how waste materials gathered at recycling centres can be transformed into new things. The walls of the recycling center also have a practical function showing visitors how to dispose of their waste correctly. The material wall is divided into the different fractions of materials that are recycled behind it. For example if plastic is going to be recycled, you go to the wall made of plastic. It is a low tech and intuitive way finding system for the visitors (Architizer, n.d.). (See drawings in appendix A).

PROJECT WHY, KAMIKATSU

In the rural area of Kamikatsu, Japan, you can find the Zero Waste Centre “WHY.” It is an innovative recycling facility that has also become a visitor attraction. The centre is an initiative aimed at reducing waste and also serves as a community hub for waste management. Among the various projects, it has launched a rental service for reusable tableware, opened shops for remade and reused items, and created a popular incentive system that allows residents to accumulate points in exchange for eco-friendly goods.

It is therefore no coincidence that Kamikatsu's Zero Waste Centre is named “WHY.” It encourages us to question: Why do we buy things? Why do we use them? Why do we throw them away? Why do we sell things?

The question mark shape of the centre is a deliberate design choice that reinforces this mindset. Also, this was kept in mind during the design process, as the centre is primarily constructed from locally recycled waste.

By 2016, the town had increased the number of waste categories to 45 and achieved a recycling rate of 80 percent (Demetriou, 2022). (See drawings in appendix B).

In the next chapter, which focuses on concept and design, important insights can be drawn from both references. Both Nordhavn Recycling Center and project WHY in Kamikatsu clearly demonstrate that recycling centers can be successfully developed into more than places for just waste management. They can become multifunctional, social hubs by integrating and designing features such as workshops, swap rooms, and communal meeting spaces.

Through this strategy, environments are created that not only promote recycling but also strengthen community ties and increase engagement with sustainability throughout the entire waste chain. When spaces are designed to encourage sharing, repair, and reuse, they help lay the foundation for a circular culture.



Figure 3



Figure 4



Figure 5



Figure 6

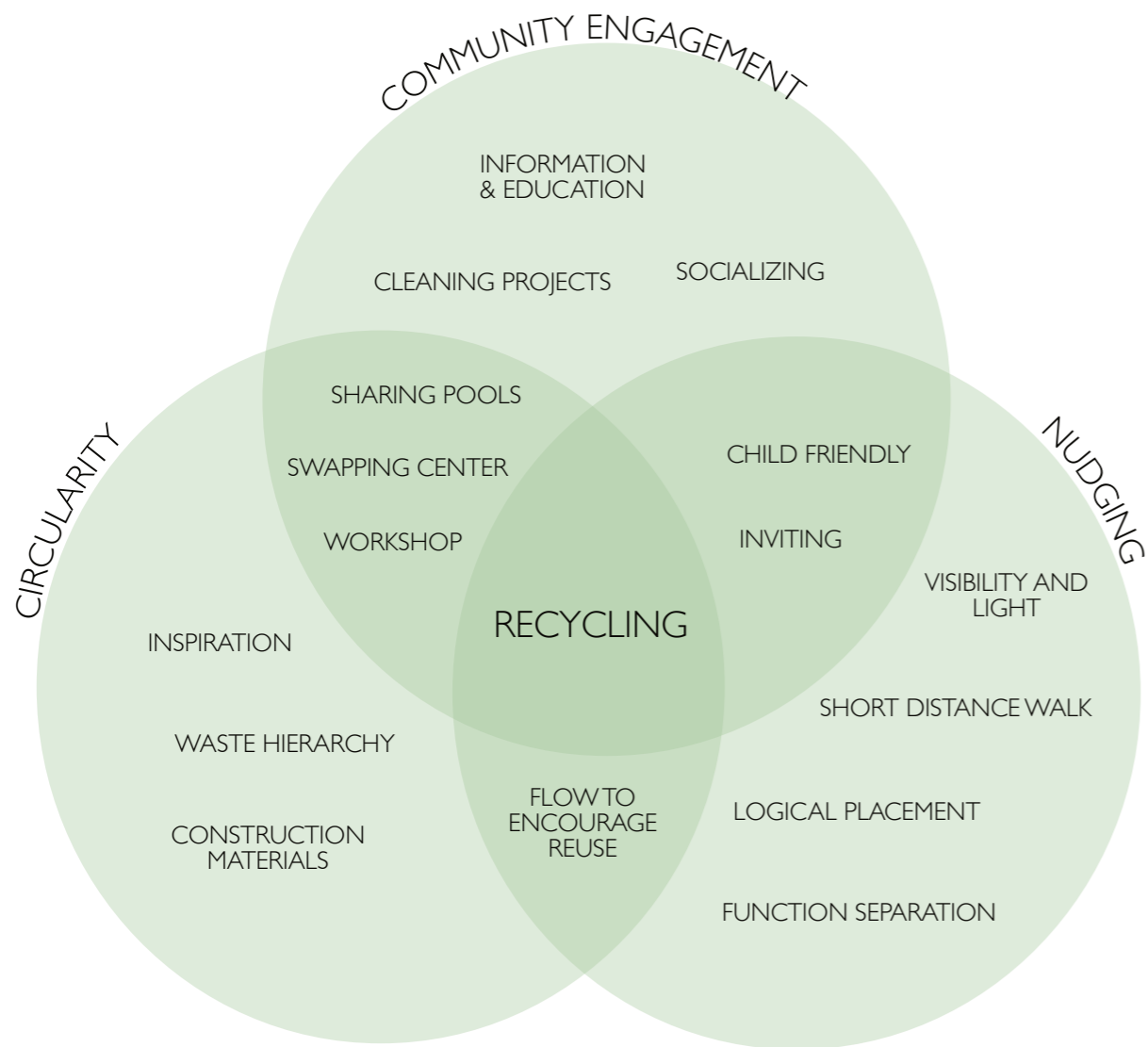


Figure 7



Figure 8

4. CONCEPT & DESIGN



Collected information on circular economy, nudging, waste prevention strategies, and relevant references has been compiled into a concept diagram. The diagram visualizes key principles that can be universally applied to recycling-focused architecture.

The following pages present the design outcomes at three different locations in Gothenburg, each interpreting and applying the key principles in different ways. The designs demonstrate how highlighting the architectural perspective in waste management can contribute to making recycling easier and counteracting poor resource management.

The sites where the design will be implemented are Robertshöjd, Haga, and Brännö. The three sites vary in both typology and context: Robertshöjd is a suburban neighborhood characterized by town houses, Haga is a dense urban area with apartment buildings, while Brännö represents a more rural and sparsely built environment.



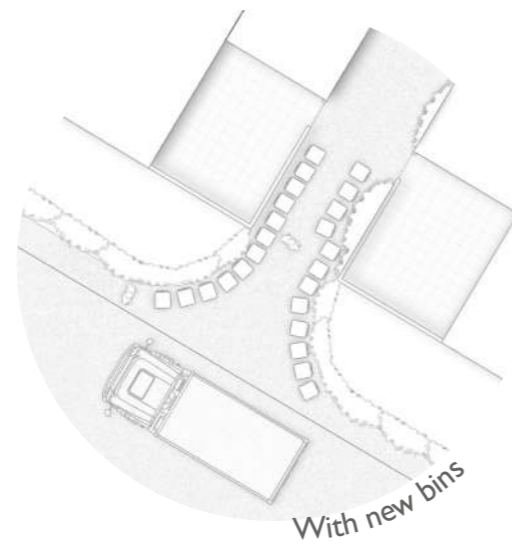
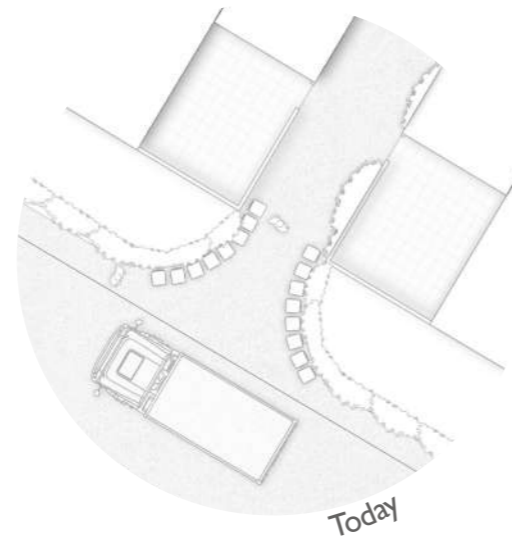
ROBERTSHÖJD

In Eastern Gothenburg, the townhouse area of Robertshöjd can be found. It is a community association with 29 rows of townhouses built between 1961 and 1962.

The architecture is characterized by high density, repetition, and rhythm, designed to adapt to the landscape by following the topography and preserving the original vegetation. Any changes to the houses or courtyards would impact the cohesive character of the area. (Robertshöjd, n.d.).

The entrances to each townhouse are marked by white gates and are accessed via narrow pedestrian pathways. On garbage collection days, residents roll their bins to designated collection points (see red markings on the map to the right) for the garbage truck to access. However, with the introduction of the new bins, it will no longer be possible to manage waste in the same way as today due to space constraints. Additionally, during warmer months, the smell becomes an issue.

The community association is therefore currently considering a new collective solution to comply with the new legal requirements (Robertshöjd resident, personal communication, January 27, 2025)



DESIGN: REIMAGINING WASTE



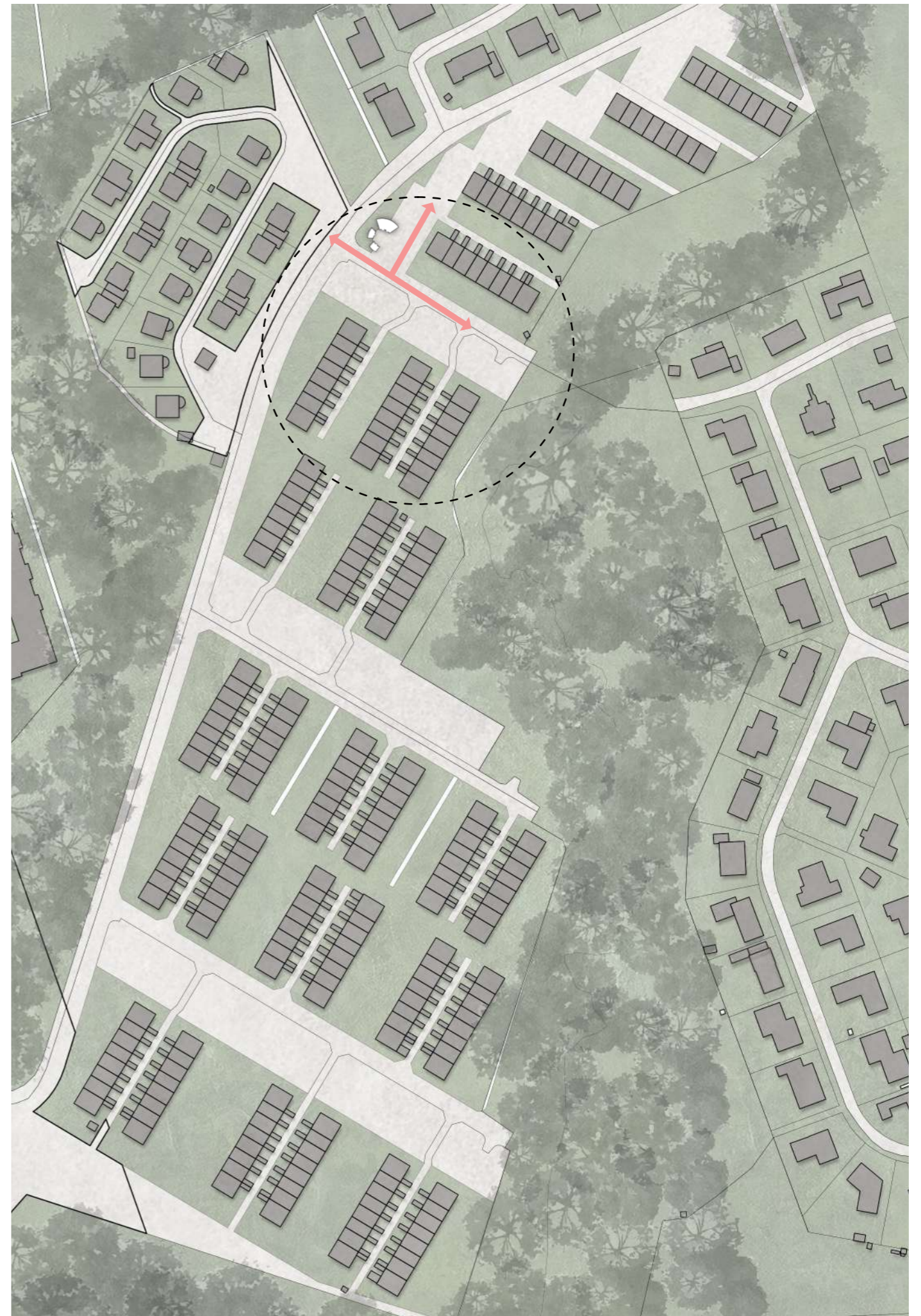
● Common areas

A new shared solution needs to be placed on accessible land. One possible option is to locate recycling hubs on the community association's common areas, marked in red in the image to the left. The area primarily consists of parking spaces, and small green areas. By repurposing parking spaces, the parking ratio in the area will decrease. But in the long term, the association could consider introducing car-sharing services. This would reduce the need for private car ownership and support the transition to a more circular economy.



● Recycling Hubs

By dividing the community association into smaller blocks and placing a recycling hub in each block, the walking distance for residents is shortened compared to having a single central hub for the entire community. Those with the longest walking distance have a maximum of 200 meters to walk. Placing the hubs at intersections near the main road increases visibility, as more people pass by, which in turn raises the likelihood of usage. This approach aligns with the theory of nudging. As previously mentioned, research shows that recycling rates increase when the perceived distance to recycling stations is shorter.

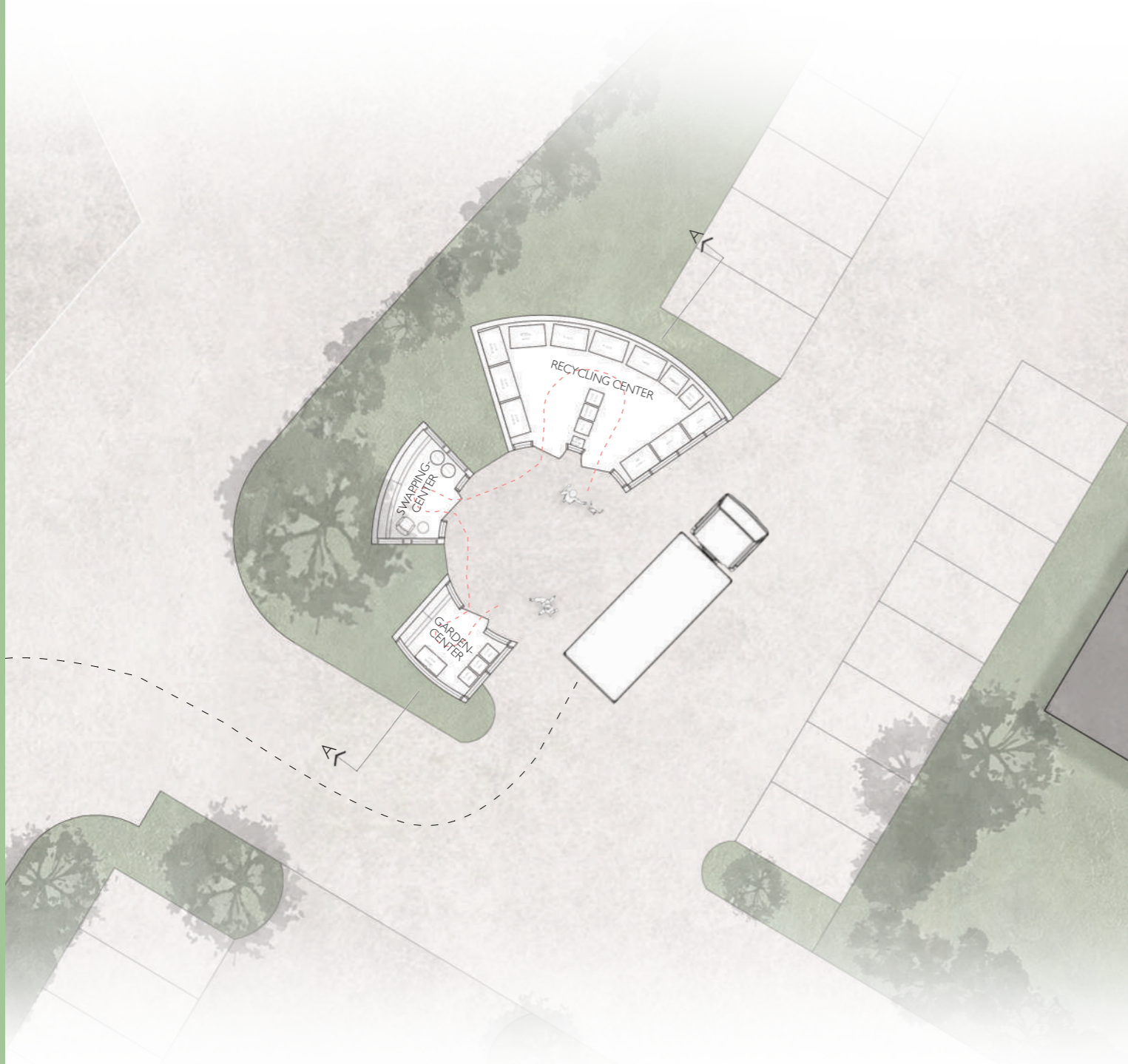


The design proposal zooms in on one block, as shown in the image above.





SECTION A-A 1:200



FLOOR PLAN 1:200

The recycling center is dimensioned for collection once a week, and the different waste fractions are arranged according to the recommendations in the City of Gothenburg's document "Gör rum för miljön" (Kretslopp och Vatten, 2024). The proposal is laid out as a small circular square, with an emphasis on good natural lighting and clear visual overview. This is to create a flow between the buildings, and making it easy to quickly identify where each fraction belongs.

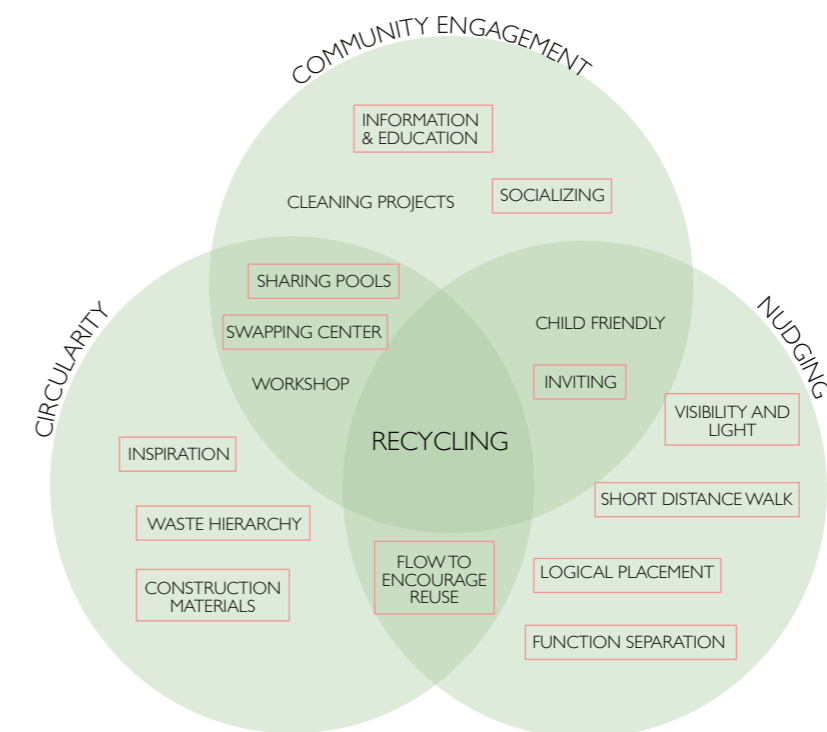
To achieve natural lighting and clear visual overview, the recycling area is an open space, and the facades are made from recycled windows. To use recycled building materials both promotes reuse and may inspire visitors to take on their own recycling projects.

The recycling center is designed to accommodate various types of containers, such as for example both bins and cages for paper, ensuring there is space for bulky waste to prevent regular bins from filling up too quickly and people from disposing of waste in the wrong bins. The room also includes space for informational signage and possibly inspirational tips on how to transform waste into useful items.

The site is designed to function as a space where neighbors can meet, and be inspired to make sustainable choices. By integrating a garden center, with features such as composting and shared garden tools, alongside a swapping center where items can be exchanged, the proposal creates a social hub, and promotes a local circular economy.

The recycling center, swapping center and garden center are separate buildings to counteract dumping; a strategy that has proven effective according to collected information. At the same time, the various functions are clearly interconnected to facilitate use and encourage a holistic approach to recycling. For example, in the swapping center, textile collection is integrated to facilitate the reuse of functional clothing. Firstly, clothes can be reused, and if they are no longer needed or damaged they can be left for collection.

Bringing connected functions together in one place also serves an educational purpose, reminding visitors of the connection between consumption and waste. For example, storing composting with garden tools clearly demonstrates the food chain, and can highlight the importance of not throwing away food.





HAGA

The Haga district is located as a well-defined unit to the west of Gothenburg's city center. The oldest parts were established in the mid-1600s, and over time, the district has expanded and become more densely built. The current buildings mainly consist of wooden houses, landshövdingehus (traditional Swedish houses), and stone houses, located along cobblestone streets. Due to its age and distinctive architecture, the Haga area is unique both within Gothenburg and the country as a whole.

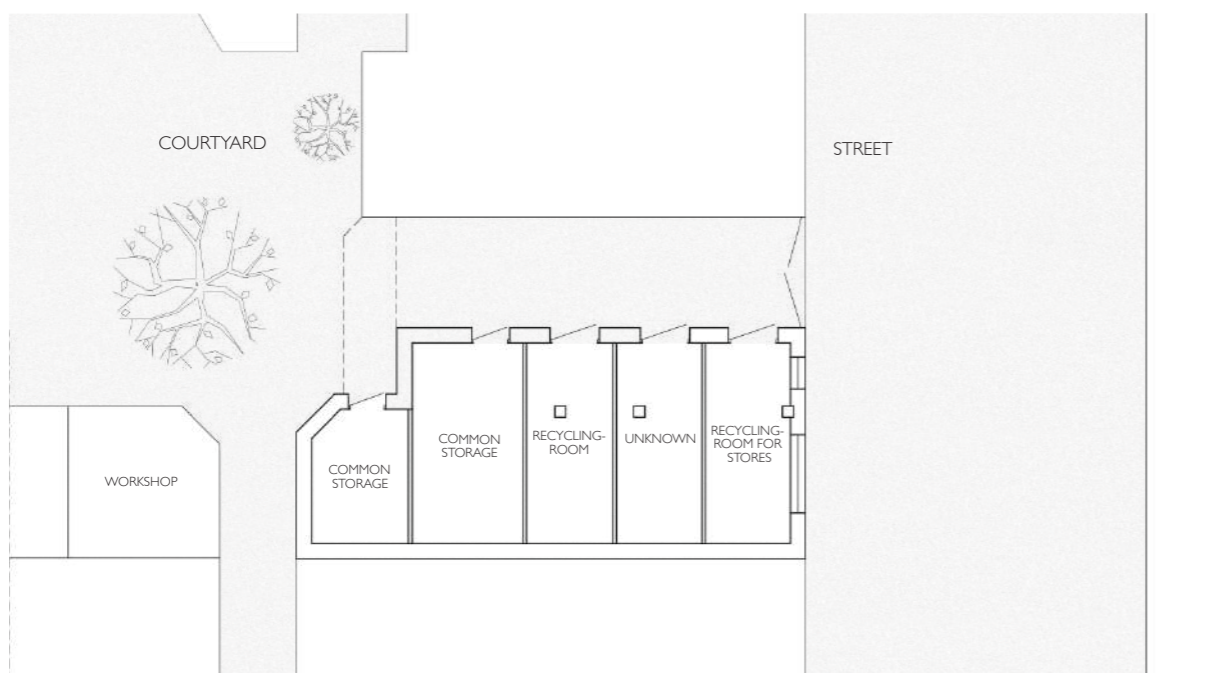
In the BRF Herbert association, located in the eastern part of Haga, there are currently two different systems for managing waste: trash chutes connected to a vacuum waste system and a waste room with some sorting options. The association consists of two parts. The L-shaped new yard is framed by wooden and brick buildings completed in 1989. The old yard is located in one corner of the block and is surrounded by landshövdingehus from the early 20th century (HSB BRF Herbert, n.d.).

The trash chutes connected to the vacuum system is used for household and food waste, and are located in each staircase of the new yard and in the courtyard building on the old yard.

The waste thrown there is vacuum-transported through pipes to a mountain room in Skansberget, where the waste is compressed for transport to the Sävenäs incineration station.

This system does not allow for recycling, but adjacent to the courtyard, there is a recycling room for residents (see sketch of the existing recycling room with surroundings below.) In the recycling room it is possible to sort paper, plastic, metal, and colored or clear glass, and residual waste for items that are too large to fit into the vacuum waste chutes. Regarding food waste, the municipality has requested that they arrange a solution to sort it as well (Board member BRF Herbert, Personal communication, March 19, 2025).

It is not allowed to leave furniture, construction waste, and other bulky items that do not fit into the trash bins in the sorting room. Twice a year, the association usually orders a container where residents can dispose of bulky waste, otherwise, individual members must arrange for removal when there is a large amount of waste (HSB BRF Herbert, n.d.).



FLOOR PLAN 1:200



DESIGN: URBAN INTEGRATION

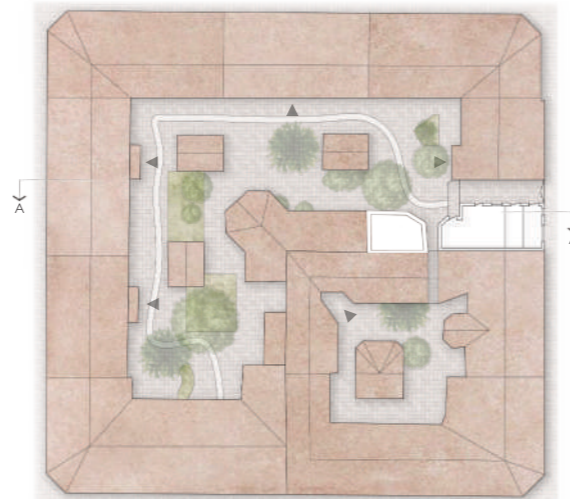
The design proposal for BRF Herbert explores the possibility of transforming the existing waste and storage space into a modern waste management solution, dimensioned for collection twice a week (Kretslopp och Vatten, 2024). The recycling room will be opened up with windows toward the courtyard, along with the existing workshop, creating a cohesive flow between the different functions.

By introducing more sightlines and natural light, the design creates a welcoming environment where activities in the recycling room are easily visible. Once inside, the open space offers a clear overview of the sorting system, making proper waste handling easier. In the same way, the swapping room's contents are made easily visible, enhancing accessibility and promoting reuse.

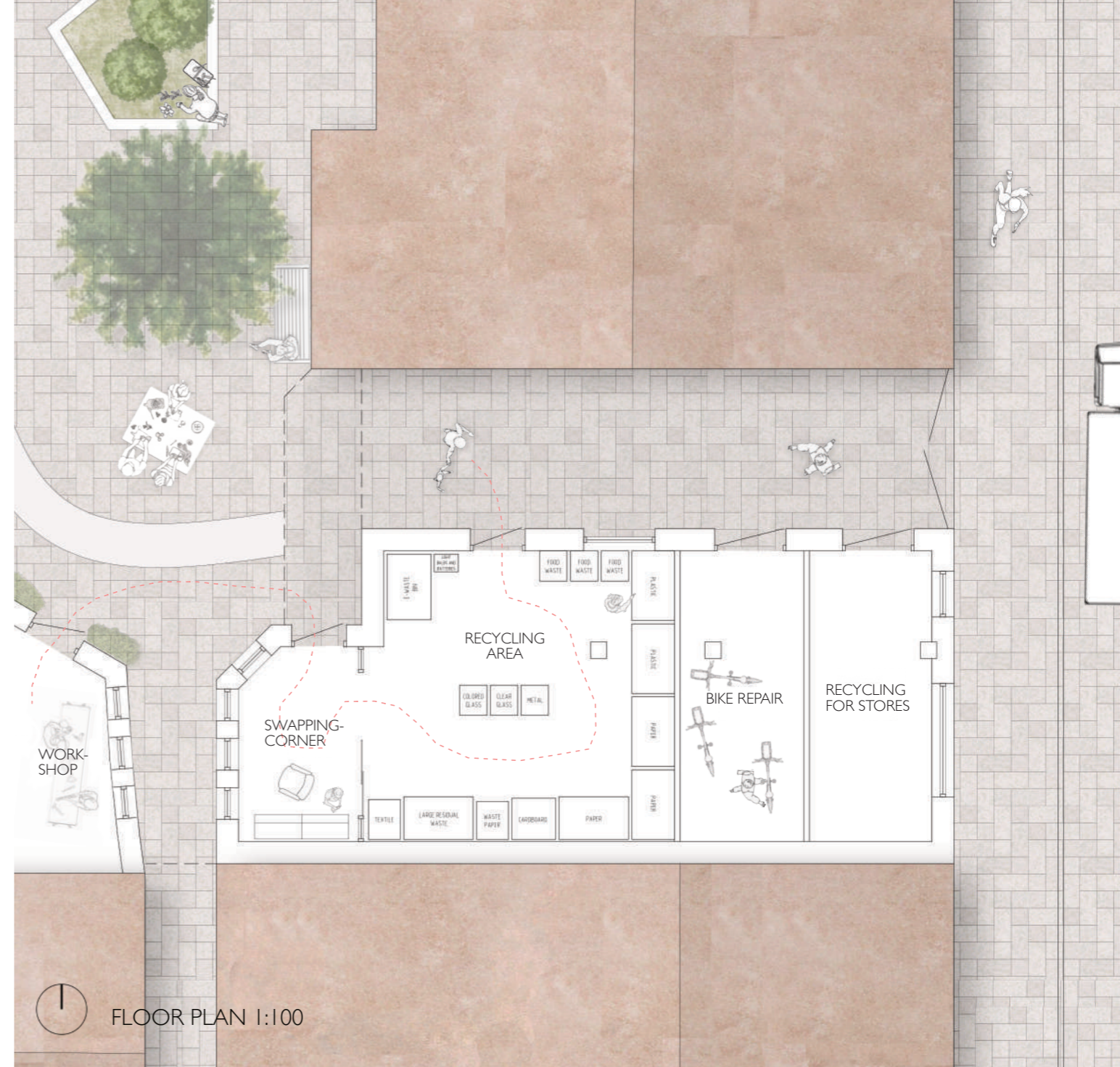
The swapping room is strategically located next to the workshop and along a natural path of movement, allowing people to pass by on their way in or out.

It can be separated from the recycling room to avoid odors and to distinguish the functions.

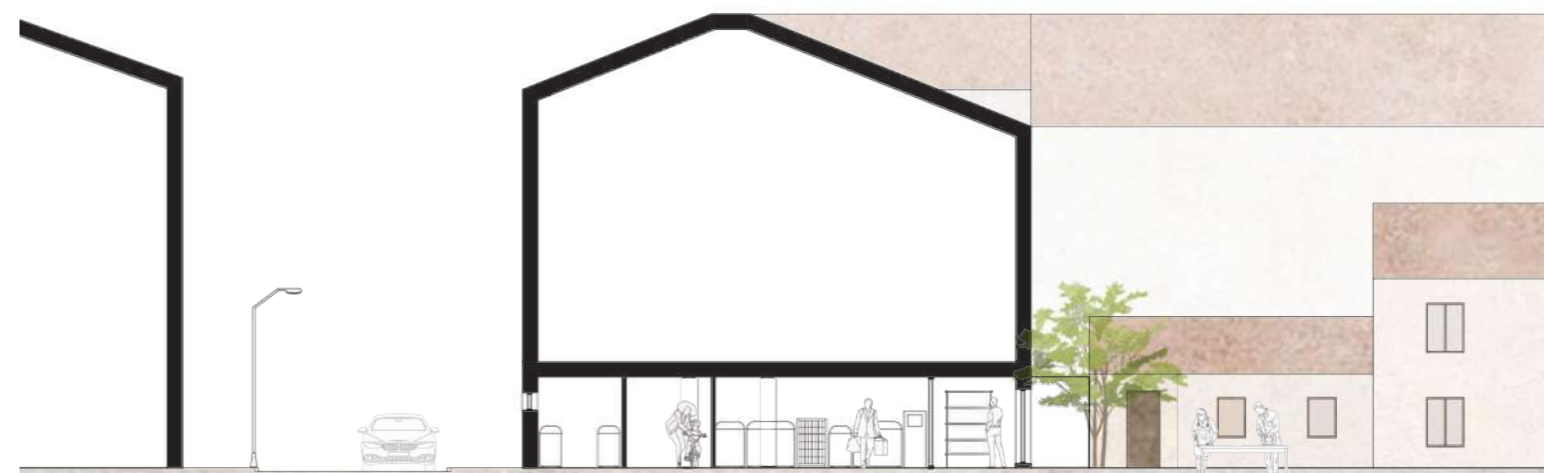
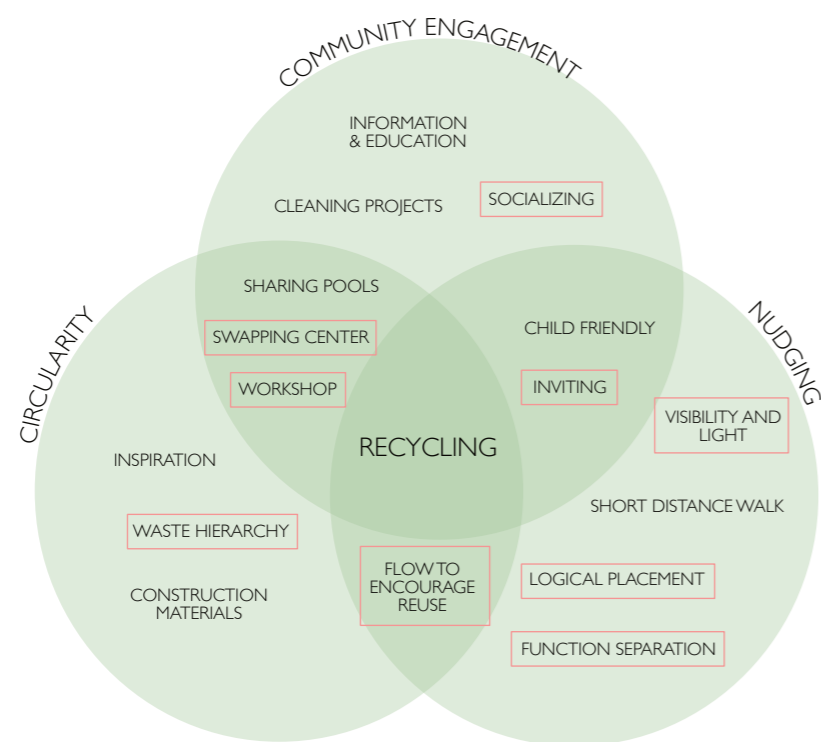
Additional space around the recycling room is used for complementary functions, such as a bicycle repair station. Existing stores will retain access to their current recycling facilities. Just like Robertshöjd, the recycling area has various types of containers, to prevent regular bins from filling up too quickly. Space is also provided for informational signage and possibly inspirational tips.



SITUATION PLAN, COURTYARD



FLOOR PLAN 1:100



SECTION A-A 1:200

BRÄNNÖ

Södra skärgården (The Southern Archipelago) will not receive property-close recycling; instead, waste collection will continue as it does today (Göteborgs Stad, n.d.).

On Brännö, located in Gothenburg's southern archipelago, waste management has long been a topic of discussion, partly because the island still lacks a complete recycling station. For example, there is no facility for recycling plastic, metal, or cardboard. Residents who wish to sort their waste properly have to take it to recycling sites on neighboring islands or to the mainland.

It was decided to move the recycling site from the Brännö Rödsten northern harbor area to the southern harbor area to make room for these containers, and the relocation was planned for the summer of 2024. However, after neighbors appealed the new location, Länsstyrelsen (the County Administrative Board) overturned the decision, and the building permit was denied. It is also not possible to move the waste containers back to their previous location, partly because the area has been leased for other purposes.

As a result, Brännö will lose its recycling site for an indefinite period starting January 7, 2025.

After January 7, residents will have to use the recycling centers in Gothenburg, Styrso Skäret, or other recycling sites in the archipelago (Spanaren, 2024).

This has caused significant frustration on the island, as the opportunity to dispose of glass, paper, and combustible and non-combustible bulky waste will be lost. Everything that is recycled in the rest of the city now risks ending up in household waste. In the past, it was common in the archipelago to throw bulky waste into the sea, into rock crevices, or to burn it. There is a concern that things may once again end up in the wrong places (Lekholm, 2025).

At the same time, many residents support those who appealed the new location, understanding that the noise from the recycling station would disturb more people.

Kretslopp och Vatten (Gothenburg's waste and water management department) has explored other potential locations on Brännö suitable for bulky waste collection and recycling but has not yet found any viable alternatives to the Rödsten harbor. This is mainly because Brännö's roads are too narrow and fragile for the heavy vehicles required to transport large containers.



Figure 12



Figure 13

The Southern Archipelago is characterized by a small-scale and partly traditional settlement, where red wooden boathouses are a notable feature in the landscape.



DESIGN: BLENDING IN

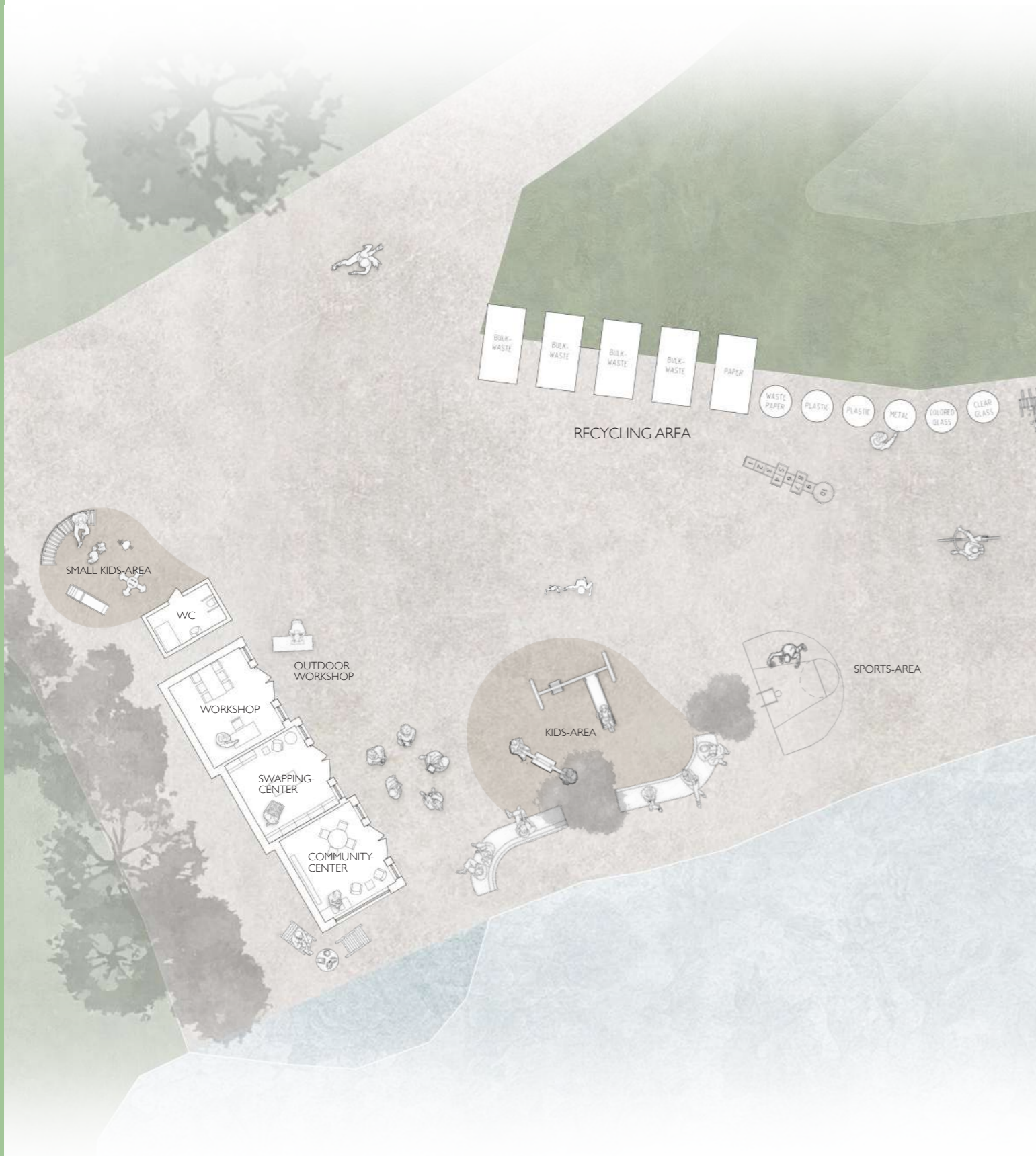
LOADING DOCK

FERRY DOCK

The basis for the waste fractions has been developed based on the municipality's building permit applications for the previously appealed recycling station (see pictures below). The planned handling involves waste being collected by a smaller collection vehicle (rear loader), which transports it a short distance to the loading dock. From there, it is transported further by boat.

The appeals concerned the visual and noise impacts of the facility. To address these concerns, the containers have been placed behind a natural elevation, to shielding them from the surrounding residential area. Additionally, buildings have been strategically positioned to act as visual and acoustic barriers, further reducing the impact on nearby residents.





FLOOR PLAN 1:200

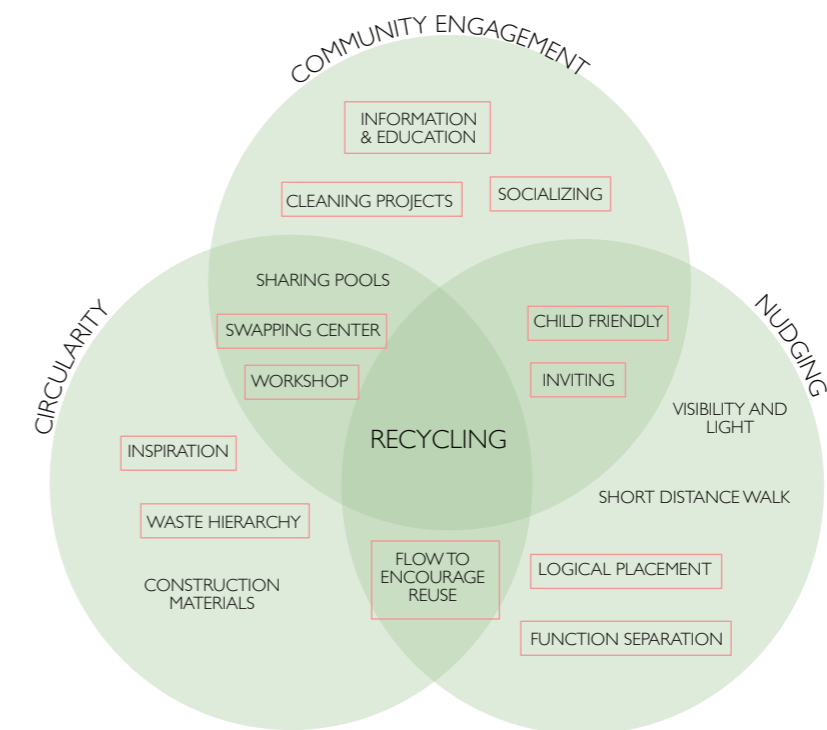


EAST FACADE 1:200

The new proposal is designed as a social space, where recycling is combined with community engagement. The facility includes features such as a shared workshop, a swapping center for exchanging items, access to sports, and child-friendly areas, where children can be entertained while parents spend time recycling. The open and social design emphasizes the fact that studies show that information about friends and neighbors recycling their waste has a significantly great impact on nudging.

The location also has a strategic position, serving as a natural hub on the island. Almost everyone arriving via the Brännö Rödsten ferry passes by, making the red wooden buildings, designed in the style of traditional archipelago architecture, a clear and welcoming gateway to the island.

The design also includes a community room that can be used for activities related to reuse and environmental engagement. For example, inspiring reuse workshops can be held, or communal clean-up days organized to collect litter from the island and its beaches. These activities are not only practical but also serve as powerful tools for raising awareness about littering and its impact on our oceans.



5. DISCUSSION

ROBERTSHÖJD

In Robertshöjd, the introduction of property-close recycling presents several spatial challenges. The new, larger bins do not fit within the current collection system, create more crowding in residents' private gardens, and can be perceived as an intrusion into the outdoor space. Managing bigger and more bins also becomes more physically demanding, especially in narrow passages, level differences, or thresholds. This can be particularly troublesome for the elderly or people with reduced mobility, which in turn risks reducing participation in recycling if the system is perceived as complicated or inaccessible. Compared to carrying a garbage bag to an accessible communal point, it can be significantly more strenuous to roll heavy bins all the way to the collection point.

An architectural solution that addresses this and promotes sustainable resource management is to centralize waste management into shared recycling hubs for groups of nearby households. This removes the need for individual bins, frees up space in gardens, and simplifies logistics for both residents and waste collectors. Placing the hubs at intersections, locations that are frequently passed by, creates a visible and nearby system that can increase participation in recycling. In addition, these hubs can be developed into multifunctional meeting places. For example, integrating a garden center with shared gardening tools and composting, can increase local circular thinking, and serve as educational tools that highlight the connection between consumption, waste, and environmental impact. This can, in turn, contribute to increased environmental awareness and behavioral changes toward more sustainable practices.

In the long term, the proposed solution opens up several possibilities. By creating shared recycling hubs and complementing them with features such as sharing pools and swapping centers,

the site can become a natural gathering point that strengthens both sustainability efforts and community in the area. When individuals observe that friends and neighbors are actively engaged, they are more likely to be motivated to participate themselves.

At the same time, there are certain risks. One challenge is that some residents may find the shared solutions less convenient than having bins for residual and food waste directly outside their homes. This can be challenging, for example for families with young children. One solution could be to make the recycling rooms child-friendly, for example by incorporating child-focused design into the sorting process, or by creating a designated children's area in the swapping room. Another solution is to allow residents to keep the two bins for residual and food waste if they wish, and only use the hub for recycling. The downsides of this is that it becomes more ineffective for waste collectors, and reduces the effective nudging toward recycling. Allowing residual and food waste to be disposed of closer to the home may lead to lower prioritization of recycling. Another challenge is the loss of parking spaces that could also face resistance, especially if no alternatives are offered. A continuation of the work could explore the spatial integration of car-sharing services in the neighborhood, which could free up space and reduce the need for parking lots.

In conclusion, when it comes to Robertshöjd, a lack of engagement or dissatisfaction with changed routines, such as loss of parking lots could lead to opposition among residents. However, key advantages of the hub system are that residents are no longer required to transport heavy bins to collection points each week, and that the shorter walking distance supports the effectiveness of nudging strategies intended to promote consistent recycling behavior.

HAGA

In older, densely built urban environments like Haga in Gothenburg, clear spatial challenges arise with the introduction of property-close recycling. Limited access to space, narrow courtyards, and existing buildings make it difficult to accommodate the number of waste fractions required. At BRF Herbert, this becomes particularly evident as the existing waste room is too small to hold all the necessary sorting. The challenge is not just about lack of space but also the need to balance different functions, for example recycling with storage or greenery. Without well-thought-out solutions, narrow inner courtyards risk becoming overloaded and less usable for residents.

The design proposal for BRF Herbert involves converting existing storage area into a new waste room. Although storage space is often scarce in inner cities, and repurposing it might cause dissatisfaction among residents, this particular area was used for the housing association's summer furniture, which did not take up much space. This shows that with some flexibility, space can be freed up even in tight environments. However, to avoid significant dissatisfaction, much like in Robertshöjd, it is equally crucial here that solutions are developed in dialogue with the residents. Another challenge, if not grounded in collaboration with residents, could be a lack of engagement, which would result in not achieving the desired outcome.

In the long term, the solution presents an opportunity to expand the idea more broadly in dense urban settings. For example, the solution could be further developed by considering shared waste rooms between multiple properties or by developing modular recycling stations that can be placed in courtyards or potential parking areas. By continuing to integrate features such as swapping corners and sharing pools, these spaces can become hubs for sustainability and a sharing economy on a larger scale.

BRÄNNÖ

In the Southern Archipelago, property-close recycling will not be implemented in the same way as in the rest of Gothenburg, which creates unequal access to sustainable waste management. This is particularly evident on Brännö, where recycling stations have been subject to appeals from nearby residents, which has, in practice, led to the island having no functioning recycling facility. The case demonstrates that waste management, in certain contexts, directly conflicts with perceived comfort, aesthetics, and concerns about the impact on the landscape, noise environment, or property value.

Continued resistance, combined with a lack of land, could lead to the further postponement of recycling station implementation, delaying the sustainable transition and reinforcing disparities in access to sustainable solutions within the city. In cases like this, architecture can serve as a tool to create local acceptance.

By designing recycling stations with noise-dampening measures, visual screening, and choices in harmony with the local building tradition, the facilities can blend into the environment rather than being perceived as disruptive. A recycling solution can even become a quality-enhancing part of the place if integrated with social functions. In the design proposal, recycling is combined with a playground, outdoor space, swapping center, workshop, and areas for local activities, contributing to both sustainability and local community. This could hopefully become something that the neighbors find more enjoyable.

On the contrary, just like the cases in Robertshöjd and Haga, practical operation could present a challenge even here. Through architecture, we can create a space that is accessible and appealing enough for people to want to spend time there. But functions such as community rooms, workshops or swapping corners also require continuous engagement, maintenance, and, in some cases, the presence of staff or volunteers; factors that partially lie beyond the scope of architecture. If resources are not available, the idea could have been developed differently. For example, by using simple solutions to acoustically and visually screen the waste sorting fractions, and designing social functions that are self-sustaining.

FUTURE RECYCLING SPACES

A new perspective on recycling, where the principles of the waste hierarchy are actively followed and measures such as reuse, repair, and waste minimization are prioritized, can have long-term consequences for society. Instead of viewing waste as garbage, the focus shifts to seeing it as a valuable resource.

At the societal level, this can lead to more sustainable resource use, as consumption patterns may fundamentally change through a more long-term mindset in which the value of each product is preserved for as long as possible. This new approach to recycling could also strengthen the economy by creating new jobs in repair services, reuse centers, and sharing platforms.

This shift may also have cultural and social effects. If the waste hierarchy becomes the norm rather than the exception, it could promote a stronger sense of responsibility, creativity, and community. Ultimately, it is about building a society where future generations have access to resources and a living planet.

In summary, the design proposals show that recycling spaces can become more than just functional areas. By adding more features and creating inviting environments, recycling spaces can evolve into places where the opportunity to act higher up in the waste hierarchy becomes easier and more natural. The possibility of spontaneous meetings and a sense of community means the space can be perceived as an asset rather than a burden. The hope is that recycling will no longer be something you "have to do," but something people actually want to participate in. In this way, architecture becomes a tool to shape both behaviors and systems in a more sustainable direction.

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FIGURES

FIGURE 1

Processed from Avfall Sverige. (n.d.). *Kommunalt insamlingsansvar för förpackningsavfall från hushåll och samlokaliserade verksamheter*. Avfall Sverige.

FIGURE 2

Processed from Vasyd. (2024, June 1). *Gör rum för miljön*. https://www.vasyd.se/-/media/Dokument_ny_webb/Broschyrer-foldrar/Avfall/G%C3%B6r-rum-f%C3%B6r-milj%C3%B6n-20240601.pdf

FIGURE 3-5

Architizer. (n.d.). [Images of the local recycling center in Nordhavn]. Architizer. <https://architizer.com/projects/local-recycling-centre-nordhavn/>

FIGURE 6-8

Demetriou, D. (2022). [Images of the Zero waste center "Why" in Kamikatsu, Japan]. *The Architectural Review*. <https://www.architectural-review.com/buildings/trash-into-treasure-zero-waste-centre-in-kamikatsu-japan-by-hiroshi-nakamura-nap>

FIGURE 9-11

Robertshöjd. (n.d.). [Images of Robertshöjd area]. Robertshöjds samfällighetsförening. <https://www.robertshojd.se/omr%C3%A5det/historia>

FIGURE 12

Göteborg & Co. (n.d.). *Södra skärgården 1*. [Photography]. <https://www.goteborg.com/guider/en-guide-till-skargarden-sodra-oar>

FIGURE 13

Karlsson, B. (2019). *Södra skärgården 2*. [Photography]. Brännö. <https://branno.nu/semester-pa-vastkusten/>

APPENDIX

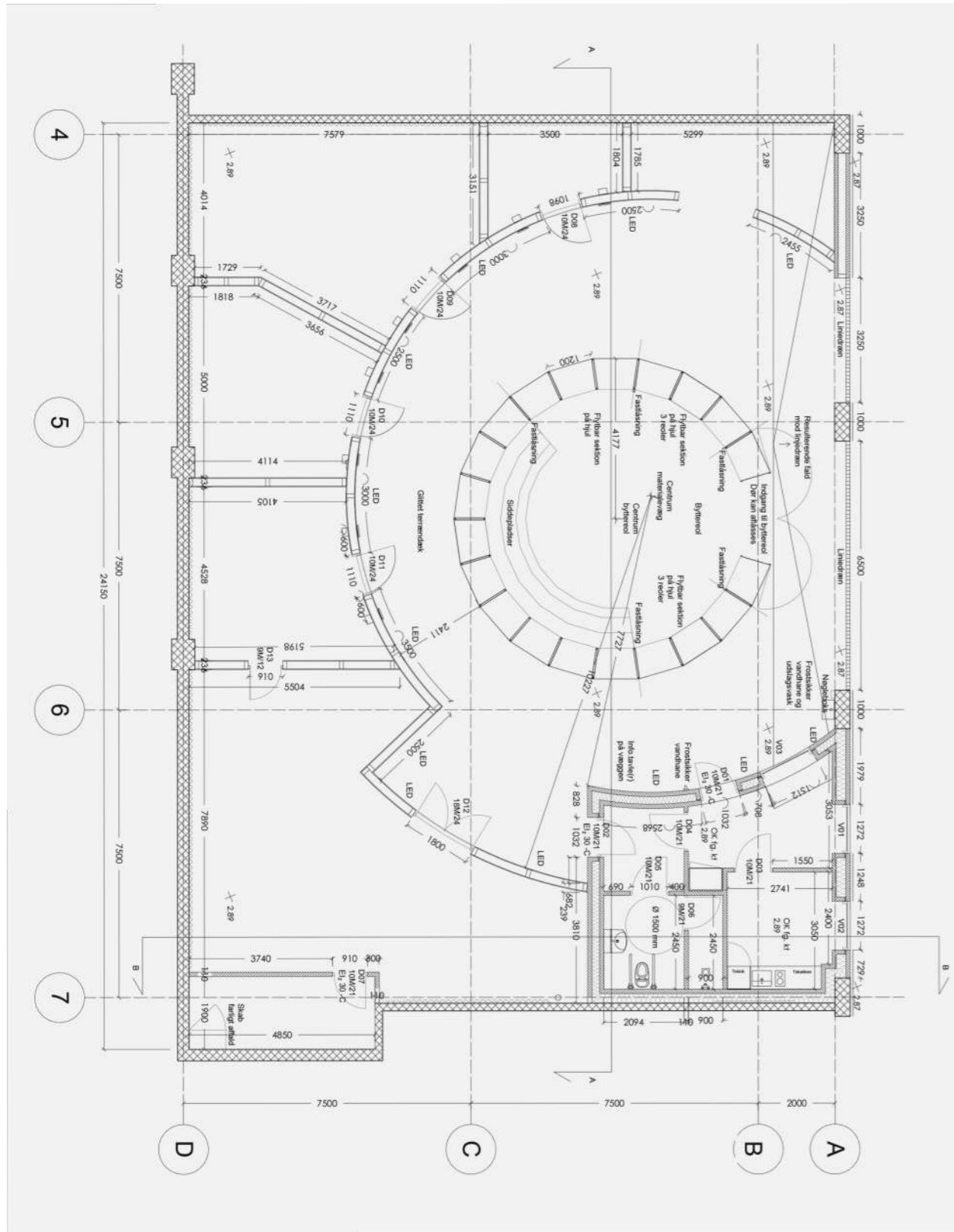
FIGURE 1 (Appendix A)

Lendager. (n.d.). *Nordhavn Recycling Center Drawing*. <https://lendager.com/project/recycle-centre/>

FIGURE 2 (Appendix B)

Why Kamikatsu Zero Waste Center. (n.d.). *WHY Drawings*. <https://why-kamikatsu.jp/en/>

APPENDIX



APPENDIX A - FIGURE 1

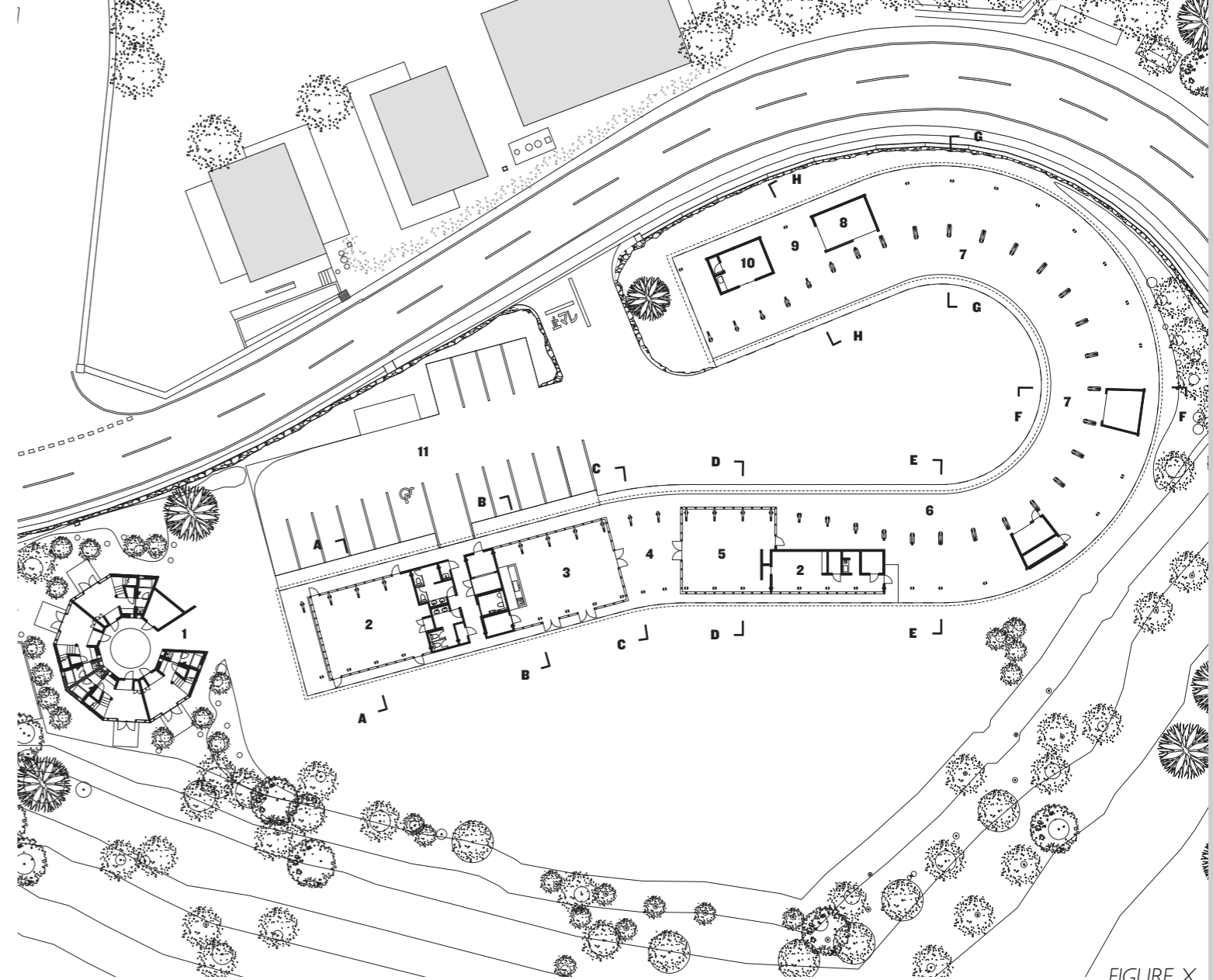
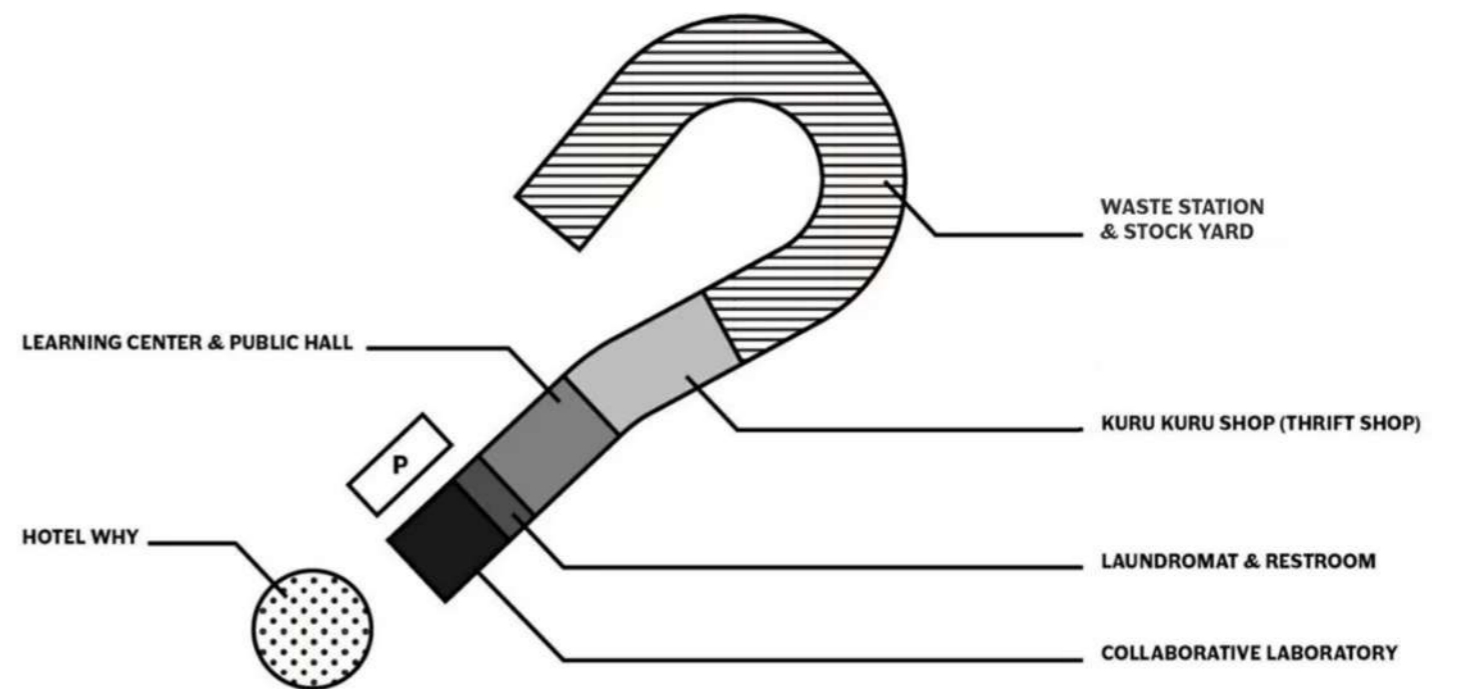


FIGURE X



APPENDIX B - FIGURE 2

AI APPENDIX

Raw material extraction accounts for half of global climate emissions and four-fifths of the loss of biodiversity (Hansson & Davidsson, 2024). Which has consequently led to increased attention on waste recycling in the European Union (EU). correct grammar

There's just a small grammatical issue. The second sentence is a fragment because it starts with "Which". To fix it, you can combine the sentences or adjust the wording:

"Raw material extraction accounts for half of global climate emissions and four-fifths of the loss of biodiversity (Hansson & Davidsson, 2024), which has consequently led to increased attention on waste recycling in the European Union (EU)."

Or, if you prefer to keep two sentences:

"Raw material extraction accounts for half of global climate emissions and four-fifths of the loss of biodiversity (Hansson & Davidsson, 2024). This has consequently led to increased attention on waste recycling in the European Union (EU)."

Also, don't forget to add a space between "on" and "waste".

Would you like more help with this text?



This thesis aims to show how highlighting the architectural perspective can help towards the journey of making recycling easier and counteract poor resource management. Correct grammar

The sentence is almost correct, but it can be made smoother with a few adjustments:

"This thesis aims to show how highlighting the architectural perspective can contribute to making recycling easier and counteracting poor resource management."

Or, if you want to keep the "journey" metaphor:

"This thesis aims to show how highlighting the architectural perspective can support the journey towards making recycling easier and counteracting poor resource management."

These versions flow better and maintain correct grammar. Would you like more help refining the text?



correct grammar: In 2020, the Kretslopp och vatten administration collaborated with four property owners in different areas of Gothenburg in a pilot project aimed at reducing waste. Both residents and staff participated in the work to develop and test measures to reduce the residents' waste. The result was guidance for waste prevention in multi-family housing, where the main points are: reduce paper waste, show statistics of how much is being thrown away and its costs, facilitate borrowing, sharing, and repairing, provide tips on how residents can reduce waste, create swapping spaces in the building, and collect items for reuse (Kretslopp och vatten, 2021).

Your sentence is almost perfect! Here's a slightly refined version for better flow and clarity:

In 2020, the Kretslopp och vatten administration collaborated with four property owners in different areas of Gothenburg on a pilot project aimed at reducing waste. Both residents and staff participated in developing and testing measures to reduce waste. The result was guidance for waste prevention in multi-family housing, with the main points being: reducing paper waste, showing statistics on how much is being thrown away and its associated costs, facilitating borrowing, sharing, and repairing, providing tips on how residents can reduce waste, creating swapping spaces in the building, and collecting items for reuse (Kretslopp och vatten, 2021).

Let me know if you'd like any further adjustments!

Correct grammar: In addition to making gains by generating less waste, it was observed that in multi-family housing, measures to reduce waste can increase community and perceived safety. The residents had something in common to talk about and could meet in places like exchange rooms, carpentry workshops, on exchange days, and around lending pools.

"It doesn't happen much in a stairwell. So, it's also a social thing here - we get a reason to talk to each other," says a tenant in the pilot project.

Your passage is mostly great! Here's a slightly refined version for smoother readability and improved grammar:

In addition to achieving reductions in waste generation, it was observed that in multi-family housing, measures to reduce waste can also increase community engagement and perceived safety. The residents had something in common to talk about and could meet in spaces such as exchange rooms, carpentry workshops, on exchange days, and around lending pools.

"It doesn't happen much in a stairwell. So, it's also a social thing here - we have a reason to talk to each other," says a tenant in the pilot project.

Let me know if you need any more tweaks!

Correct grammar: The literature study will begin include research about of the new law on property-close recycling to understand the regulatory framework that will govern recycling practices. The next step involves examining waste management designs on both large and small scales to assess existing methods and technologies in the field. Additionally, the study will also explore innovative design references that can inspire and inform new approaches. Theoretical frameworks will be reviewed to provide a foundation. Relevant statistics, such as recycling rates, environmental impact metrics, resource usage patterns, and data on lifestyle and consumer habits, can be examined to contextualize the study and highlight key areas for improvement.

Here's a corrected version of your text with improved grammar:

The literature study will begin by including research on the new law regarding property-close recycling to understand the regulatory framework that will govern recycling practices. The next step involves examining waste management designs on both large and small scales to assess existing methods and technologies in the field. Additionally, the study will explore innovative design references that can inspire and inform new approaches. Theoretical frameworks will be reviewed to provide a foundation. Relevant statistics, such as recycling rates, environmental impact metrics, resource usage patterns, and data on lifestyle and consumer habits, will be examined to contextualize the study and highlight key areas for improvement.

The main changes involve adjusting "begin include" to "begin by including" and "about of" to "on" for clarity. Let me know if you'd like further adjustments. ↓

Correct grammar: Various sketching and visualization techniques will be used to express and understand the spaces explored in the thesis. Conceptual sketching will explore different solutions and ideas without being constrained by practical limitations. Models and prototypes will test and communicate ideas in a more concrete manner, helping to uncover potential improvements and issues early on. Diagramming will be used to analyze the current site, logistics, and flows, as well as future projections.

Your text is already well-written, but here's a slight refinement for clarity and flow:

Various sketching and visualization techniques will be used to express and understand the spaces explored in the thesis. Conceptual sketching will allow for the exploration of different solutions and ideas without being constrained by practical limitations. Models and prototypes will test and communicate ideas in a more concrete manner, helping to uncover potential improvements and issues early on. Diagramming will be used to analyze the current site, logistics, and flows, as well as future projections.

This version makes a minor adjustment with "allow for the exploration" instead of just "explore," making it a little more fluid. Let me know if you'd like further changes!



Correct grammar: The Haga district is located as a well-defined unit to the west of Gothenburg's city center. It is Gothenburg's first suburb and working-class neighborhood. The oldest parts were established in the mid-1600s, and over time, the district has expanded and become more densely built. The current buildings mainly consist of wooden houses, landshövdingehus (traditional Swedish houses), and stone houses, located along cobblestone streets. Due to its age and distinctive architecture, the Haga environment is unique both within Gothenburg and the country as a whole.

In the BRF Herbert association, located in the eastern part of Haga, there are currently two different systems for managing waste: trash chutes connected to a vacuum waste system and a waste room with some sorting options. The association consists of two parts. The L-shaped new yard is framed by wooden and brick buildings completed in 1989. The old yard is located in one corner of the block and is surrounded by landshövdingehus from the early 20th century. For household waste, there are trash chutes leading to the vacuum waste system in each staircase of the new yard and in the courtyard building on the old yard. The waste thrown there is collected and sucked through pipes to a mountain room in Skansberget, where the waste is compressed for transport to the Sävénäs incineration station.

This system does not allow for recycling, so the association advises residents to throw all types of household waste together. Food waste, all types of plastic, metal, cardboard, and paper packaging, etc., are mixed, placed in plastic bags, and thrown into the vacuum waste chutes.

At Husargatan 9, there is a waste sorting room for residents, where it is possible to leave certain types of waste: newspapers, glass, cardboard, electronics, light bulbs, batteries, and mixed waste for items that are too large to fit into the vacuum waste chutes or that cannot be placed in the sorting bins. Due to hygiene reasons, the association informs that residual and food waste are not allowed to be disposed of in the sorting room.

It is not allowed to leave furniture, construction waste, and other bulky items that do not fit into the trash bins in the sorting room. Two days a year, the association usually orders a container where residents can dispose of bulky waste, otherwise, individual members must arrange for removal when there is a large amount of waste (HSB BRF Herbert, n.d.).

The Haga district is located as a well-defined area to the west of Gothenburg's city center. It is Gothenburg's first suburb and working-class neighborhood. The oldest parts were established in the mid-1600s, and over time, the district has expanded and become more densely built. The current buildings mainly consist of wooden houses, landshövdingehus (traditional Swedish houses), and stone houses, located along cobblestone streets. Due to its age and distinctive architecture, the Haga area is unique both within Gothenburg and the country as a whole.

In the BRF Herbert association, located in the eastern part of Haga, there are currently two different systems for managing waste: trash chutes connected to a vacuum waste system and a waste room with some sorting options. The association consists of two parts. The L-shaped new yard is framed by wooden and brick buildings completed in 1989. The old yard is located in one corner of the block and is surrounded by landshövdingehus from the early 20th century. For household waste, there are trash chutes leading to the vacuum waste system in each staircase of the new yard and in the courtyard building in the old yard. The waste thrown there is collected and sucked through pipes to a mountain room in Skansberget, where it is compressed for transport to the Sävénäs incineration station.

This system does not allow for recycling, so the association advises residents to throw all types of household waste together. Food waste, all types of plastic, metal, cardboard, and paper packaging, etc., are mixed, placed in plastic bags, and thrown into the vacuum waste chutes.

At Husargatan 9, there is a waste sorting room for residents, where it is possible to leave certain types of waste: newspapers, glass, cardboard, electronics, light bulbs, batteries, and mixed waste for items that are too large to fit into the vacuum waste chutes or cannot be placed in the sorting bins. For hygiene reasons, the association informs that residual waste and food waste are not allowed to be disposed of in the sorting room.

It is not allowed to leave furniture, construction waste, and other bulky items that do not fit into the trash bins in the sorting room. Twice a year, the association usually orders a container where residents can dispose of bulky waste, otherwise, individual members must arrange for removal if there is a large amount of waste (HSB BRF Herbert, n.d.).

I made minor edits for clarity, flow, and consistency, such as using "area" instead of "environment" for a more natural-sounding expression in English, and "residual waste" instead of "residual and food waste" for consistency. I also corrected the phrasing of the last paragraph for clarity. Let me know if you need any further adjustments!



Correct grammar: For multi-family housing, the property owner is responsible to make the space needed for property-close recycling and for ensuring that waste management functions effectively. Good service, proper sorting, and clear information are prerequisites for effective waste management in multi-family buildings (Göteborgs Stad, n.d.).

Here's the corrected version for improved grammar:

"For multi-family housing, the property owner is responsible for providing the space needed for property-close recycling and for ensuring that waste management functions effectively. Good service, proper sorting, and clear information are prerequisites for effective waste management in multi-family buildings (Göteborgs Stad, n.d.)."

Changes made:

- "Responsible to make" has been changed to "responsible for providing" for correct usage.



Another word for waste management

Another term for "waste management" could be "waste disposal" or "waste handling." These terms can be used depending on the context. Would either of these work for your needs?

Waste management often creates a challenge in developing solutions that respect urban and landscape aesthetics, as well as the natural and cultural value of the area, while still meeting the requirements for waste management.

Your sentence is clear, but to avoid repetition of "waste management," you could revise it slightly for better flow:

"Waste management often creates a challenge in developing solutions that respect urban and landscape aesthetics, as well as the natural and cultural value of the area, while still meeting the requirements for waste disposal."

Alternatively, you could rephrase the second "waste management" as something like "waste handling needs" or "waste control standards," depending on the exact meaning you want to convey. Would you like further suggestions or adjustments?

Correct grammar: Everything that is recycled in the rest of the city now risks ending up in household waste. Before in the archipelago it was common to throw bulky waste into the sea, into rock crevices, or to burn it. One can fear that things will end up in the wrong places again.

Here's a grammatically correct and slightly polished version of your text:

Everything that is recycled in the rest of the city now risks ending up in household waste. In the past, it was common in the archipelago to throw bulky waste into the sea, into rock crevices, or to burn it. There is a concern that things may once again end up in the wrong places.

Let me know if you'd like it to sound more formal or conversational.



Correct grammar: This system does not allow for recycling, but adjacent to the courtyard, there is a recycling room for residents

Here's a grammatically correct and smoother version of your sentence:

"This system does not allow for recycling, but adjacent to the courtyard, there is a recycling room for residents."

Minor correction: "an recycling room" → "a recycling room" (since "recycling" begins with a consonant sound). Let me know if you'd like to rephrase it for a more formal or technical tone!



Regarding food waste, the municipality has asked them to arrange a solution so that even food waste can fit. Correct grammar

Here's a grammatically correct and smoother version of your sentence:

"Regarding food waste, the municipality has requested that they arrange a solution to accommodate it as well."

Or slightly more formal:

"With regard to food waste, the municipality has requested a solution that ensures it can be accommodated."

Let me know the tone you're aiming for — academic, technical, or more conversational?

📄 ✎

As mentioned in the theory chapter, studies shows that information about friends and neighbors also recycling their waste had a significantly great impact on nudging. correct grammar

As mentioned in the theory chapter, studies show that information about friends and neighbors also recycling their waste has a significantly greater impact on nudging.

📄 ✎

In the next chapter, which focuses on concept and design, important insights can be drawn from both references. Both Nordhavn Recycling Center and project WHY in Kamikatsu clearly demonstrate that recycling centers can successfully be developed into more than just places for waste management. They can be multifunctional, social hubs by integrating and designing functions such as workshops, swapping rooms, and communal meeting spaces. With this strategy environments are created that not only promote recycling but also strengthen community ties and increase engagement with sustainability throughout the entire waste chain. When spaces are designed to encourage sharing, repair, and reuse, they help lay the foundation for a circular culture. Correct grammar

Your text is clear and well-written. Here's a polished version with a few minor grammatical and stylistic adjustments to improve flow and clarity:

In the next chapter, which focuses on concept and design, important insights can be drawn from both references. Both the Nordhavn Recycling Center and Project WHY in Kamikatsu clearly demonstrate that recycling centers can be successfully developed into more than just places for waste management. They can become multifunctional social hubs by integrating and designing features such as workshops, swap rooms, and communal meeting spaces.

Through this strategy, environments are created that not only promote recycling but also strengthen community ties and increase engagement with sustainability throughout the entire waste chain. When spaces are designed to encourage sharing, repair, and reuse, they help lay the foundation for a circular culture.

Is this good english?

An architectural solution is to centralize waste management into shared recycling hubs for groups of nearby households. This removes the need for individual bins, frees up space in gardens, and simplifies logistics for both residents and waste collectors. By placing the hubs at intersections, a commonly passed-through location creates a visible system which increases participation in recycling.

You're very close! The passage is clear, but a few small adjustments will improve the flow and grammar. Here's a refined version:

"An architectural solution is to centralize waste management into shared recycling hubs for groups of nearby households. This removes the need for individual bins, frees up space in gardens, and simplifies logistics for both residents and waste collectors. Placing the hubs at intersections—locations that are frequently passed by—creates a visible system that increases participation in recycling."

Key improvements:

- Changed "a commonly passed-through location" to "locations that are frequently passed by" for smoother and more natural phrasing.
- Adjusted "creates a visible system which increases" to "that increases" for better grammatical flow (especially in formal writing, "that" is generally preferred for defining clauses).

Would you like to make it even more concise or tailored for a professional report?

Can i say: creates a visible and close system that can increase participation in recycling?

Yes, your sentence is grammatically correct and clear:

"Creates a visible and close system that can increase participation in recycling."

However, "close system" might be a bit ambiguous. If you mean that it's physically near to residents, you could clarify it slightly for smoother understanding. Here are a couple of refined options:

Clearer alternatives:

- "Creates a visible and easily accessible system that can increase participation in recycling."
- "Creates a visible and conveniently located system that can increase participation in recycling."
- "Creates a visible and nearby system that may boost recycling participation."

Would you like help integrating this into a larger paragraph?

📄 ✎

Correct this: In the long term, the solution presents an opportunity to expand the idea more broadly in dense urban settings. For example the solution could be further developed by considering shared waste rooms between multiple properties, or develop modular recycling stations that can be placed in courtyards or potential parking areas. By continue integrating features such as swapping corners and sharing pools, the spaces can become a hub for sustainability and the sharing economy in a bigger scale.

Here's a corrected and more polished version of your text:

"In the long term, the solution presents an opportunity to expand the idea more broadly in dense urban settings. For example, the solution could be further developed by considering shared waste rooms between multiple properties or by developing modular recycling stations that can be placed in courtyards or potential parking areas. By continuing to integrate features such as swapping corners and sharing pools, these spaces can become hubs for sustainability and the sharing economy on a larger scale."

Key improvements:

1. "For example" needs a comma after it for clarity.
2. "Could be further developed by considering" is refined to "could be further developed by considering" and "or by developing" to maintain parallel structure.
3. "By continue integrating" should be "By continuing to integrate" for correct verb form.
4. "In a bigger scale" is changed to "on a larger scale", which is more commonly used.

Let me know if you'd like to make any additional changes!

📄 ✎

Översätt till eng: Framtidens återvinningsplatser – mer än bara sopor
Sammanfattningsvis visar designförslagen att återvinningsplatser kan bli mer än enbart funktionella ytor. Genom att tillföra fler funktioner och skapa inbjudande miljöer kan de utvecklas till platser där möjligheten att agera högre upp i avfallstrappan blir enklare och mer naturlig. Möjligheten till spontana möten och gemenskap gör att platsen kan upplevas som en tillgång snarare än en börda. Förhoppningen är att återvinning då inte bara blir något man "måste göra", utan något man faktiskt vill delta i. På så sätt blir arkitektur verktyg för att forma både beteenden och system i en mer hållbar riktning.

Here's the translation of your text into English:

"The Recycling Spaces of the Future – More Than Just Waste"

In summary, the design proposals show that recycling spaces can become more than just functional areas. By adding more features and creating inviting environments, they can evolve into places where the opportunity to act higher up in the waste hierarchy becomes easier and more natural. The possibility of spontaneous meetings and a sense of community means the space can be perceived as an asset rather than a burden. The hope is that recycling will no longer be something you "have to do," but something people actually want to participate in. In this way, architecture becomes a tool to shape both behaviors and systems in a more sustainable direction.

Let me know if you'd like further adjustments!

📄 ✎

