REIHERSTIEGVIERTEL
HAMBURG

HafenCity Universität Hamburg

Bauer A. | Guerra J. | Jiménez M. | Stortz T. | Yanachek J.

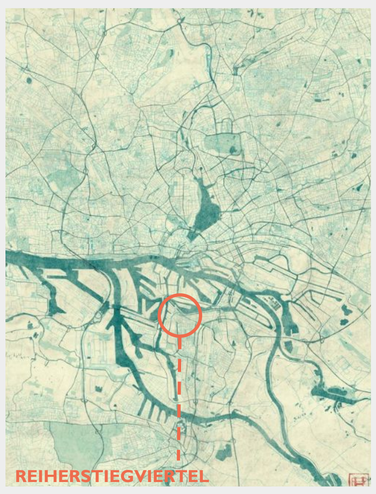
ABSTRACT

The Reiherstieg is a neighborhood in the Wilhelmsburg district of Hamburg, located south of the Elbe river, which is home to almost 22000 residents [7]. In recent years, the neighborhood has received much investment from the Internationale Bauausstellung Hamburg (IBA), has been seen as an attractive and vibrant place to live for young people, and has been at the center of a debate on rising rents and gentrification.

An urban analysis of the Reiherstieg was conducted through the use of design tools such as AutoCAD and Photoshop, geospatial information from the city, as well as an extensive literature review. Indicators for mobility, energy, water, materials, and urban density were assessed. As a result of our work, we concluded that interventions in the scopes of water and mobility could be very beneficial to the area.

Being situated on an island, the neighborhood's location poses a unique set of challenges which were analyzed in Project II. Specifically, connectivity to other areas of Hamburg are limited, and the neighborhood's soil conditions do not allow for much infiltration of water. The interventions proposed as part of Project II aim to alleviate these issues, and enhance the overall livability of the Reiherstieg.

LOCATION OF THE NEIGHBORHOOD



SECTIONS THROUGH NEIGHBORHOOD

GEORG WILHELM STR.

VERINGSTRASSE

BAUVEREINSWEG

EXPERT CONSULTATIONS

MOBILITY
Dr. phil. Thomas Prill

WATER
Univ.-Prof. Dr.-Ing. Wolfgang Dickhaut

REFERENCES

- Icons: "freepik" (n.d.). flaticon. Retrieved July 20, 2020 from https://www.flaticon.com/de/autoren/freepik [1]
- Gehl, J. (2010). Cities for people. Island press. [2]
- Diagrams from: "Geoportal". (2020). Retrieved on June 07, 2020 from https://geoportal-hamburg.de/geo-online/ [3]
- Government of Philadelphia (2014). *Green Streets Design Manual.* Retrieved on July 12, 2020 from https://www.phila.gov/media/20160504172218/Green-Streets-Design-Manual-2014.pdf [4]
- "Hamburger-HBF.de" (2014). Liniennetz Hamburg. Retrieved July 20, 2020 from https://www.hvv.de/resource/blob/10910/a76e3dcf26c96b62abb00c0cb4039a85/metropolregion-regionalverkehrsplan-data.pdf [5]
- National Association of City Transportation Officials (2013). *Urban Bikeway Design Guide.* Retrieved on July 12, 2020 from https://nacto.org/publication/urban-bikeway-design-guide/ [6]
- Statistisches Amt für Hamburg und Schleswig-Holstein. (2018). *Hamburger Stadtteil-Profile Berichtsjahr 2018.* Retrieved from: https://www.statistik-nord.de/fileadmin/Dokumente/NORD.regional/NR21_Statistik-Profile_HH-2018.pdf [7]
- Photos: Taken by the authors (2020). [8]
- PNG trees and autos for sections: "FreePNGming". (n.d). Retrieved on July 15, 2020, from https://freepngimg.com/nature/tree [9]
- "Hamburg Wasser". (2020). *Leitungsbestandsplan. Hamburger Stadtentwässerung AöR.* Retrieved from the Hamburg Wasser administration [10]
- Maheshwari, B., Singh, V. P., & Thoradeniya, B. (2016). Balanced urban development: is it a myth or reality?. In *Balanced urban development: Options and strategies for liveable cities* (pp. 3-13). Springer, Cham [11]
- Non - Planted Filters. Sustainable Sanitation and Water Management Toolbox. (2020). Non Planted Filters. Retrieved from https://sswm.info/sswm-university-course/module-6-disaster-situations-planning-and-preparedness/further-resources/non-planted-filters [12]
- Picture - Green Roof Sample: "BimObject". (n.d.) Retrieved on July 20, 2020 from https://www.bimobject.com/en/content/showproductimage/77e7d110-fcf8-45c9-a87c-be8d7d59f690/18013/default?ver=20160515195502 [13]

Overview


Ernst-August watergate


Stübenplatz - local market place


Intersection: Vogelhüttendeich/Veringstraße


Vogelhüttendeich - mixed use


Sanitasstraße - Residenital zone

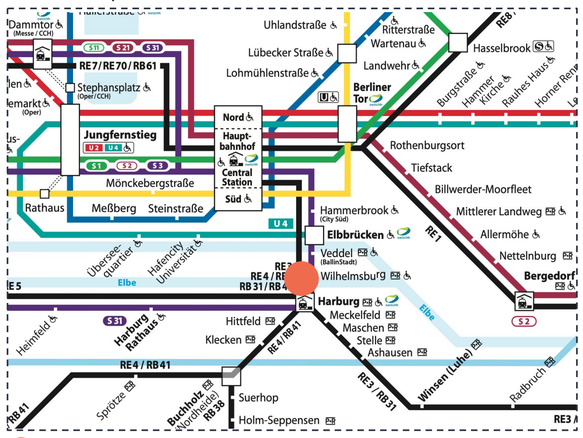

Honigfabrik - Cultural Centre

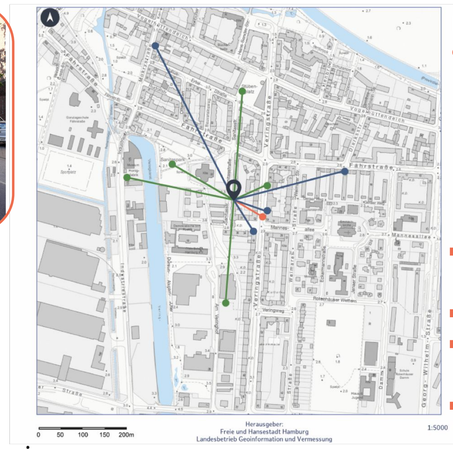

Veringstraße - mixed use


Georg-Wilhelmstraße


Emmauskirche

Public transport network



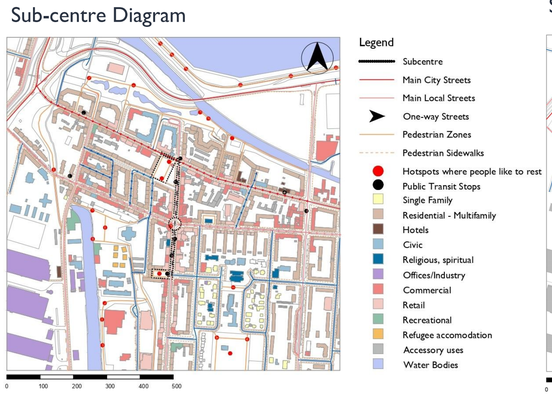


Facts and figures of Wilhelmsburg

- Density: 1.528 inhabitants per km²
- Area: 35 km²
- Population: 54.000 inhabitants
- Character: mixed use

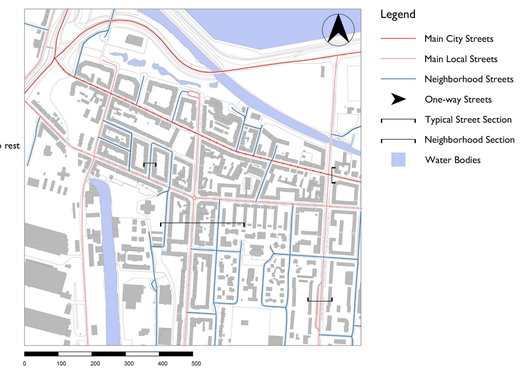
Urban Analysis

Sub-centre Diagram



Length **350 m**
Time to traverse **4'30"**
Street width **6 m**
Pedestrian zone width **4 - 5 m**

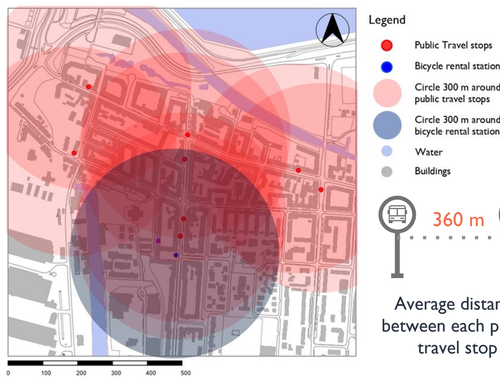
Street Hierarchy Diagram



Average of **number of vehicles** per day from Monday to Friday:

Main city streets **21000**
Main local street **11000**

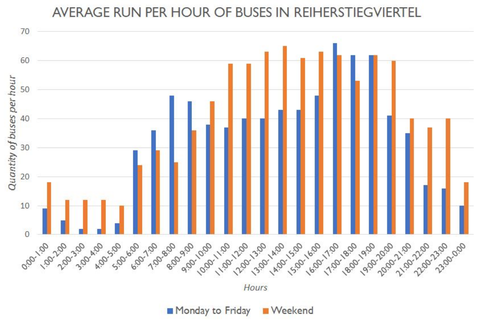
Travel diagram - Public transport

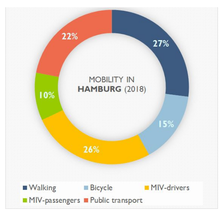


360 m

Average distance between each public travel stop

AVERAGE RUN PER HOUR OF BUSES IN REIHERSTIEGVIERTEL





Bus stations **8**
Bike-sharing station **1** (23 bikes)

Supply does not meet demand

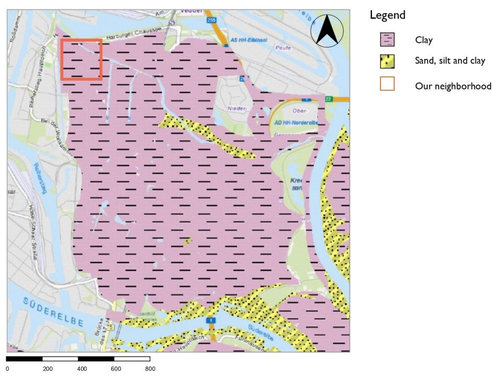
Open Space Diagram

Green Roof

Natural features **49%**
Public spaces **19%**
Buildings + streets **32%**

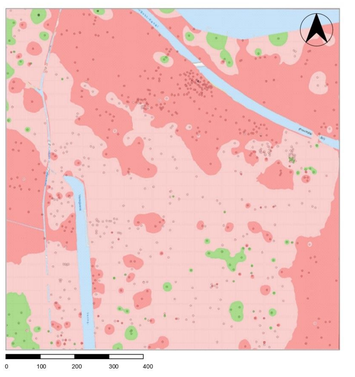
Potential of green roofs **46%**
Already existing green roofs **2%**
Not suitable for green roof **52%**

Surface Materials & Permeability



Clay
Coefficient of Permeability **<10^{-7} cm/s**
Degree of permeability **Very Low**

Groundwater & Potential Infiltration of Soil



Depth of groundwater **0 - 2 m**

Infiltration unlikely

Research questions

What are the measures that can be used to improve liveability and also contribute to sustainable urbanism in the district?

Mobility

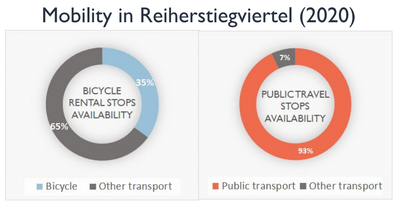
To what extent can alternative transport options relieve congestion on the 13 bus and S-bahn connection into the city center (and thereby improve/increase mobility for the Reiherstiegviertel)?

Water

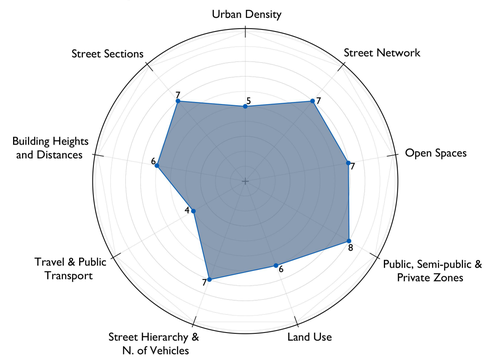
Which soft measures of water management can be applied to decrease the surface runoff in the Reiherstiegviertel?

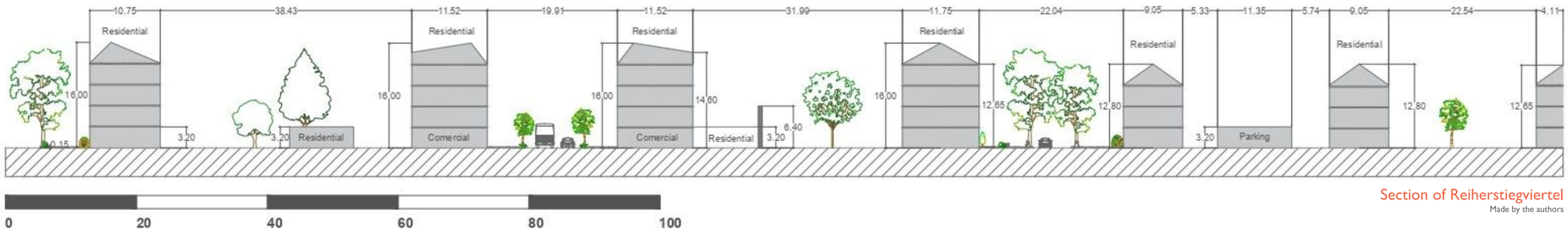
Green Roof Potentials

Mobility in Reiherstiegviertel (2020)



Radar Chart Analysis





Section of Reiherstiegviertel
Made by the authors

Conveying Water, Moving People: Enhancing the **Livability** of the Reiherstieg

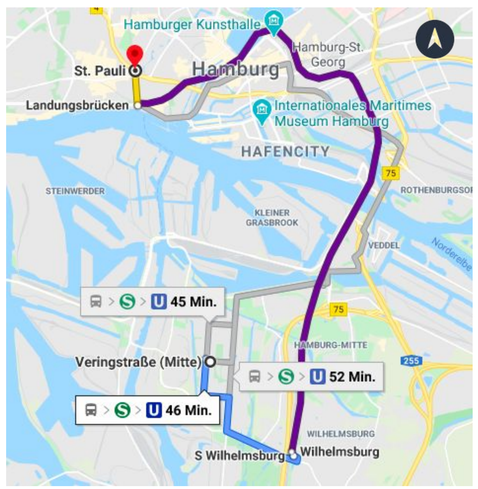
PROJECT II

Instructors: Marianna Giannousopoulou, Tim Fettback & Prof. Ingo Weidlich
Tutor: Maria Moleiro Dale

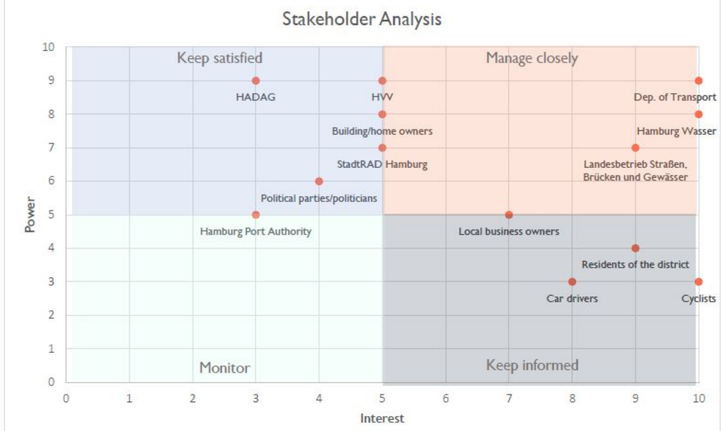
In-depth Analysis

Land Genesis

Transit Connection



Stakeholder Analysis

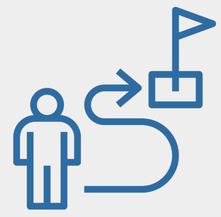


LogFrame Analysis

Overall objective

The livability of Reiherstieg will be enhanced through the use of decentralized green infrastructure for stormwater management, and through increased mobility options.

Direct Objective | Purpose



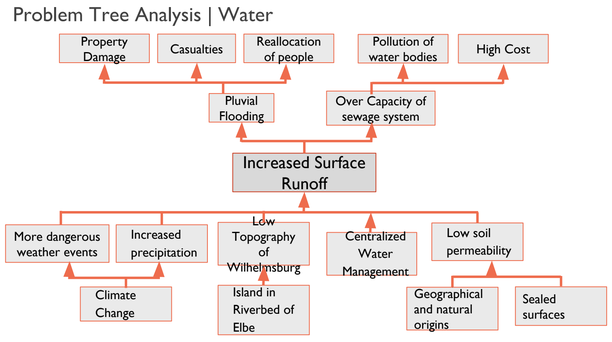
1. Decrease in 10% high flood risk on Vogelhüttendeich and Georg-Wilhelm Straße.

2. A 25% increase in the no. of bicycle trips into/out of the district.

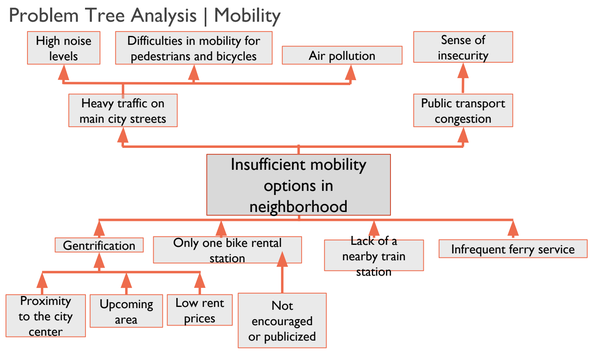
3. A 19.39% increase in the weekly no. of ferry trips into/out of the district.

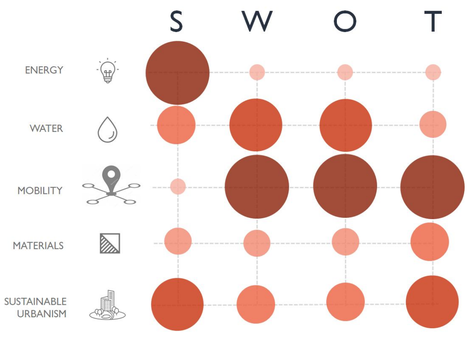
Strategy Analysis and Defining the Objectives

Problem Tree Analysis | Water

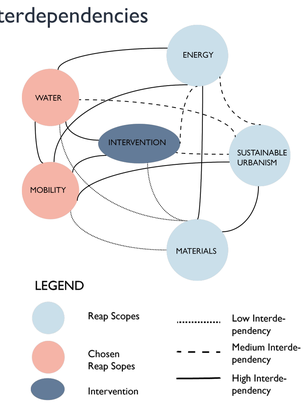


Problem Tree Analysis | Mobility



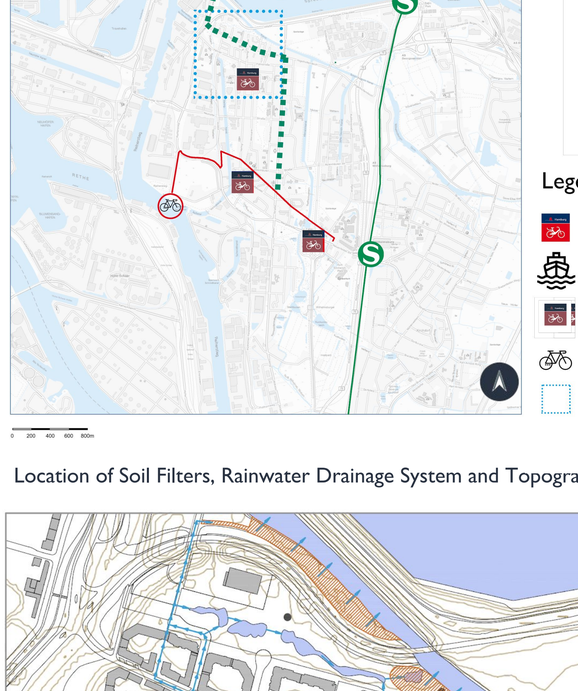


Interdependencies



Our Proposed Interventions

Integrated Planning Activities for **Mobility** and **Water**



Concept Diagram

Bike Lane connection to ferry station

New StadtRad Station

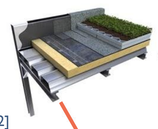
Soil Filters

[12]

New Bike Lane on Vogelhüttendeich and improvement on Georg- Wilhelm Strasse

[6]

Green Roofs



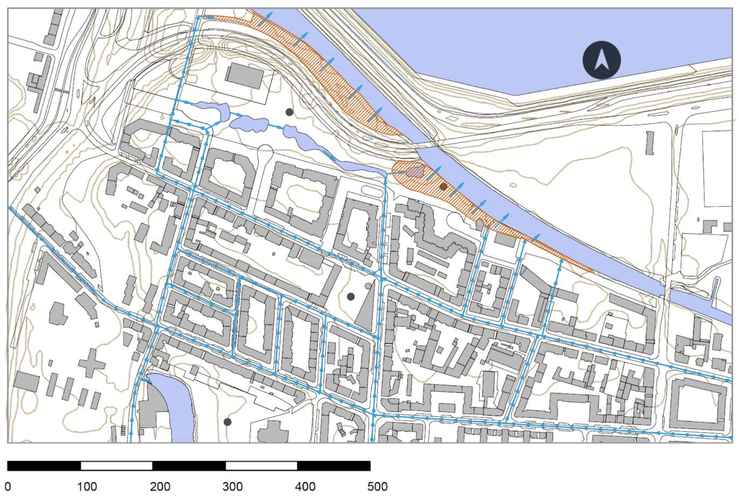
[12]

Legend

- New StadtRad Station
- Ferry Station
- Existing StadtRad Station
- Bike Path (Loop)
- Project Area

Tree Bumpouts as part of Bike Lanes [4]

Location of Soil Filters, Rainwater Drainage System and Topograpny



[10]

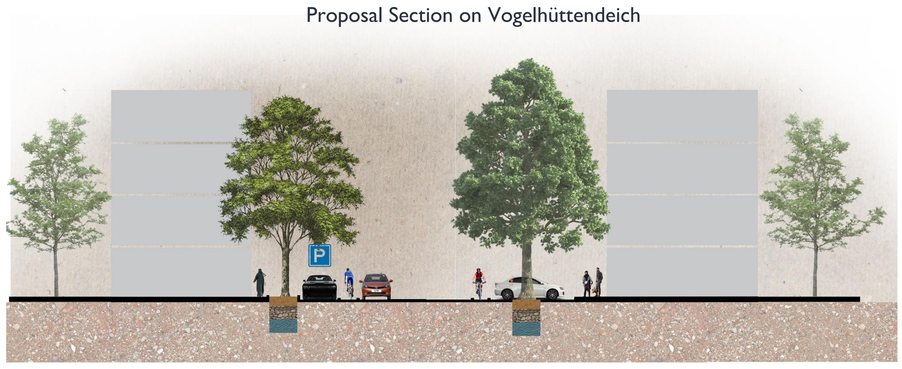
Legend

- Water Bodies
- Influx into Water Bodies
- Rainwater Drainage System
- Usable space for Soil Filters
- Levels 1.25 m

Coverage area of soil filters **11,189 m2**
Highest point of dykes **7.50 m**

Axonometric Diagram

Proposal Section on Vogelhüttendeich



Proposal Section on Georg Wilhelm Strasse

Outputs | Results

1. <u>Green infrastructure:</u>

(A) Bumpouts, tree pits along Vogelhüttendeich and Georg-Wilhelm Straße.
(B) Soil filters along the canal.
(C) Additional green roofs throughout neighborhood.

2. <u>Cycle Infrastructure:</u>

(A) 1 km of cycle paths along Vogelhüttendeich; 0.8 km cycle paths along Georg-Wilhelm Straße.
(B) Additional StadtRAD station at Ernst-August-Schleuse ferry stop.

3. <u>Ferry</u>:

(A) Enhanced HADAG ferry service from Ernst-August-Schleuse ferry stop during the weekends

Activities | Inputs

1. <u>Green infrastructure:</u> Construction project; notification of public, awarding of contracts, project management

2. <u>Cycle Infrastructure:</u> Construction project; notification of public, project management

3. <u>Ferry</u>: Reworking of timetable, increase in HADAG staff, coordination with Hamburg Port Authority

CONCLUSION

Following the principle that liveable neighborhoods are based on pleasant and safe streets that facilitate all modes of movement, with a mixture of land uses that allows a balanced development [11], an urban analysis of the Reiherstiegviertel was conducted to investigate the current situation of the district in regards to its liveability.

From the research made, it became clear that the mobility and the water sectors needed physical-spatial interventions to improve the living environment in the neighborhood. To achieve that, a blue-green street design for two main streets in the district was proposed. Apart from that, to help reduce the pressure in those sectors, additional measures, such as investing in green roofs, and increasing the ferry service during the weekends were proposed.

These interventions aim to address these inadequacies, and have the overall objective of enhancing the livability of the neighborhood. As we learned from task one, liveability and sustainability go hand in hand, so these improvements to the district's livability standards will also contribute to its longer term sustainability. With a decentralized system for stormwater management, and mobility improvements, Reiherstieg can overcome its limitations and thrive long into the future. In short, we propose interventions which ***convey water***, and ***move people***.