December 10, 2025

Regenerative landscapes

Henning Larsen

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ResetCity2025

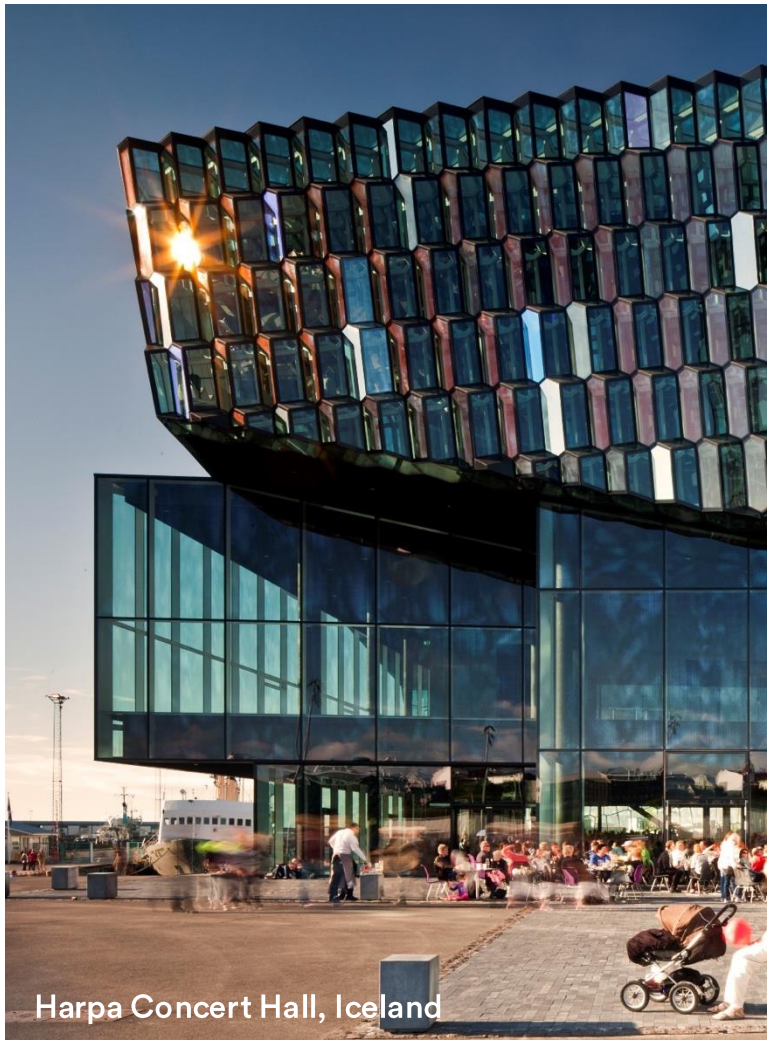
Henning Larsen

Regenerative design in landscape

Regenerative design aims at setting the framework for nature to do what it does best, and allow humans to enjoy it.

Renaturation of the watercourse of the Aire, Georges Descombes and Atelier Descombes & Rampini

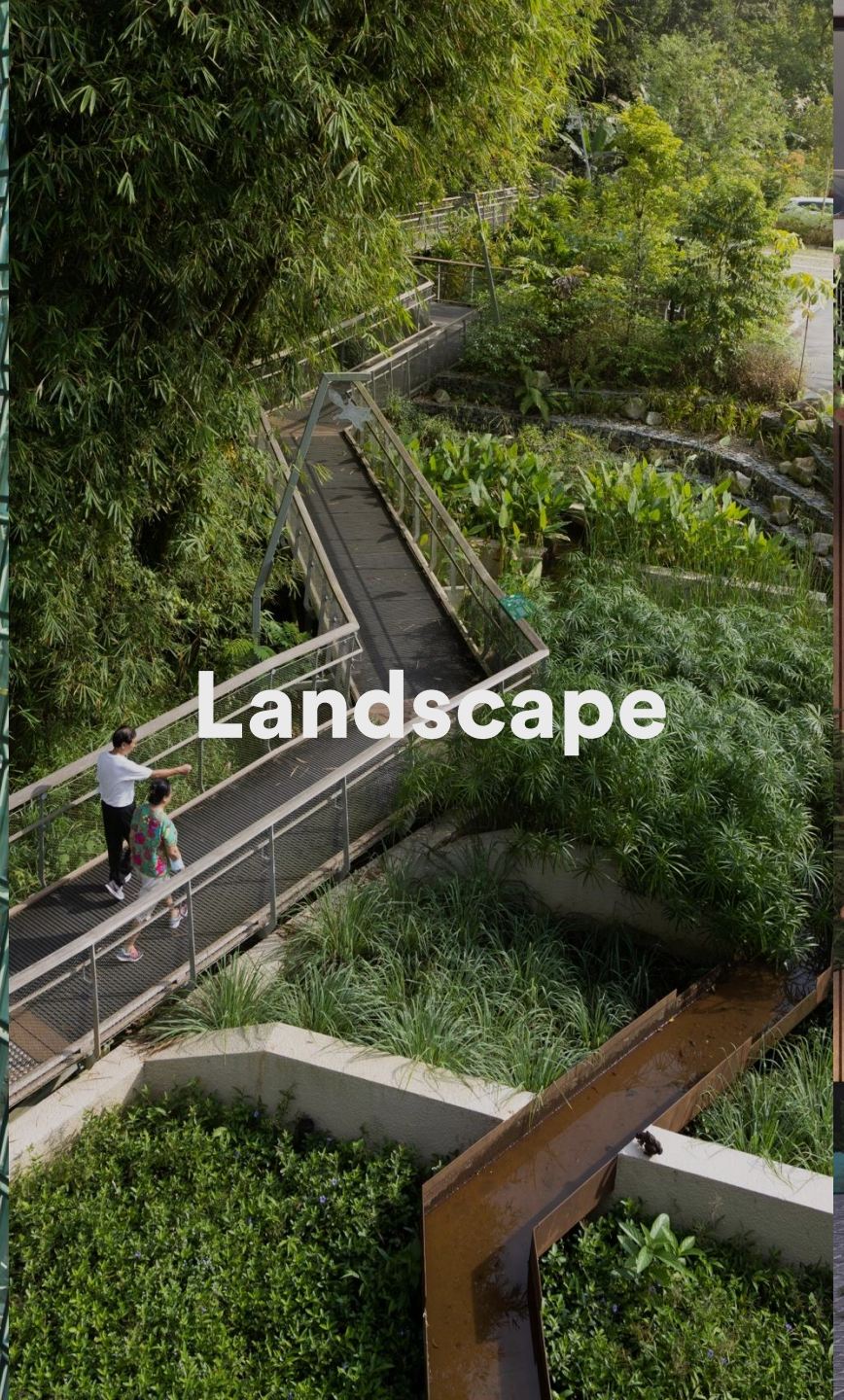
A Danish office with a global outreach


Harpa Concert Hall, Iceland


World of Volvo, Sweden


Downsview, Toronto framework


Architecture

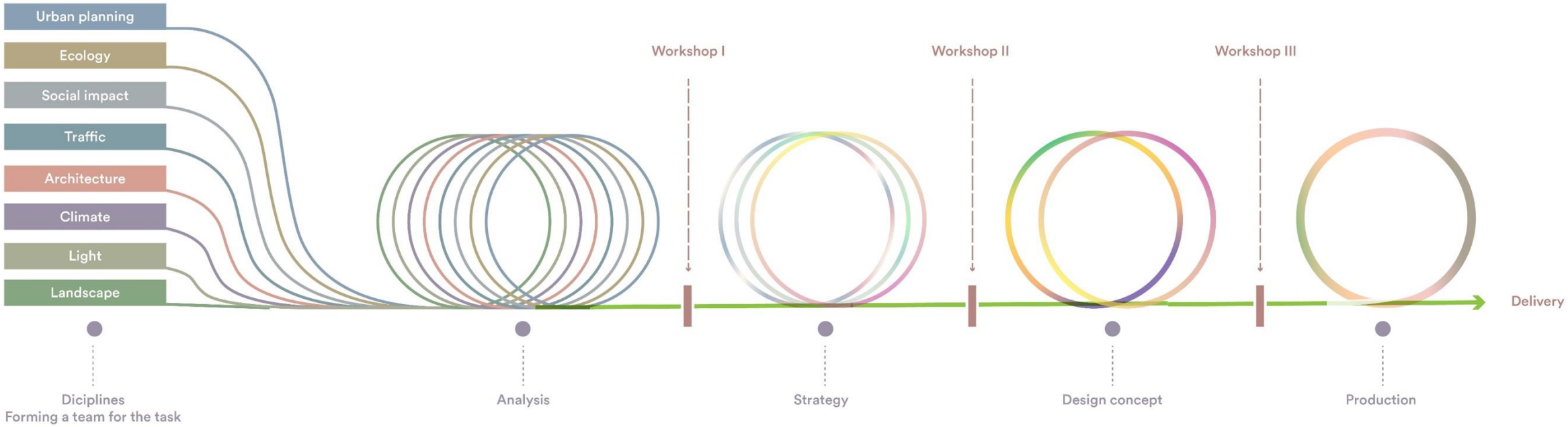

Landscape


Urbanism
ABB

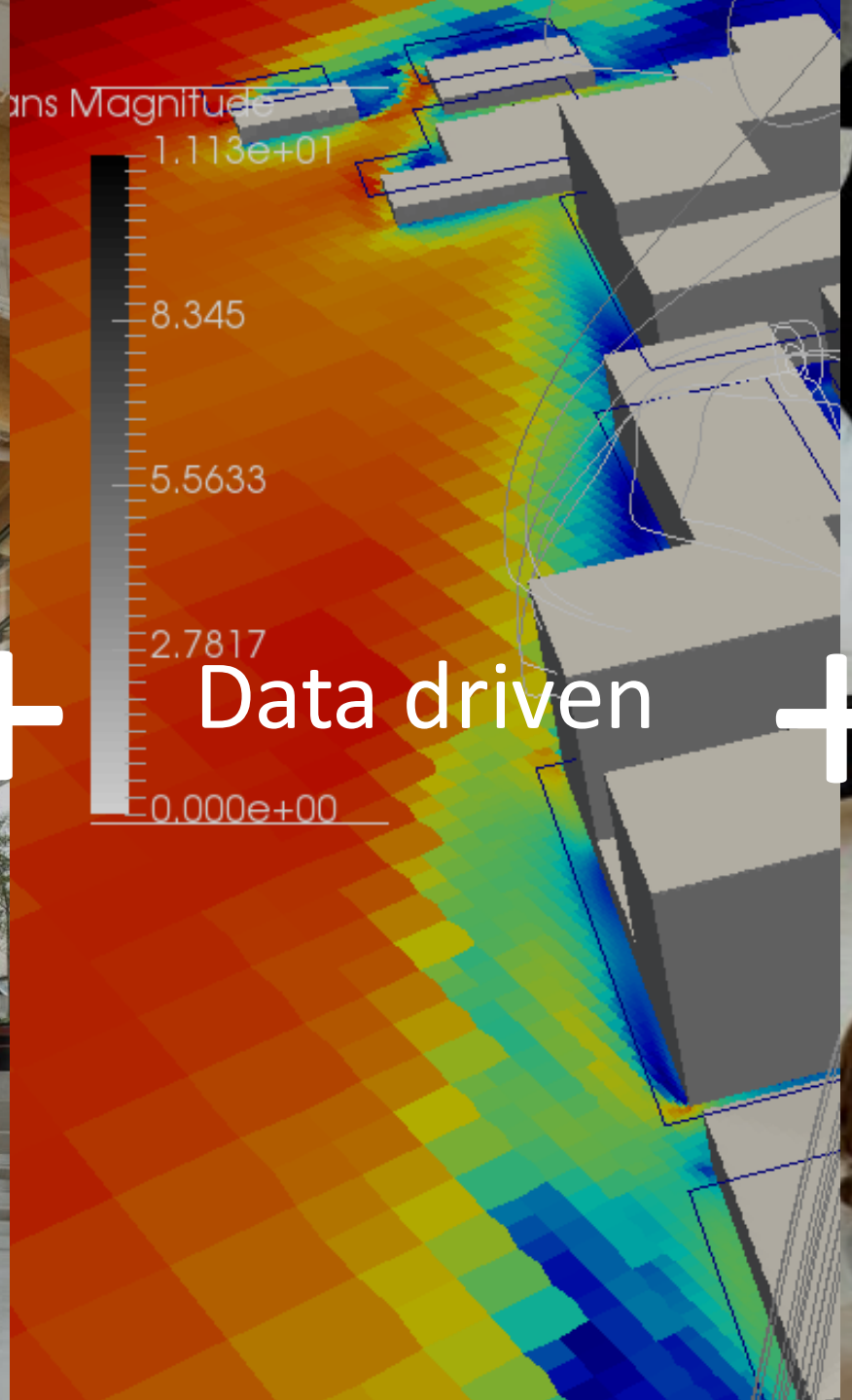
Henning Larsen


We start every project with
nature as the brief

Innovation driven by the interdisciplinary approach



Design +



Data driven +

Interdisciplinary

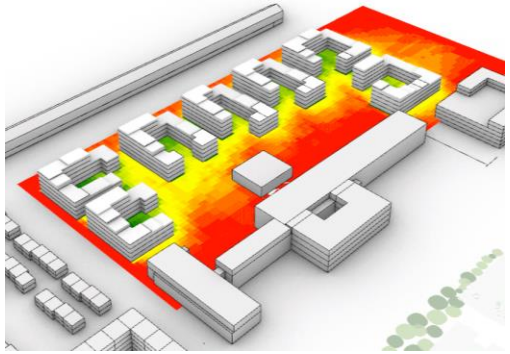
A curiosity-led studio

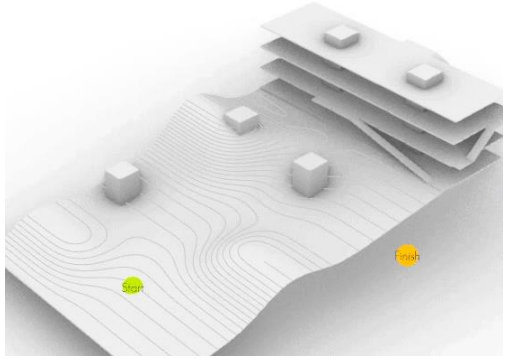


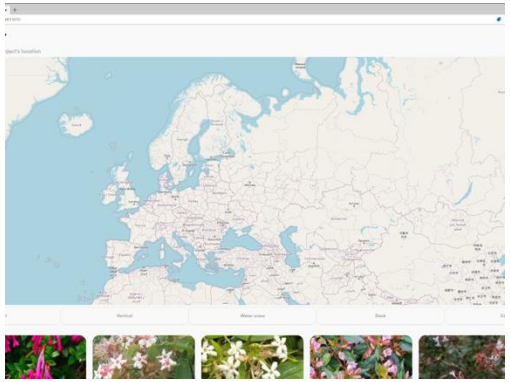


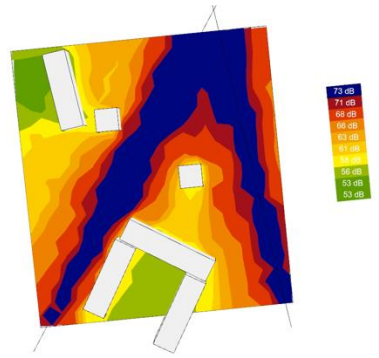


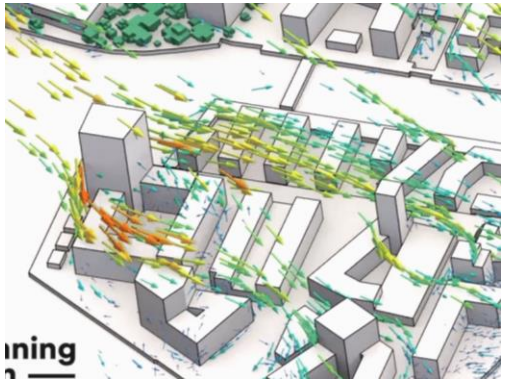
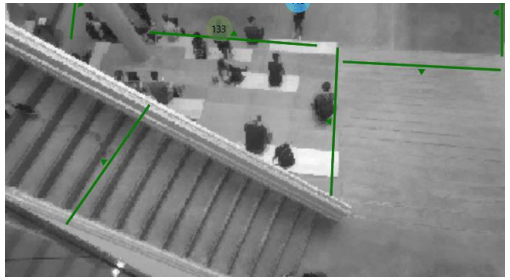
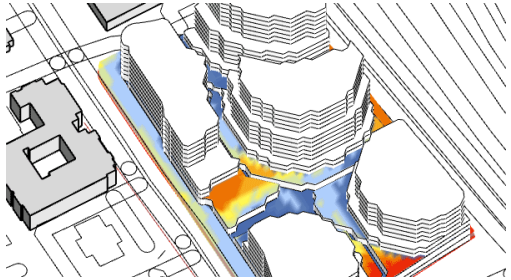
Applied innovation



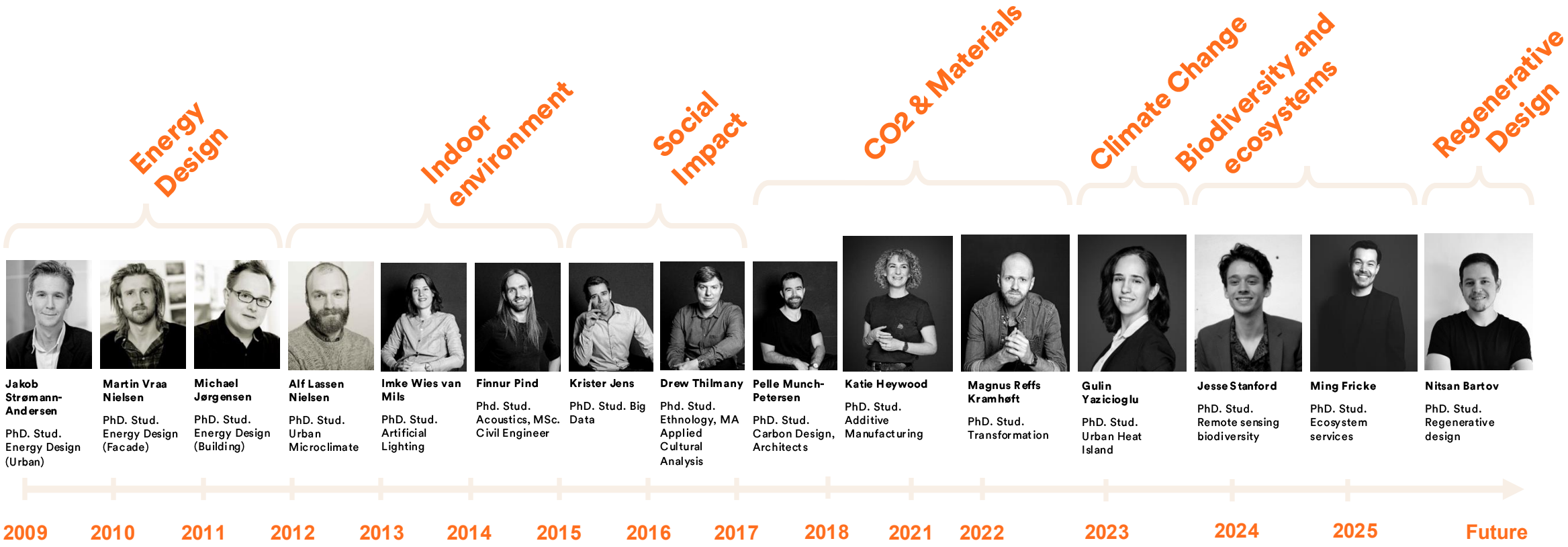







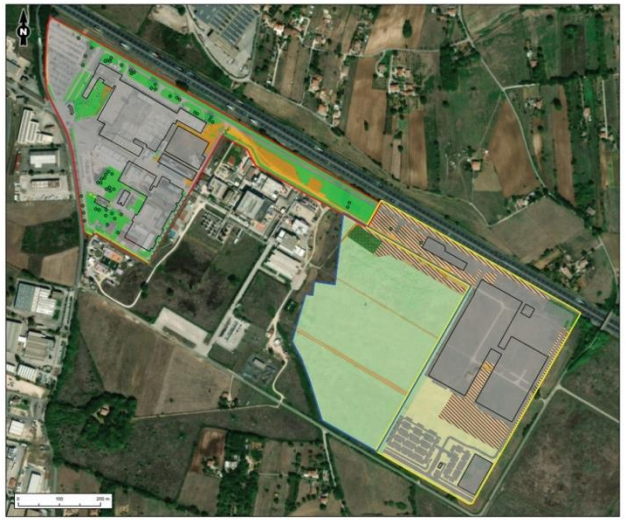
Chronology of our PHD students



Biodiversity net gain

SCENARIO 1

No landscape intervention on both greenfield and brownfield



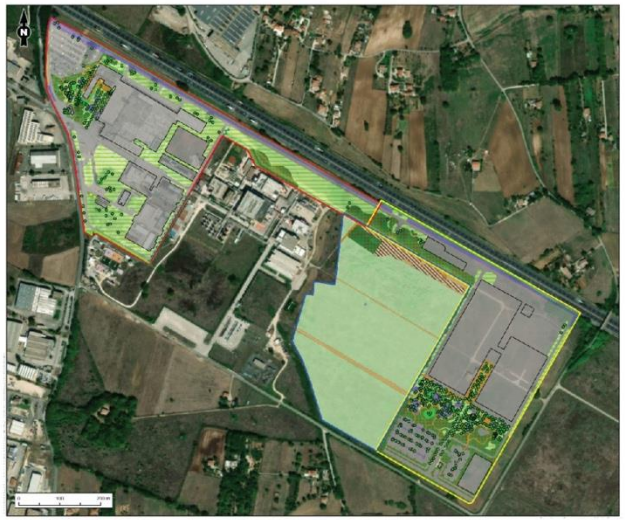
Result compared to existing site conditions:

- 30.87%

decrease of biodiversity

SCENARIO 2

Landscape intervention in both greenfield and brownfield



Result compared to existing site conditions:

+49.11%

increase of biodiversity

SCENARIO 3

Landscape intervention on greenfield, brownfield and adjacent plot (park)

Result compared to existing site conditions:

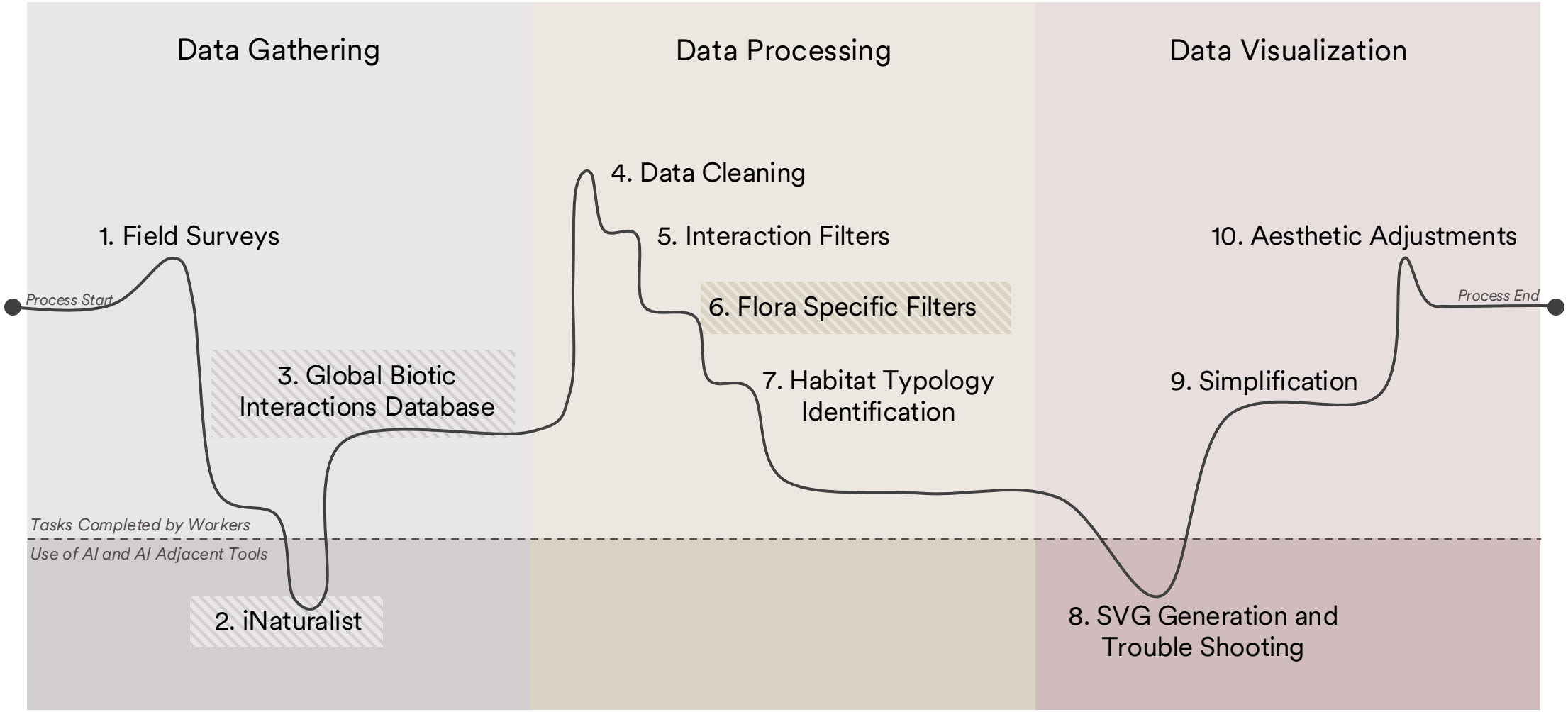
+109.11%

increase of biodiversity

What are we currently exploring with our in-house biologist

- To identify suitable planting typologies that will contribute to the flourishing of local ecological communities
- To work with a variety of data sources to identify ”extant biota” at and near the site as well as their potential relationships to each other
- To explore AI tools as a method for effective visual communication

Process overview



Data gathering

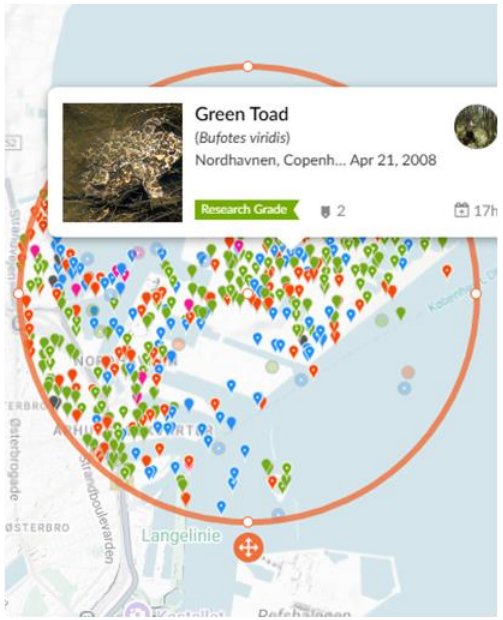
Field Surveys

- Expert Ecologists/Biologists were sent to the site to observe and identify flora and fauna species present.
- IUCN threat level was identified for species observed

Tasks Completed by Workers

iNaturalist

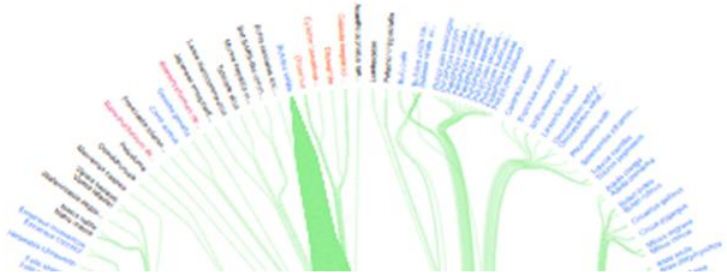
- Additional species were added into our analysis through the Citizen Science app iNaturalist, which uses *Computer Vision* to identify species based off of user submitted photos



Use of AI and AI Adjacent Tools

Global Biotic Interactions Database

- Biotic interactions (aggregated from scientific articles) between relevant species were downloaded with an AI-generated API request.



Data Acquired by Workers, Data Accessed with AI Assistance

Data processing and visual output

Data processing

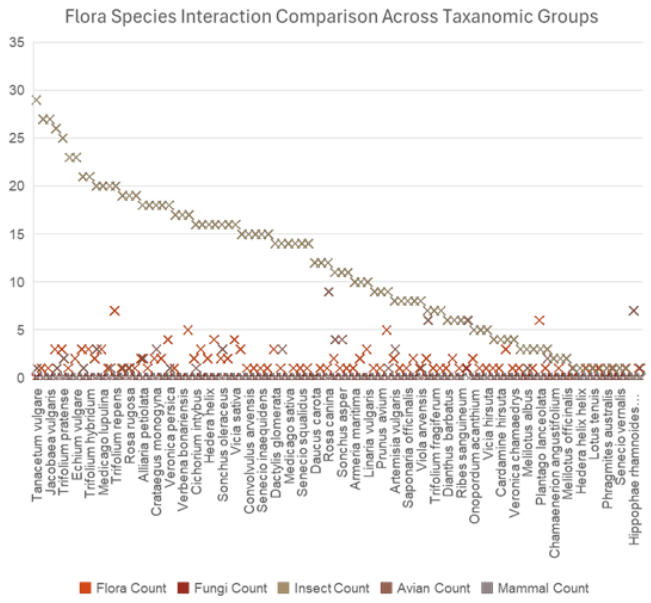
- Data manual cleaning
- Interaction filters
- Priority relationship

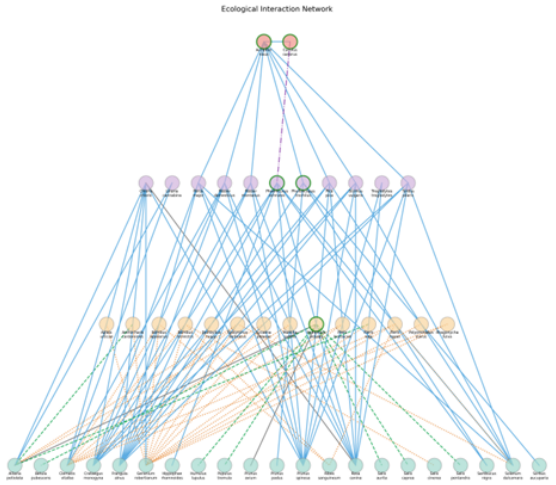
Code generation

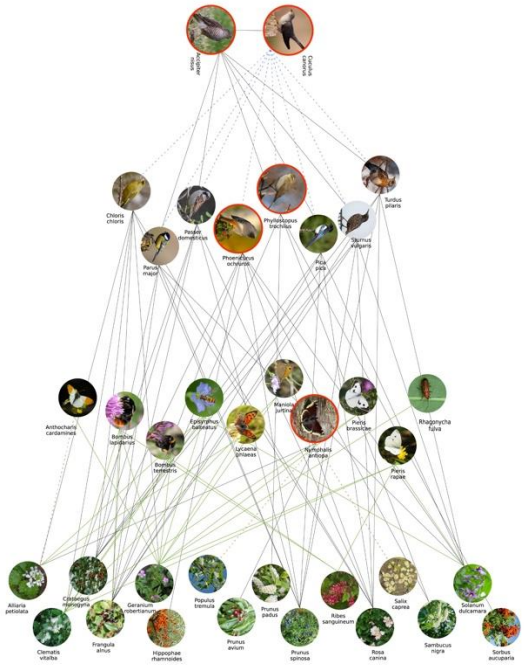
- Code-generated graphics to allow for editability and fine-tuning
- Several Interations required to ensure accurate depictions of data

Visual improvement

- Alignment with color palette
- Insertion of species pictures
- Improvement of graphic structure







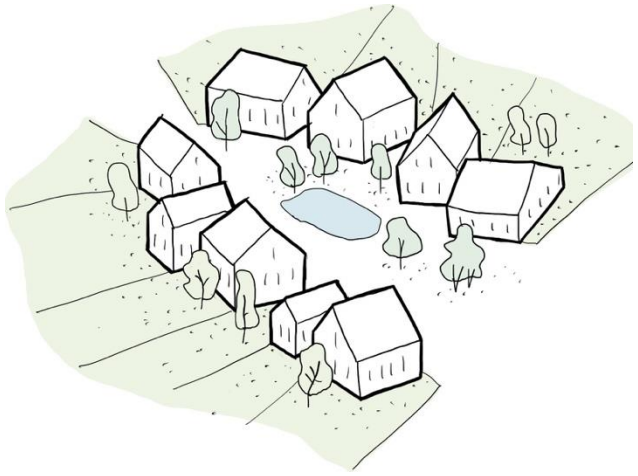
Fælledby, Copenhagen

Typology: Mixed use masterplan

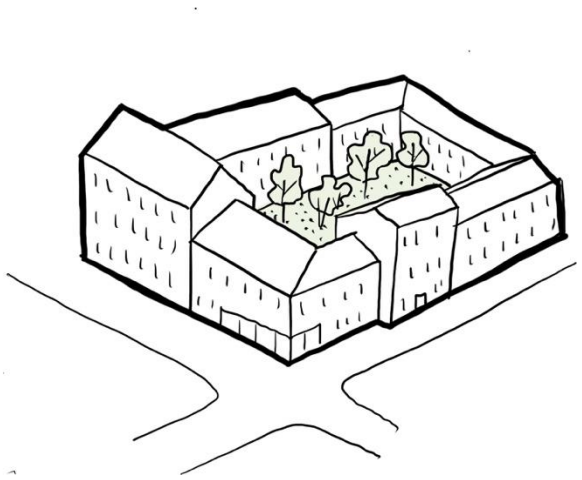
How to plug in a human habitat?

Living + Nature

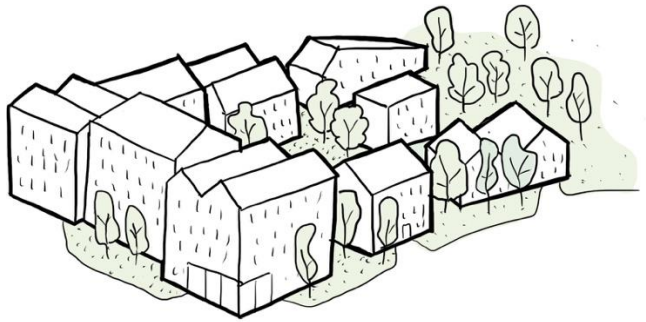
Village



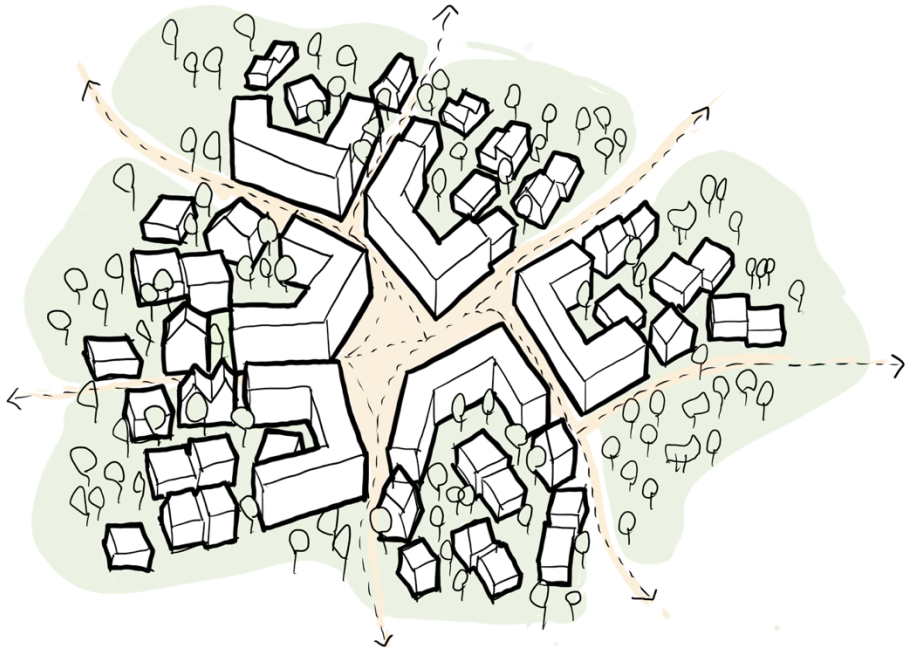
Copenhagen block



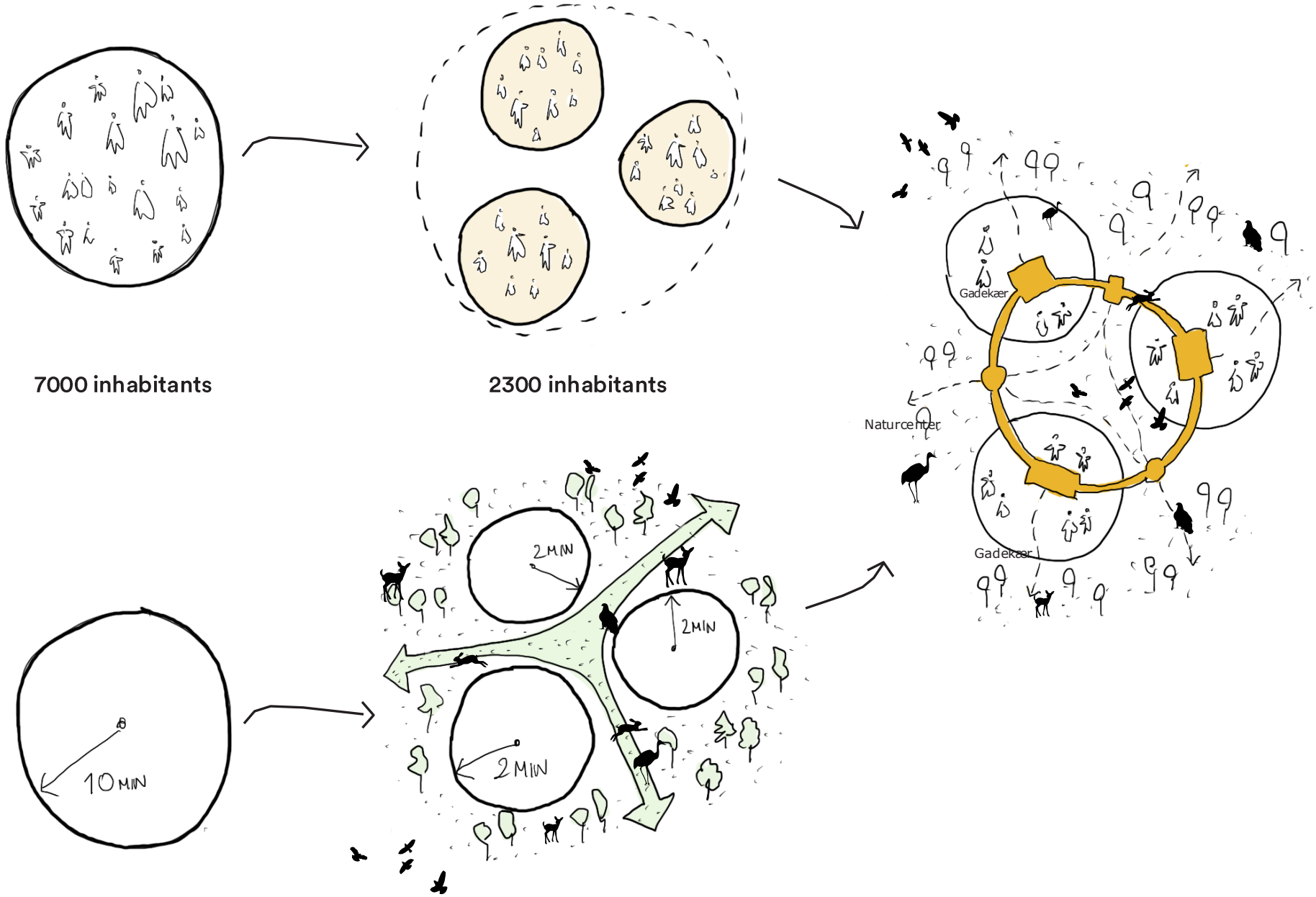
Fælledby block



Fælledby Neighbourhood



Fælledby building structure


7000 inhabitants
2300 inhabitants
Gadekær
Naturcenter
Gadekær
10 MIN
2 MIN
2 MIN
2 MIN
Animal and plant communities

N

1 Overgrown

2 Shrub

5 Sand slopes

6 Water puddles

3 Wetland

4 Meadow

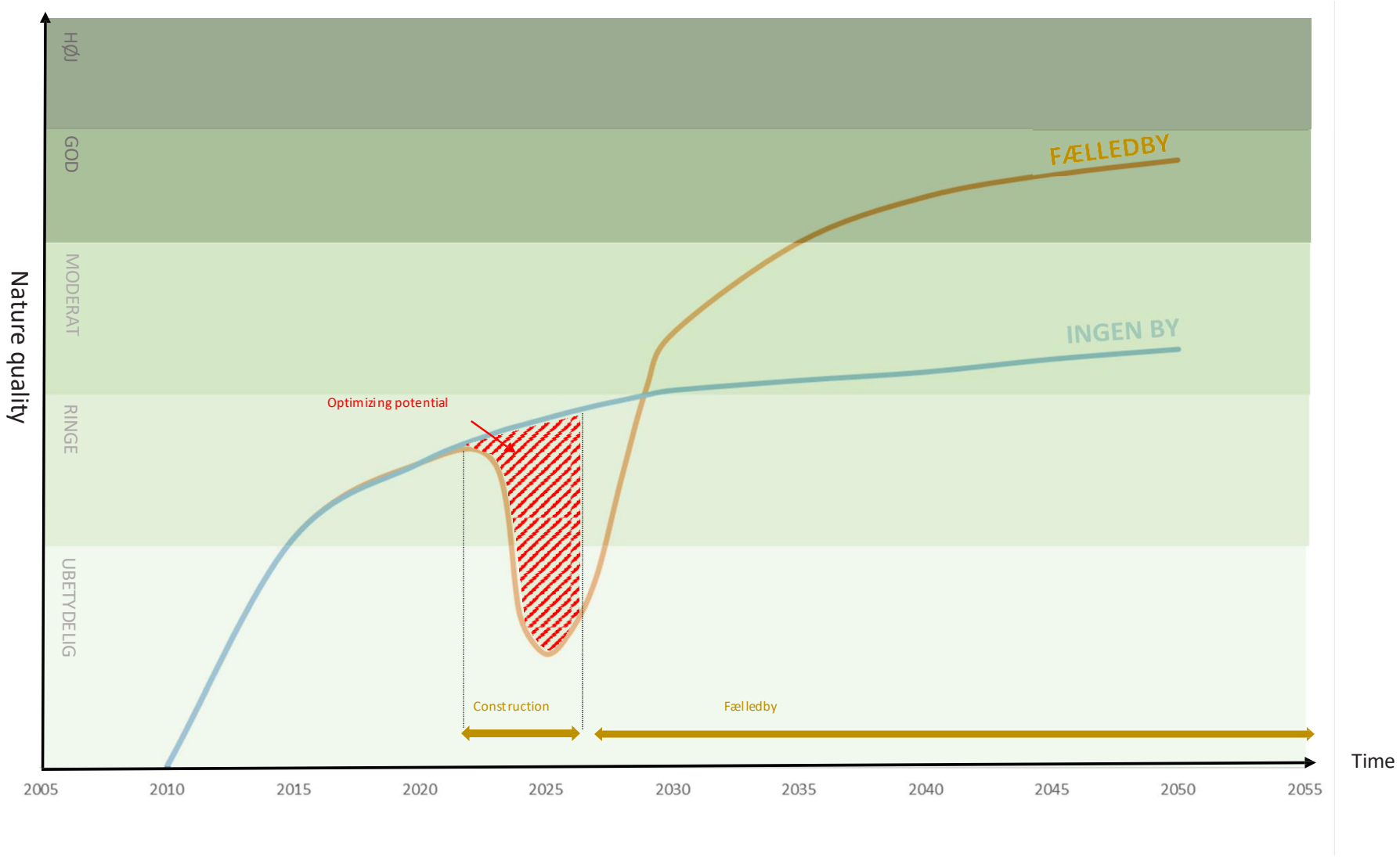
7 Edge zones

8 Climbing plants

Nature taking priority

Design for biodiversity

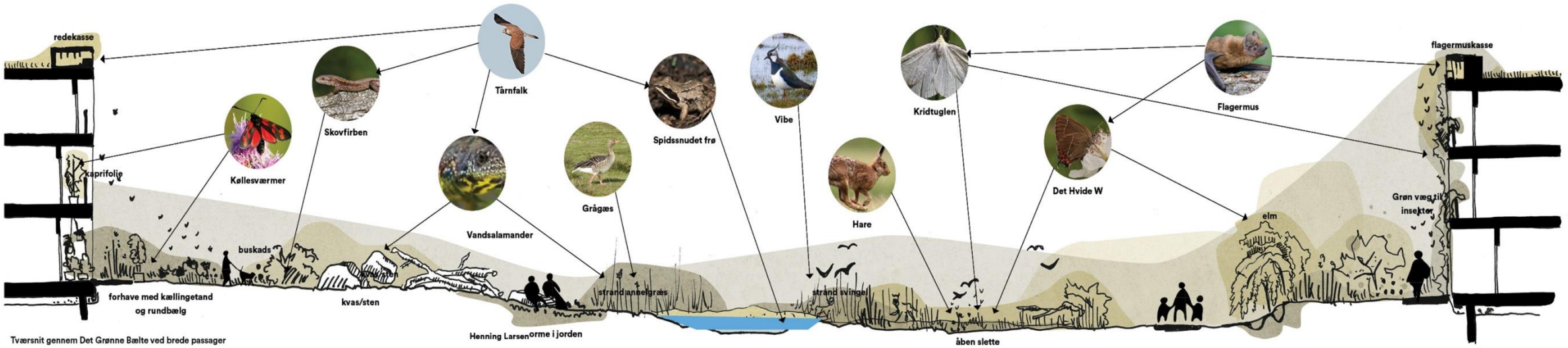
Decreased green area sqm by 37%
...but increaed bidiversity by
+ 77% quality A habitats
+ 300 % more diversity in species


Nature quality
HØJ
GOD
MODERAT
RINGE
UBETYDELIG
FÆLLEDBY
INGEN BY
Optimizing potential
Construction
Fælledby
Time
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

Biofactor

Fun fact

Cats are not allowed!



New way of living in Nature…

Rainwater strategy

1 year event scenario

5 years event scenario

40 years event scenario

Living together

Visualization © Vivid Vision

Henning Larsen

Bishan Park, Singapore

Typology: Public park

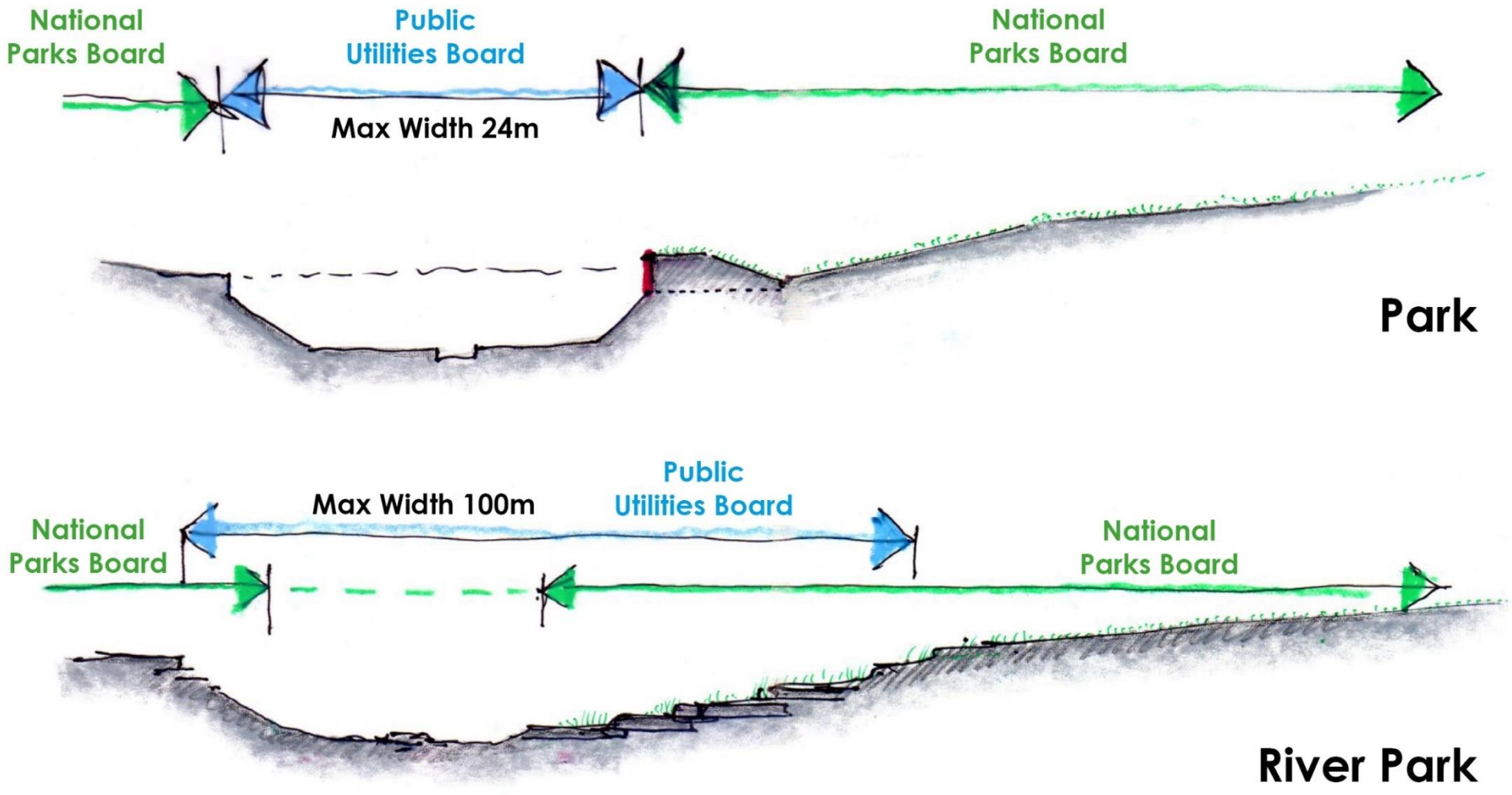
From traditional infrastructure

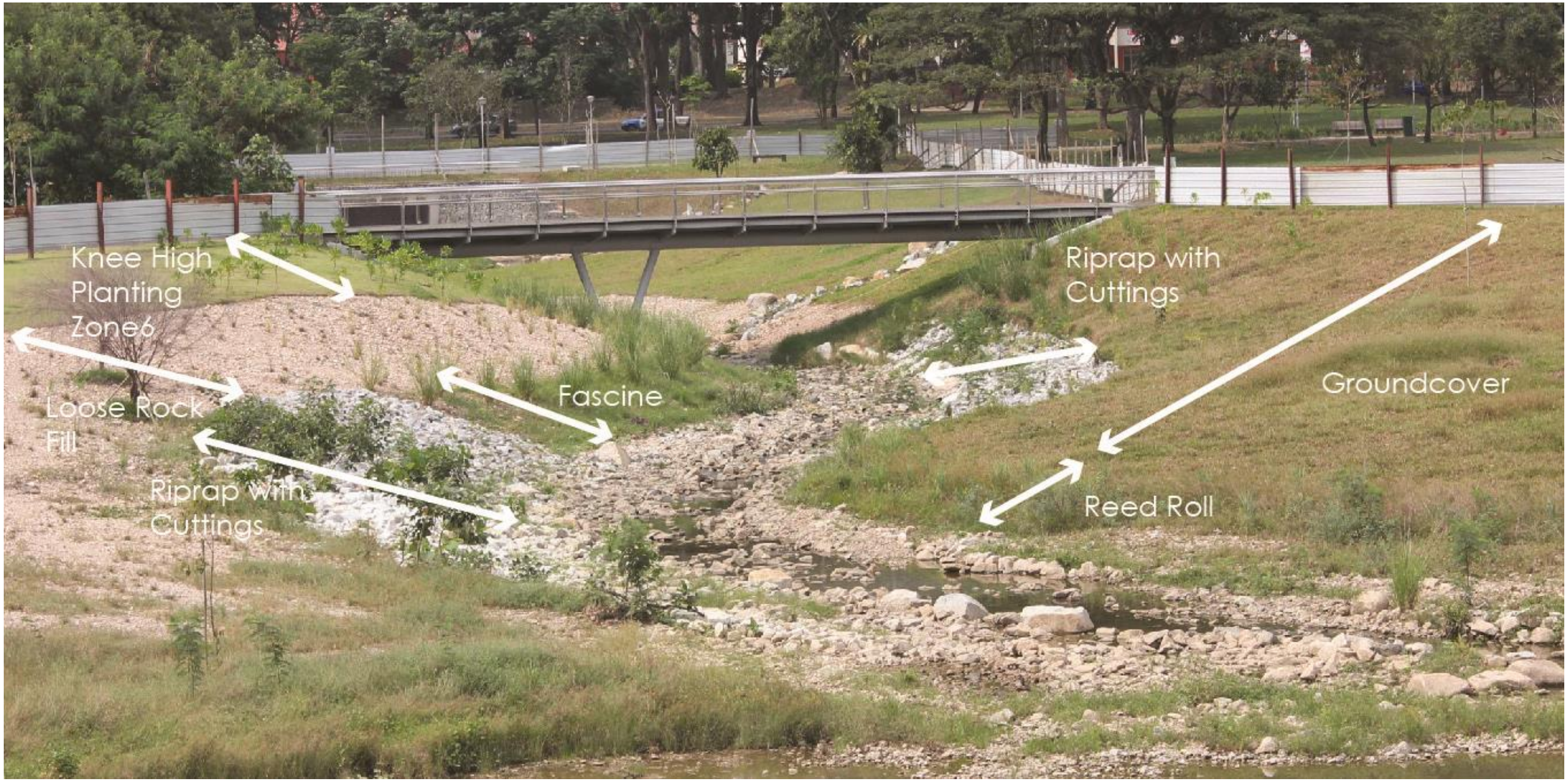

100%
SEPARATION OF
PARK FROM WATER
IN 2008


100%
INTEGRATION OF
PARK AND RIVER
2012
RAMBOLL STUDIODREISEITL
View from bridge 5)

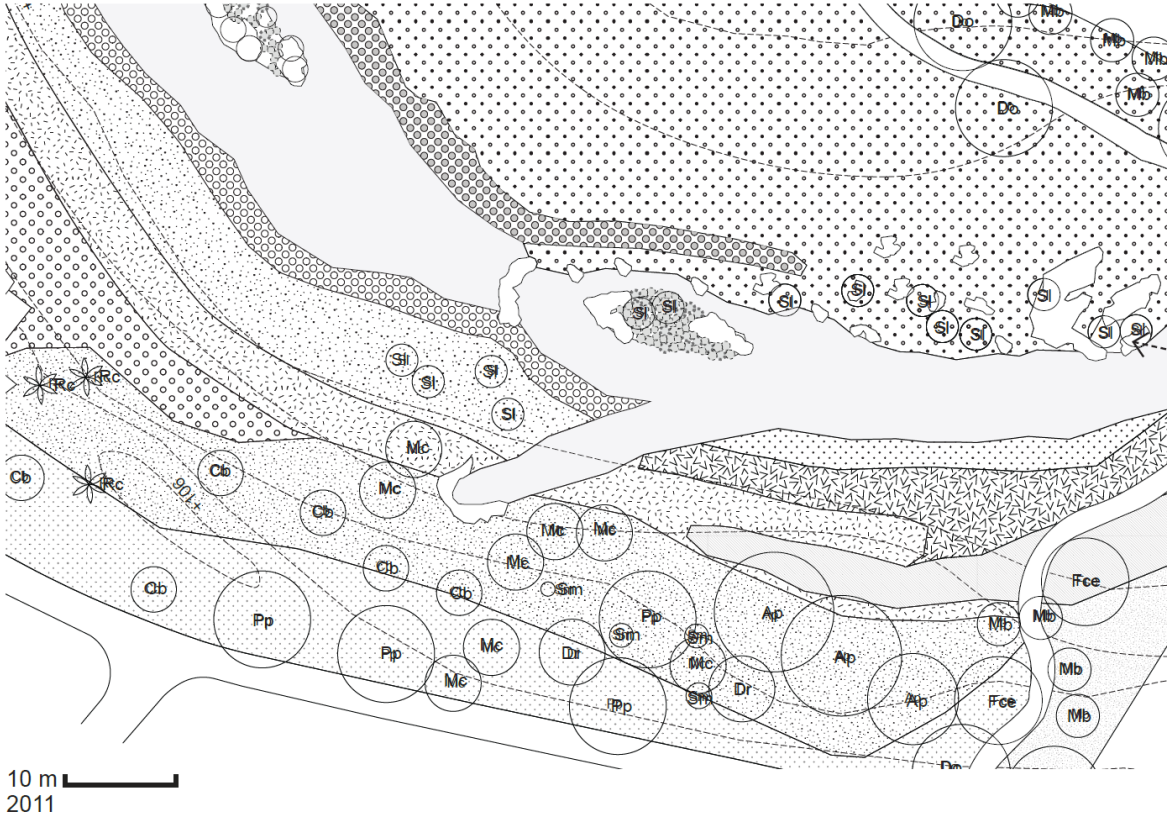

Il fiume come generatore di vita
Air Quality Improvements
Flood Protection
Biomass
Climate machine
Retention
Water Cleansing
Micro-Climate Improvements
Biodiversity
Infiltration
Erosion Control
Evapotranspiration

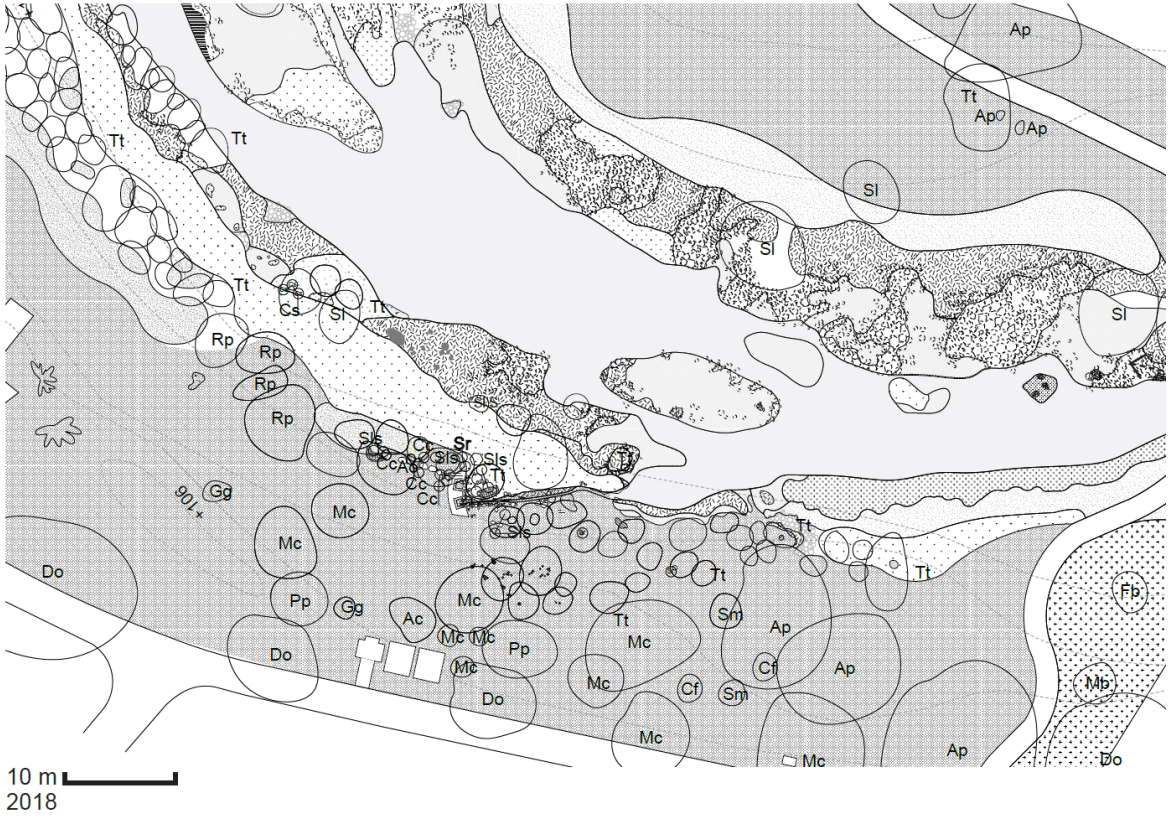
The river as a life giving force


National
Parks Board
Public
Utilities Board
National
Parks Board
Max Width 24m
Park
Public
Utilities Board
Max Width 100m
National
Parks Board
National
Parks Board
River Park

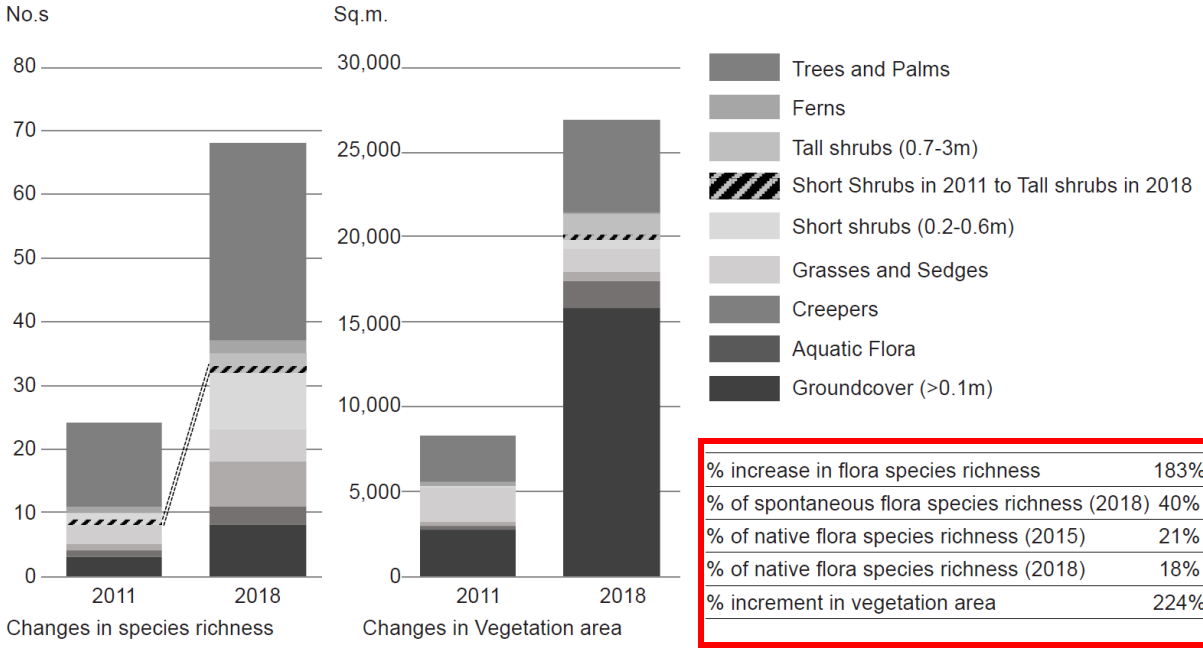

Knee High Planting Zone6
Loose Rock Fill
Riprap with Cuttings
Fascine
Riprap with Cuttings
Reed Roll
Groundcover

Designed vs spontaneous





2011 (completion) vs 2018



% increase in flora species richness	183%
% of spontaneous flora species richness (2018)	40%
% of native flora species richness (2015)	21%
% of native flora species richness (2018)	18%
% increment in vegetation area	224%

2011 (completion) vs 2018


BRING PEOPLE CLOSE TO WATER


Creating awareness
and education!

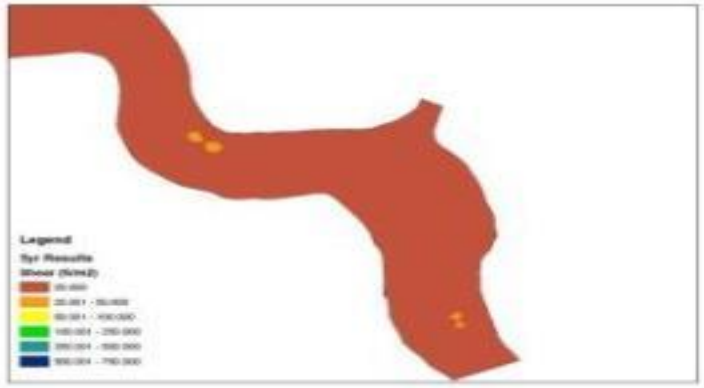

RIVER VALLEY

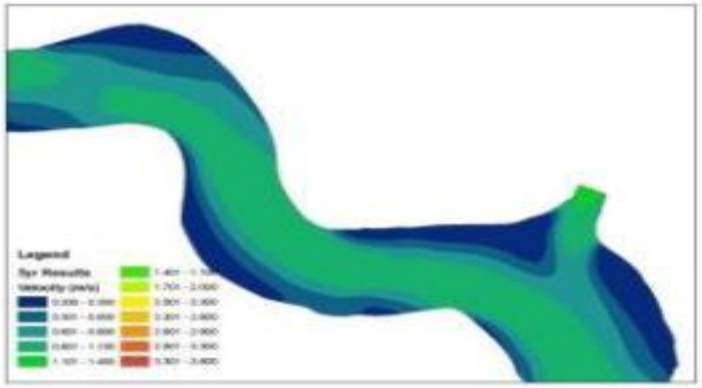

BRING ANIMAL CLOSE TO WATER

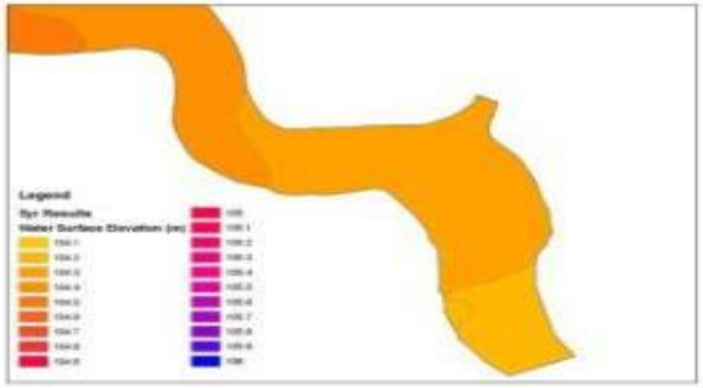

30%
INCREASE IN BIODIVERSITY

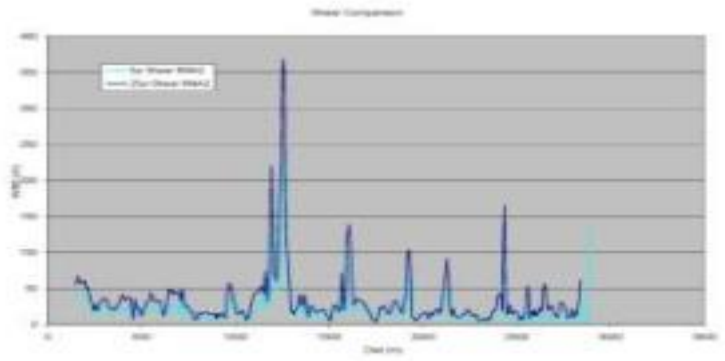

40% increase of water capacity

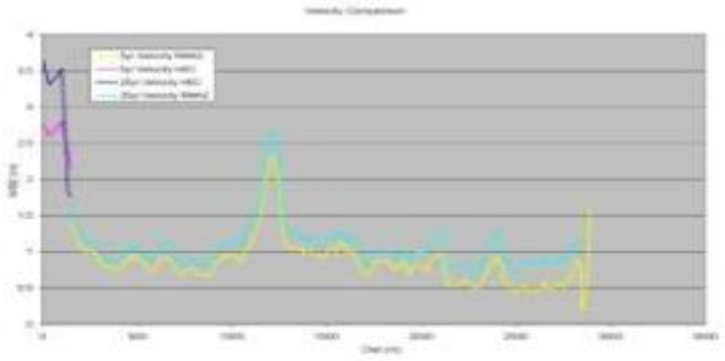
Data driven river design

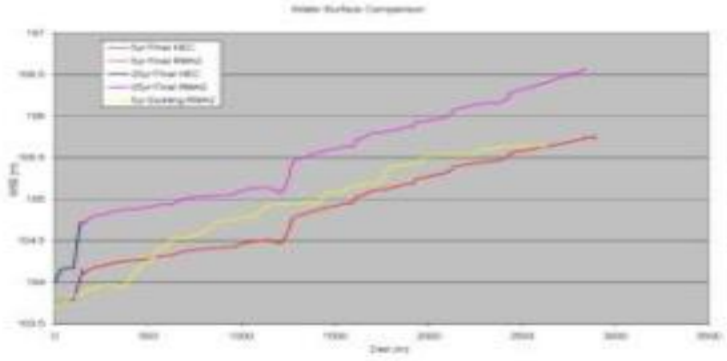












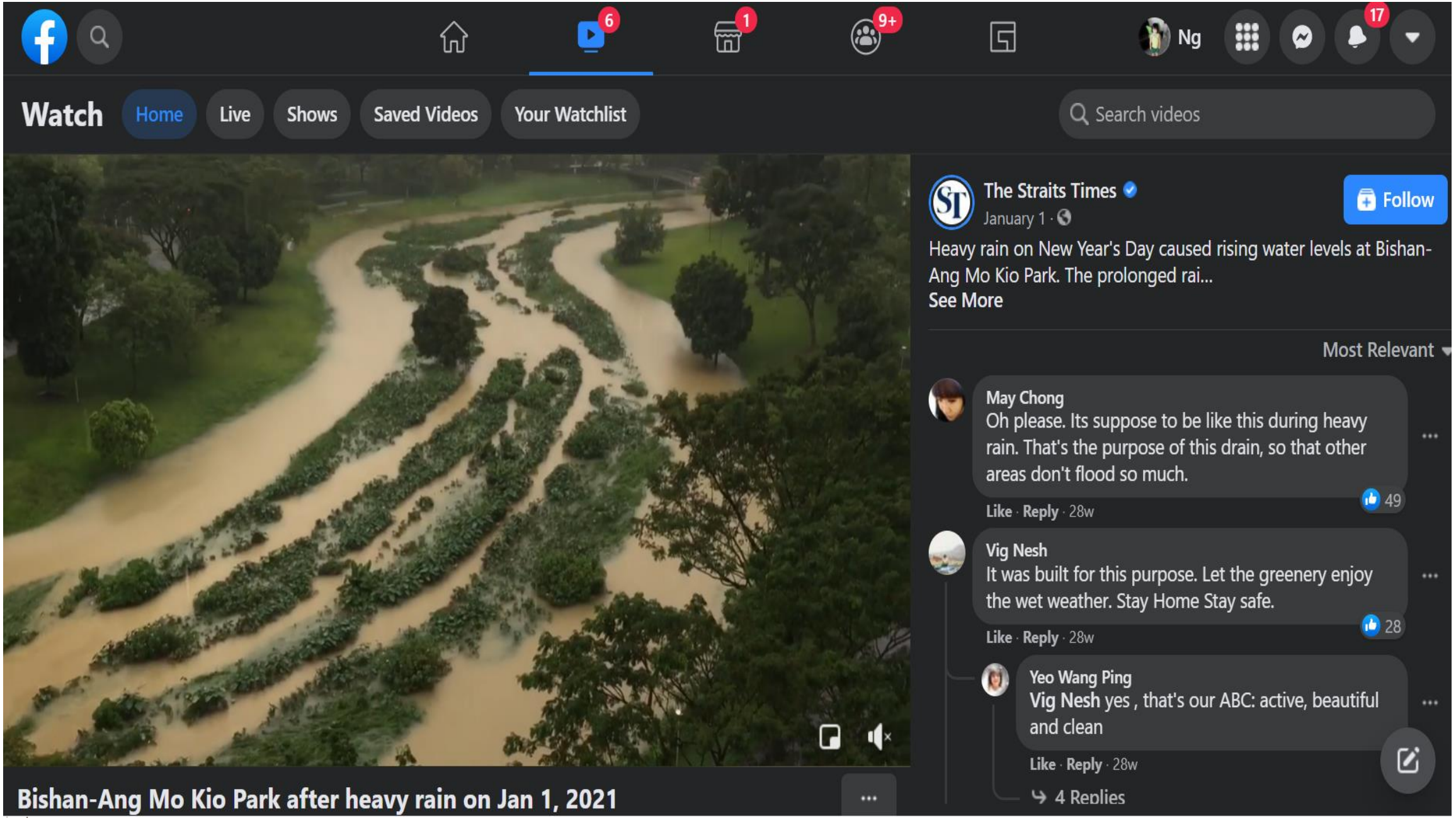
Shear

Velocity

Water Level


25 YEAR FLOOD – TEST RUN
MAY 4TH, 2011


INPUT:
uncleansed
water
NATURAL CLEANSING PROCESSES
OUTPUT:
cleansed
water
Interactive Holistic Benefits


Watch
Home
Live
Shows
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Your Watchlist
Search videos
Ng
The Straits Times
January 1 ·
Follow
Heavy rain on New Year's Day caused rising water levels at Bishan-Ang Mo Kio Park. The prolonged rai...
See More
Most Relevant
May Chong
Oh please. Its suppose to be like this during heavy rain. That's the purpose of this drain, so that other areas don't flood so much.
Like · Reply · 28w
49
Vig Nesh
It was built for this purpose. Let the greenery enjoy the wet weather. Stay Home Stay safe.
Like · Reply · 28w
28
Yeo Wang Ping
Vig Nesh yes , that's our ABC: active, beautiful and clean
Like · Reply · 28w
4 Replies
Bishan-Ang Mo Kio Park after heavy rain on Jan 1, 2021

Closing

Let us try not to control Nature, but rather understand its complexity through technology to maximize its benefits for all living things.